Global Markets Analysis Report

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

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Ginnie Mae
Our Guaranty Matters

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

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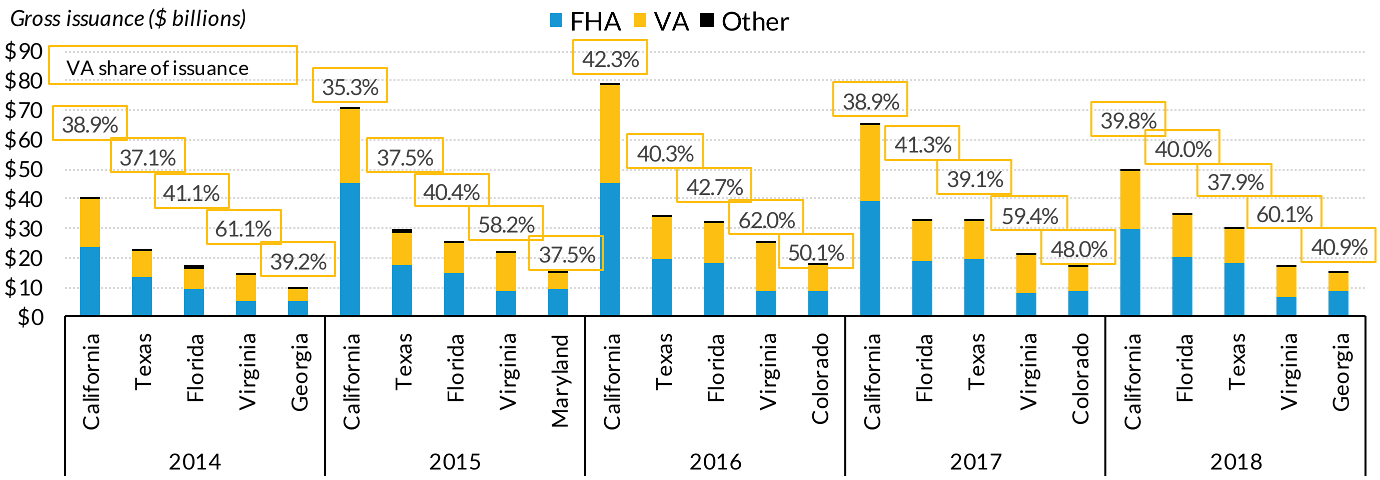
HIGHLIGHTS

Trends in Ginnie Mae Issuance by State

Ginnie Mae MBS constitutes 31 percent, or just under a third of all outstanding agency MBS, as illustrated on page 13 of this report. In general, Ginnie Mae's share is higher in states with lower home prices, which is a reflection of the borrower s served in our program. By state, Ginnie Mae's share varies greatly, being as low as 16% in D.C. and as high as 52% in Alaska.

Additional insights emerge from an analysis of annual flow issuance by state. Figure 1 below shows the five largest states for Ginnie Mae based on dollar volume of issuance. Each year from 2014 to 2018, the largest volume of Ginnie Mae issuance came from California, ranging from $23 billion to $45 billion. The next three largest issuance states were Texas, Florida and Virginia, often, but not always, in that order. The 5th largest state varied year to year but was either Georgia, Maryland or Colorado.

Figure 1: States with highest Ginnie Mae Issuance (top 5)



Source: eMBS and Urban Institute

The list of top 5 states by volume is largely expected. California, Texas and Florida are among a handful of states with high house prices and large populations helping boost issuance volumes. When looking across years, Figure 1 demonstrates that issuance volumes declined for most states in 2017 and 2018, as higher mortgage rates post-2016 curtailed refinance activity. Also, despite strong growth in loan volumes in recent years, VA lags FHA in each of the top 5 states, except Virginia, where VA's volume and share both exceed that of FHA (see Figure 2). This largely reflects the large concentration of veteran population in Virginia.

Figure 2: Breakdown of Issuance Volume and Credit Characteristics for 2018 Ginnie Issuances

	CA		FL		TX		VA		GA	
	FHA	VA	FHA	VA	FHA	VA	FHA	VA	FHA	VA
2018 Issuance ($ Bil)	$30	$19	$21	$14	$19	$12	$7	$11	$9	$6
Wtd. Avg FICO	672	709	669	710	661	707	672	722	664	701
Wtd. Avg LTV (%)	91.78	92.50	94.37	95.89	96.54	97.25	94.52	96.14	94.34	96.91
Wtd. Avg DTI (%)	45.96	45.14	44.94	42.71	44.63	43.19	43.32	41.34	43.31	40.95
Wtd. Avg Rate (%)	4.57	4.32	4.64	4.39	4.79	4.40	4.53	4.29	4.66	4.41

Source: eMBS and Urban Institute

Figure 2 also shows key credit characteristics for each of the 5 states in 2018. It shows that CA and Virginia had the highest average FHA FICO in 2018 (672 in both cases), while Virginia had the highest VA FICO (722). CA had the lowest LTV and the highest DTI for both FHA and VA loans. When comparing FHA to VA across states, FHA loans had higher average DTI, lower FICO, lower LTV, and higher note rate than VA in each of the 5 states in 2018.

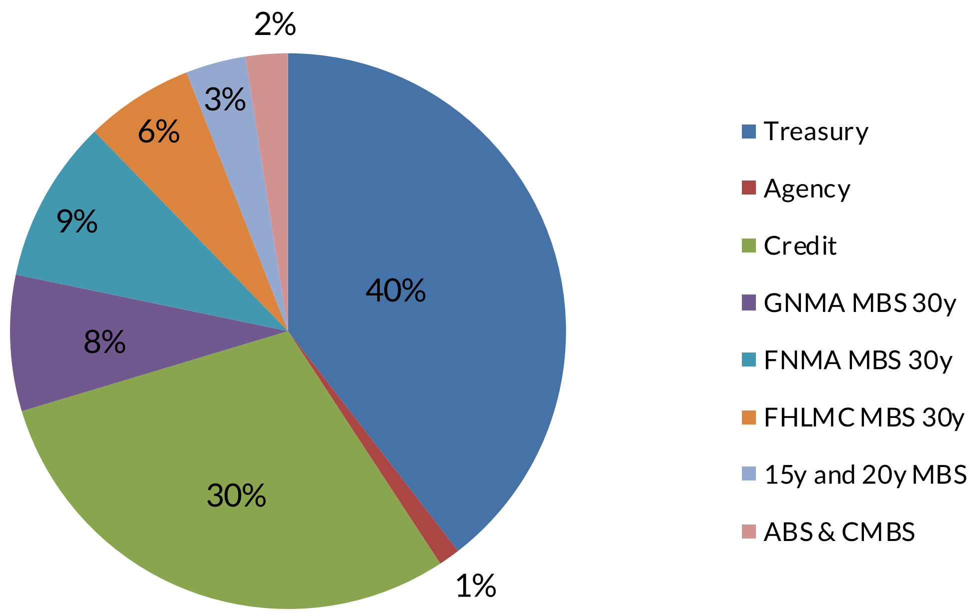
***Highlights this month*:**

- The share of originations held in portfolio increased by 8 percentage points in the first quarter of 2019 (page16).
- PLS origination volume is up 64.5 percent year-over-year in the first quarter of 2019 (page 16).
- The Ginnie Mae first time homebuyer share hit a new peak of 72.6 percent in May 2019 (page 21).
- The median DTI on Ginnie Mae originations in May 2019 fell to 42.9 percent, compared to 43.2 percent in April (page 26).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

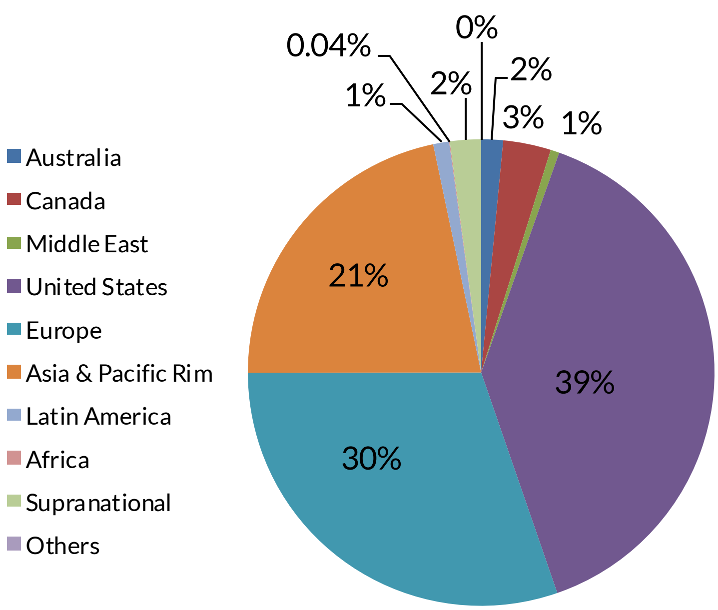
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 27 percent of the Barclays US Aggregate Index - less than either the US Treasury share (40 percent) or the US Credit share (30 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (9 percent), while Ginnie Mae 30-year MBS and 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 39 percent of the global total. US MBS comprises 11 percent of the global aggregate.

Barclays US Aggregate Index



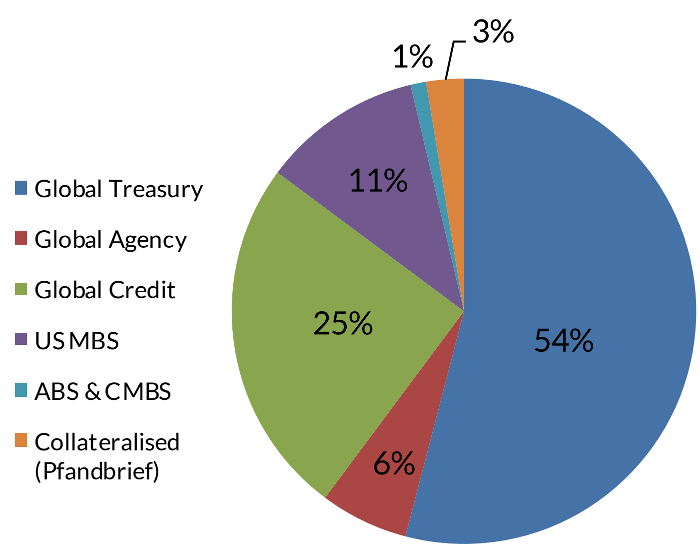
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of June 2019.*
Note: Numbers in chart may not add to 100 percent due to rounding.

Barclays Global Aggregate Index by Country



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

Barclays Global Aggregate Index by Sector

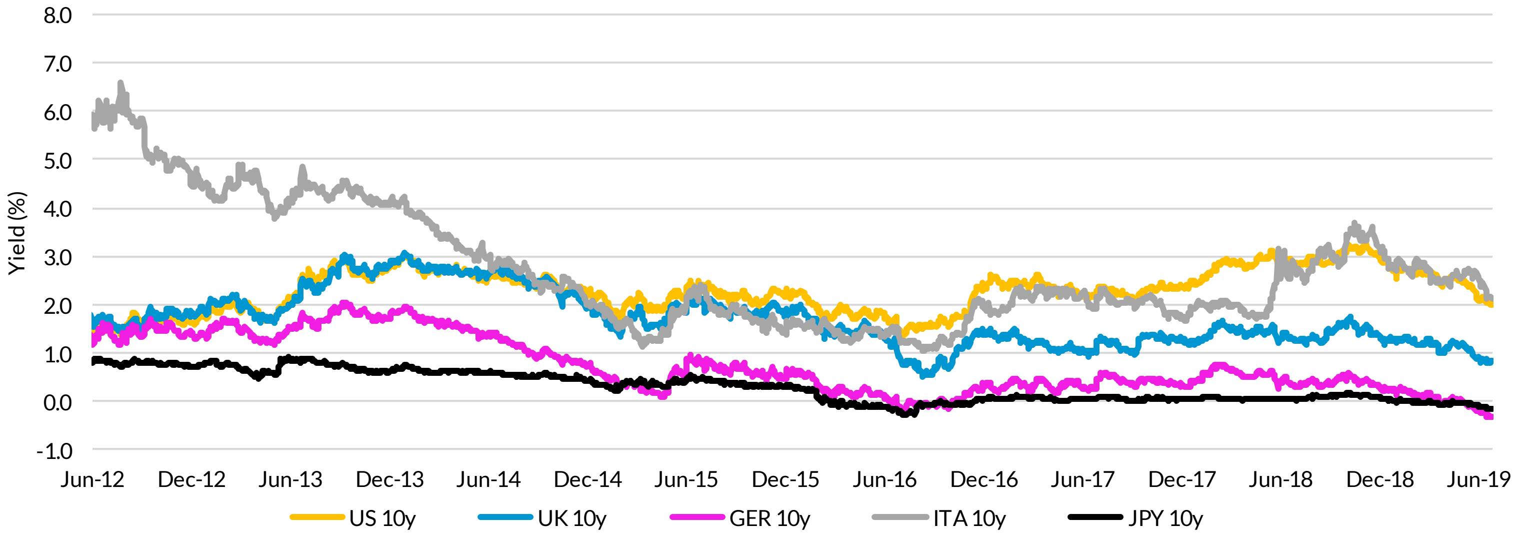


Sources: *Bloomberg and State Street Global Advisors*
Note: *Data as of June 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

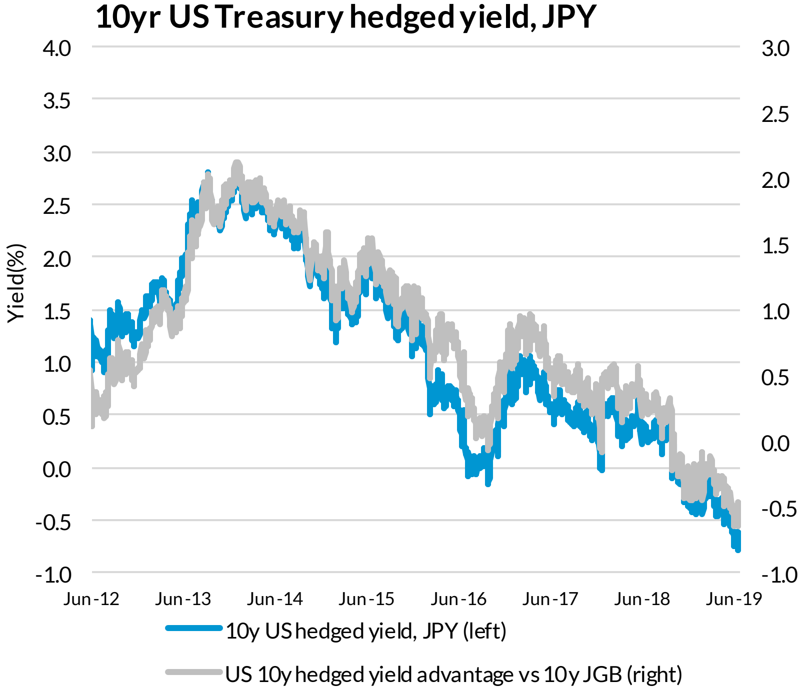
US 10-year Treasury yields have generally been the highest in the developed world over the past few years, but since August 2018, have been neck-in-neck with Italy. In June 2019, yield on the US 10-year note declined 12 bps to 2.01 percent, below the 2.10 percent for the Italian 10-year note. This largely reflects weakness in economic data recently and worries about tariffs and potential trade wars. It also reflects expectations that the Fed will cut rates in the second half of this year. In the UK, Germany, and Japan, 10-year government bond yields decreased to 0.83, -0.33, and -0.16 percent, respectively. At the end of June, the hedged yield differential between the 10-year Treasury and the 10-year JGB stood at -51 bps, an increase of 10 bps since May. The hedged yield differential between the 10-year Treasury and the 10-year Bund stands at -54 bps, an increase of 19 bps since the end of May.

Global 10-year Treasury Yields



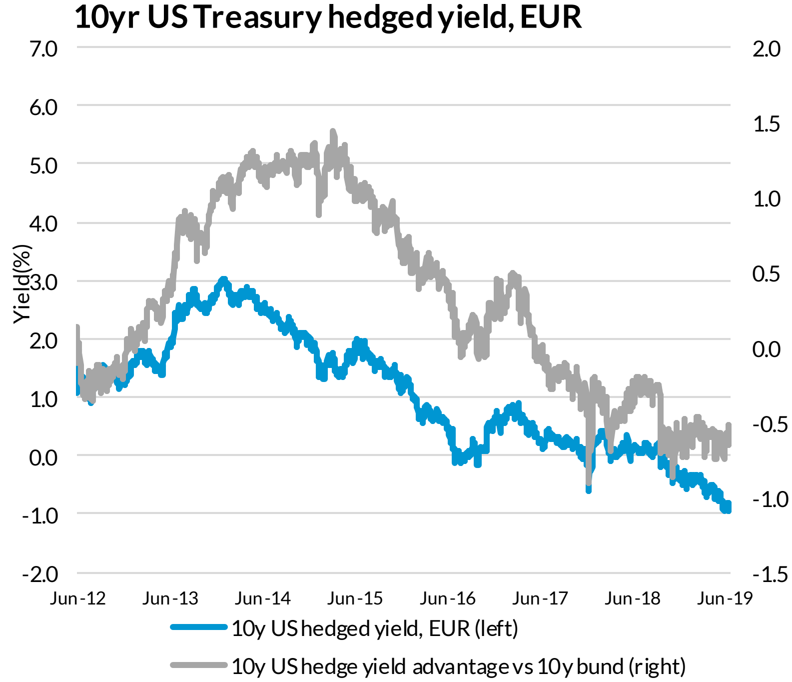
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of June 2019.*

10yr US Treasury hedged yield, JPY



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

10yr US Treasury hedged yield, EUR

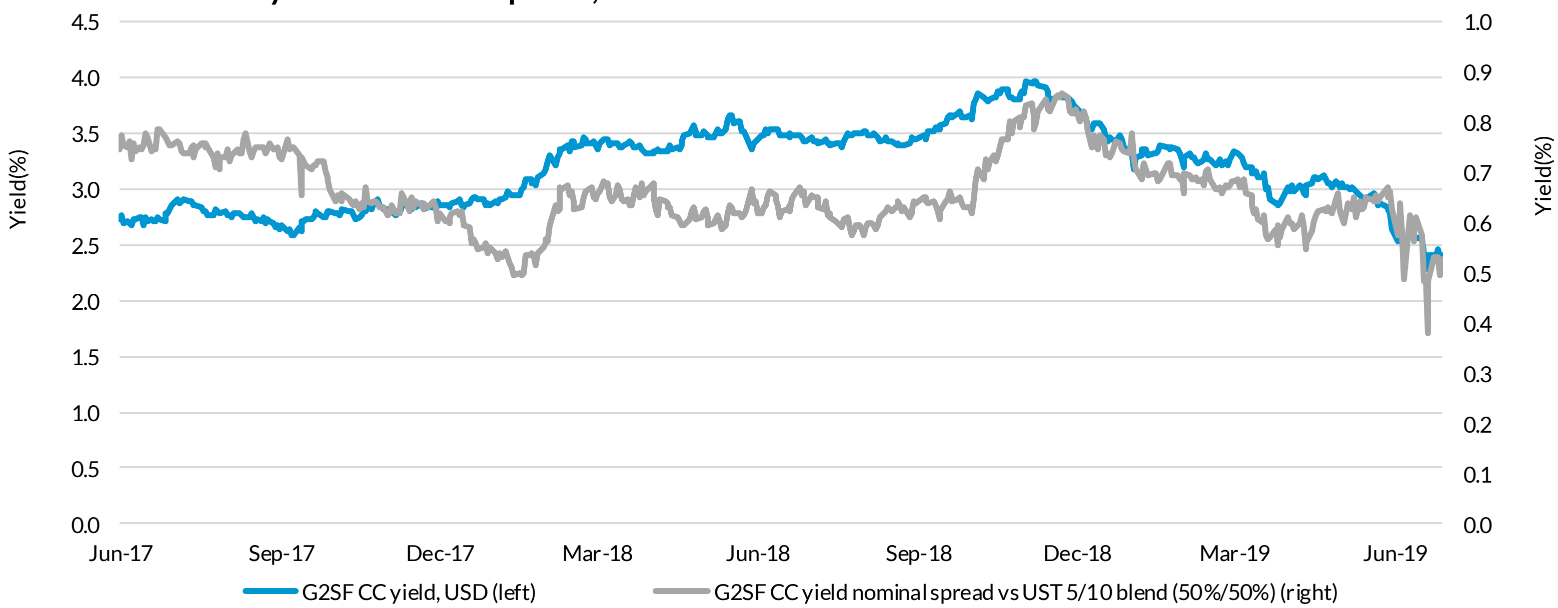


Sources: *Bloomberg and State Street Global Advisors*
Note: *Data as of June 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

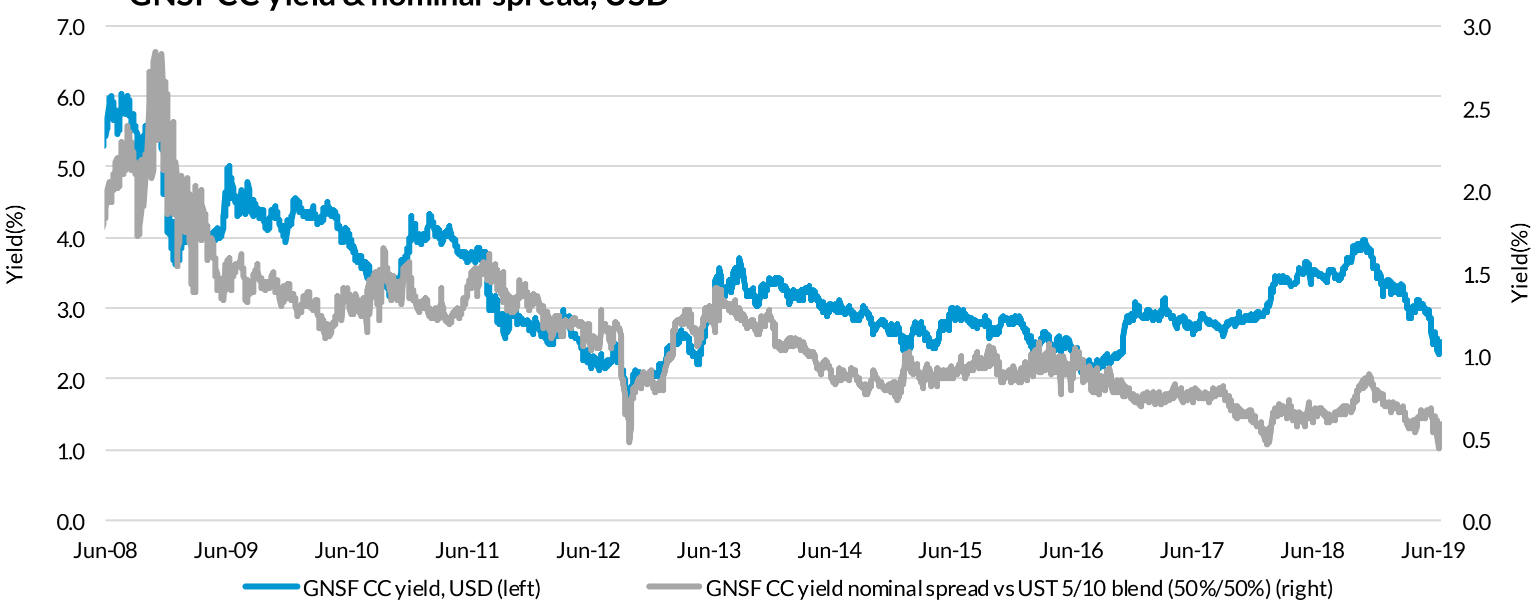
The nominal yield on both the current coupon GNMA II and GNMA I securities decreased in June 2019. Current coupon Ginnie Mae securities outyield their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 53 and 54 bps on G2SF and GNSF, respectively, a tightening of 10 bps since last month.

G2SF CC yield & nominal spread, USD



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

GNSF CC yield & nominal spread, USD

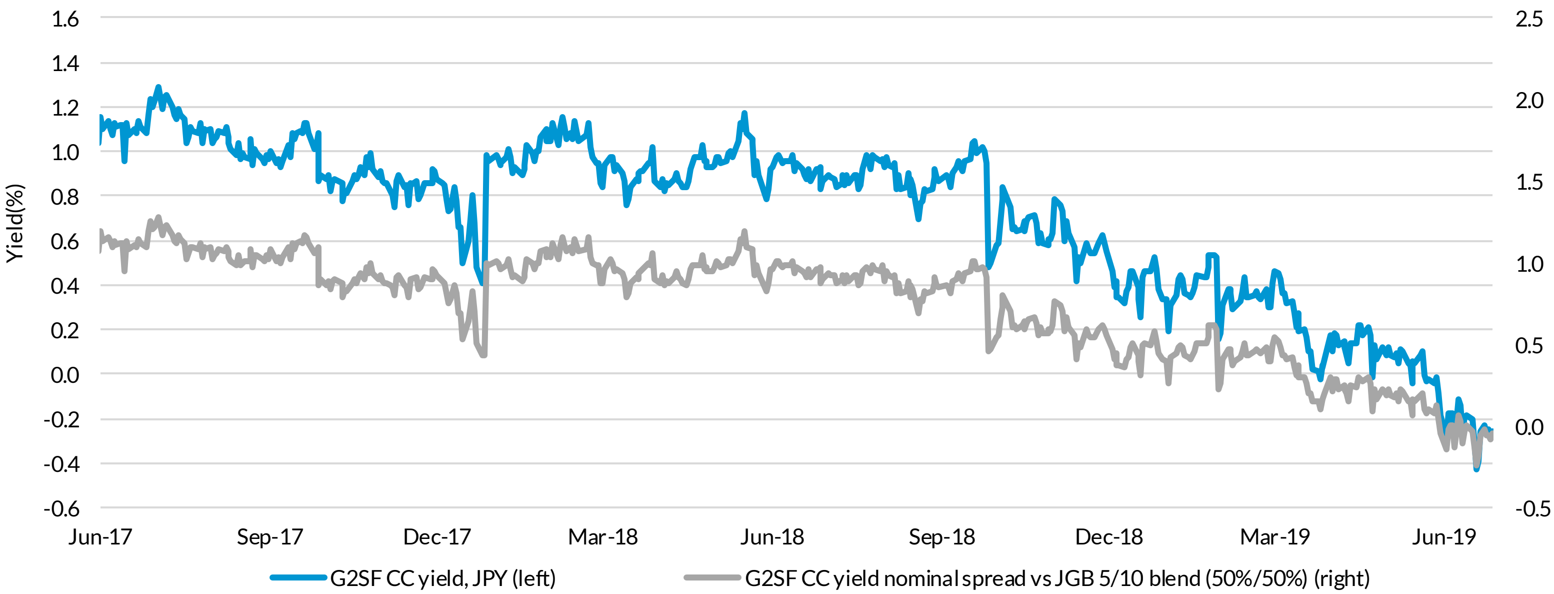


Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of June 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

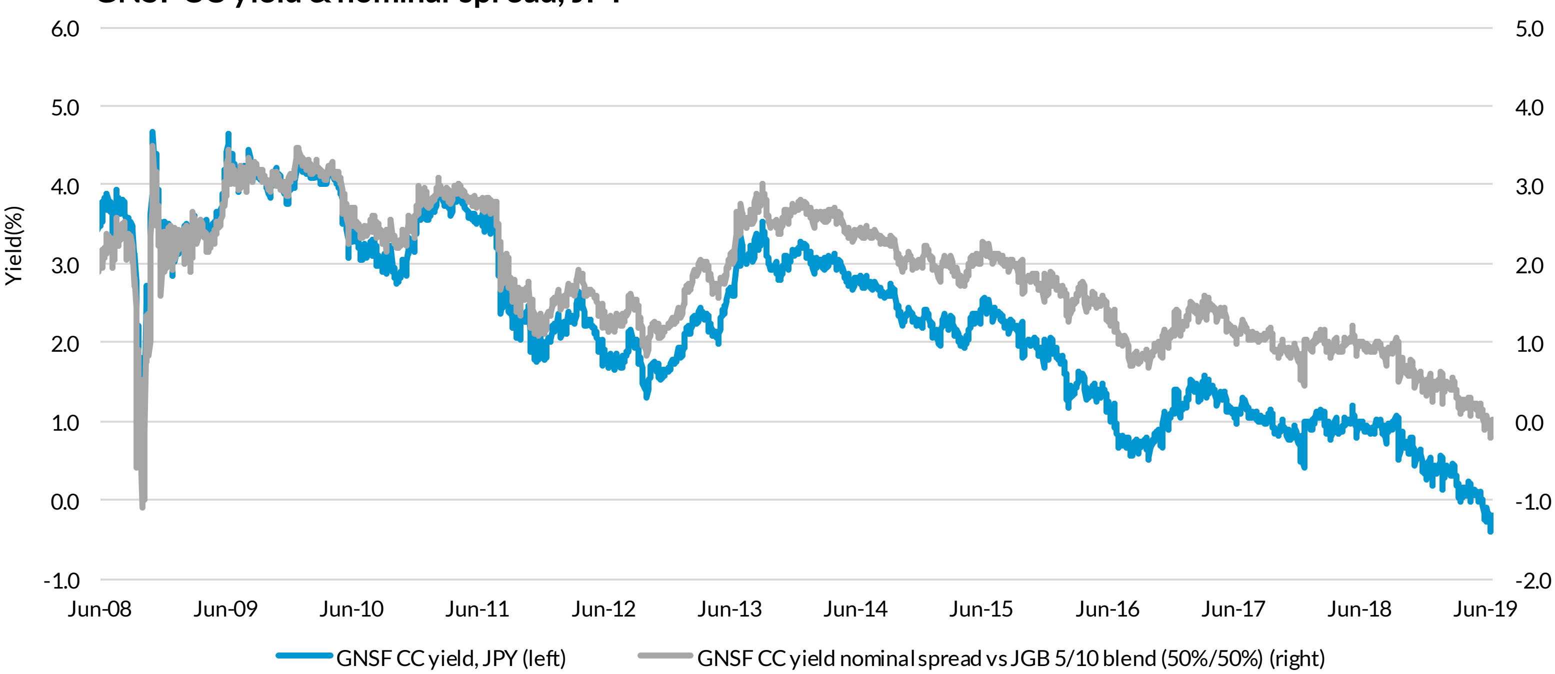
If Ginnie Mae securities are hedged into foreign currencies, they look fair on a yield basis versus many sovereign alternatives. The figures below show that current coupon G2SF and GNSF hedged into Japanese yen have a marginally lower yield than the JGB 5/10 blend by 5 and 4 bps respectively at the end of June. The past two months are the first time this yield spread has been negative since 2007.

