Global Markets Analysis Report

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Ginnie Mae
Our Guaranty Matters

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

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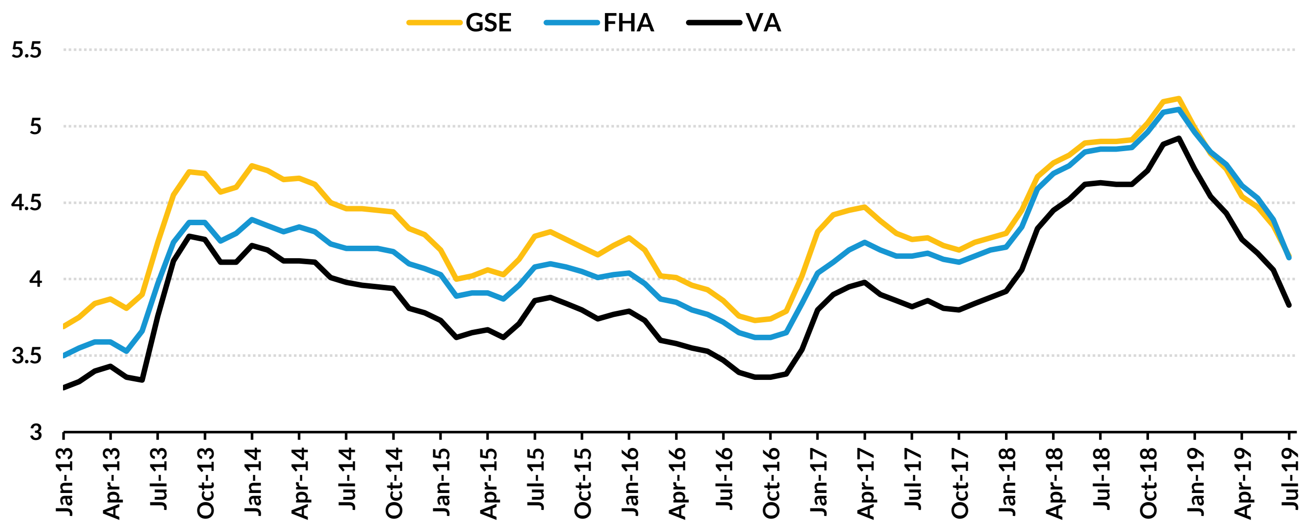
HIGHLIGHTS

Differences in Agency MBS Pooling Rules Can Affect Prepay Speeds

Mortgage rates for FHA-insured and VA-guaranteed loans have historically been lower than rates for loans guaranteed by Fannie Mae and Freddie Mac, the government-sponsored enterprises (GSEs.) The main reason is because FHA and VA loans are packaged into Ginnie Mae MBS, which are explicitly backed by the full faith and credit of the United States, compared to the implicit Federal guaranty for GSE MBS. This explicit guaranty enables Ginnie Mae MBS to trade at higher market prices than those of the GSEs. The higher MBS price translates into lower borrowing costs. Figure 1 below shows average monthly note rates (the rate paid by the borrower) for FHA, VA and GSE originations, 2013 onwards.

Figure 1: FHA, VA and GSE Note Rates



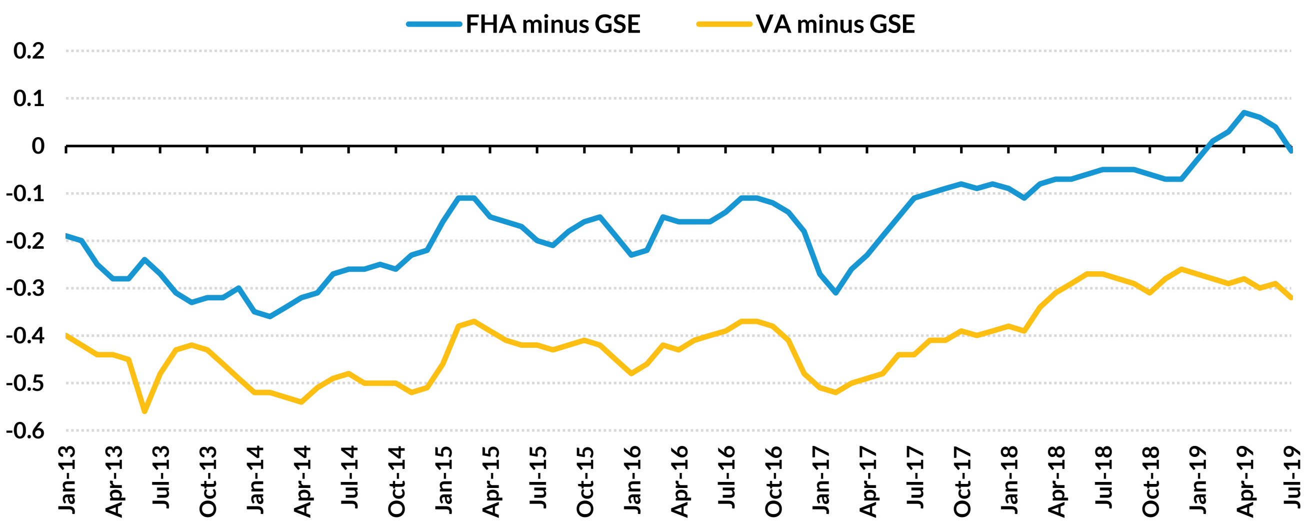
Source: eMBS and Urban Institute **Note**: Includes purchase and refinance loans.

This chart reveals two interesting observations. First, the spread between FHA and GSEs note rates has completely disappeared over time. In 2019, FHA rates are neck and neck with GSE rates, compared to a difference of 20-30 basis points in 2013. The spread between VA and GSE rates has also shrunk, from over 40 basis points in 2013, to about 30 basis points today. Figure 2 below shows spread to GSE rates separately for FHA and VA.

Secondly, when benchmarked to GSE rates, FHA and VA borrowers are paying substantially higher rates today relative to those occurring in the past. Figure 2 (next page) also shows that most of the spread increase has occurred since early 2017, with a smaller increase prior to that.

HIGHLIGHTS

Figure 2: Spread to GSE Note Rates: FHA and VA Loans



Source: eMBS and Urban Institute **Note**: Includes purchase and refinance loans.

The likely culprit is faster prepayment speeds for VA loans in recent years (see pages 41 to 44 for more detail.) In recent years, some lenders have repeatedly refinanced veterans loans causing premature payments on the securitized loan. Ginnie Mae has taken several crucial steps to mitigate this issue, including tightening MBS pooling requirements for certain refinance loans and restricting certain issuers whose loans exhibited abnormally higher prepayment speeds to custom pools. Congress has modified the VA statute to include a net tangible benefit test that requires lenders to demonstrate the borrower obtained a benefit from the refinance.

In the meantime, faced with faster prepayments on Ginnie Mae securities, as FHA and VA loans are pooled together, MBS investors are pricing for the additional risk by demanding a higher yield. This has raised mortgage rates for all FHA and VA borrowers in the Ginnie Mae program. Above data provide further evidence demonstrating how faster prepayments of VA loans increase the cost of homeownership for all Ginnie Mae borrowers. More importantly these data highlight the need for Ginnie Mae and lenders to mitigate this issue.

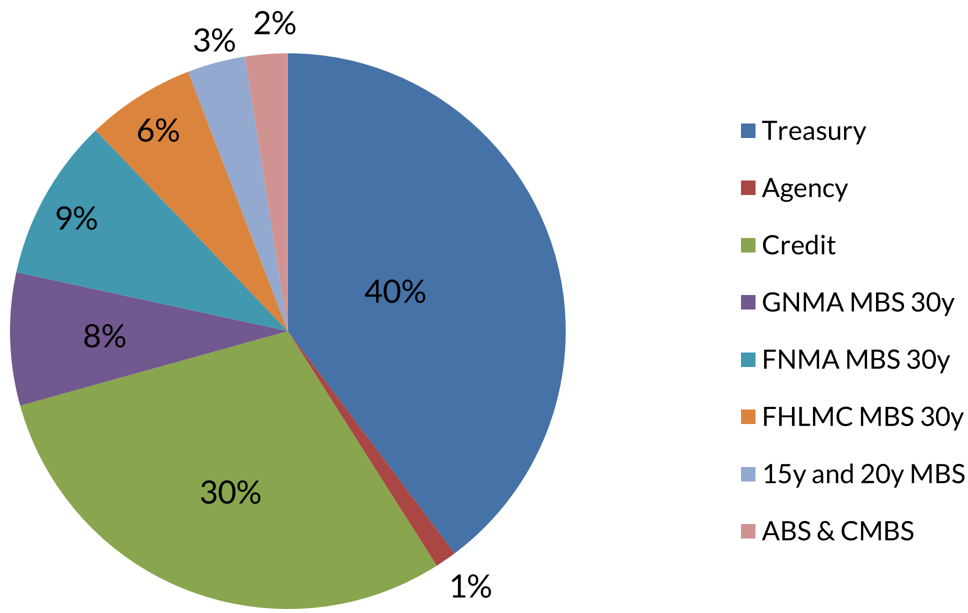
***Highlights this month*:**

- Total value of the housing market reached $30.6 trillion in the second quarter of 2019, 20.0 percent higher than the 2006 peak of $25.5 trillion according to the Federal Reserve's Flow of Funds report (page 6).
- In the first eight months of 2019, agency gross issuance was up 9.6 percent year-over-year, a product of lower interest rates (page 18).
- The share of agency MBS owned by foreign investors increased to 15.8 percent in the second quarter of 2019 (page 53).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

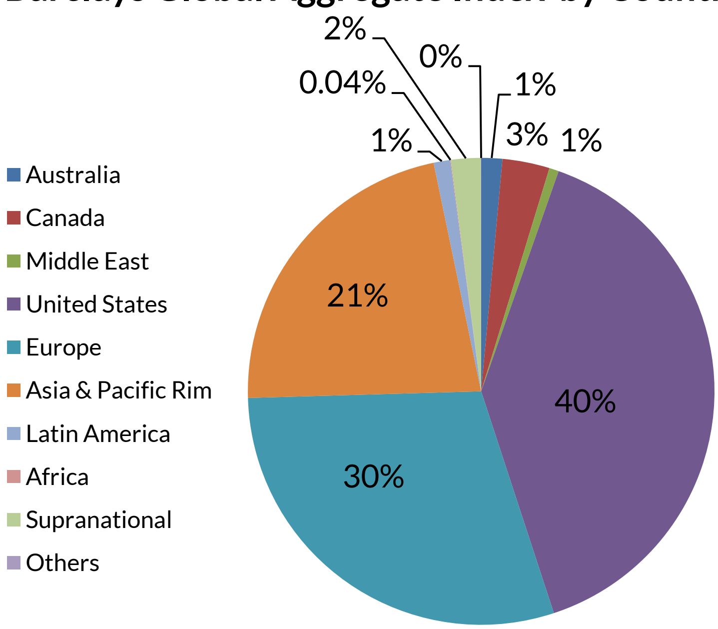
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 27 percent of the Barclays US Aggregate Index- less than either the US Treasury share (40 percent) or the US Credit share (30 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (9 percent), while Ginnie Mae 30-year MBS and 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 40 percent of the global total. US MBS comprises 11 percent of the global aggregate.

Barclays US Aggregate Index



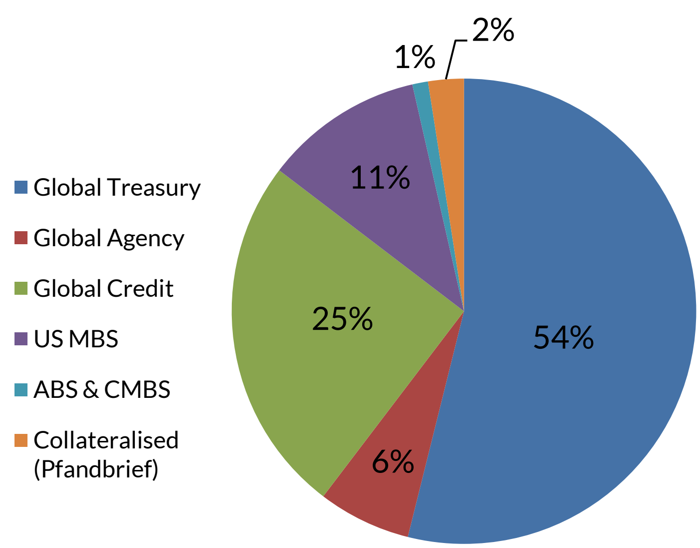
***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of September 2019.*
***Note**: Numbers in chart may not add to 100 percent due to rounding.*

Barclays Global Aggregate Index by Country



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

Barclays Global Aggregate Index by Sector

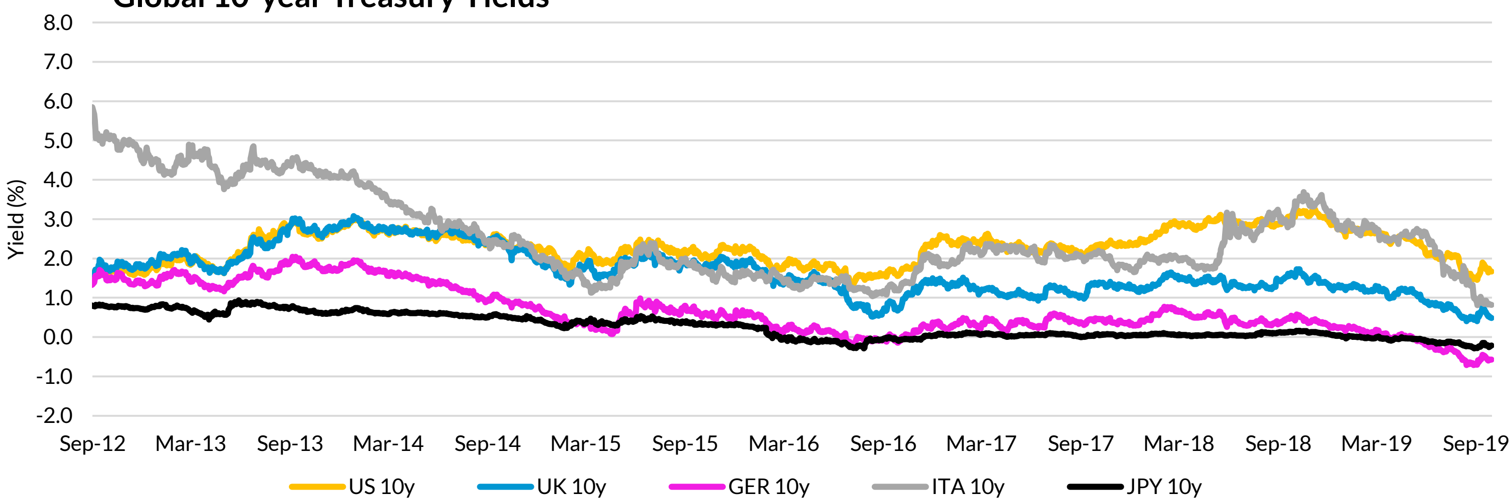


***Sources:** Bloomberg and State Street Global Advisors*
***Note**: Data as of September 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

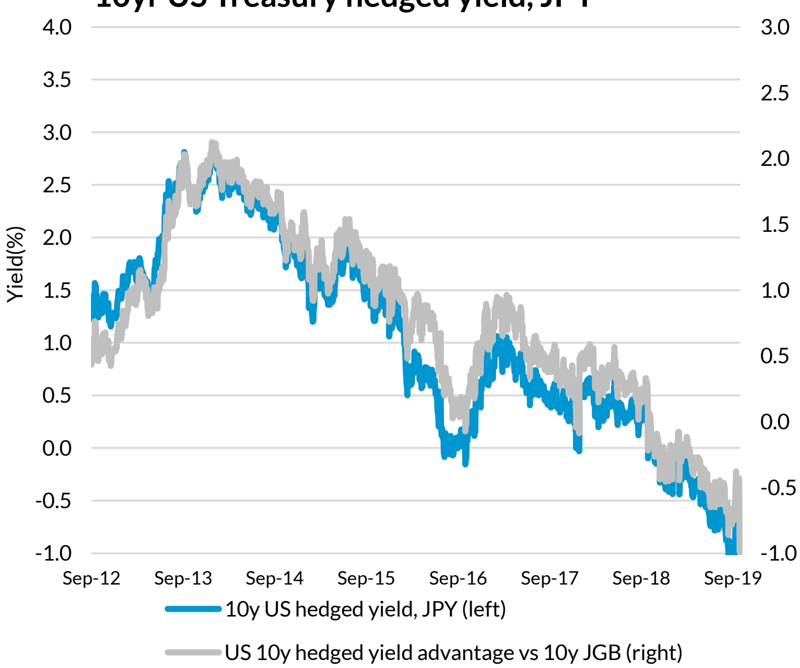
With weakness in recent economic data and worries about tariffs and trade wars, yields on government bonds have dropped across the globe over the course of 2019. Although the yield on 10 year US Treasury increased 17 bps in September to 1.7 percent, it is down 96 bps YTD. Despite the September drop, US treasury yield remained the highest in the developed world. This is followed by the Italian 10-year note, down 18 basis points on the month to 0.82 percent at the end of the September. In the UK, 10-year government yields decreased by 1 bp to 0.49 percent; in Germany they increased by 13 bps to -0.57 percent. In Japan, yields rose by 6 basis points to -0.21 percent. At the end of September, the hedged yield differential between the 10-year Treasury and the 10-year JGB stood at -100 bps, a decrease of 28 bps since August. The hedged yield differential between the 10-year Treasury and the 10-year Bund stands at -71 bps, a decrease of 14 bps since the end of August.

Global 10-year Treasury Yields



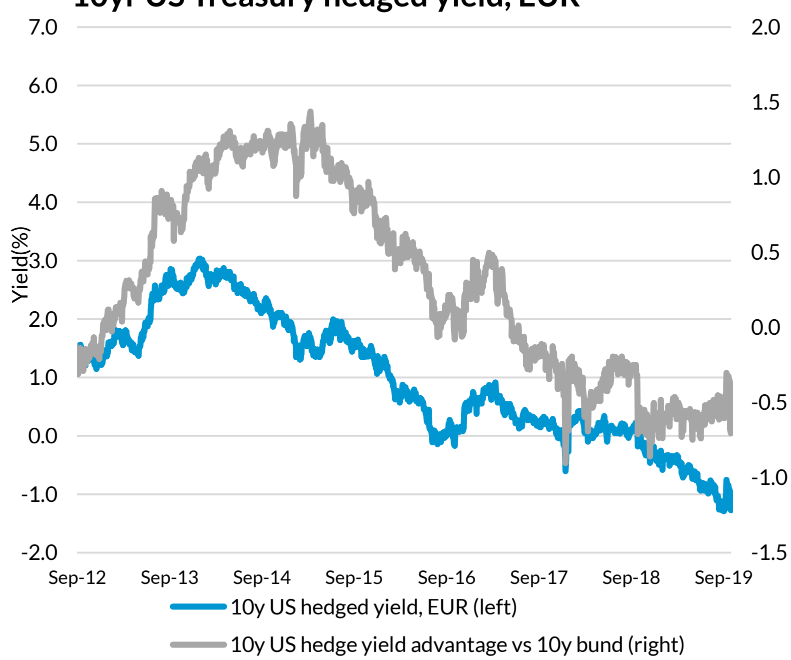
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of September 2019.*

10yr US Treasury hedged yield, JPY



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

10yr US Treasury hedged yield, EUR

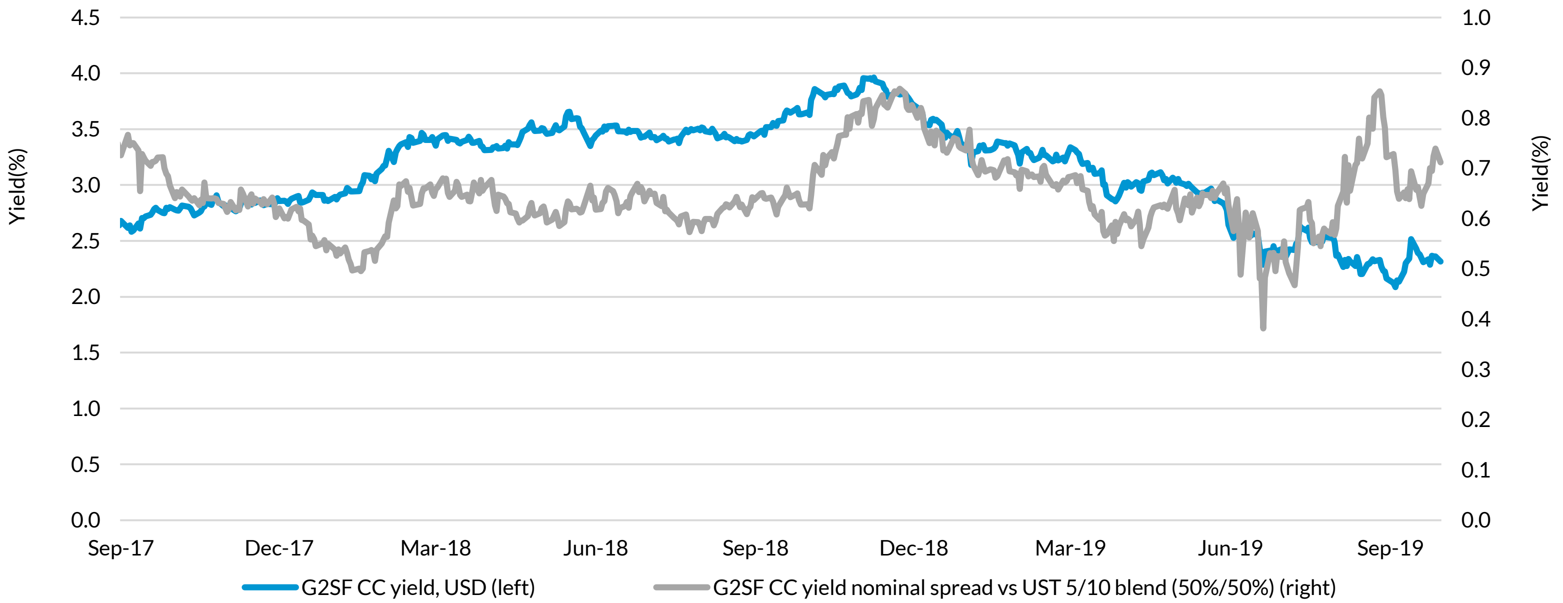


Sources: *Bloomberg and State Street Global Advisors*
Note*: Data as of September 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

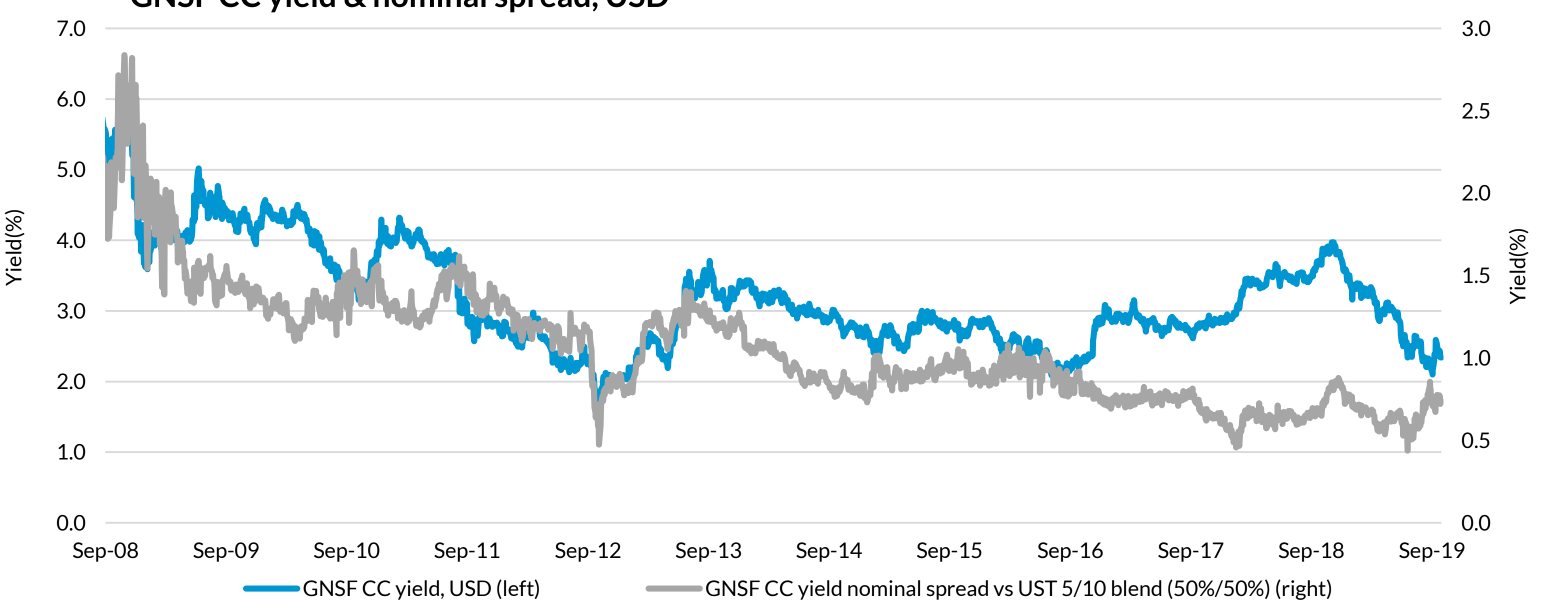
The nominal yield on both the current coupon GNMA II and GNMA I securities increased in September 2019. Current coupon Ginnie Mae securities outyield their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 71 and 74 bps on G2SF and GNSF, respectively, a tightening of about 1 bp for both since last month.

G2SF CC yield & nominal spread, USD



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

GNSF CC yield & nominal spread, USD

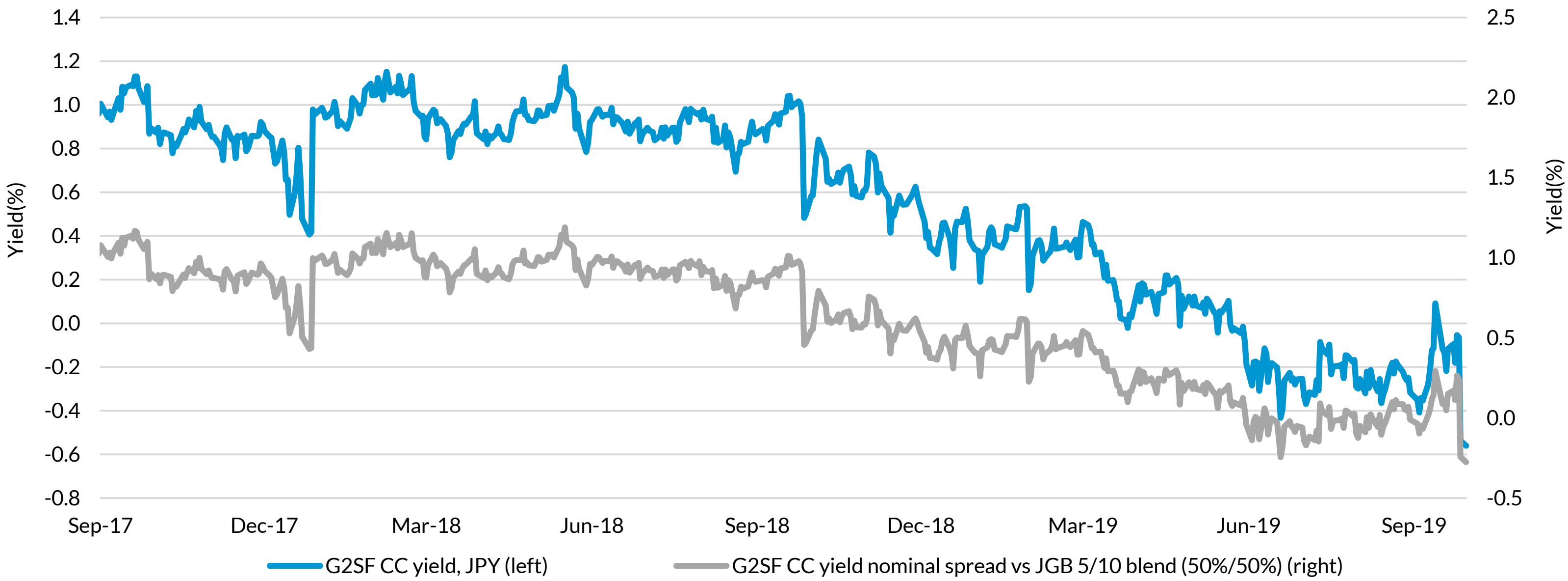


***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of September 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

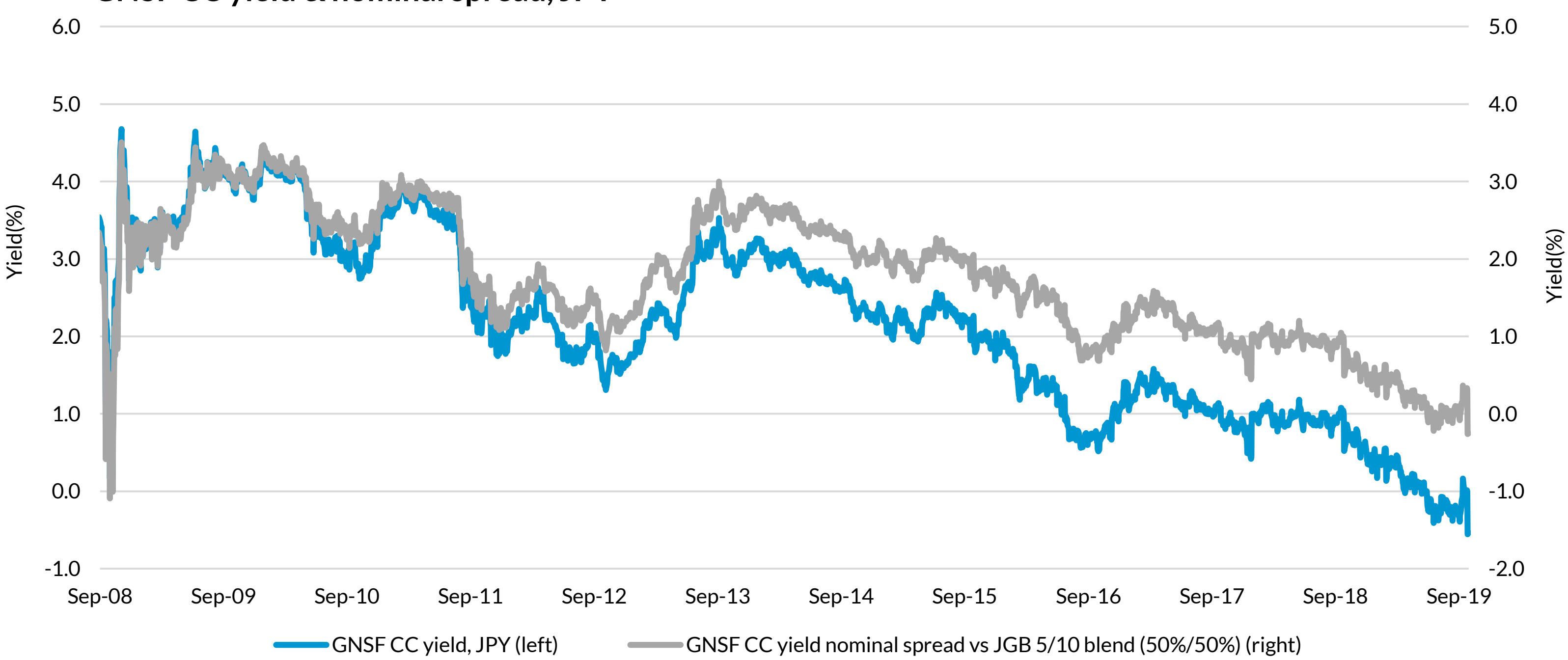
If Ginnie Mae securities are hedged into Japanese Yen, they look unfavorable on a yield basis versus the JGB 5/10 blend. More precisely, the G2SF hedged into Japanese yen has a yield of -28 bps versus the JGB 5/10 blend, while the GNSF hedged into Japanese yen has a yield of -25 bps versus the JGB 5/10 spread. This represents a decrease of 27 and 26 bps. respectively, since the end of August.

