

Global Markets Analysis Report

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



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

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HIGHLIGHTS

Differences in Agency MBS Pooling Rules Can Affect Prepay Speeds

Securitization of mortgages into Fannie Mae, Freddie Mac or Ginnie Mae MBS is governed by pooling policies established by each agency. Loans pooled into Ginnie Mae II multi issuer MBS pool must bear a note rate at least 25 basis points, but not more than 75 basis points above the MBS coupon.

By contrast, the GSEs have historically allowed originators to include loans that are a minimum of 25 basis points to a maximum of 250 basis points above the pool coupon. Thus, a 3.0% pool could have contained loans with rates from 3.25% to 5.5%. With the introduction of the UMBS in June 2019, the upper bound was capped at 112.5 basis points, limiting the maximum rate to 4.125%. Servicing fees were also capped at 50 bps. This flexibility to pool a wider range of note rates has produced more variability in the spread between note and the coupon rates in GSE pools, as shown in the table below. This variability can contribute to different prepayment sensitivities to comparable coupon Ginnie Mae MBS. Recent vintages show that for certain MBS coupons the spread differential between GSE and Ginnie Mae MBS have increased.

Basis Point Difference between Average Note Rate and Pool Coupon Rate							
Fannie Mae							
MBS Coupon	2013	2014	2015	2016	2017	2018	2019
3.0	58	57	66	64	52	59	90
3.5	55	69	61	57	55	51	89
4.0	58	59	56	51	47	55	79
Avg. Difference	57	62	61	57	51	55	86
Freddie Mac							
MBS Coupon	2013	2014	2015	2016	2017	2018	2019
3.0	58	59	67	69	62	71	96
3.5	53	70	61	61	58	66	89
4.0	56	59	56	53	47	62	76
Avg. Difference	56	63	61	61	56	66	87
Ginnie Mae II							
MBS Coupon	2013	2014	2015	2016	2017	2018	2019
3.0	34	46	46	41	45	47	54
3.5	34	40	38	39	40	45	52
4.0	32	34	36	39	39	46	52
Avg. Difference	33	40	40	40	41	46	53

Source: Urban Institute calculations from eMBS data. Note: 2019 data through August.

From 2018 to 2019, the spread between the average note rate and pool coupon rose dramatically for Fannie Mae. In 2018, average note rate on loans in 3.0% Fannie Mae pools was 3.59 percent (the difference was 59 bps.) From Jan to Aug 2019, the average note rate was much higher at 3.90 percent, a 90-bps difference. That is, originators retained more servicing, as it was economically attractive. Other Fannie coupons as well as the Freddie coupons exhibit a similar pattern as shown in the table. Monthly breakdown of this data (not displayed) show that the spread between note rate and coupon has contracted since the introduction of UMBS in June this year and its tighter pooling rules. For Fannie Mae, the spread for 3.0, 3.5 and 4.0 coupons was 87, 82 and 70 bps respectively for Aug 2019 issuances, in comparison to a 2019 YTD average of 90, 89 and 79 bps for the same coupons. Freddie monthly data shows similar decline post UMBS.

By contrast, average note rates on loans in Ginnie Mae MBS have ticked up only modestly. For example, the average note rate on mortgages in 3.0% Ginnie MBS issued over the first eight months of 2019 was 3.54 percent, 7 basis points more than the average note rate of 3.47% on loans for 2018 Ginnie Mae MBS.

This has two implications. First, borrower refinance incentive is based on the note rate on the mortgage, not the security coupon. So H1, 2019 GSE mortgages may be more prepayment responsive than earlier vintages. Second, when trading TBA securities, investors receive the “cheapest to deliver” mortgage; these higher note rate mortgages are more likely to be delivered into GSE pools. An investor must buy a specified pool to avoid this. As a result, an increasing number of GSE pools contain pay-ups. If one were to buy GSE MBS with the same note rate to coupon spread, there would likely be a pay-up.

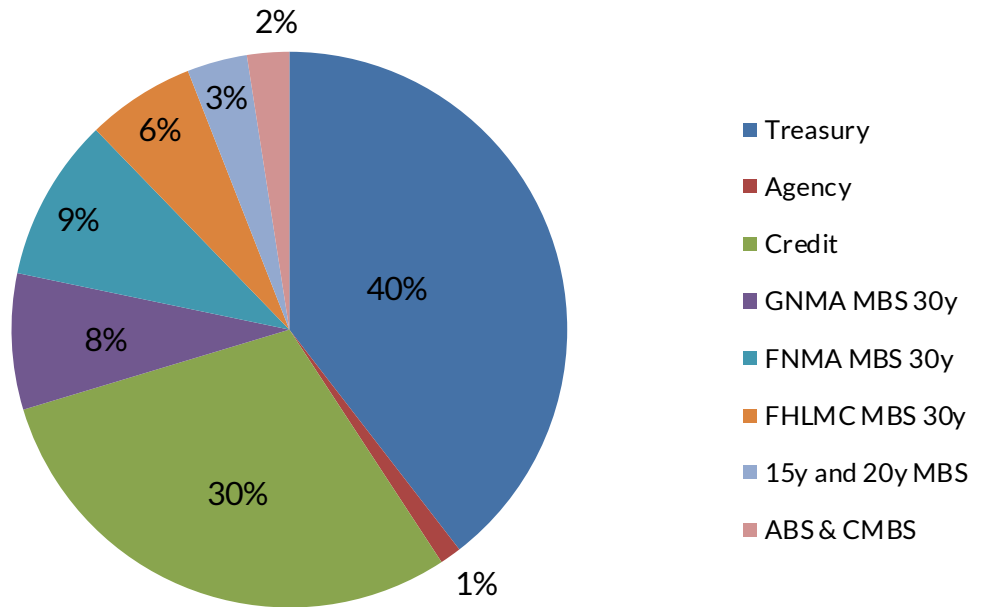
Highlights this month:

- Interest rates continued to decline in July 2019 (page 5), driving up origination volumes. Agency gross issuance in 2019 is up 3.3 percent from the same period last year (page 17).
- The FHA nonbank originator share hit a new historical high of 92 percent in July 2019 (page 33).
- MBS holdings at banks and thrifts increased for the third quarter in a row in Q2 2019 (page 51).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

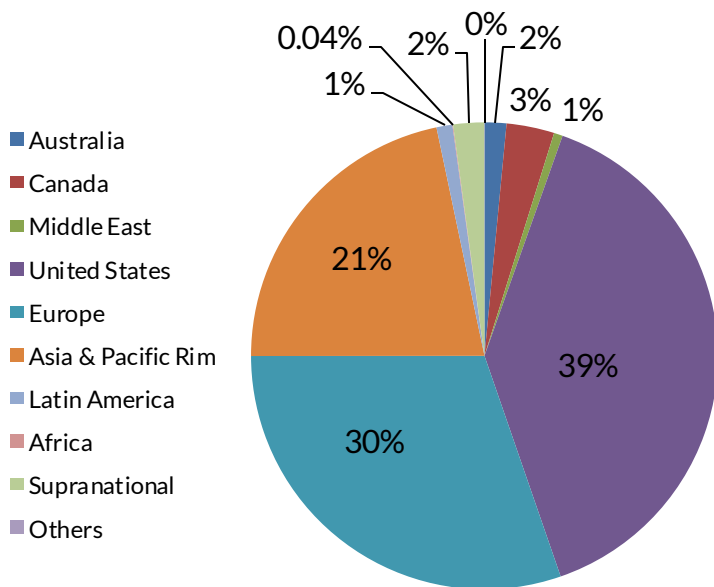
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 27 percent of the Barclays US Aggregate Index - less than either the US Treasury share (40 percent) or the US Credit share (30 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (9 percent), while Ginnie Mae 30-year MBS and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



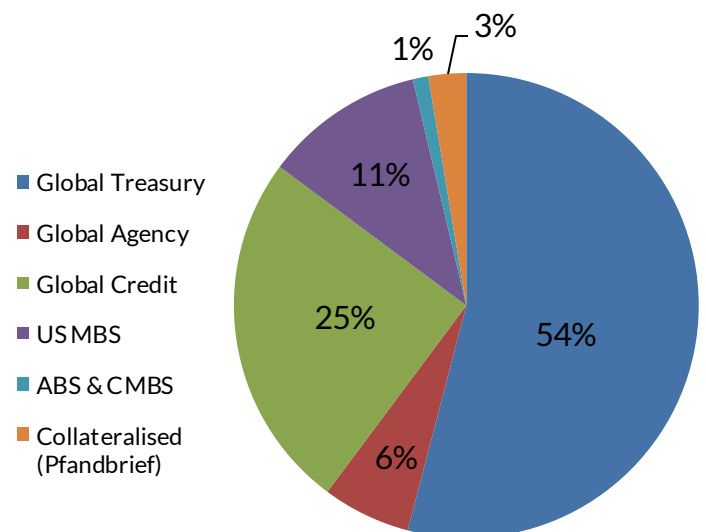
Sources: Bloomberg and State Street Global Advisors. Note: Data as of June 2019. Note: Numbers in chart may not add to 100 percent due to rounding.

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

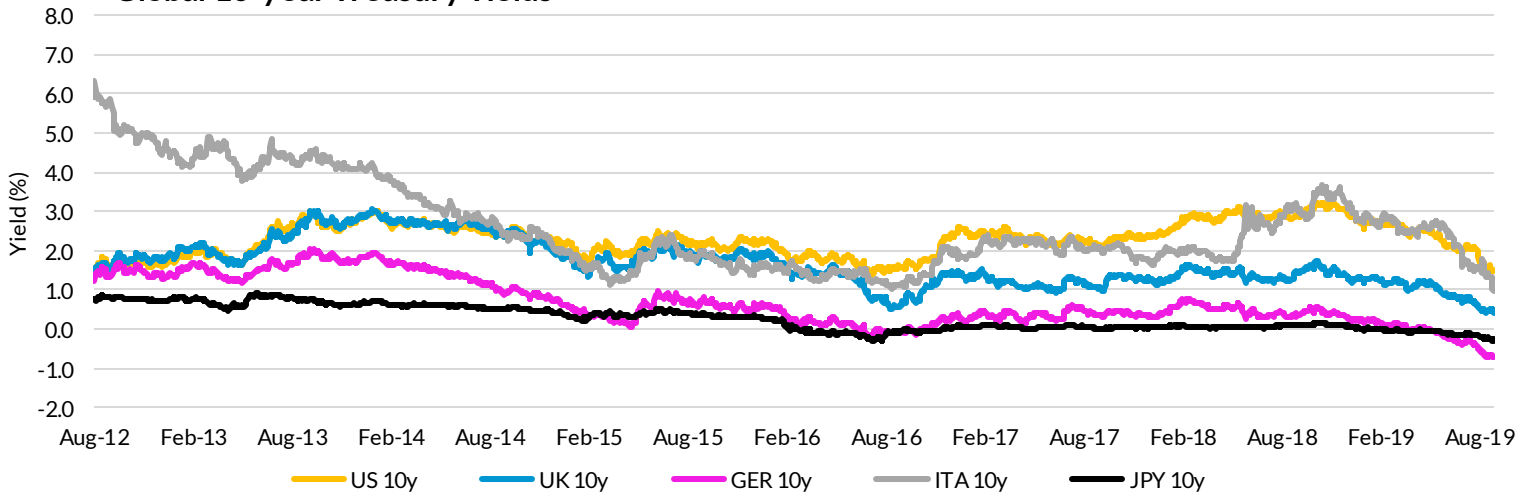


Sources: Bloomberg and State Street Global Advisors. Note: Data as of June 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

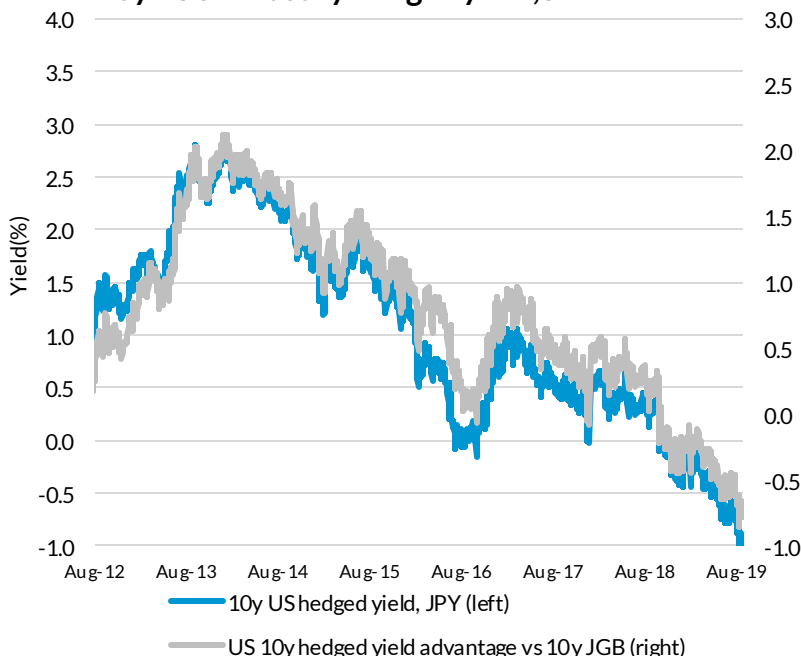
With weakness in recent economic data and worries about tariffs and potential trade wars, yields on government bonds have dropped across the globe. Despite a 52 bps drop in the US Treasury from the end of July to the end of August, the yield on the US Treasury at 1.5 percent is the highest in the developed world. This is followed by the Italian 10-year note, down 54 basis points on the month to 1.0 percent at the end of the August. In the UK, 10-year government yields decreased by 13 bps to 0.48 percent; in Germany the decrease was 26 bps to -0.70 percent. In Japan, yields fell by just over 10 basis points to -0.27 percent. At the end of August, the hedged yield differential between the 10-year Treasury and the 10-year JGB stood at -72 bps, a decrease of 11 bps since July. The hedged yield differential between the 10-year Treasury and the 10-year Bund stands at -56 bps, a slight increase of 1 bps since the end of July.

Global 10-year Treasury Yields



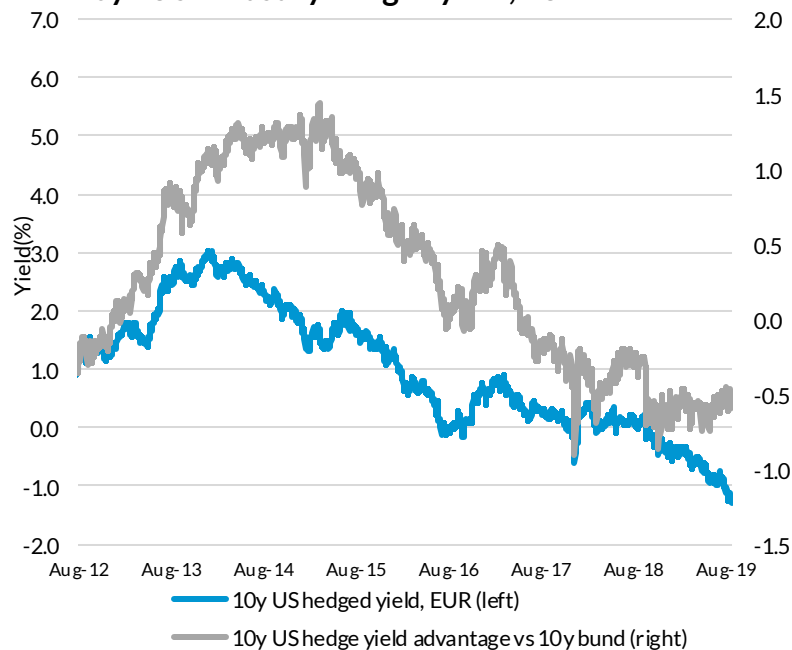
Sources: Bloomberg and State Street Global Advisors. Note: Data as of August 2019.