G2SF CC yield & nominal spread, JPY



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

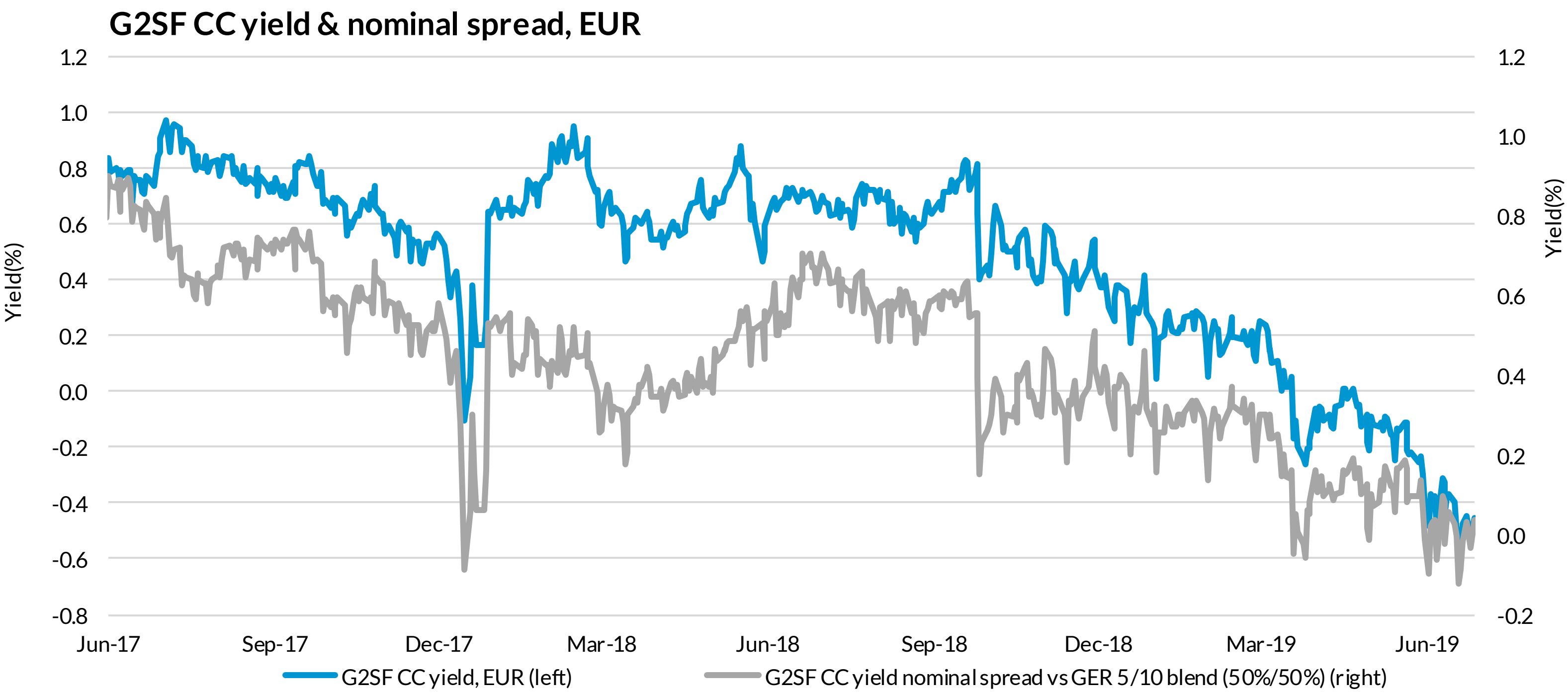
GNSF CC yield & nominal spread, JPY



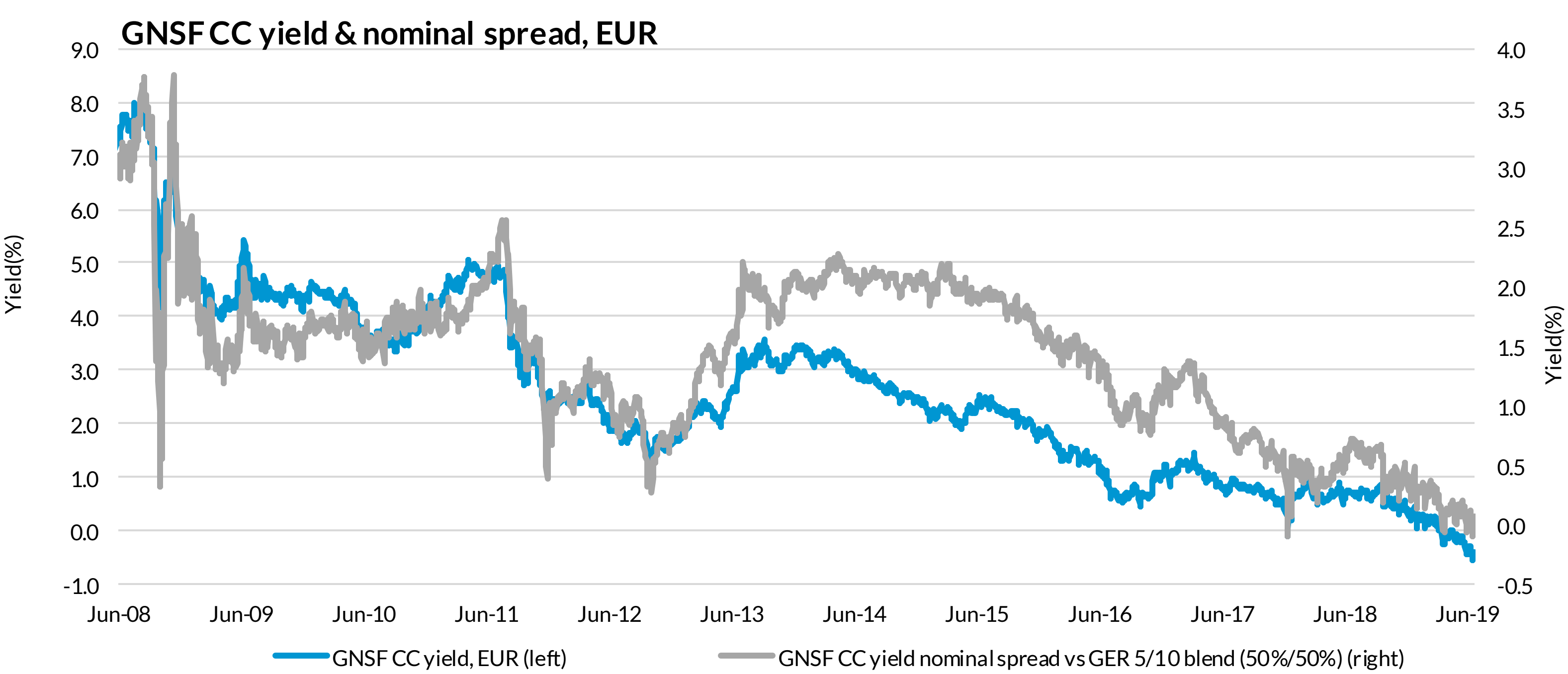
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of June 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

If Ginnie Mae securities are hedged into foreign currencies, they look fair on a yield basis versus sovereign alternatives. The figures below show that at the end of June, the current coupon G2SF has a 4 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 5 bps. This represents a 5 bp increase for each since the end of May.



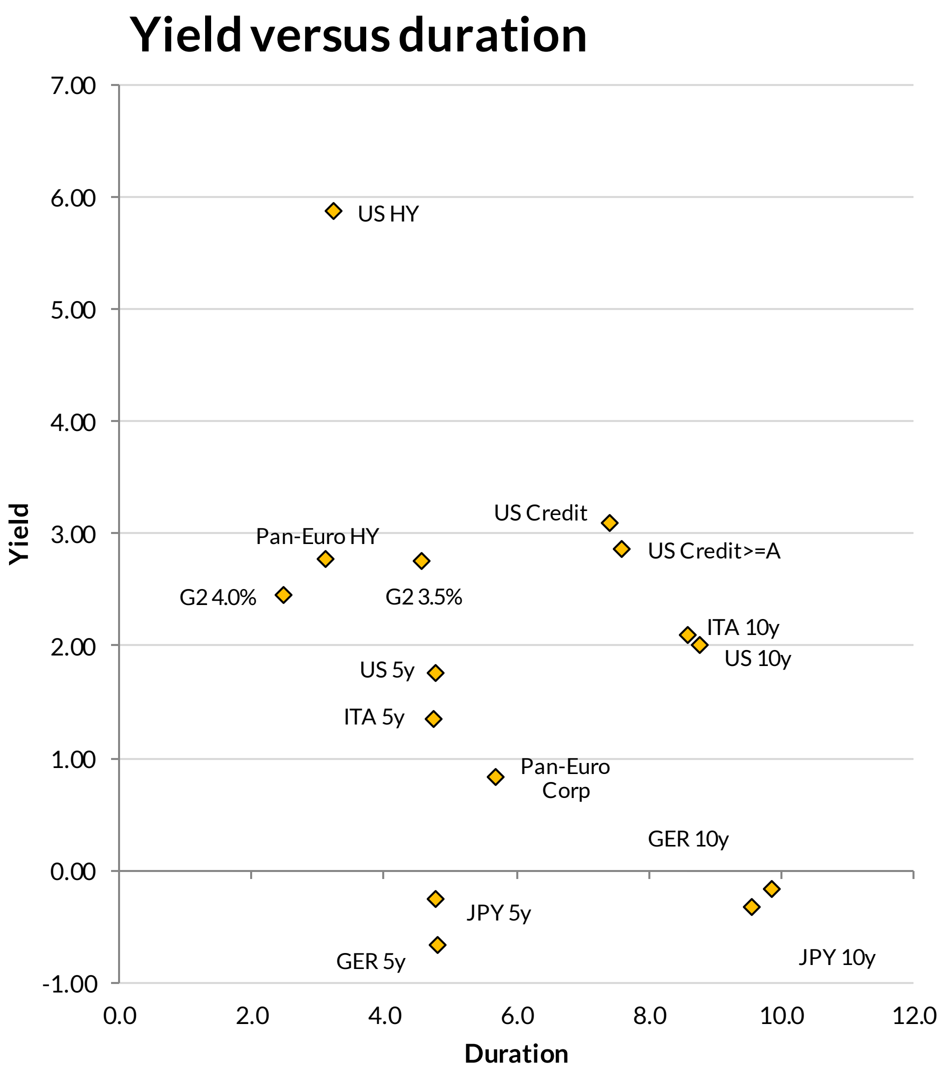
***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of June 2019.*



***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of June 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	1.77
US 10y	8.8	2.01
GNMA II 4.0%	2.5	2.46
GNMA II 3.5%	4.6	2.76
JPY 5y	4.8	-0.26
JPY 10y	9.8	-0.16
GER 5y	4.8	-0.67
GER 10y	9.5	-0.33
ITA 5y	4.7	1.35
ITA 10y	8.6	2.10
US credit	7.4	3.09
US credit >= A	7.6	2.87
US HY	3.2	5.87
Pan-Euro Corp	5.7	0.84
Pan-Euro HY	3.1	2.78

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

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The average return on the Ginnie Mae index over the past decade has been slightly higher than 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 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	0.50	0.59	0.86	0.40	0.62	0.45
3 year	0.16	0.12	0.33	0.19	0.61	0.43
5 year	0.19	0.21	0.34	0.25	0.40	0.34
10 year	0.28	0.26	0.50	0.45	0.75	0.84

	Average Excess Return (Per Month)					
Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.31	0.40	0.67	0.46	0.43	0.51
3 year	0.05	0.00	0.21	0.25	0.50	0.49
5 year	0.12	0.14	0.27	0.30	0.32	0.39
10 year	0.24	0.22	0.46	0.46	0.71	0.86

	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	0.80	1.10	1.23	0.81	1.86	1.55
3 year	0.67	0.97	1.10	0.82	1.28	1.12
5 year	0.59	0.98	1.15	0.98	1.60	1.35
10 year	0.69	1.01	1.23	1.17	1.82	2.24

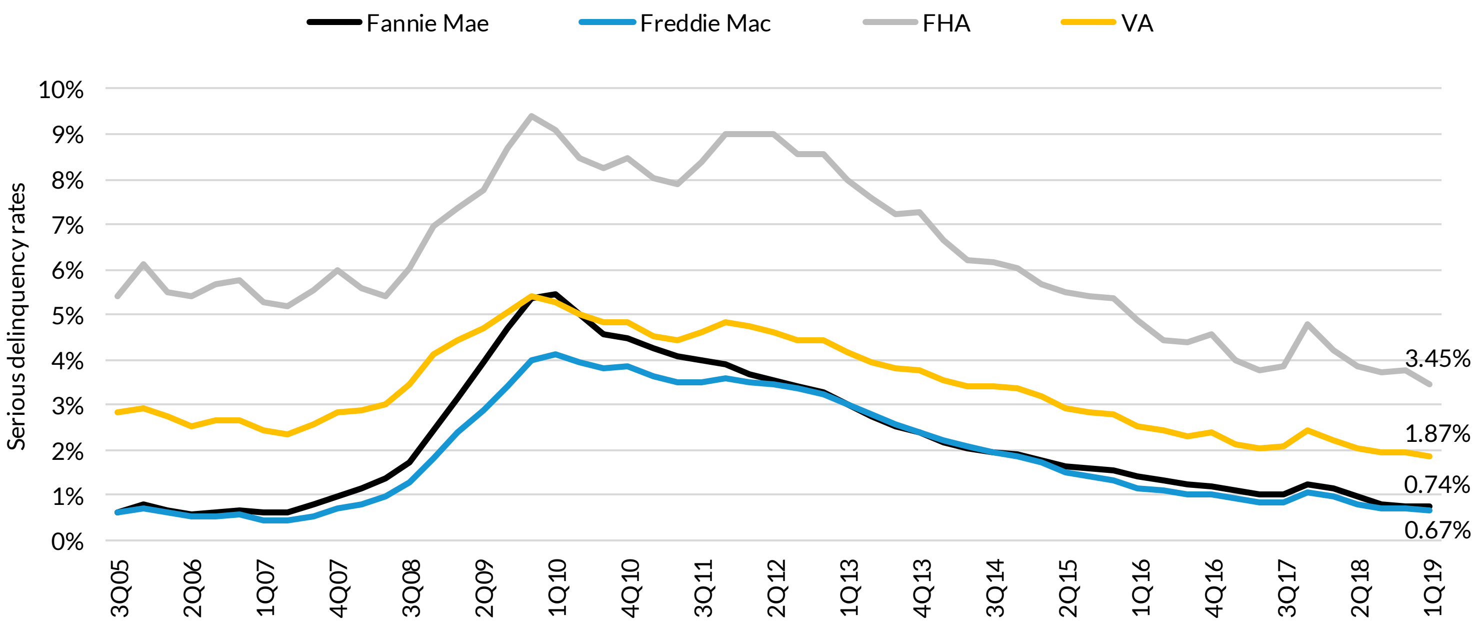
	Sharpe Ratio					
Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield	Pan Euro High Yield*
1 year	0.39	0.36	0.54	0.57	0.23	0.33
3 year	0.07	0.00	0.19	0.30	0.39	0.44
5 year	0.21	0.14	0.23	0.31	0.20	0.29
10 year	0.34	0.21	0.38	0.40	0.39	0.38

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

State of the US Housing Market

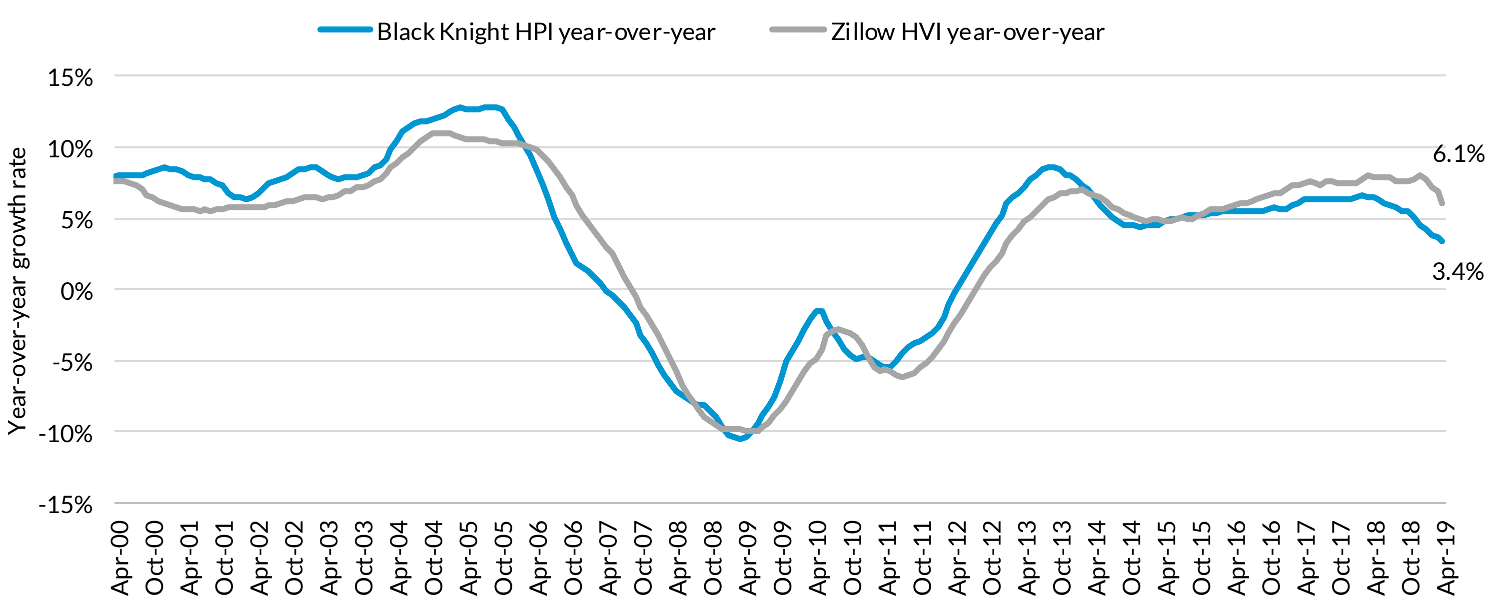
Serious delinquencies rates for single-family GSE loans, FHA loans, and VA loans declined in Q1 2019. GSE delinquencies remain slightly higher relative to 2006-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are at levels lower than 2006-2007. After touching 6.5 percent in early 2018, year-over-year house price appreciation has slowed considerably in recent months. It stood at 3.4 percent in April 2019 per Black Knight's repeat sales index and at 6.1 percent per Zillow's hedonic 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 Q1 2019.*

National Year-Over-Year HPI Growth



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

State of the US Housing Market

Nationally, nominal home prices have increased by 51.5 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 12.8 percent. The picture is very different across states, with many states well in excess of the prior peak, while a number of states remain close to 10 percent or more below peak levels: Connecticut (14.1% below), Florida (10.6% below), Nevada (9.8% below), and Maryland (9.5% below).

	HPI Changes				
State	**2000 to Peak**	**Peak to Trough**	**Trough to Current**	**YOY**	**Current HPI % Above Peak**
National	75.7%	-25.6%	51.5%	3.4%	12.8%
Alabama	44.0%	-15.5%	29.1%	5.8%	9.1%
Alaska	69.6%	-3.2%	21.8%	1.3%	18.0%
Arizona	110.2%	-47.9%	77.9%	6.4%	-7.4%
Arkansas	41.8%	-10.6%	24.1%	3.0%	10.9%
California	155.4%	-43.4%	87.9%	1.1%	6.4%
Colorado	40.1%	-12.7%	78.2%	4.2%	55.5%
Connecticut	92.4%	-24.7%	14.1%	1.9%	-14.1%
Delaware	94.7%	-23.5%	27.7%	2.7%	-2.3%
District of Columbia	175.2%	-13.5%	55.5%	3.2%	34.5%
Florida	129.2%	-47.0%	68.6%	4.0%	-10.6%
Georgia	38.3%	-32.1%	63.4%	5.1%	11.0%
Hawaii	162.0%	-22.1%	49.3%	2.4%	16.4%
Idaho	71.6%	-28.5%	75.7%	9.7%	25.6%
Illinois	61.6%	-34.6%	38.9%	1.9%	-9.1%
Indiana	21.4%	-7.6%	32.2%	5.3%	22.1%
Iowa	28.3%	-5.0%	24.6%	2.7%	18.4%
Kansas	34.7%	-9.3%	40.5%	5.0%	27.5%
Kentucky	29.5%	-7.7%	33.3%	4.1%	23.1%
Louisiana	48.8%	-5.2%	22.5%	1.8%	16.2%
Maine	82.4%	-12.5%	36.2%	6.9%	19.1%
Maryland	129.4%	-28.5%	26.6%	1.9%	-9.5%
Massachusetts	92.6%	-22.7%	52.9%	3.6%	18.1%
Michigan	24.1%	-39.7%	74.8%	4.5%	5.4%
Minnesota	66.3%	-27.6%	52.9%	3.4%	10.7%
Mississippi	41.1%	-13.6%	26.8%	5.2%	9.6%
Missouri	42.7%	-14.7%	33.1%	6.9%	13.5%
Montana	81.6%	-10.7%	45.3%	3.4%	29.7%
Nebraska	26.5%	-6.8%	37.7%	2.9%	28.4%
Nevada	126.9%	-59.4%	122.1%	7.0%	-9.8%
New Hampshire	90.7%	-23.6%	37.4%	4.2%	5.0%
New Jersey	118.0%	-27.8%	25.8%	2.5%	-9.2%
New Mexico	66.9%	-16.1%	21.6%	4.1%	2.0%
New York	98.8%	-15.2%	36.4%	2.1%	15.6%
North Carolina	40.6%	-15.5%	34.6%	5.0%	13.7%
North Dakota	54.0%	-3.9%	51.2%	-1.1%	45.2%
Ohio	21.2%	-18.3%	29.3%	0.9%	5.6%
Oklahoma	37.5%	-2.4%	17.9%	3.1%	15.1%
Oregon	82.4%	-27.9%	76.7%	3.7%	27.4%
Pennsylvania	70.4%	-11.7%	23.2%	3.8%	8.8%
Rhode Island	131.3%	-34.4%	46.5%	3.7%	-3.9%
South Carolina	45.0%	-19.3%	33.2%	4.4%	7.4%
South Dakota	45.2%	-4.0%	41.6%	4.1%	36.0%
Tennessee	35.2%	-11.8%	41.1%	5.0%	24.4%
Texas	33.2%	-5.7%	49.4%	3.1%	40.8%
Utah	54.4%	-21.8%	70.9%	7.4%	33.7%
Vermont	83.5%	-7.5%	28.1%	4.5%	18.5%
Virginia	99.5%	-22.7%	26.1%	2.8%	-2.6%
Washington	85.4%	-28.7%	85.8%	3.9%	32.6%
West Virginia	43.1%	-5.9%	16.2%	1.4%	9.3%
Wisconsin	44.9%	-16.2%	34.1%	4.8%	12.3%
Wyoming	77.4%	-5.7%	28.3%	5.1%	21.0%

***Sources:** Black Knight and Urban Institute. **Note:** HPI data as of April 2018. 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 04/2019, the latest HPI data period.*

State of the US Housing Market

Ginnie Mae MBS constitute 30.6 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 16.0 percent in the District of Columbia and as high as 51.6 percent in Alaska. In general, the Ginnie Mae share is higher in states with lower home prices.

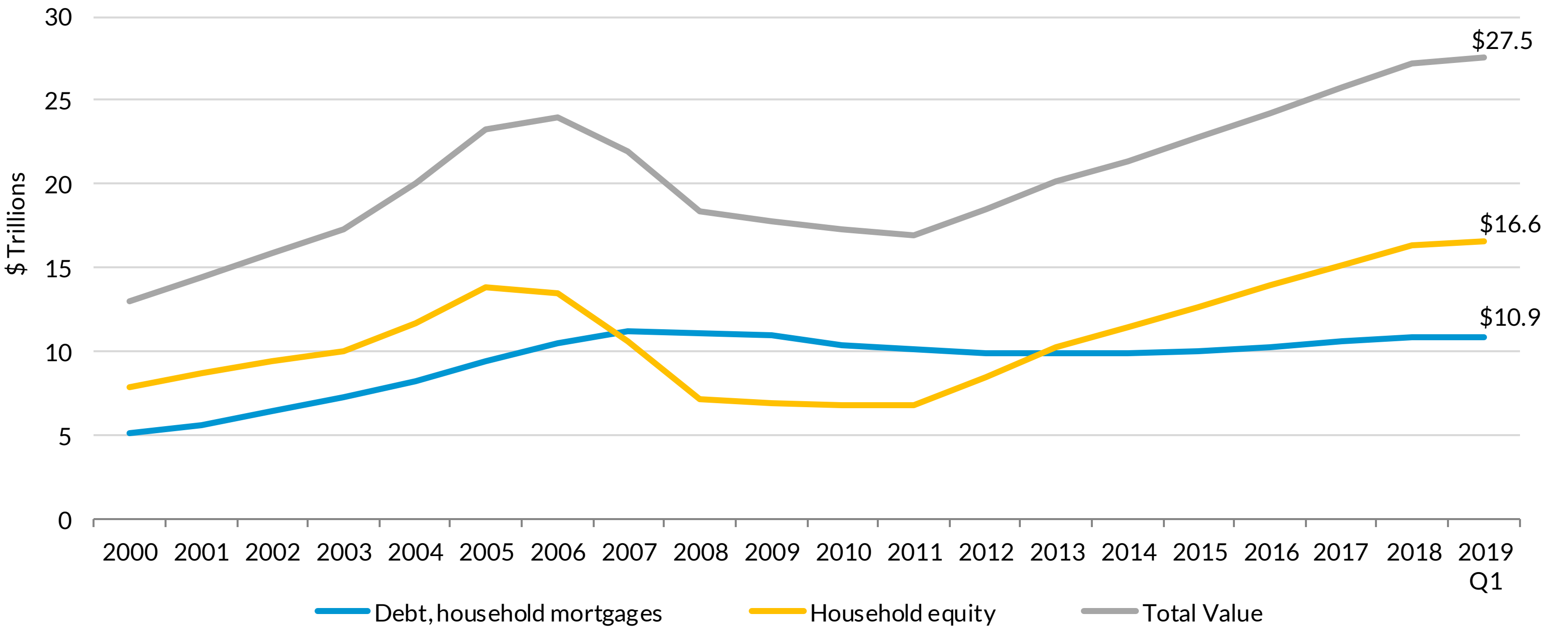
State	Agency Issuance (past 1 year)			Agency Outstanding		
	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)
National	33.1%	218.2	233.6	30.6%	165.3	187.7
Alabama	43.6%	166.6	188.5	44.9%	128.8	151.3
Alaska	51.7%	285.0	252.0	51.6%	233.7	198.6
Arizona	31.6%	220.3	223.4	31.4%	166.5	178.0
Arkansas	42.7%	145.2	170.7	44.4%	111.0	137.0
California	27.6%	355.0	339.1	21.1%	270.3	266.9
Colorado	31.8%	300.0	287.7	27.2%	220.1	224.1
Connecticut	31.8%	217.0	227.9	29.5%	183.8	188.5
Delaware	37.1%	217.6	228.6	36.2%	180.8	183.9
District of Columbia	18.4%	424.8	362.5	16.0%	302.2	302.1
Florida	40.1%	213.1	213.0	35.2%	165.5	170.3
Georgia	39.6%	190.7	214.1	38.6%	143.4	169.3
Hawaii	38.3%	496.2	402.2	30.7%	392.8	315.4
Idaho	32.1%	212.4	215.5	31.7%	154.7	165.8
Illinois	26.7%	179.8	200.3	24.7%	142.0	160.3
Indiana	37.3%	146.7	162.0	37.6%	111.6	125.8
Iowa	27.6%	148.0	164.6	25.8%	114.4	131.0
Kansas	35.9%	157.6	178.1	35.6%	120.8	138.5
Kentucky	39.2%	152.9	170.0	38.9%	122.1	132.4
Louisiana	42.3%	172.5	194.9	41.8%	137.5	158.6
Maine	35.0%	188.7	205.1	32.5%	153.4	159.9
Maryland	43.8%	286.1	267.6	39.3%	233.2	218.6
Massachusetts	24.6%	301.0	287.8	19.4%	237.7	227.5
Michigan	25.2%	151.0	172.7	25.2%	114.0	134.4
Minnesota	24.1%	204.4	216.7	24.1%	156.9	170.2
Mississippi	50.3%	156.0	175.7	50.3%	120.3	141.7
Missouri	35.3%	155.8	175.1	34.9%	121.3	138.7
Montana	29.4%	224.0	228.1	29.6%	170.4	176.1
Nebraska	32.1%	169.3	175.0	33.0%	123.2	137.6
Nevada	33.8%	259.9	242.5	35.1%	188.3	190.7
New Hampshire	31.6%	239.9	230.3	29.2%	194.2	180.7
New Jersey	29.5%	257.1	269.0	27.3%	211.9	218.6
New Mexico	41.5%	183.6	191.5	42.4%	141.5	152.7
New York	25.9%	251.1	274.4	25.2%	187.0	214.7
North Carolina	33.9%	186.9	209.4	33.8%	141.9	165.8
North Dakota	31.3%	213.9	207.5	26.3%	168.0	165.8
Ohio	34.6%	146.3	158.8	35.9%	113.0	126.3
Oklahoma	44.6%	156.5	175.4	47.8%	119.2	139.9
Oregon	27.1%	266.9	267.1	23.6%	200.0	206.7
Pennsylvania	32.0%	168.8	196.5	32.5%	137.2	158.1
Rhode Island	39.2%	236.7	227.7	33.7%	188.4	181.9
South Carolina	39.0%	189.5	198.4	37.4%	147.7	160.4
South Dakota	37.4%	179.9	189.9	35.7%	143.7	149.3
Tennessee	39.4%	189.5	206.3	39.8%	139.4	163.6
Texas	34.2%	201.6	219.8	35.5%	142.5	174.7
Utah	28.0%	255.3	264.2	27.9%	191.7	206.7
Vermont	22.4%	190.1	202.0	20.0%	165.8	159.6
Virginia	44.4%	272.1	263.1	41.1%	223.6	216.2
Washington	30.5%	298.5	298.7	27.7%	220.2	227.6
West Virginia	49.0%	156.7	156.5	45.8%	126.8	127.0
Wisconsin	22.1%	171.6	180.1	20.9%	134.7	141.2
Wyoming	41.6%	218.5	218.6	40.1%	178.3	175.8

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

State of the US Housing Market

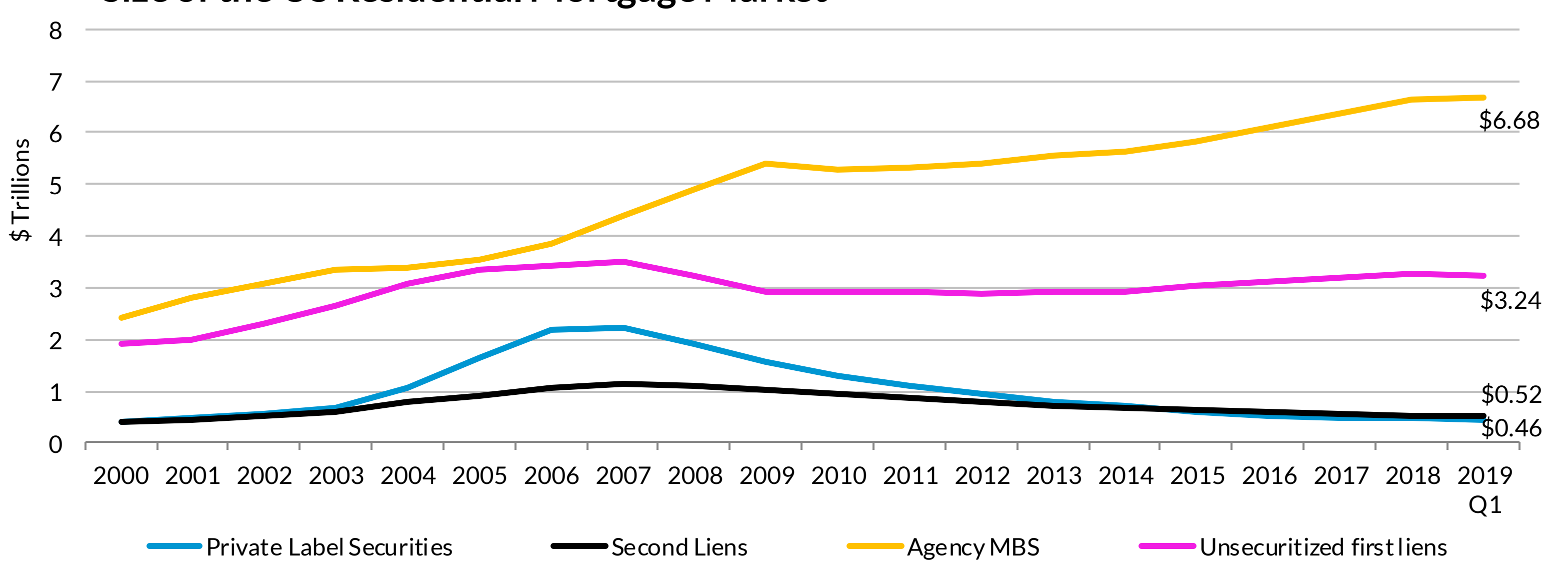
The Federal Reserve's Flow of Funds report has consistently indicated an increasing total value of the housing market driven by growing household equity since 2012, and 2019 Q1 was no different. Total mortgage debt outstanding increased slightly to $10.9 trillion and household equity increased slightly to $16.6 trillion, bringing the total value of the housing market to $27.5 trillion, 15 percent higher than the pre-crisis peak in 2006. Agency MBS make up 61.3 percent of the total mortgage market, private-label securities make up 4.2 percent, and unsecuritized first liens at the GSEs, commercial banks, savings institutions, and credit unions make up 29.7 percent. Second liens comprise the remaining 4.8 percent of the total.