G2SF CC yield & nominal spread, JPY



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

GNSF CC yield & nominal spread, JPY

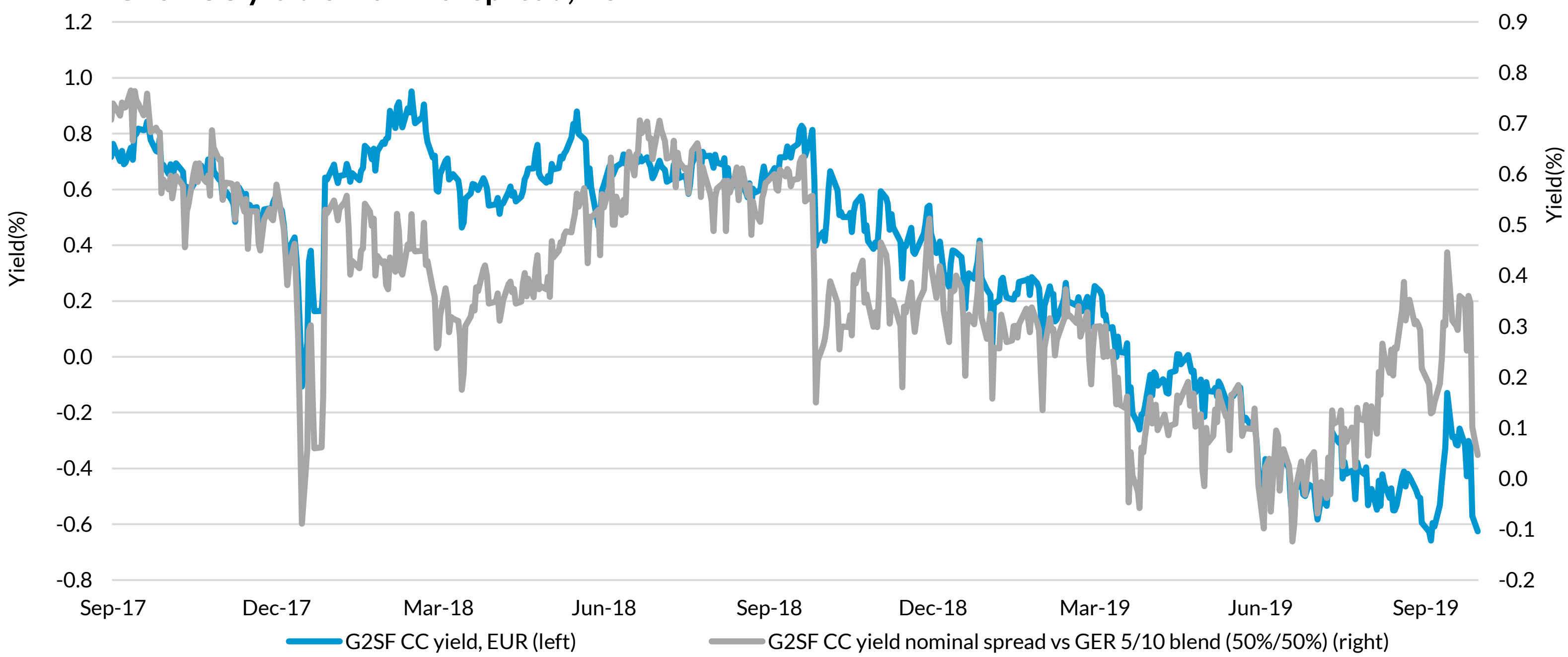


Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of September 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

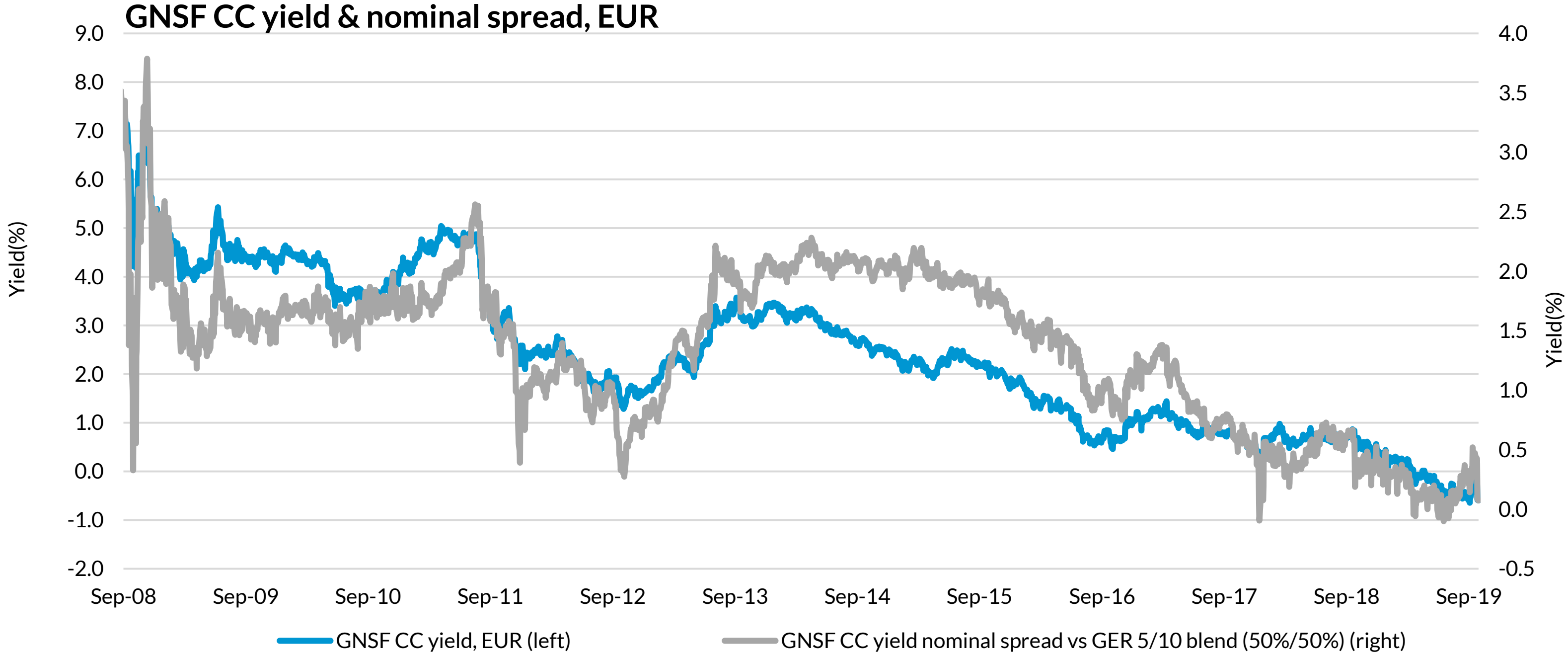
If Ginnie Mae securities are hedged into Euros, they look fair to favorable on a yield basis versus the German 5/10 Blend. The figures below show that at the end of September, the current coupon G2SF has a 5 bp higher yield than the than the average of the German 5/10 blend, while the GNSF hedged into euros has a spread to the German 5/10 blend of 7 bps. This represents a 17 bp decrease for each since the end of August.

G2SF CC yield & nominal spread, EUR



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

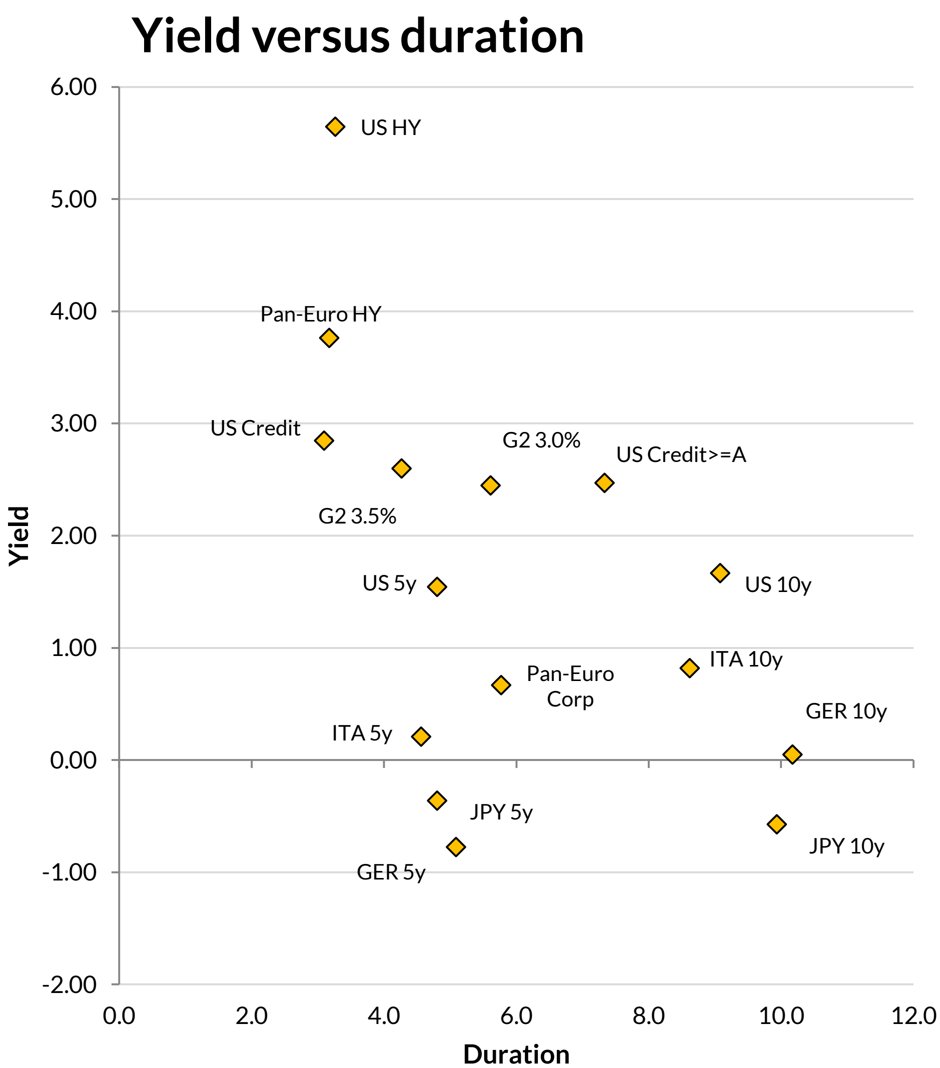
GNSF CC yield & nominal spread, EUR



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

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

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



Security	Duration	Yield
US 5y	4.8	1.55
US 10y	9.1	1.67
GNMA II 3.0%	5.6	2.45
GNMA II 3.5%	4.3	2.60
JPY 5y	4.8	-0.36
JPY 10y	10.2	0.05
GER 5y	5.1	-0.78
GER 10y	9.9	-0.57
ITA 5y	4.6	0.21
ITA 10y	8.6	0.82
US credit	7.6	2.85
US credit >= A	7.3	2.47
US HY	3.3	5.65
Pan-Euro Corp	5.8	0.67
Pan-Euro HY	3.2	3.76

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

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The average return on the Ginnie Mae index over the past decade is equal to the US Treasury index. However, the standard deviation of the Ginnie Mae index is the lowest of any sector, as it has the least price volatility over a 1, 3, 5 and 10 year horizon. The result: The Sharpe Ratio, or excess return per unit of risk over the 10-year horizon is only marginally lower than most of the corporate indices, although a good bit higher than the US Treasury Index, which has a much higher standard deviation than the Ginnie Mae 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	0.59	0.84	1.03	0.58	0.53	0.45
3 year	0.18	0.19	0.37	0.19	0.50	0.39
5 year	0.21	0.24	0.39	0.24	0.45	0.37
10 year	0.26	0.26	0.46	0.42	0.65	0.69

	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	0.41	0.66	0.85	0.63	0.35	0.51
3 year	0.05	0.06	0.25	0.25	0.37	0.45
5 year	0.13	0.16	0.31	0.29	0.37	0.42
10 year	0.22	0.21	0.42	0.44	0.61	0.71

	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	0.73	1.34	1.42	0.83	1.85	1.52
3 year	0.67	1.12	1.19	0.78	1.19	1.05
5 year	0.58	1.06	1.18	0.98	1.54	1.34
10 year	0.68	1.05	1.19	1.14	1.69	1.69

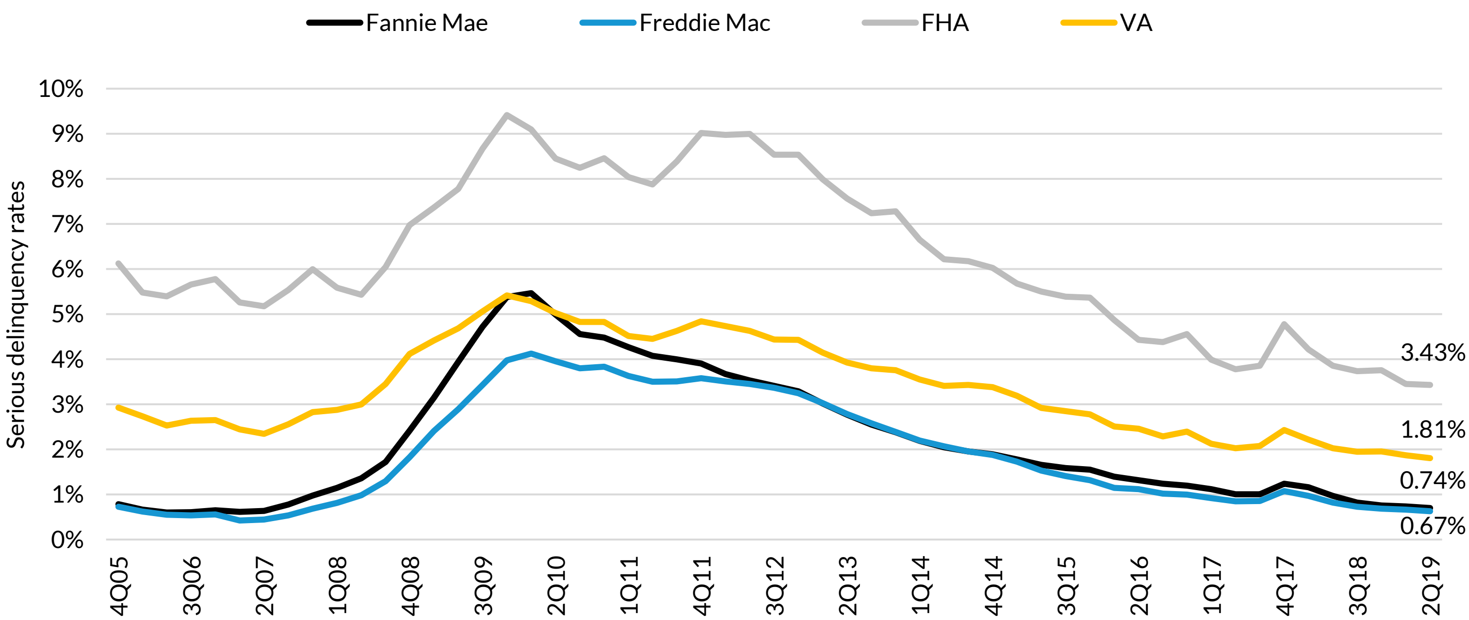
	Sharpe Ratio					
Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield	Pan Euro High Yield*
1 year	0.57	0.49	0.60	0.76	0.19	0.33
3 year	0.07	0.06	0.21	0.32	0.31	0.43
5 year	0.22	0.15	0.26	0.30	0.24	0.31
10 year	0.32	0.20	0.35	0.38	0.36	0.42

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

State of the US Housing Market

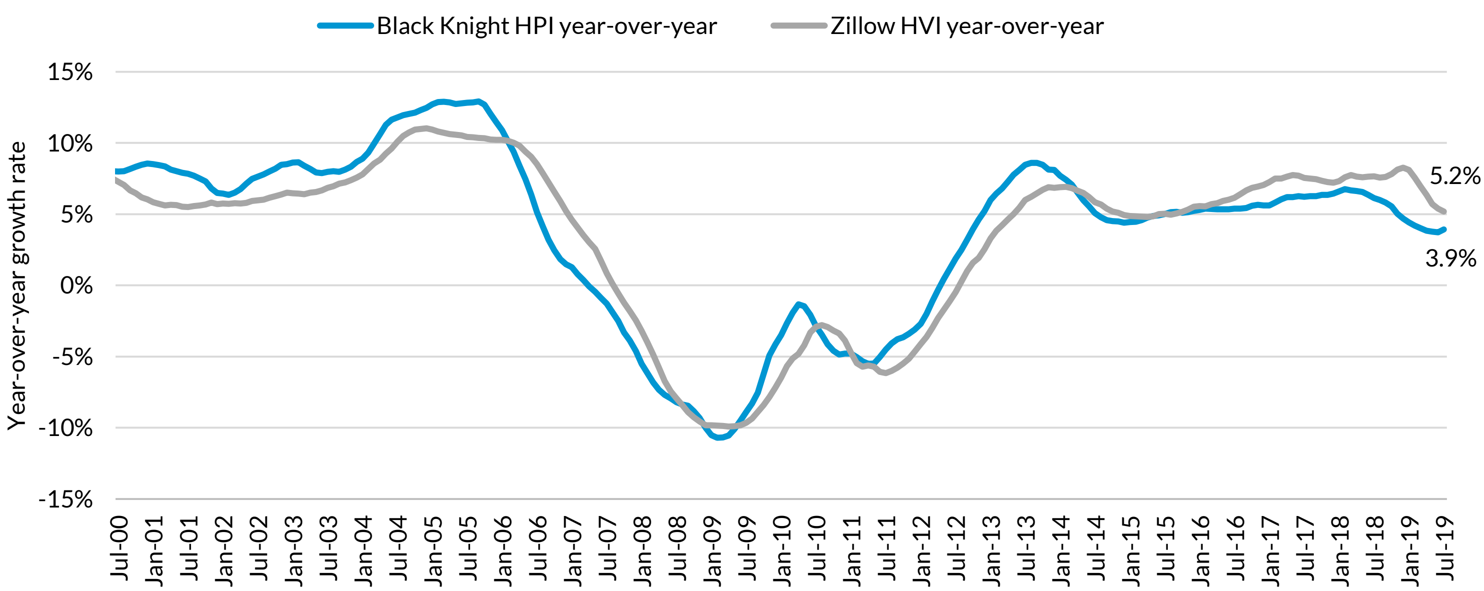
Serious delinquencies rates for single-family GSE loans, FHA loans, and VA loans continued to decline in Q2 2019. GSE delinquencies remain slightly higher relative to 2006-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are at levels similar to 2006-2007. After touching 6.5 percent in early 2018, year-over-year house price appreciation has slowed considerably over the past year. It grew slightly to 3.9 percent on the Black Knight index; it continued to fall to 5.2 percent in July 2019 on the Zillow index.

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 Q2 2019.*

National Year-Over-Year HPI Growth



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

State of the US Housing Market

Nationally, nominal home prices have increased by 54.7 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 15.3 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 (11.9% below),Nevada (9.3%), and Florida (9.0% below).

	HPI Changes				
State	2000 to Peak	Peak to Trough	Trough to Current	YOY	Current HPI % Above Peak
National	75.5%	-25.5%	54.7%	3.9%	15.3%
Alabama	44.0%	-14.9%	32.2%	6.2%	12.5%
Alaska	69.5%	-3.1%	24.1%	2.4%	20.2%
Arizona	110.2%	-47.9%	80.5%	5.8%	-6.0%
Arkansas	41.7%	-10.4%	26.3%	3.8%	13.1%
California	155.2%	-43.3%	90.4%	1.7%	7.9%
Colorado	40.3%	-12.8%	81.0%	4.5%	57.9%
Connecticut	92.4%	-24.6%	16.9%	2.3%	-11.9%
Delaware	94.9%	-23.8%	28.5%	2.2%	-2.0%
District of Columbia	175.4%	-13.6%	53.9%	1.5%	33.0%
Florida	129.0%	-47.0%	71.5%	4.6%	-9.0%
Georgia	38.3%	-32.0%	67.0%	5.4%	13.6%
Hawaii	161.9%	-22.5%	51.9%	3.2%	17.8%
Idaho	71.8%	-28.6%	85.2%	11.3%	32.3%
Illinois	61.6%	-34.5%	41.0%	2.0%	-7.6%
Indiana	21.2%	-7.6%	36.4%	5.9%	26.0%
Iowa	28.4%	-4.8%	27.7%	3.5%	21.5%
Kansas	34.7%	-9.3%	40.6%	3.9%	27.5%
Kentucky	29.5%	-7.7%	32.4%	4.9%	22.3%
Louisiana	48.8%	-5.0%	24.1%	3.0%	17.9%
Maine	82.4%	-12.5%	33.3%	2.3%	16.6%
Maryland	129.4%	-28.6%	28.2%	2.0%	-8.4%
Massachusetts	92.6%	-22.8%	56.7%	4.3%	21.0%
Michigan	24.1%	-39.5%	79.5%	4.8%	8.5%
Minnesota	66.3%	-27.6%	56.9%	4.2%	13.6%
Mississippi	41.1%	-13.7%	24.4%	1.5%	7.4%
Missouri	42.8%	-14.7%	37.0%	8.4%	16.9%
Montana	80.7%	-10.8%	53.3%	6.0%	36.8%
Nebraska	26.6%	-6.8%	42.7%	4.4%	33.1%
Nevada	126.9%	-59.3%	123.2%	3.5%	-9.3%
New Hampshire	90.6%	-23.5%	42.9%	5.6%	9.3%
New Jersey	117.9%	-27.8%	28.3%	2.8%	-7.4%
New Mexico	66.9%	-16.2%	24.8%	5.4%	4.6%
New York	98.6%	-15.2%	40.9%	2.8%	19.5%
North Carolina	40.6%	-15.7%	37.2%	5.4%	15.7%
North Dakota	54.1%	-3.9%	54.8%	1.3%	48.9%
Ohio	21.2%	-18.4%	38.1%	5.2%	12.7%
Oklahoma	37.4%	-2.3%	19.4%	2.9%	16.6%
Oregon	82.5%	-28.0%	79.5%	3.7%	29.3%
Pennsylvania	70.0%	-11.6%	26.2%	4.1%	11.5%
Rhode Island	131.0%	-34.4%	51.0%	4.3%	-1.0%
South Carolina	44.7%	-19.2%	35.9%	4.7%	9.7%
South Dakota	45.1%	-4.0%	46.0%	4.3%	40.2%
Tennessee	35.2%	-11.9%	46.1%	6.3%	28.8%
Texas	33.4%	-5.7%	51.8%	3.2%	43.1%
Utah	54.5%	-21.8%	75.9%	7.4%	37.5%
Vermont	83.5%	-7.5%	33.4%	5.8%	23.4%
Virginia	99.4%	-22.7%	27.8%	3.6%	-1.2%
Washington	85.4%	-28.7%	87.6%	4.1%	33.8%
West Virginia	43.0%	-6.5%	25.4%	3.7%	17.2%
Wisconsin	44.7%	-16.2%	38.6%	5.4%	16.2%
Wyoming	77.5%	-5.7%	31.2%	5.8%	23.7%

***Sources:** Black Knight and Urban Institute. **Note:** HPI data as of July 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 07/2019, the latest HPI data period.*

State of the US Housing Market

Ginnie Mae MBS constitute 29.8 percent of outstanding agency issuance by loan balance and 33.1 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 15.5 percent in the District of Columbia and as high as 50.7 percent in Alaska. In general, the Ginnie Mae share is higher in states with lower home prices.

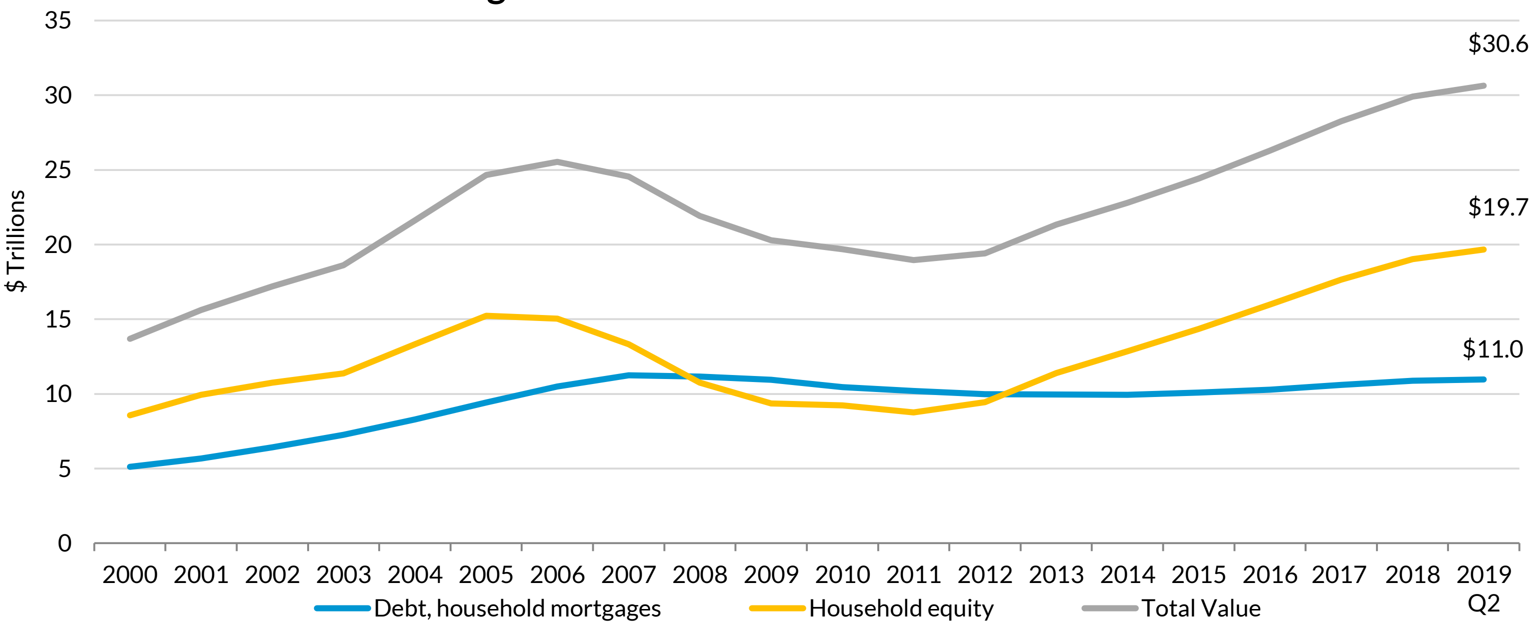
State	Agency Issuance (past 1 year)			Agency Outstanding		
	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)
National	33.1%	224.0	239.1	29.8%	164.5	188.7
Alabama	43.9%	170.8	191.6	44.1%	128.5	152.1
Alaska	51.2%	287.3	256.4	50.7%	232.6	199.3
Arizona	32.0%	225.6	228.5	30.2%	165.7	179.3
Arkansas	42.7%	148.3	173.7	43.6%	110.7	137.8
California	28.1%	363.1	347.5	20.2%	267.9	268.1
Colorado	32.4%	306.7	294.1	26.0%	219.5	226.3
Connecticut	31.9%	219.6	230.7	29.0%	183.0	189.0
Delaware	37.4%	220.8	231.3	35.7%	180.2	184.3
District of Columbia	18.4%	428.7	370.2	15.5%	301.8	303.5
Florida	39.6%	217.9	216.3	34.5%	165.9	171.7
Georgia	40.0%	194.4	217.8	37.7%	143.3	170.5
Hawaii	39.9%	505.9	408.2	29.7%	388.0	316.3
Idaho	32.5%	220.2	220.4	30.8%	155.1	167.9
Illinois	26.1%	182.5	204.5	24.1%	141.3	160.9
Indiana	36.8%	149.9	165.3	36.8%	111.4	126.7
Iowa	27.1%	150.3	169.0	25.2%	114.2	131.4
Kansas	35.5%	161.0	182.1	34.8%	120.3	139.4
Kentucky	39.2%	155.9	173.6	38.2%	121.6	133.1
Louisiana	42.8%	175.2	197.5	41.2%	137.1	159.0
Maine	34.7%	192.0	208.6	31.8%	153.1	160.9
Maryland	44.0%	290.7	272.5	38.6%	232.1	219.1
Massachusetts	24.2%	306.0	296.3	18.9%	237.2	228.8
Michigan	24.9%	154.7	177.9	24.6%	113.8	135.3
Minnesota	24.0%	209.1	221.0	23.3%	156.5	171.4
Mississippi	50.5%	159.4	178.0	49.7%	120.2	142.1
Missouri	35.1%	159.2	179.7	34.2%	120.9	139.3
Montana	29.9%	227.8	231.4	28.7%	170.0	177.7
Nebraska	32.5%	172.9	177.7	32.3%	122.8	138.1
Nevada	35.5%	265.7	246.6	33.8%	188.2	192.6
New Hampshire	31.4%	245.5	234.3	28.4%	193.6	181.8
New Jersey	29.5%	261.3	273.7	26.7%	211.0	219.4
New Mexico	41.9%	187.6	196.2	41.8%	141.1	153.2
New York	24.9%	254.0	280.8	24.7%	187.2	215.9
North Carolina	34.6%	190.9	214.8	33.0%	141.5	166.8
North Dakota	30.1%	216.6	209.2	25.8%	167.8	166.4
Ohio	34.1%	149.5	162.8	35.1%	112.7	127.0
Oklahoma	45.0%	159.5	178.1	47.0%	119.0	140.5
Oregon	27.9%	273.2	271.7	22.8%	199.6	208.3
Pennsylvania	31.8%	171.9	200.9	31.9%	136.7	158.8
Rhode Island	38.5%	240.9	232.0	33.1%	188.4	183.0
South Carolina	39.7%	193.8	203.0	36.6%	147.4	161.4
South Dakota	38.2%	183.3	192.0	35.2%	143.4	149.8
Tennessee	39.7%	194.3	210.8	38.7%	139.1	165.1
Texas	34.1%	205.9	223.5	34.7%	142.9	175.9
Utah	27.6%	262.1	269.9	26.5%	191.5	209.1
Vermont	23.3%	193.8	207.1	19.8%	165.1	159.9
Virginia	44.8%	278.8	269.1	40.2%	221.9	217.2
Washington	31.4%	306.9	305.0	26.6%	219.4	230.0
West Virginia	49.3%	158.9	160.4	45.5%	126.5	127.2
Wisconsin	21.9%	176.4	185.4	20.2%	134.0	141.8
Wyoming	41.5%	221.7	223.1	39.2%	177.7	176.7

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

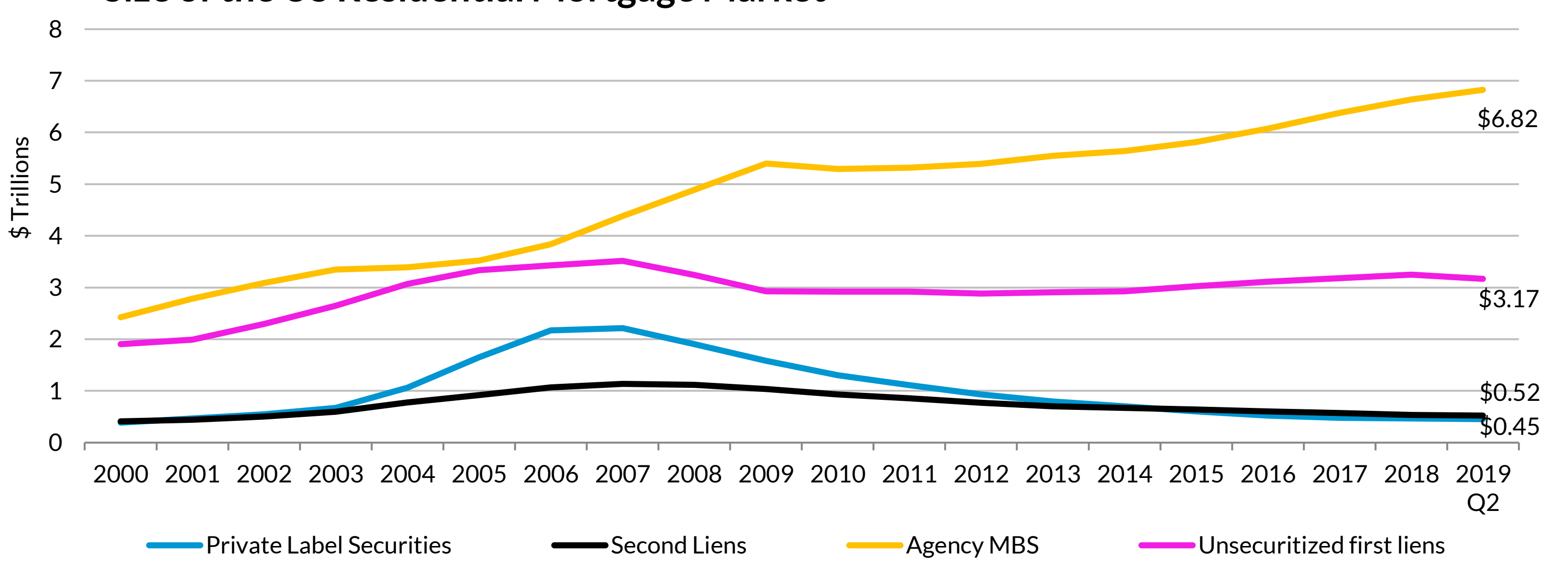
State of the US Housing Market

The Federal Reserve's Flow of Funds report has indicated a gradually increasing total value of the housing market driven by growing household equity since 2012, and 2Q 2019 was no different. While total mortgage debt outstanding was steady at $11.0 trillion, household equity grew from $19.6 trillion in Q1 2019 to $19.7 trillion in Q2 2019, bringing the total value of the housing market to $30.6 trillion, 20.0 percent higher than the pre-crisis peak in 2006. Agency MBS account for 62.2 percent of the total mortgage debt outstanding, private-label securities make up 4.1 percent, and unsecuritized first liens make up 28.9 percent. Second liens comprise the remaining 4.7 percent of the total.