10yr US Treasury hedged yield, JPY



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

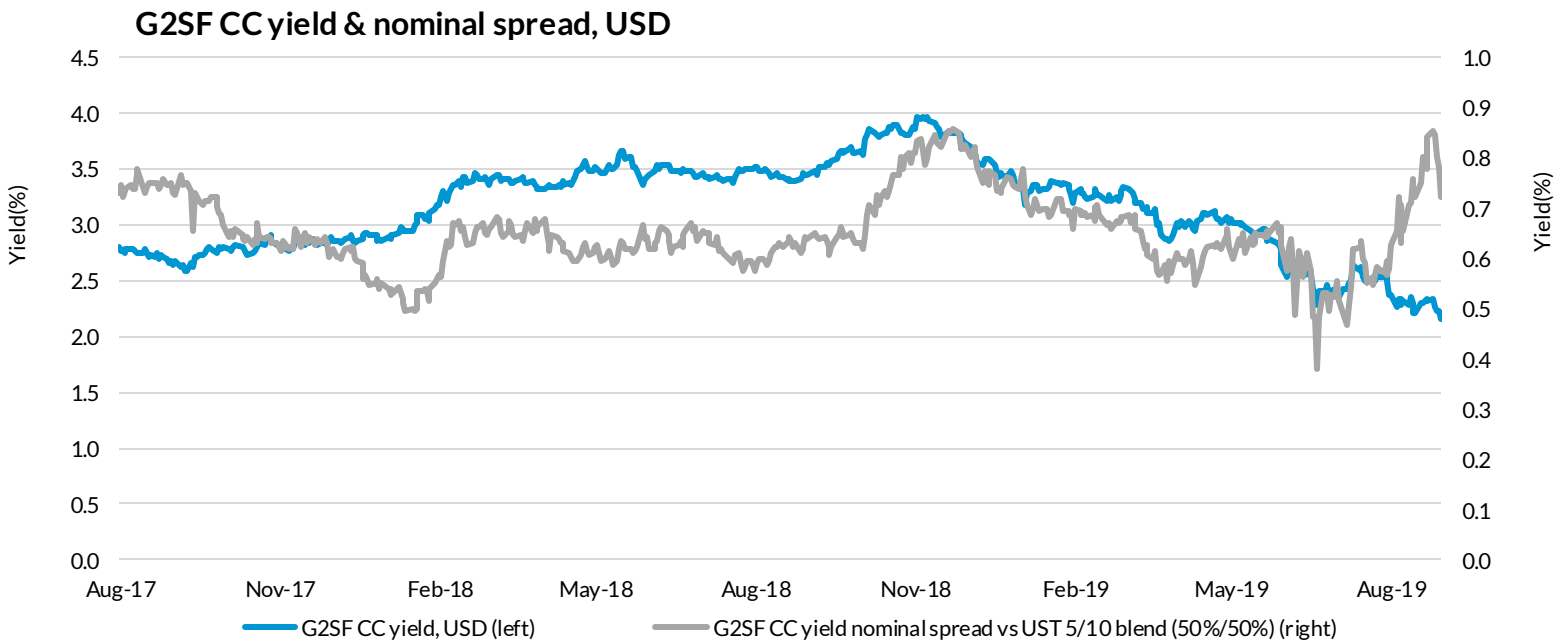
10yr US Treasury hedged yield, EUR



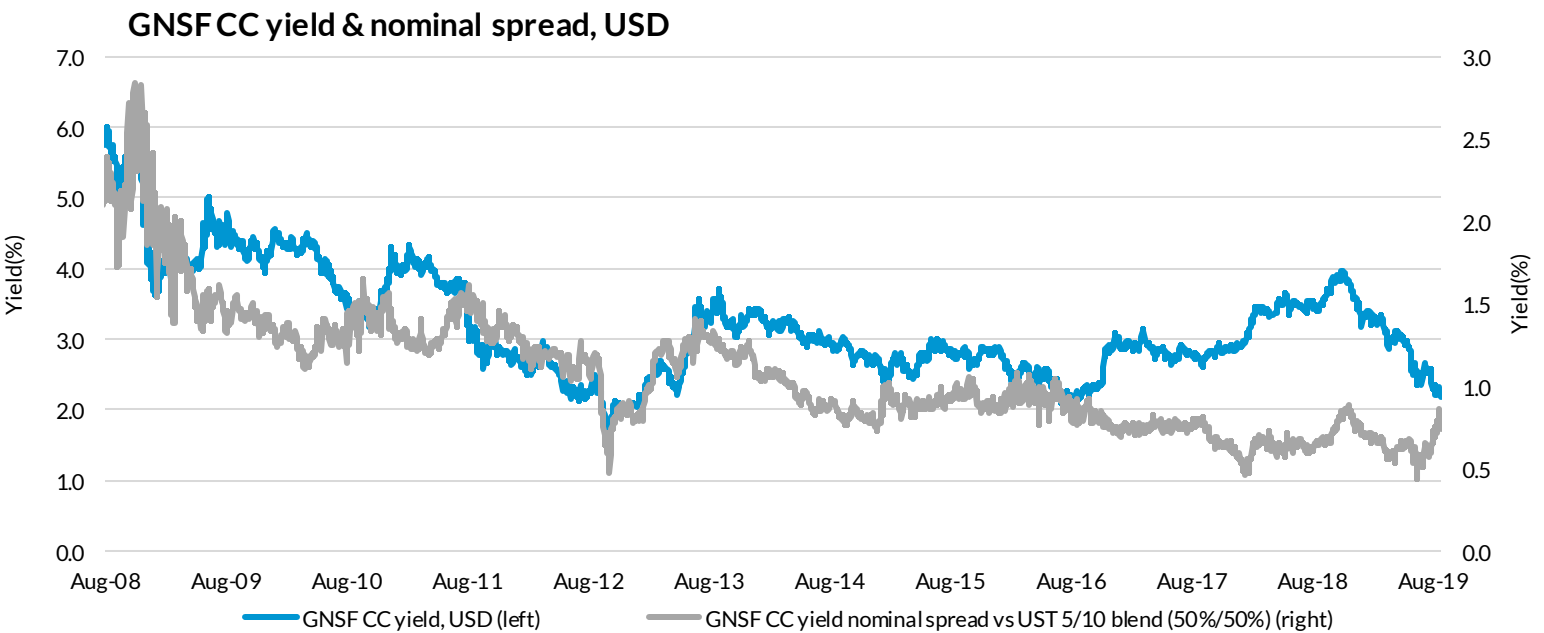
Sources: Bloomberg and State Street Global Advisors.
Note: Data as of August 2019.

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 August 2019. However, current coupon Ginnie Mae securities outyielded their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 72 and 74 bps on G2SF and GNSF, respectively, a widening of 15 and 13 bps since last month.



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

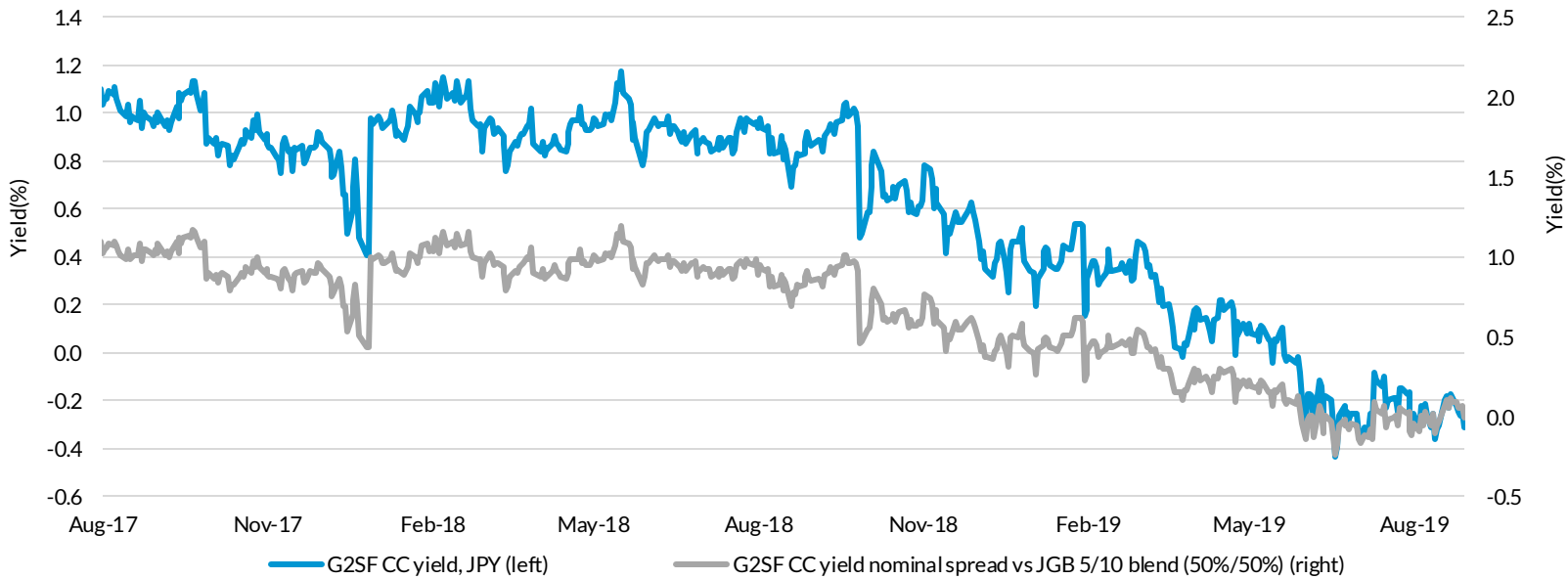


Sources: Bloomberg and State Street Global Advisors. Note: Data as of August 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

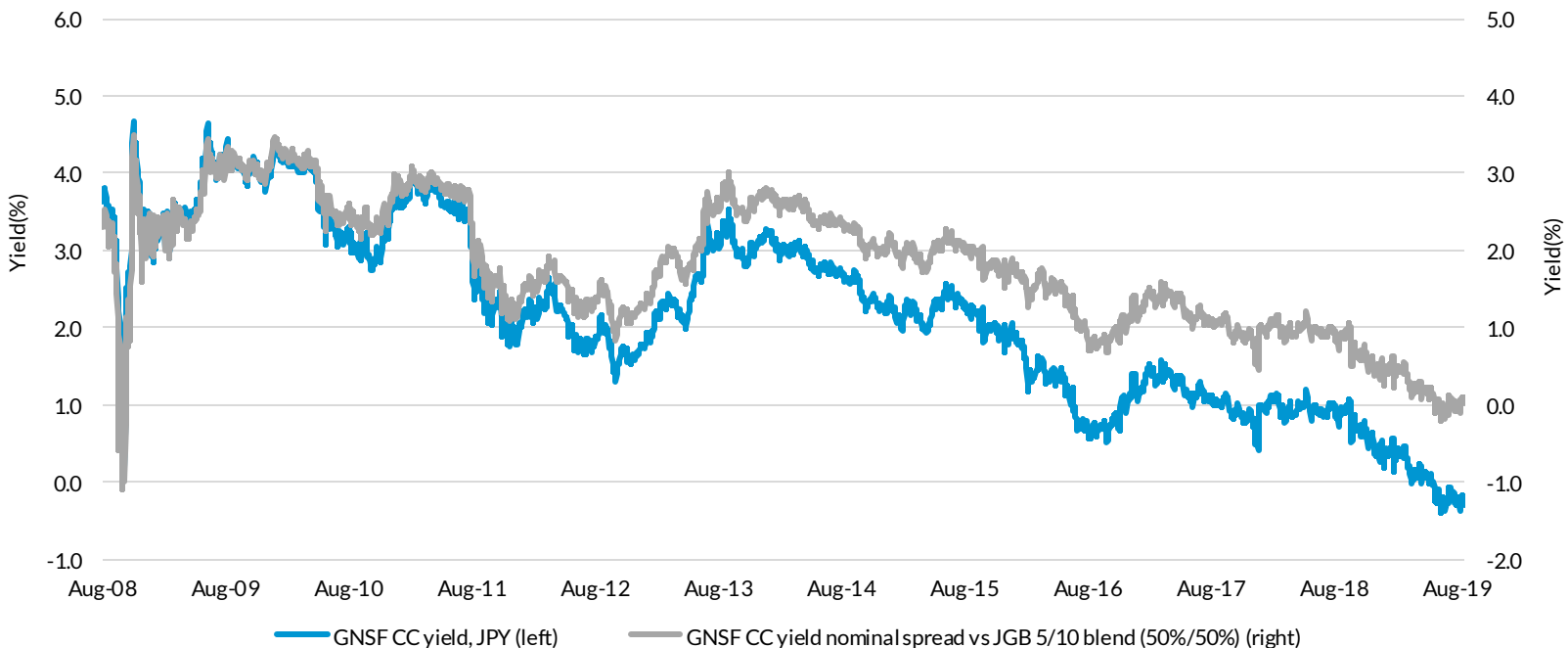
If Ginnie Mae securities are hedged into foreign currencies, they look fair to favorable on a yield basis versus many sovereign alternatives. The figure below shows that the current coupon G2SF and GNSF hedged into Japanese yen is basically flat to the JGB 5/10 spread. More precisely, the G2SF hedged into Japanese yen has a yield of -1 bps versus the JGB 5/10 blend, while the GNSF hedged into Japanese yen has a yield of bps over the JGB 5/10 spread. This represents an improvement of 9 and 7 bps, respectively, since the end of July.

G2SF CC yield & nominal spread, JPY



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

GNSF CC yield & nominal spread, JPY

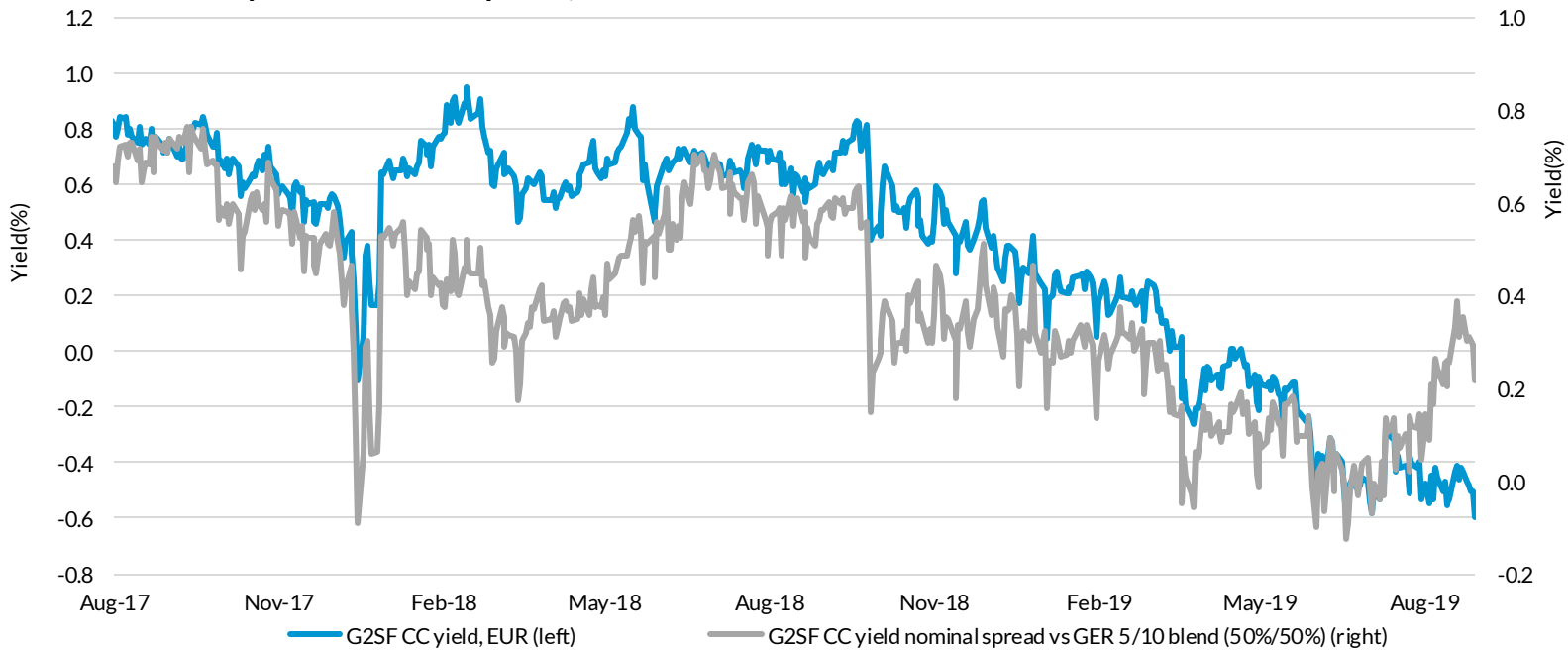


Sources: Bloomberg and State Street Global Advisors. Note: Data as of August 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

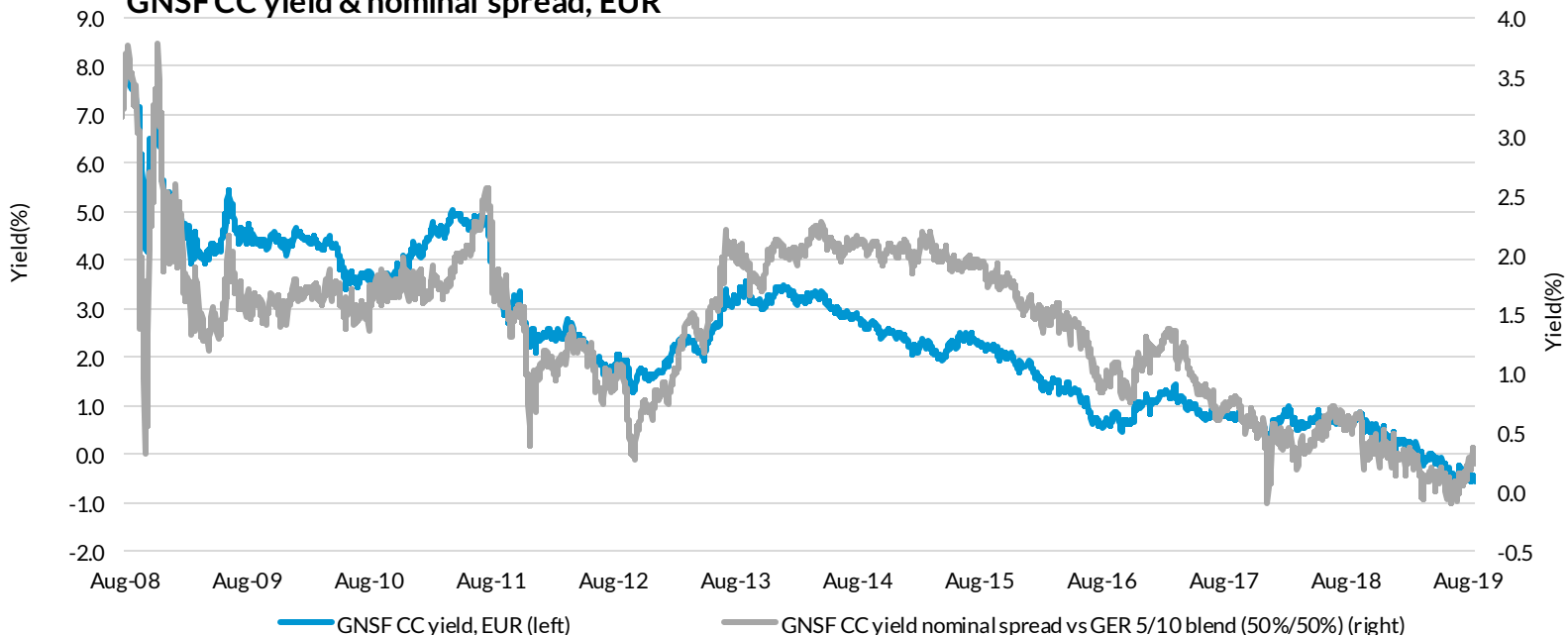
If Ginnie Mae securities are hedged into foreign currencies, they look fair to favorable on a yield basis versus sovereign alternatives. The figures below show that at the end of August, the current coupon G2SF has a 22 bp higher yield than the than the average of the German 5/10 blend, while the GNSF hedged into euros has a spread to the German 5/10 blend of 24 bps. This represents a 17 and 15 bp increase for each respectively since the end of July.