Value of the US Housing Market



Sources: *Federal Reserve Flow of Funds and Urban Institute. Data as of Q1 2019.*

Size of the US Residential Mortgage Market

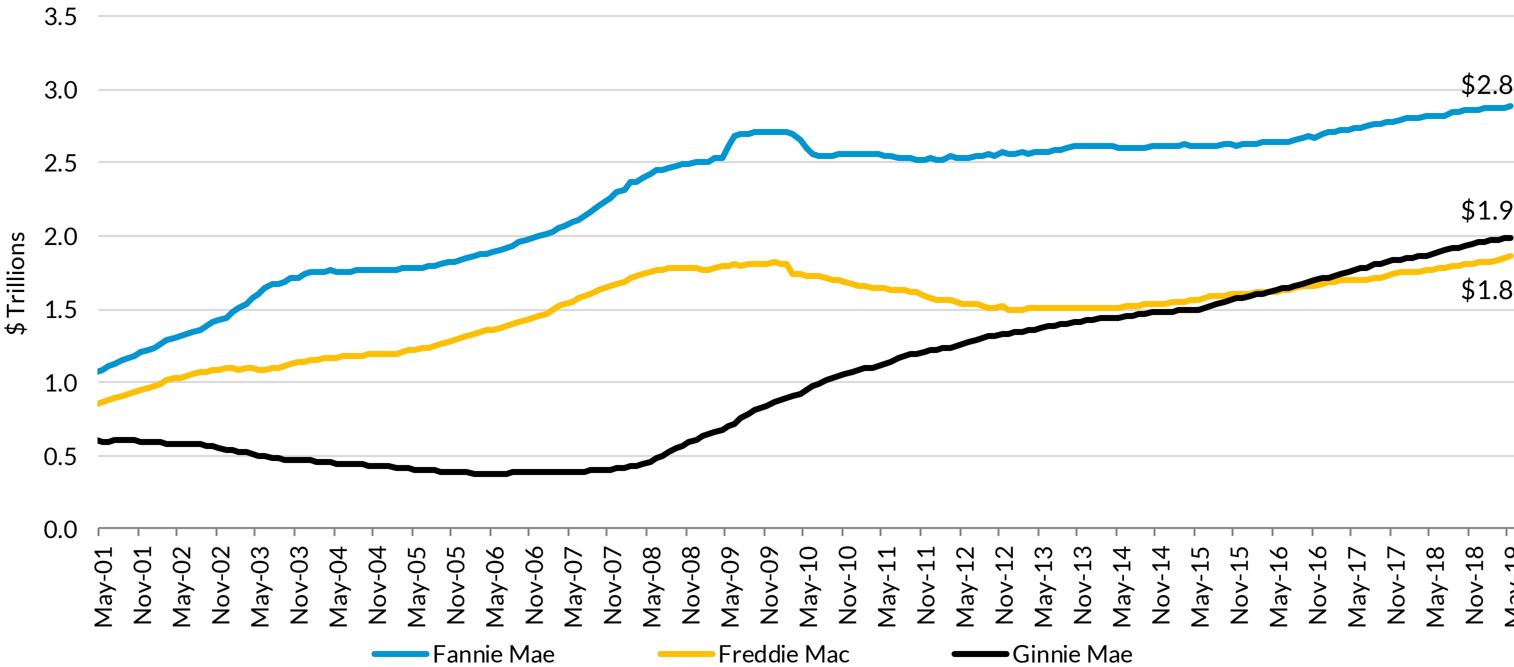


Sources: *Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.*
Note: *Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions. Data as of Q1 2019.*

State of the US Housing Market

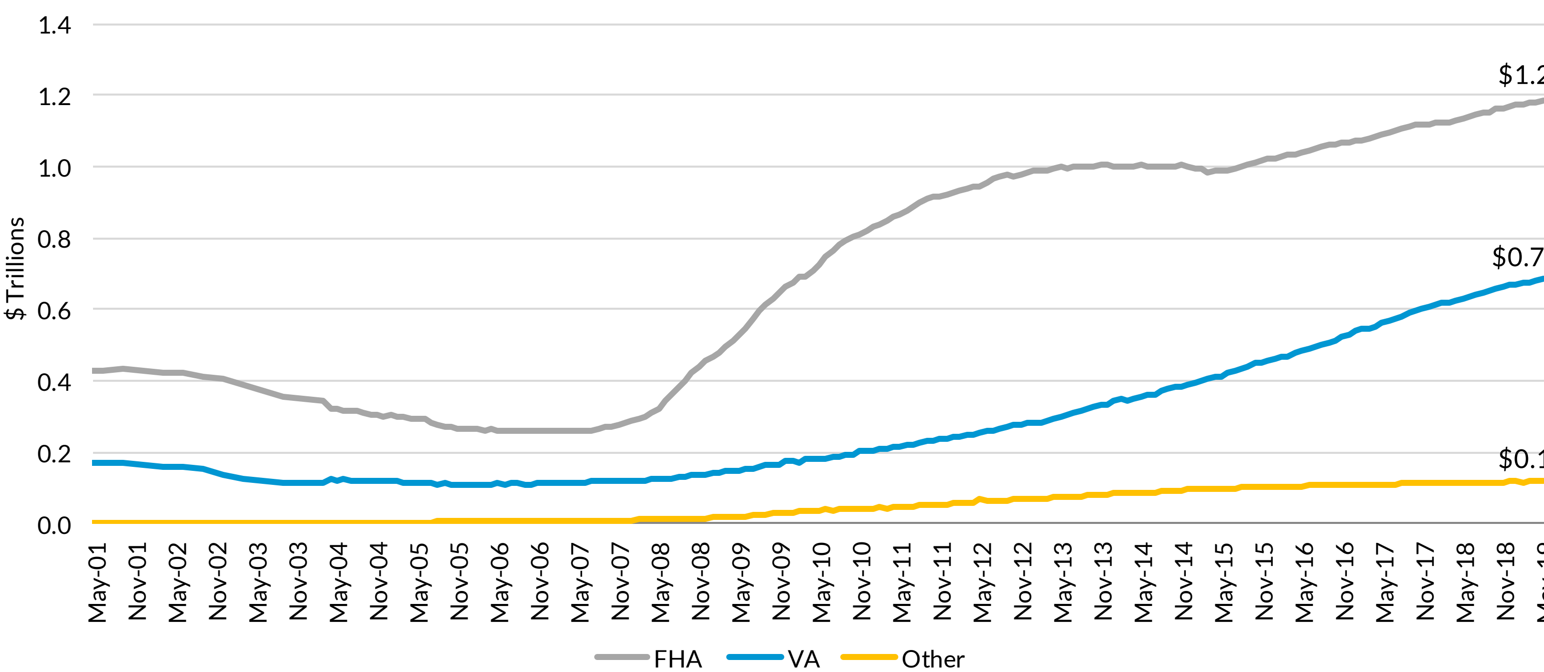
As of May 2019, outstanding securities in the agency market totaled $6.73 trillion: 42.8 percent Fannie Mae, 27.6 percent Freddie Mac, and 29.6 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. FHA comprises 59.6 percent of total Ginnie Mae MBS outstanding, while VA comprises 34.5 percent.

Outstanding Agency Mortgage-Backed Securities



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

Outstanding Ginnie Mae Mortgage-Backed Securities

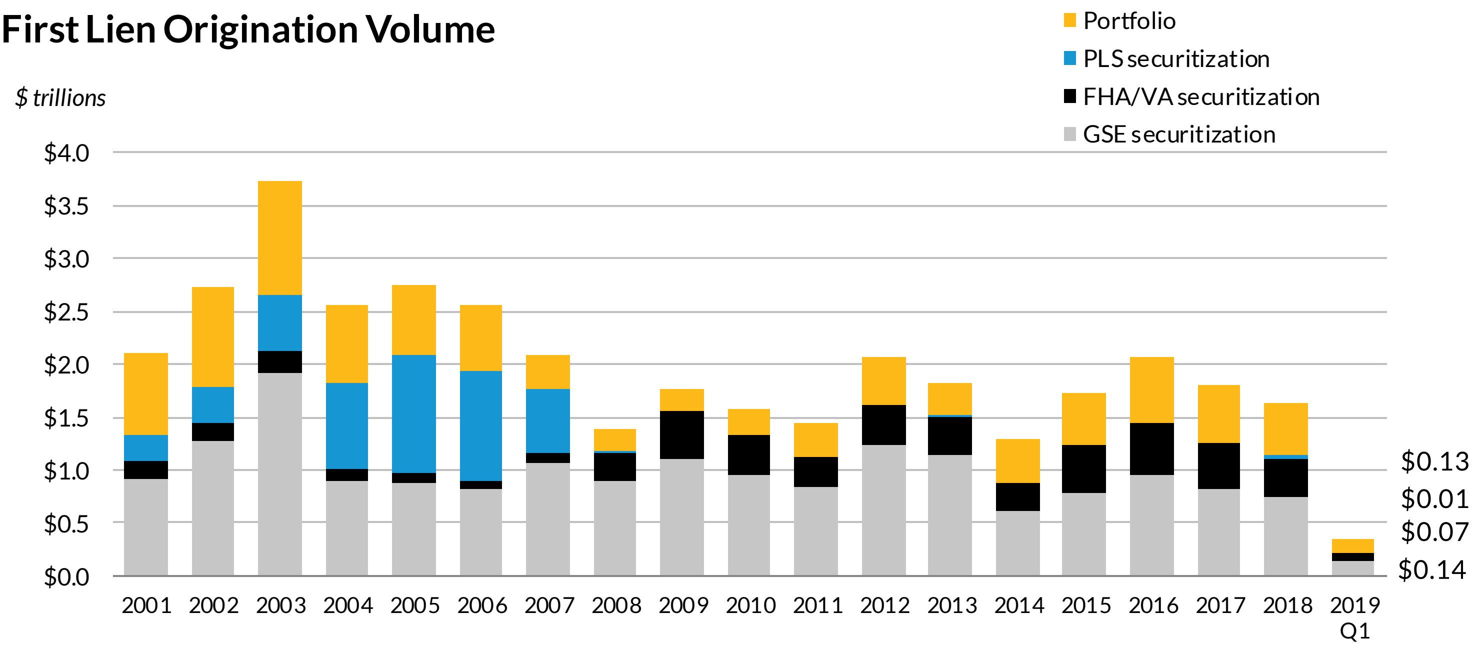


Sources: *eMBS and Urban Institute.* **Note:** *Data as of May 2019.*

State of the US Housing Market

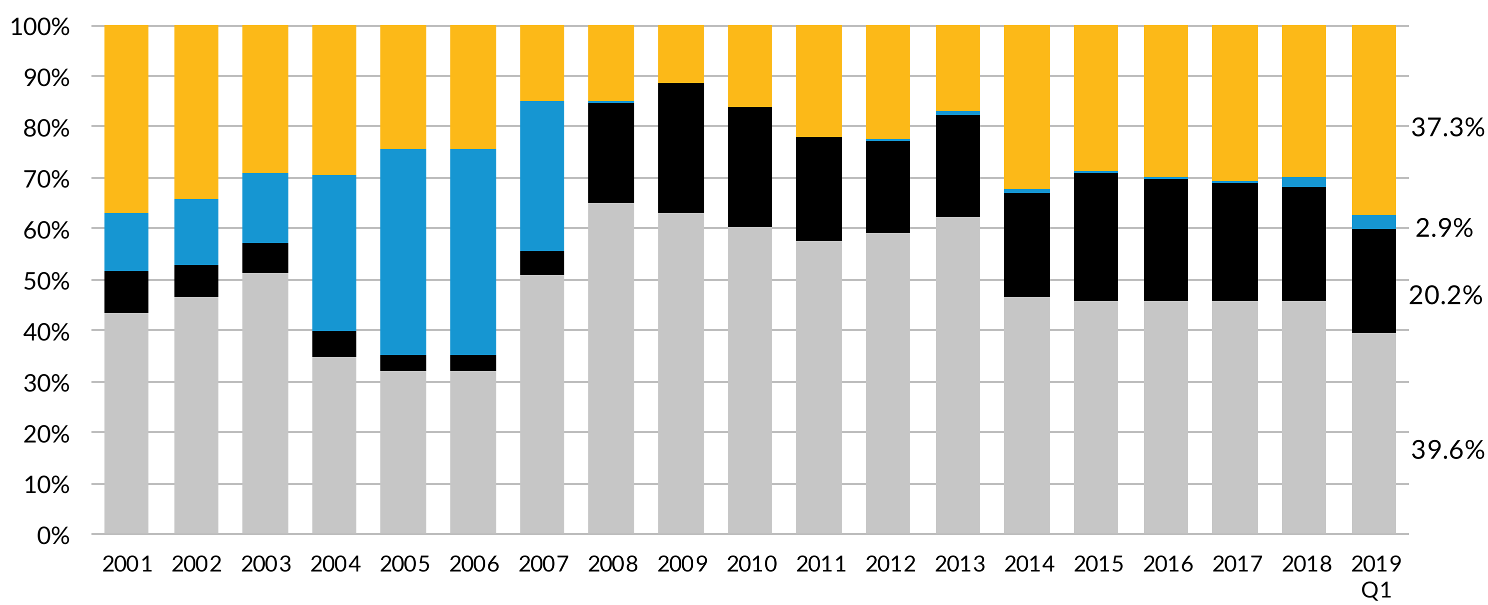
In the first quarter of 2019, first lien originations totaled $355 billion, down slightly from $380 billion in Q1 2018. The share of portfolio originations was 37.3 percent in Q1 2019, up significantly from 29.0 percent in the same period of 2018. The GSE share was down at 37.3 percent, compared to 46.3 percent in Q1 2018. The FHA/VA share fell slightly, at 20.2 percent compared to 22.9 percent in the same period last year. Private-label securitization at 2.9 percent was relatively high compared to the share of 0 percent ten years 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 Q1 2019.*

First Lien Origination Share



Sources: *Inside Mortgage Finance and Urban Institute.* **Note:** *Data as of Q1 2019.*

US Agency Market, Originations

Agency gross issuance was $450.1 billion in the first five months of 2019, down 6.1 percent compared to the same period in 2018. Ginnie Mae gross issuance was down by 7.6 percent and GSE gross issuance was down by 5.4 percent. Within the Ginnie Mae market, FHA was down by 3.4 percent and VA origination was down by 11.0 percent. The decline in origination volume is the result of lower origination volumes in January and February 2019, versus the same period a year earlier, as well as Ginnie Mae and VA actions to curb rapid VA refinancing speeds.

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	$167.8	$131.5	$299.4	$150.8	$450.1
2019 YTD % Change YOY	-15.4%	11.6%	-5.4%	-7.6%	-6.1%
2019 Ann.	$402.8	$315.7	$718.5	$361.8	$1,080.3

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	$85.2	$60.6	$5.0	$150.8
2019 YTD % Change YOY	-3.4%	-11.0%	-26.4%	-7.6%
2019 Ann.	$204.4	$145.5	$11.9	$361.8

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 May 2019.*

US Agency Market, Originations

Agency net issuance totaled $91.7 billion in the first five months of 2019, down up 0.6 percent compared to the same period in 2018. Ginnie Mae net issuance was $37.8 billion, comprising 41.2 percent of total agency net issuance. Ginnie Mae net issuance was down 7.1 percent compared to the same period in 2019. Ginnie Mae net issuance in the first five months of 2019 was comprised of 50.5 percent VA and 48.7 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	$16.2	$37.7	$53.9	$37.8	$91.7
2019 YTD % Change YOY	-48.6%	98.8%	6.7%	-7.1%	0.6%
2019 Ann.	$38.9	$90.4	$129.3	$90.8	$220.1

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	$18.4	$19.1	$0.4	$37.8
2019 YTD % Change YOY	19.7%	-20.2%	-74.7%	-7.1%
2019 Ann.	$44.1	$45.8	$0.9	$90.8

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 May 2019.*

US Agency Market, Originations

Agency gross issuance moves inversely to interest rates, generally declining as interest rates have risen, rising 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. May 2019 gross agency issuance of $117.6 billion is above the May 2018 level of $100.1 billion.

Monthly Agency Issuance

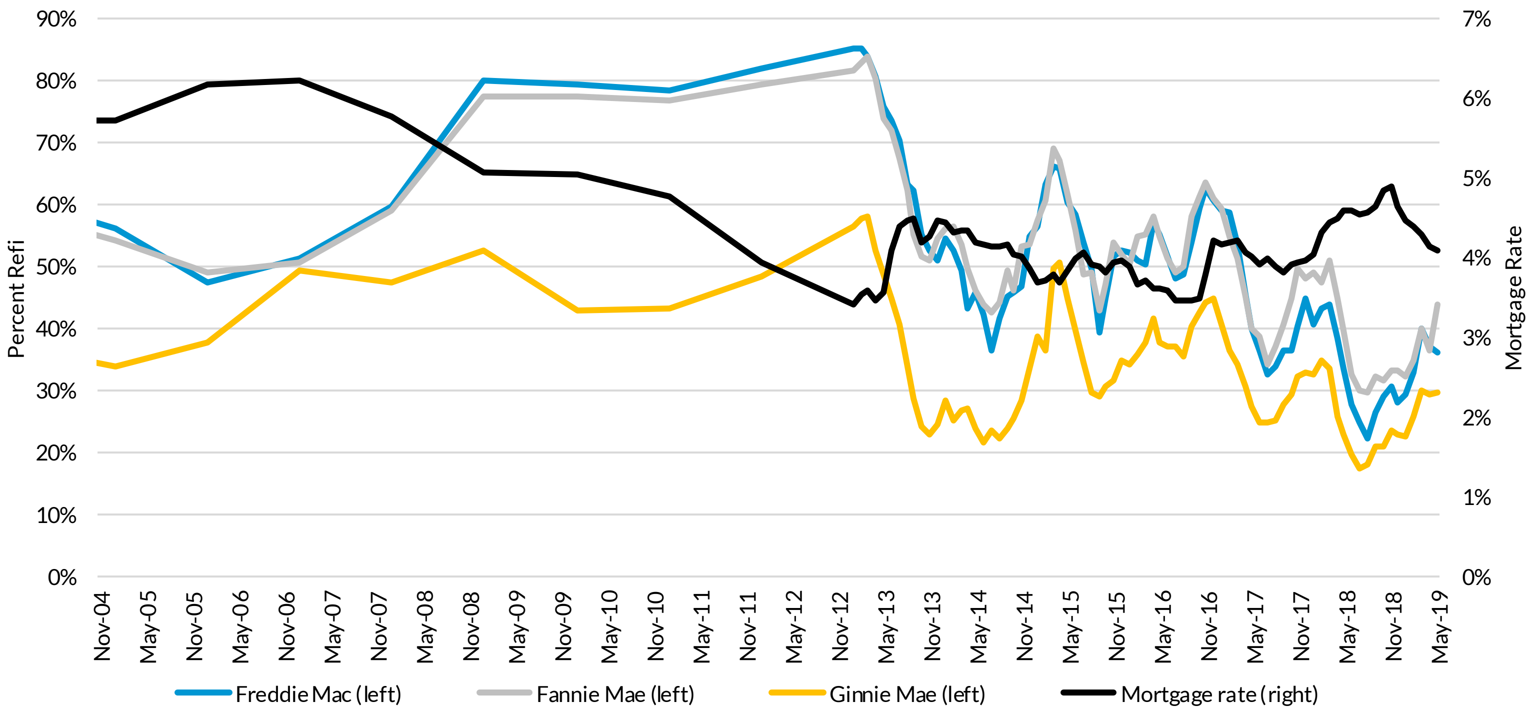
	Gross Issuance				Net Issuance			
Date	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-16	$35.6	$22.5	$32.5	$90.6	-$0.6	$1.0	$7.3	$7.8
Feb-16	$32.4	$21.2	$30.5	$84.1	$2.4	$3.1	$8.4	$13.9
Mar-16	$39.7	$27.5	$32.9	$100.1	$7.9	$8.2	$9.6	$25.8
Apr-16	$43.8	$26.2	$40.1	$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

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 May 2019.*

US Agency Market, Originations

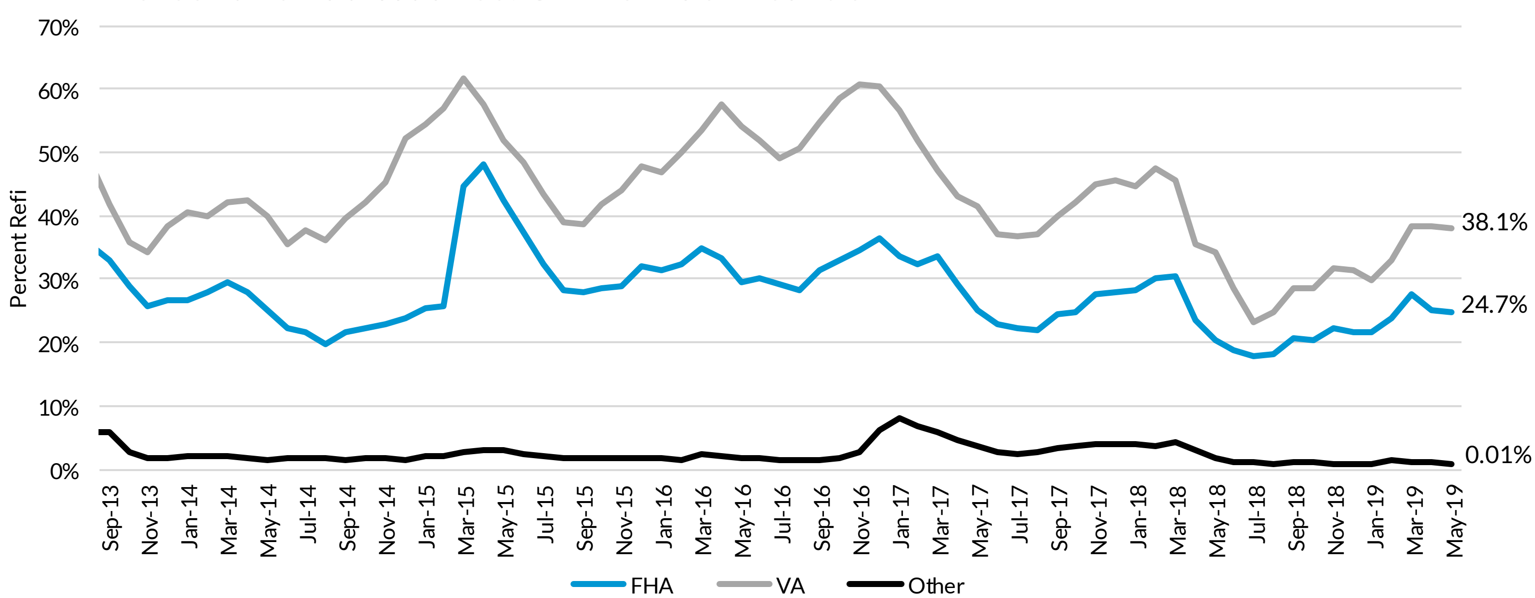
The Ginnie Mae refi share stood at 30 percent in May 2019, below the 36-44 percent share for Fannie Mae and Freddie Mac. Within Ginnie Mae, VA had the highest refi share at 38 percent in May 2019, followed by FHA's 25 percent. In the spring and summer of 2018, refi share for all agencies fell sharply due to rising interest rates and seasonal upticks in purchase activity. The refi share stabilized after the summer surge in purchase activity ended; it ticked up in spring 2019 as rates trended down.

Percent Refi at Issuance



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

Percent Refi at Issuance: Ginnie Mae Breakdown

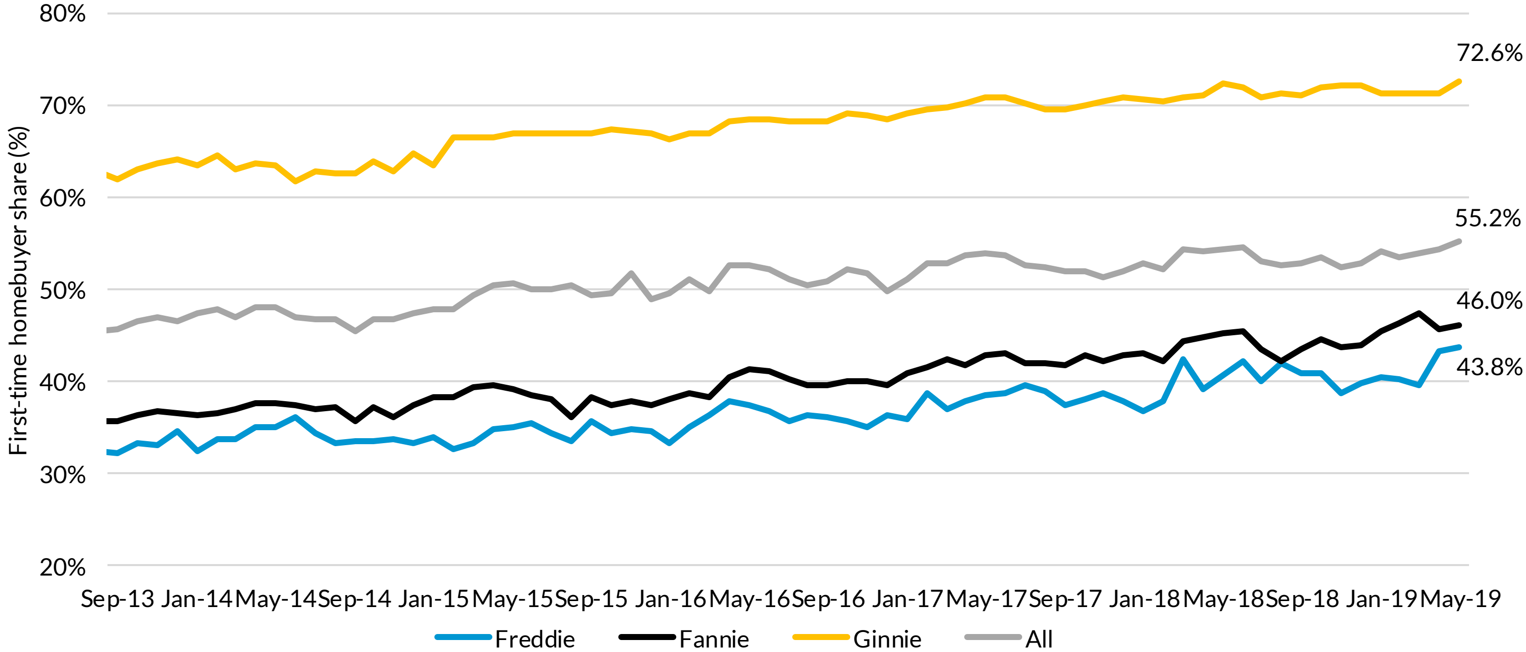


Sources: *eMBS and Urban Institute.*
Note: *Based on at-issuance balance. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of May 2019.*

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 72.6 percent in May 2019, a historical high. 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 46.0 percent and 43.8 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in May 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 May 2019.*

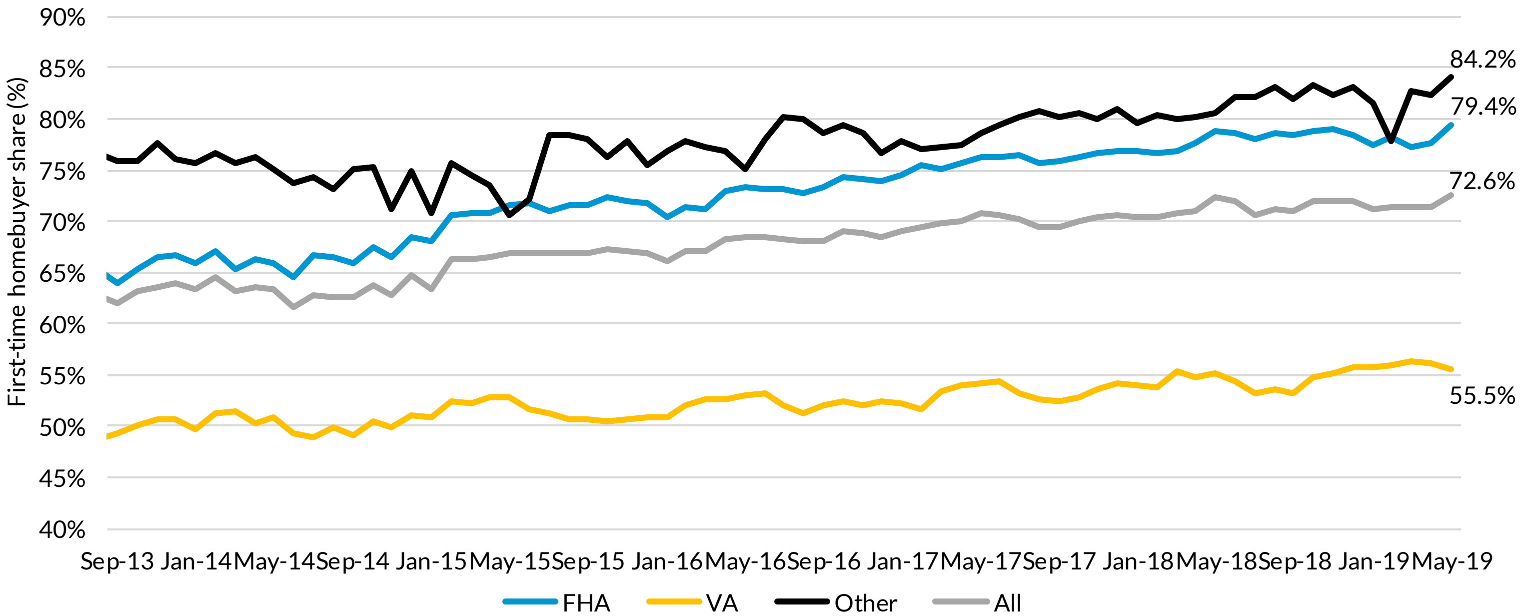
	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	240,721	265,478	247,112	268,567	211,144	260,974	227,837	265,306
Credit Score	739.7	754.8	743.4	758.0	675.9	700.2	709.6	741.0
LTV (%)	88.0	79.1	86.6	79.5	96.9	95.4	92.0	83.6
DTI (%)	36.0	36.6	35.0	36.2	42.0	43.1	38.7	38.2
Loan Rate (%)	4.6	4.5	4.5	4.4	4.6	4.5	4.6	4.4

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 May 2019.*

Credit Box

Within the Ginnie Mae purchase market, 79.4 percent of FHA loans, 55.5 percent of VA loans and 84.2 percent of other loans represent financing for first-time home buyers in May 2019. The bottom table shows that based on mortgages originated in May 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 and lower DTI.