Value of the US Housing Market



Size of the US Residential Mortgage Market

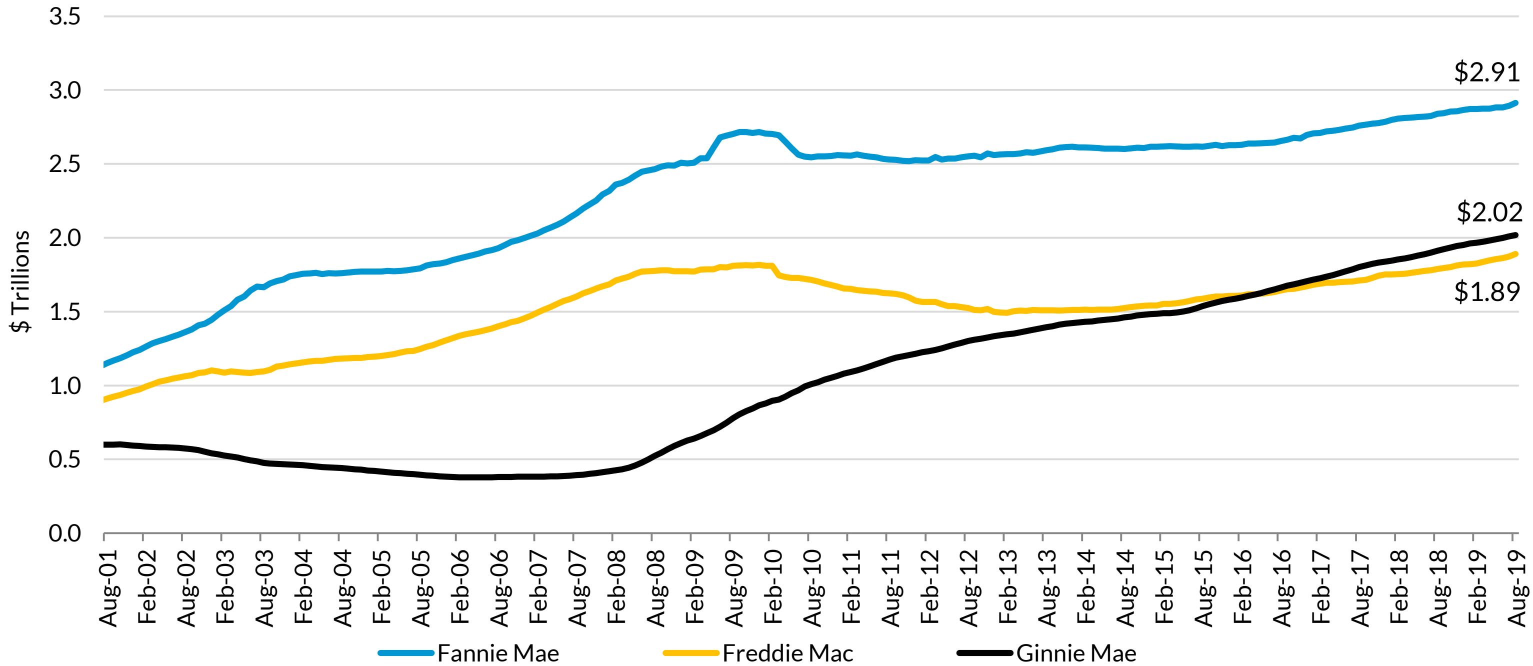


Sources: *Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.*
Note: *Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions.*

State of the US Housing Market

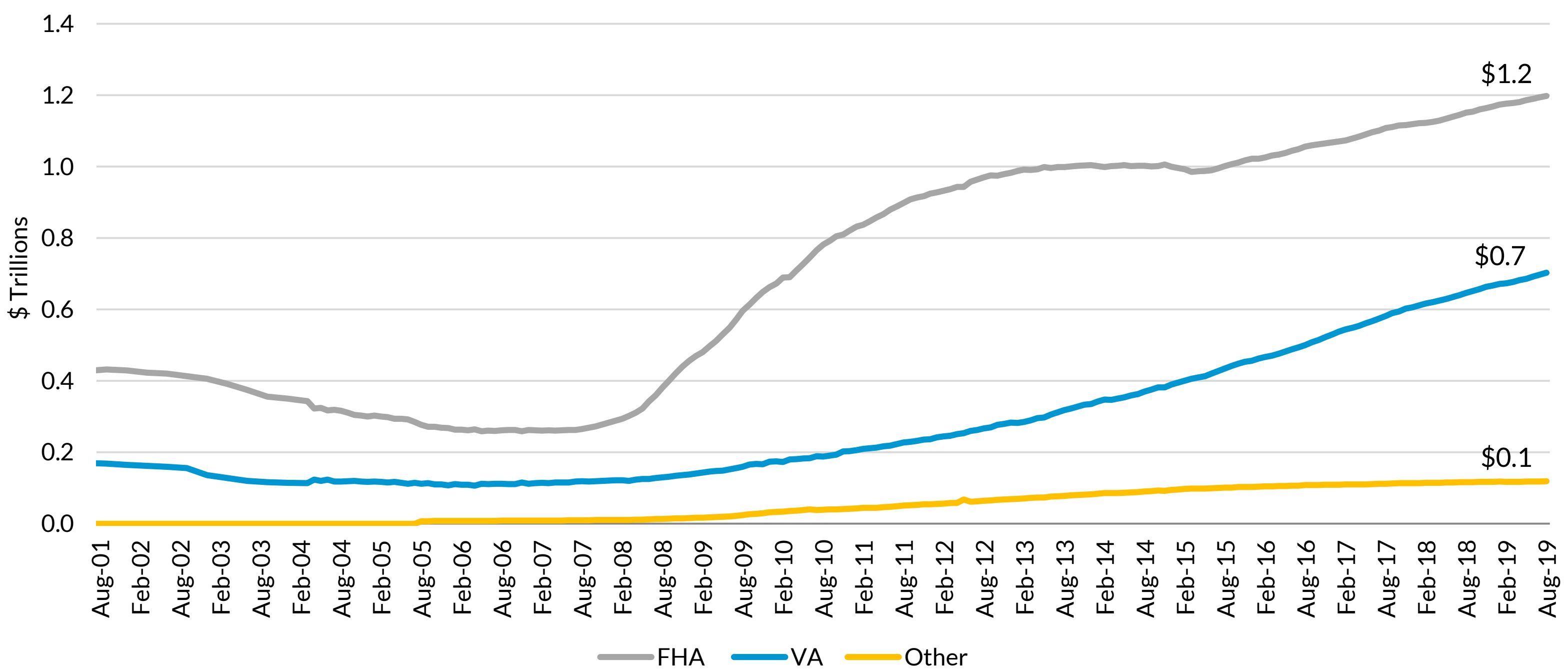
As of August 2019, outstanding securities in the agency market totaled $6.82 trillion: 42.7 percent Fannie Mae, 27.7 percent Freddie Mac, and 29.6 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. FHA comprises 59.3 percent of total Ginnie Mae MBS outstanding, while VA comprises 34.8 percent.

Outstanding Agency Mortgage-Backed Securities



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

Outstanding Ginnie Mae Mortgage-Backed Securities

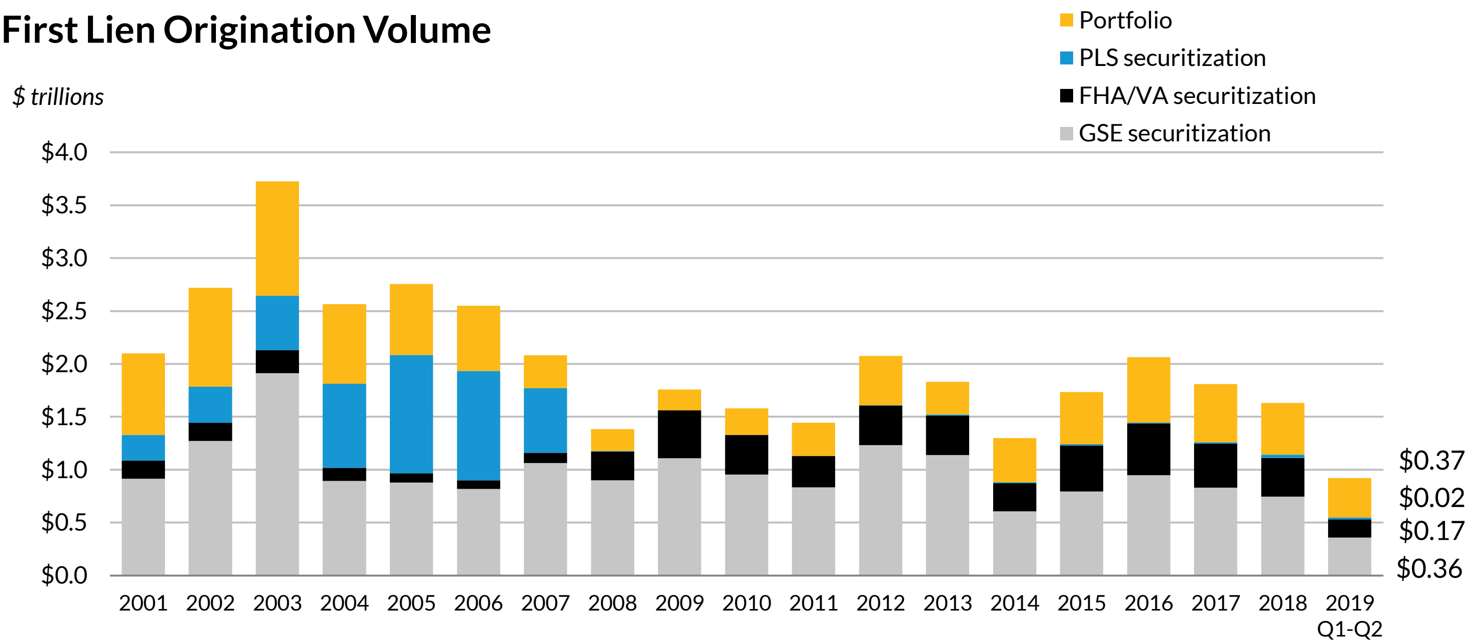


Sources: *eMBS and Urban Institute.* **Note:** *Data as of August 2019.*

State of the US Housing Market

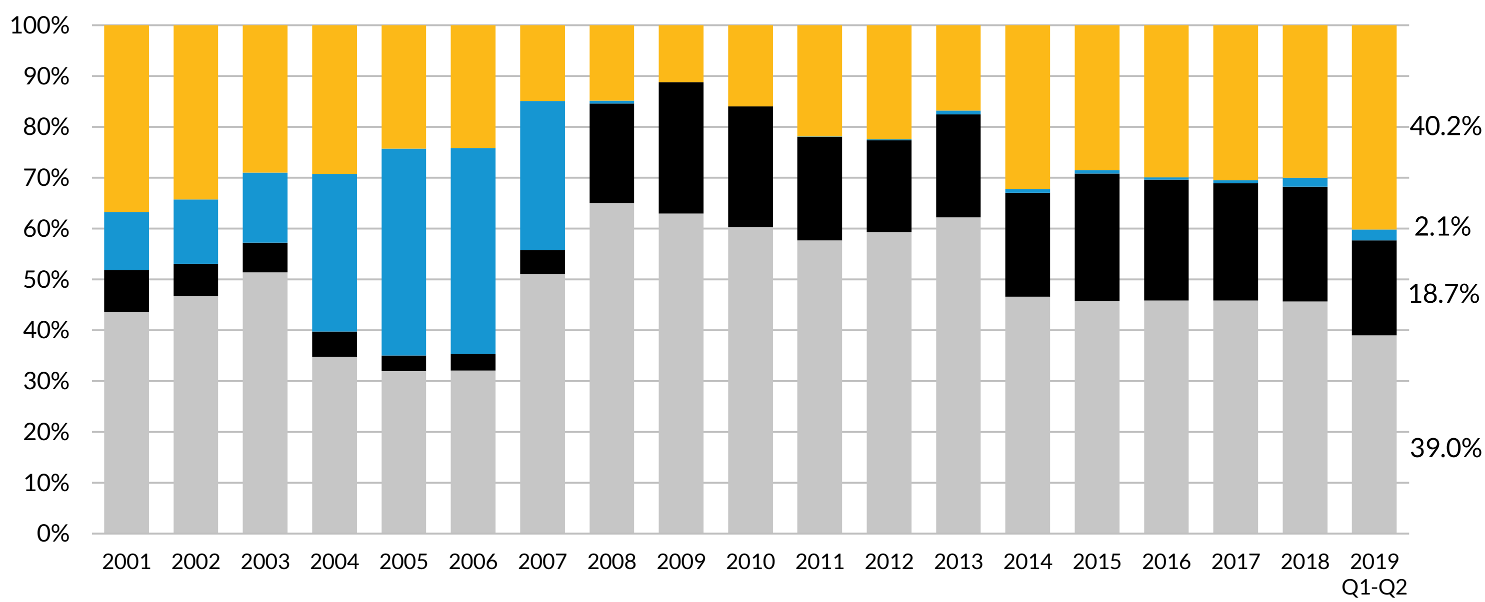
In the first half of 2019, first lien originations totaled $920 billion, up from $825 billion in 1H 2018. The share of portfolio originations was 40.2 percent in 1H 2019, up significantly from 32.3 percent in the same period of 2018. The GSE share was down at 39.0 percent, compared to 43.9 percent in 1H 2018. The FHA/VA share fell slightly, at 18.7 percent compared to 21.9 percent in the same period last year. Private-label securitization at 2.1 percent was slightly above the 2.0 percent 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 Q2 2019.*

First Lien Origination Share



Sources: *Inside Mortgage Finance and Urban Institute.* **Note:** *Data as of Q2 2019.*

US Agency Market, Originations

Agency gross issuance was $879.1 billion in the first eight months of 2019, up 9.6 percent compared to the same period in 2018. Ginnie Mae gross issuance was up by 7.1 percent and GSE gross issuance was up by 10.9 percent. Within the Ginnie Mae market, FHA was up by 6.3 percent and VA origination was up by 11.0 percent. While origination volumes were lower in January and February, a favorable rate environment has led to in increase in issuance year-over-year.

Agency Gross Issuance					
Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	$202.8	$157.9	$360.6	$102.2	$462.8
2001	$506.9	$378.2	$885.1	$171.5	$1,056.6
2002	$710.0	$529.0	$1,238.9	$169.0	$1,407.9
2003	$1,174.4	$700.5	$1,874.9	$213.1	$2,088.0
2004	$517.5	$355.2	$872.6	$119.2	$991.9
2005	$514.1	$379.9	$894.0	$81.4	$975.3
2006	$500.2	$352.9	$853.0	$76.7	$929.7
2007	$633.0	$433.3	$1,066.2	$94.9	$1,161.1
2008	$562.7	$348.7	$911.4	$267.6	$1,179.0
2009	$817.1	$462.9	$1,280.0	$451.3	$1,731.3
2010	$626.6	$377.0	$1,003.5	$390.7	$1,394.3
2011	$578.2	$301.2	$879.3	$315.3	$1,194.7
2012	$847.6	$441.3	$1,288.8	$405.0	$1,693.8
2013	$749.9	$426.7	$1,176.6	$393.6	$1,570.2
2014	$392.9	$258.0	$650.9	$296.3	$947.2
2015	$493.9	$351.9	$845.7	$436.3	$1,282.0
2016	$600.5	$391.1	$991.6	$508.2	$1,499.8
2017	$531.3	$345.9	$877.3	$455.6	$1,332.9
2018	$480.9	$314.1	$795.0	$400.6	$1,195.3
2019 YTD	$335.2	$252.7	$587.9	$291.2	$879.1
2019 YTD % Change YOY	2.4%	24.6%	10.9%	7.1%	9.6%
2019 Ann.	$502.9	$379.0	$881.9	$436.8	$1,318.7

Ginnie Mae Breakdown: Agency Gross Issuance				
Issuance Year	FHA	VA	Other	Total
2000	$80.2	$18.8	$3.2	$102.2
2001	$133.8	$34.7	$3.1	$171.5
2002	$128.6	$37.9	$2.5	$169.0
2003	$147.9	$62.7	$2.5	$213.1
2004	$85.0	$31.8	$2.5	$119.2
2005	$55.7	$23.5	$2.1	$81.4
2006	$51.2	$23.2	$2.3	$76.7
2007	$67.7	$24.2	$3.0	$94.9
2008	$221.7	$39.0	$6.9	$267.6
2009	$359.9	$74.6	$16.8	$451.3
2010	$304.9	$70.6	$15.3	$390.7
2011	$216.1	$82.3	$16.9	$315.3
2012	$253.4	$131.3	$20.3	$405.0
2013	$239.2	$132.2	$22.2	$393.6
2014	$163.9	$111.4	$21.0	$296.3
2015	$261.5	$155.6	$19.2	$436.3
2016	$281.8	$206.5	$19.9	$508.2
2017	$257.6	$177.8	$20.2	$455.6
2018	$222.6	$160.8	$17.2	$400.6
2019 YTD	$160.5	$121.3	$9.4	$291.2
2019 YTD % Change YOY	6.3%	11.0%	-18.2%	7.1%
2019 Ann.	$240.7	$181.9	$14.2	$436.8

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 August 2019.*

US Agency Market, Originations

Agency net issuance totaled $186.8 billion in the first eight months of 2019, up 13.3 percent compared to the same period in 2018. Ginnie Mae net issuance was $66.8 billion, comprising 35.7 percent of total agency net issuance. Ginnie Mae net issuance was down 10.6 percent compared to the same period in 2018. Ginnie Mae net issuance in the first eight months of 2019 was comprised of 53.9 percent VA and 44.4 percent FHA.

Agency Net Issuance

Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	$92.0	$67.8	$159.8	$29.3	$189.1
2001	$216.6	$151.8	$368.4	-$9.9	$358.5
2002	$218.9	$138.3	$357.2	-$51.2	$306.1
2003	$293.7	$41.1	$334.9	-$77.6	$257.3
2004	$32.3	$50.2	$82.5	-$40.1	$42.4
2005	$62.5	$111.7	$174.2	-$42.2	$132.0
2006	$164.3	$149.3	$313.6	$0.2	$313.8
2007	$296.1	$218.8	$514.9	$30.9	$545.7
2008	$213.0	$101.8	$314.8	$196.4	$511.3
2009	$208.1	$42.5	$250.6	$257.4	$508.0
2010	-$156.4	-$146.8	-$303.2	$198.3	-$105.0
2011	-$32.6	-$95.8	-$128.4	$149.6	$21.2
2012	$32.9	-$75.3	-$42.4	$119.1	$76.8
2013	$57.5	$11.6	$69.1	$87.9	$157.0
2014	$0.5	$30.0	$30.5	$61.6	$92.1
2015	$10.2	$65.0	$75.1	$97.3	$172.5
2016	$68.6	$66.8	$135.5	$125.3	$260.8
2017	$90.2	$78.2	$168.5	$131.3	$299.7
2018	$79.4	$68.4	$147.7	$113.9	$261.6
2019 YTD	$48.5	$71.6	$120.1	$66.8	$186.8
2019 YTD % Change YOY	-8.3%	91.4%	33.0%	-10.6%	13.3%
2019 Ann.	$72.8	$107.4	$180.1	$100.1	$280.3

Ginnie Mae Breakdown: Net Issuance

Issuance Year	FHA	VA	Other	Total
2000	$29.0	$0.3	$0.0	$29.3
2001	$0.7	-$10.6	$0.0	-$9.9
2002	-$22.5	-$28.7	$0.0	-$51.2
2003	-$56.5	-$21.1	$0.0	-$77.6
2004	-$45.2	$5.1	$0.0	-$40.1
2005	-$37.3	-$12.1	$7.2	-$42.2
2006	-$4.7	$3.8	$1.2	$0.2
2007	$20.2	$8.7	$2.0	$30.9
2008	$173.3	$17.7	$5.4	$196.4
2009	$206.4	$35.1	$15.8	$257.4
2010	$158.6	$29.6	$10.0	$198.3
2011	$102.8	$34.0	$12.8	$149.6
2012	$58.9	$45.9	$14.3	$119.1
2013	$20.7	$53.3	$13.9	$87.9
2014	-$4.8	$53.9	$12.5	$61.6
2015	$22.5	$66.9	$7.9	$97.3
2016	$45.6	$73.2	$6.0	$124.9
2017	$50.1	$76.1	$5.0	$131.3
2018	$49.2	$61.2	$3.5	$113.9
2019 YTD	$29.6	$36.0	$1.1	$66.8
2019 YTD % Change YOY	-7.4%	-10.4%	-55.1%	-10.6%
2019 Ann.	$44.4	$54.0	$1.7	$100.1

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 August 2019.*

US Agency Market, Originations

Agency gross issuance moves inversely to interest rates, generally declining as interest rates rise, increasing when interest rates fall, but the seasonal trend is also very strong. This table allows for a comparison with the same month in previous years. In 2019, January and February were lower than 2018, March was about the same, while April through August have been much higher, benefitting from the decline in interest rates. The August 2019 gross agency issuance of $172.6 billion is well above the August 2018 level of $117.8 billion.

Monthly Agency Issuance

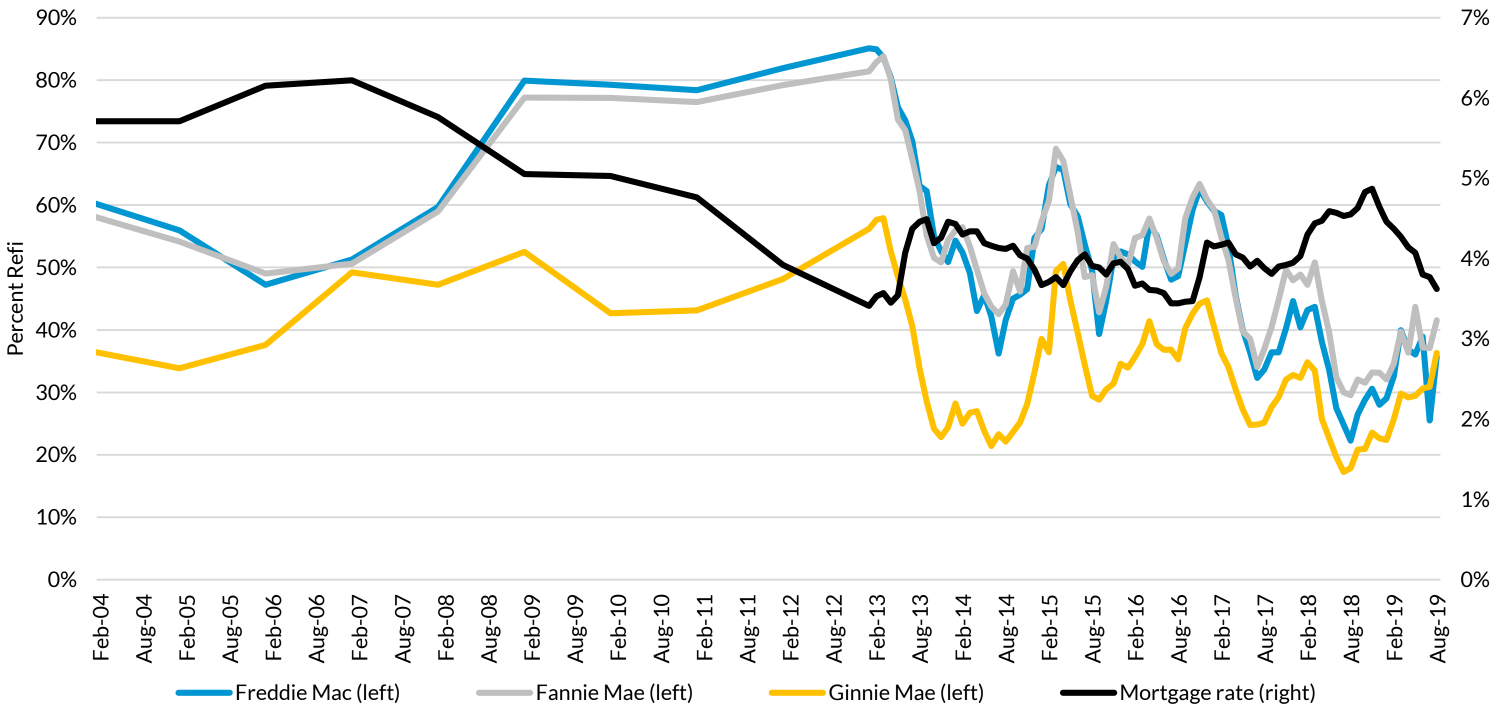
	Gross Issuance				Net Issuance			
Date	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-16	$35.6	$22.5	$32.5	$90.6	-$0.6	$1.0	$7.3	$7.8
Feb-16	$32.4	$21.2	$30.5	$84.1	$2.4	$3.1	$8.4	$13.9
Mar-16	$39.7	$27.5	$32.9	$100.1	$7.9	$8.2	$9.6	$25.8
Apr-16	$43.8	$26.2	$40.1	$110.1	$0.8	-$0.2	$8.8	$9.4
May-16	$44.2	$29.9	$41.6	$115.6	$2.4	$4.4	$11.4	$18.3
Jun-16	$46.7	$30.1	$43.9	$120.8	$2.7	$3.0	$11.9	$17.7
Jul-16	$49.8	$35.3	$46.1	$131.1	$2.3	$6.3	$10.8	$19.4
Aug-16	$54.9	$37.9	$46.7	$139.5	$10.4	$11.0	$13.8	$35.2
Sep-16	$65.8	$44.0	$52.5	$162.4	$8.7	$9.0	$12.5	$30.2
Oct-16	$66.0	$35.9	$47.4	$149.3	$11.8	$2.7	$9.3	$24.5
Nov-16	$48.8	$40.2	$47.2	$136.3	-$3.5	$7.9	$10.3	$14.8
Dec-16	$72.7	$40.5	$46.8	$160.0	$23.3	$10.4	$10.8	$44.6
Jan-17	$55.6	$38.5	$42.6	$136.6	$10.3	$10.7	$10.3	$31.9
Feb-17	$37.6	$27.4	$33.1	$98.1	$3.1	$6.5	$9.2	$18.9
Mar-17	$39.5	$24.4	$31.3	$95.2	$10.3	$6.2	$9.6	$26.3
Apr-17	$39.3	$21.2	$36.4	$97.0	$4.8	$0.4	$11.7	$17.3
May-17	$40.3	$22.6	$36.4	$99.3	$7.6	$2.7	$13.1	$23.6
Jun-17	$45.7	$25.1	$39.9	$110.7	$8.3	$2.4	$13.2	$24.1
Jul-17	$45.3	$27.6	$40.6	$113.5	$5.8	$3.5	$12.1	$21.5
Aug-17	$49.1	$29.3	$42.8	$121.1	$12.0	$6.7	$15.6	$33.9
Sep-17	$47.3	$27.9	$40.2	$115.5	$7.4	$3.8	$10.5	$21.7
Oct-17	$42.9	$34.6	$38.4	$115.9	$6.4	$12.5	$10.7	$29.6
Nov-17	$43.5	$37.2	$37.8	$118.5	$4.6	$13.6	$8.2	$26.4
Dec-17	$45.3	$30.0	$36.2	$111.5	$9.6	$8.2	$6.8	$24.6
Jan-18	$47.4	$21.4	$35.2	$104.0	$12.4	$0.3	$7.8	$20.6
Feb-18	$40.3	$21.5	$31.9	$93.7	$8.0	$2.3	$7.1	$17.4
Mar-18	$35.6	$21.3	$29.0	$85.9	$4.9	$3.0	$6.1	$14.0
Apr-18	$36.3	$26.2	$32.7	$95.2	$1.7	$6.1	$9.1	$16.8
May-18	$38.9	$27.5	$33.7	$100.1	$4.5	$7.2	$10.6	$22.4
Jun-18	$38.2	$28.8	$35.6	$102.5	$2.2	$6.8	$10.5	$19.5
Jul-18	$40.3	$26.2	$35.6	$102.1	$4.2	$3.7	$10.7	$18.6
Aug-18	$50.4	$29.9	$37.5	$117.8	$14.9	$7.9	$12.8	$35.6
Sep-18	$41.8	$30.1	$34.8	$106.6	$5.7	$6.2	$9.1	$21.0
Oct-18	$39.8	$27.4	$33.2	$100.3	$10.1	$7.6	$12.1	$29.7
Nov-18	$35.1	$30.1	$32.4	$97.6	$2.6	$10.8	$9.6	$22.9
Dec-18	$36.9	$23.9	$28.4	$89.1	$8.2	$6.4	$8.4	$23.0
Jan-19	$33.3	$19.2	$29.0	$81.6	$5.5	$2.5	$9.5	$17.5
Feb-19	$27.3	$19.9	$23.5	$70.7	$1.2	$3.6	$4.6	$9.5
Mar-19	$29.6	$27.3	$26.6	$83.5	$1.9	$10.3	$5.8	$18.0
Apr-19	$33.1	$30.8	$32.9	$96.8	$0.6	$11.0	$8.5	$20.1
May-19	$44.5	$34.3	$38.8	$117.6	$7.0	$10.3	$9.4	$26.7
Jun-19	$44.6	$34.0	$43.3	$121.9	$1.6	$6.2	$9.2	$16.9
Jul-19	$51.7	$36.9	$45.9	$134.5	$10.3	$10.3	$10.8	$31.4
Aug-19	$71.1	$50.4	$51.2	$172.6	$20.4	$17.5	$8.9	$46.8

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 August 2019.*

US Agency Market, Originations

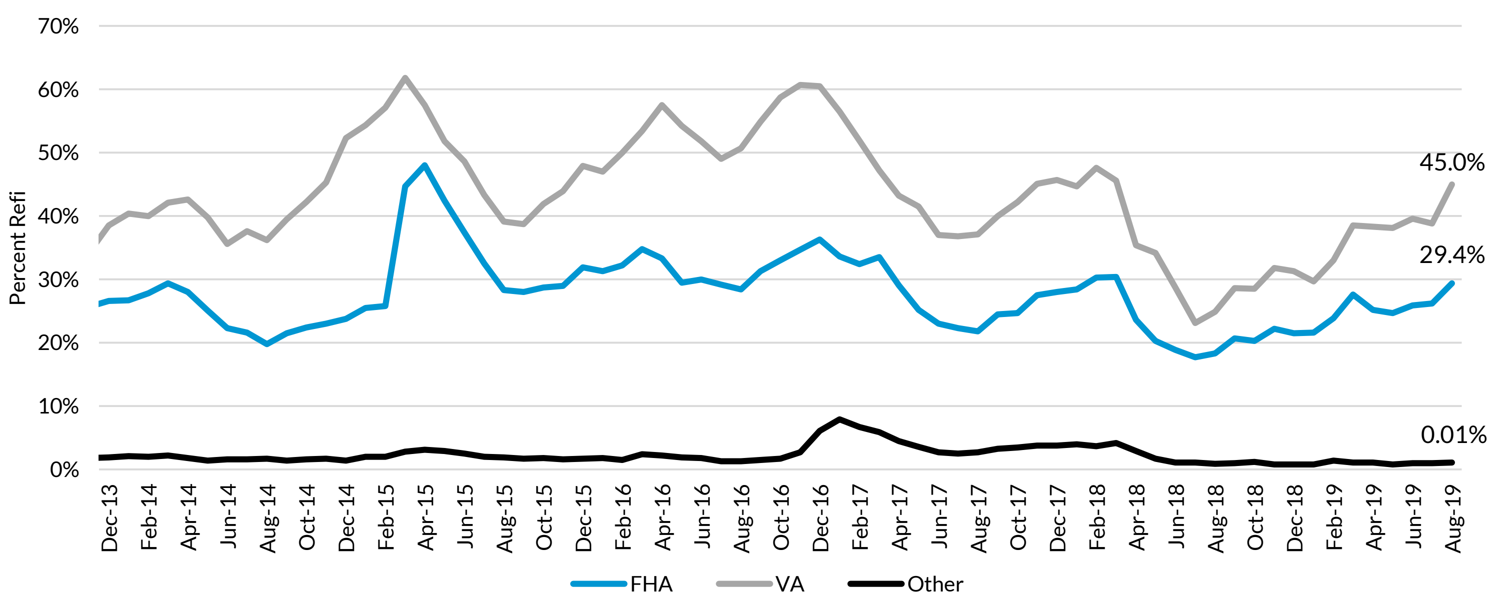
The Ginnie Mae refi share stood at 36 percent in August 2019, the same as the Freddie Mac share, and well below the 42 percent Fannie Mae share. Within the Ginnie Mae market, VA had the highest refi share at 45.0%; the refi share for FHA was 29.4 percent. The refi share has steadily ticked up in 2019 as rates have fallen.

Percent Refi at Issuance



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

Percent Refi at Issuance: Ginnie Mae Breakdown

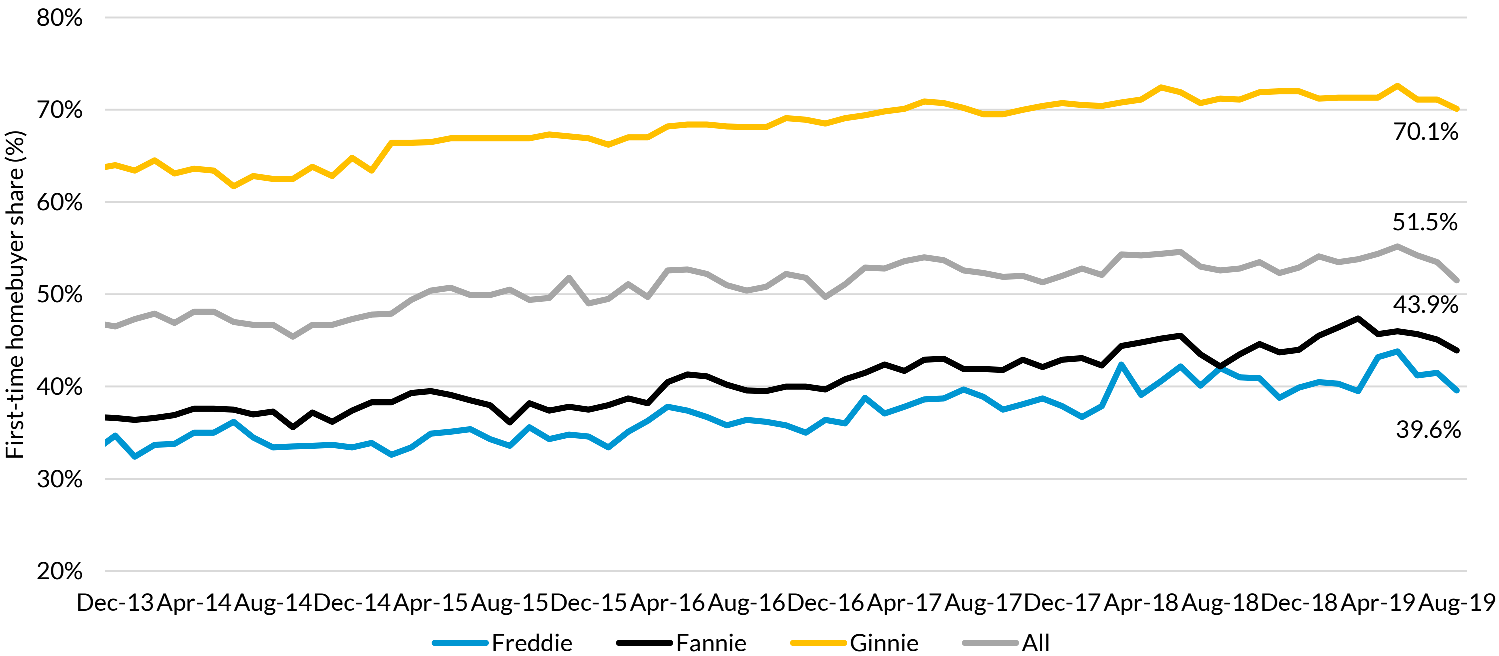


Sources: *eMBS and Urban Institute.*
Note: *Based on at-issuance balance. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of August 2019.*

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 70.1 percent in August 2019, down slightly from its historical high in May. First time homebuyers comprise a significantly higher share of the Ginnie Mae purchase market than of the GSE purchase market, with first time homebuyers accounting for 43.9 percent and 39.6 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in August 2019, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, a much higher LTV and similar DTI.