G2SF CC yield & nominal spread, EUR



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

GNSFCC yield & nominal spread, EUR

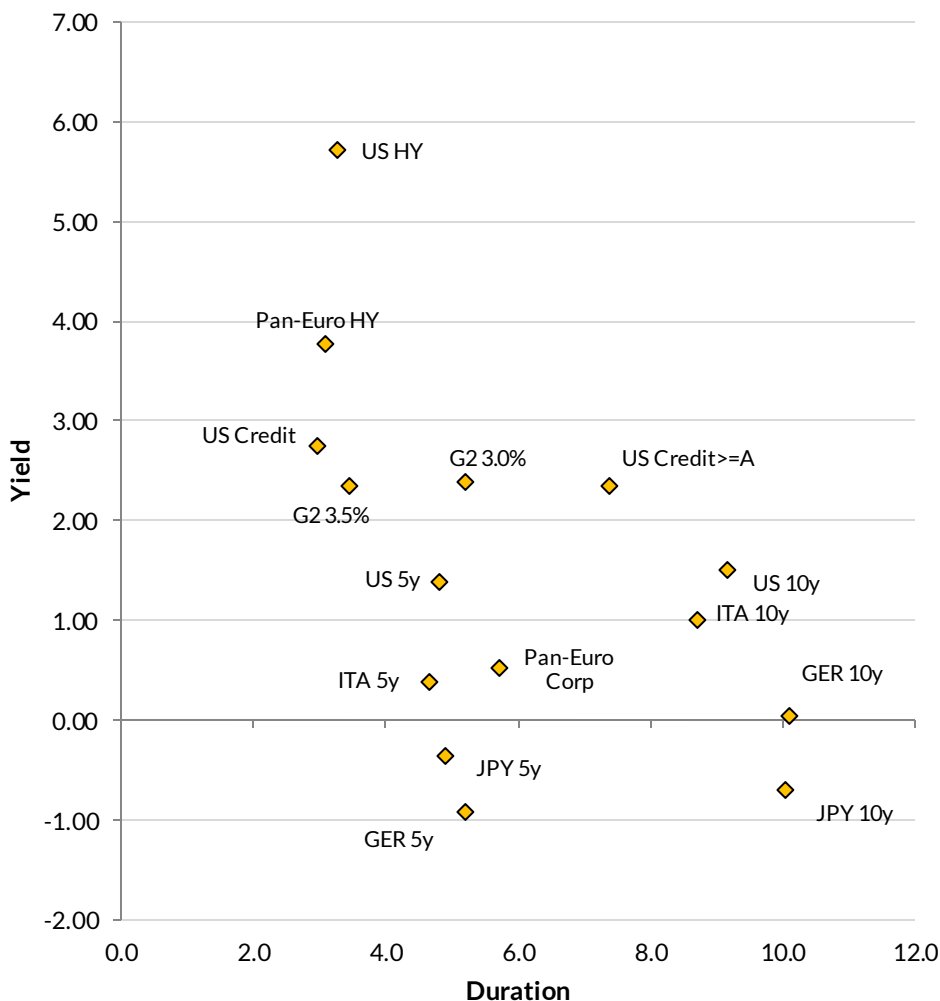


Sources: Bloomberg and State Street Global Advisors. Note: Data as of August 2019.

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.

Yield versus duration



Security	Duration	Yield
US 5y	4.8	1.39
US 10y	9.2	1.50
GNMA II 3.0%	5.2	2.38
GNMA II 3.5%	3.4	2.36
JPY 5y	4.9	-0.35
JPY 10y	10.1	0.05
GER 5y	5.2	-0.93
GER 10y	10.0	-0.70
ITA 5y	4.6	0.38
ITA 10y	8.7	1.00
US credit	3.0	2.74
US credit >= A	7.4	2.35
USHY	3.3	5.72
Pan-Euro Corp	5.7	0.53
Pan-Euro HY	3.1	3.78

Sources: Bloomberg and State Street Global Advisors. Note: Yields are in base currency of security and unhedged. Data as of July 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	USMBS Ginnie Mae	USTreasury	USCredit Corp	Pan Euro Credit Corp	USHigh Yield*	Pan Euro High Yield*
1 year	0.54	0.83	1.06	0.57	0.55	0.46
3 year	0.18	0.21	0.39	0.18	0.51	0.36
5 year	0.21	0.25	0.38	0.25	0.41	0.36
10 year	0.27	0.27	0.48	0.43	0.70	0.75

Average Excess Return (Per Month)

Time Period	USMBS Ginnie Mae	USTreasury	USCredit Corp	Pan Euro Credit Corp	USHigh Yield*	Pan Euro High Yield*
1 year	0.36	0.65	0.87	0.62	0.36	0.52
3 year	0.06	0.09	0.26	0.24	0.38	0.42
5 year	0.13	0.17	0.30	0.30	0.33	0.41
10 year	0.23	0.23	0.44	0.44	0.65	0.77

Standard Deviation

Time Period	USMBS Ginnie Mae	USTreasury	USCredit Corp	Pan Euro Credit Corp	USHigh Yield*	Pan Euro High Yield*
1 year	0.79	1.35	1.40	0.84	1.85	1.52
3 year	0.67	1.10	1.18	0.79	1.19	1.06
5 year	0.58	1.06	1.19	0.98	1.57	1.35
10 year	0.68	1.05	1.19	1.14	1.76	1.76

Sharpe Ratio

Time Period	USMBS Ginnie Mae	USTreasury	USCredit Corp	Pan Euro Credit Corp	USHigh Yield	Pan Euro High Yield*
1 year	0.45	0.48	0.62	0.75	0.19	0.34
3 year	0.09	0.08	0.22	0.30	0.32	0.40
5 year	0.22	0.16	0.25	0.31	0.21	0.30
10 year	0.33	0.22	0.37	0.39	0.37	0.44

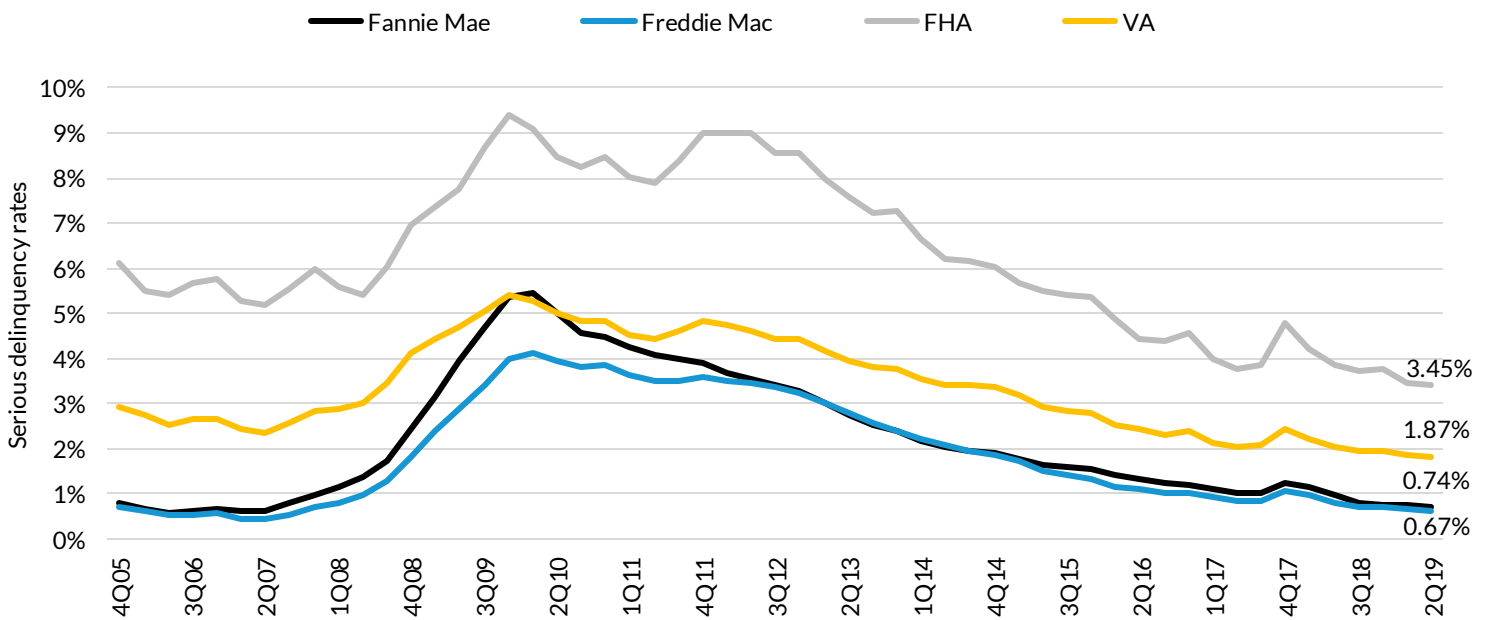
*Assumes 2% capitalization max per issuer on high yield indices

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

State of the US Housing Market

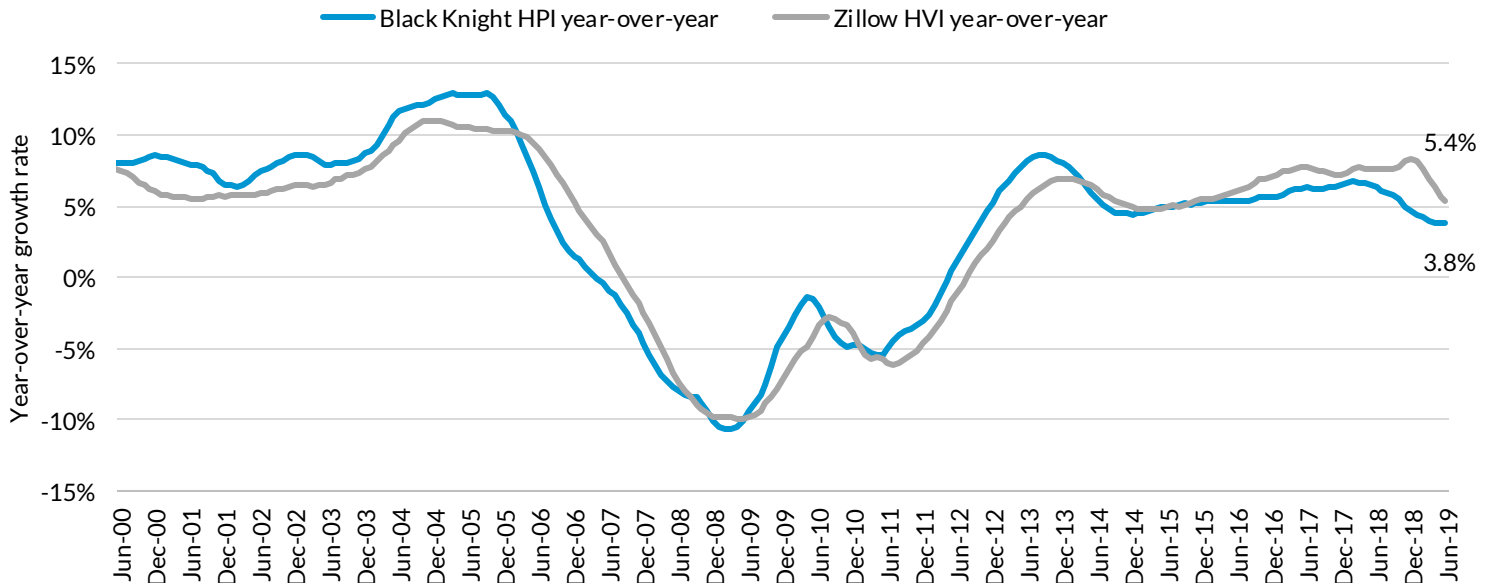
Serious delinquency rates for single-family GSE loans, FHA loans, and VA loans continued to decline in Q2 2019. GSE delinquencies remain slightly higher relative to 2006-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are at levels lower than 2006-2007. After touching 6.5 percent in early 2018, year-over-year house price appreciation has slowed considerably over the past year. It appears to have stabilized at 3.8 percent on the Black Knight index; it fell to 5.4 percent in June 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 June 2019.

State of the US Housing Market

Nationally, nominal home prices have increased by 54.3 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 14.9 percent. The picture is very different across states, with many states well in excess of the prior peak, while a number of states remain more than 9 percent below peak levels: Connecticut (12.1% below), Florida (9.5% below), and Nevada (9.4% below).

State	HPI Changes				YOY	Current HPI % Above Peak
	2000 to Peak	Peak to Trough	Trough to Current			
National	75.6%	-25.5%	54.3%	3.8%	14.9%	
Alabama	44.0%	-15.4%	31.2%	5.8%	11.0%	
Alaska	69.5%	-3.1%	23.3%	1.5%	19.4%	
Arizona	110.2%	-47.9%	80.1%	5.9%	-6.2%	
Arkansas	41.8%	-10.8%	25.8%	3.3%	12.2%	
California	155.3%	-43.4%	90.3%	1.3%	7.8%	
Colorado	40.2%	-12.8%	80.3%	4.0%	57.3%	
Connecticut	92.4%	-24.6%	16.6%	1.9%	-12.1%	
Delaware	94.8%	-23.7%	25.4%	-0.1%	-4.4%	
District of Columbia	175.5%	-13.5%	54.2%	1.2%	33.3%	
Florida	129.0%	-47.0%	70.7%	4.2%	-9.5%	
Georgia	38.3%	-32.0%	66.4%	5.4%	13.2%	
Hawaii	162.1%	-22.1%	51.4%	2.9%	17.9%	
Idaho	71.7%	-28.5%	82.3%	10.9%	30.5%	
Illinois	61.6%	-34.5%	41.2%	2.0%	-7.5%	
Indiana	21.2%	-7.6%	35.5%	5.5%	25.2%	
Iowa	28.4%	-4.9%	27.4%	3.3%	21.2%	
Kansas	34.7%	-9.3%	40.1%	3.5%	27.0%	
Kentucky	29.5%	-7.6%	31.4%	4.6%	21.3%	
Louisiana	48.7%	-5.0%	24.0%	2.8%	17.8%	
Maine	82.4%	-12.5%	32.8%	2.4%	16.2%	
Maryland	129.4%	-28.6%	28.2%	2.1%	-8.4%	
Massachusetts	92.6%	-22.8%	56.3%	3.8%	20.7%	
Michigan	24.1%	-39.5%	80.4%	5.4%	9.1%	
Minnesota	66.4%	-27.6%	57.1%	4.4%	13.7%	
Mississippi	41.1%	-13.7%	24.0%	1.6%	7.0%	
Missouri	42.8%	-14.7%	36.5%	8.3%	16.4%	
Montana	81.0%	-10.7%	51.2%	5.0%	35.0%	
Nebraska	26.6%	-6.8%	41.8%	3.9%	32.2%	
Nevada	126.9%	-59.3%	122.8%	4.4%	-9.4%	
New Hampshire	90.7%	-23.6%	41.3%	4.7%	8.1%	
New Jersey	117.9%	-27.8%	28.2%	3.2%	-7.5%	
New Mexico	66.9%	-16.2%	23.8%	4.9%	3.8%	
New York	98.7%	-15.2%	40.4%	3.0%	19.1%	
North Carolina	40.6%	-15.6%	36.8%	5.3%	15.5%	
North Dakota	54.1%	-3.9%	56.4%	1.4%	50.4%	
Ohio	21.2%	-18.4%	37.7%	5.0%	12.4%	
Oklahoma	37.5%	-2.3%	19.0%	3.1%	16.2%	
Oregon	82.4%	-28.0%	79.9%	3.6%	29.6%	
Pennsylvania	70.2%	-11.7%	26.5%	4.4%	11.7%	
Rhode Island	131.2%	-34.5%	50.8%	4.5%	-1.2%	
South Carolina	44.8%	-19.3%	35.6%	4.9%	9.4%	
South Dakota	45.1%	-4.0%	45.4%	4.8%	39.6%	
Tennessee	35.2%	-11.8%	45.0%	6.1%	27.8%	
Texas	33.3%	-5.7%	51.1%	3.1%	42.5%	
Utah	54.5%	-21.8%	75.0%	7.6%	36.8%	
Vermont	83.5%	-7.5%	32.5%	5.4%	22.6%	
Virginia	99.4%	-22.7%	27.5%	3.4%	-1.5%	
Washington	85.4%	-28.7%	87.9%	3.7%	34.0%	
West Virginia	43.0%	-6.0%	22.1%	4.1%	14.8%	
Wisconsin	44.8%	-16.2%	37.9%	5.0%	15.6%	
Wyoming	77.0%	-5.6%	29.1%	5.1%	21.8%	

Sources: Black Knight and Urban Institute. Note: HPI data as of June 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 06/2019, the latest HPI data period.