First Time Homebuyer Share: Ginnie Mae Purchase Only Loans Breakdown by Source



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

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	206,707	224,752	250,218	304,660	147,066	165,312	211,144	260,974
Credit Score	666.6	671.0	696.3	728.0	693.2	701.6	675.9	700.2
LTV (%)	95.6	94.0	99.9	96.4	99.2	99.1	96.9	95.4
DTI (%)	43.3	44.4	40.9	42.5	35.0	36.1	42.0	43.1
Loan Rate (%)	4.7	4.6	4.4	4.3	4.6	4.6	4.6	4.5

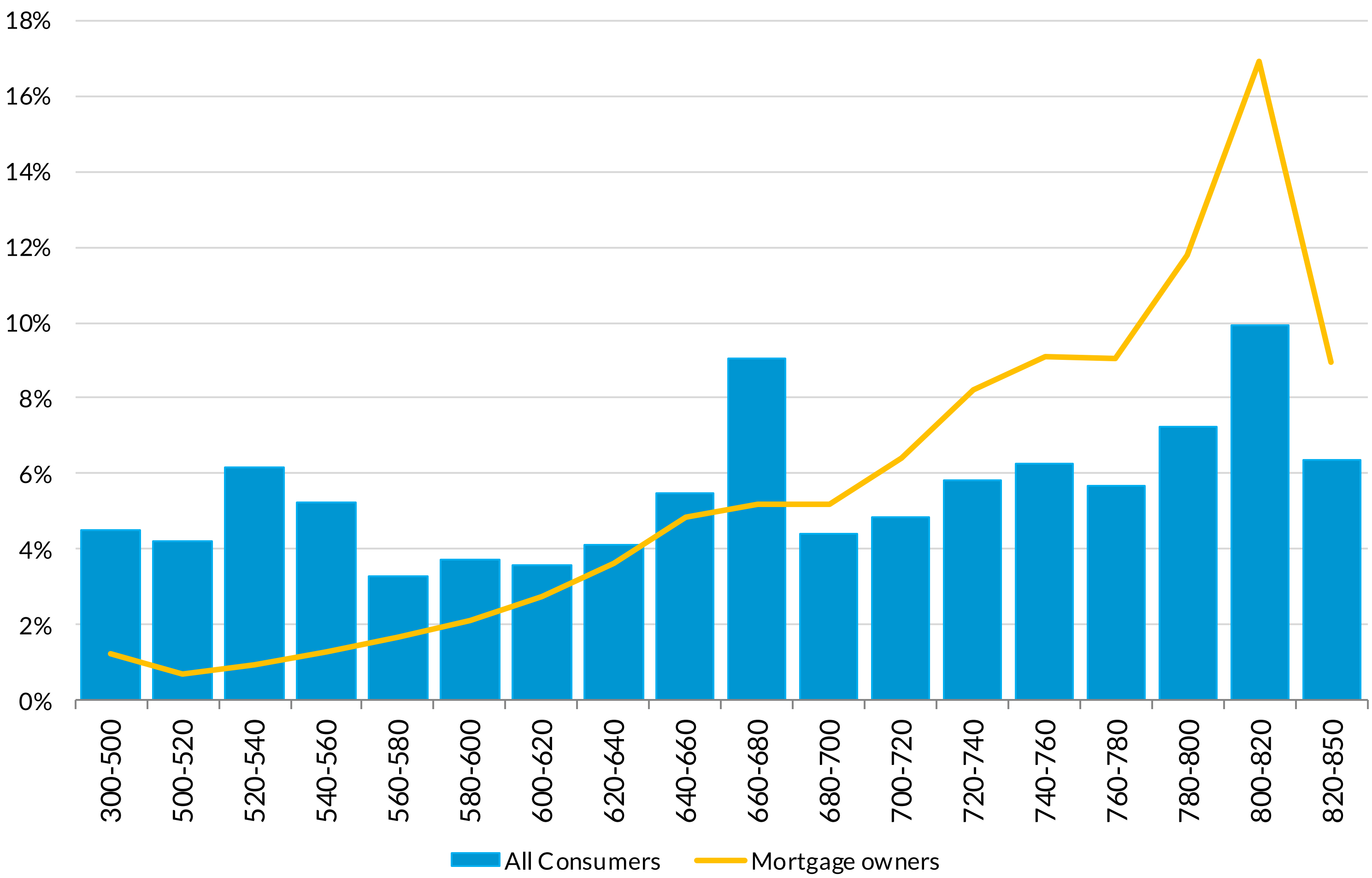
Sources: *eMBS and Urban Institute.* **Note**: *Data as of May 2019. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed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

May 2019 Credit Box at a Glance

In May 2019, the median Ginnie Mae FICO score was 674 versus 752 for Fannie and 756 for Freddie. Note that the FICO score for the 10th percentile was 619 for Ginnie Mae, versus 681 for Fannie and 685 for Freddie. Within the Ginnie Mae market, FHA loans have a median FICO score of 662, VA loans have a median FICO score of 703 and other loans have a median FICO score of 690.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	305,243	642	681	732	776	798	725
Fannie	106,820	686	718	756	786	801	749
Freddie	85,869	690	723	761	788	802	752
Ginnie	112,554	621	642	674	719	767	683
Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	162,312	647	685	731	773	796	725
Fannie	71,420	674	705	746	780	799	740
Freddie	49,560	676	708	748	780	799	742
Ginnie	41,332	610	641	675	716	761	678
All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	467,555	643	682	732	775	797	725
Fannie	178,240	681	713	752	784	801	745
Freddie	135,429	685	717	756	785	801	749
Ginnie	153,886	619	642	674	718	765	681

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	112,554	621	642	674	719	767	683
FHA	69,720	614	636	662	695	732	667
VA	33,828	629	659	710	764	794	710
Other	9,006	639	657	690	730	763	695
Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	41,332	610	641	675	716	761	678
FHA	21,695	604	632	661	694	729	663
VA	19,573	620	655	695	742	778	694
Other	64	625	659	692	733	780	695
All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	153,886	619	642	674	718	765	681
FHA	91,415	611	635	662	695	731	666
VA	53,401	627	658	703	756	790	704
Other	9,070	639	657	690	730	764	695

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 May 2019.*

May 2019 Credit Box at a Glance

In May 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 both Fannie Mae and Freddie Mac. Within the Ginnie Mae market, the median LTV was 96.5 for FHA, 100.0 for VA and 100.9 for other programs.

Purchase LTV

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	306,419	72.0	80.0	95.0	96.5	100.0	87.6
Fannie	106,917	64.0	80.0	85.0	95.0	97.0	82.8
Freddie	86,739	64.0	80.0	80.0	95.0	95.0	82.0
Ginnie	112,763	93.3	96.5	96.5	100.0	102.0	96.5

Refi LTV

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	163,523	46.0	60.0	75.0	83.0	95.0	71.6
Fannie	71,425	42.0	56.0	70.0	78.0	80.0	65.6
Freddie	50,099	42.0	58.0	71.0	80.0	80.0	66.8
Ginnie	41,999	71.1	83.0	86.8	98.2	100.0	87.4

All LTV

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	469,942	57.1	75.0	85.0	96.5	98.0	82.0
Fannie	178,342	50.0	68.0	80.0	90.0	95.0	75.9
Freddie	136,838	52.0	70.0	80.0	90.0	95.0	76.4
Ginnie	154,762	84.0	94.3	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	112,763	93.3	96.5	96.5	100.0	102.0	96.5
FHA	69,830	93.6	96.5	96.5	96.5	96.5	95.2
VA	33,884	91.1	100.0	100.0	102.2	103.0	98.3
Other	9,049	95.0	98.9	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	41,999	71.1	83.0	86.8	98.2	100.0	87.4
FHA	21,626	69.0	80.8	86.5	87.0	97.6	83.7
VA	20,302	74.1	87.0	96.7	100.0	101.1	91.4
Other	71	67.9	79.1	86.3	98.0	99.2	84.4

All LTV: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	154,762	84.0	94.3	96.5	100.0	101.0	94.0
FHA	91,456	83.8	91.8	96.5	96.5	96.5	92.5
VA	54,186	82.6	95.0	100.0	100.3	102.4	95.7
Other	9,120	94.8	98.9	100.9	101.0	101.0	99.0

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 May 2019.*

May 2019 Credit Box at a Glance

In May 2019, the median Ginnie Mae debt-to-income ratio (DTI) was 42.9 percent, considerably higher than the 37 percent median DTI for both Freddie Mac and Fannie Mae. The 90th percentile for Ginnie Mae was 54.4 percent, also much higher than the 47 percent DTI for the GSEs. Within the Ginnie Mae market, the median FHA DTI ratio was 44.5 percent, versus 41.6 percent for VA and 36.2 percent for other lending programs.

Purchase DTI

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	306,060	24.0	31.5	39.1	45.3	50.0	38.2
Fannie	106,911	22.0	29.0	37.0	44.0	48.0	36.1
Freddie	86,719	22.0	29.0	37.0	43.0	47.0	35.5
Ginnie	112,430	29.3	36.0	43.0	49.5	54.4	42.3

Refi DTI

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	152,258	23.0	30.0	38.0	44.0	48.8	36.6
Fannie	71,362	22.0	29.0	37.0	43.0	47.0	35.4
Freddie	50,055	22.0	29.0	37.0	43.0	46.0	35.3
Ginnie	30,841	26.9	34.0	42.5	49.5	54.5	41.4

All DTI

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	458,318	24.0	31.0	39.0	45.0	49.2	37.7
Fannie	178,273	22.0	29.0	37.0	43.0	47.0	35.8
Freddie	136,774	22.0	29.0	37.0	43.0	47.0	35.4
Ginnie	143,271	28.9	35.6	42.9	49.5	54.4	42.1

Purchase DTI: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	112,430	29.3	36.0	43.0	49.5	54.4	42.3
FHA	69,834	30.9	37.8	44.5	50.6	54.7	43.5
VA	33,594	27.9	34.8	42.1	49.0	54.5	41.6
Other	9,002	26.2	31.0	36.2	40.2	42.8	35.2

Refi DTI: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	30,841	26.9	34.0	42.5	49.5	54.5	41.4
FHA	17,546	28.8	36.1	44.2	50.6	54.8	42.7
VA	13,241	24.6	32.0	40.1	47.7	53.3	39.6
Other	54	21.9	24.9	34.9	39.3	41.0	32.5

All DTI: Ginnie Mae Breakdown By Source

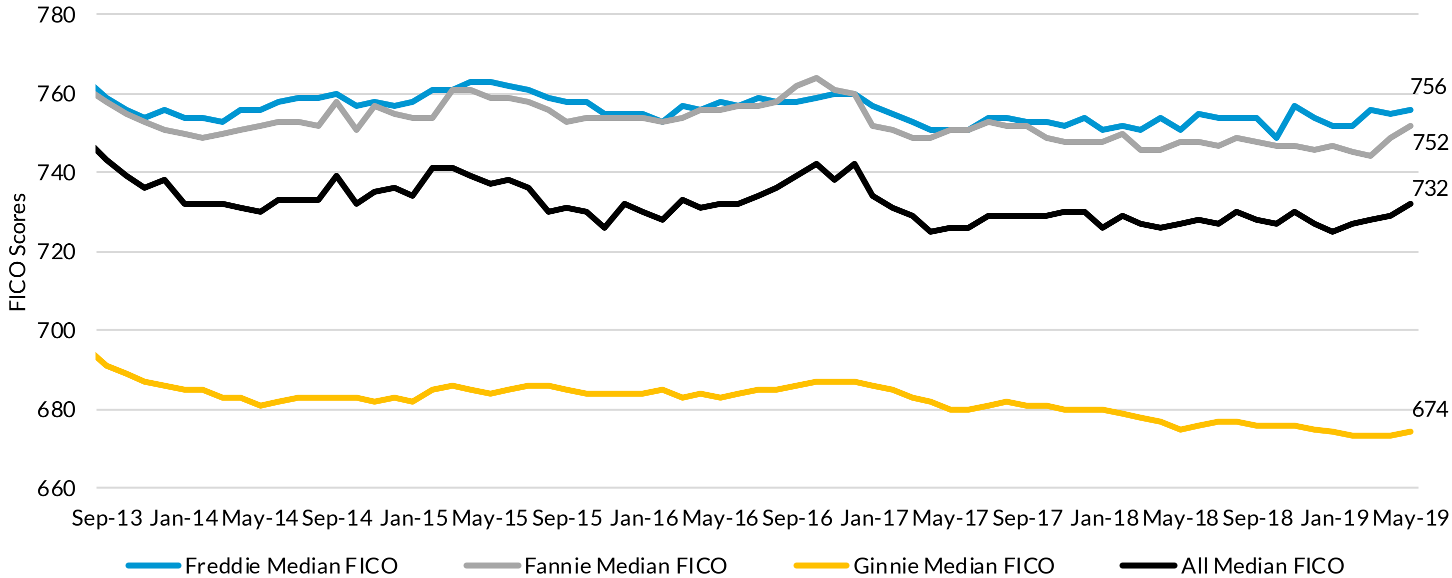
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	143,271	28.9	35.6	42.9	49.5	54.4	42.1
FHA	87,380	30.5	37.4	44.5	50.6	54.7	43.4
VA	46,835	27.0	33.9	41.6	48.7	54.2	41.0
Other	9,056	26.2	31.0	36.2	40.2	42.8	35.2

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 May 2019.*

Credit Box: Historical

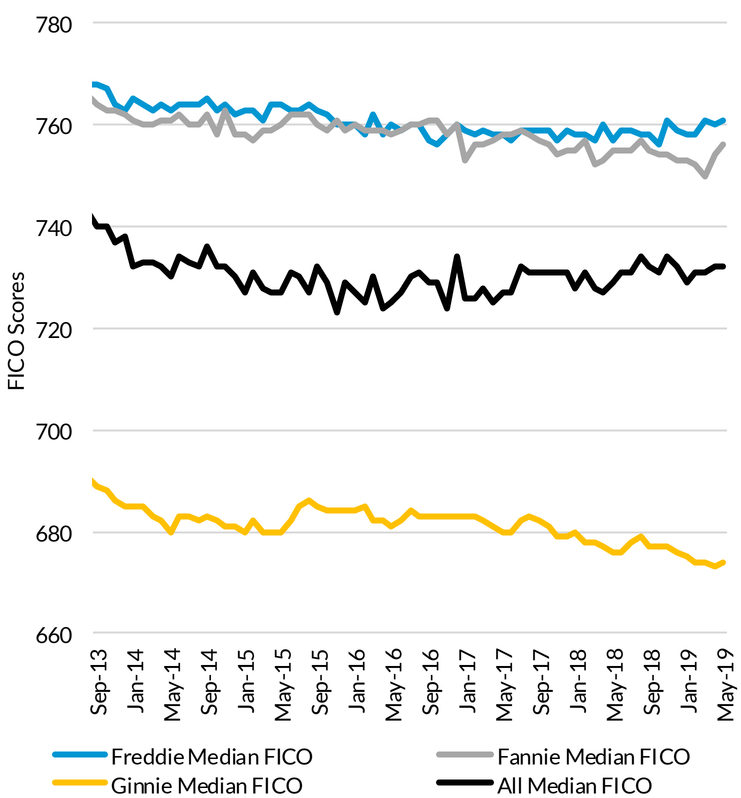
The median FICO score for all agency loans originated in May 2019 was 732, an increase from 729 in April 2019. The figures show that the median FICO score for Ginnie Mae borrowers has always been considerably lower than for GSE borrowers. Since early 2019, the median FICO score for Ginnie borrowers has trended down, while those for Fannie and Freddie are marginally higher. The difference between Ginnie Mae and GSE borrowers is wider in purchase loans than in refi loans.

FICO Scores for All Loans



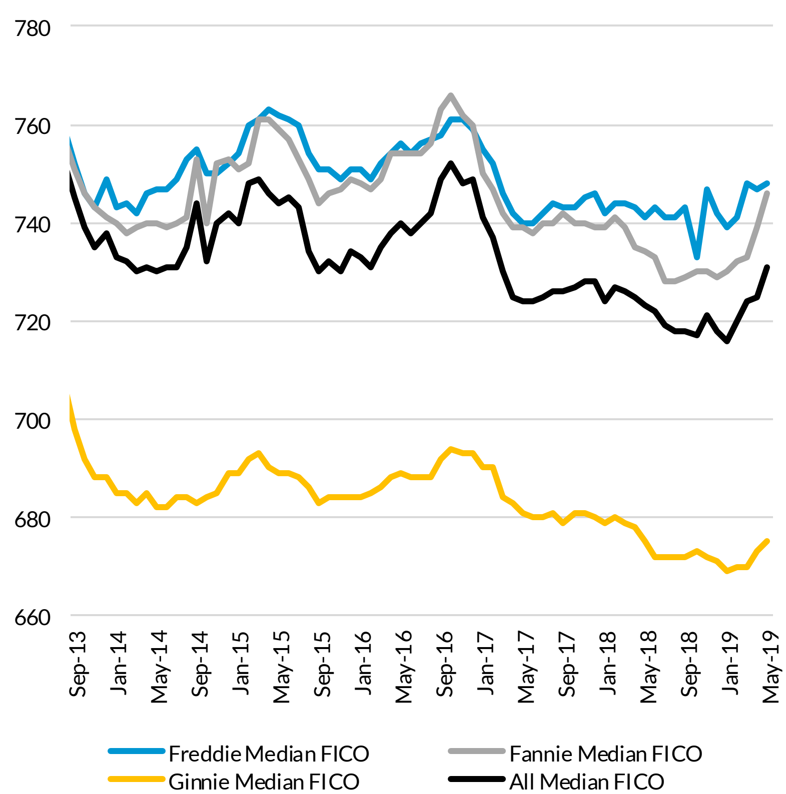
Sources: *eMBS and Urban Institute.* **Note**: *Data as of May 2019.*

FICO Scores for Purchase Loans



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

FICO Scores for Refinance Loans

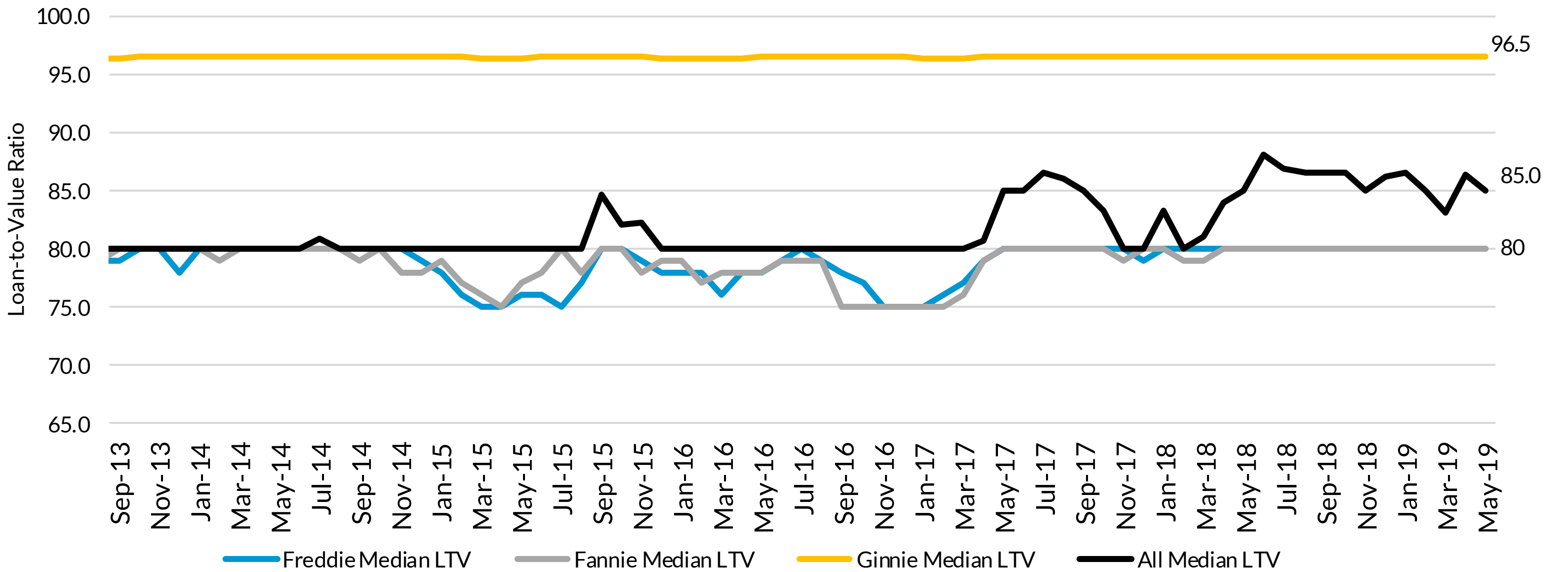


Sources: *eMBS and Urban Institute.* **Note:** *Data as of May 2019.*

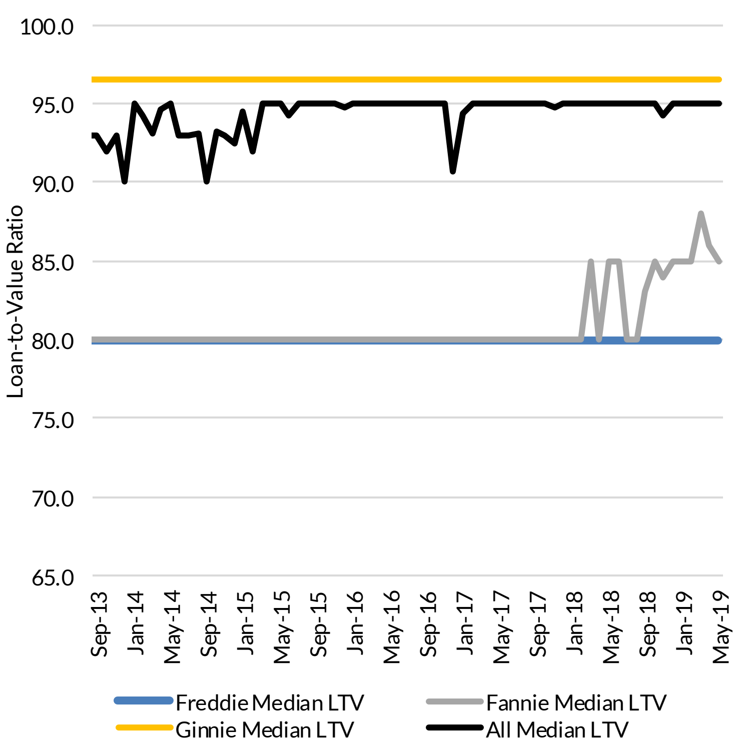
Credit Box: Historical

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 6-20 points lower than their purchase counterparts.

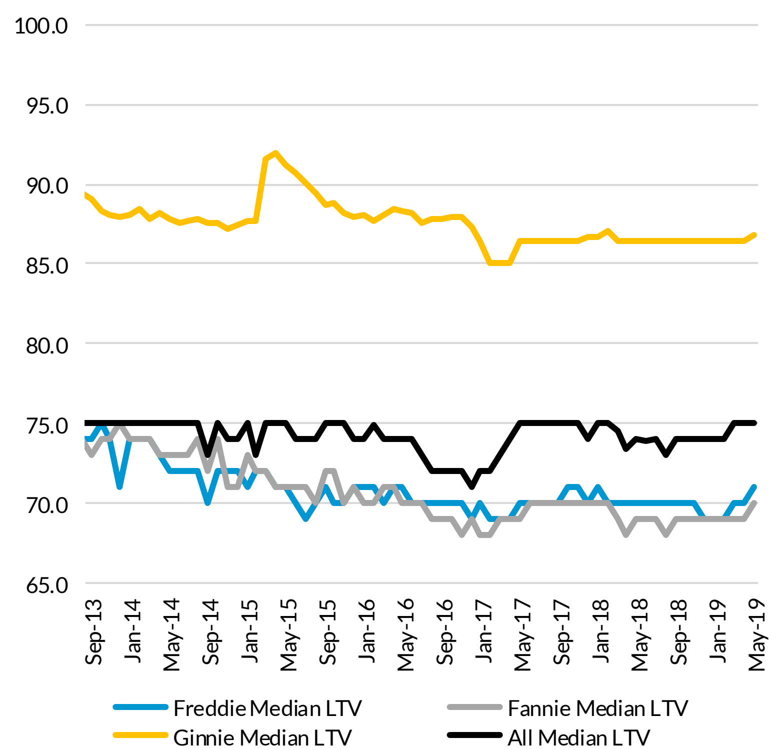
LTV Ratio for All Loans



LTV Ratio for Purchase Loans



LTV Ratio for Refinance Loans

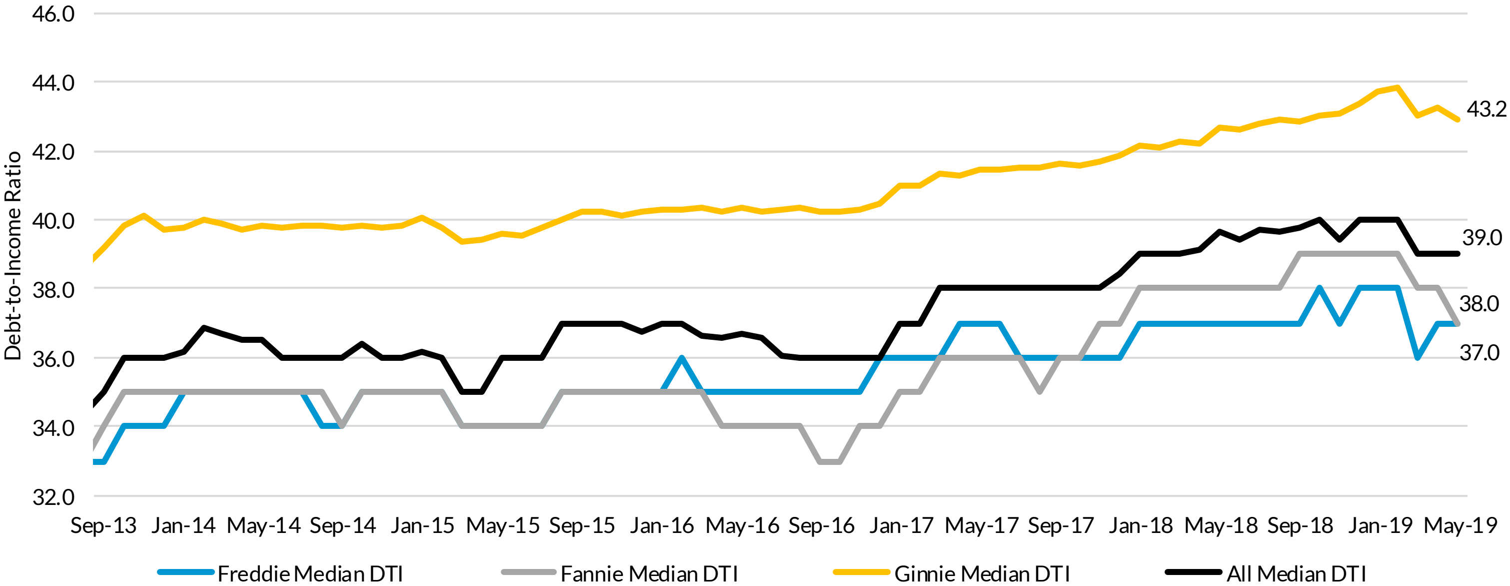


Sources: *eMBS and Urban Institute.* **Note:** *In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium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

Credit Box: Historical

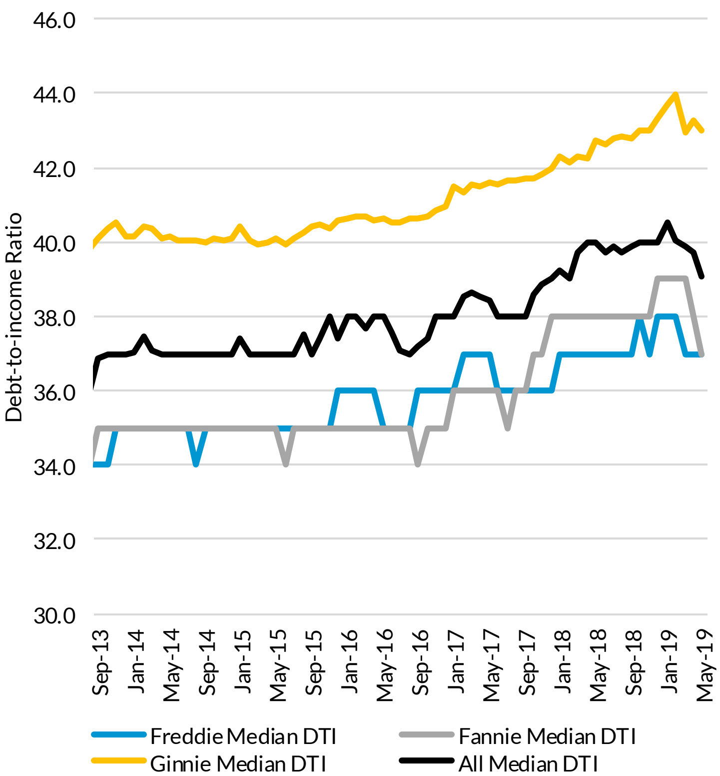
Median debt-to-income ratios on Ginnie Mae loans have historically been in the low 40s, considerably higher than for the GSEs. DTIs have increased over the past two years for both Ginnie Mae and GSE loans, with the movement more pronounced for Ginnie Mae. Increases in DTI are very typical in an environment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

DTI Ratio for All Loans



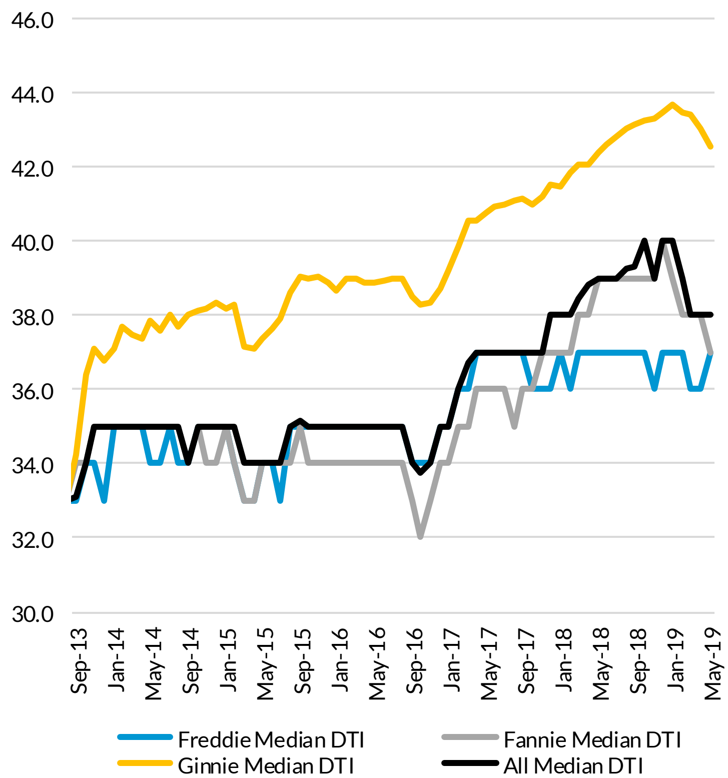
Sources: *eMBS and Urban Institute.* **Note:** *Data as of May 2019.*

DTI Ratio for Purchase Loans



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

DTI Ratio for Refinance Loans

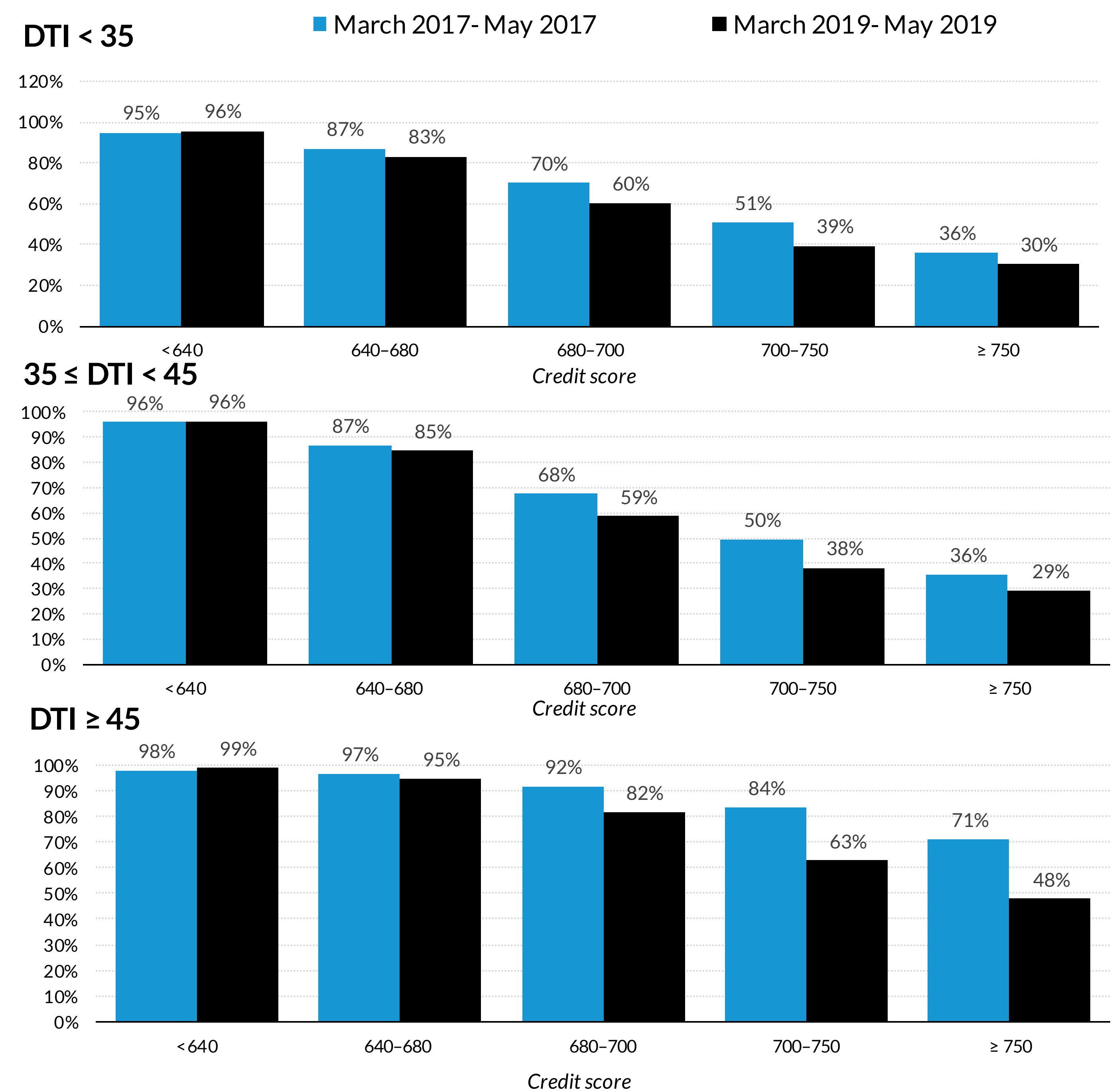


Sources: *eMBS and Urban Institute.*
Note: *Data as of May 2019.*

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 March 2019–May 2019, Ginnie Mae accounted for 96 percent of agency issuance for DTIs under 35 and FICOs below 640, compared to just 30 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 March 2019–May 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 59-60 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 70.4 percent of its issuances in the March 2019-May-2019 period having LTVs of 95 or above, compared to 20.1 percent for the GSEs. The GSEs have increased their high-LTV lending share from 15.7 percent in March 2017–May 2017. Ginnie Mae increased its high-LTV lending only slightly over the same period, up from 70.3 percent. As home prices and interest rates 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
March 2017-May 2017	70.3%	15.7%	33.9%
March 2019-May 2019	70.4%	20.1%	36.2%