First Time Homebuyer Share: Purchase Only Loans



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

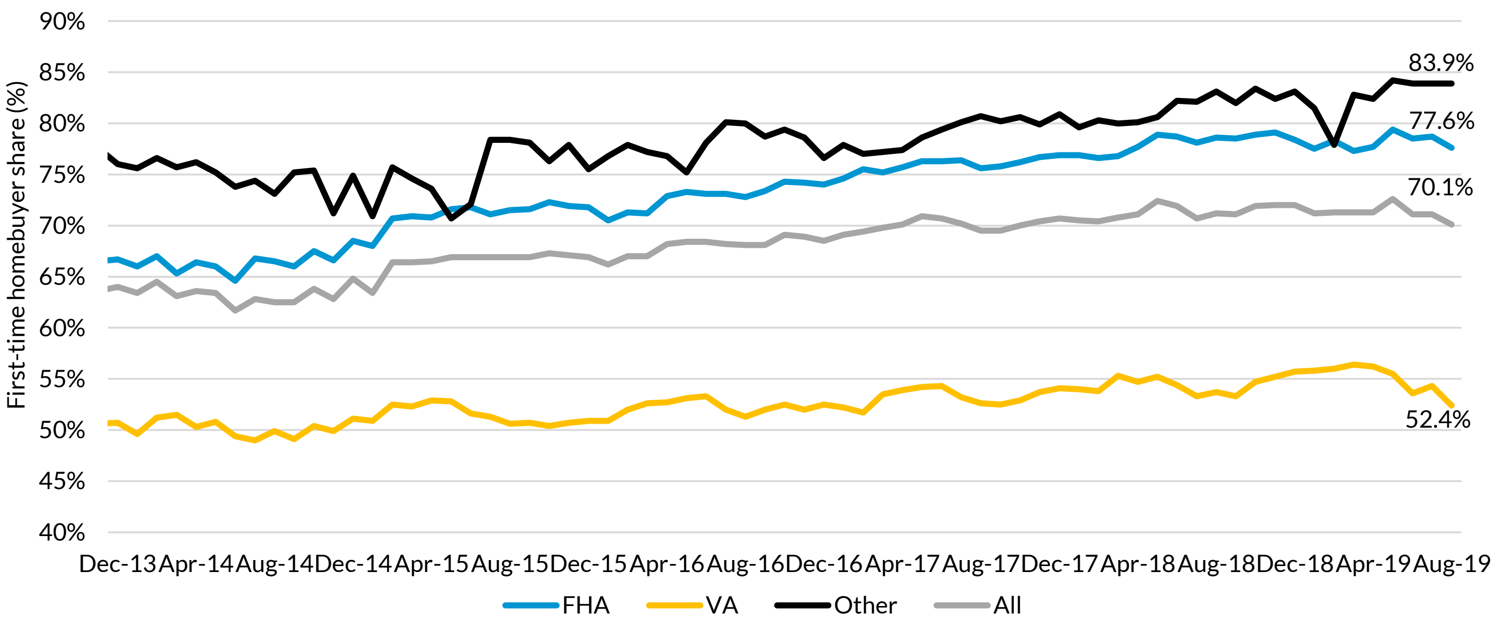
	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	254,625	280,619	264,926	286,510	219,612	272,608	240,791	280,739
Credit Score	741.4	756.7	748.1	760.5	678.7	702.3	713.9	744.7
LTV (%)	87.3	78.2	86.0	78.9	96.9	95.3	91.4	82.6
DTI (%)	35.4	35.9	34.4	35.5	41.6	42.4	38.0	37.3
Loan Rate (%)	4.2	4.1	4.1	4.0	4.3	4.0	4.2	4.1

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 August 2019.*

Credit Box

Within the Ginnie Mae purchase market, 77.6 percent of FHA loans, 52.4 percent of VA loans and 83.9 percent of other loans represent financing for first-time home buyers in August 2019. The bottom table shows that based on mortgages originated in August 2019, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, higher LTV similar DTI, and pay a higher rate.

First Time Homebuyer Share: Ginnie Mae Breakdown



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

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	214,559	233,884	261,070	315,257	150,298	171,834	219,612	272,608
Credit Score	668.6	670.2	700.4	730.6	694.8	703.2	678.7	702.3
LTV (%)	95.6	93.9	99.7	96.4	99.5	99.1	96.9	95.3
DTI (%)	43.0	44.0	40.4	41.5	34.8	35.5	41.6	42.4
Loan Rate (%)	4.3	4.2	4.0	3.9	4.2	4.1	4.3	4.0

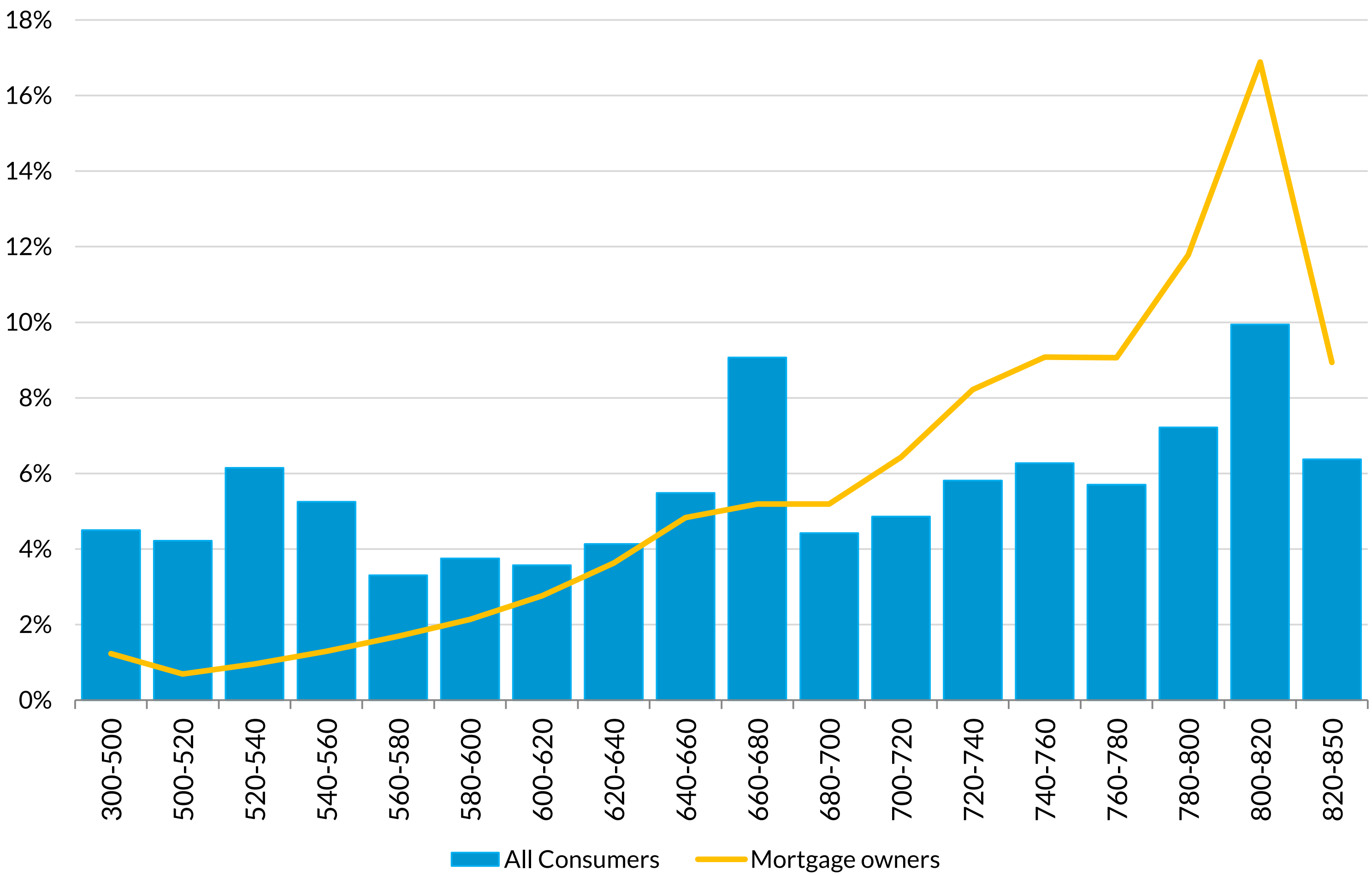
Sources: *eMBS and Urban Institute.* **Note**: *Data as of August 2019. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed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

Credit Box

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

FICO Score Distribution: Mortgage Owners vs All Consumers

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



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

August 2019 Credit Box at a Glance

In August 2019, the median Ginnie Mae FICO score was 679 versus 758 for Fannie Mae and 762 for Freddie Mac. Note that the FICO score for the 10th percentile was 621 for Ginnie Mae, versus 685 for Fannie Mae and 693 for Freddie Mac. Within the Ginnie Mae market, FHA loans have a median FICO score of 664, VA loans have a median FICO score of 713 and other loans have a median FICO score of 692.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	381,463	646	687	740	780	799	730
Fannie	142,213	687	721	759	787	802	751
Freddie	109,529	697	728	764	789	802	756
Ginnie	129,721	622	644	677	725	772	686
Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	242,309	655	696	743	779	798	734
Fannie	111,115	683	717	756	784	801	748
Freddie	70,490	687	721	758	785	800	750
Ginnie	60,704	620	648	684	730	773	689
All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	623,772	648	691	741	779	798	732
Fannie	253,328	685	719	758	786	801	750
Freddie	180,019	693	725	762	788	802	753
Ginnie	190,425	621	645	679	727	772	687

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	129,721	622	644	677	725	772	686
FHA	77,982	616	637	663	696	734	669
VA	41,533	631	663	718	769	796	715
Other	10,206	637	657	692	733	767	696
Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	60,704	620	648	684	730	773	689
FHA	29,499	609	637	666	698	735	668
VA	31,104	631	665	708	756	787	708
Other	101	653	680	710	741	769	709
All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	190,425	621	645	679	727	772	687
FHA	107,481	614	637	664	697	734	669
VA	72,637	631	664	713	764	792	712
Other	10,307	637	657	692	733	767	696

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

August 2019 Credit Box at a Glance

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

Purchase LTV							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	383,696	70.0	80.0	93.0	96.5	100.0	86.7
Fannie	142,188	62.0	78.0	80.0	95.0	97.0	81.9
Freddie	111,439	63.0	79.0	80.0	95.0	95.0	81.4
Ginnie	130,069	92.9	96.5	96.5	100.0	102.0	96.4

Refi LTV							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	246,558	48.0	63.0	75.0	85.0	96.5	73.0
Fannie	111,121	44.0	58.0	70.0	79.0	83.0	66.8
Freddie	71,998	45.0	60.0	73.0	80.0	84.0	68.2
Ginnie	63,439	74.0	84.7	91.3	98.6	100.0	89.1

All LTV							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	630,254	57.0	74.0	81.1	96.4	97.8	81.3
Fannie	253,309	51.0	67.0	80.0	90.0	95.0	75.3
Freddie	183,437	53.0	70.0	80.0	90.0	95.0	76.2
Ginnie	193,508	83.6	93.7	96.5	100.0	101.0	94.0

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	130,069	92.9	96.5	96.5	100.0	102.0	96.4
FHA	78,208	93.3	96.5	96.5	96.5	96.5	95.2
VA	41,603	91.0	100.0	100.0	102.2	103.0	98.1
Other	10,258	95.8	99.3	101.0	101.0	101.0	99.5

Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	63,439	74.0	84.7	91.3	98.6	100.0	89.1
FHA	30,533	72.6	82.7	86.5	96.3	98.2	85.9
VA	32,794	75.8	87.7	97.0	100.0	101.2	92.0
Other	112	77.8	86.3	97.2	100.1	101.7	92.3

All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	193,508	83.6	93.7	96.5	100.0	101.0	94.0
FHA	108,741	83.8	91.4	96.5	96.5	96.5	92.6
VA	74,397	82.0	94.0	100.0	100.0	102.2	95.4
Other	10,370	95.7	99.2	101.0	101.0	101.0	99.4

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 August 2019.*

August 2019 Credit Box at a Glance

In August 2019, the median Ginnie Mae debt-to-income ratio (DTI) was 42.2 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 46.0 percent for Freddie Mac. Within the Ginnie Mae market, the median FHA DTI ratio was 44.0 percent, versus 40.5 percent for VA and 35.9 percent for other lending programs.

Purchase DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	383,341	23.9	30.9	38.7	45.0	49.2	37.5
Fannie	142,305	22.0	29.0	37.0	43.0	47.0	35.5
Freddie	111,439	22.0	28.0	36.0	43.0	47.0	35.0
Ginnie	129,597	28.8	35.4	42.5	49.1	54.2	41.8
Refi DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	221,409	22.0	28.0	36.0	43.0	48.0	35.4
Fannie	110,929	21.0	27.0	35.0	42.0	46.0	34.4
Freddie	71,994	21.0	27.0	35.0	42.0	46.0	34.3
Ginnie	38,486	24.8	32.0	41.0	48.8	54.2	40.0
All DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	604,750	23.0	30.0	38.0	44.0	49.0	36.7
Fannie	253,234	22.0	28.0	36.0	43.0	47.0	35.1
Freddie	183,433	21.0	28.0	36.0	42.0	46.0	34.7
Ginnie	168,083	27.9	34.8	42.2	49.0	54.2	41.4

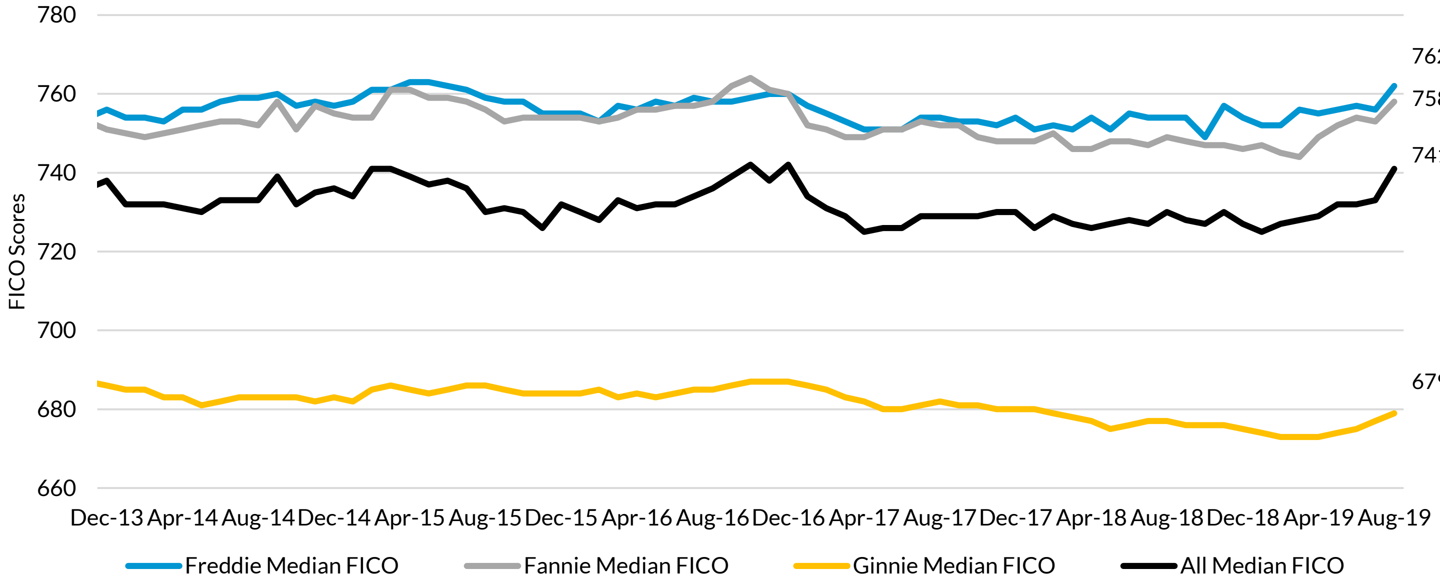
Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	129,597	28.8	35.4	42.5	49.1	54.2	41.8
FHA	78,184	30.7	37.4	44.1	50.1	54.6	43.2
VA	41,204	26.9	33.8	41.4	48.5	54.2	40.9
Other	10,209	25.6	30.6	35.9	40.0	42.8	34.9
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	38,486	24.8	32.0	41.0	48.8	54.2	40.0
FHA	21,188	27.9	35.0	43.4	50.1	54.7	42.0
VA	17,212	21.5	30.3	38.1	46.3	52.8	37.7
Other	86	14.0	23.3	33.0	39.9	42.7	31.3
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	168,083	27.9	34.8	42.2	49.0	54.2	41.4
FHA	99,372	30.1	37.0	44.0	50.1	54.6	42.9
VA	58,416	25.4	32.3	40.5	47.9	53.8	40.0
Other	10,295	25.5	30.5	35.9	40.0	42.8	34.9

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. Data as of August 2019.*

Credit Box: Historical

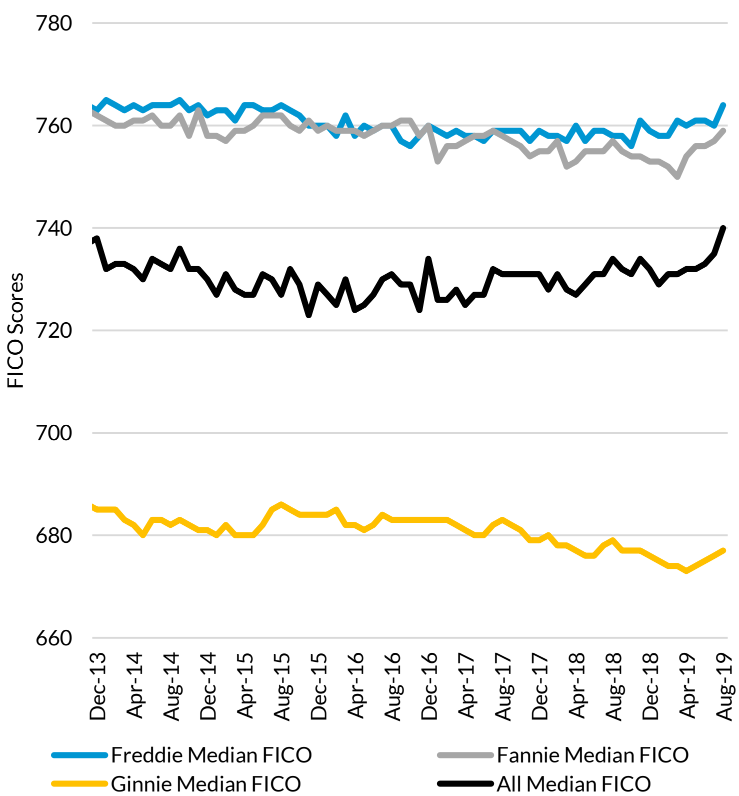
The median FICO score for all agency loans originated in August 2019 was 741, up substantially from 733 last month. The figures show that the median FICO score for Ginnie Mae borrowers has always been considerably lower than for GSE borrowers. Since early 2019, the median FICO scores for Fannie, Freddie 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



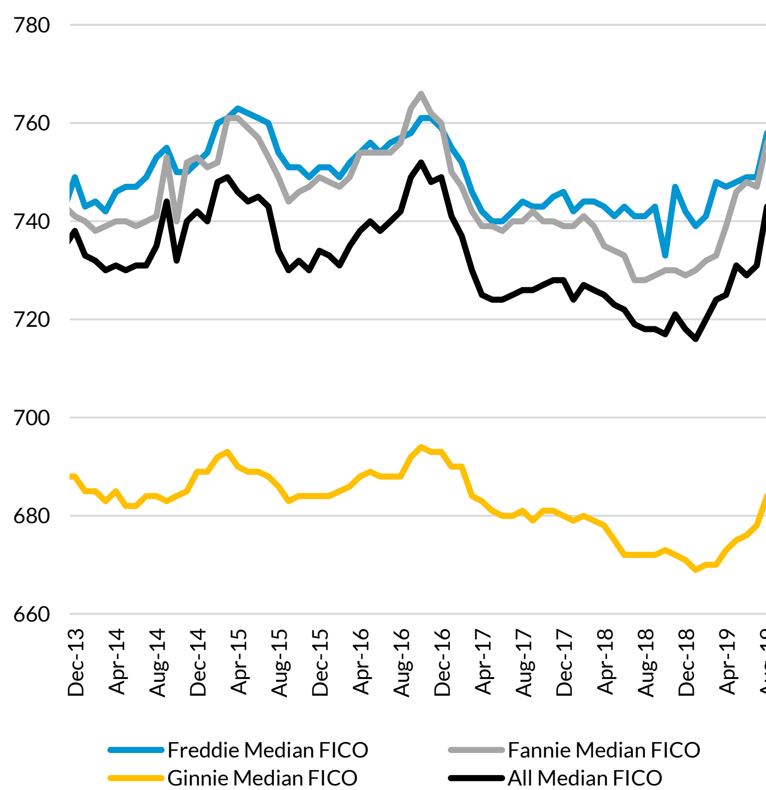
Sources: *eMBS and Urban Institute.* **Note**: *Data as of August 2019.*

FICO Scores for Purchase Loans



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

FICO Scores for Refinance Loans

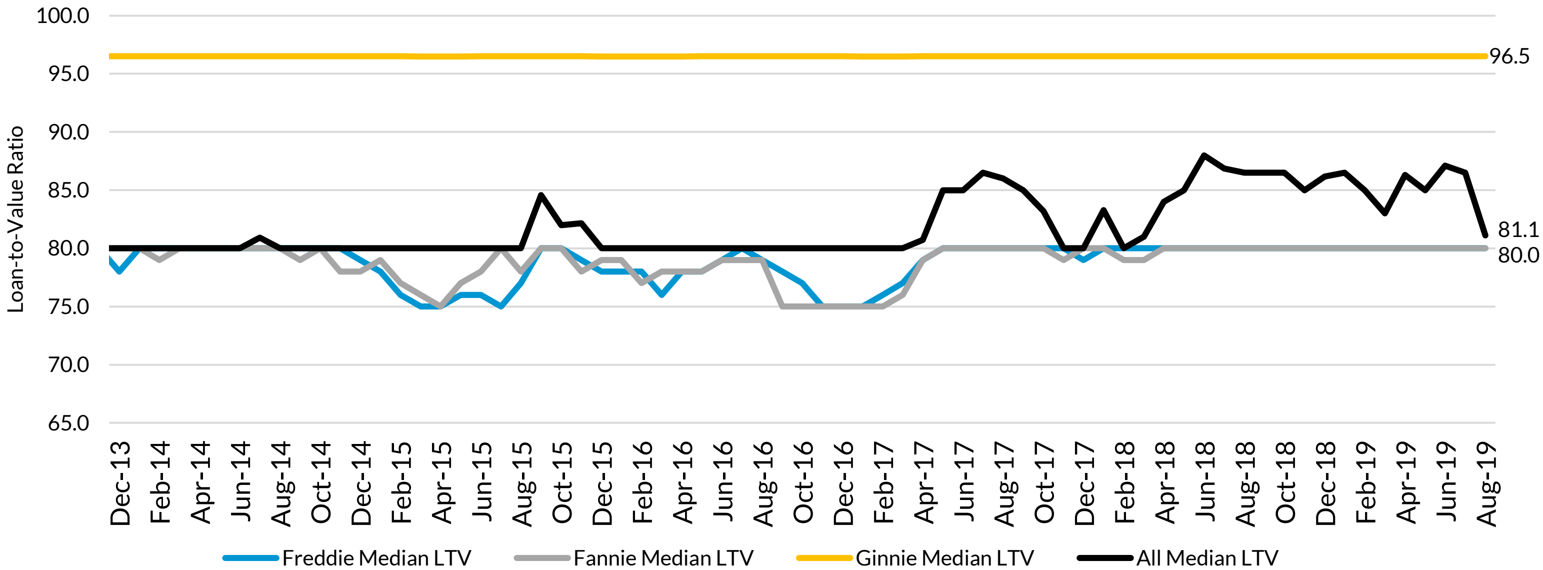


Sources: *eMBS and Urban Institute.* **Note:** *Data as of August 2019.*

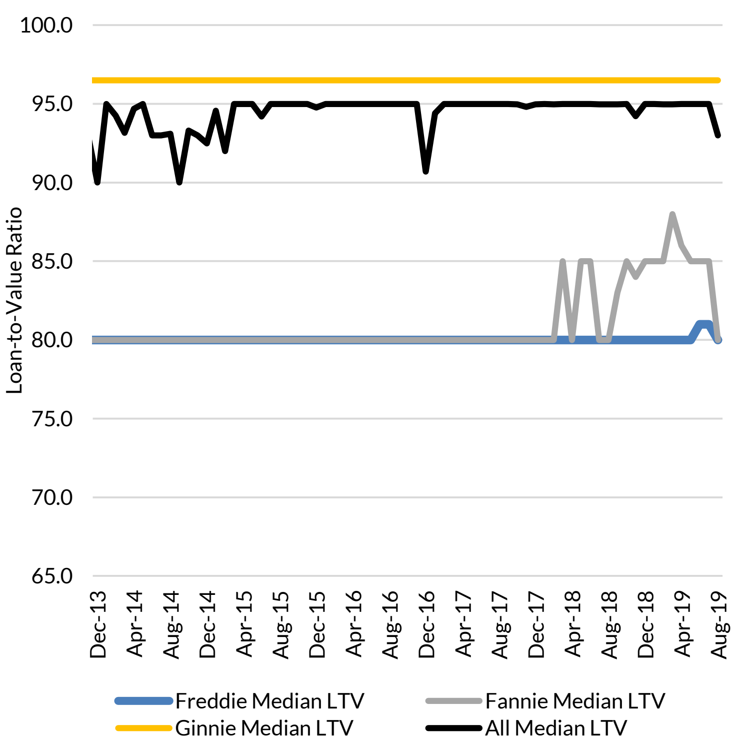
Credit Box: Historical

Median LTVs for Ginnie Mae loans have historically been at 96.5 percent, much higher than the 80 percent LTVs for the GSEs. Through time, both Ginnie Mae and GSE refinances have LTVs about 4-20 points lower than their purchase counterparts.

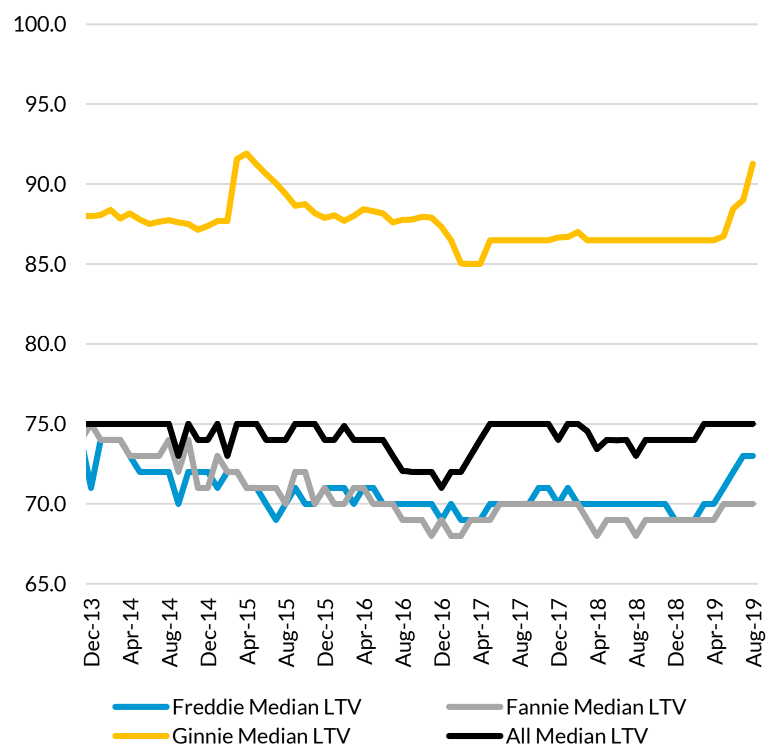
LTV Ratio for All Loans



LTV Ratio for Purchase Loans



LTV Ratio for Refinance Loans

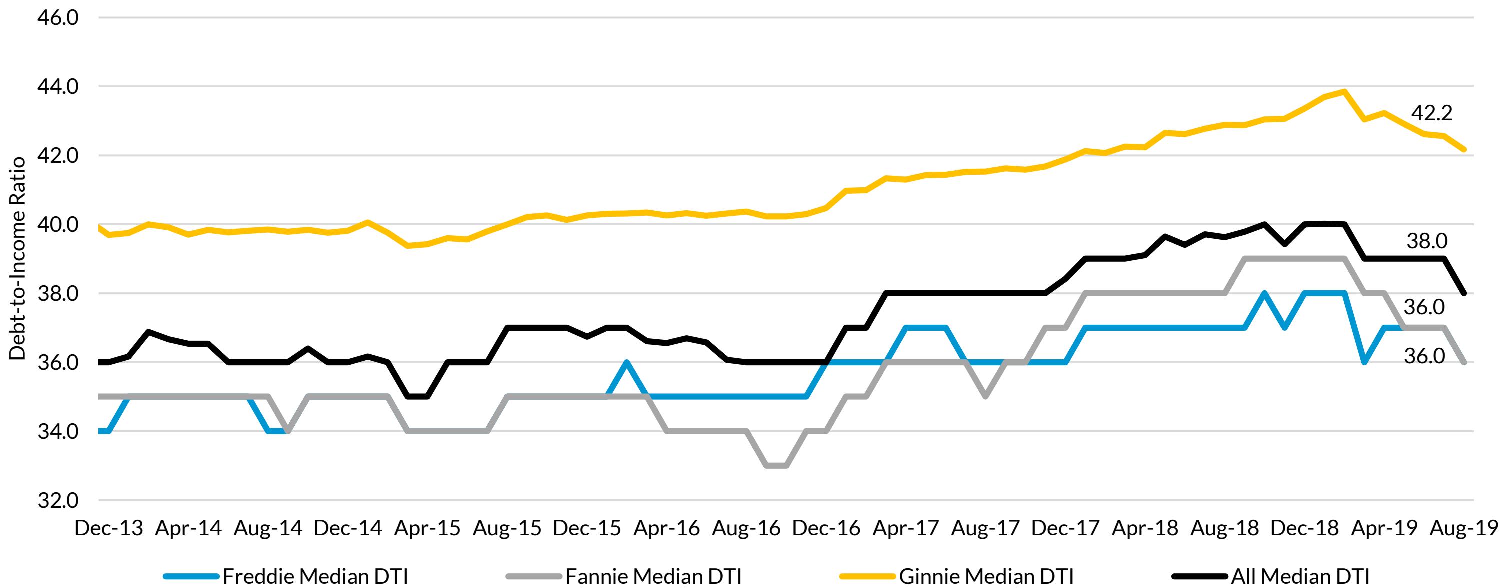


Sources: *eMBS and Urban Institute.* **Note:** *In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium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

Credit Box: Historical

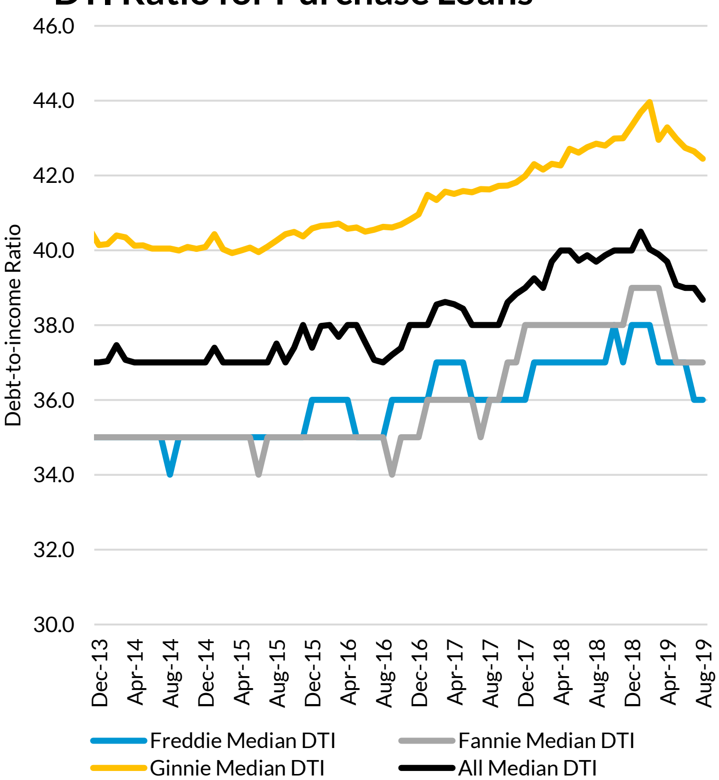
Median debt-to-income ratios on Ginnie Mae loans have historically been in the low 40s, considerably higher than for the GSEs. DTIs have in the 2017-2018 period for both Ginnie Mae and GSE loans, with the movement more pronounced for Ginnie Mae. Increases in DTI are very typical in an environment of rising interest rates and rising home prices. All three agencies have witnessed measurable declines in DTIs in spring and summer 2019 driven by lower interest rates.