State of the US Housing Market

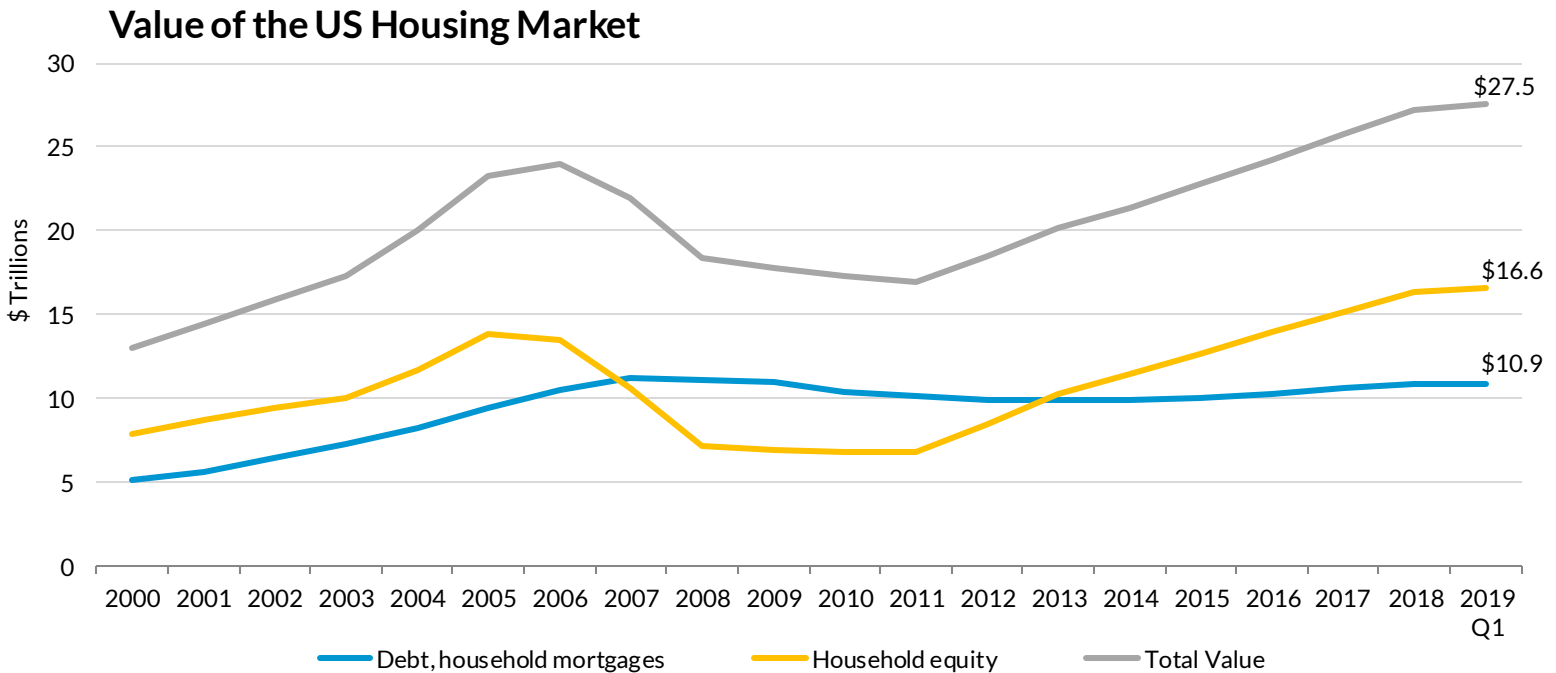
Ginnie Mae MBS constitute 30.2 percent of outstanding agency issuance by loan balance and 33.2 percent of new issuance over the past year. However, the Ginnie Mae share varies widely across states, with the share of outstanding (by loan balance) as low as 15.8 percent in the District of Columbia and as high as 51.2 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	33.2%	221.9	236.8	30.2%	165.0	188.1
Alabama	43.8%	169.1	190.2	44.5%	128.8	151.8
Alaska	51.1%	285.4	254.7	51.2%	233.3	198.9
Arizona	32.0%	223.8	226.2	30.8%	166.3	178.8
Arkansas	43.1%	147.6	172.1	44.0%	110.9	137.5
California	28.1%	360.2	344.2	20.7%	269.4	267.2
Colorado	32.4%	304.8	291.7	26.7%	220.3	225.3
Connecticut	31.9%	218.8	229.4	29.4%	183.4	188.5
Delaware	37.6%	220.3	229.7	36.1%	180.6	184.1
District of Columbia	18.4%	429.0	365.9	15.8%	302.7	302.1
Florida	39.8%	216.2	214.9	34.9%	166.0	171.2
Georgia	39.9%	193.3	216.1	38.2%	143.5	170.1
Hawaii	39.6%	501.8	405.3	30.3%	390.9	316.2
Idaho	32.3%	217.4	218.3	31.3%	155.2	167.1
Illinois	26.3%	181.5	203.0	24.5%	141.7	160.4
Indiana	36.9%	148.6	163.9	37.3%	111.6	126.2
Iowa	27.2%	149.5	167.5	25.6%	114.4	131.2
Kansas	35.7%	159.2	180.4	35.2%	120.5	139.0
Kentucky	39.5%	155.0	172.0	38.6%	121.9	132.7
Louisiana	42.6%	173.8	196.7	41.5%	137.3	158.8
Maine	34.9%	190.2	207.2	32.3%	153.3	160.3
Maryland	44.0%	289.7	270.8	39.0%	232.8	218.5
Massachusetts	24.5%	303.7	293.0	19.3%	237.7	227.9
Michigan	25.1%	153.5	175.5	24.9%	114.0	134.9
Minnesota	24.1%	207.5	219.1	23.7%	156.9	170.8
Mississippi	50.6%	157.9	177.0	50.0%	120.3	142.0
Missouri	35.2%	157.9	178.0	34.6%	121.2	139.0
Montana	29.9%	226.1	229.8	29.2%	170.4	177.1
Nebraska	32.7%	171.6	176.7	32.7%	123.2	137.8
Nevada	34.8%	263.9	245.1	34.4%	188.7	191.9
New Hampshire	31.6%	243.3	232.2	28.9%	194.0	181.1
New Jersey	29.5%	259.9	271.6	27.1%	211.4	218.6
New Mexico	41.7%	186.3	194.4	42.1%	141.4	153.0
New York	25.1%	252.9	279.4	25.1%	187.3	214.9
North Carolina	34.4%	189.4	213.2	33.4%	141.8	166.3
North Dakota	30.6%	215.7	208.0	26.1%	168.3	166.2
Ohio	34.3%	148.4	161.1	35.5%	112.9	126.6
Oklahoma	45.0%	158.3	176.9	47.5%	119.3	140.2
Oregon	27.7%	271.0	269.9	23.2%	200.1	207.7
Pennsylvania	32.0%	170.7	199.0	32.2%	136.9	158.4
Rhode Island	38.9%	239.3	230.6	33.5%	188.7	182.6
South Carolina	39.5%	192.4	201.3	37.0%	147.7	161.0
South Dakota	37.9%	181.9	191.2	35.5%	143.7	149.7
Tennessee	39.7%	192.8	208.9	39.2%	139.4	164.4
Texas	34.2%	204.4	222.4	35.1%	143.0	175.4
Utah	27.9%	259.8	267.7	27.2%	192.0	208.1
Vermont	22.8%	191.8	204.9	20.0%	165.4	159.6
Virginia	44.9%	276.8	266.7	40.8%	222.8	216.3
Washington	31.2%	304.4	302.3	27.2%	220.1	228.9
West Virginia	49.2%	158.2	159.6	45.7%	126.7	127.1
Wisconsin	22.2%	174.8	183.0	20.6%	134.4	141.5
Wyoming	41.5%	220.7	220.9	39.7%	178.1	176.3

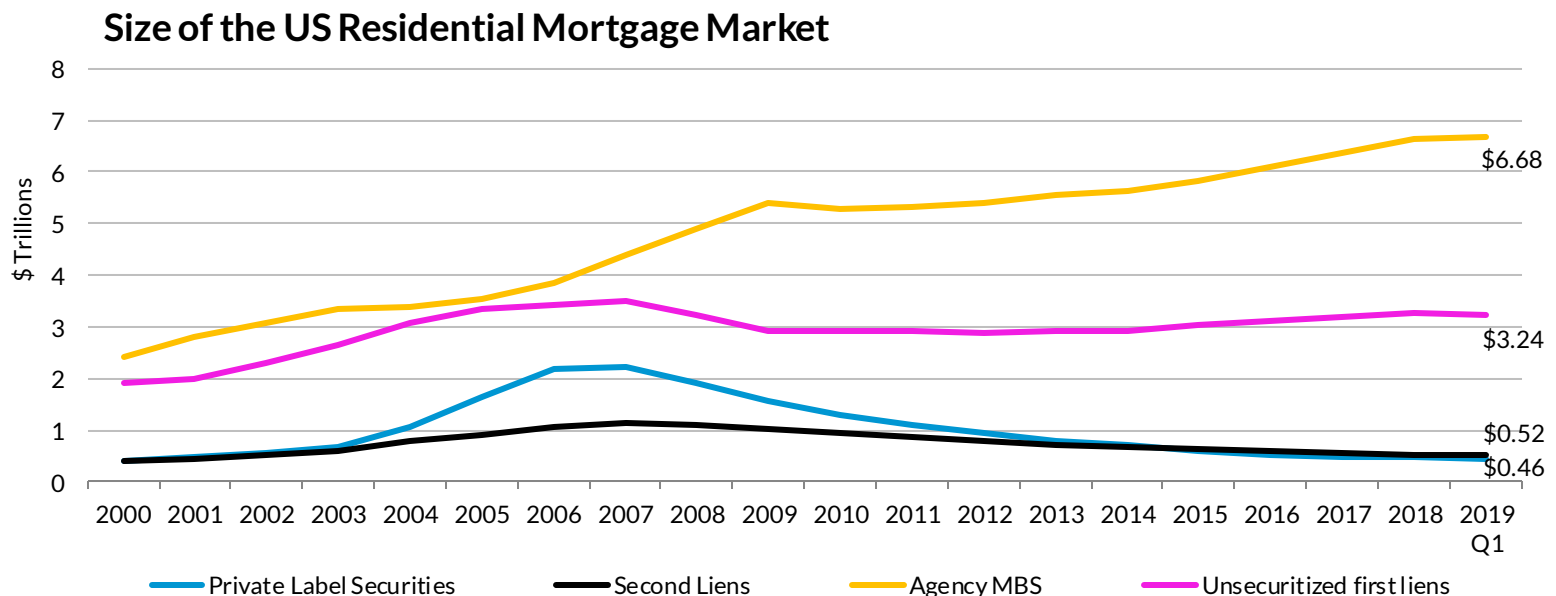
Sources: eMBS and Urban Institute. Note: Ginnie Mae outstanding share are based on loan balance as of July 2019. Ginnie Mae issuance is based on the last 12 months, from July 2018 to July 2019.

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.



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



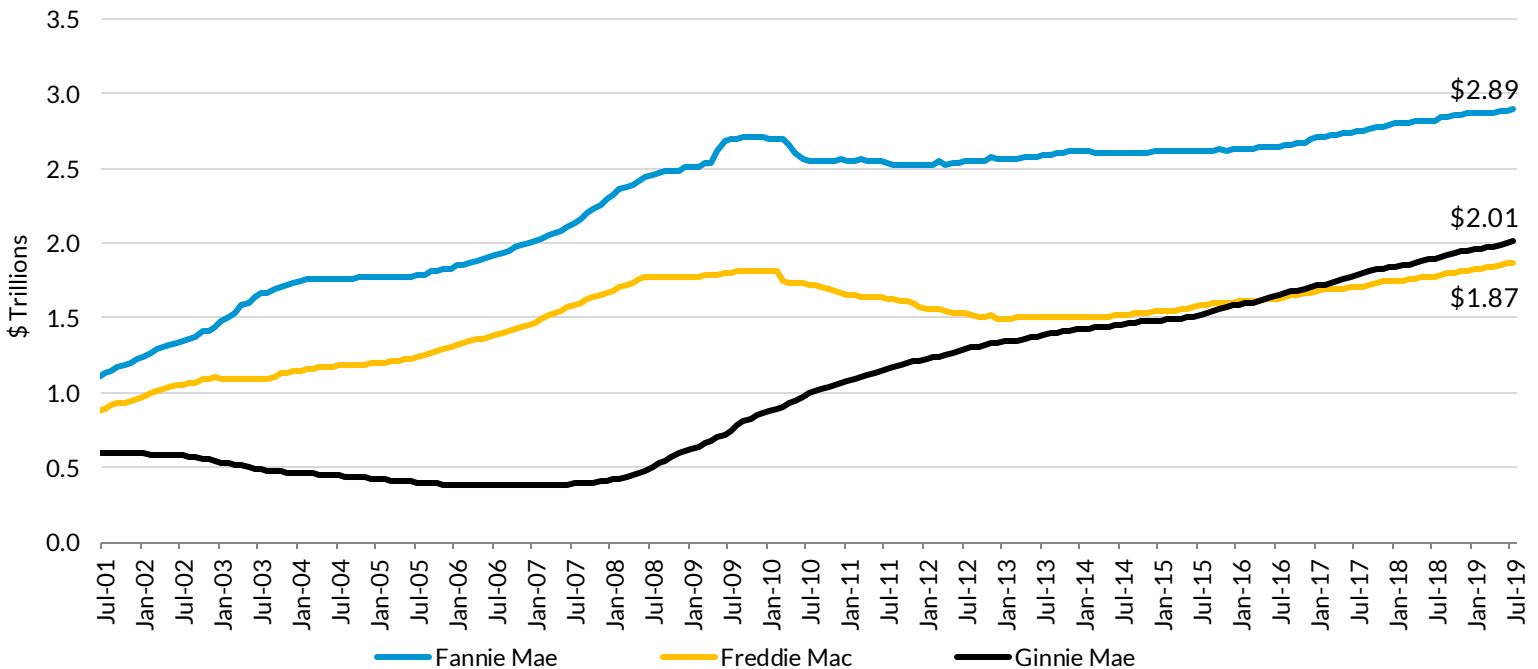
Sources: Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.

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

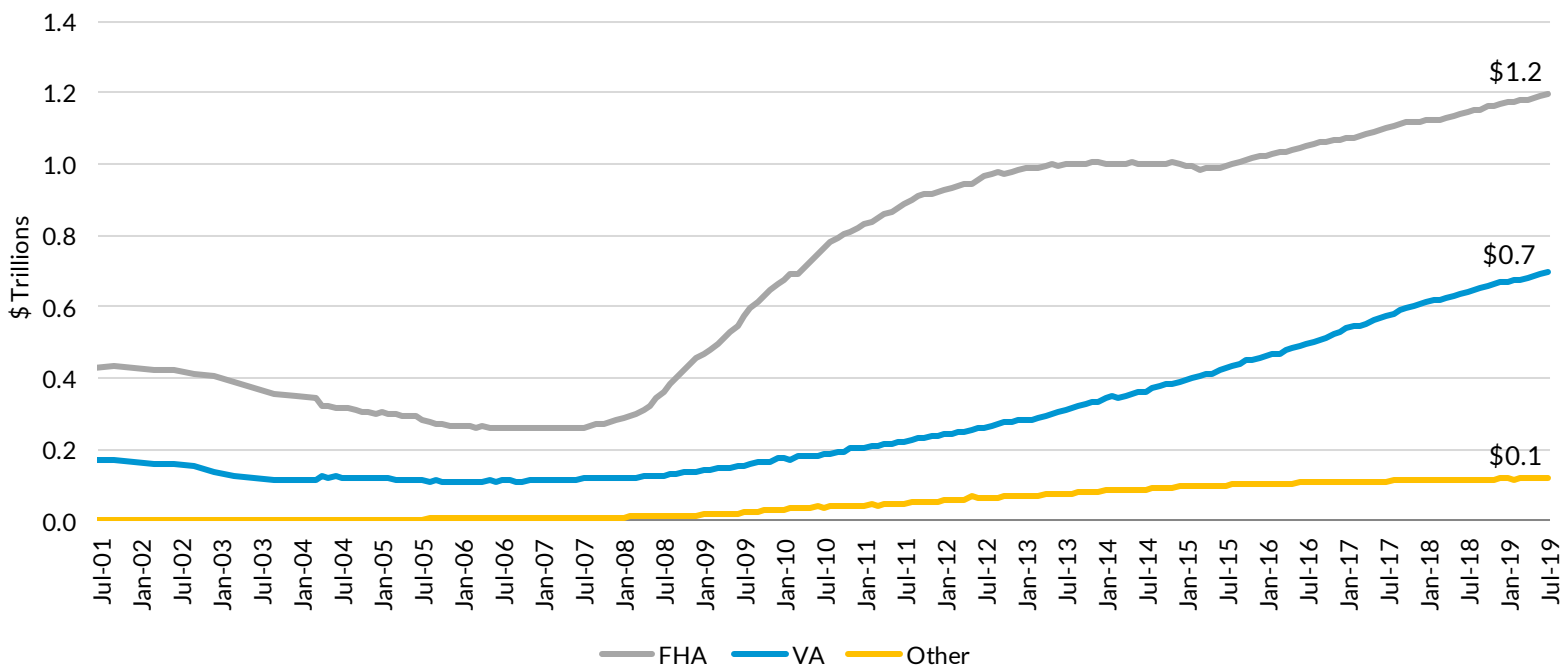
As of July 2019, outstanding securities in the agency market totaled \$6.78 trillion: 42.7 percent Fannie Mae, 27.6 percent Freddie Mac, and 29.7 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. FHA comprises 59.4 percent of total Ginnie Mae MBS outstanding, while VA comprises 34.7 percent.