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

March 2017-May 2017

	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	3.0%	6.0%	3.3%	8.0%	9.4%	29.7%
35 –45	5.4%	10.4%	5.5%	12.2%	10.1%	43.6%
≥ 45	3.7%	8.2%	3.8%	6.8%	4.3%	26.7%
All	12.1%	24.6%	12.5%	26.9%	23.8%	100.0%

March 2019-May 2019

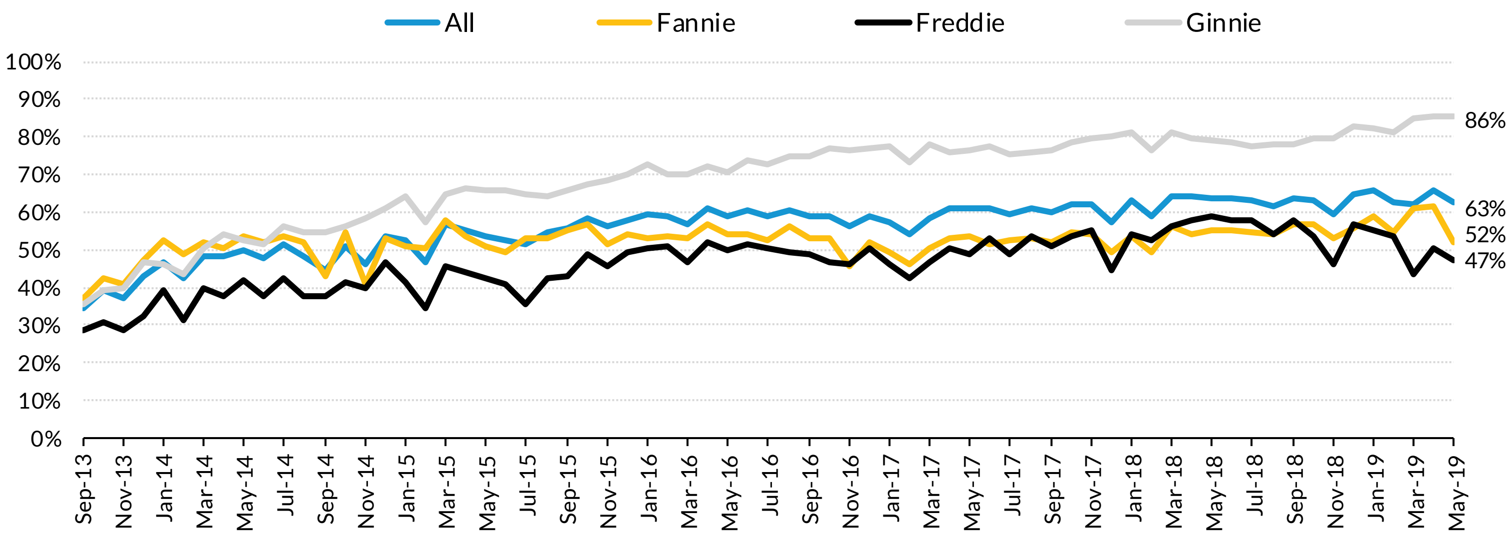
	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	3.0%	4.6%	2.5%	6.9%	8.8%	25.8%
35 –45	5.7%	8.7%	4.7%	11.4%	9.9%	40.4%
≥ 45	5.4%	8.9%	4.3%	8.9%	6.4%	33.8%
All	14.1%	22.2%	11.5%	27.1%	25.1%	100.0%

Sources: *eMBS and Urban Institute.*

Nonbank Originators

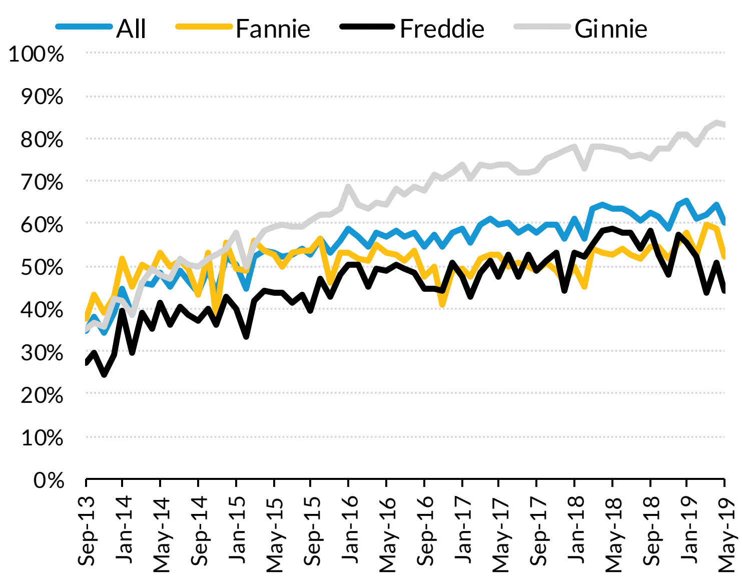
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, remaining at a record high of 86 percent in May 2019. Freddie and Fannie's nonbank shares both fell in May, to 47 and 52 percent respectively (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 refi, and has been in a decline since September 2018.

Nonbank Origination Share: All Loans

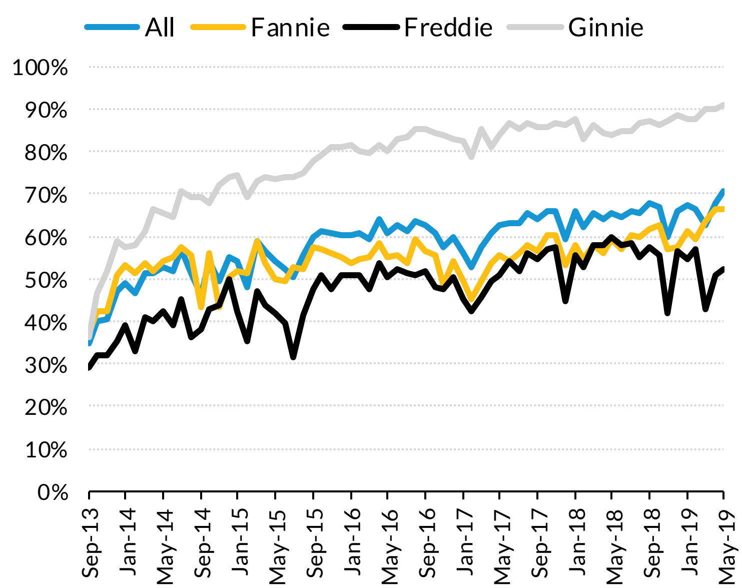


Sources: *eMBS and Urban Institute*
Note: *Data as of May 2019.*

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

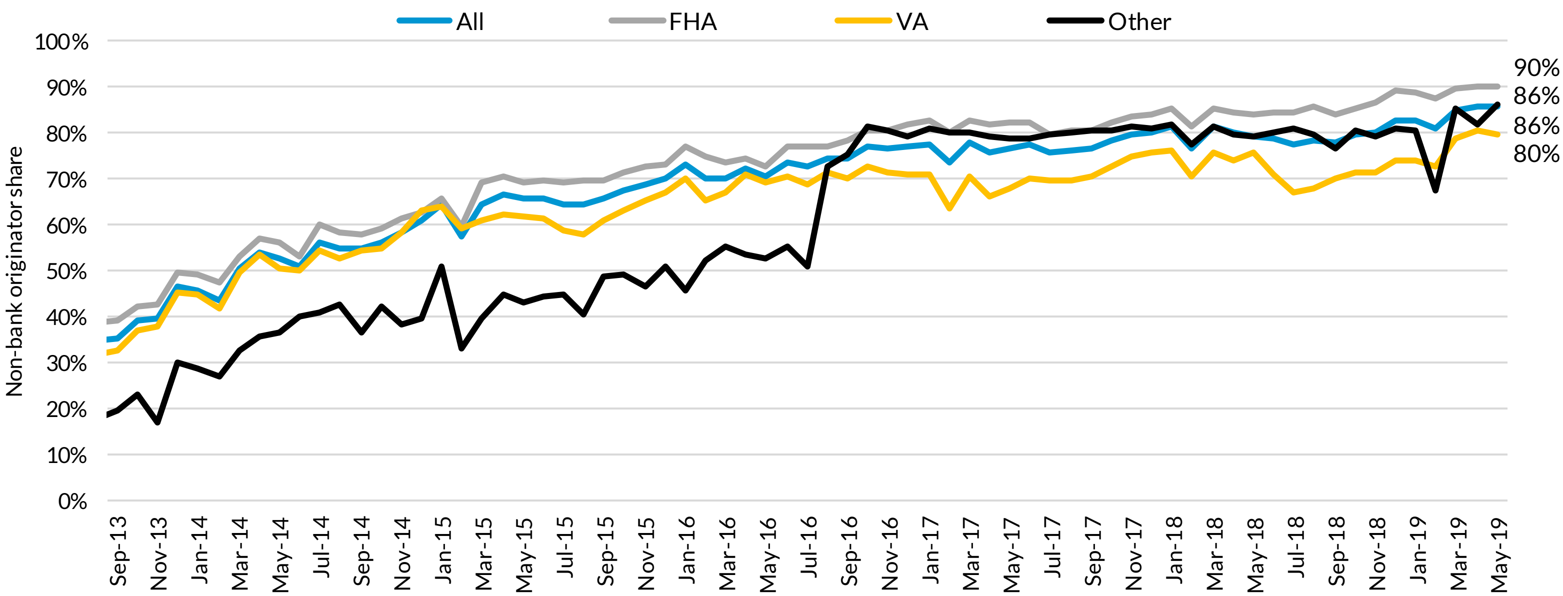


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of May 2019.*

Ginnie Mae Nonbank Originators

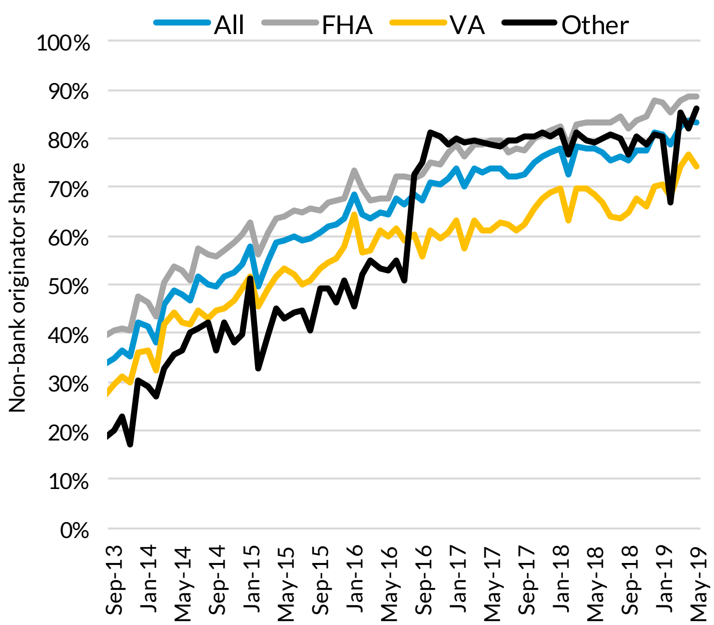
In May 2019, Ginnie Mae's nonbank share was flat at 86 percent. The nonbank originator share for FHA remained at its historical high of 90 percent. The nonbank originator share for VA was 80 percent, and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, increased to 86 percent.

Ginnie Mae Nonbank Originator Share: All Loans

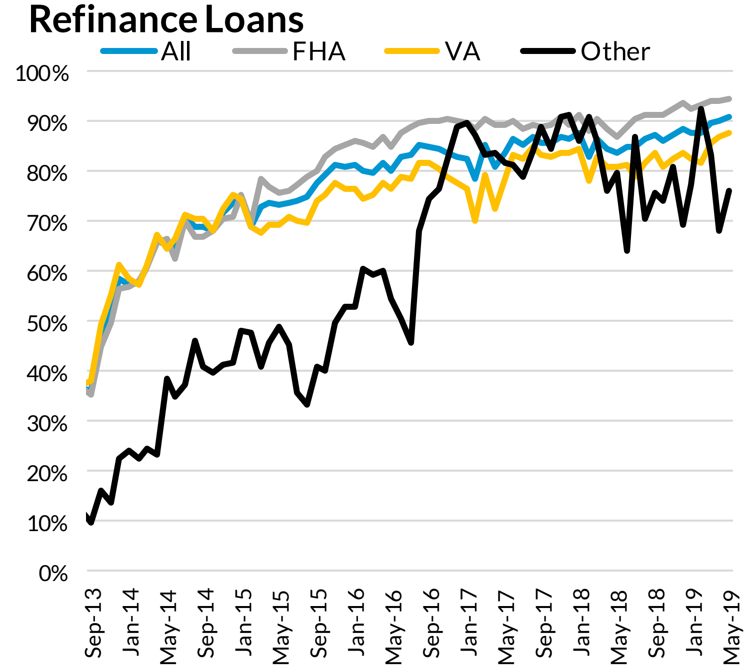


Sources: *eMBS and Urban Institute*
Note: *Data as of May 2019.*

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

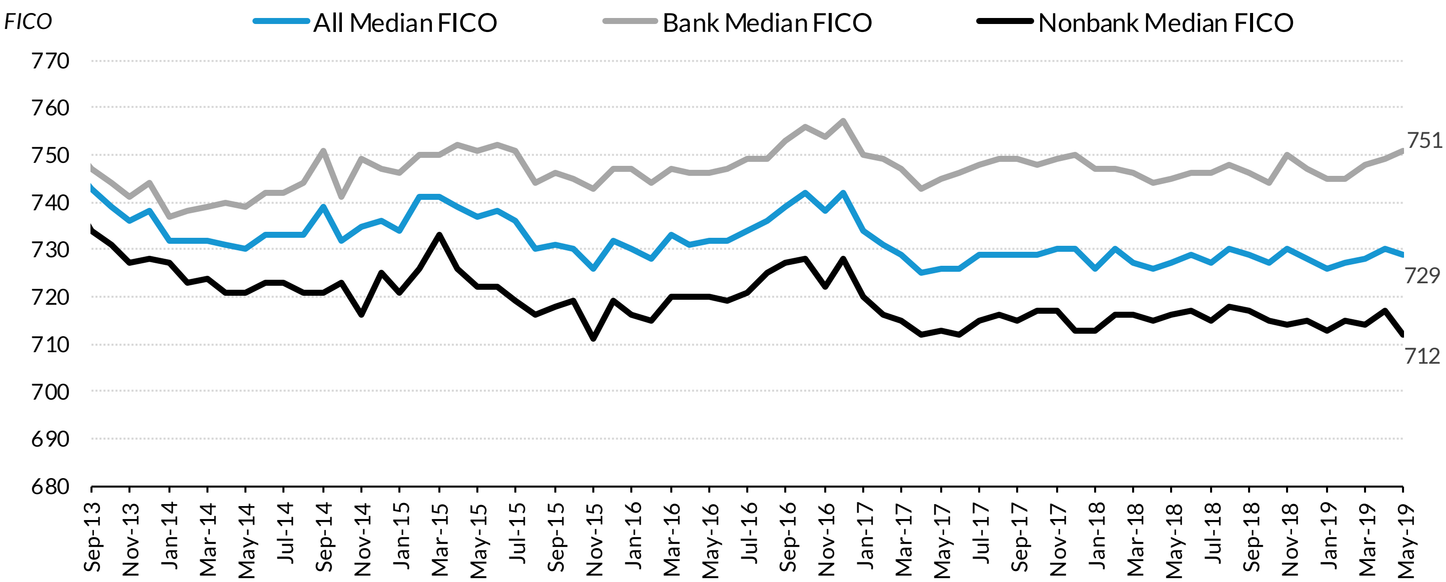


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of May 2019.*

Nonbank Credit Box

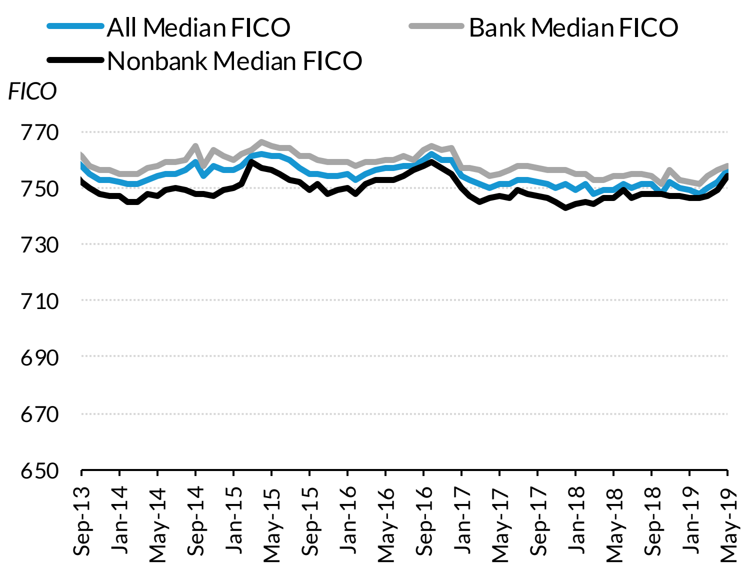
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have declined since 2014 with a further relaxation in FICOs since early 2017. In contrast, within the Ginnie Mae space, FICO scores for bank originations are flat since 2014 while nonbank FICOs have declined. This largely reflects the sharp cut-back in FHA lending by many banks.

Agency FICO: Bank vs. Nonbank



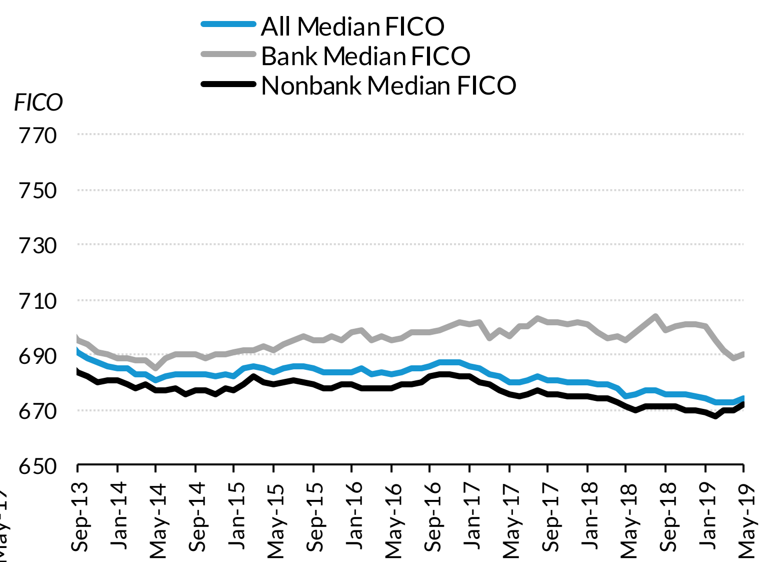
Sources: *eMBS and Urban Institute.* **Note**: *Data as of May 2019.*

GSE FICO: Bank vs. Nonbank



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

Ginnie Mae FICO: Bank vs. Nonbank

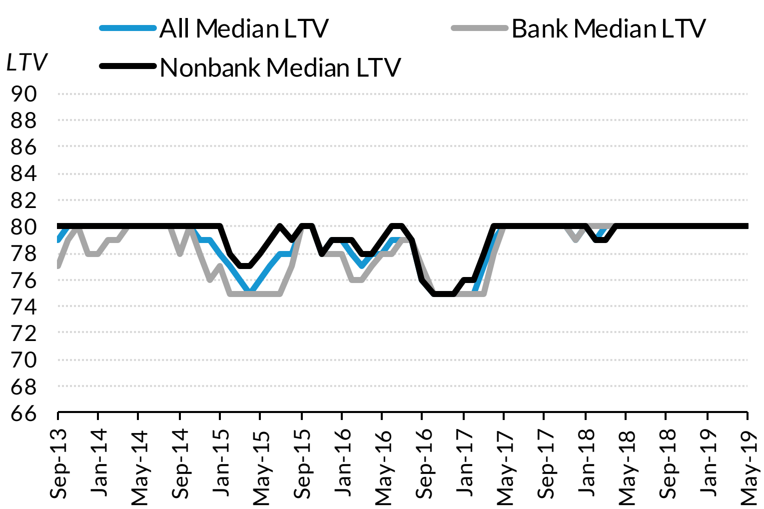


Sources: *eMBS and Urban Institute.*
Note: *Data as of May 2019.*

Nonbank Credit Box

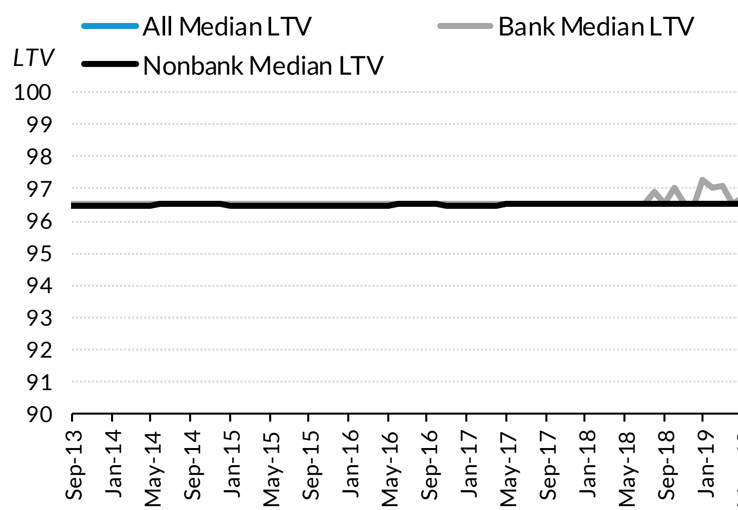
The median LTVs for nonbank and bank originations are comparable, while the median DTI for nonbank loans is higher than for bank loans, indicating that nonbanks are more accommodating in both this and the FICO dimension. Since early 2017, there has been a substantial increase in DTIs, which has partially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

GSE LTV: Bank vs. Nonbank



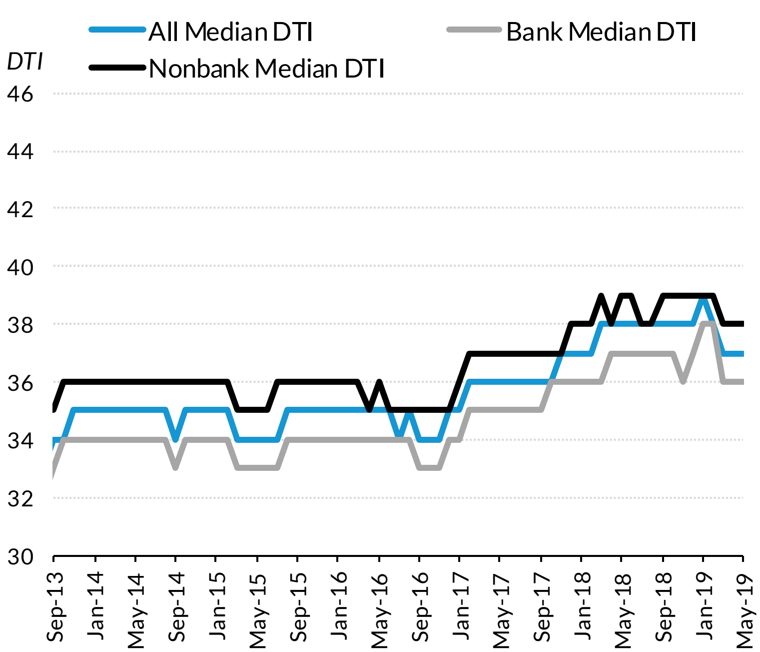
Sources: *eMBS and Urban Institute.* **Note:** *Data as of May 2019.*

Ginnie Mae LTV: Bank vs. Nonbank



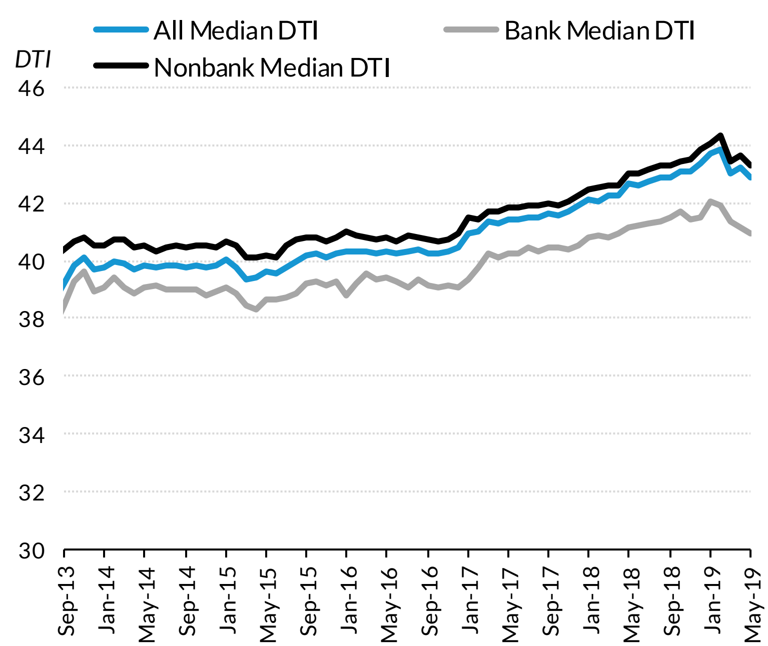
Sources: *eMBS and Urban Institute.* **Note:** *Data as of May 2019.*

GSE DTI: Bank vs. Nonbank



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

Ginnie Mae DTI: Bank vs. Nonbank

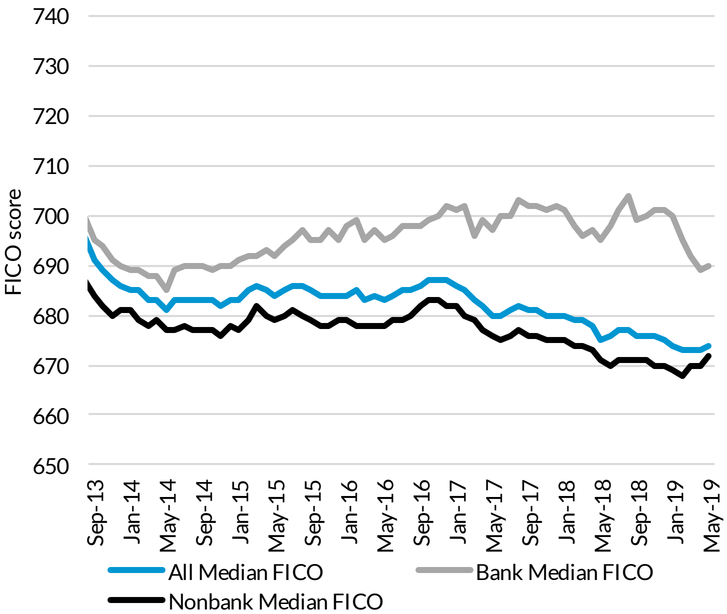


Sources: *eMBS and Urban Institute.* **Note:** *Data as of May 2019.*

Ginnie Mae Nonbank Originators: Credit Box

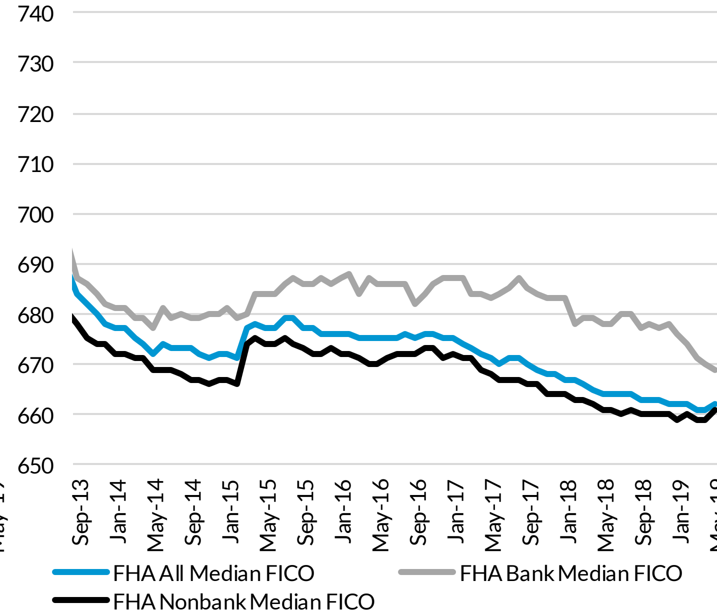
The FICO scores for both Ginnie Mae nonbank and bank originators increased slightly in May 2019. The spread in the FICO scores between banks and nonbanks has increased since 2013, but narrowed in 2019 as bank FICOs have fallen. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



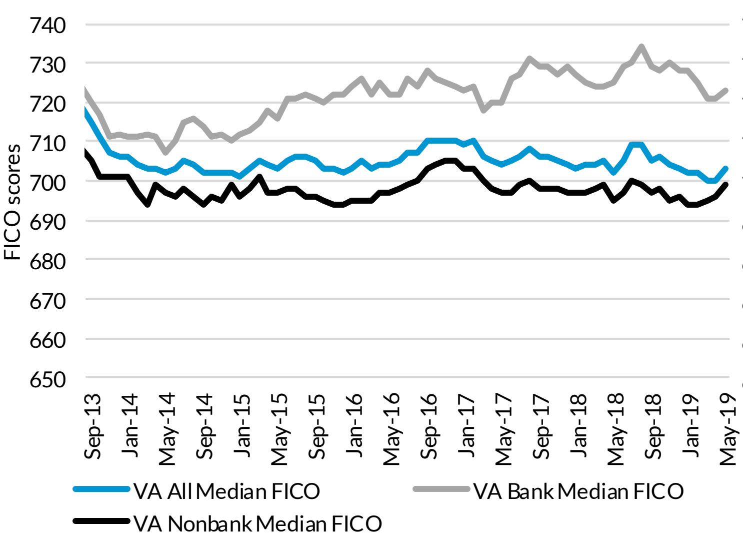
Sources: *eMBS and Urban Institute* **Note:** *Data as of May 2019.*

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



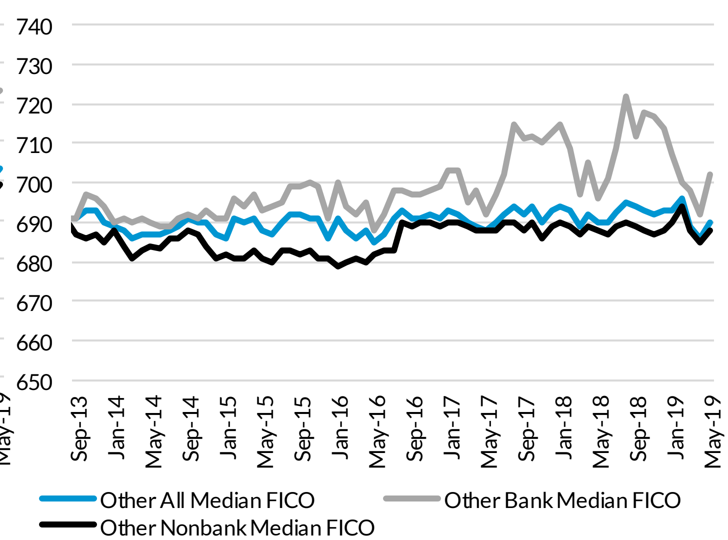
Sources: *eMBS and Urban Institute* **Note:** *Data as of May 2019.*

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



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

Ginnie Mae Other FICO Scores: Bank vs. Nonbank

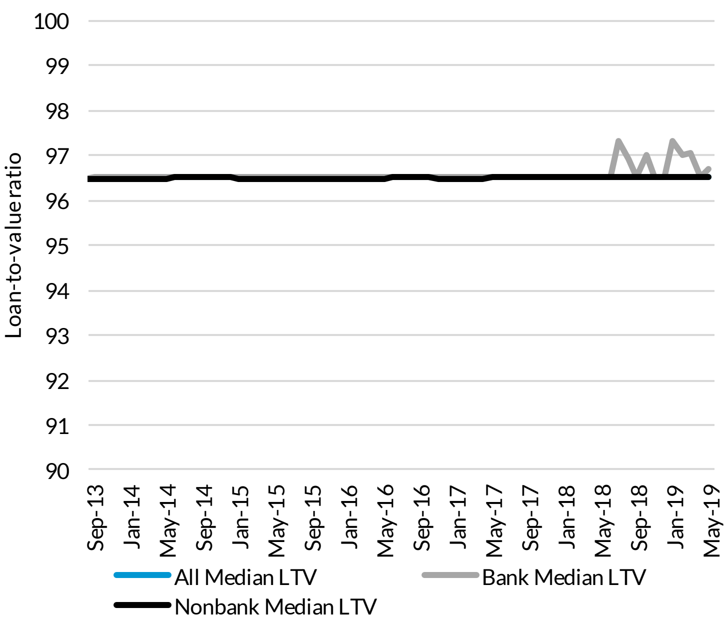


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of May 2019.*

Ginnie Mae Nonbank Originators: Credit Box

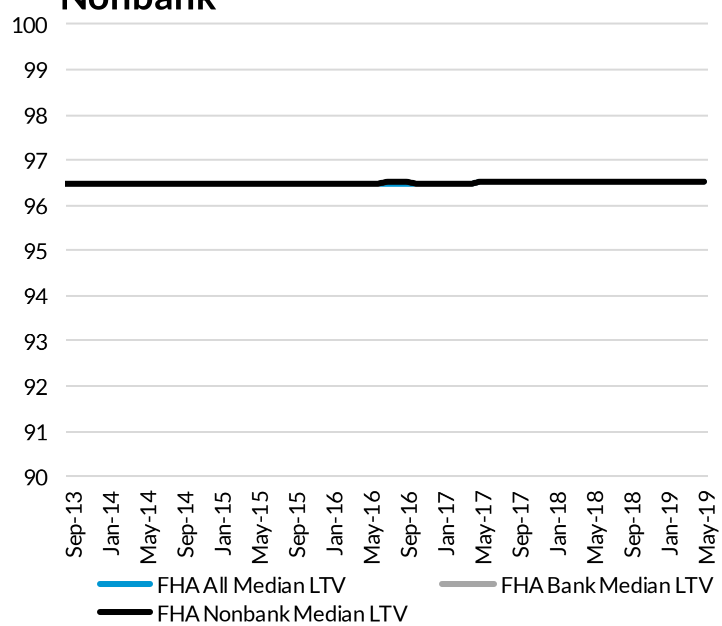
An analysis of the loans backing Ginnie Mae origination indicates that there are virtually no differences in median LTV ratios between bank originated loans and nonbank originated loans.