DTI Ratio for All Loans



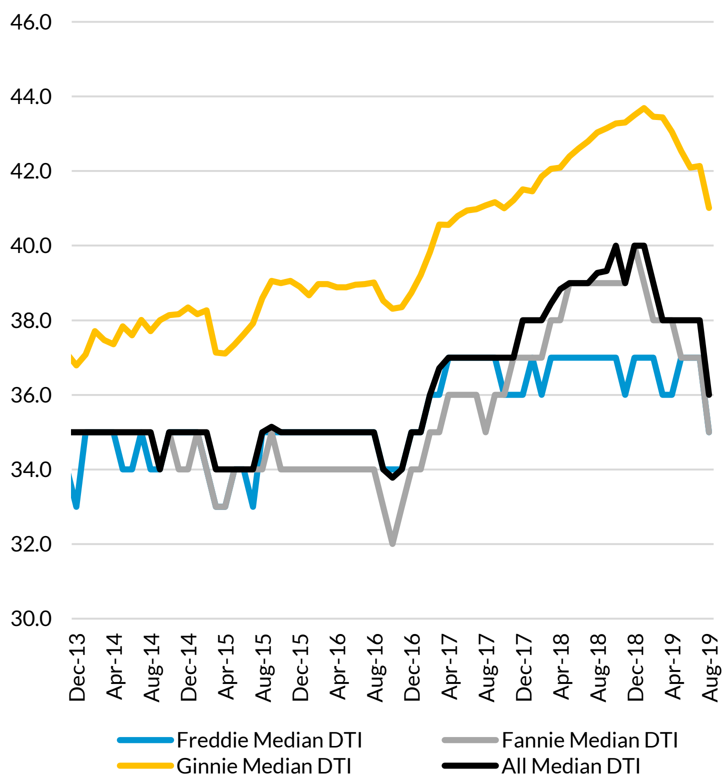
Sources: *eMBS and Urban Institute.* **Note:** *Data as of August 2019.*

DTI Ratio for Purchase Loans



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

DTI Ratio for Refinance Loans

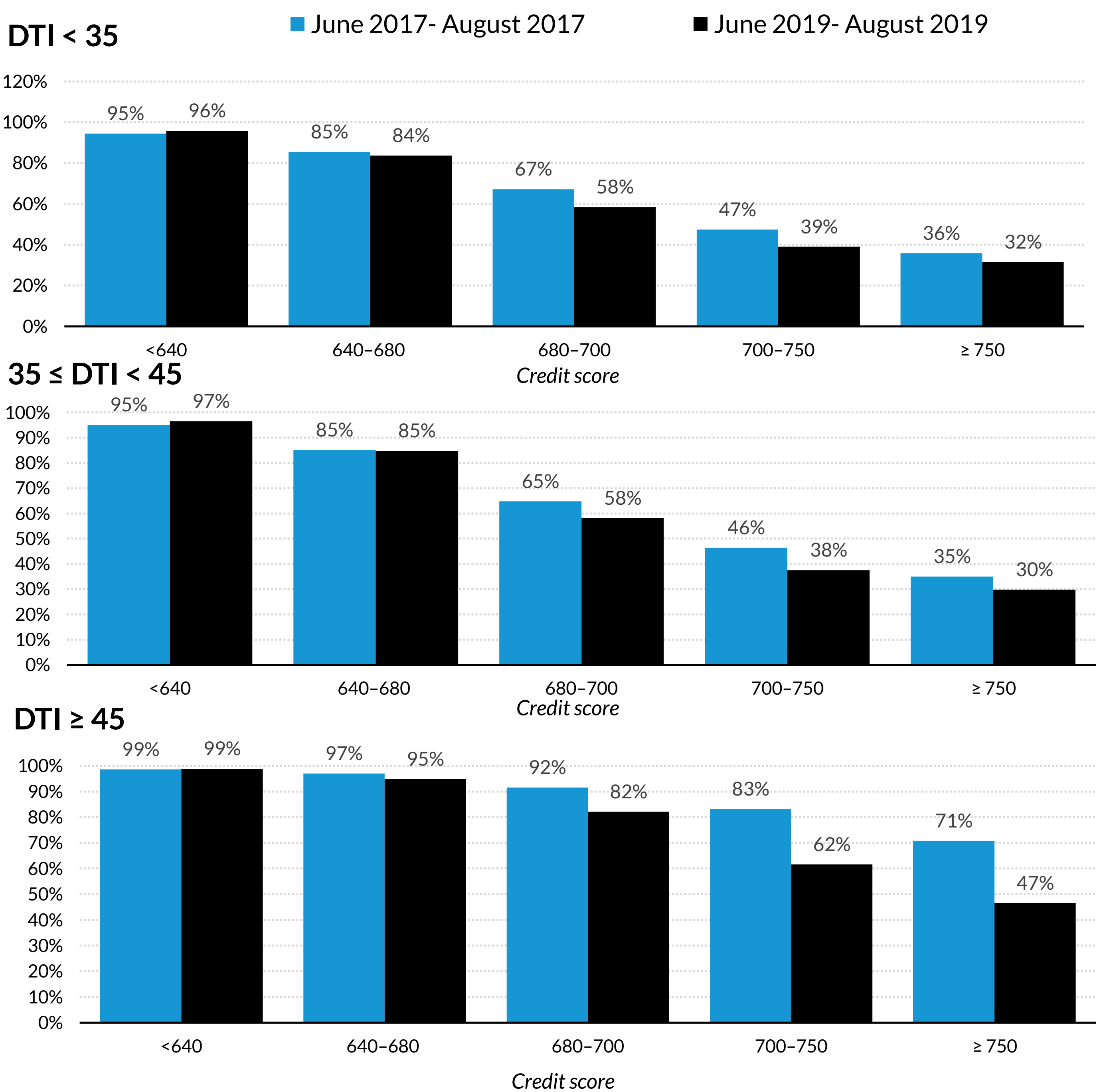


Sources: *eMBS and Urban Institute.*
Note: *Data as of August 2019.*

Credit Box: Historical

This table shows Ginnie Mae's share of agency high-LTV lending by DTI and FICO. In each DTI bucket, Ginnie Mae's share is more concentrated in lower FICO scores than in higher FICO scores. In June 2019–August 2019, Ginnie Mae accounted for 96 percent of agency issuance for DTIs under 35 and FICOs below 640, compared to just 32 percent for DTIs below 35 and FICO 750 and higher. The Ginnie/GSE split in the 35-45 DTI bucket looks a lot like the below 35 percent DTI bucket. In June 2019– August 2019, Ginnie Mae's share of issuance was higher for DTIs of 45 and above, as compared with the two lower DTI buckets. Ginnie Mae share of loans with a DTI of 45 and above and a FICO of 680-700 was 82 percent; it was 58 percent for the same FICO in the lower DTI buckets. Comparing this period to 2 years earlier, it is clear that GSEs have stepped up their higher LTV lending in all but the lowest FICO buckets, taking market share from Ginnie Mae.

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



Sources: *eMBS and Urban Institute.*

High LTV Loans: Ginnie Mae vs. GSEs

Ginnie Mae dominates high-LTV lending, with 71.3 percent of its issuances in the June 2019-August 2019 period having LTVs of 95 or above, compared to 21.7 percent for the GSEs. The GSEs have increased their high-LTV lending share from 18.7 percent in June 2017–August 2017. Ginnie Mae's high-LTV lending is down just slightly over the same period from 72.0 percent. As home prices have increased, the share of high-DTI lending (loans with DTI ≥ 45) has increased across the FICO spectrum.

Share of Loans with LTV ≥ 95

	Ginnie Mae	GSE	All
June 2017- August 2017	72.0%	18.7%	37.2%
June 2019- August 2019	71.3%	21.7%	37.7%

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

June 2017-August 2017

	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	3.0%	5.7%	3.2%	8.2%	10.0%	30.1%
35 –45	5.2%	10.0%	5.4%	12.3%	10.5%	43.4%
≥ 45	3.8%	8.0%	3.7%	6.7%	4.3%	26.5%
All	11.9%	23.8%	12.3%	27.3%	24.7%	100.0%

June 2019-August 2019

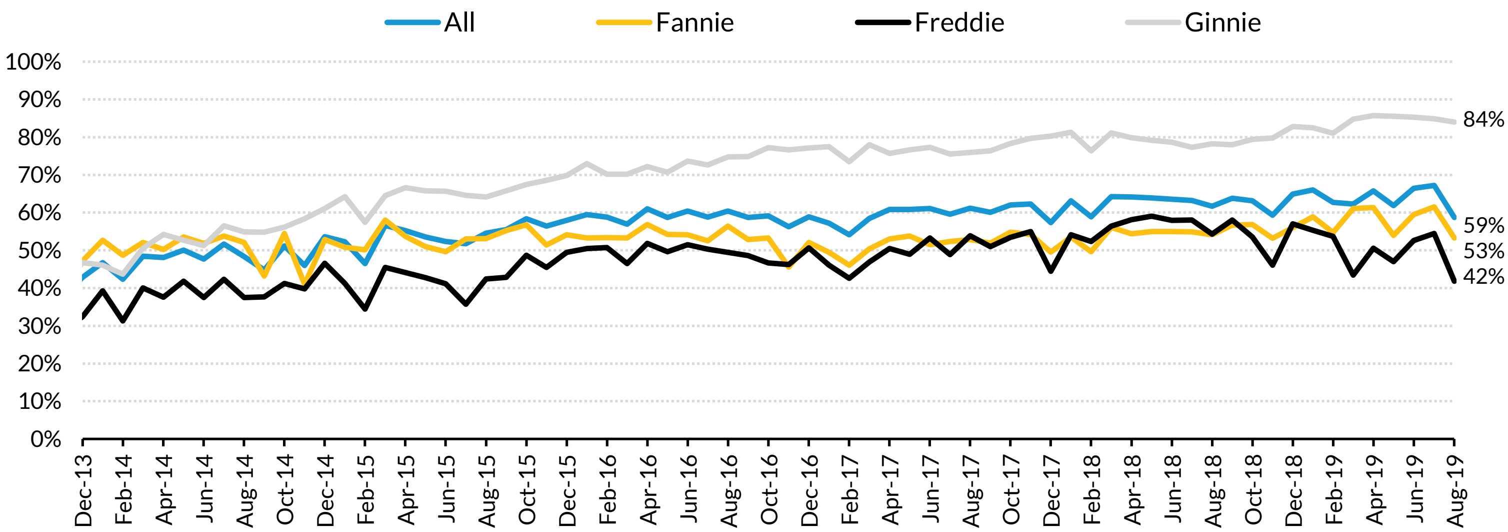
	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.9%	4.6%	2.6%	7.4%	10.0%	27.5%
35 –45	5.4%	8.5%	4.6%	11.3%	10.4%	40.2%
≥ 45	4.8%	8.4%	4.0%	8.5%	6.5%	32.3%
All	13.2%	21.5%	11.3%	27.2%	26.9%	100.0%

Sources: *eMBS and Urban Institute.*

Nonbank Originators

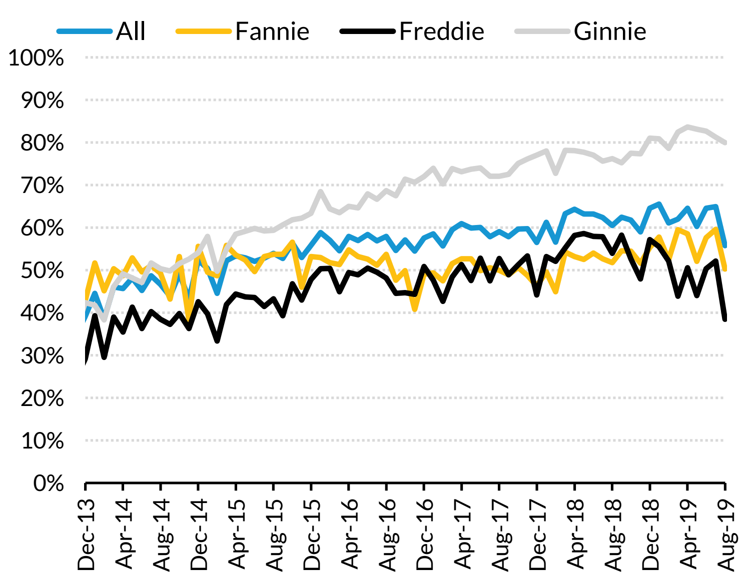
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, standing slightly below the record high of 86 percent at 84 percent in August 2019. Freddie and Fannie's nonbank shares both fell in August, to 42 and 53 percent respectively (note that these numbers can be volatile on a month-to-month basis). Ginnie Mae, Fannie Mae and Freddie Mac all have higher nonbank origination shares for refi activity than for purchase activity. Freddie Mac's nonbank share is the lowest among the three agencies for both purchase and refinance loans.

Nonbank Origination Share: All Loans

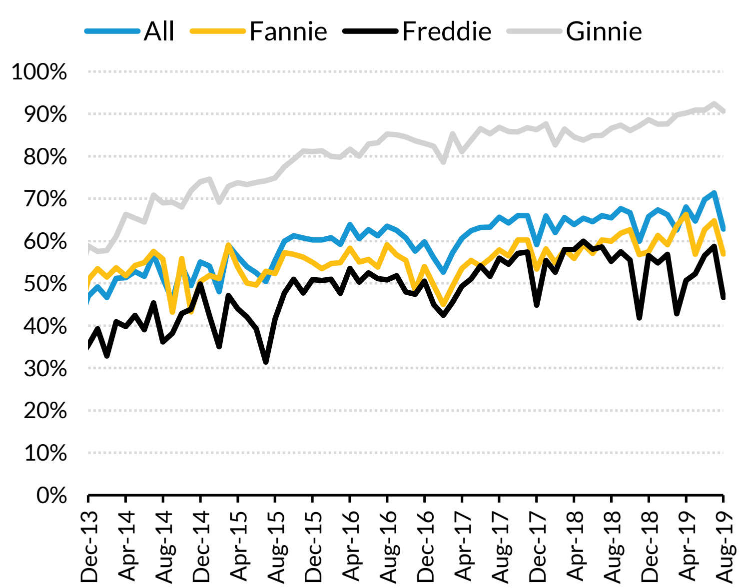


Sources: *eMBS and Urban Institute*
Note: *Data as of August 2019.*

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

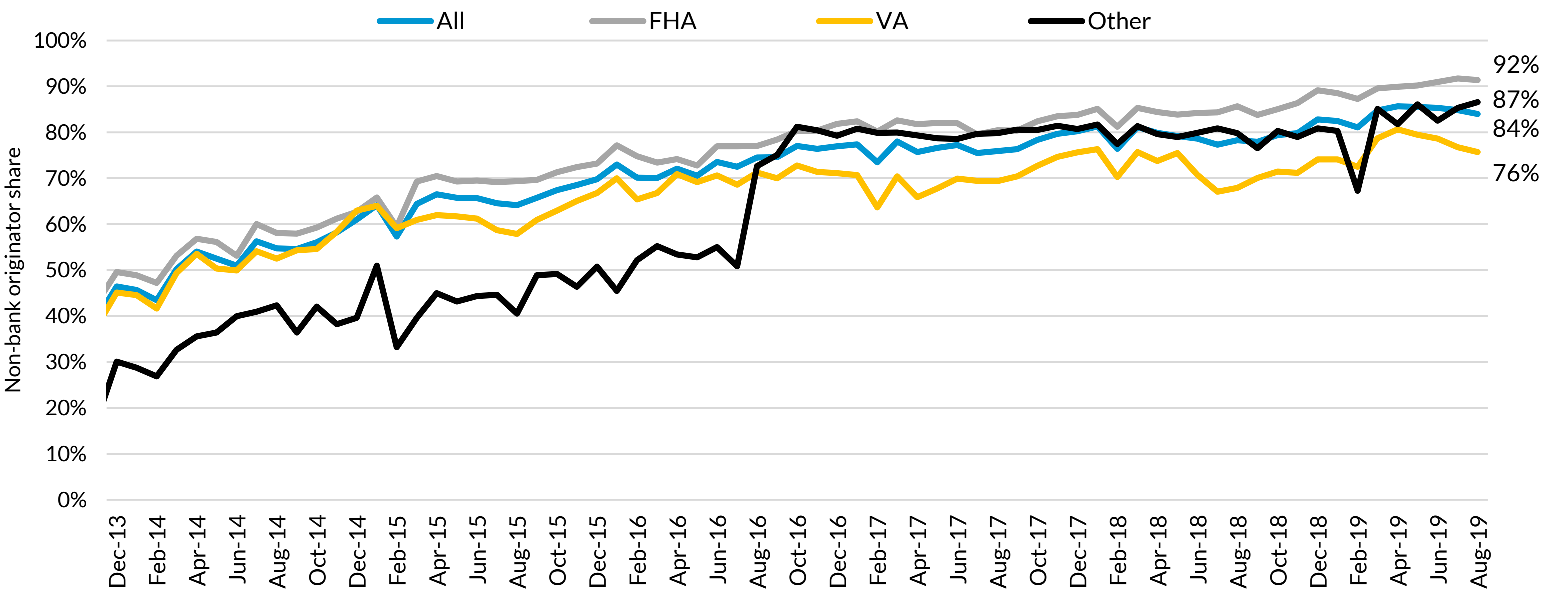


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of August 2019.*

Ginnie Mae Nonbank Originators

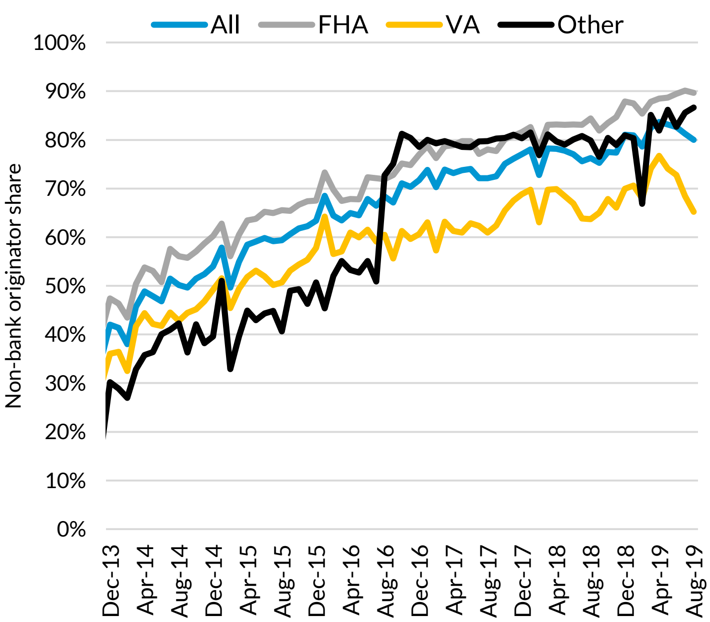
In August 2019, Ginnie Mae's nonbank share fell slightly to 84 percent. The nonbank originator share for FHA fell slightly, standing just below its historical high of 92 percent at 91 percent in August. The nonbank originator share for VA was 76 percent, and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, increased to 87 percent.

Ginnie Mae Nonbank Originator Share: All Loans

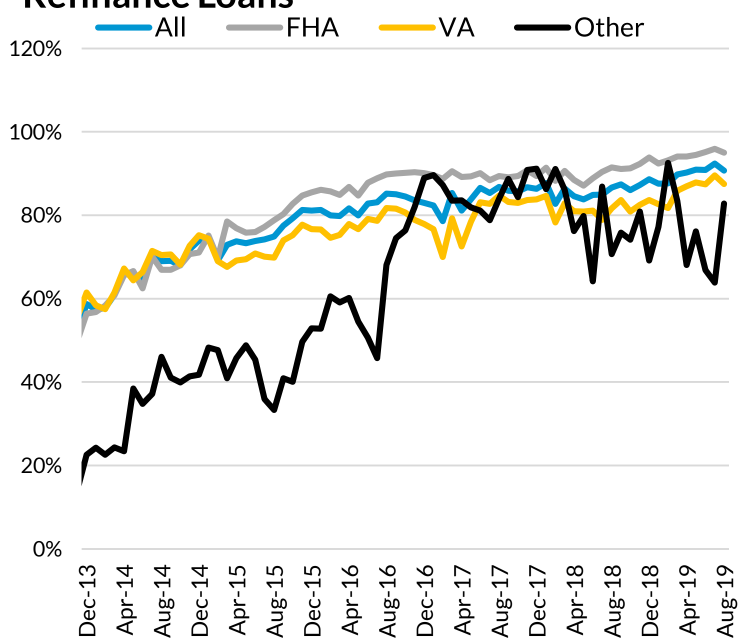


Sources: *eMBS and Urban Institute*
Note: *Data as of August 2019.*

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

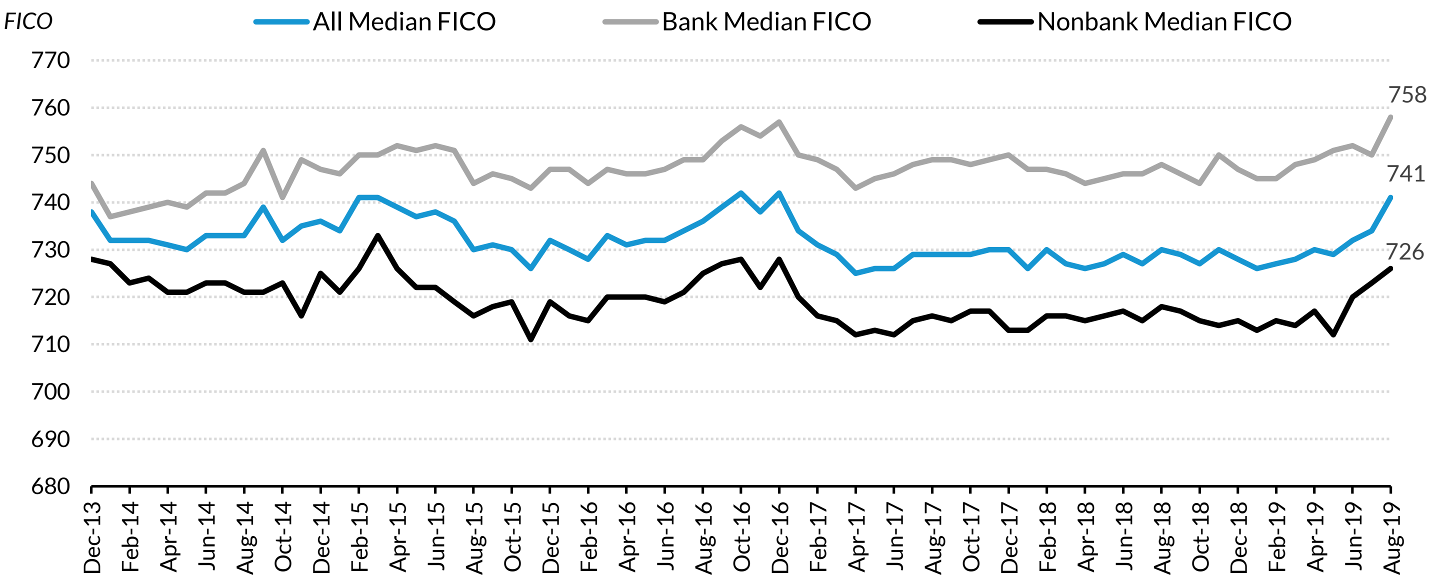


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of August 2019.*

Nonbank Credit Box

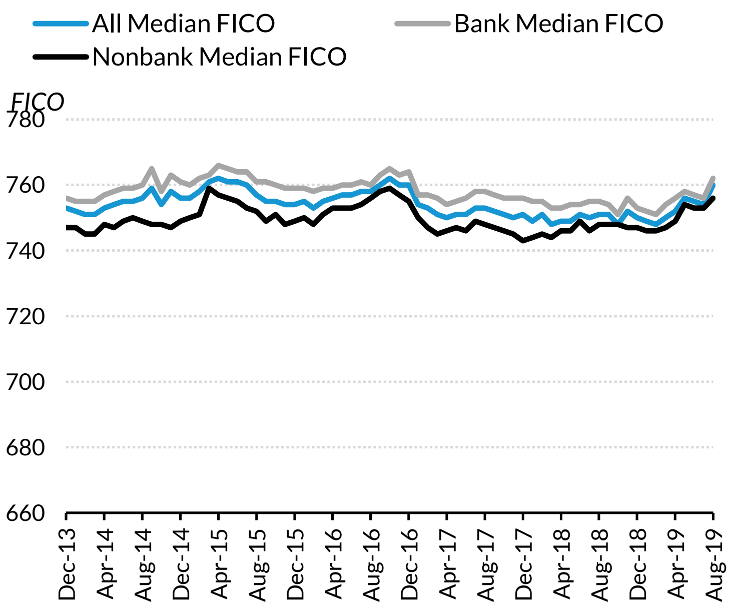
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have been relatively flat since 2014. In contrast,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

Agency FICO: Bank vs. Nonbank



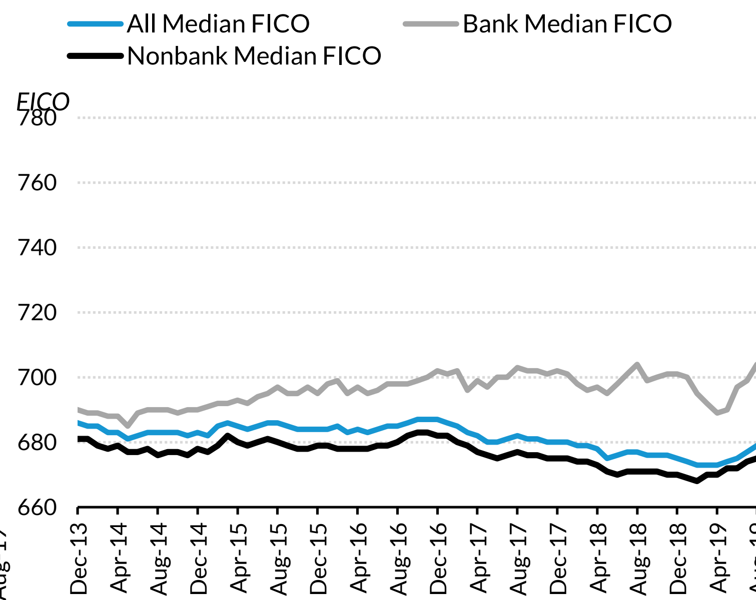
Sources: *eMBS and Urban Institute.* **Note**: *Data as of August 2019.*

GSE FICO: Bank vs. Nonbank



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

Ginnie Mae FICO: Bank vs. Nonbank

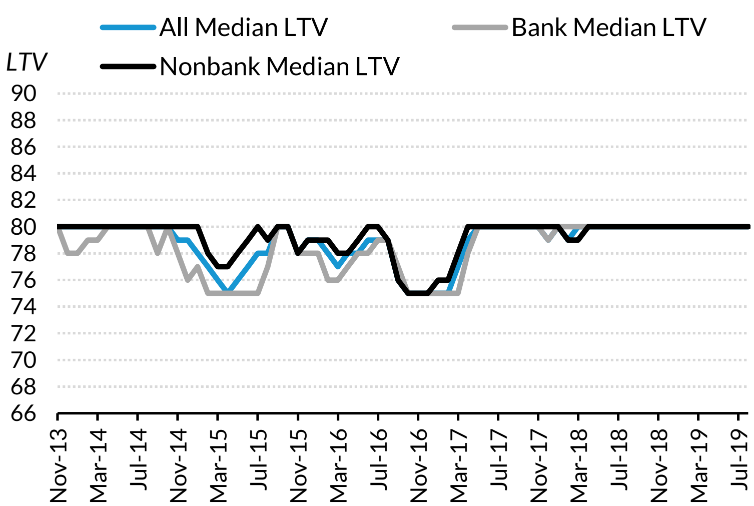


Sources: *eMBS and Urban Institute.*
Note: *Data as of August 2019.*

Nonbank Credit Box

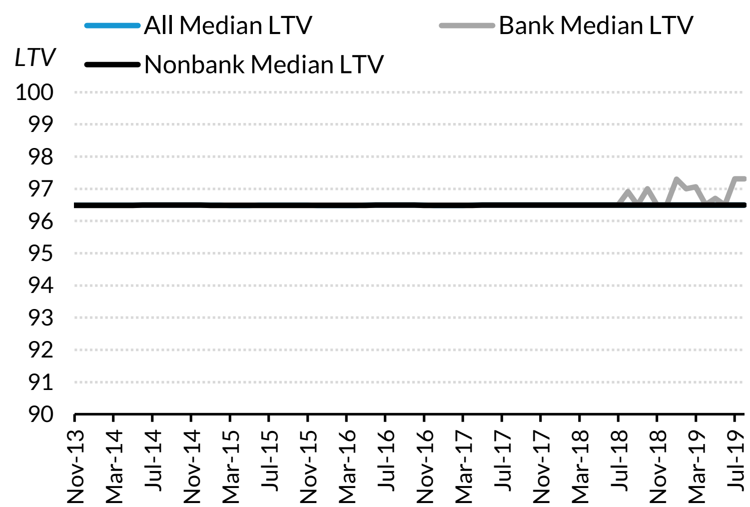
The median LTVs for nonbank and bank originations are comparable, while the median DTI for nonbank loans is higher than for bank loans, indicating that nonbanks are more accommodating in both this and the FICO dimension. Since early 2017, there has been a substantial increase in DTIs, which has partially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

GSE LTV: Bank vs. Nonbank



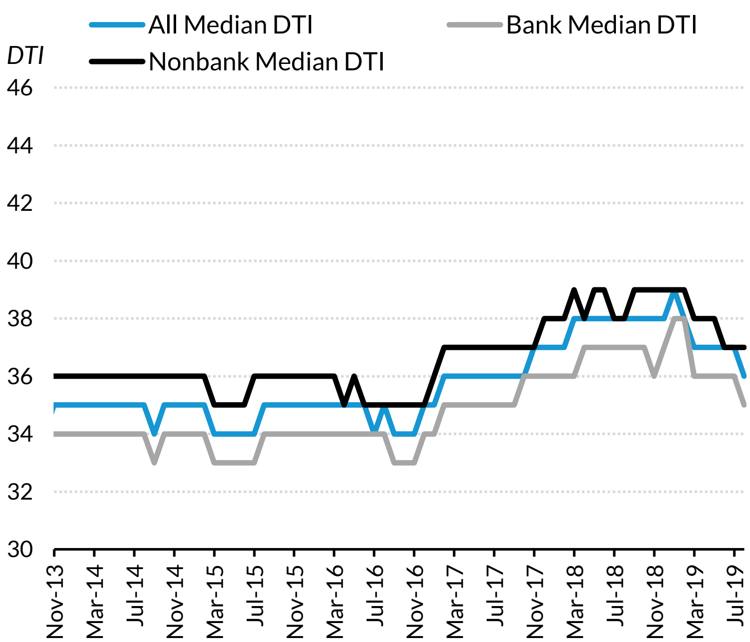
Sources: *eMBS and Urban Institute.* **Note:** *Data as of August 2019.*

Ginnie Mae LTV: Bank vs. Nonbank



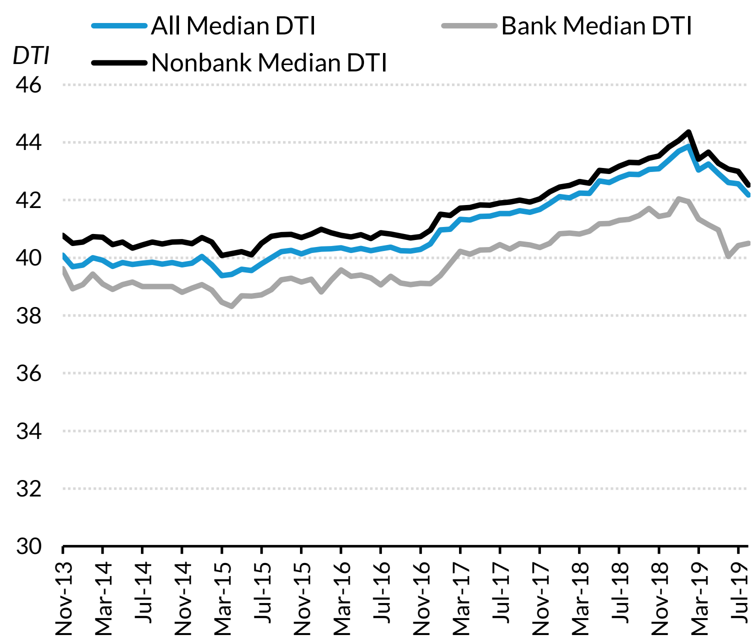
Sources: *eMBS and Urban Institute.* **Note:** *Data as of August 2019.*

GSE DTI: Bank vs. Nonbank



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

Ginnie Mae DTI: Bank vs. Nonbank

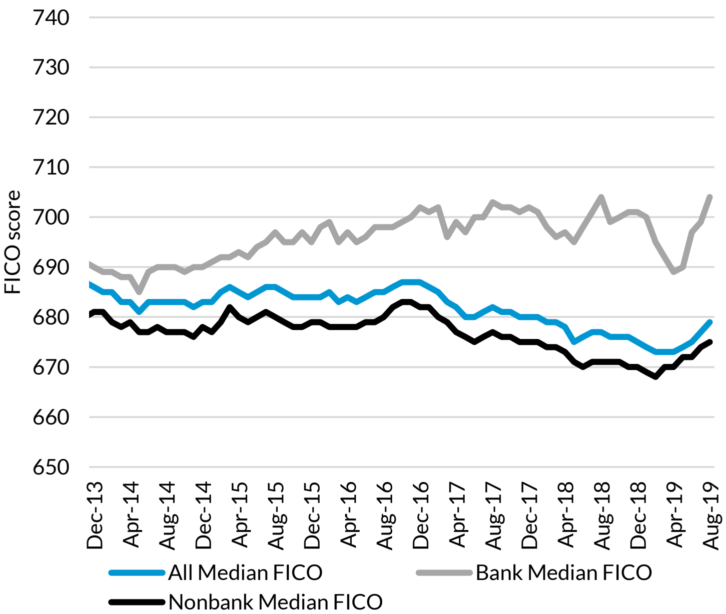


Sources: *eMBS and Urban Institute.* **Note:** *Data as of August 2019.*

Ginnie Mae Nonbank Originators: Credit Box

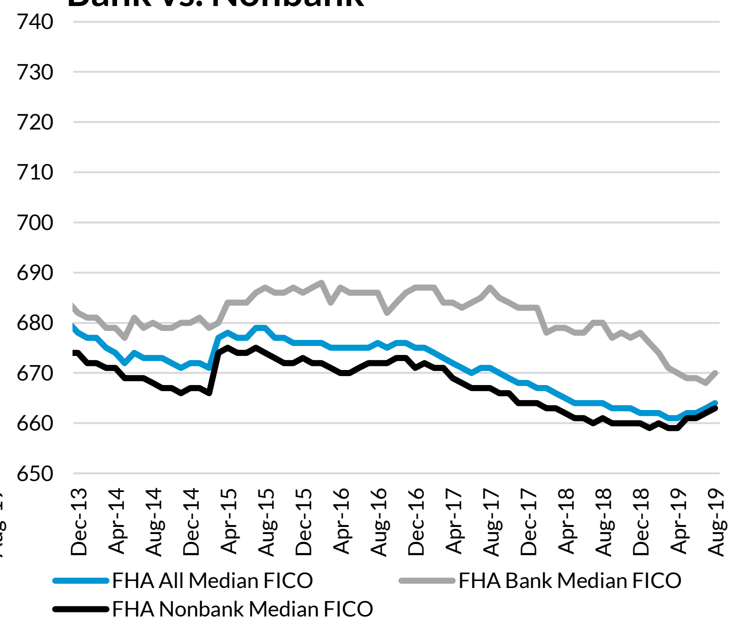
The FICO scores for both Ginnie Mae nonbank and bank originators increased in August 2019. FICO spreads between banks and nonbanks have generally increased since 2013. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