Outstanding Agency Mortgage-Backed Securities



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

Outstanding Ginnie Mae Mortgage-Backed Securities

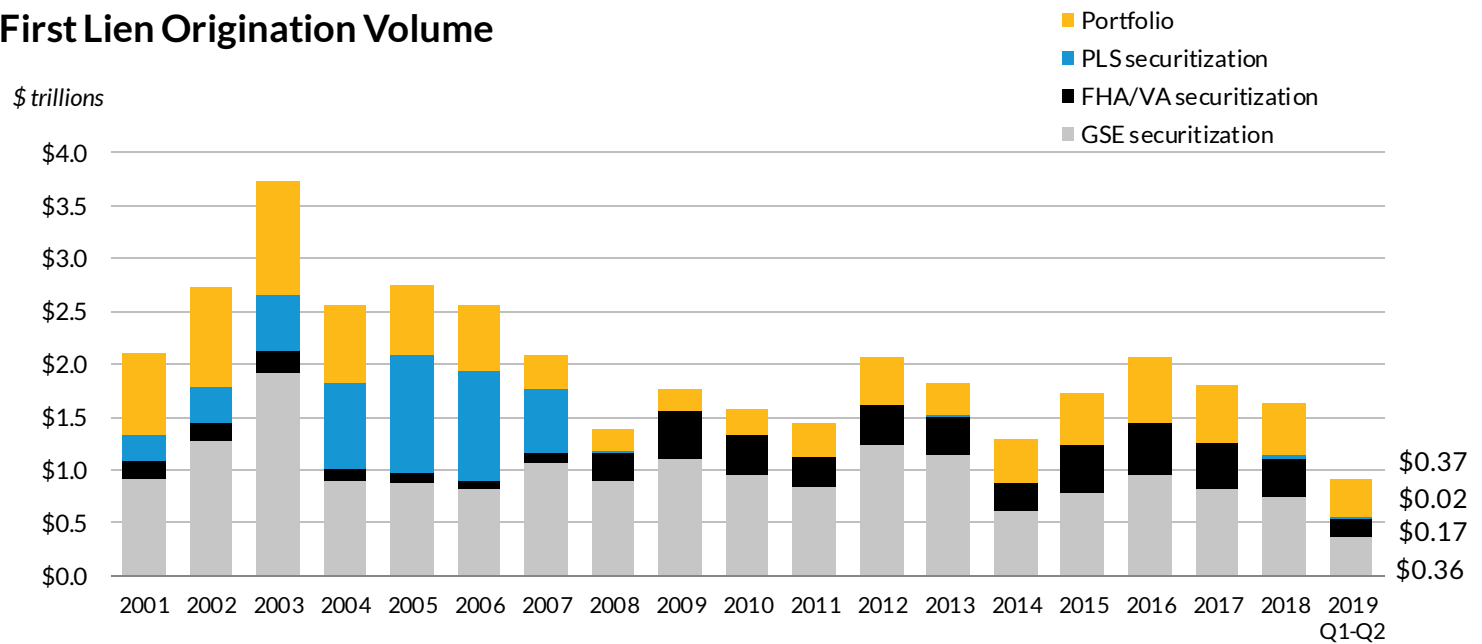


Sources: eMBS and Urban Institute. Note: Data as of July 2019.

State of the US Housing Market

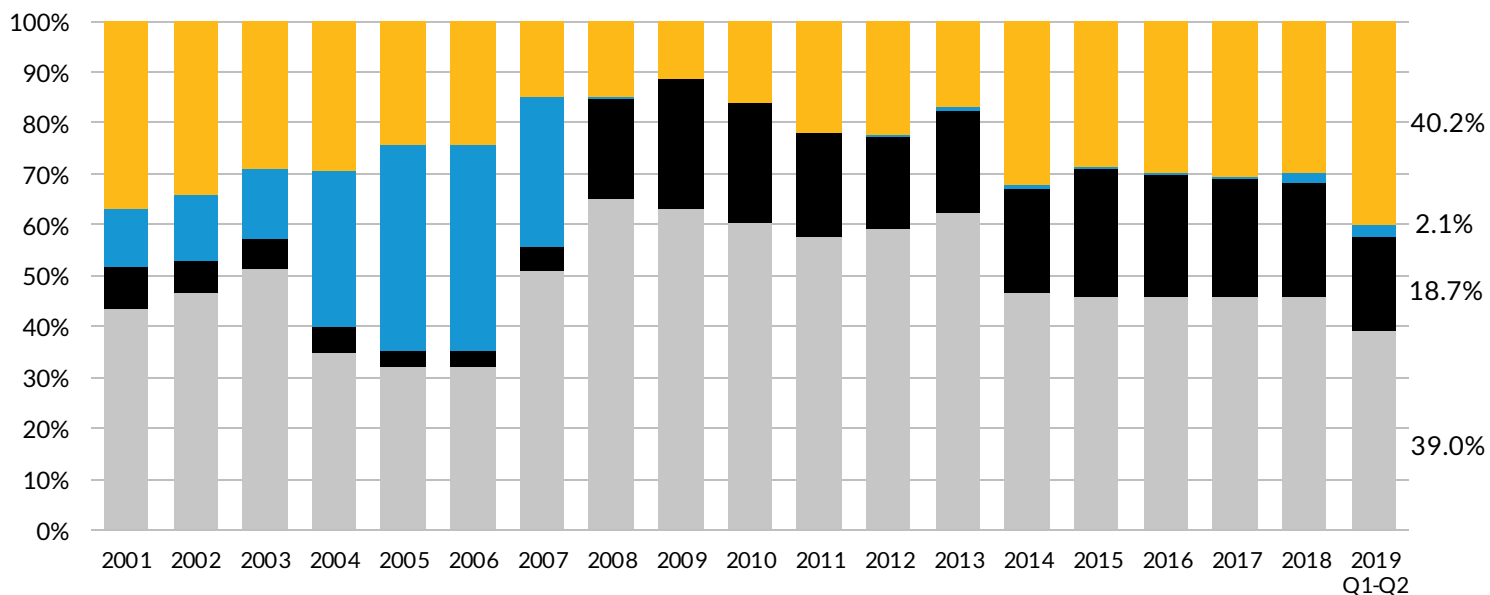
In the first half of 2019, first lien originations totaled \$920 billion, up from \$825 billion in 1H 2018. The share of portfolio originations was 40.2 percent in 1H 2019, up significantly from 32.3 percent in the same period of 2018. The GSE share was down at 39.0 percent, compared to 43.9 percent in H1 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 \$706.5 billion in the first seven months of 2019, up 3.3 percent compared to the same period in 2018. Ginnie Mae gross issuance was up by 2.4 percent and GSE gross issuance was up by 3.7 percent. Within the Ginnie Mae market, FHA was up by 3.3 percent and VA origination was up by 3.5 percent. While origination volumes were lower in January and February, a favorable rate environment has led to an increase in issuance year-over-year.

Agency Gross Issuance					
Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	\$202.8	\$157.9	\$360.6	\$102.2	\$462.8
2001	\$506.9	\$378.2	\$885.1	\$171.5	\$1,056.6
2002	\$710.0	\$529.0	\$1,238.9	\$169.0	\$1,407.9
2003	\$1,174.4	\$700.5	\$1,874.9	\$213.1	\$2,088.0
2004	\$517.5	\$355.2	\$872.6	\$119.2	\$991.9
2005	\$514.1	\$379.9	\$894.0	\$81.4	\$975.3
2006	\$500.2	\$352.9	\$853.0	\$76.7	\$929.7
2007	\$633.0	\$433.3	\$1,066.2	\$94.9	\$1,161.1
2008	\$562.7	\$348.7	\$911.4	\$267.6	\$1,179.0
2009	\$817.1	\$462.9	\$1,280.0	\$451.3	\$1,731.3
2010	\$626.6	\$377.0	\$1,003.5	\$390.7	\$1,394.3
2011	\$578.2	\$301.2	\$879.3	\$315.3	\$1,194.7
2012	\$847.6	\$441.3	\$1,288.8	\$405.0	\$1,693.8
2013	\$749.9	\$426.7	\$1,176.6	\$393.6	\$1,570.2
2014	\$392.9	\$258.0	\$650.9	\$296.3	\$947.2
2015	\$493.9	\$351.9	\$845.7	\$436.3	\$1,282.0
2016	\$600.5	\$391.1	\$991.6	\$508.2	\$1,499.8
2017	\$531.3	\$345.9	\$877.3	\$455.6	\$1,332.9
2018	\$480.9	\$314.1	\$795.0	\$400.6	\$1,195.3
2019 YTD	\$264.2	\$202.3	\$466.5	\$240.0	\$706.5
2019 YTD % Change YOY	-4.6%	17.1%	3.7%	2.4%	3.3%
2019 Ann.	\$452.9	\$346.9	\$799.7	\$411.4	\$1,211.1

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	\$133.4	\$98.8	\$7.8	\$240.0
2019 YTD % Change YOY	3.3%	3.5%	-20.9%	2.4%
2019 Ann.	\$228.7	\$169.3	\$13.4	\$411.4

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 July 2019.

US Agency Market, Originations

Agency net issuance totaled \$140.0 billion in the first seven months of 2019, up 8.3 percent compared to the same period in 2018. Ginnie Mae net issuance was \$57.8 billion, comprising 41.3 percent of total agency net issuance. Ginnie Mae net issuance was down 6.6 percent compared to the same period in 2018. Ginnie Mae net issuance in the first seven months of 2019 was comprised of 53.3 percent VA and 45.4 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	\$28.1	\$54.1	\$82.2	\$57.8	\$140.0
2019 YTD % Change YOY	-25.9%	83.6%	21.9%	-6.6%	8.3%
2019 Ann.	\$48.2	\$92.7	\$140.9	\$99.1	\$240.1

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	\$26.2	\$30.8	\$0.8	\$57.8
2019 YTD % Change YOY	2.3%	-9.7%	-62.8%	-6.6%
2019 Ann.	\$45.0	\$52.8	\$1.4	\$99.1

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 July 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 July have been much higher, benefitting from the decline in interest rates. The July 2019 gross agency issuance of \$134.5 billion is well above the July 2018 level of \$102.1 billion.

Monthly Agency Issuance

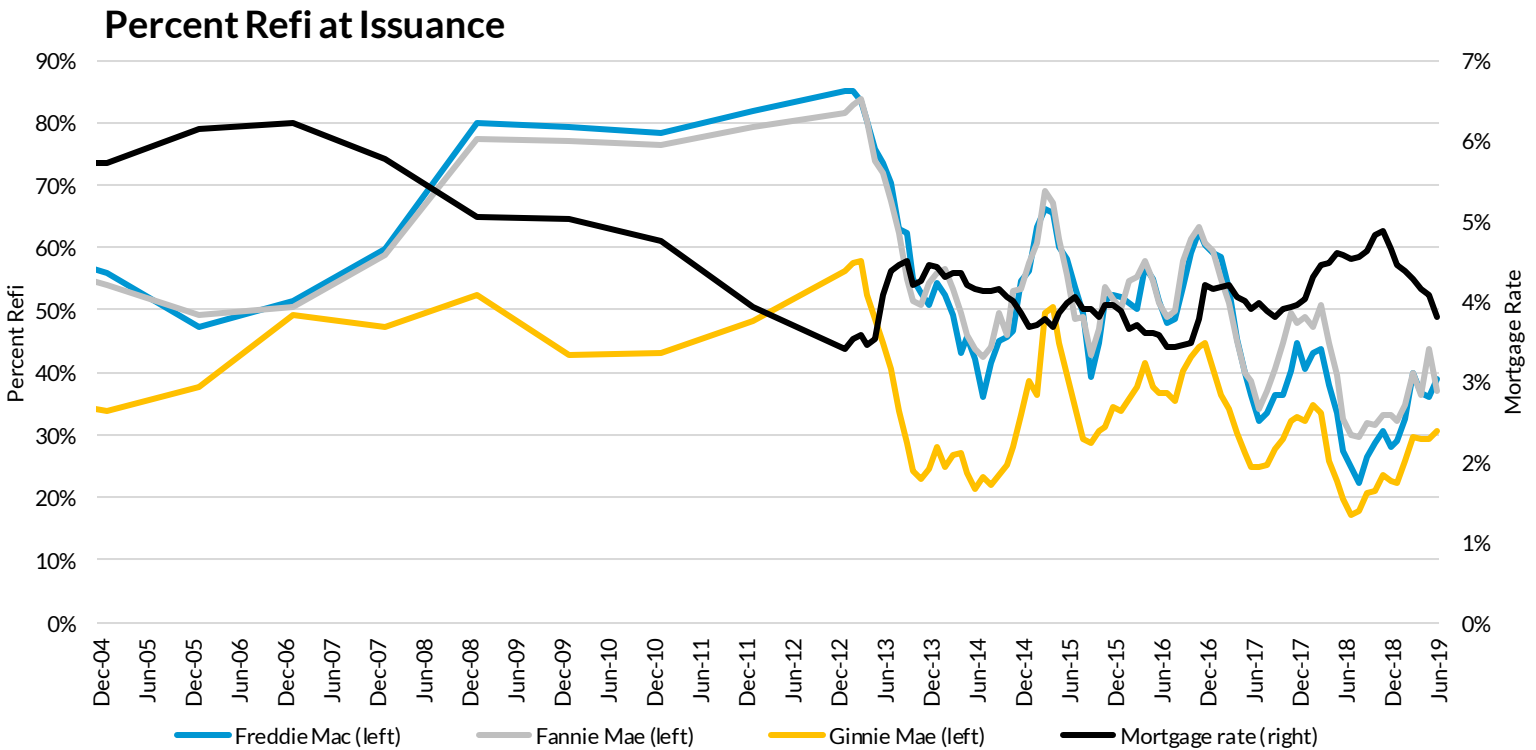
Date	Gross Issuance				Net Issuance			
	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-16	\$35.6	\$22.5	\$32.5	\$90.6	-\$0.6	\$1.0	\$7.3	\$7.8
Feb-16	\$32.4	\$21.2	\$30.5	\$84.1	\$2.4	\$3.1	\$8.4	\$13.9
Mar-16	\$39.7	\$27.5	\$32.9	\$100.1	\$7.9	\$8.2	\$9.6	\$25.8
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	\$36.9	\$51.7	\$45.9	\$134.5	\$10.3	\$10.3	\$10.8	\$31.4

Sources: eMBS and Urban Institute.

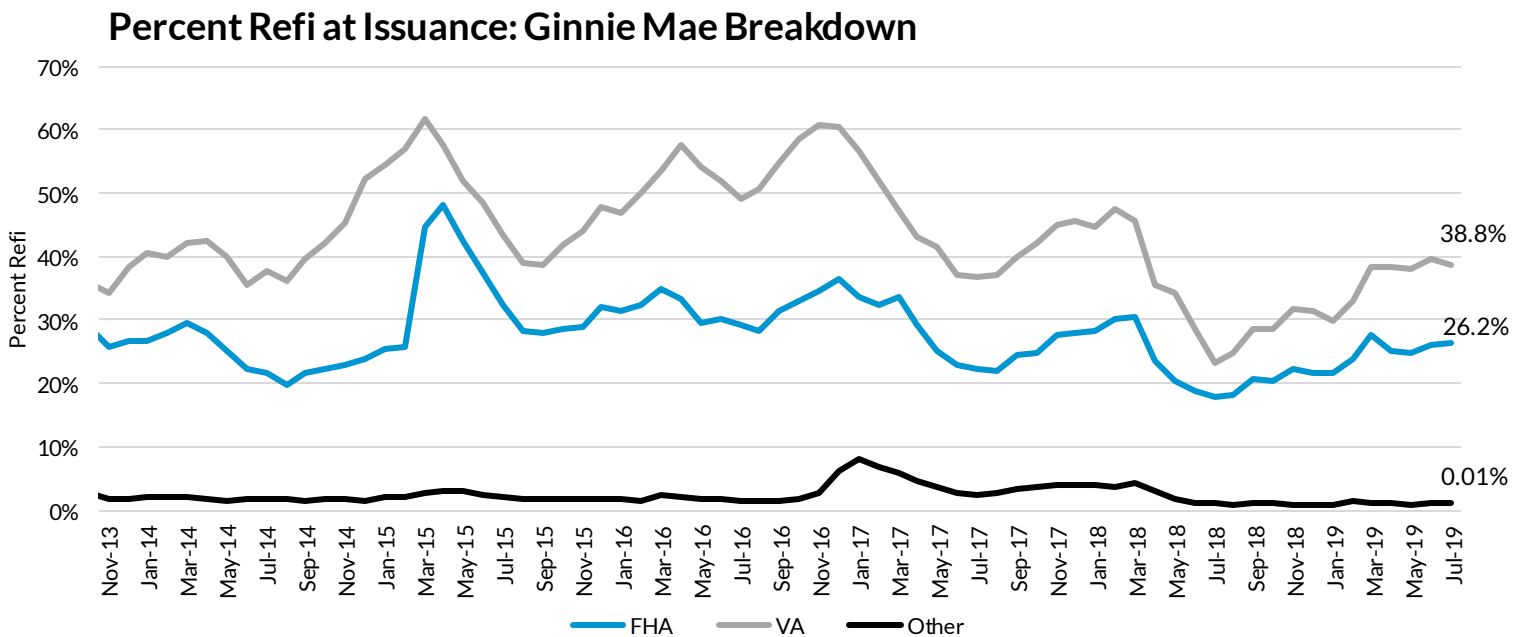
Note : Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of July 2019.