Ginnie Mae LTV: Bank vs. Nonbank



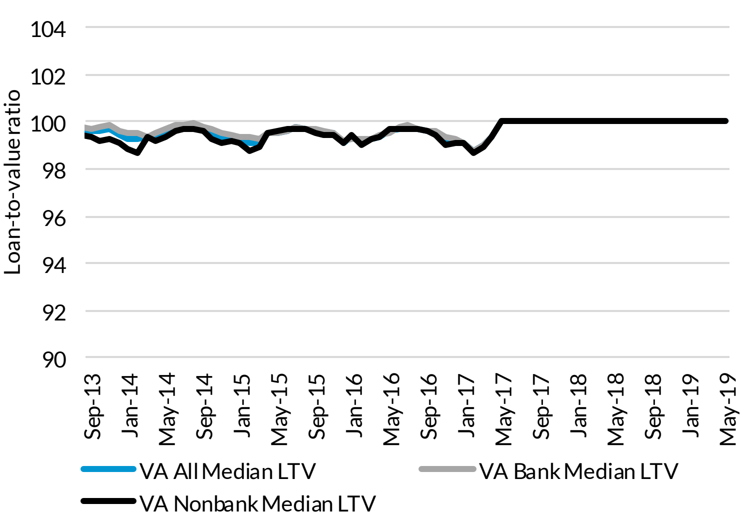
Sources: *eMBS and Urban Institute* **Note:** *Data as of May 2019.*

Ginnie Mae FHA LTV: Bank vs. Nonbank



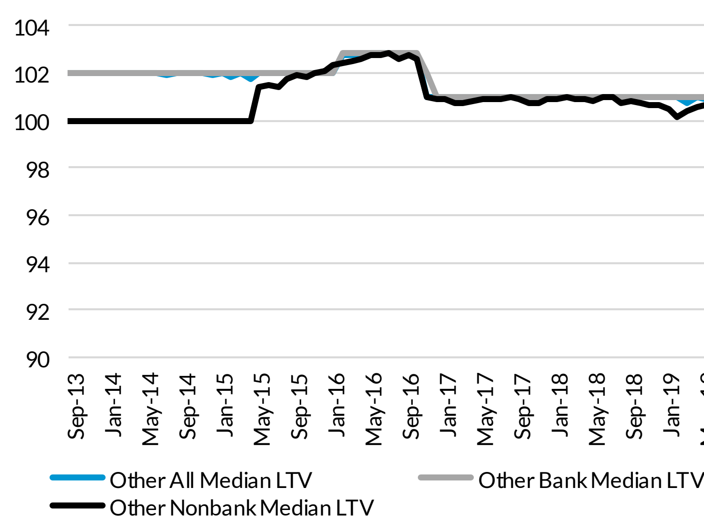
Sources: *eMBS and Urban Institute* **Note:** *Data as of May 2019.*

Ginnie Mae VA LTV: Bank vs. Nonbank



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

Ginnie Mae Other LTV: Bank vs. Nonbank

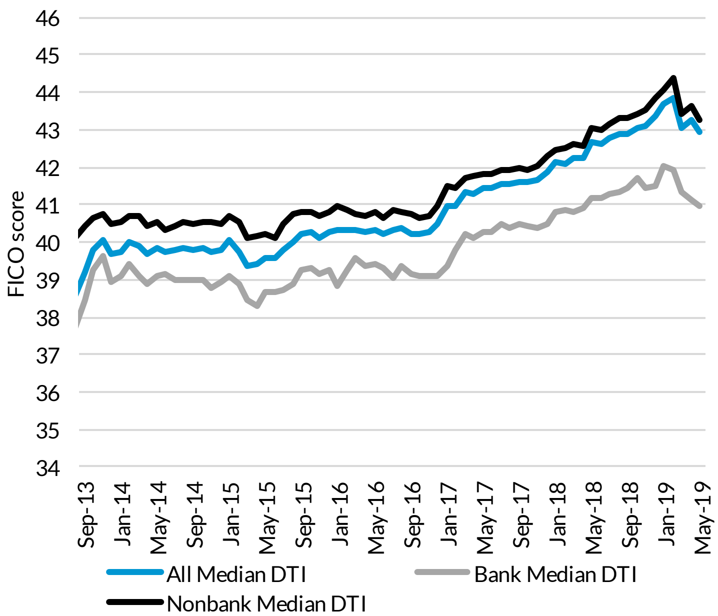


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of May 2019.*

Ginnie Mae Nonbank Originators: Credit Box

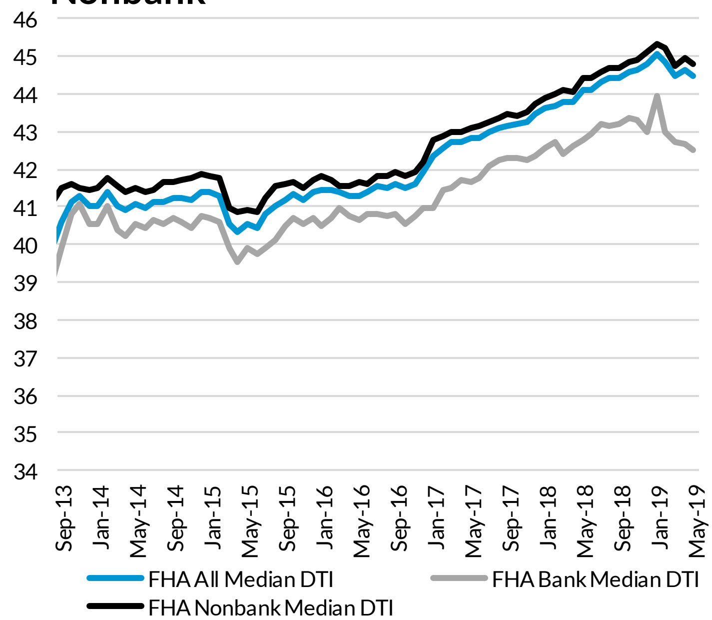
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA loans experienced notable increases since early 2017 for both bank and nonbank originations, while the Other origination DTIs stayed relatively flat. Rising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

Ginnie Mae DTI: Bank vs. Nonbank



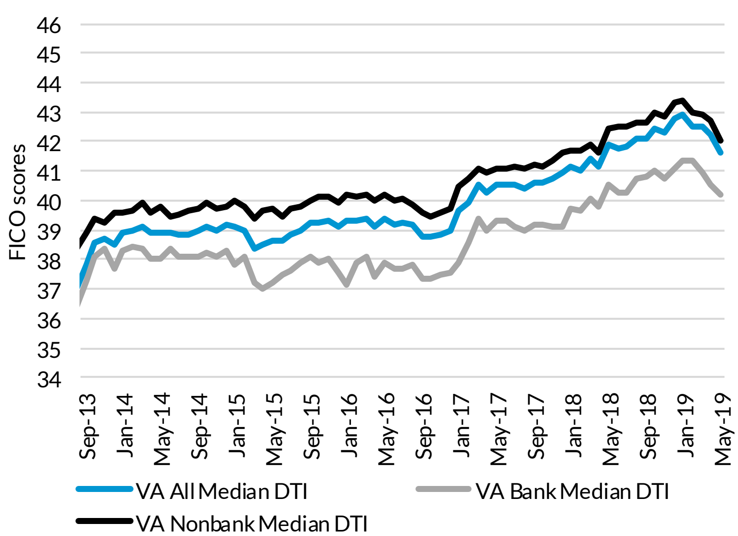
Sources: *eMBS and Urban Institute* **Note:** *Data as of May 2019.*

Ginnie Mae FHA DTI: Bank vs. Nonbank



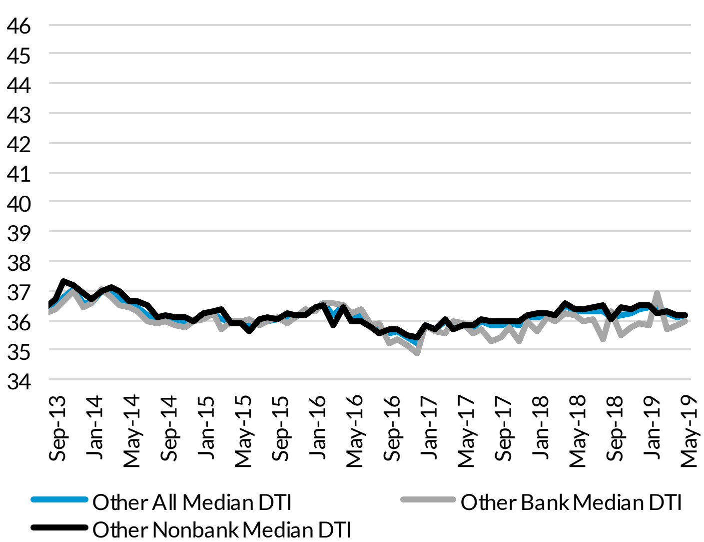
Sources: *eMBS and Urban Institute* **Note:** *Data as of May 2019.*

Ginnie Mae VA DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *Data as of May 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 May 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 May 2019, over half (51.9 percent) of the Ginnie Mae MSRs are owned by the top six firms. The top 30 firms collectively own 84.7 percent. Eighteen of these 30 are non-depositories, the remaining 12 are depository institutions.

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

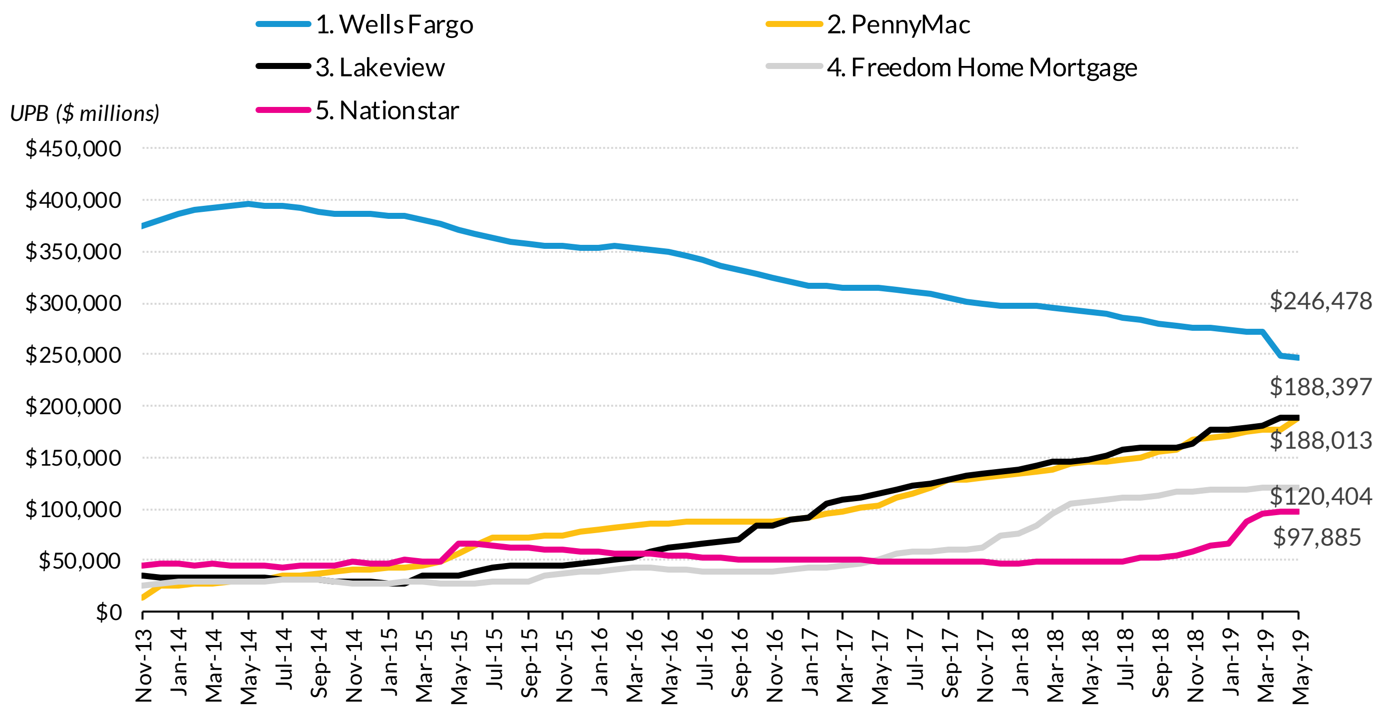
Rank	MSR Holder	UPB ($ millions)	Share	Cumulative Share
1	Wells Fargo	$246,478	14.1%	14.1%
2	PennyMac	$188,397	10.8%	24.8%
3	Lakeview	$188,013	10.7%	35.6%
4	Freedom Home Mortgage	$120,404	6.9%	42.5%
5	Nationstar	$97,885	5.6%	48.0%
6	Quicken Loans	$66,877	3.8%	51.9%
7	US Bank	$60,725	3.5%	55.3%
8	JPMorgan Chase	$54,406	3.1%	58.4%
9	Carrington Home Mortgage	$43,386	2.5%	60.9%
10	USAA Federal Savings Bank	$38,246	2.2%	63.1%
11	Caliber Home Loans	$37,036	2.1%	65.2%
12	Newrez	$27,818	1.6%	66.8%
13	Navy Federal Credit Union	$25,560	1.5%	68.3%
14	Amerihome Mortgage	$23,300	1.3%	69.6%
15	Midfirst Bank	$23,197	1.3%	70.9%
16	The Money Source	$22,262	1.3%	72.2%
17	M&T Bank	$20,979	1.2%	73.4%
18	Suntrust	$19,109	1.1%	74.5%
19	Ditech Financial	$17,635	1.0%	75.5%
20	Home Point Financial	$17,510	1.0%	76.5%
21	Roundpoint	$17,154	1.0%	77.5%
22	Branch Banking and Trust	$16,211	0.9%	78.4%
23	Guild Mortgage	$16,129	0.9%	79.3%
24	Ocwen	$15,034	0.9%	80.2%
25	Loan Depot	$14,663	0.8%	81.0%
26	Flagstar Bank	$14,514	0.8%	81.8%
27	Pingora	$14,437	0.8%	82.7%
28	Citizens Bank	$12,396	0.7%	83.4%
29	Bank of America	$12,077	0.7%	84.1%
30	PNC	$10,907	0.6%	84.7%

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

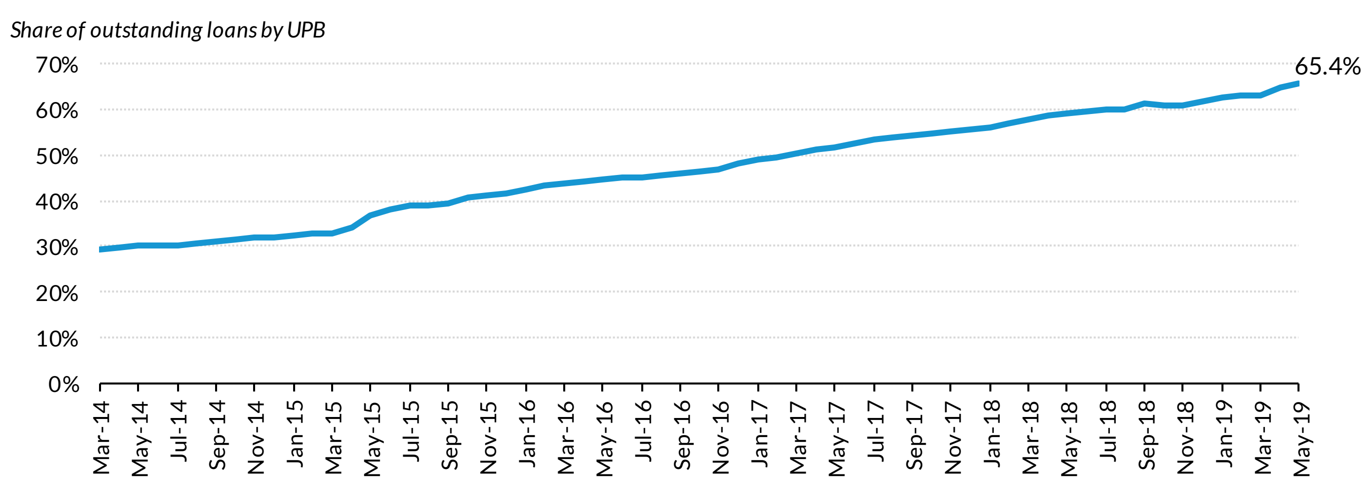
Holders of Ginnie Mae MSRs

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 $246 billion. PennyMac, Lakeview, Freedom Home Mortgage, and Nationstar (all nonbanks) make up the remainder of the top five largest holders of MSRs, owning $188 billion, $188 billion, $120 billion, and $98 billion respectively as of May 2019. PennyMac surpassed Lakeview to become the second largest holder of Ginnie Mae MSRs. As of May 2019, nonbanks collectively owned servicing rights for 65.4 percent of all outstanding unpaid principal balance guaranteed by Ginnie Mae. In December 2013, the nonbank share was much smaller at 27.7 percent.

Top 5 MSR Holders: Outstanding Ginnie Mae Loans by UPB



Share of Ginnie Mae MSRs held by Nonbanks



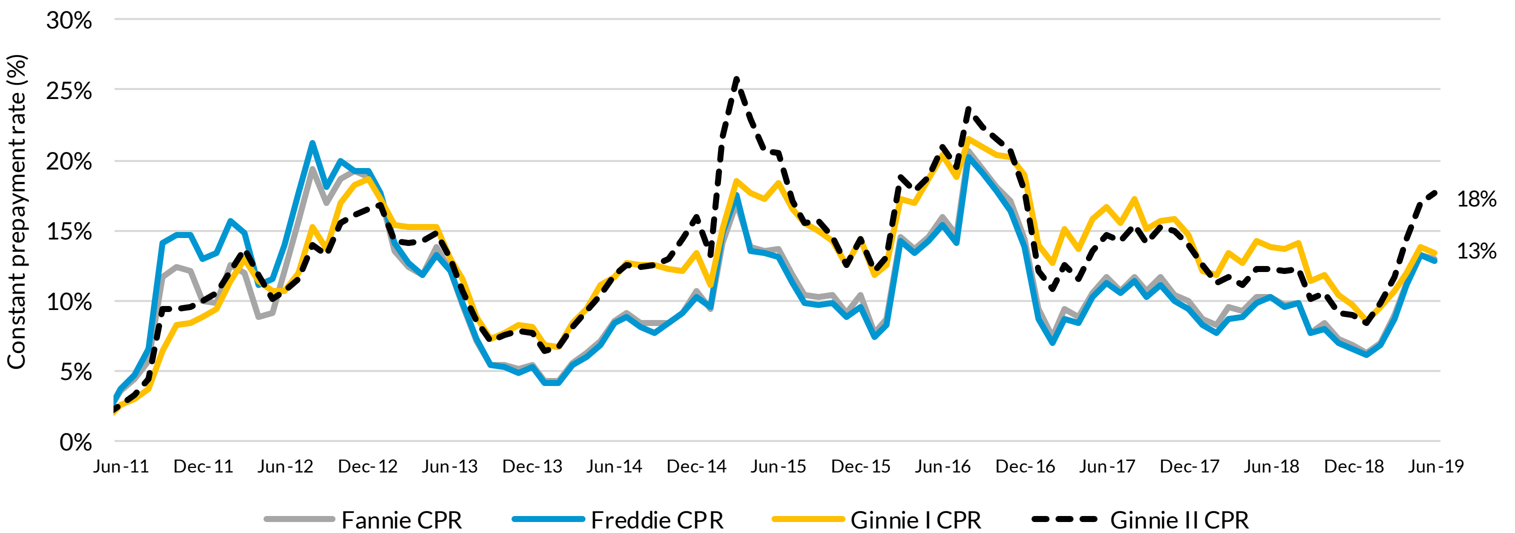
Sources: *eMBS and Urban Institute*. **Note:** *Data as of May 2019.*

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.

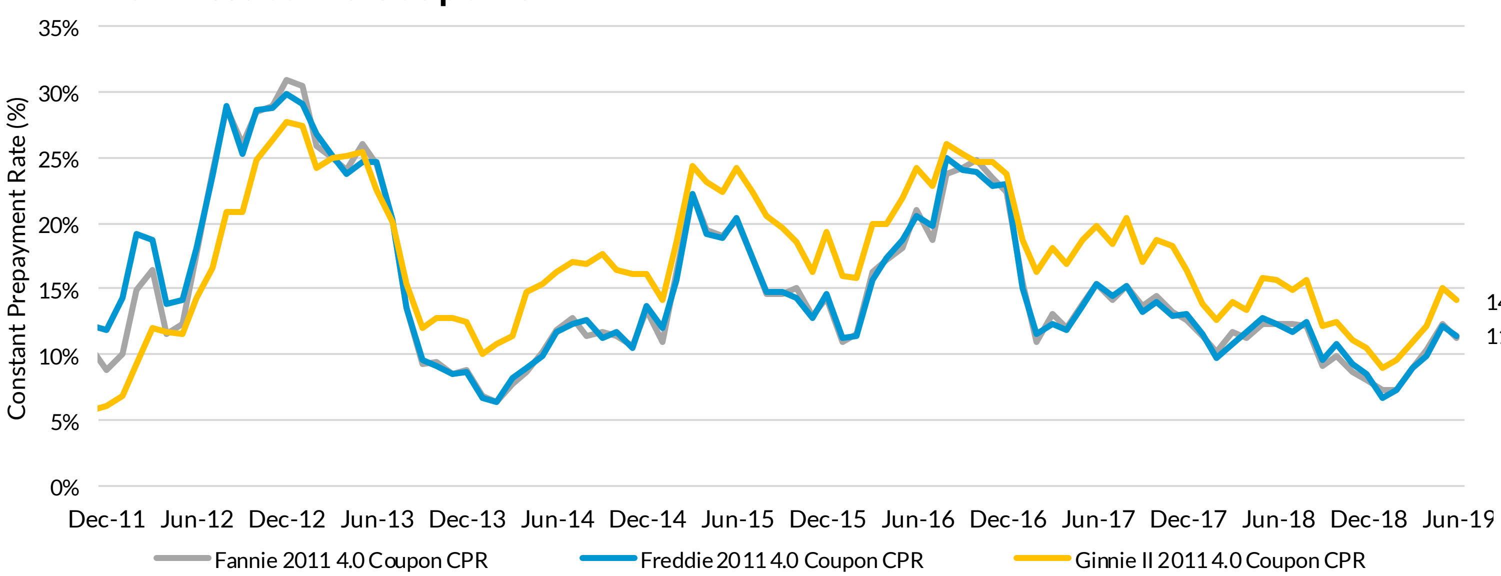
With the increase in interest rates since November 2016, the prepayment speeds for all agencies have slowed down considerably. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economical to refinance, the small month to month variation in speeds reflected seasonality, changes in day count and changes in rates. With the drop in rates beginning in late 2018, we have seen some pick up in prepayment activity in recent months; we expect more as borrowers realize and act on the opportunity to refinance at attractive rates.

Aggregate Prepayments



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

2011 Issued 4.0 Coupon CPR



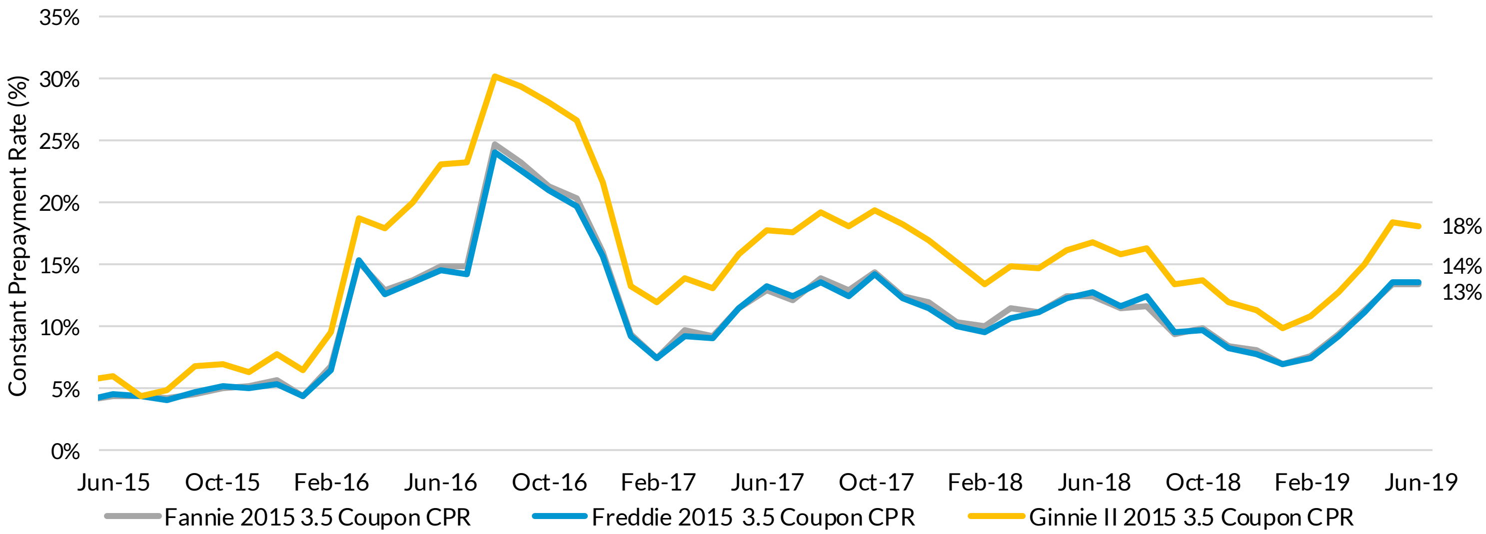
Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of June 2019.*

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.

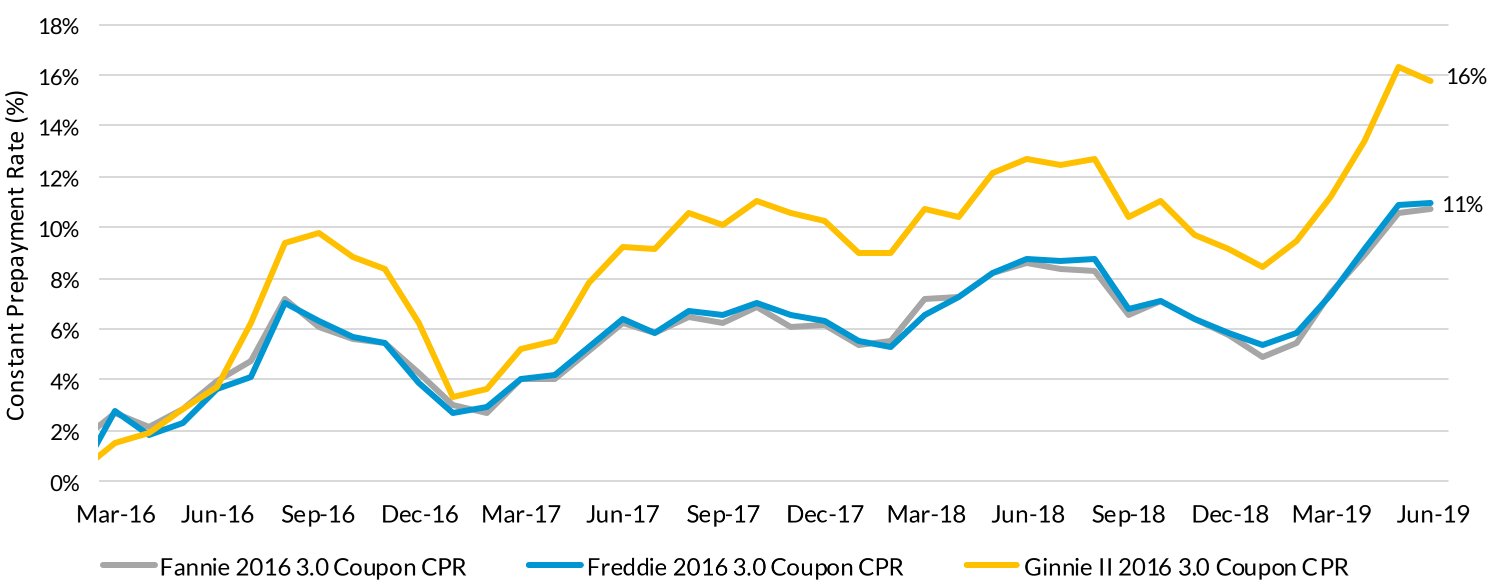
After a sharp mortgage rate increase in November 2016, the prepayment speeds of Ginnie Mae and conventional loans both fell dramatically. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflected seasonality, changes in day count and changes in mortgage interest rates. With the drop in rates beginning in late 2018, we have seen some pick up in prepayment activity in recent months; we expect more as borrowers realize and act on the opportunity to refinance at attractive rates.