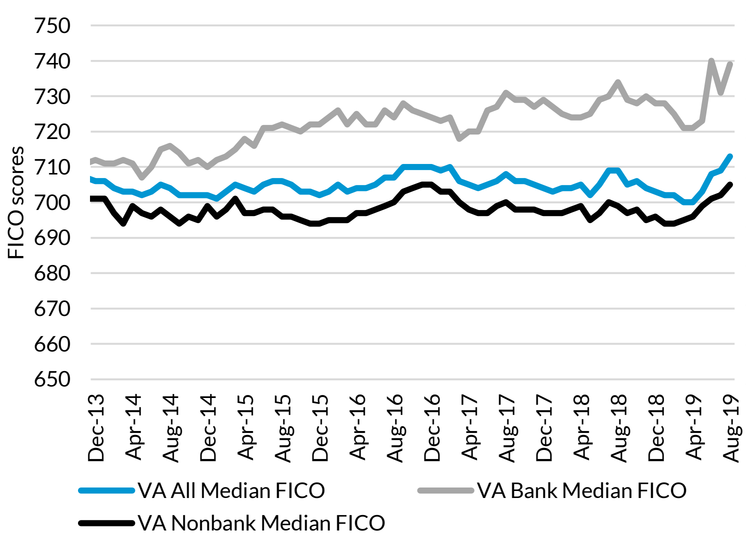
Sources: *eMBS and Urban Institute* **Note:** *Data as of August 2019.*

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



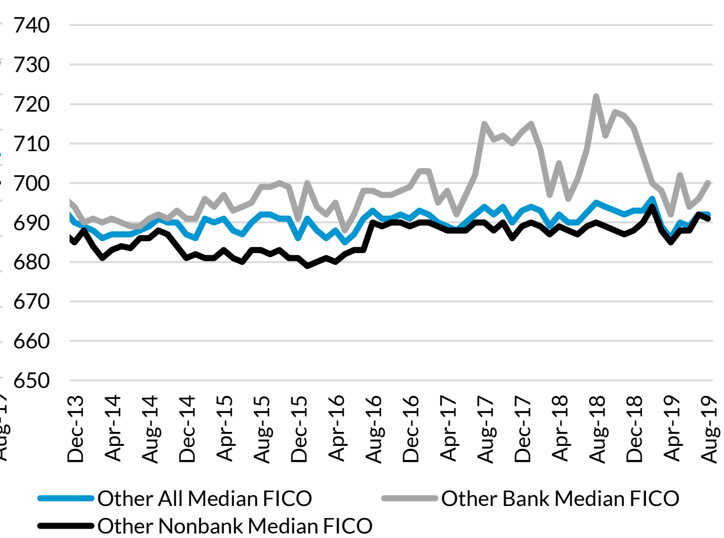
Sources: *eMBS and Urban Institute* **Note:** *Data as of August 2019.*

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



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

Ginnie Mae Other FICO Scores: Bank vs. Nonbank

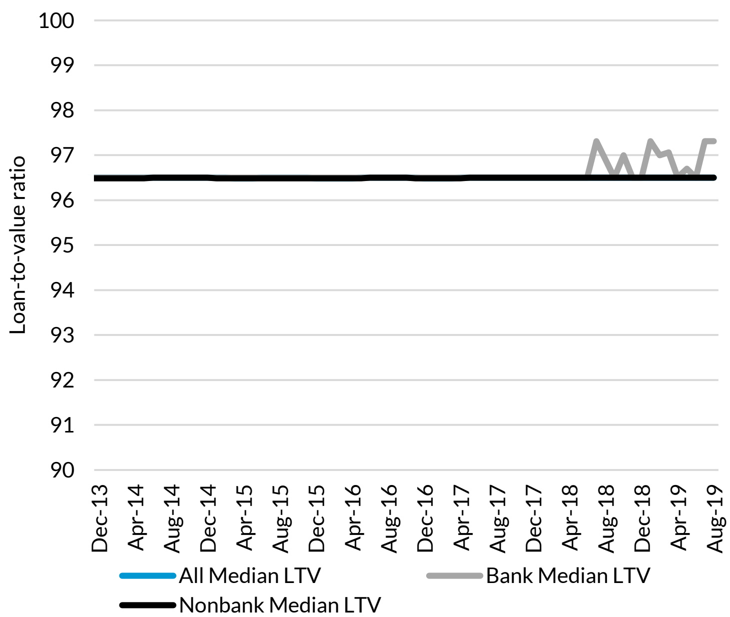


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of August 2019.*

Ginnie Mae Nonbank Originators: Credit Box

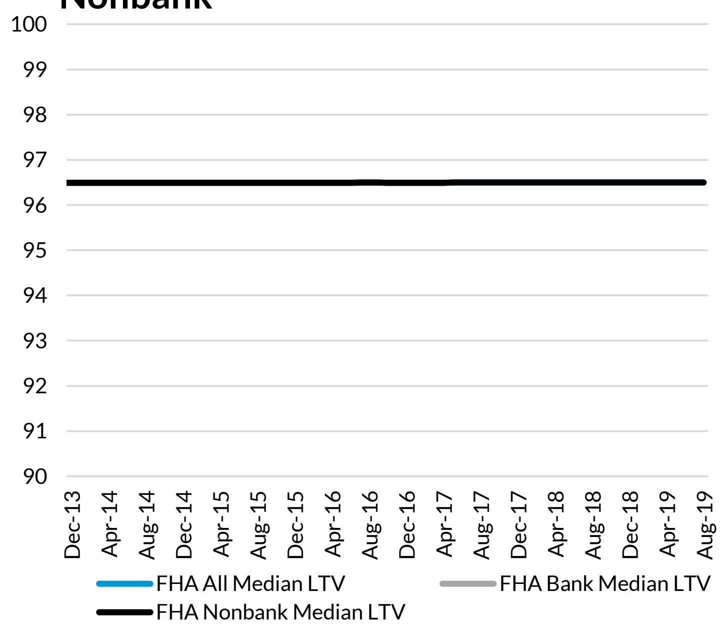
An analysis of the loans backing Ginnie Mae origination indicates that there are virtually no differences in median LTV ratios between bank originated loans and nonbank originated loans.

Ginnie Mae LTV: Bank vs. Nonbank



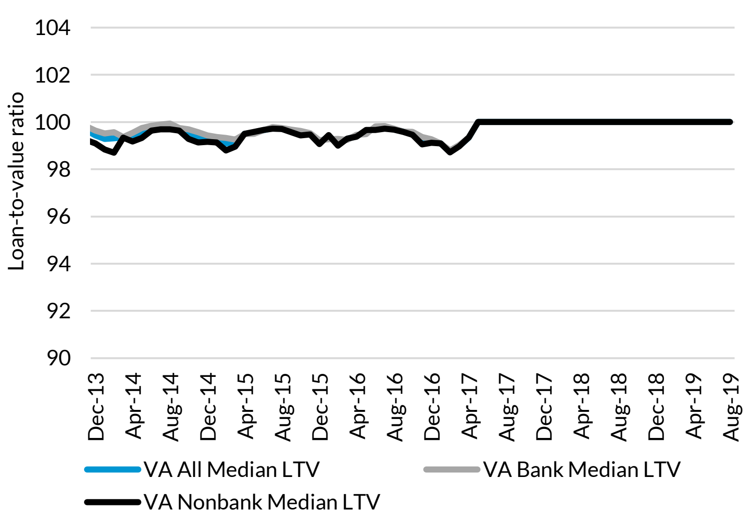
Sources: *eMBS and Urban Institute* **Note:** *Data as of August 2019.*

Ginnie Mae FHA LTV: Bank vs. Nonbank



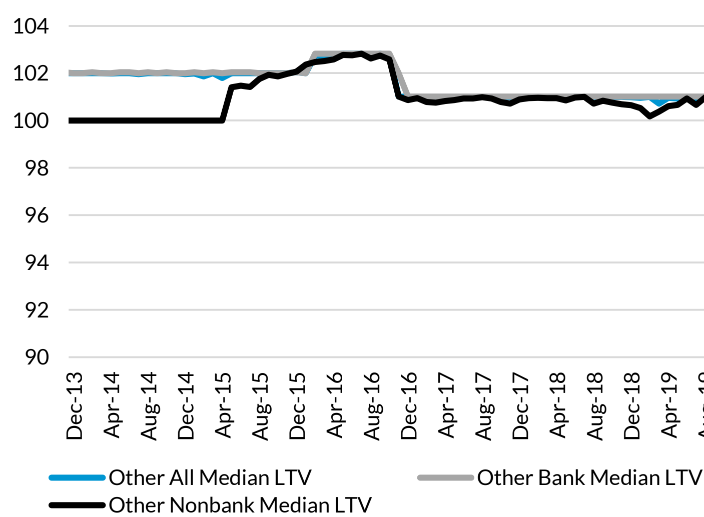
Sources: *eMBS and Urban Institute* **Note:** *Data as of August 2019.*

Ginnie Mae VA LTV: Bank vs. Nonbank



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

Ginnie Mae Other LTV: Bank vs. Nonbank

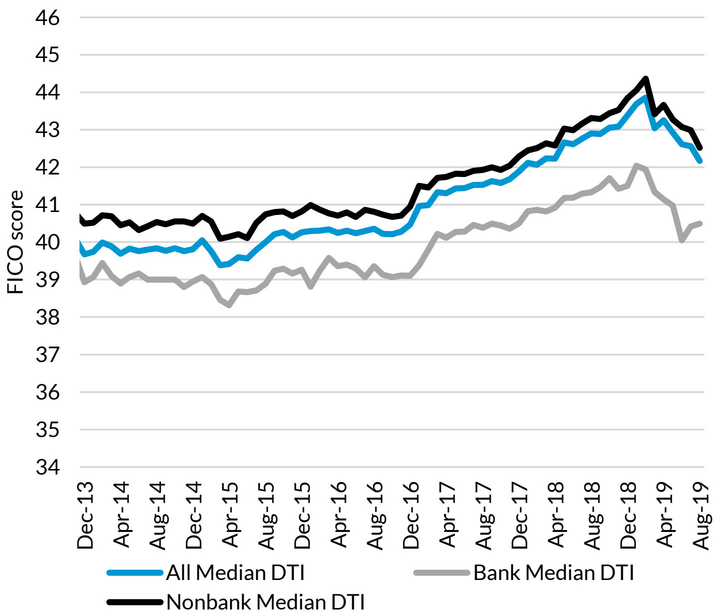


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of August 2019.*

Ginnie Mae Nonbank Originators: Credit Box

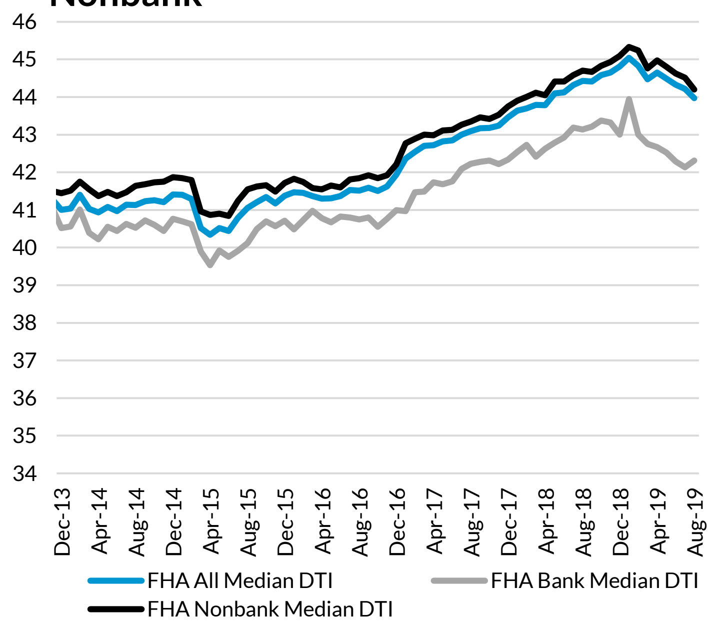
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA loans experienced notable increases since early 2017 for both bank and nonbank originations, while the Other origination DTIs stayed relatively flat. Rising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

Ginnie Mae DTI: Bank vs. Nonbank



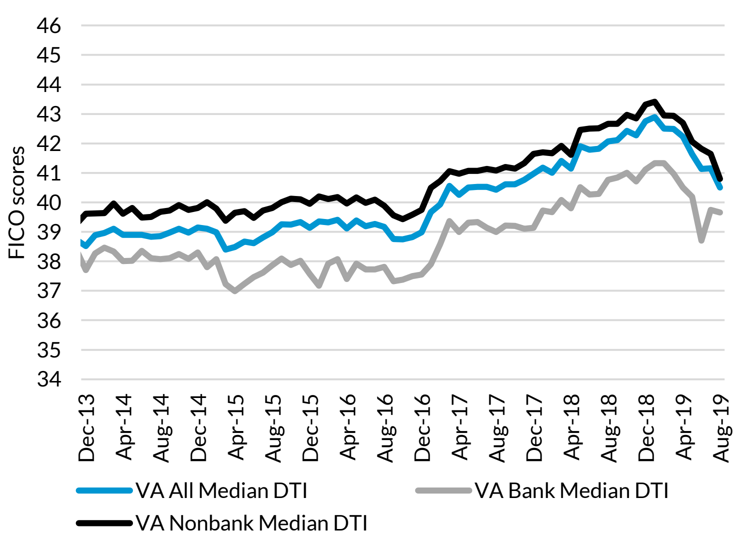
Sources: *eMBS and Urban Institute* **Note:** *Data as of August 2019.*

Ginnie Mae FHA DTI: Bank vs. Nonbank



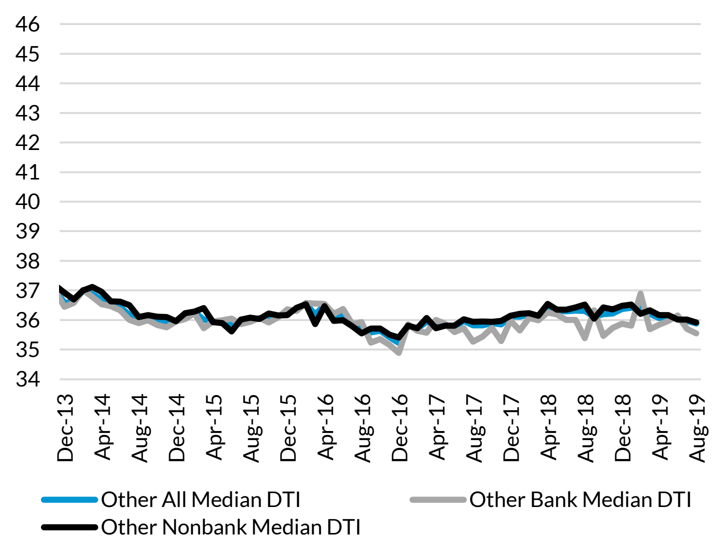
Sources: *eMBS and Urban Institute* **Note:** *Data as of August 2019.*

Ginnie Mae VA DTI: Bank vs. Nonbank



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

Ginnie Mae Other DTI: Bank vs. Nonbank



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

Holders of Ginnie Mae MSRs

This table shows 30 largest owners of mortgage servicing rights (MSR) by UPB for Ginnie Mae securitizations. As of August 2019, over half (52.8 percent) of the Ginnie Mae MSRs are owned by the top six firms. The top 30 firms collectively own 85.3 percent. Seventeen of these 30 are non-depositories, the remaining 13 are depository institutions.

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

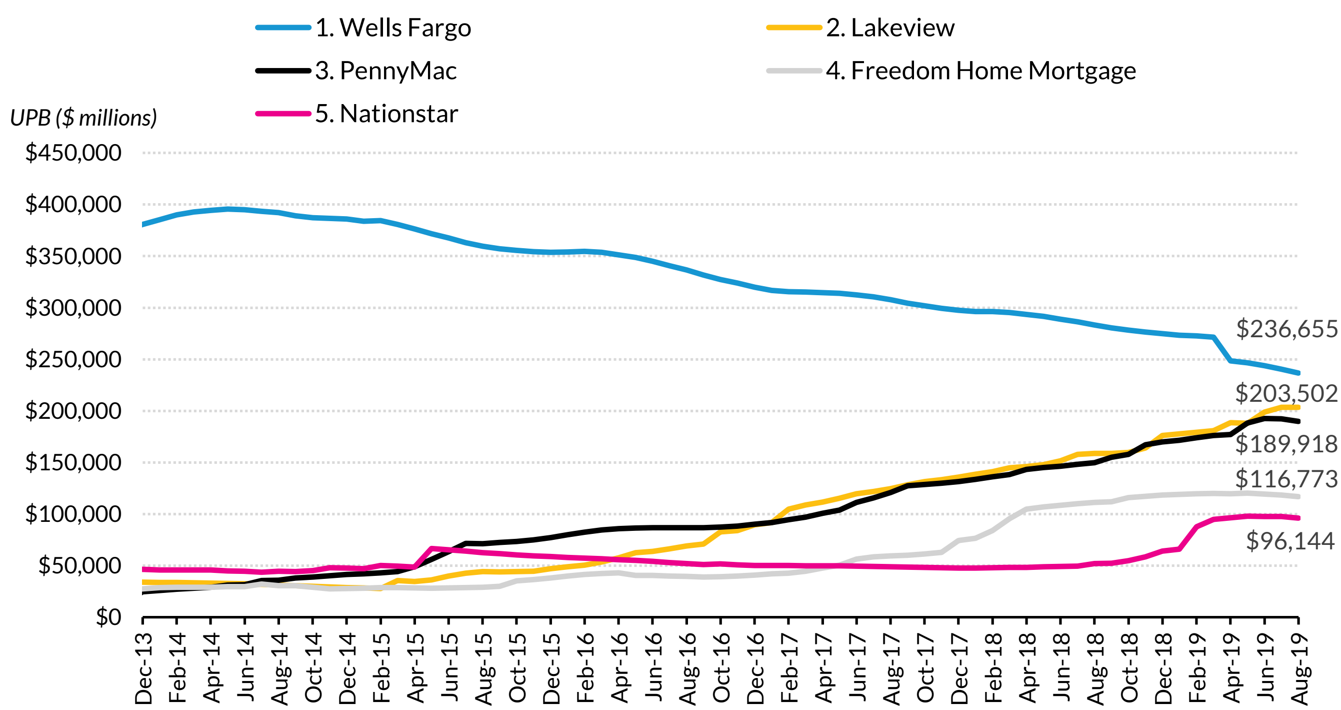
Rank	MSR Holder	UPB ($ millions)	Share	Cumulative Share
1	Wells Fargo	$236,655	13.8%	13.8%
2	Lakeview	$203,502	11.8%	25.6%
3	PennyMac	$189,918	11.0%	36.6%
4	Freedom Home Mortgage	$116,773	6.8%	43.4%
5	Nationstar	$97,684	5.6%	49.0%
6	Quicken Loans	$66,188	3.8%	52.8%
7	US Bank	$59,310	3.4%	56.3%
8	JPMorgan Chase	$43,601	2.5%	58.8%
9	Carrington Home Mortgage	$41,759	2.4%	61.2%
10	USAA Federal Savings Bank	$37,790	2.2%	63.4%
11	Caliber Home Loans	$36,060	2.1%	65.5%
12	Newrez	$26,725	1.6%	67.1%
13	Navy Federal Credit Union	$26,145	1.5%	68.6%
14	Amerihome Mortgage	$24,883	1.4%	70.1%
15	The Money Source	$22,543	1.3%	71.4%
16	Midfirst Bank	$22,055	1.3%	72.6%
17	M&T Bank	$20,020	1.2%	73.8%
18	Suntrust	$18,566	1.1%	74.9%
19	Ditech Financial	$18,326	1.1%	76.0%
20	Roundpoint	$18,284	1.1%	77.0%
21	Home Point Financial	$17,456	1.0%	78.0%
22	Guild Mortgage	$15,956	0.9%	79.0%
23	Branch Banking and Trust	$15,827	0.9%	79.9%
24	Loan Depot	$15,181	0.9%	80.8%
25	Flagstar Bank	$14,617	0.8%	81.6%
26	PHH Mortgage	$14,070	0.8%	82.4%
27	Pingora	$13,680	0.8%	83.2%
28	Citizens Bank	$12,555	0.7%	83.9%
29	Bank of America	$11,540	0.7%	84.6%
30	Fifth Third Bank	$11,453	0.7%	85.3%

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

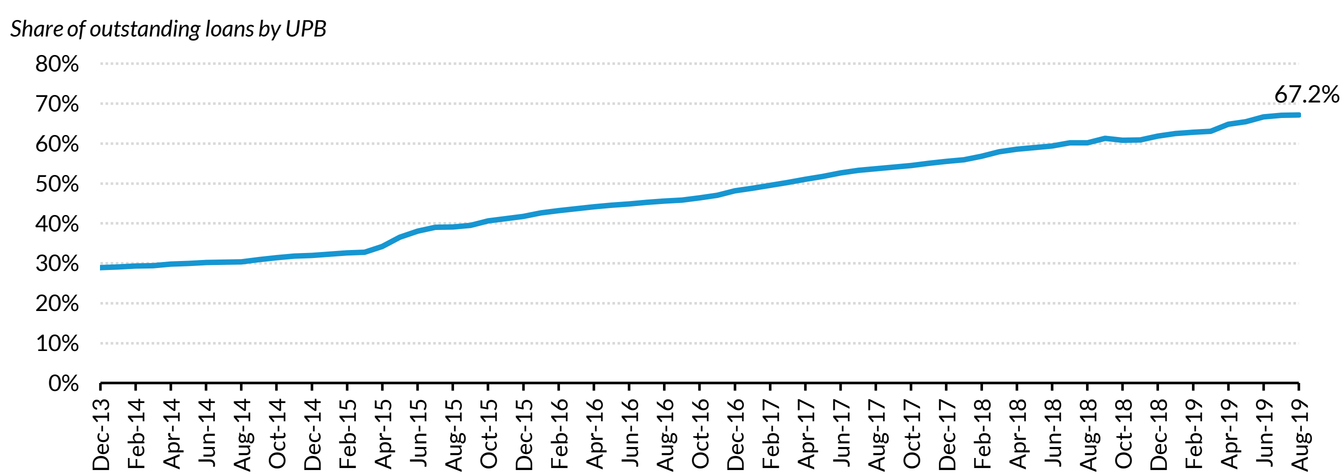
Holders of Ginnie Mae MSRs

The composition of the largest owners of Ginnie Mae MSR has evolved quite a bit over time. In November 2013, Wells Fargo and JP Morgan Chase were the two largest owners of Ginnie Mae MSRs, holding $375 billion and $139 billion in servicing UPB respectively. Although Wells Fargo is still the largest player, its portfolio has shrunk to $240 billion. Lakeview, PennyMac, Freedom Home Mortgage, and Nationstar (all nonbanks) make up the remainder of the top five largest holders of MSRs, owning $204 billion, $190 billion, $117 billion, and $96 billion respectively as of August 2019. As of August 2019, nonbanks collectively owned servicing rights for 67.2 percent of all outstanding unpaid principal balance guaranteed by Ginnie Mae. In December 2013, the nonbank share was much smaller at 27.7 percent.

Top 5 MSR Holders: Outstanding Ginnie Mae Loans by UPB



Share of Ginnie Mae MSRs held by Nonbanks



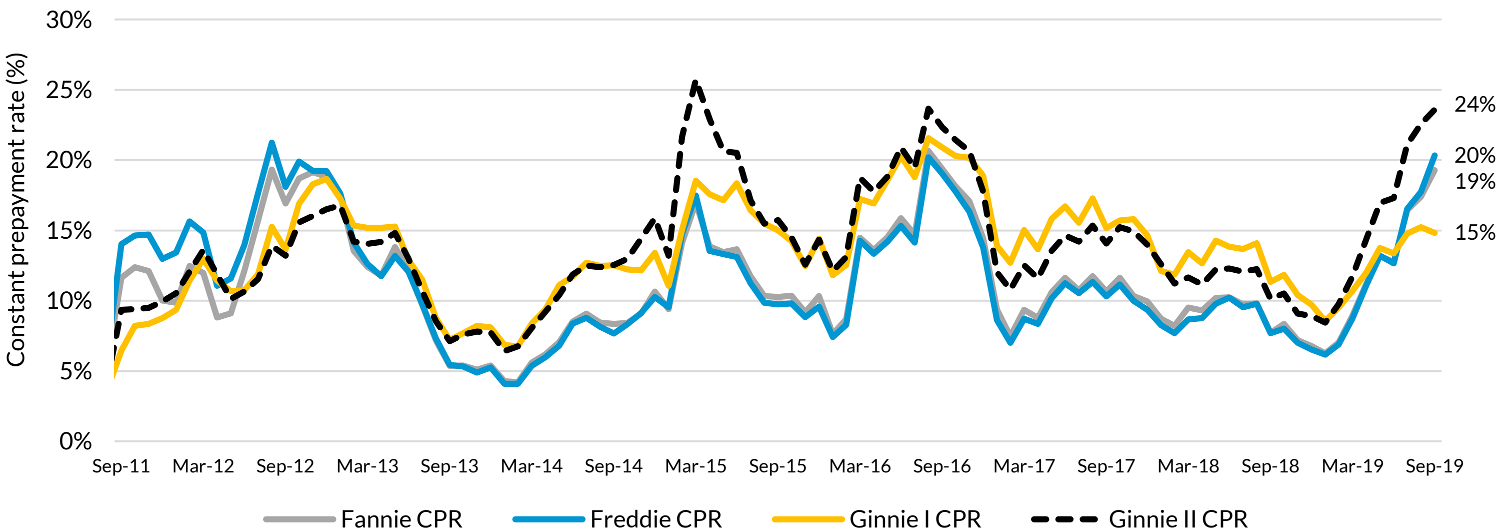
Sources: *eMBS and Urban Institute.* **Note:** *Data as of August 2019.*

Prepayments

Prepayments on Ginnie Mae securities were lower than on GSE securities from 2011 through early-2013, but have been higher since. These increased Ginnie speeds reflect the growing share of VA loans, which tend to prepay faster than either FHA or GSE loans. In addition, FHA puts fewer restrictions on streamlined refinances, and unlike GSE streamline refinances, requires no credit report and no appraisal. Some of the upfront mortgage insurance premium can also be applied to the refinanced loan.

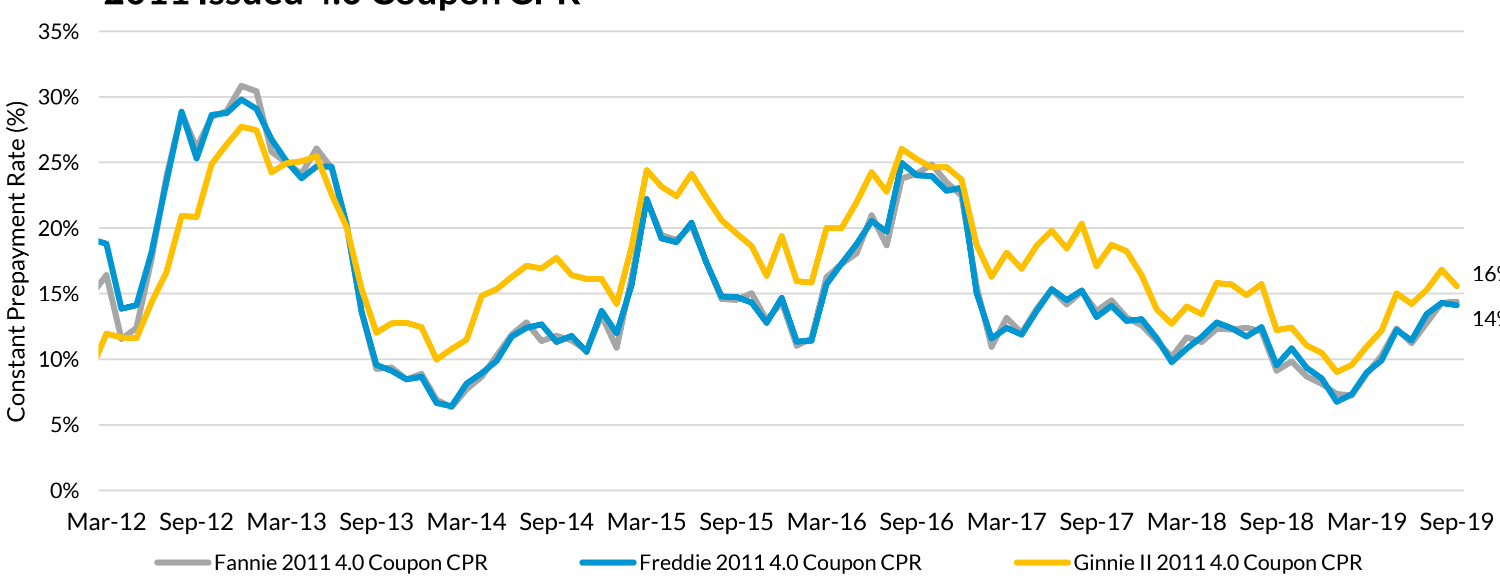
From late 2016 to later 2018, as interest rates increased, the bulk of the mortgage universe found it non-economic to refinance and the prepayment speeds for all agency MBS slowed substantially. The small month-to-month variation in speeds reflected primarily seasonality and changes in day count. With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

Aggregate Prepayments



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

2011 Issued 4.0 Coupon CPR



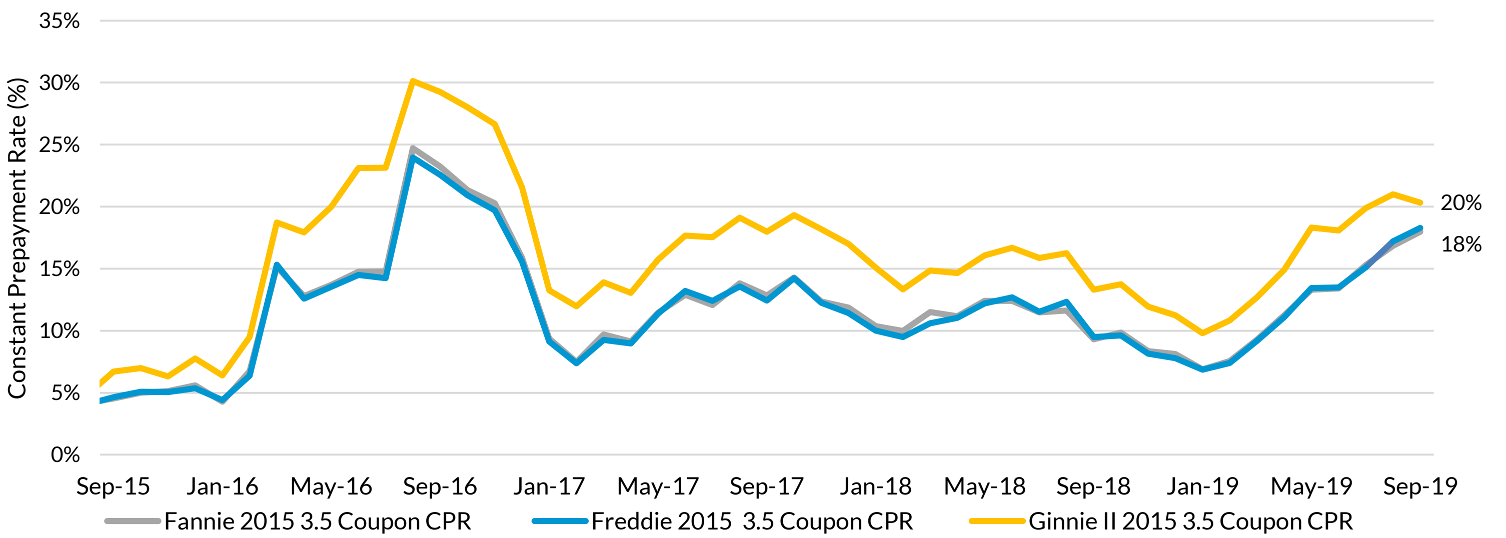
Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of September 2019.*

Prepayments

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

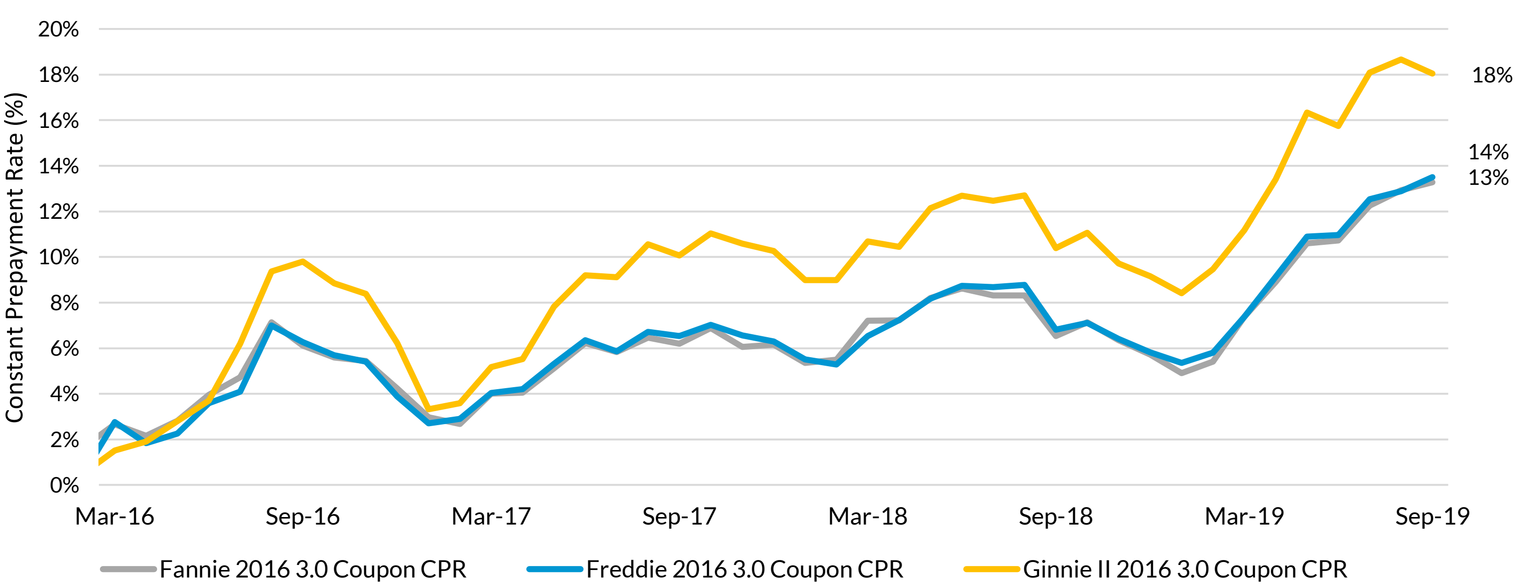
With the increase in interest rates over the 2 year period beginning in November 2016, the prepayment speeds for all agency MBS had slowed. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflected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