US Agency Market, Originations

The Ginnie Mae refi share stood at 31 percent in June 2019, below the 37-39 percent share for Fannie Mae and Freddie Mac. Within Ginnie Mae, VA had the highest refi share at 38.8 percent in July 2019, followed by FHA's 26.2 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 2019 as rates fell.



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

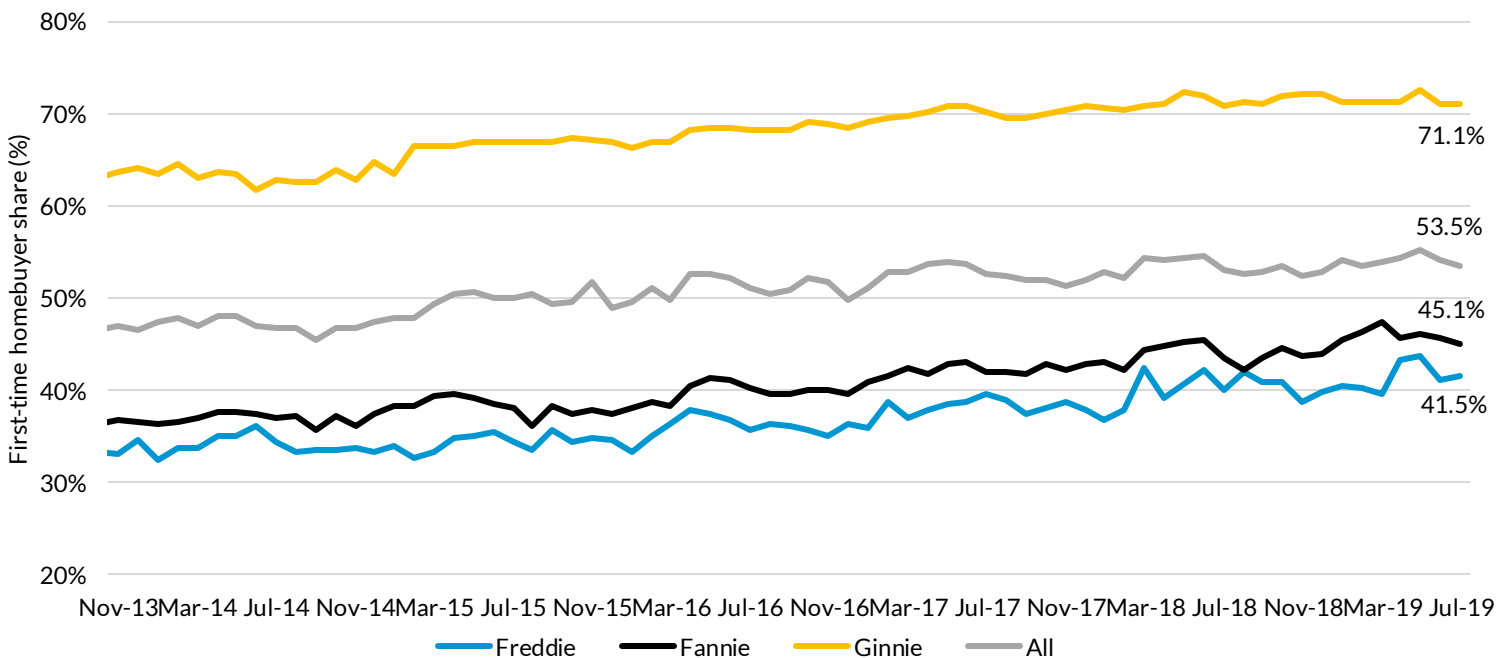


Sources: eMBS and Urban Institute. Note: Based on at-issuance balance. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of July 2019.

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 71.1 percent in July 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 45.1 percent and 41.5 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in July 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 July 2019.

	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	247,586	277,500	246,360	270,924	220,991	273,719	234,516	274,337
Credit Score	739.4	755.4	744.3	757.4	678.5	702.9	711.2	742.1
LTV (%)	88.8	79.6	87.2	79.7	96.9	95.3	92.3	83.8
DTI (%)	35.8	36.4	34.9	35.9	41.8	42.6	38.5	37.9
Loan Rate (%)	4.4	4.3	4.3	4.3	4.4	4.2	4.4	4.3

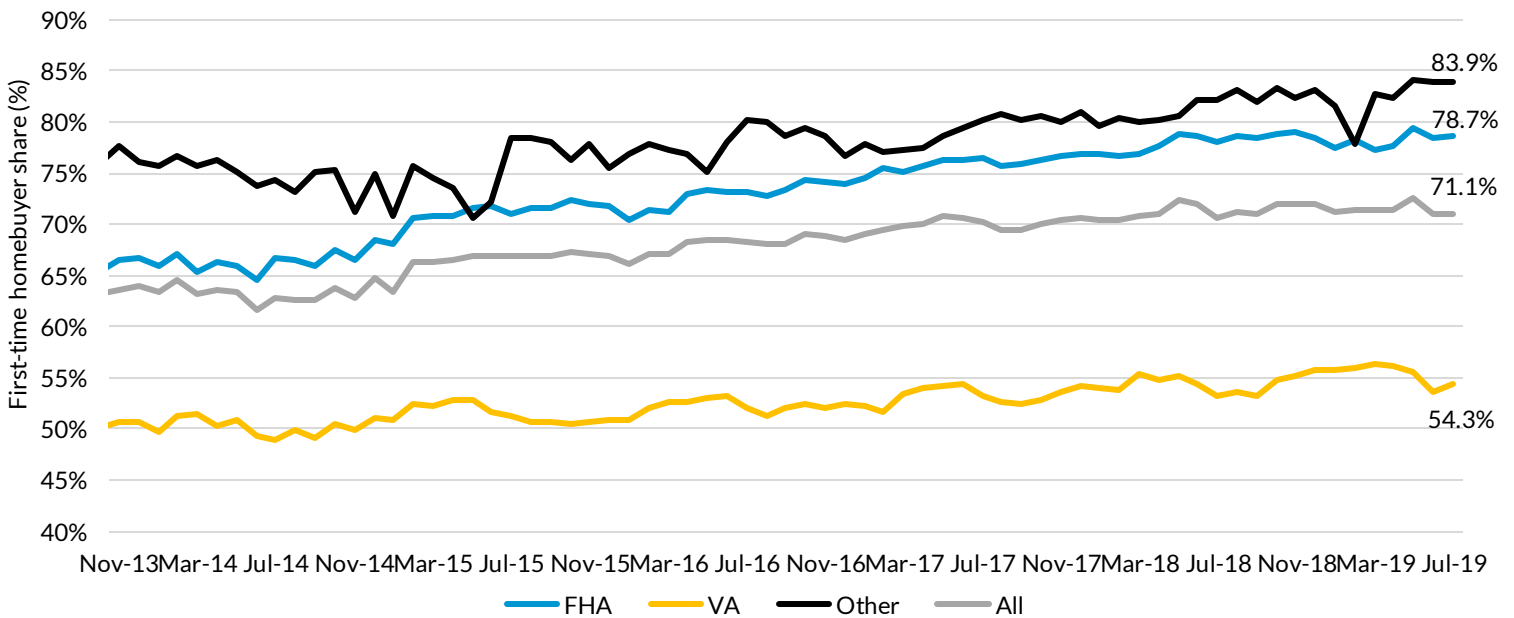
Sources: eMBS and Urban Institute.

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 July 2019.

Credit Box

Within the Ginnie Mae purchase market, 78.7 percent of FHA loans, 54.3 percent of VA loans and 83.9 percent of other loans represent financing for first-time home buyers in July 2019. The bottom table shows that based on mortgages originated in July 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 similar DTI.

First Time Homebuyer Share: Ginnie Mae Breakdown



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

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	214,546	233,743	262,837	316,310	150,288	167,745	220,991	273,719
Credit Score	668.1	671.3	700.2	729.7	695.7	703.2	678.5	702.9
LTV (%)	95.5	93.9	99.6	96.3	99.1	99.3	96.9	95.3
DTI (%)	43.1	44.0	40.6	41.8	34.9	36.1	41.8	42.6
Loan Rate (%)	4.5	4.4	4.2	4.0	4.3	4.3	4.4	4.2

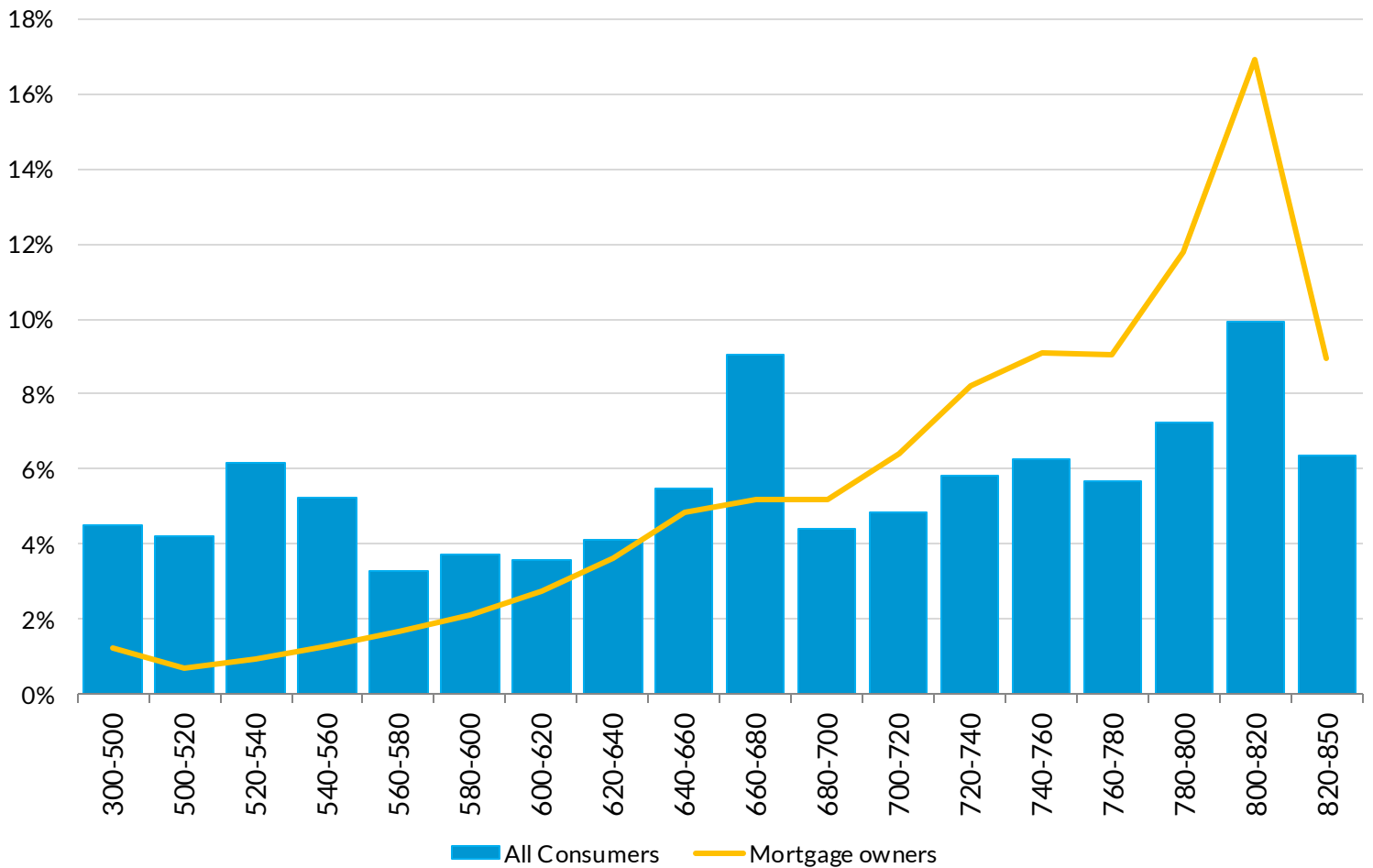
Sources: eMBS and Urban Institute. Note: Data as of July 2019. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront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

July 2019 Credit Box at a Glance

In July 2019, the median Ginnie Mae FICO score was 677 versus 753 for Fannie Mae and 756 for Freddie Mac. Note that the FICO score for the 10th percentile was 620 for Ginnie Mae, versus 682 for Fannie Mae and 686 for Freddie Mac. Within the Ginnie Mae market, FHA loans have a median FICO score of 663, VA loans have a median FICO score of 709 and other loans have a median FICO score of 692.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	343,924	644	683	735	777	798	727
Fannie	126,095	686	718	757	786	801	749
Freddie	93,305	691	724	760	788	802	753
Ginnie	124,524	622	644	676	724	772	686

Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	172,767	647	685	731	772	795	725
Fannie	73,948	675	707	747	780	799	741
Freddie	50,958	676	709	749	779	798	742
Ginnie	47,861	614	643	678	721	766	683

All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	516,691	645	684	733	775	797	726
Fannie	200,043	682	714	753	784	801	746
Freddie	144,263	686	719	756	785	801	749
Ginnie	172,385	620	644	677	723	771	685

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	124,524	622	644	676	724	772	686
FHA	74,481	615	637	663	696	734	669
VA	40,842	630	663	715	768	795	714
Other	9,201	640	659	692	733	768	697

Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	47,861	614	643	678	721	766	683
FHA	24,422	605	634	663	695	730	665
VA	23,355	625	659	700	748	783	701
Other	84	646	673	697	734	767	701

All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	172,385	620	644	677	723	771	685
FHA	98,903	613	636	663	696	733	668
VA	64,197	629	661	709	762	792	709
Other	9,285	640	659	692	733	768	697

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

July 2019 Credit Box at a Glance

In July 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, 97 percent for Fannie Mae and 95 percent for Freddie Mac. 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	344,577	72.0	80.0	95.0	96.5	100.0	87.8
Fannie	126,203	65.0	80.0	85.0	95.0	97.0	83.3
Freddie	93,362	64.0	80.0	81.0	95.0	95.0	82.3
Ginnie	125,012	92.6	96.5	96.5	100.0	101.6	96.4

Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	175,437	48.0	63.0	75.0	86.0	96.6	73.2
Fannie	73,951	43.0	58.0	70.0	79.0	82.0	66.6
Freddie	50,963	44.0	59.0	73.0	80.0	84.0	67.9
Ginnie	50,523	72.5	83.9	89.0	98.3	100.0	88.2

All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	520,014	59.0	75.0	86.5	96.5	98.7	82.9
Fannie	200,154	52.0	69.0	80.0	92.0	97.0	77.1
Freddie	144,325	53.0	70.0	80.0	90.0	95.0	77.2
Ginnie	175,535	84.0	94.0	96.5	100.0	101.0	94.1

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	125,012	92.6	96.5	96.5	100.0	101.6	96.4
FHA	74,793	93.1	96.5	96.5	96.5	96.5	95.2
VA	40,933	91.0	100.0	100.0	102.2	103.0	98.1
Other	9,286	95.1	99.0	101.0	101.0	101.0	99.2

Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	50,523	72.5	83.9	89.0	98.3	100.0	88.2
FHA	25,194	70.7	81.6	86.5	93.8	98.1	84.9
VA	25,236	74.7	86.9	96.5	100.0	101.0	91.6
Other	93	61.5	84.0	93.0	99.2	101.0	87.8

All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	175,535	84.0	94.0	96.5	100.0	101.0	94.1
FHA	99,987	84.0	91.7	96.5	96.5	96.5	92.6
VA	66,169	82.6	94.6	100.0	100.0	102.2	95.6
Other	9,379	94.9	98.9	101.0	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 July 2019.

July 2019 Credit Box at a Glance

In July 2019, the median Ginnie Mae debt-to-income ratio (DTI) was 42.6 percent, considerably higher than the 37 percent median DTI for both Freddie Mac and Fannie Mae. The 90th percentile for Ginnie Mae was 54.3 percent, also much higher than the 47 percent DTI for the GSEs. Within the Ginnie Mae market, the median FHA DTI ratio was 44.2 percent, versus 41.1 percent for VA and 36.0 percent for other lending programs.