2015 Issued 3.5 Coupon CPR



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

2016 Issued 3.0 Coupon CPR

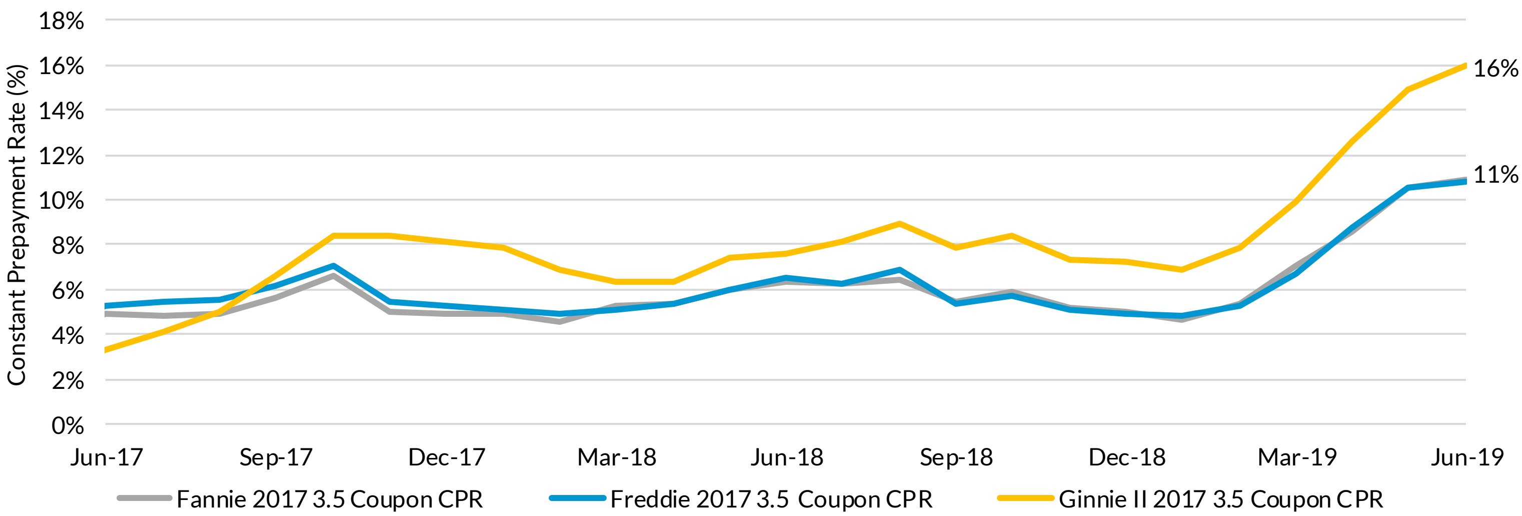


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of June 2019.*

Prepayments

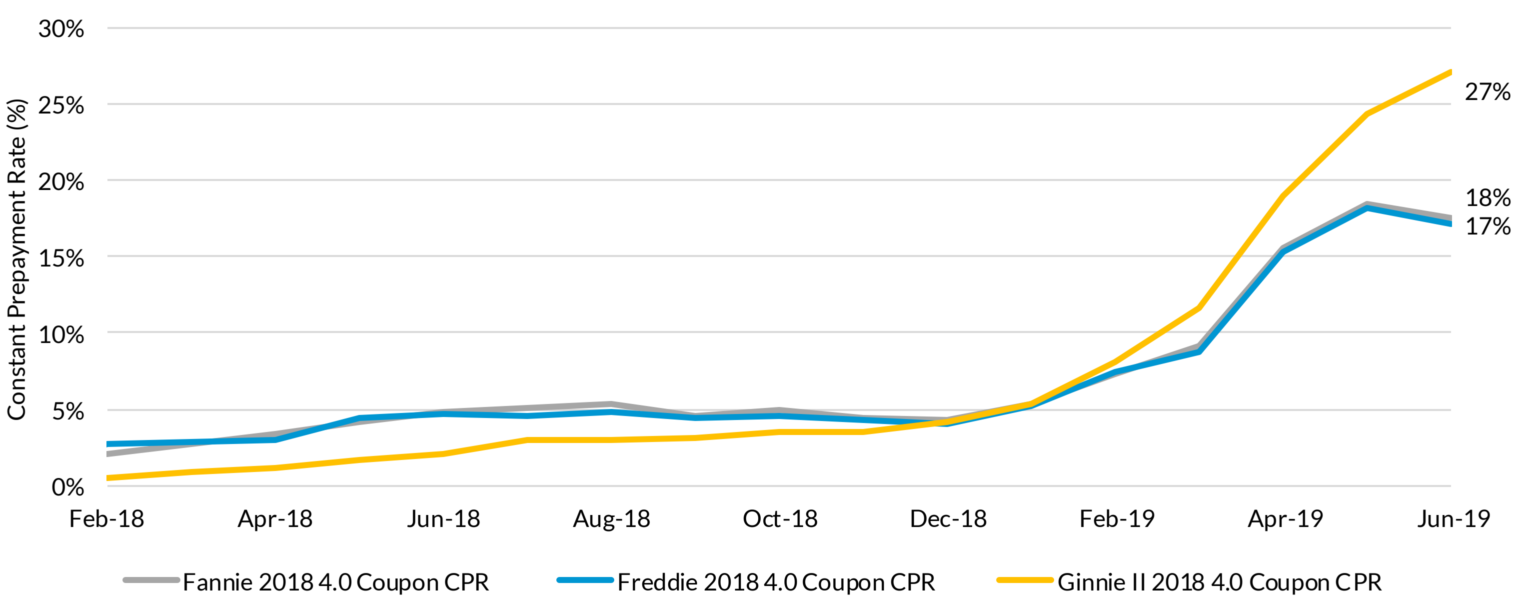
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayments in the early months. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of those vintage years. Despite slower seasoning, 2017 Ginnie II 3.5s have been prepaying faster than their conventional counterparts since late 2017, due primarily to fast VA prepayment speeds. In comparison, 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 June 2019.*

2018 Issued 4.0 Coupon CPR

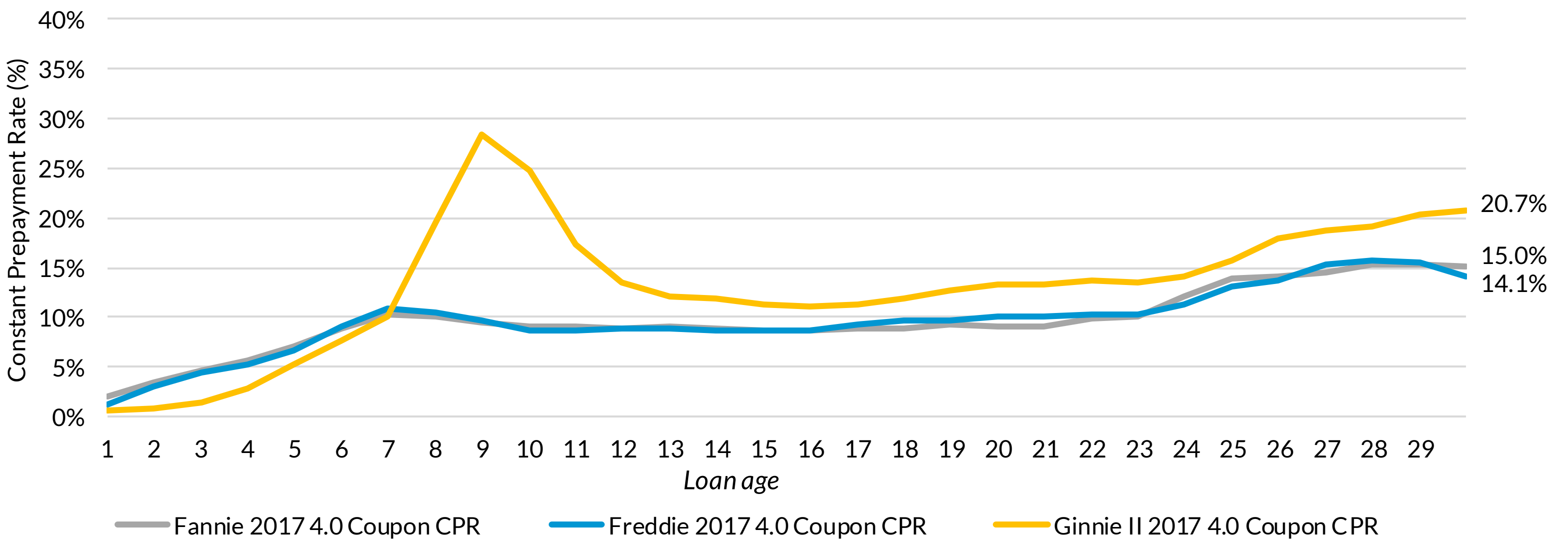


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of June 2019.*

Prepayments

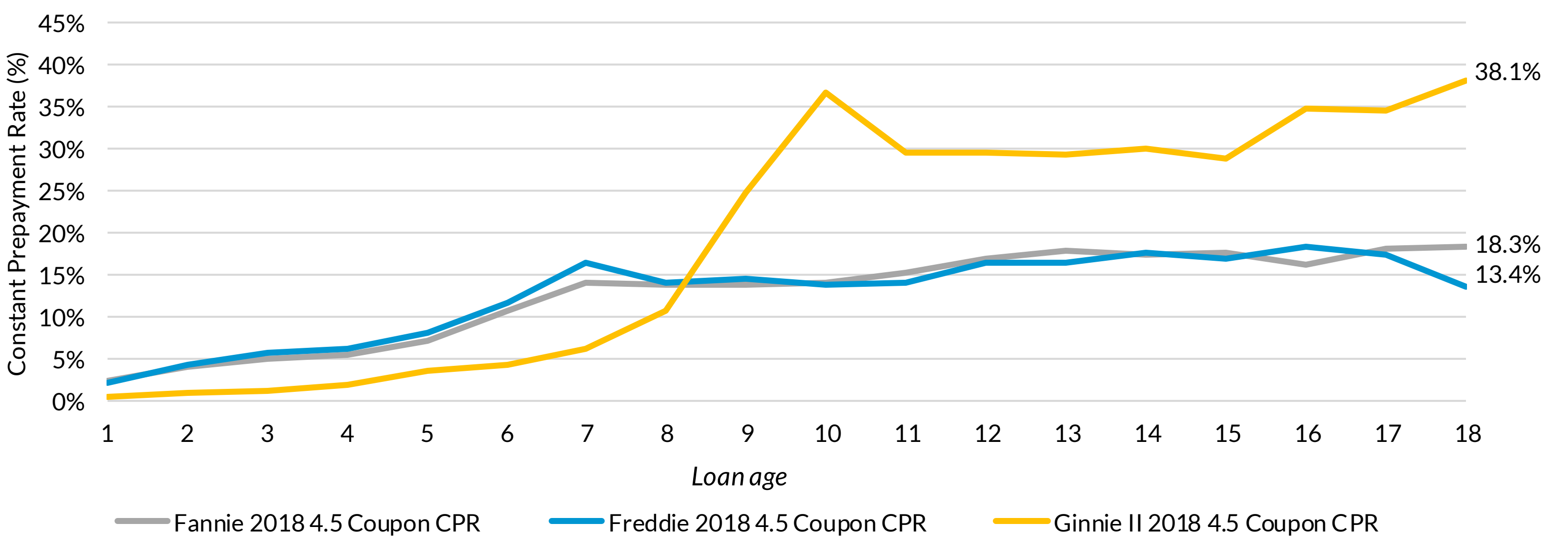
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s —the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined 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. 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 June 2019.*

2018 Issued 4.5 Coupon CPR, by Loan Age

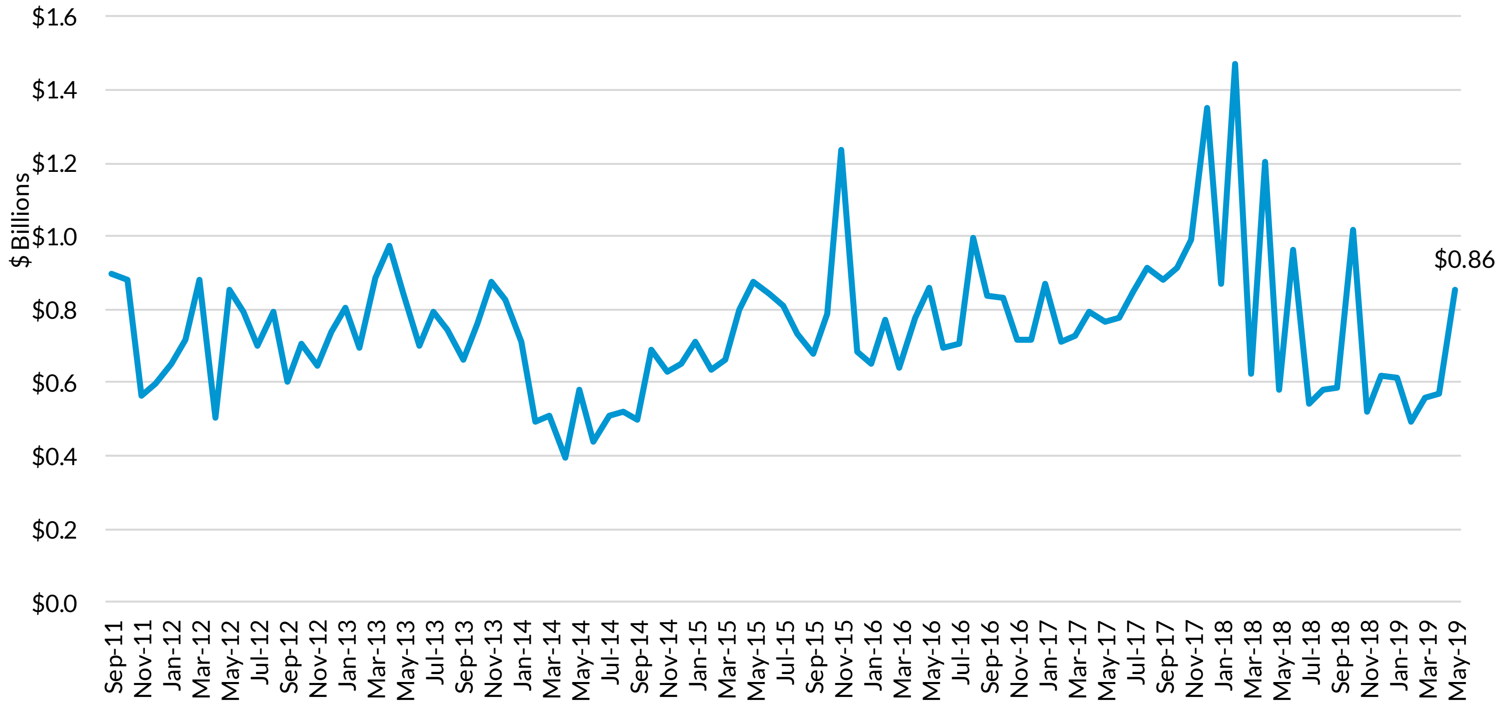


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of June 2019.*

Other Ginnie Mae Programs
Reverse Mortgage Volumes

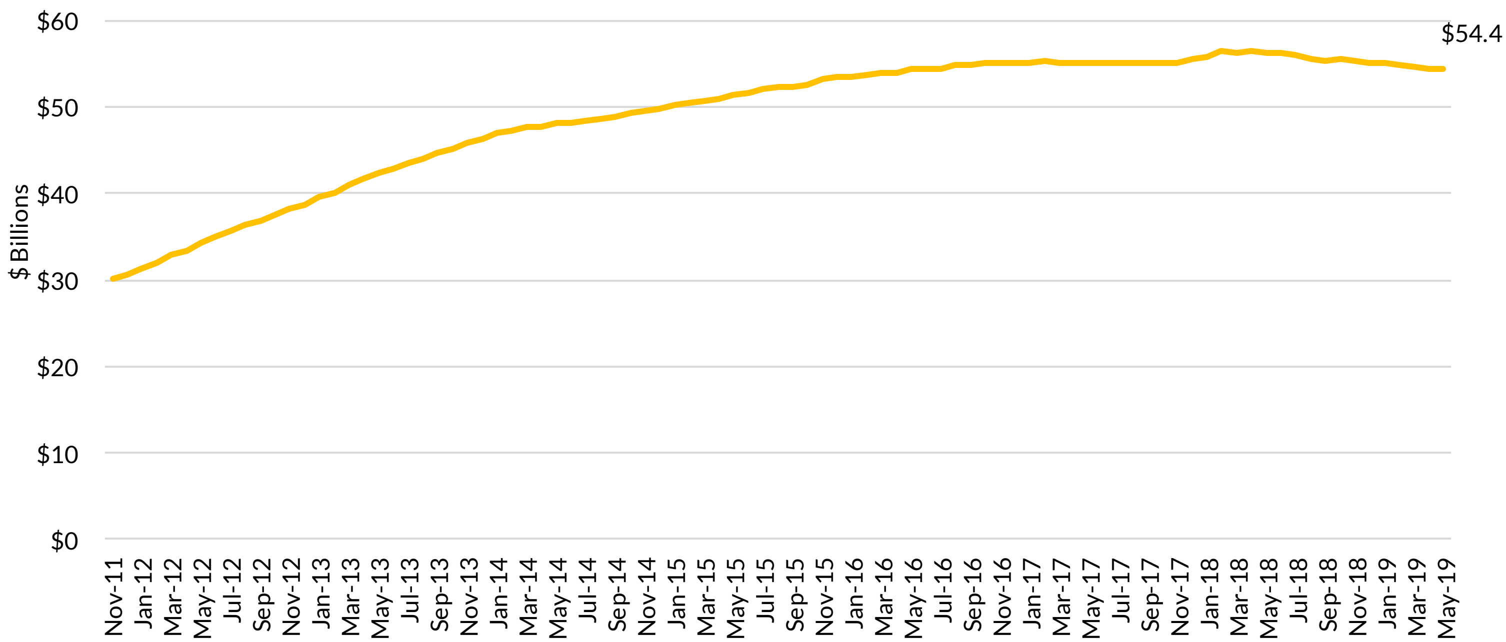
Ginnie Mae reverse mortgage issuance has been volatile in recent months; the May 2019 volume increased to $0.86 billion. Issuance has been declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In May 2019, outstanding reverse mortgage securities totaled $54.4 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 May 2019.*

HMBS Outstanding

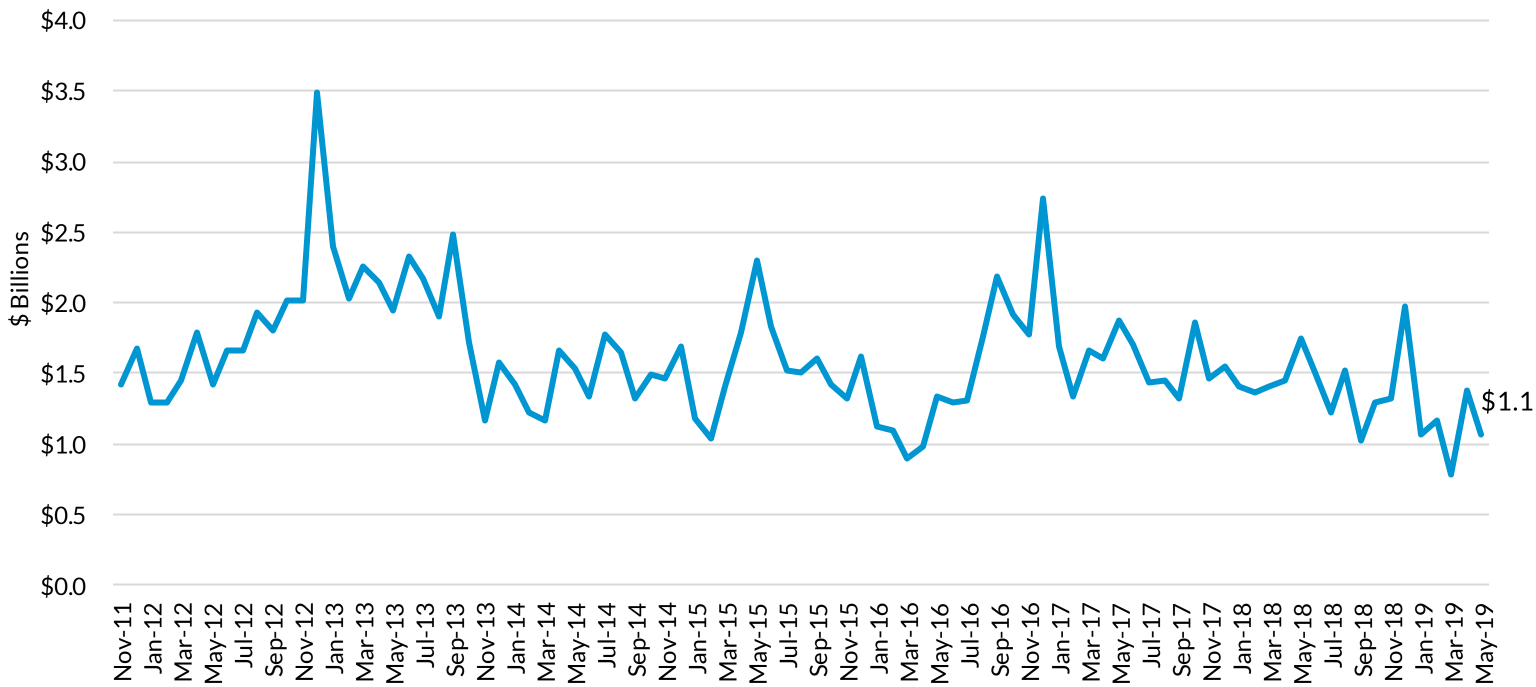


Sources: *Ginnie Mae and Urban Institute.* **Note**: *Data as of May 2019.*

Other Ginnie Mae Programs Multifamily Market

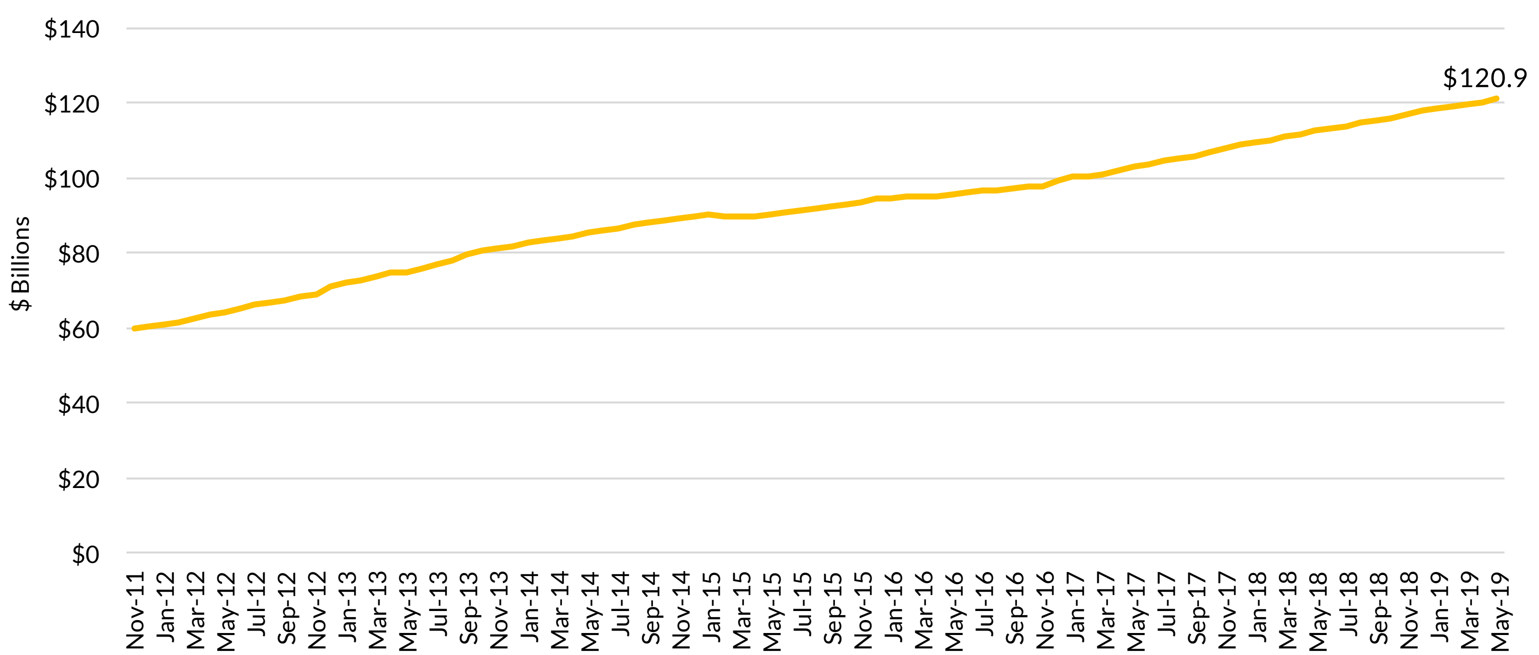
Ginnie Mae multifamily issuance volume in May 2019 totaled $1.1 billion, below average issuance levels over the past 18 months, but an increase from last month. Outstanding multifamily securities totaled $120.9 billion in May.

Ginnie Mae Multifamily MBS Issuance



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

Ginnie Mae Multifamily MBS Outstanding

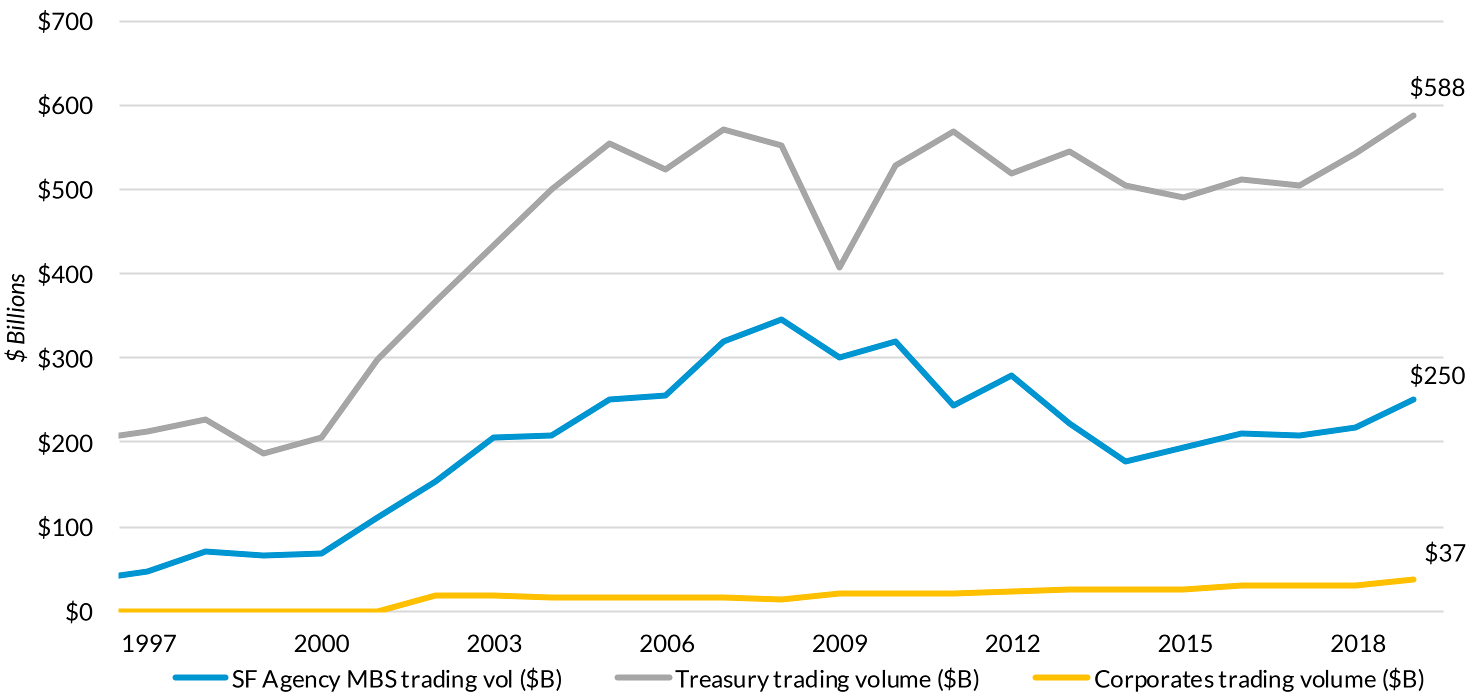


Sources: *Ginnie Mae and Urban Institute.* **Note**: *Data as of May 2019.*

Market Conditions

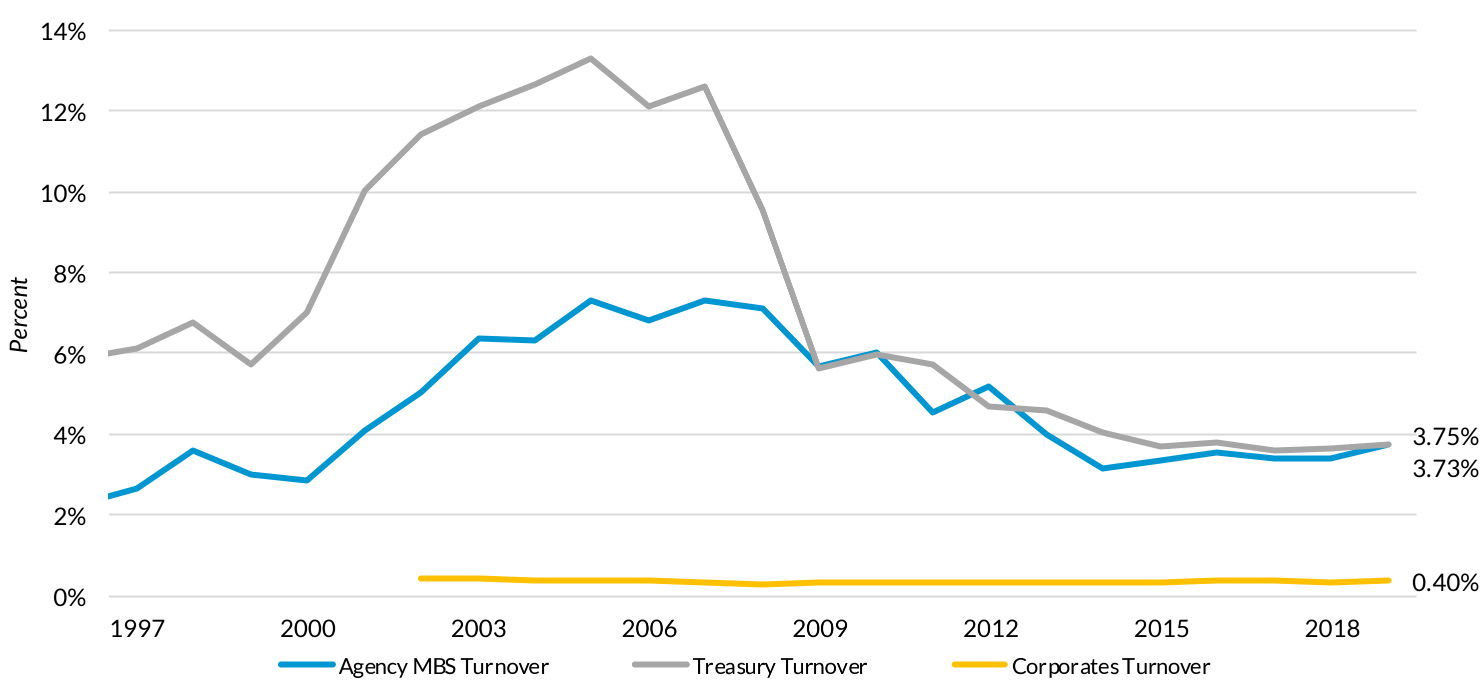
Agency MBS trading volume was $250 billion/day on average 2019 YTD, more robust than in the 2014-2018 period, but well below the pre-crisis peak of $345 billion in 2008. In contrast, average daily trading volume for Treasuries now exceeds the pre-crisis peak. Agency MBS turnover in 2019 YTD also has been slightly higher than the 2014-2018 period; in the first four months of 2019, average daily MBS turnover was 3.75 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 June 2019.*