2015 Issued 3.5 Coupon CPR



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

2016 Issued 3.0 Coupon CPR

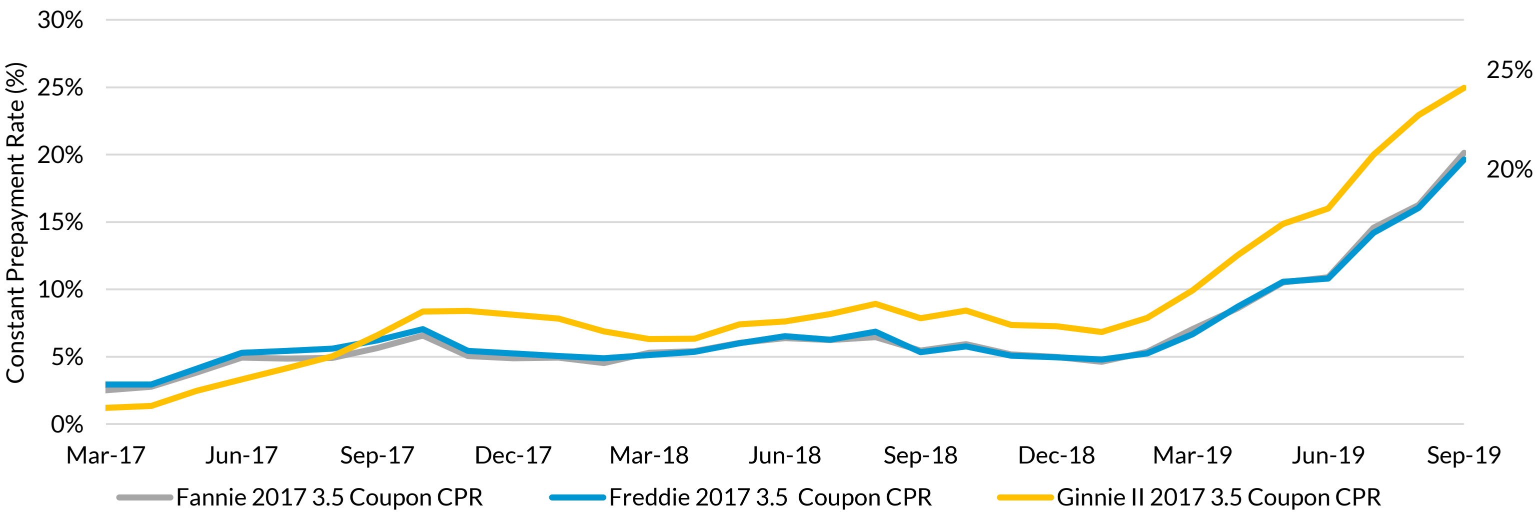


Sources: *Credit Suisse and Urban Institute.* **Note:** *Data as of September 2019.*

Prepayments

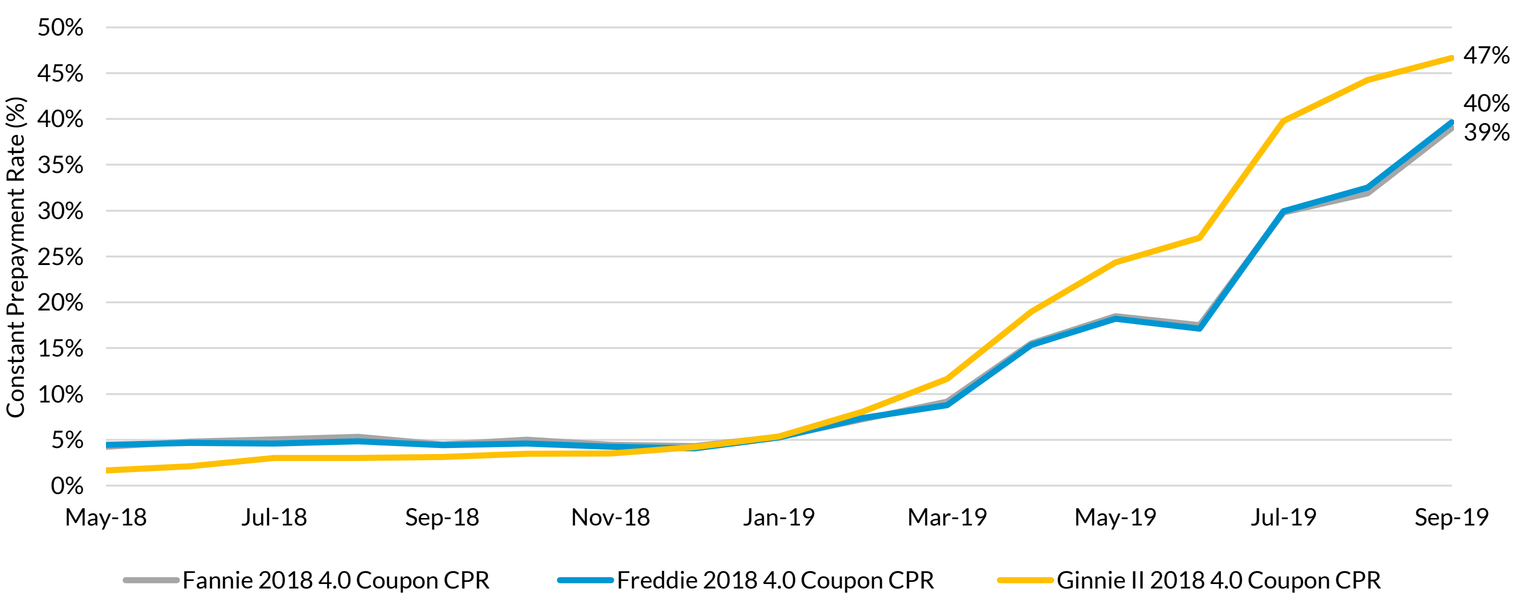
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayment in the early months but are more interest rate responsive thereafter. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of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

2017 Issued 3.5 Coupon CPR



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

2018 Issued 4.0 Coupon CPR

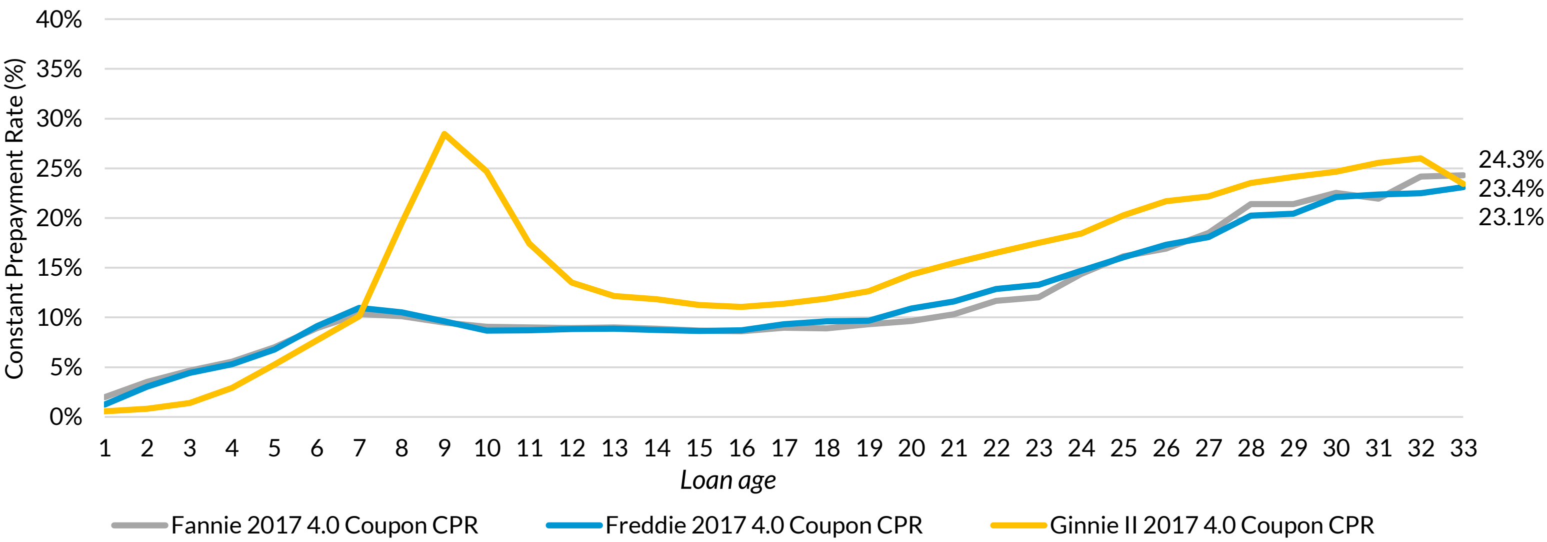


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of September 2019.*

Prepayments

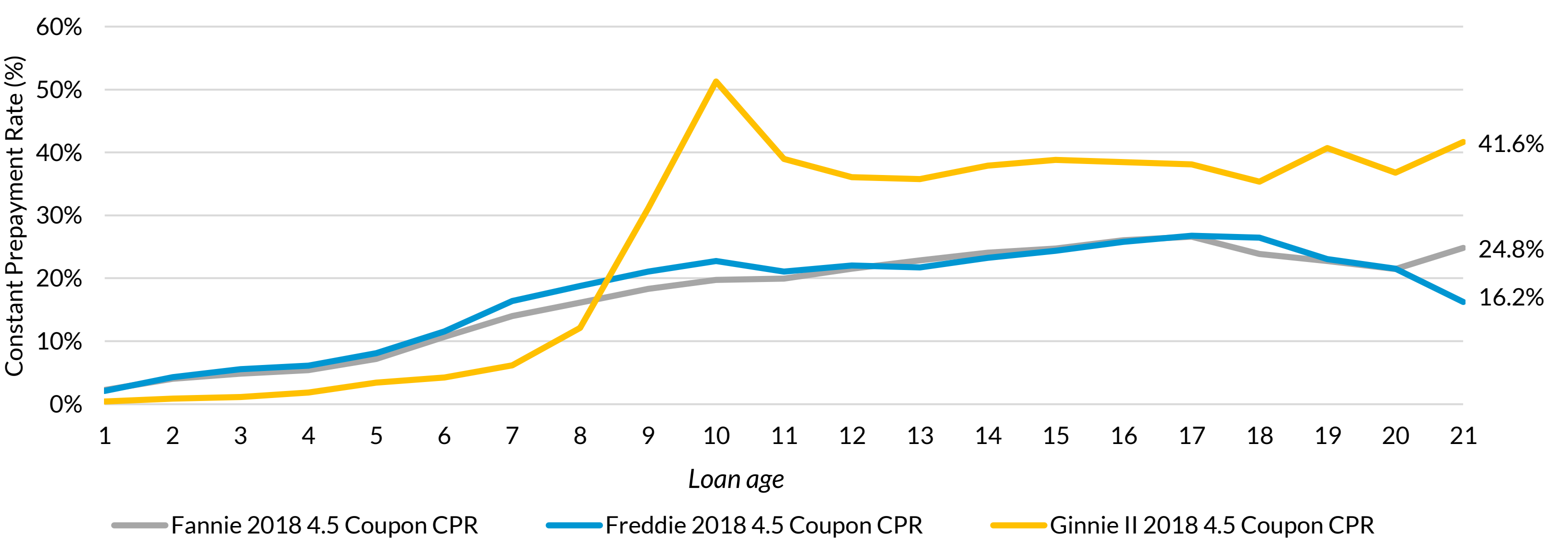
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined Refi program (IRRRL). The 2018 Ginnie II 4.5s do not show increased speeds until the 9-10 month point; reflecting both the effect of lower rates and the actions taken by both Ginnie Mae and the VA in H1 2018 to curb this abuse. Ginnie Mae actions have included suspending a few servicers whose VA prepayment speeds are especially high from selling VA loans into Ginnie Mae II securities, as well as rewriting the pooling requirements so that if loans that do not meet the seasoning requirement are refinanced, the new loan is ineligible for securitization. Ginnie's latest action on this front, effective for securities issued on or after Nov 1 2019, will bar 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 September 2019.*

2018 Issued 4.5 Coupon CPR, by Loan Age

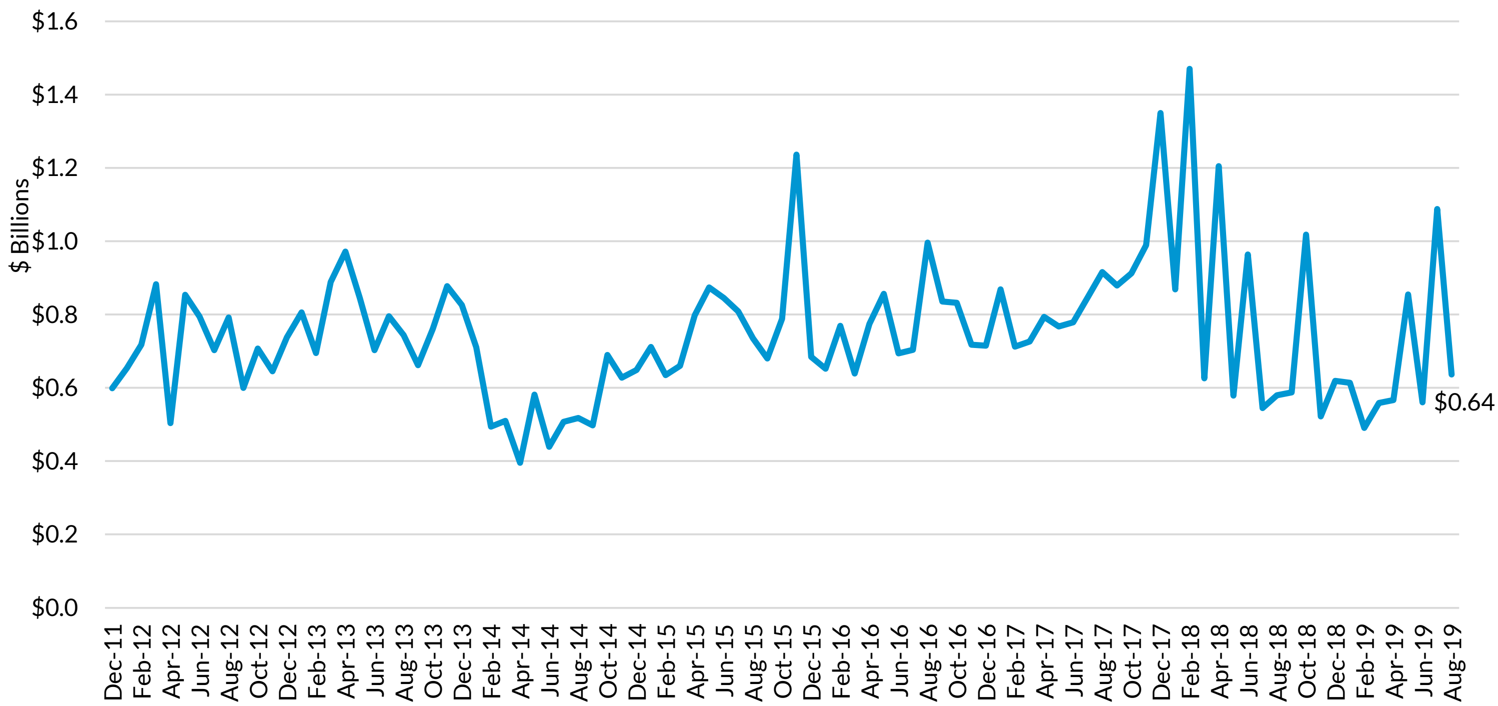


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of September 2019.*

Other Ginnie Mae Programs Reverse Mortgage Volumes

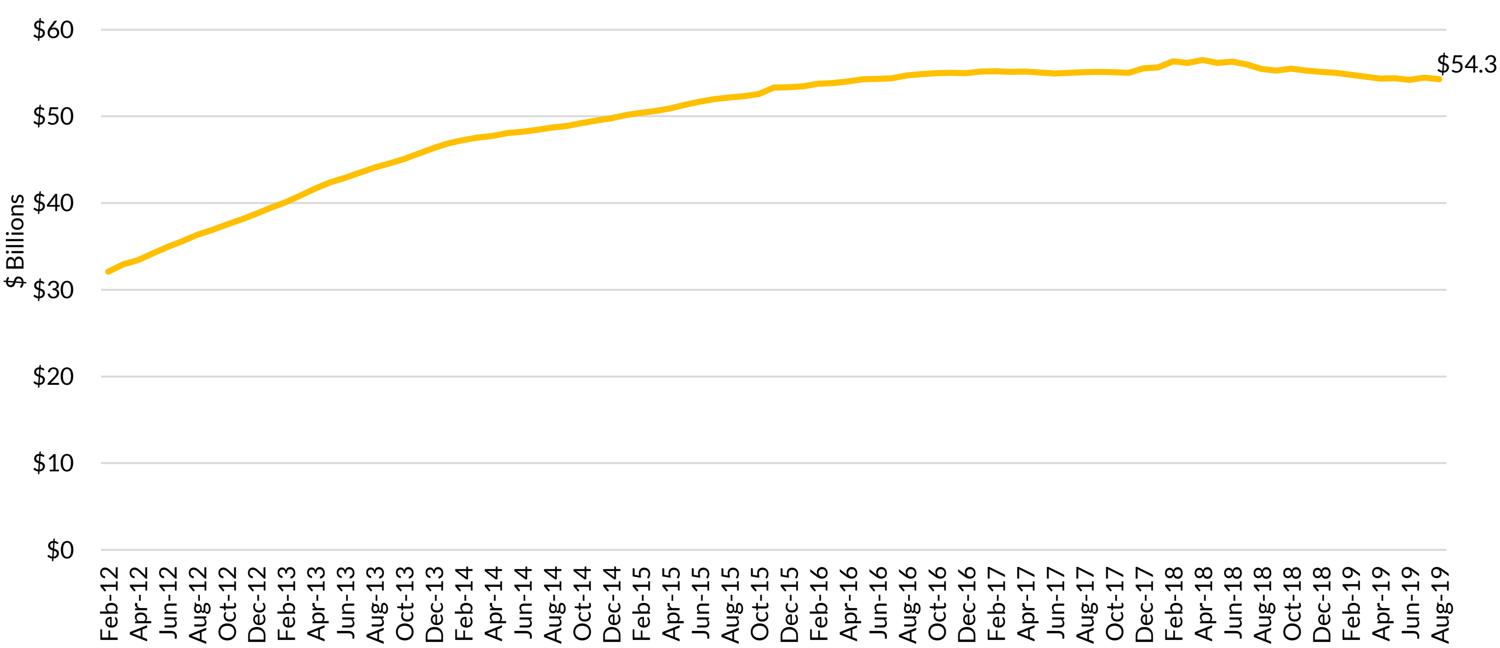
Ginnie Mae reverse mortgage issuance has been volatile in recent months; after increase in July, August 2019 volume dropped to $0.64 billion. Issuance has been declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In August 2019, outstanding reverse mortgage securities totaled $54.3 billion, lower compared to recent past, reflecting a lower volume of new issuances.

HMBS Issuance Volume



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

HMBS Outstanding

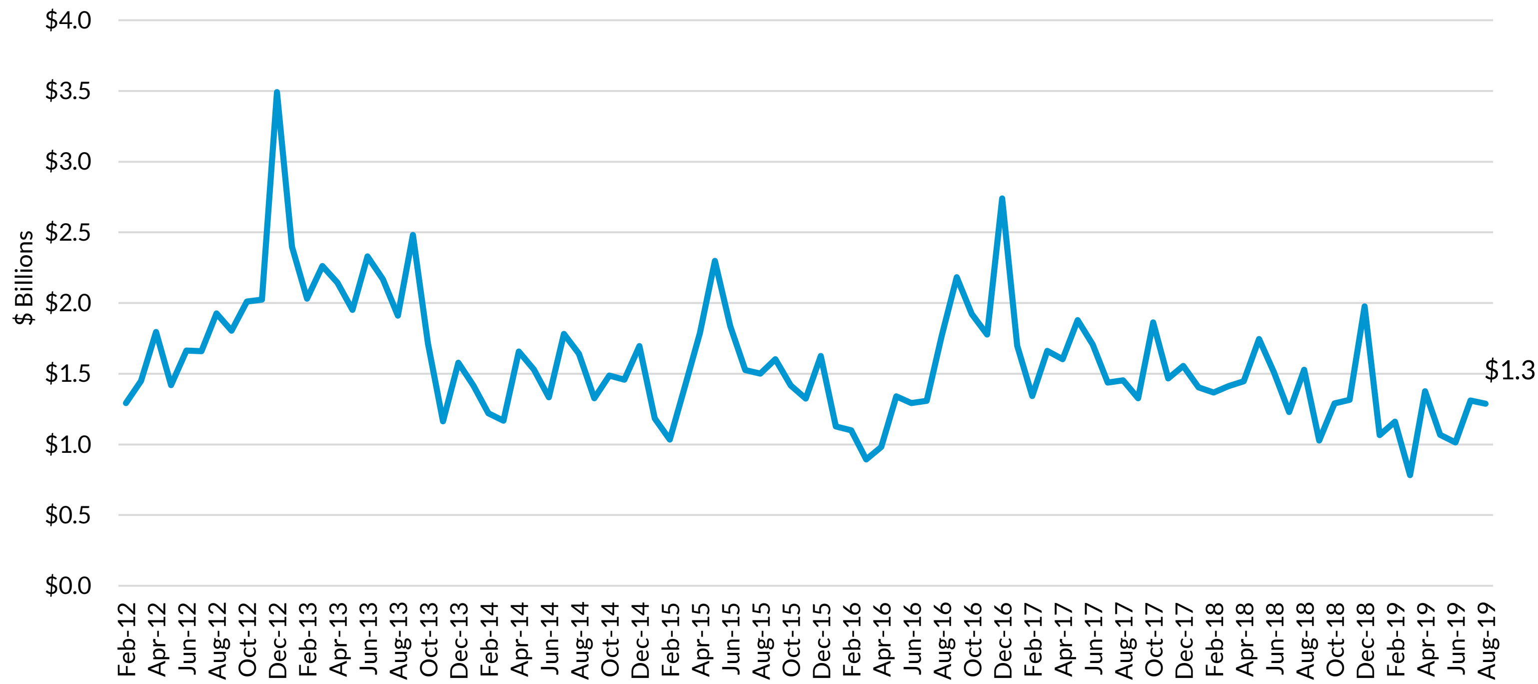


Sources: *Ginnie Mae and Urban Institute.* **Note:** *Data as of Aigist 2019.*

Other Ginnie Mae Programs Multifamily Market

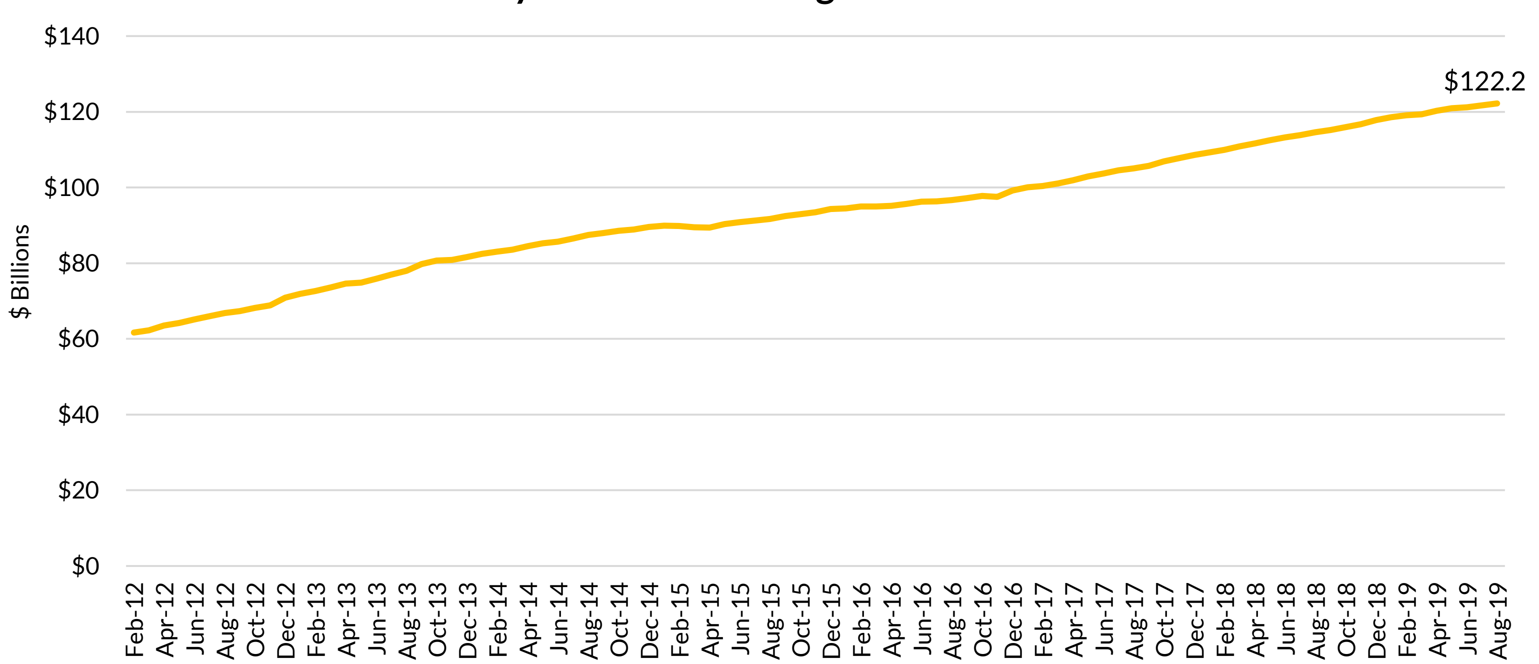
Ginnie Mae multifamily issuance volume in August 2019 totaled $1.3 billion, in slight decrease from the past month and below average issuance levels over the past 18 months. Outstanding multifamily securities totaled $122.2 billion in August.

Ginnie Mae Multifamily MBS Issuance



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

Ginnie Mae Multifamily MBS Outstanding

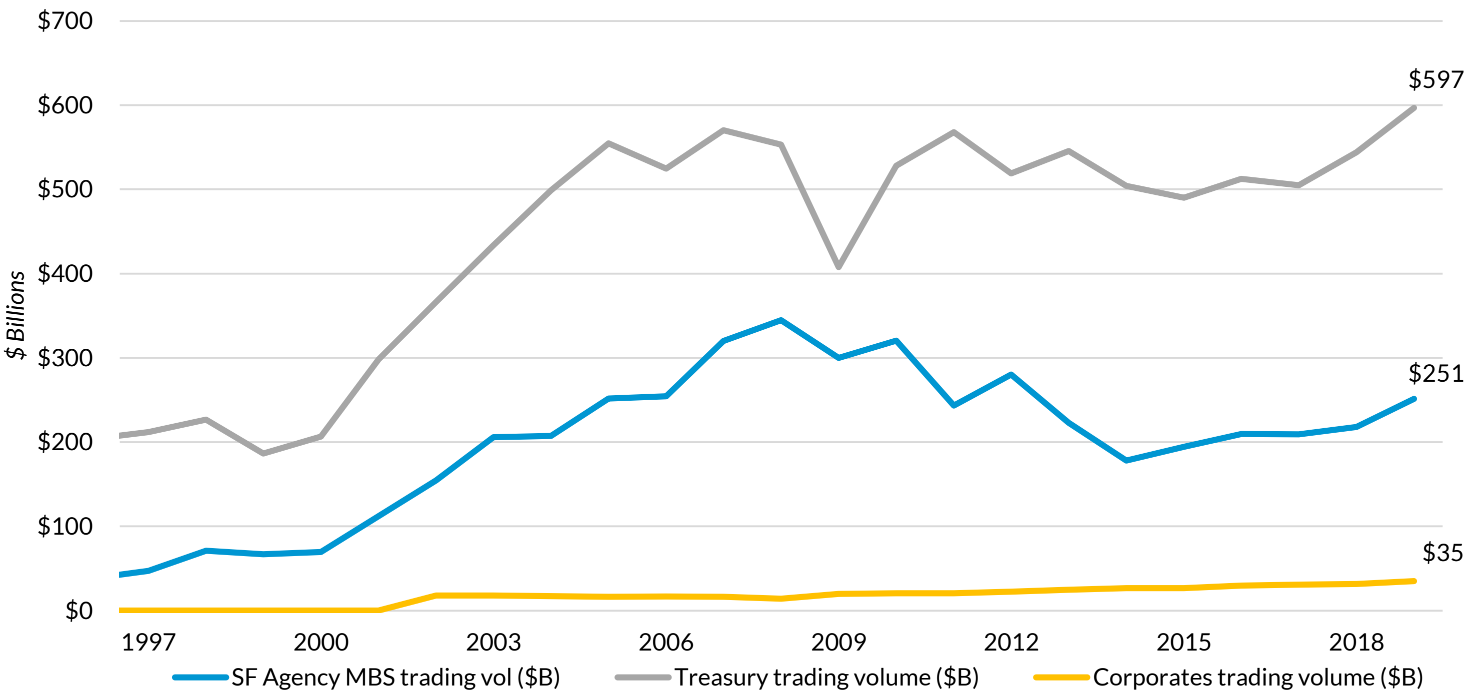


Sources: *Ginnie Mae and Urban Institute.* **Note**: *Data as of August 2019.*

Market Conditions

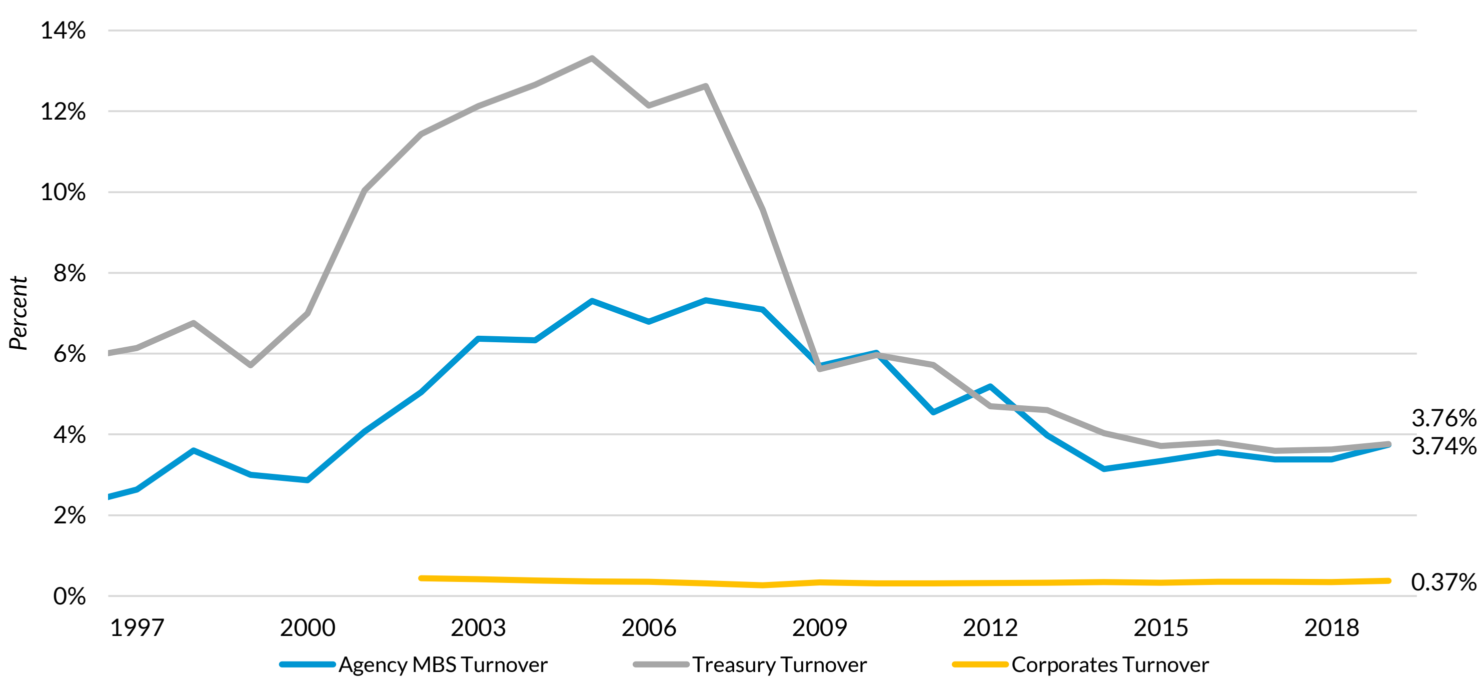
Agency MBS trading volume was $251 billion/day on average 2019 YTD, more robust than in the 2014-2018 period, but well below the pre-crisis peak of $345 billion in 2008. In contrast, average daily trading volume for Treasuries now exceeds the pre-crisis peak. Agency MBS turnover in 2019 YTD also has been slightly higher than the 2014-2018 period; in the first nine months of 2019, average daily MBS turnover was 3.74 percent, above the 2018 average of 3.39 percent. Both average daily mortgage and Treasury turnover are down from their pre-crisis peaks. Corporate turnover is miniscule relative to either Agency MBS or Treasury turnover.