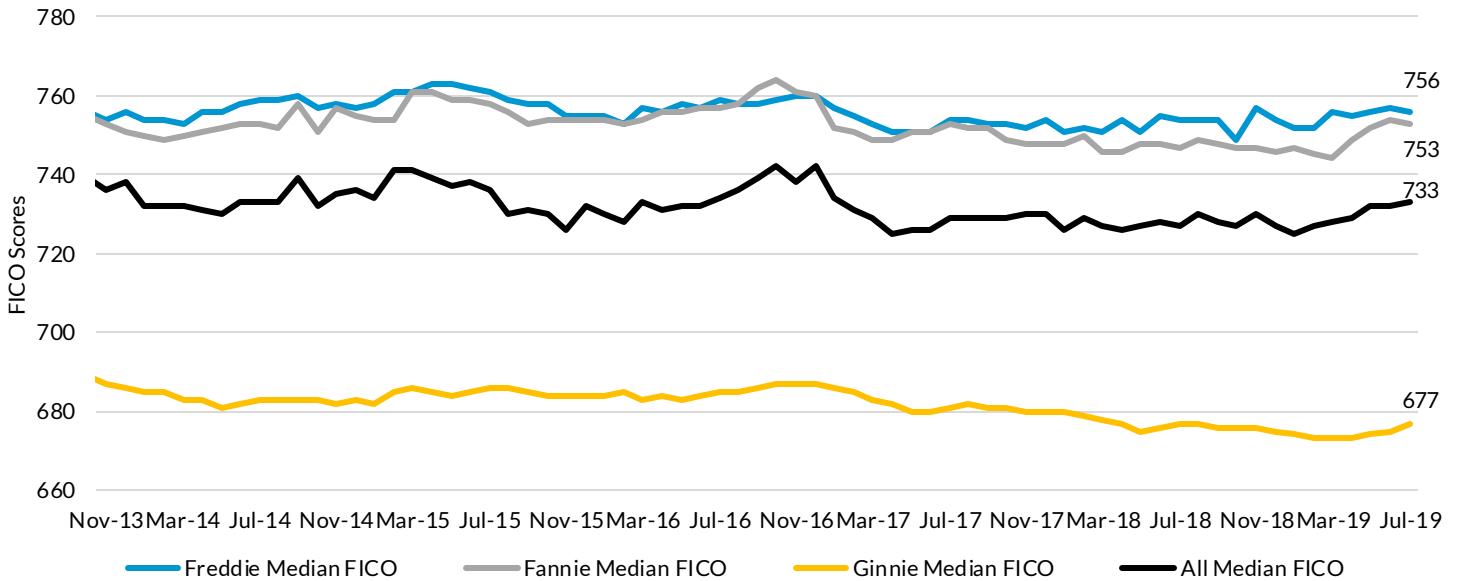
Purchase DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	344,134	24.0	31.0	39.0	45.0	49.9	38.0
Fannie	126,199	22.0	29.0	37.0	44.0	48.0	36.0
Freddie	93,360	22.0	29.0	36.0	43.0	47.0	35.3
Ginnie	124,575	28.9	35.6	42.7	49.3	54.3	42.0
Refi DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	157,788	23.0	30.0	38.0	44.0	48.7	36.6
Fannie	73,924	22.0	29.0	37.0	43.0	47.0	35.4
Freddie	50,949	22.0	29.0	37.0	43.0	47.0	35.4
Ginnie	32,915	26.0	33.4	42.1	49.3	54.4	40.9
All DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	501,922	24.0	31.0	39.0	45.0	49.0	37.5
Fannie	200,123	22.0	29.0	37.0	43.0	47.0	35.8
Freddie	144,309	22.0	29.0	37.0	43.0	47.0	35.4
Ginnie	157,490	28.3	35.1	42.6	49.3	54.3	41.8
Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	124,575	28.9	35.6	42.7	49.3	54.3	42.0
FHA	74,770	30.7	37.4	44.3	50.3	54.6	43.3
VA	40,589	27.3	34.1	41.6	48.7	54.4	41.1
Other	9,216	25.9	30.8	36.0	40.1	43.0	35.1
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	32,915	26.0	33.4	42.1	49.3	54.4	40.9
FHA	18,755	28.2	35.6	43.9	50.5	54.8	42.4
VA	14,083	23.1	31.6	39.8	47.2	53.3	38.9
Other	77	22.3	27.4	31.4	37.0	40.3	31.6
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	157,490	28.3	35.1	42.6	49.3	54.3	41.8
FHA	93,525	30.2	37.1	44.2	50.4	54.7	43.1
VA	54,672	26.3	33.3	41.1	48.3	54.1	40.6
Other	9,293	25.9	30.7	36.0	40.1	42.9	35.1

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 July 2019.

Credit Box: Historical

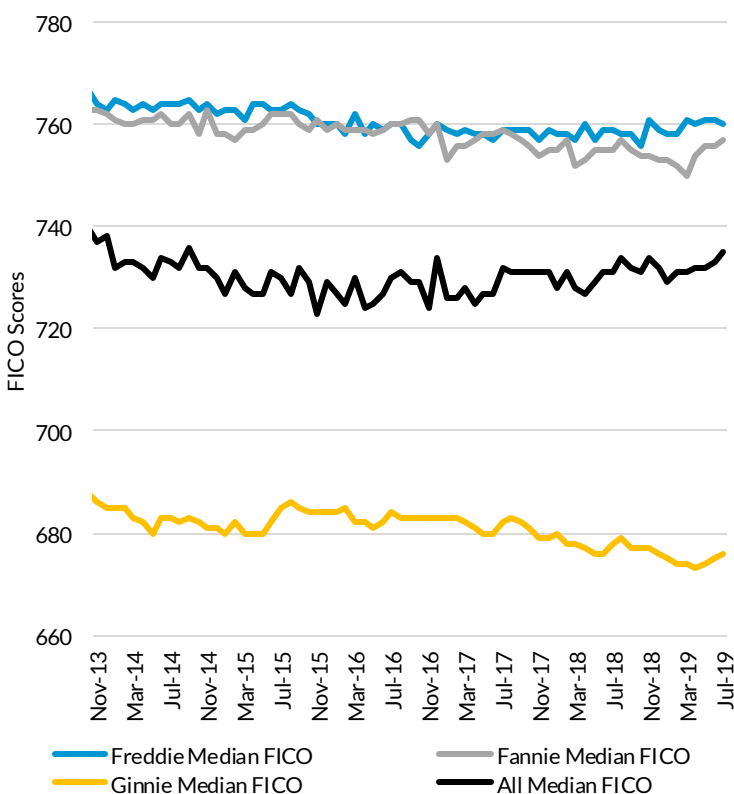
The median FICO score for all agency loans originated in July 2019 was 733, relatively flat from the previous month. The figures show that the median FICO score for Ginnie Mae borrowers has always been considerably lower than for GSE borrowers. Since early 2019, the median FICO score for Ginnie borrowers has remained flat, while FICOs for Fannie and Freddie are higher. The difference between Ginnie Mae and GSE borrower FICOs is slightly wider for purchase loans than for refi loans.

FICO Scores for All Loans



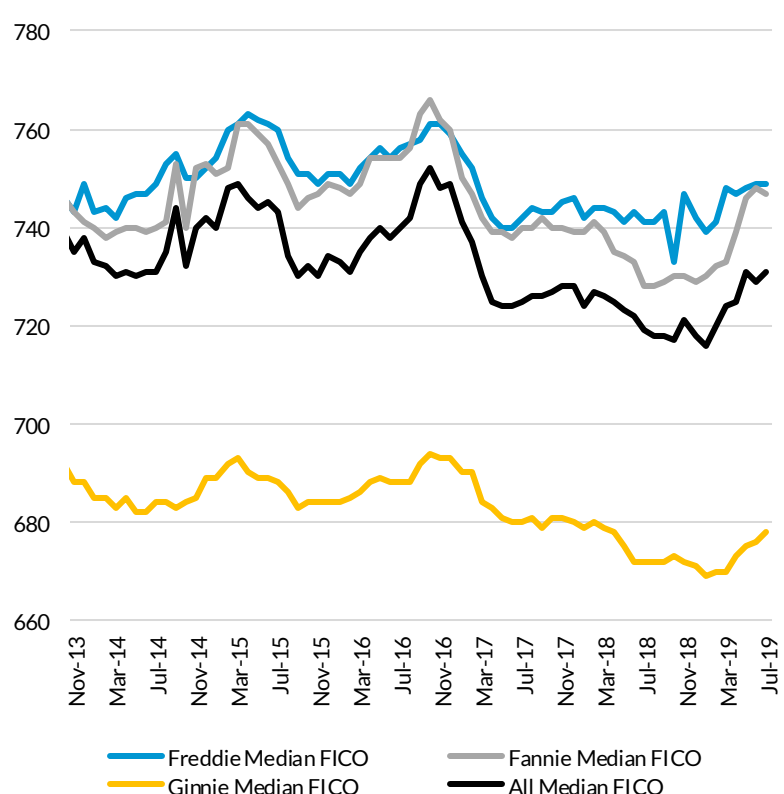
Sources: eMBS and Urban Institute. Note: Data as of July 2019.

FICO Scores for Purchase Loans



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

FICO Scores for Refinance Loans

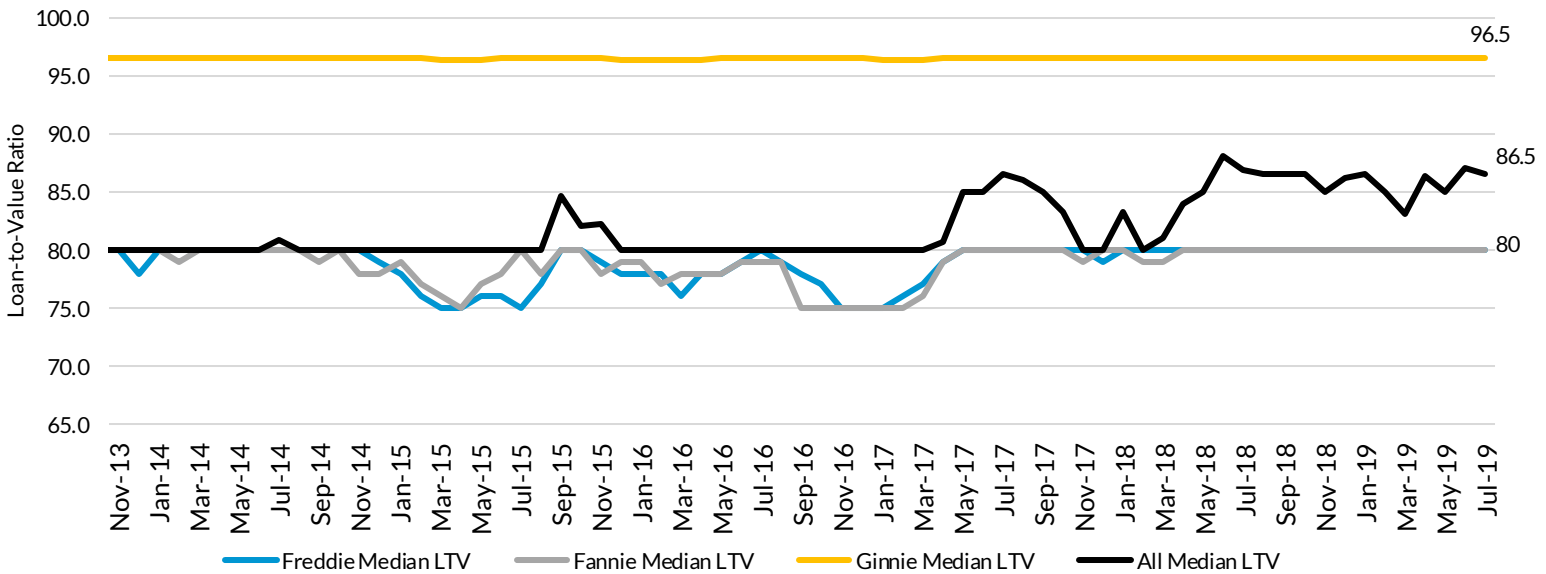


Sources: eMBS and Urban Institute. Note: Data as of July 2019.

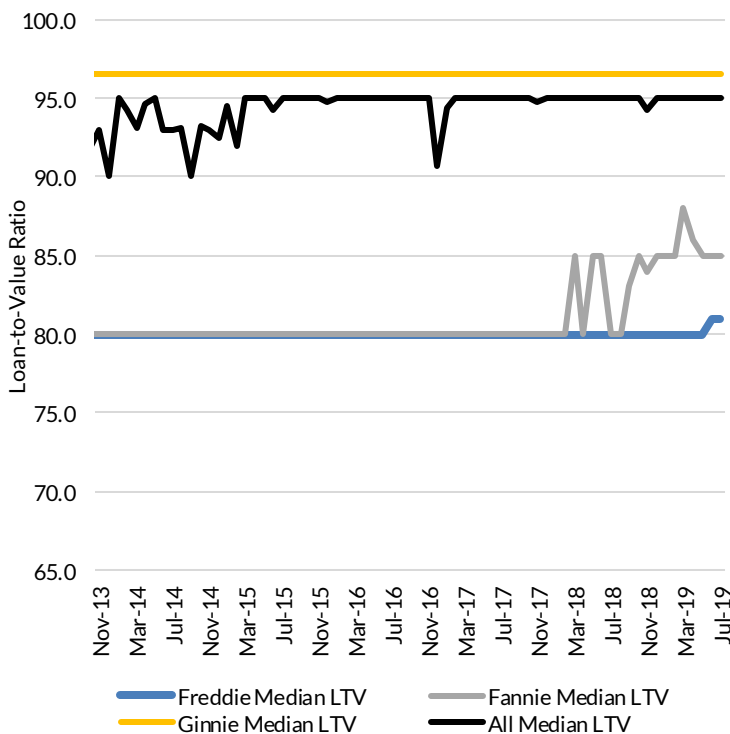
Credit Box: Historical

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.

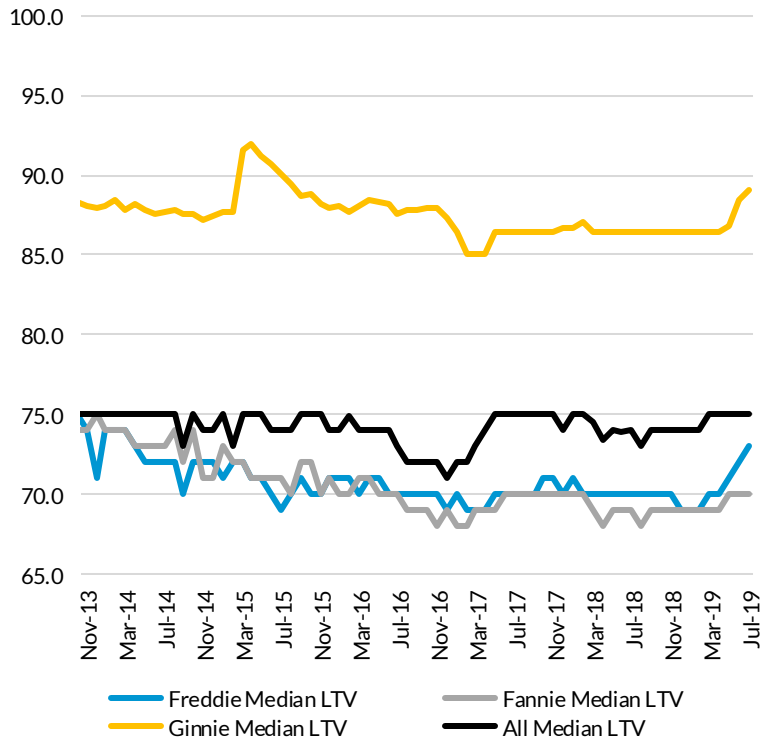
LTV Ratio for All Loans



LTV Ratio for Purchase Loans



LTV Ratio for Refinance Loans

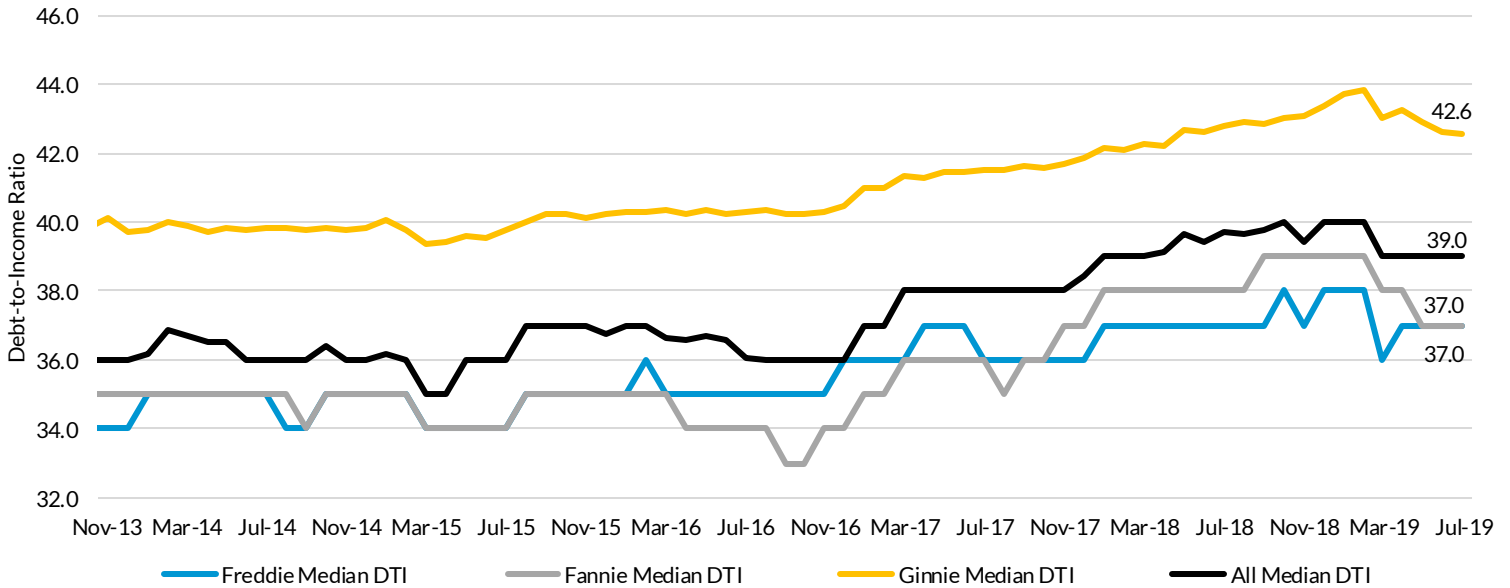


Sources: eMBS and Urban Institute. Note: In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting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