Average Daily Turnover by Sector

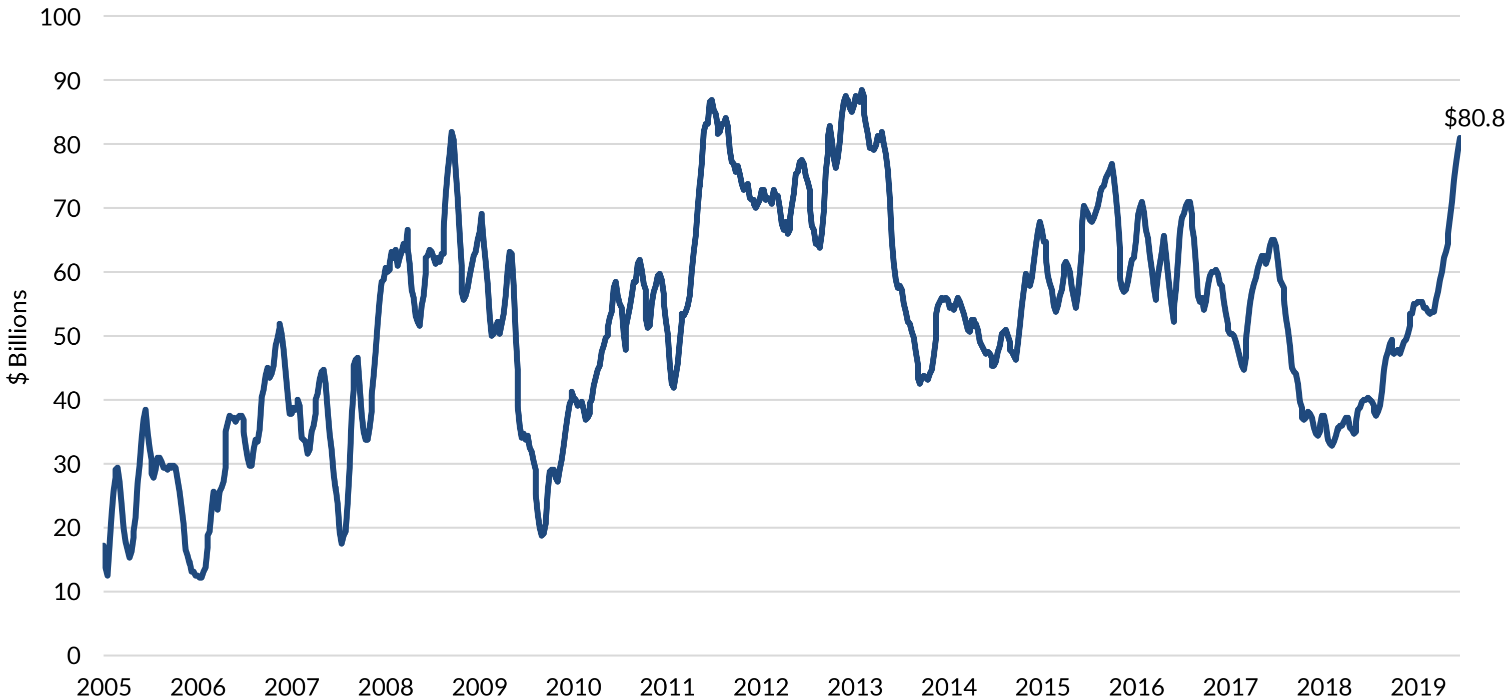


Sources: *SIFMA and Urban Institute.* ***Note:*** *Data as of June 2019.*

Market Conditions

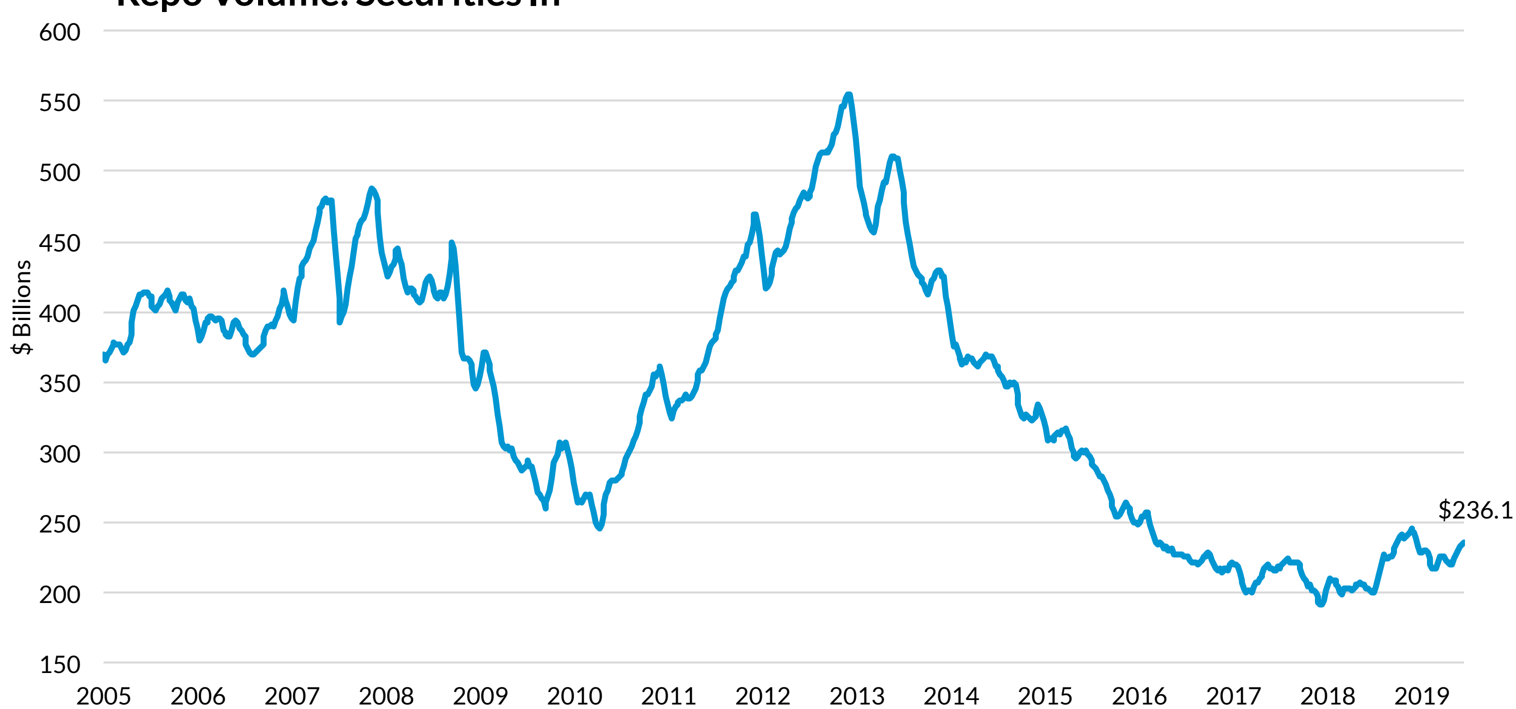
Dealer net positions are near their post-crisis highs. By contrast, dealer gross positions have fallen dramatically. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

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 June 2019.*

Repo Volume: Securities In

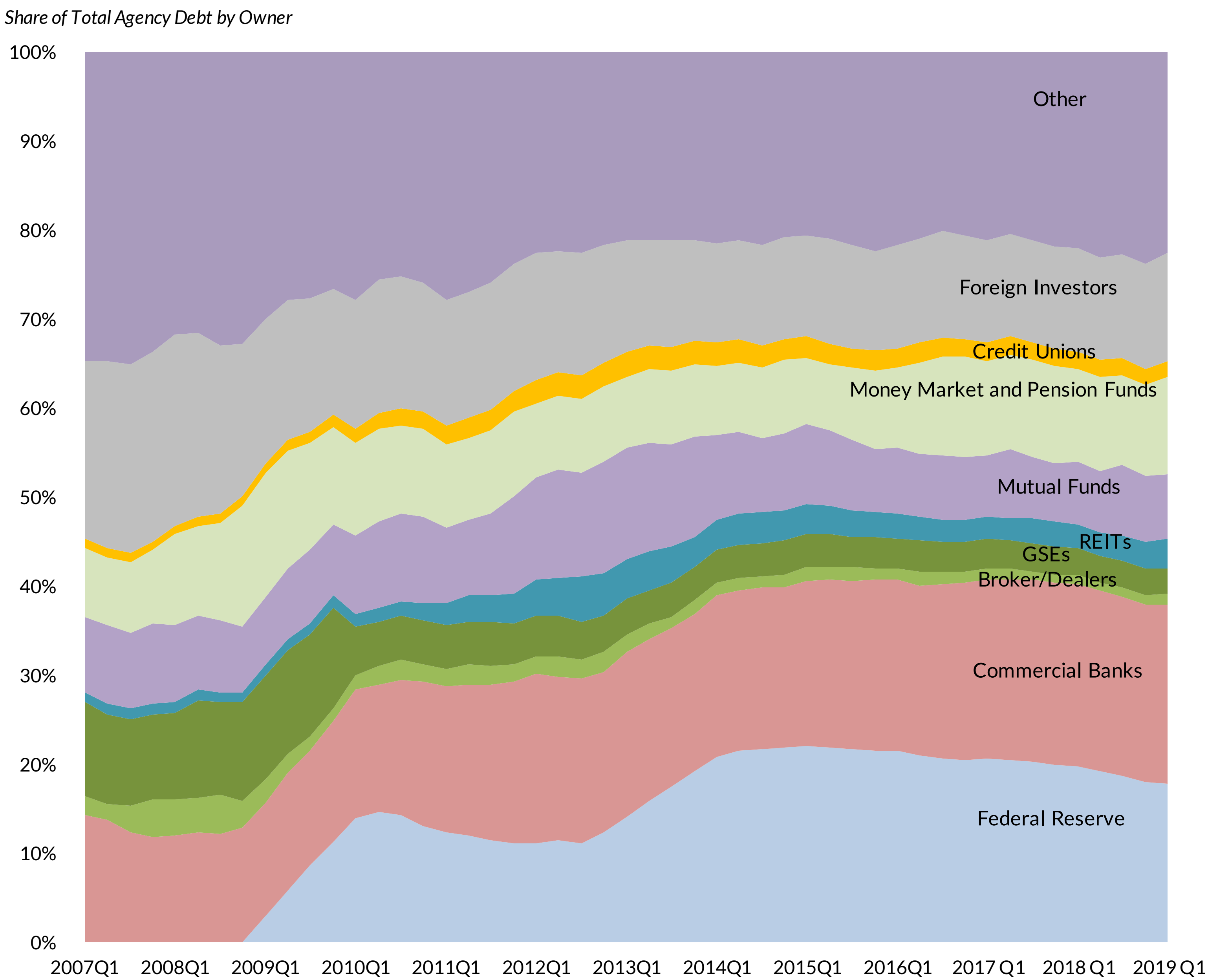


Sources: *Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute.* **Note:** *Data as of June 2019.*

MBS Ownership

The largest holders of agency debt (Agency MBS + Agency notes and bonds) include the Federal Reserve (18 percent), commercial banks (20 percent) and foreign investors (12 percent). The broker/dealer and GSE shares are a fraction of what they once were.

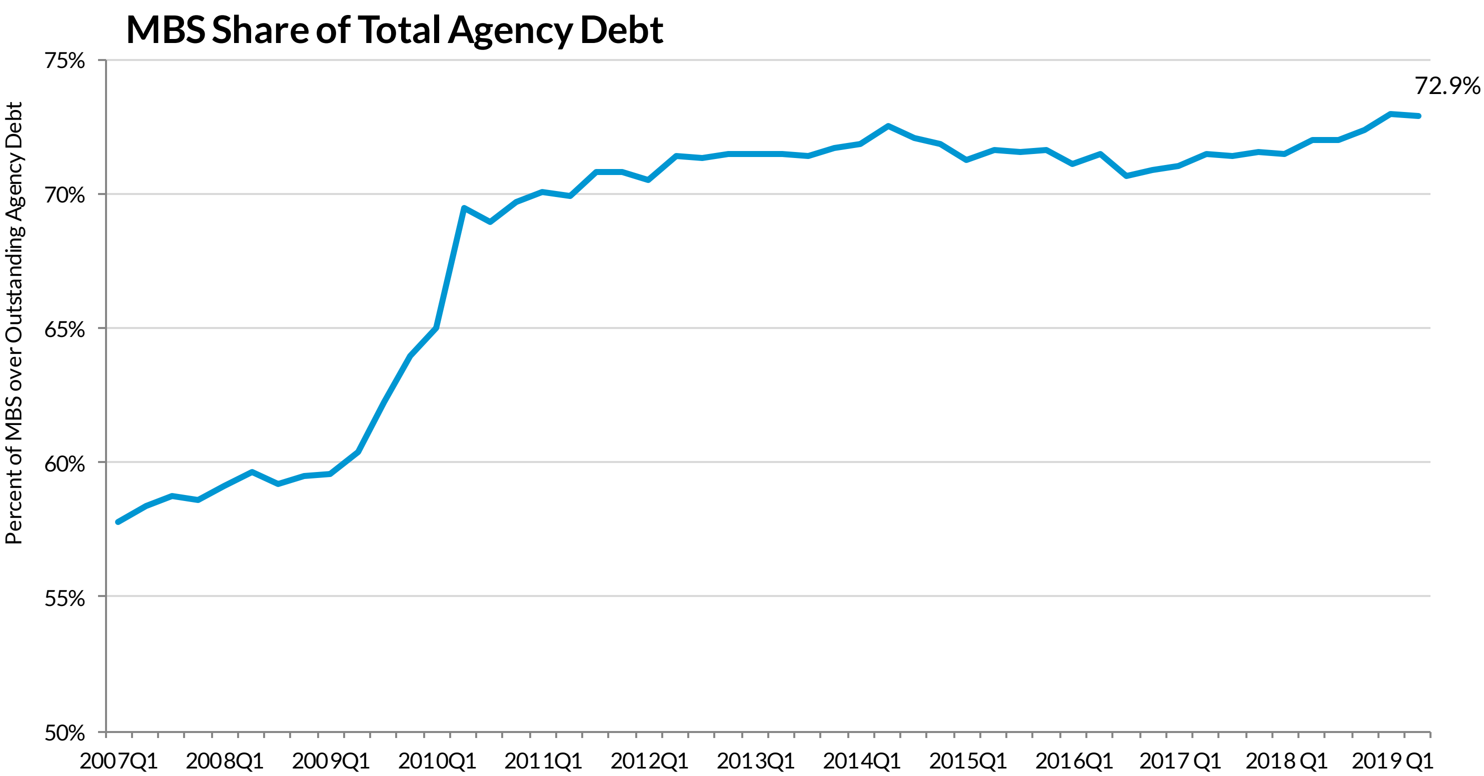
Who owns Total Agency Debt?



Sources: *Federal Reserve Flow of Funds and Urban Institute.* **Note:** *Data as of Q1 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 Q1 2019, the MBS share of total agency debt stood at 72.9 percent. Commercial banks are now the largest holders of Agency MBS. Out of their nearly $2.0 trillion in holdings as of the end of May 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 Q1 2019.*

	Commercial Bank Holdings ($Billions)								Week Ending			
	May-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun 5	Jun 12	Jun 19	Jun 26
Largest Domestic Banks	1,291.7	1,332.4	1,359.5	1,388.3	1,399.2	1,411.9	1,431.5	1,433.6	1,442.1	1,442.8	1,465.7	1,465.2
Small Domestic Banks	481.3	481.7	484.5	491.5	492.0	494.8	498.8	499.3	503.5	504.1	505.8	507.9
Foreign Related Banks	30.2	25.3	27.4	25.9	25.8	26.3	25.4	28.9	29.6	29.4	25.8	28.9
Total, Seasonally Adjusted	1,803.2	1,839.4	1,871.4	1,905.7	1,917.0	1,933.0	1,955.7	1,961.8	1,975.2	1,976.3	1,997.3	2,002.0

Sources: *Federal Reserve Bank and Urban Institute.* ***Note***: *Data as of June 2019.*

MBS Ownership

Out of the $1.8 trillion in MBS holdings at banks and thrifts as of Q1 2019, $1.4 trillion was agency pass-throughs: $1.0 trillion in GSE pass-throughs and $383.5 billion in Ginnie Mae pass-throughs. Another $422.2 billion was agency CMOs, while non-agency holdings totaled $37.7 billion. MBS holdings at banks and thrifts increased for the second quarter in a row in Q1 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

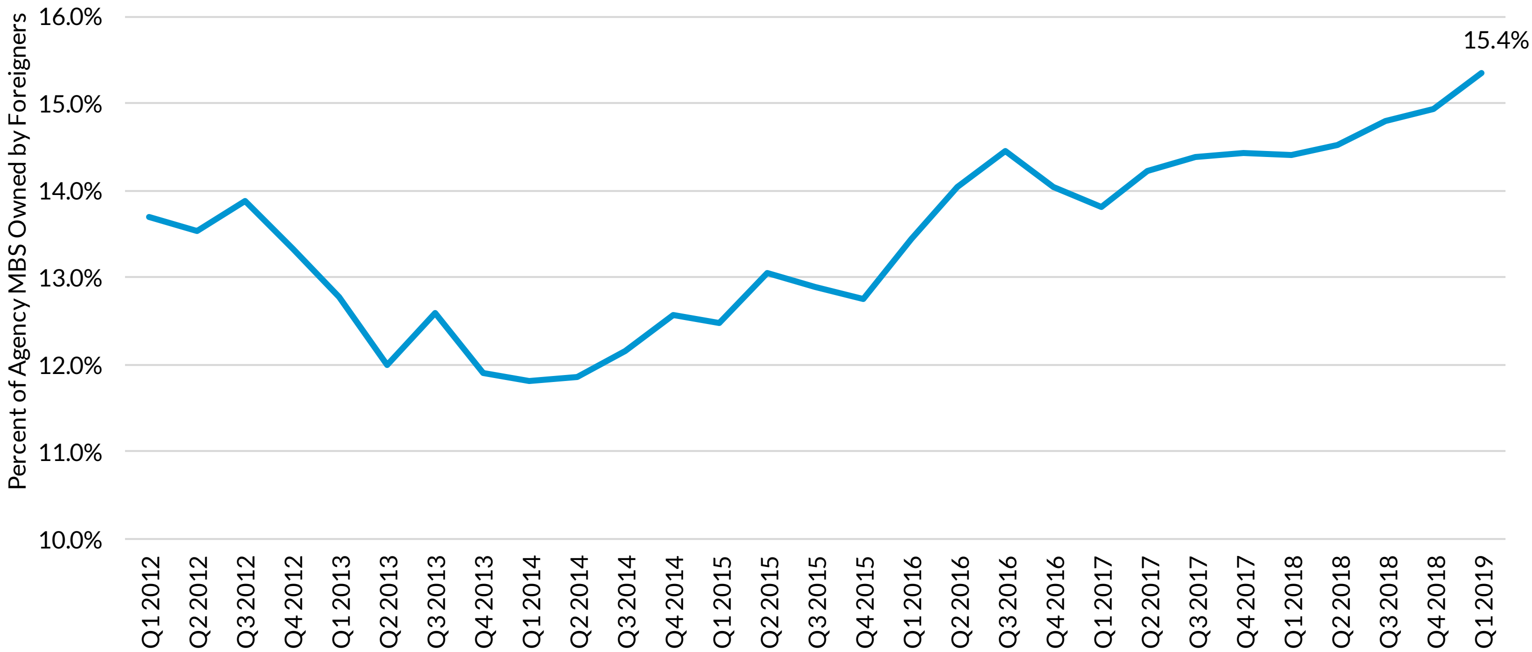
	Top Bank & Thrift Residential MBS Investors	Total ($MM)	GSE PT ($MM)	GNMA PT ($MM)	Agency REMIC ($MM)	Non-Agency ($MM)	Market Share
1	Bank of America Corporation	$309,006	$185,044	$112,425	$11,429	$108	16.7%
2	Wells Fargo & Company	$236,916	$166,022	$65,826	$3,612	$1,456	12.8%
3	JP Morgan Chase & Co.	$100,099	$64,579	$25,134	$273	$10,113	5.4%
4	U S. Bancorp.	$82,516	$39,490	$18,179	$24,847	$1	4.5%
5	Charles Schwab Bank	$77,668	$46,991	$12,097	$18,580	$0	4.2%
6	Capital One Financial Corporation	$67,175	$29,135	$14,641	$22,477	$922	3.6%
7	Citigroup Inc.	$66,897	$52,945	$4,265	$7,244	$2,443	3.6%
8	Bank of New York Mellon Corp.	$52,218	$30,982	$2,363	$17,519	$1,354	2.8%
9	PNC Bank, National Association	$47,069	$38,505	$3,661	$2,625	$2,277	2.6%
10	Branch Banking and Trust Company	$41,642	$15,966	$15,964	$7,341	$2,371	2.3%
11	State Street Bank and Trust Company	$39,389	$14,416	$5,969	$18,507	$497	2.1%
12	E*TRADE Bank	$27,097	$14,395	$7,818	$4,884	$0	1.5%
13	HSBC Banks USA, National Association	$25,230	$12,317	$3,594	$9,319	$0	1.4%
14	KeyBank National Association	$24,252	$7,164	$7,284	$9,801	$3	1.3%
15	SunTrust Bank	$23,284	$1,741	$871	$20,673	$0	1.3%
16	Morgan Stanley	$23,147	$11,736	$11,180	$231	$1	1.3%
17	Ally Bank	$21,913	$12,930	$3,085	$3,144	$2,754	1.2%
18	The Northern Trust Company	$21,769	$10,481	$6,101	$4,258	$930	1.2%
19	MUFG Union Bank	$18,268	$11,383	$4,215	$2,668	$2	1.0%
20	Regions Bank	$17,685	$5,367	$3,836	$7,549	$932	1.0%
	Total Top 20	**$1,323,241**	**$771,588**	**$328,509**	**$196,980**	**$26,164**	**71.8%**

Sources: *Inside Mortgage Finance and Urban Institute.* ***Note:*** *Data as of Q1 2019.*

MBS Ownership

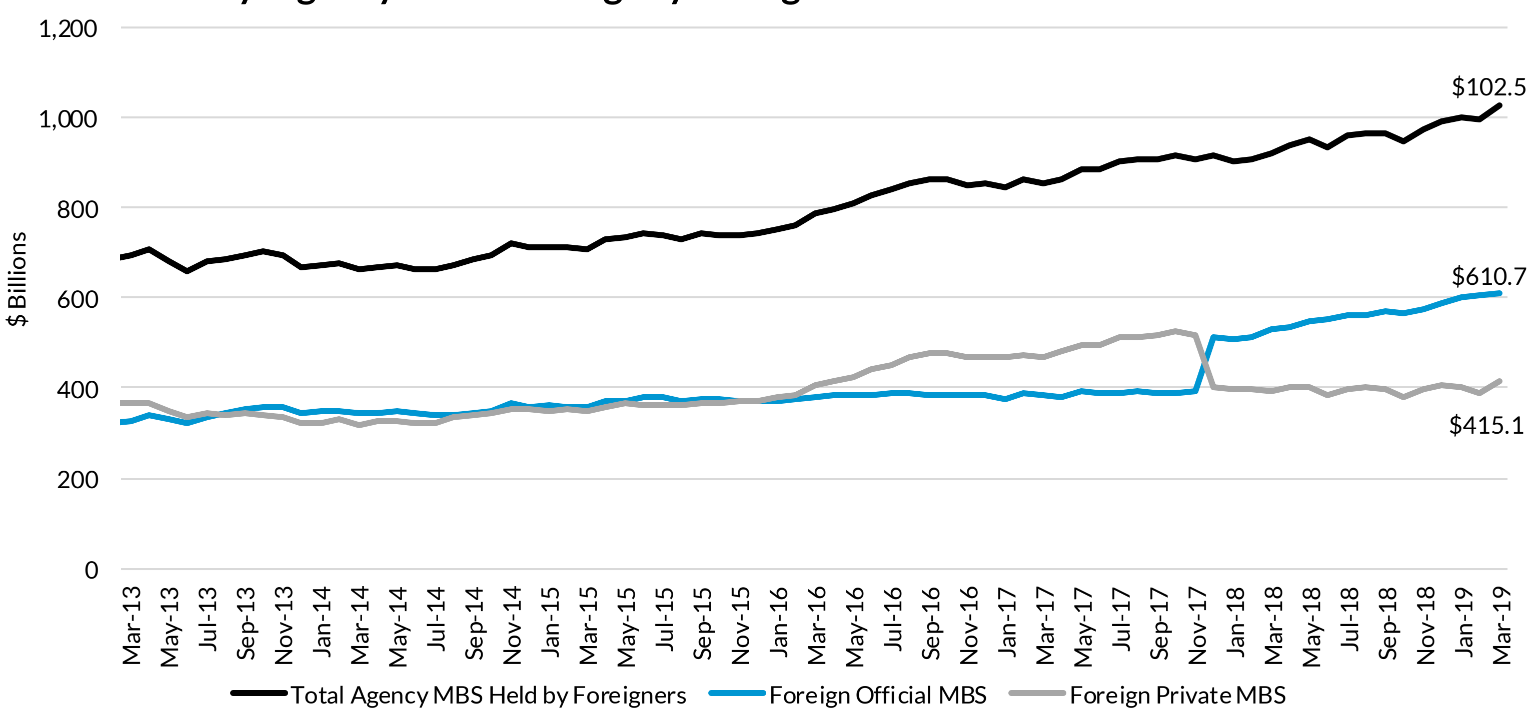
Foreign investors held 15.4 percent of agency MBS in Q1 2019, up from a low of 11.8 percent in Q1 2014. For the month of March 2019, this represents $102.5 billion in Agency MBS; $415.1 billion held by foreign private institutions and $610.7 billion held by foreign official investors.

Foreign Share of Agency MBS



***Sources**: SIFMA and Treasury International Capital (TIC). **Note**: Data as of Q1 2019.*

Monthly Agency MBS Holdings by Foreigners



***Sources**: Treasury International Capital (TIC) and Urban Institute. **Note**: Data as of March 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 March 2019, we estimate China has increased their agency MBS holdings by $27.4 billion, Taiwan has increased their holdings by $16.0 billion, and Japan has increased their holdings by $26.4 billion.

Agency MBS+ Agency Debt

	Level of Holdings ($Millions)*				Change in Holdings ($Millions)*		
Country	Jun-18	Sep-18	Dec-18	Mar-19	Q3 2018	Q4 2018	Q1 2019
Japan	257,547	254,511	262,771	284,323	-3,036	8,260	21,552
Taiwan	250,009	250,639	261,231	265,992	630	10,592	4,761
China	180,635	190,203	188,921	208,540	9,568	-1,282	19,619
Ireland	46,817	48,220	48,045	46,623	1,403	-175	-1,422
Luxembourg	36,372	38,800	50,079	44,561	2,428	11,279	-5,518
South Korea	44,039	43,944	44,735	42,604	-95	791	-2,131
Bermuda	27,866	27,610	27,721	29,104	-256	111	1,383
Cayman Islands	31,017	31,638	31,379	30,375	621	-259	-1,004
Malaysia	12,710	12,874	12,671	12,395	164	-203	-276
Netherlands	11,995	12,229	9,618	9,400	234	-2,611	-218
Rest of World	125,197	128,807	130,345	129,998	3,610	1,538	-347
Total	1,024,200	1,039,475	1,067,516	1,103,915	15,275	28,041	36,399

Agency MBS Only (Estimates)

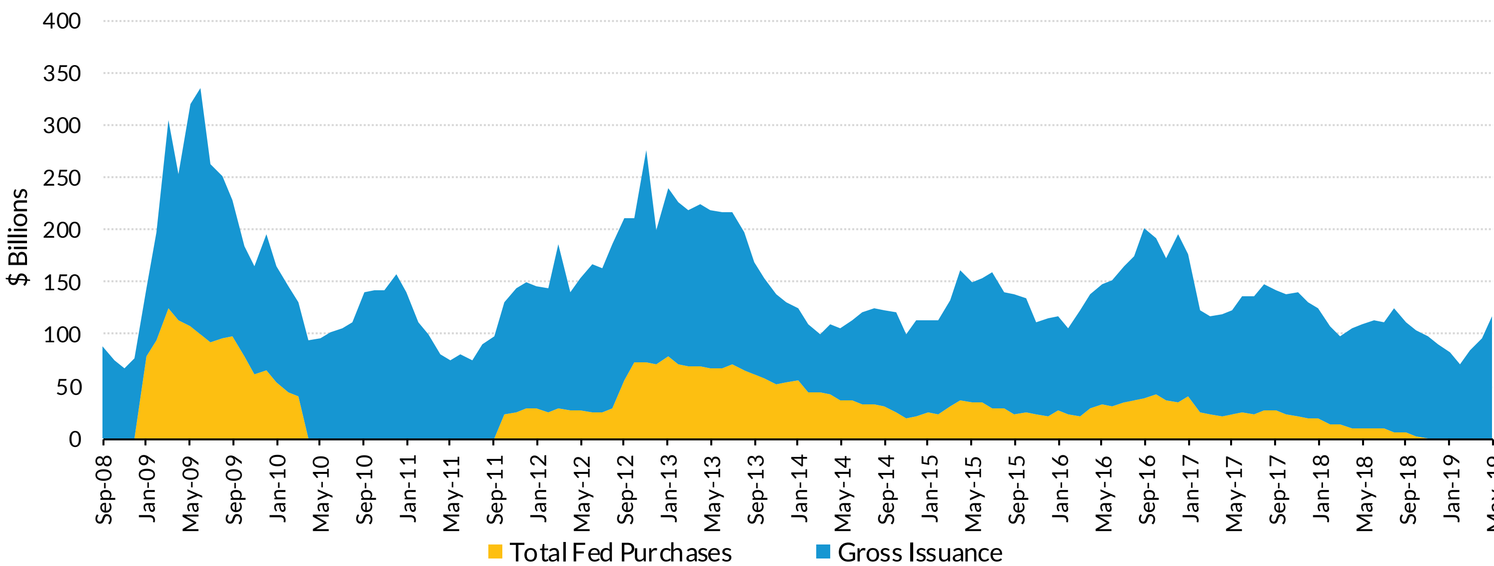
	Level of Holdings ($Millions)*				Change in Holdings ($Millions)*		
Country	Jun-18	Sep-18	Dec-18	Mar-19	Q3 2018	Q4 2018	Q1 2019
Japan	253,972	250,851	258,909	280,366	-3,121	8,058	21,457
Taiwan	249,773	250,397	260,976	265,731	624	10,579	4,755
China	176,345	185,811	184,287	203,791	9,466	-1,524	19,504
Ireland	37,832	39,021	38,339	36,677	1,189	-682	-1,662
Luxembourg	34,012	36,384	47,530	41,949	2,372	11,146	-5,581
South Korea	33,064	32,708	32,879	30,455	-356	171	-2,424
Bermuda	24,969	24,644	24,592	25,897	-325	-53	1,306
Cayman Islands	24,384	24,847	24,214	23,033	463	-634	-1,181
Malaysia	12,319	12,474	12,249	11,962	155	-225	-286
Netherlands	11,437	11,658	9,015	8,782	221	-2,643	-233
Rest of World	95,510	98,414	98,276	97,137	2,904	-138	-1,139
Total	953,612	967,209	991,264	1,025,779	13,597	24,055	34,515

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 March 2019.*

MBS Ownership

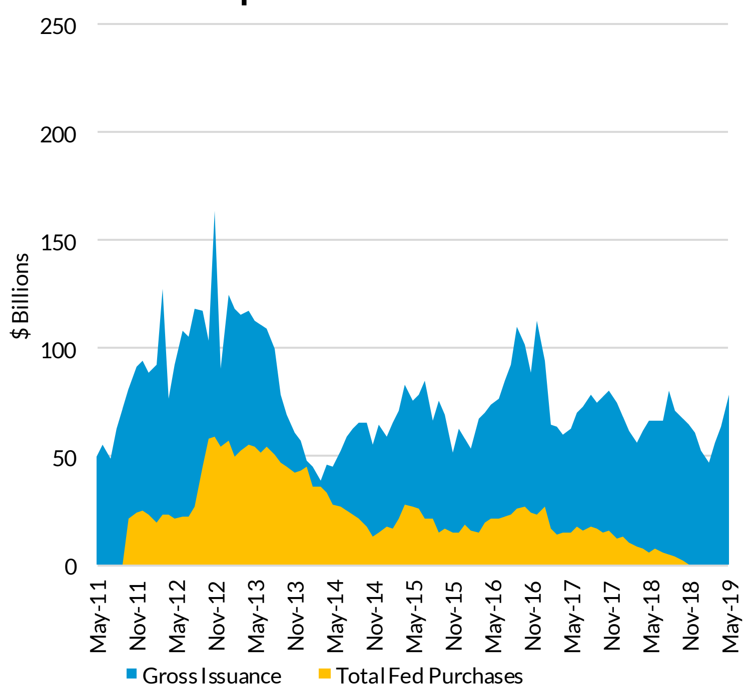
The Federal Reserve is actively winding down its mortgage portfolio; MBS purchases are minimal. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross 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 is 0.23 percent.

Total Fed Absorption



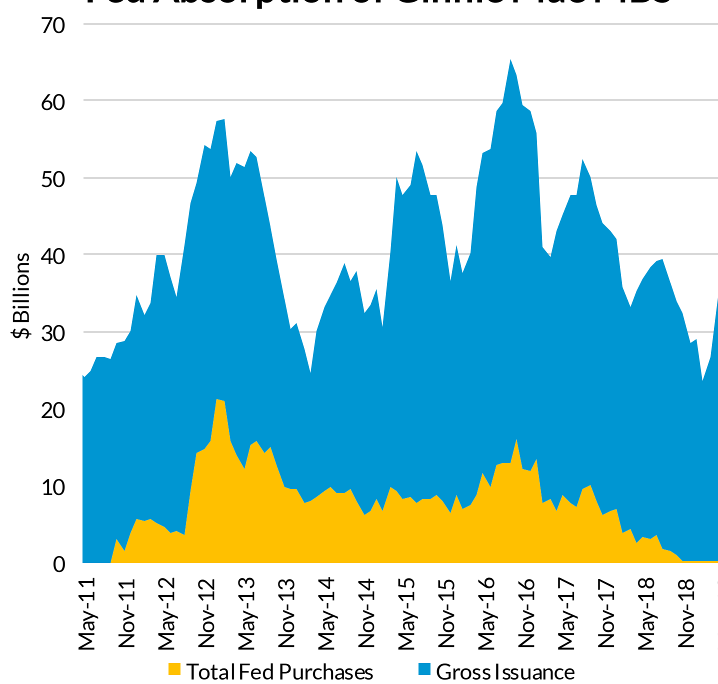
Sources: *eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note:*** *Data as of May 2019.*

Fed Absorption of GSE MBS



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

Fed Absorption of Ginnie Mae MBS



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

Disclosures

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