Average Daily Fixed Income Trading Volume by Sector



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

Average Daily Turnover by Sector

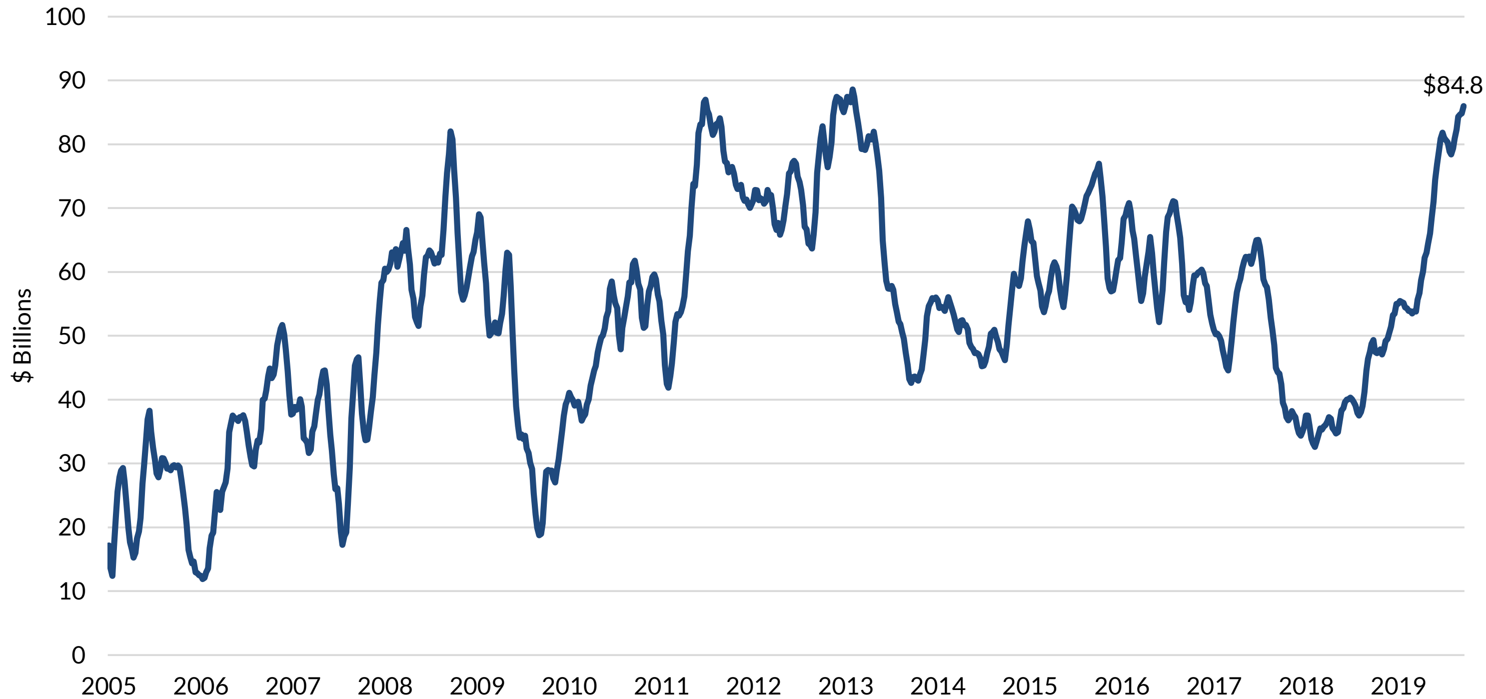


Sources: *SIFMA and Urban Institute.* ***Note:*** *Data as of September 2019.*

Market Conditions

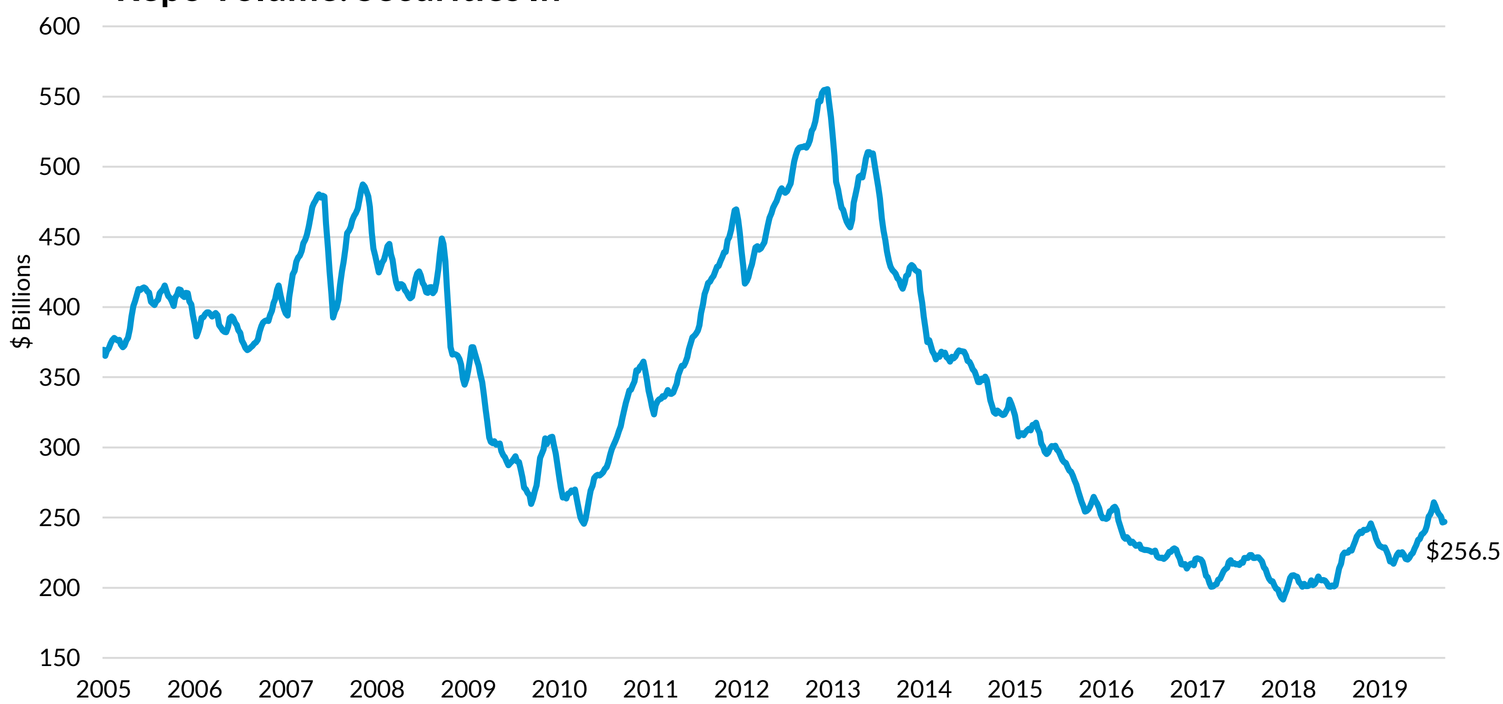
Dealer net positions are near their post-crisis highs. By contrast, dealer gross positions have fallen dramatically. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

Dealer Net Positions: Federal Agency and GSE MBS



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

Repo Volume: Securities In

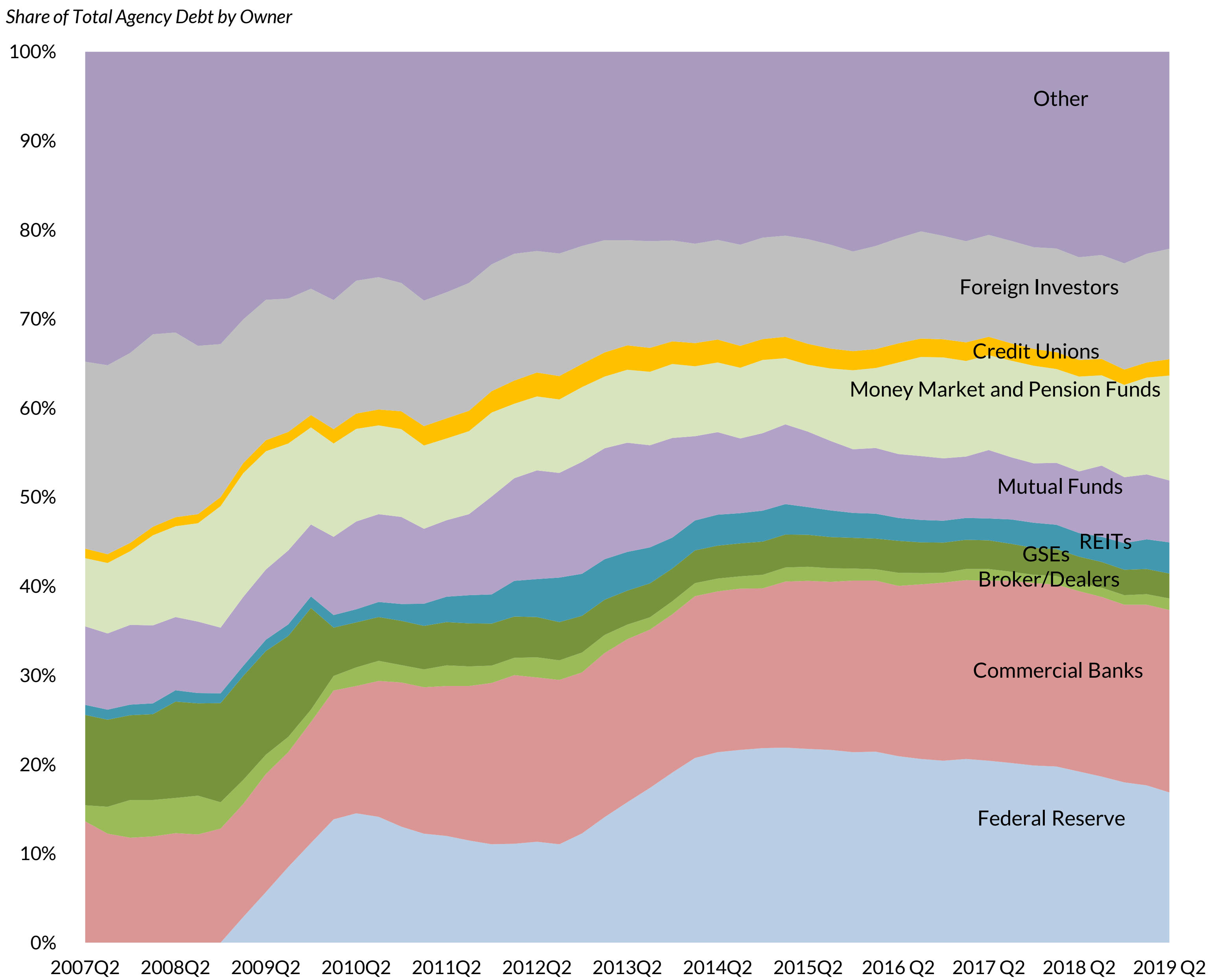


Sources: *Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute.* **Note:** *Data as of September 2019.*

MBS Ownership

The largest holders of agency debt (Agency MBS + Agency notes and bonds) include the Federal Reserve (17 percent), commercial banks (20 percent) and foreign investors (12 percent). The broker/dealer and GSE shares are a fraction of what they once were.

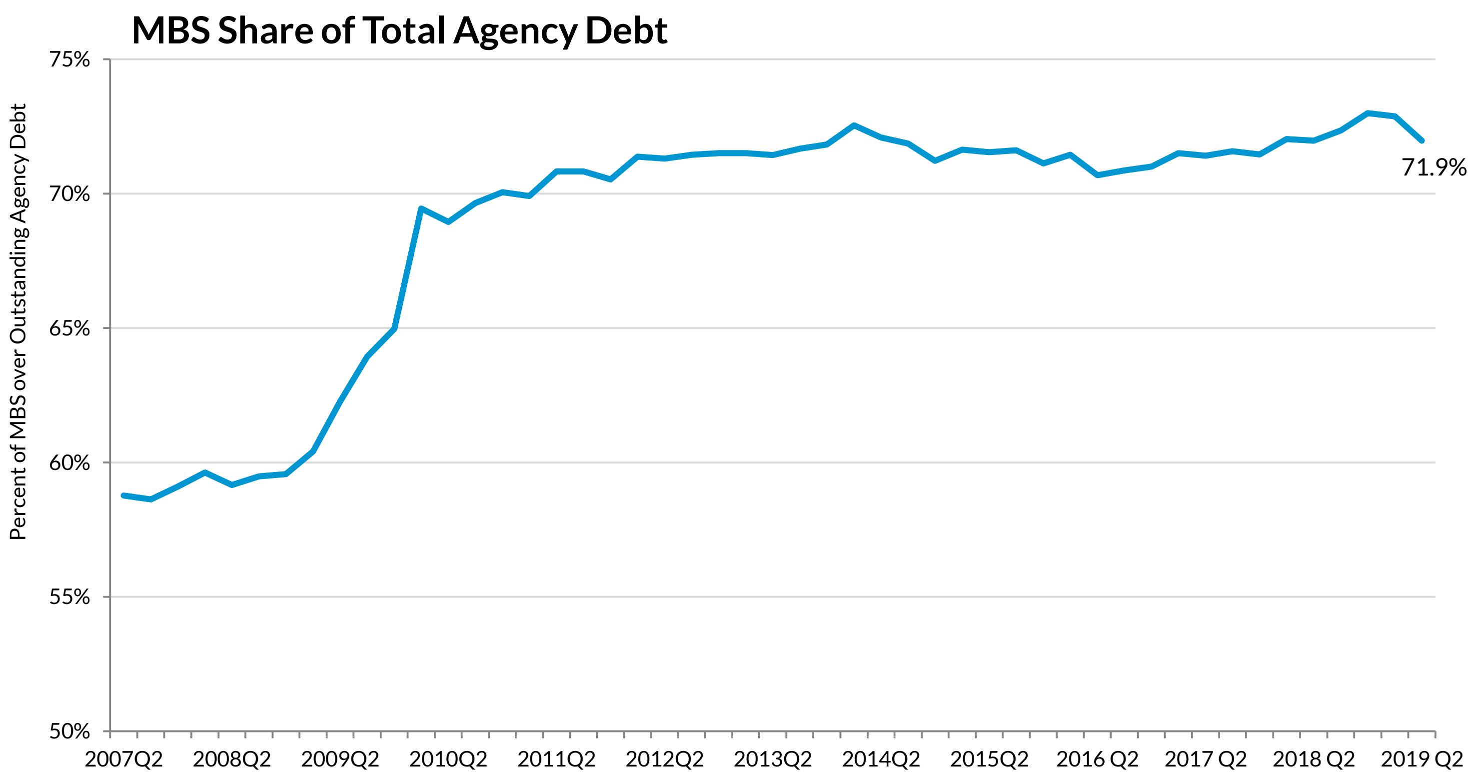
Who owns Total Agency Debt?



Sources: *Federal Reserve Flow of Funds and Urban Institute.* **Note**: *Data as of Q2 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 Q2 2019, the MBS share of total agency debt stood at 71.9 percent. Commercial banks are now the largest holders of Agency MBS. Out of their $2.1 trillion in holdings as of the end of September 2019, $1.5 trillion was held by the top 25 domestic banks.



***Sources**: Federal Reserve Flow of Funds and Urban Institute. **Note**: Data as of Q2 2019.*

	Commercial Bank Holdings ($Billions)								Week Ending			
	Aug-18	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep 4	Sep 11	Sep 18	Sep 25
Largest 25 Domestic Banks	1,319.1	1,399.8	1,412.8	1,431.0	1,434.2	1,452.0	1,455.0	1,465.0	1,479.8	1,487.7	1,491.4	1,493.9
Small Domestic Banks	484.7	493.0	495.7	501.0	502.4	506.6	512.1	513.2	516.0	516.4	517.7	519.9
Foreign Related Banks	24.6	25.5	26.5	26.6	29.0	27.7	28.3	33.1	34.8	35.2	32.4	36.4
Total, Seasonally Adjusted	1,828.4	1,918.3	1,935.0	1,958.6	1,965.6	1,986.3	1,995.4	2,011.3	2,030.6	2,039.3	2,041.5	2,050.2

***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 September 2019.*

MBS Ownership

Out of the $1.8 trillion in MBS holdings at banks and thrifts as of Q2 2019, $1.4 trillion was agency pass-throughs: $1.0 trillion in GSE pass-throughs and $408 billion in Ginnie Mae pass-throughs. Another $422 billion was agency CMOs, while non-agency holdings totaled $40 billion. MBS holdings at banks and thrifts increased for the third quarter in a row in Q2 2019. This increase was broad based, coming from Ginnie Mae and GSE pass-throughs, agency CMOs as well as non-agency holdings.

Bank and Thrift Residential MBS Holdings

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

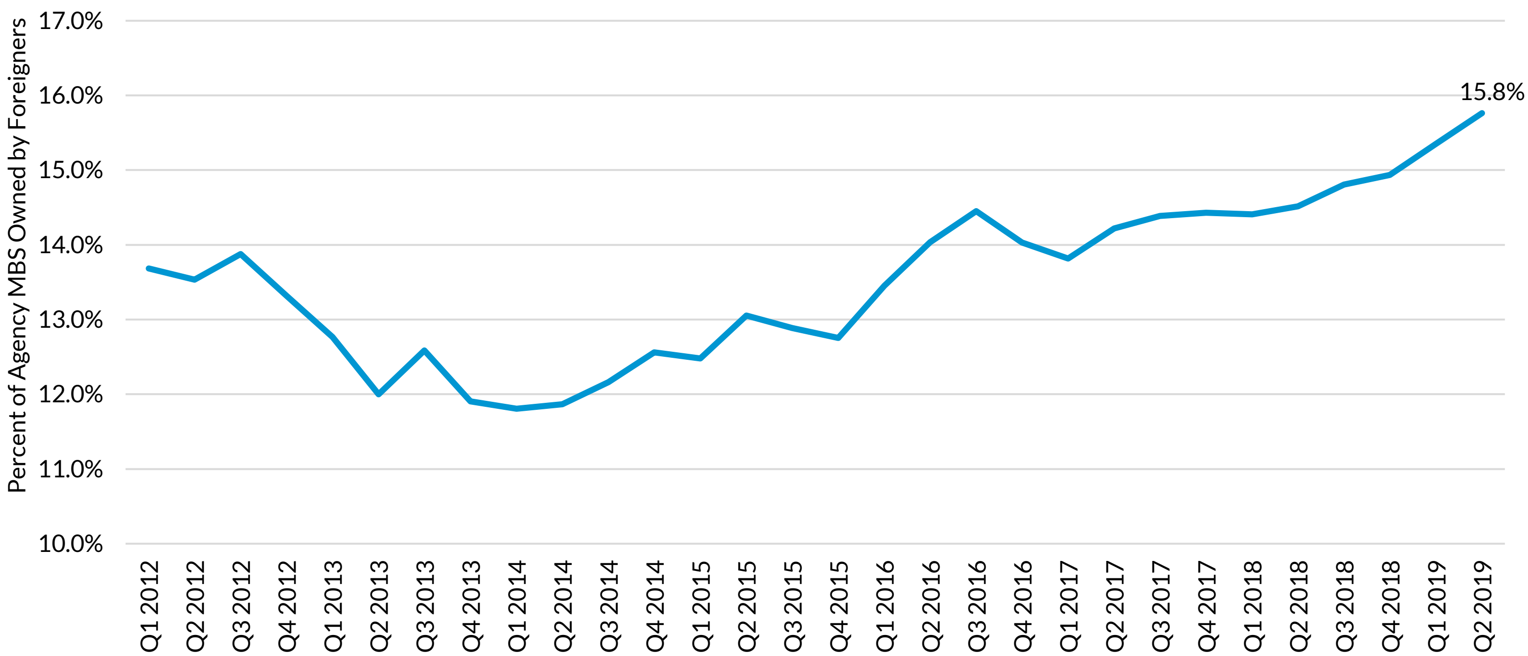
	Top Bank & Thrift Residential MBS Investors	Total ($MM)	GSE PT ($MM)	GNMA PT ($MM)	Agency REMIC ($MM)	Non-Agency ($MM)	Market Share
1	Bank of America Corporation	$321,350	$189,813	$120,254	$11,182	$101	16.8%
2	Wells Fargo & Company	$242,666	$170,698	$67,268	$3,437	$1,263	12.7%
3	JP Morgan Chase & Co.	$122,486	$77,351	$32,145	$250	$12,740	6.4%
4	U S. Bancorp.	$86,589	$40,367	$23,172	$23,050	$1	4.5%
5	Charles Schwab Bank	$85,873	$50,421	$16,665	$18,787	$0	4.5%
6	Capital One Financial Corporation	$66,636	$53,951	$3,427	$7,099	$2,159	3.5%
7	Citigroup Inc.	$66,505	$28,528	$14,430	$22,657	$890	3.5%
8	Bank of New York Mellon Corp.	$54,168	$31,612	$3,769	$17,473	$1,314	2.8%
9	PNC Bank, National Association	$51,679	$43,569	$3,437	$2,467	$2,208	2.7%
10	Branch Banking and Trust Company	$41,845	$19,522	$12,602	$7,084	$2,637	2.2%
11	State Street Bank and Trust Company	$39,065	$13,582	$5,882	$19,219	$382	2.1%
12	E*TRADE Bank	$26,428	$14,621	$7,586	$4,221	$0	1.4%
13	HSBC Banks USA, National Association	$26,110	$6,683	$9,981	$9,444	$2	1.4%
14	KeyBank National Association	$23,235	$11,550	$11,224	$462	$0	1.2%
15	SunTrust Bank	$22,534	$1,683	$836	$20,015	$0	1.2%
16	Morgan Stanley	$22,399	$13,594	$2,537	$3,462	$2,806	1.2%
17	Ally Bank	$21,975	$10,778	$5,785	$4,517	$895	1.2%
18	The Northern Trust Company	$21,969	$9,897	$3,365	$8,707	$0	1.2%
19	MUFG Union Bank	$17,558	$11,200	$3,843	$2,513	$2	0.9%
20	Regions Bank	$16,871	$5,293	$3,517	$7,140	$921	0.8%
	Total Top 20	**$1,377,942**	**$804,712**	**$351,724**	**$193,185**	**$28,321**	**72.2%**

Sources: *Inside Mortgage Finance and Urban Institute.* ***Note:*** *Data as of Q2 2019.*

MBS Ownership

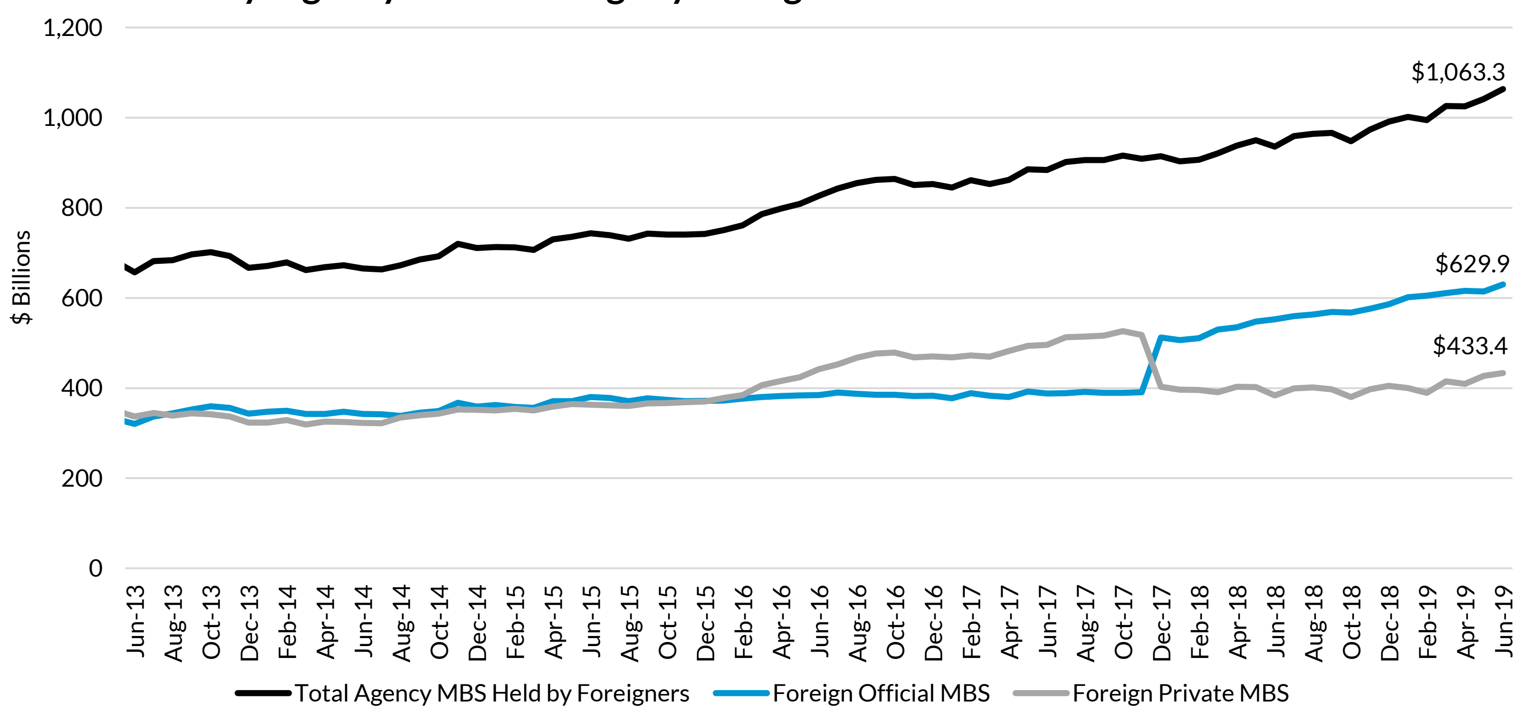
Foreign investors held 15.8 percent of agency MBS in Q2 2019, up from a low of 11.8 percent in Q1 2014. For the month of June 2019, this represents $1.06 trillion in Agency MBS, $433.4 billion held by foreign private institutions and $629.9 billion held by foreign institutions.

Foreign Share of Agency MBS



***Sources**: SIFMA and Treasury International Capital (TIC). **Note**: Data as of Q2 2019.*

Monthly Agency MBS Holdings by Foreigners



***Sources**: Treasury International Capital (TIC) and Urban Institute. **Note**: Data as of June 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 June 2019, we estimate China has increased their agency MBS holdings by $46.5 billion, Taiwan has increased their holdings by $15.5 billion, and Japan has increased their holdings by $38.8 billion.

Agency MBS+ Agency Debt

	Level of Holdings ($Millions)*					Change in Holdings ($Millions)*			
Country	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019
Japan	257,547	254,511	262,771	284,323	296,445	-3,036	8,260	12,323	12,123
Taiwan	250,009	250,639	261,231	265,992	265,520	630	10,592	4,730	-472
China	180,635	190,203	188,921	208,540	227,312	9,568	-1,282	19,619	18,772
Ireland	46,817	48,220	48,045	46,623	44,979	1,403	-175	-1,422	-1,644
Luxembourg	36,372	38,800	50,079	44,561	45,144	2,428	11,279	-6,308	583
South Korea	44,039	43,944	44,735	42,604	42,669	-95	791	-2,190	65
Bermuda	27,866	27,610	27,721	29,104	29,377	-256	111	-116	842
Cayman Islands	31,017	31,638	31,379	30,375	30,885	621	-259	-1,031	511
Malaysia	12,710	12,874	12,671	12,395	12,108	164	-203	-276	-287
Netherlands	11,995	12,229	9,618	9,400	13,548	234	-2,611	-201	4,148
Rest of World	125,197	128,807	130,345	129,998	128,056	3,610	1,538	642	-1,931
Total	1,024,200	1,039,475	1,067,516	1,103,915	1,136,043	15,275	28,041	25,770	32,710

Agency MBS Only (Estimates)

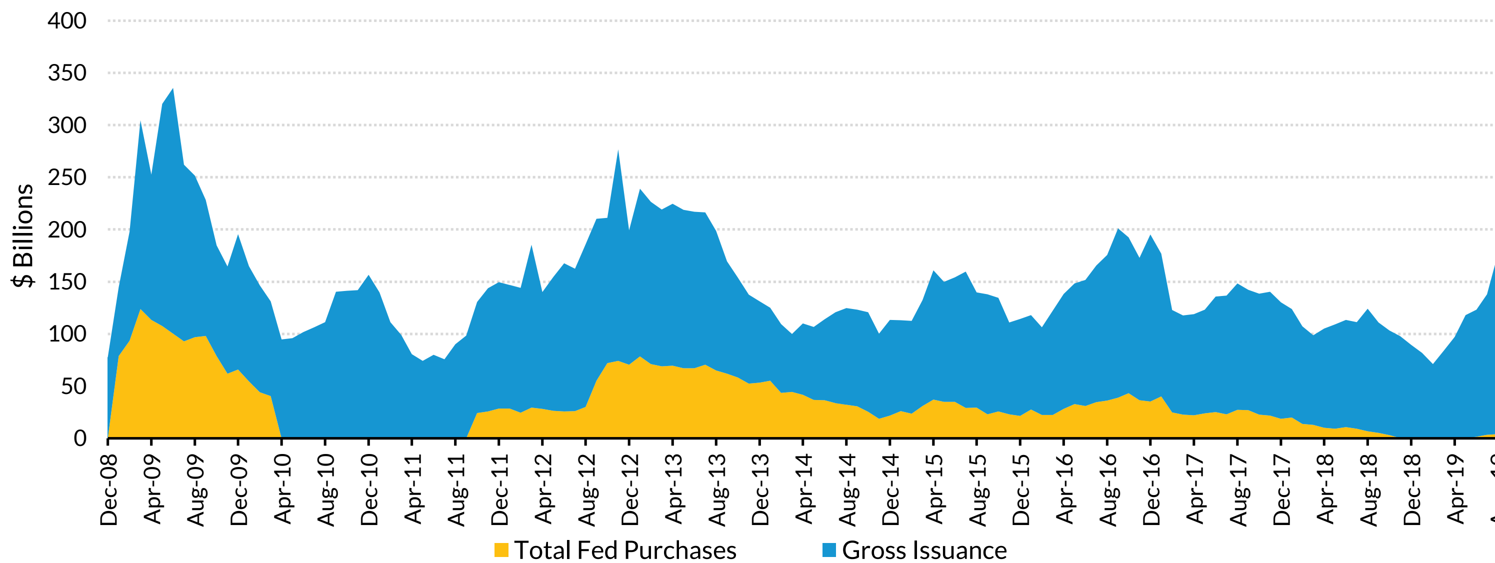
	Level of Holdings ($Millions)*					Change in Holdings ($Millions)*			
Country	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019
Japan	253,972	250,851	258,909	280,366	292,762	-3,121	8,058	12,275	12,368
Taiwan	249,773	250,397	260,976	265,731	265,277	624	10,579	4,727	-456
China	176,345	185,811	184,287	203,791	222,893	9,466	-1,524	19,562	19,066
Ireland	37,832	39,021	38,339	36,677	35,723	1,189	-682	-1,542	-1,028
Luxembourg	34,012	36,384	47,530	41,949	42,713	2,372	11,146	-6,339	745
South Korea	33,064	32,708	32,879	30,455	31,363	-356	171	-2,336	817
Bermuda	24,969	24,644	24,592	25,897	26,393	-325	-53	-155	1,040
Cayman Islands	24,384	24,847	24,214	23,033	24,052	463	-634	-1,119	965
Malaysia	12,319	12,474	12,249	11,962	11,705	155	-225	-281	-260
Netherlands	11,437	11,658	9,015	8,782	12,973	221	-2,643	-208	4,186
Rest of World	95,510	98,414	98,276	97,137	97,473	2,904	-138	247	103
Total	953,612	967,209	991,264	1,025,779	1,063,325	13,597	24,055	24,831	37,546

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 June 2019.*

MBS Ownership

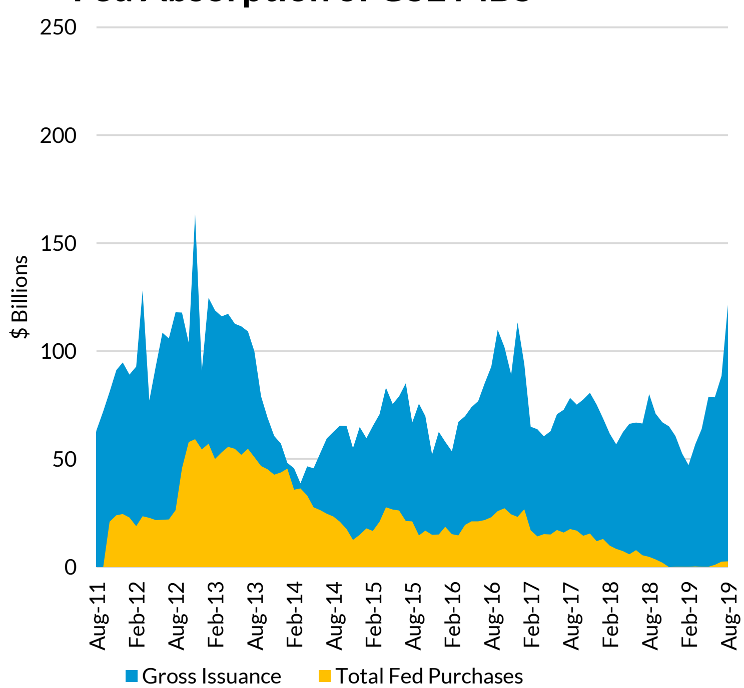
The Federal Reserve is actively winding down its mortgage portfolio; MBS purchases are very low. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross 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 2.18 percent in August.

Total Fed Absorption



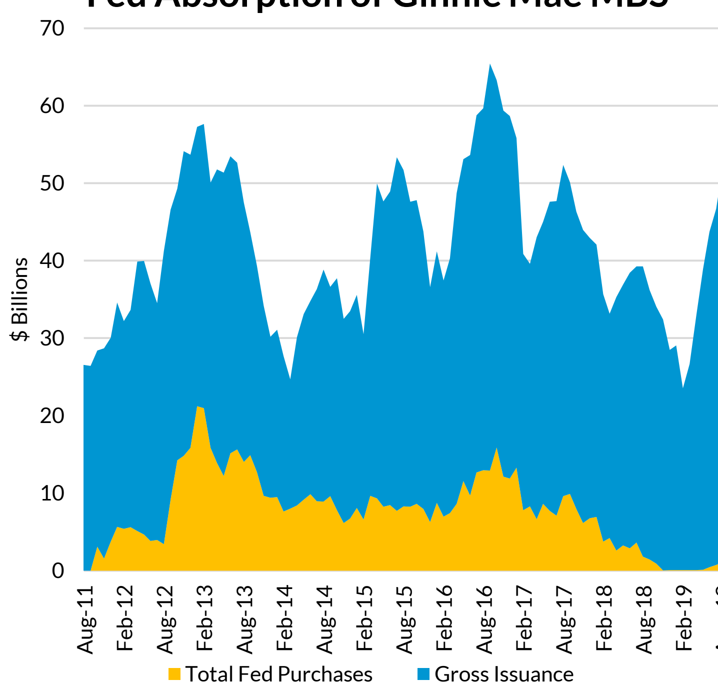
***Sources**: eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note:** Data as of August 2019.*

Fed Absorption of GSE MBS



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

Fed Absorption of Ginnie Mae MBS



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

Disclosures

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