Credit Box: Historical

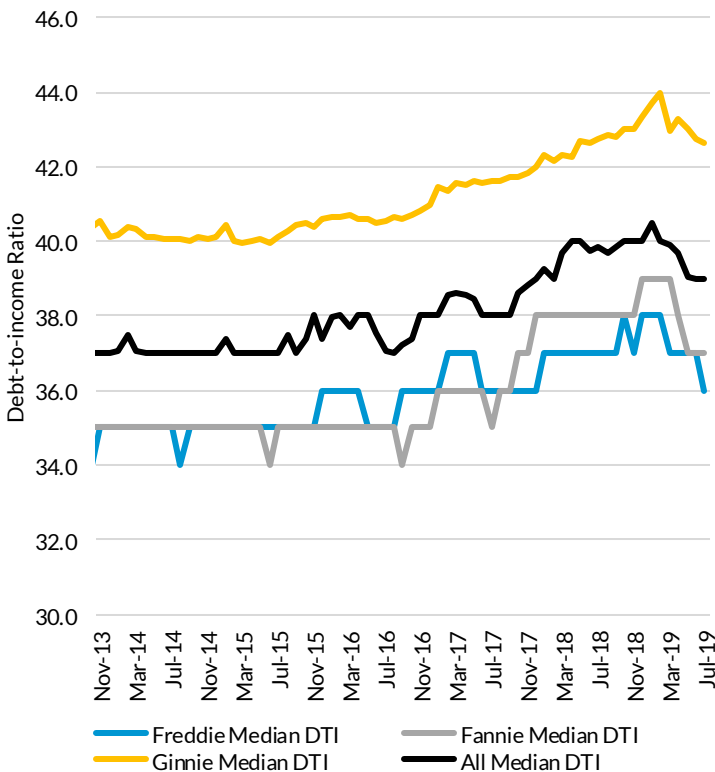
Median debt-to-income ratios on Ginnie Mae loans have historically been in the low 40s, considerably higher than for the GSEs. DTIs have increased over the past two years for both Ginnie Mae and GSE loans, with the movement more pronounced for Ginnie Mae. Increases in DTI are very typical in an environment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

DTI Ratio for All Loans



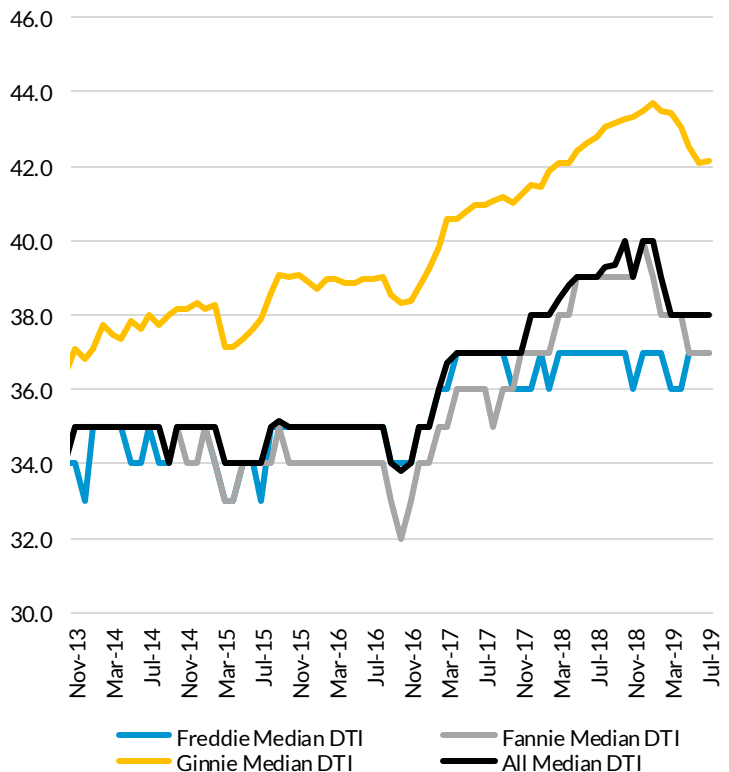
Sources: eMBS and Urban Institute. Note: Data as of July 2019.

DTI Ratio for Purchase Loans



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

DTI Ratio for Refinance Loans

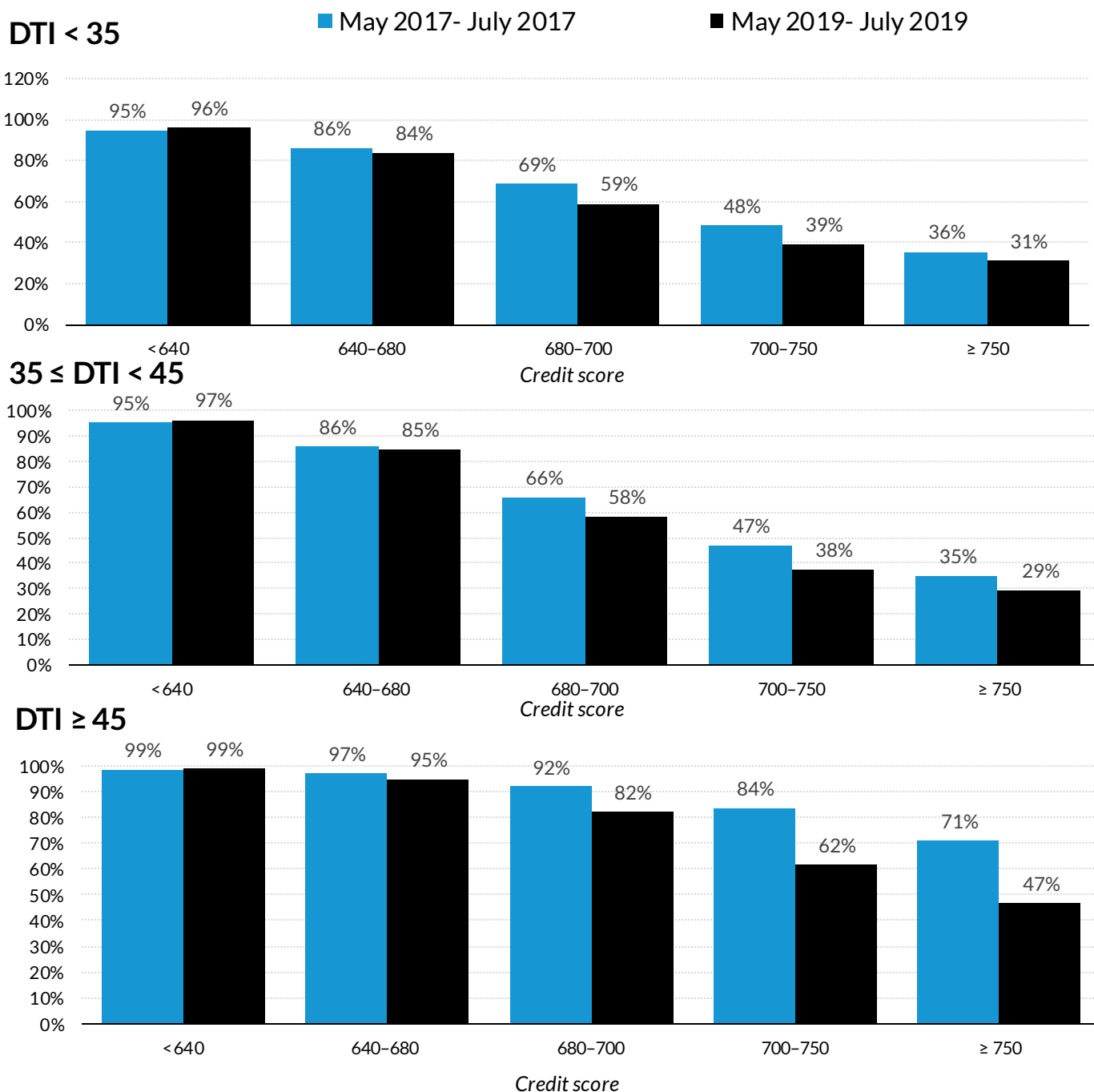


Sources: eMBS and Urban Institute. Note: Data as of July 2019.

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 May 2019–July 2019, Ginnie Mae accounted for 96 percent of agency issuance for DTIs under 35 and FICOs below 640, compared to just 31 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 May 2019–July 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 58–59 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 May 2019-July 2019 period having LTVs of 95 or above, compared to 21.1 percent for the GSEs. The GSEs have increased their high-LTV lending share from 18.2 percent in May 2017-July 2017. Ginnie Mae's high-LTV lending is down just slightly over the same period from 71.4 percent. As home prices have increased, the share of high-DTI lending (loans with DTI \geq 45) has increased across the FICO spectrum.

Share of Loans with LTV \geq 95

	Ginnie Mae	GSE	All
May 2017-July 2017	71.4%	18.2%	36.9%
May 2019-July 2019	71.3%	21.1%	37.1%

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

May 2017-July 2017

DTI	FICO					All
	<640	640-680	680-700	700-750	\geq 750	
< 35	3.1%	5.9%	3.3%	8.1%	9.7%	30.0%
35-45	5.4%	10.1%	5.4%	12.3%	10.3%	43.4%
\geq 45	3.8%	8.1%	3.7%	6.8%	4.2%	26.6%
All	12.2%	24.1%	12.4%	27.1%	24.2%	100.0%

May 2019-July 2019

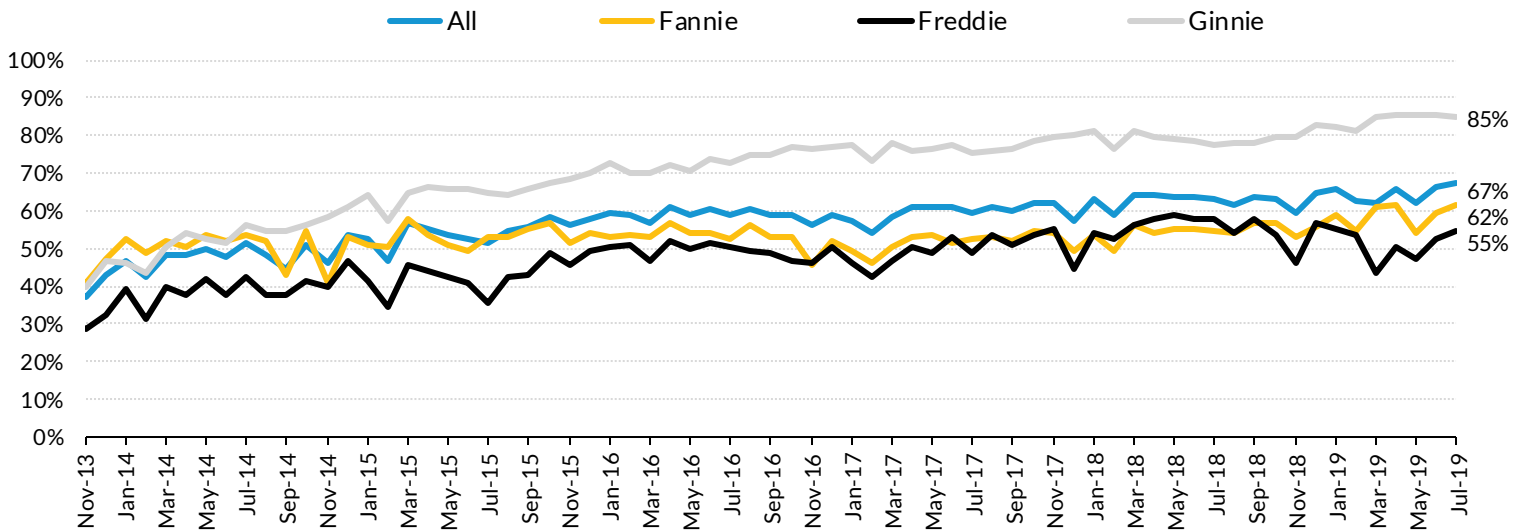
DTI	FICO					All
	<640	640-680	680-700	700-750	\geq 750	
< 35	3.0%	4.6%	2.6%	7.3%	9.7%	27.2%
35-45	5.5%	8.6%	4.6%	11.3%	10.3%	40.3%
\geq 45	5.0%	8.5%	4.1%	8.6%	6.4%	32.6%
All	13.4%	21.7%	11.3%	27.2%	26.4%	100.0%

Sources: eMBS and Urban Institute.

Nonbank Originators

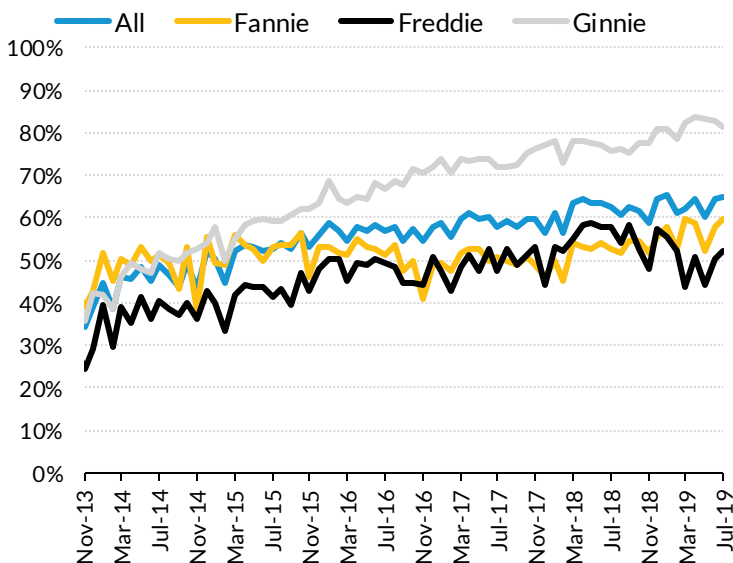
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, standing just below the record high of 86 percent at 85 percent in July 2019. Freddie and Fannie's nonbank shares both grew in July, to 55 and 61 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

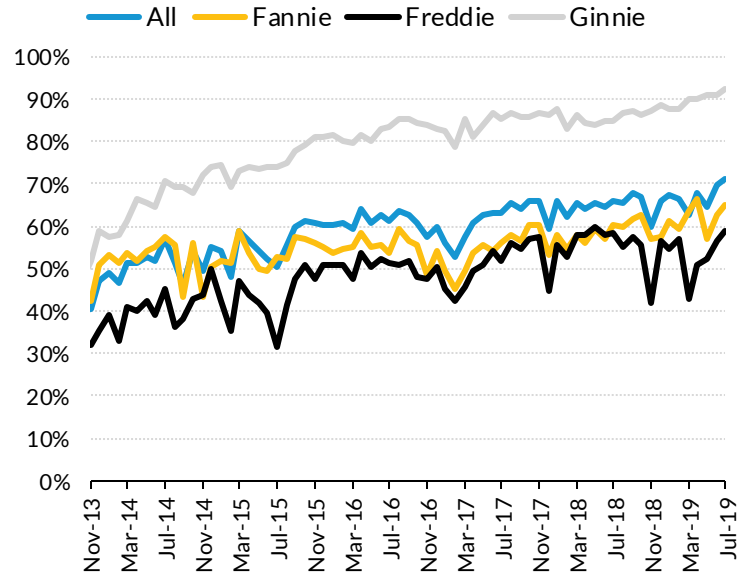


Sources: eMBS and Urban Institute
 Note: Data as of July 2019.

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

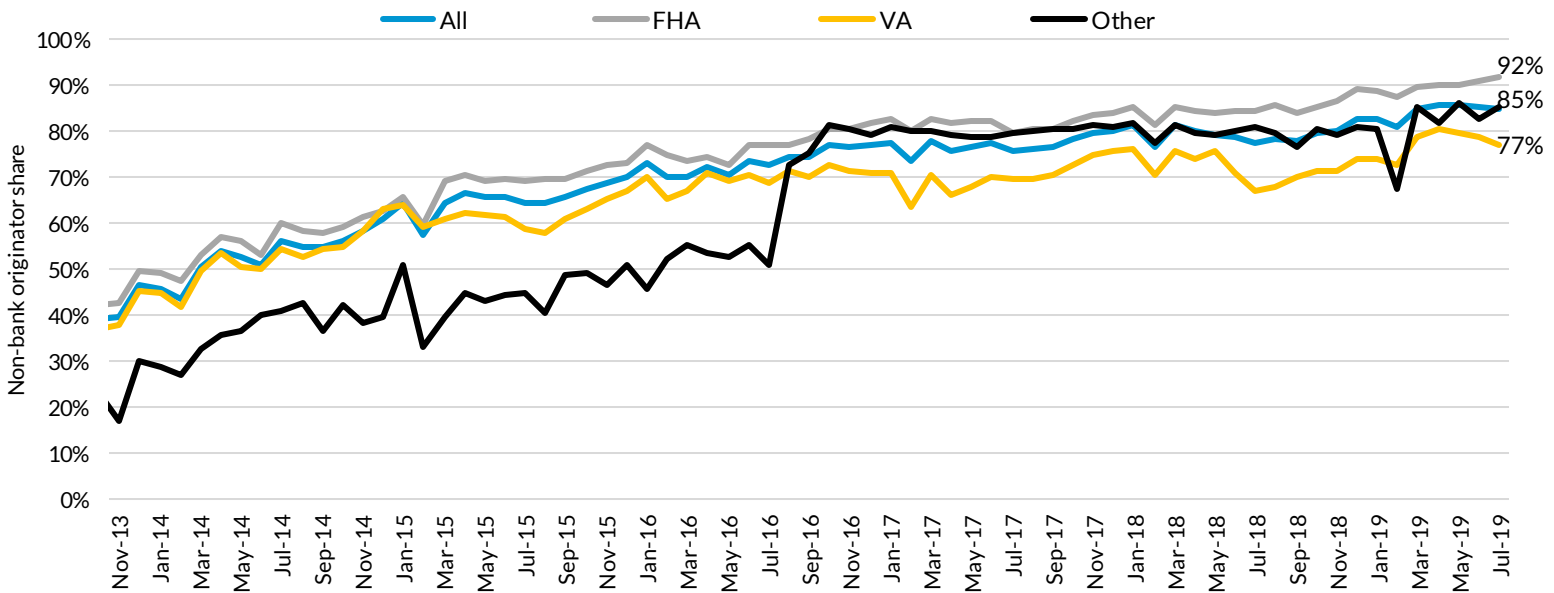


Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of July 2019.

Ginnie Mae Nonbank Originators

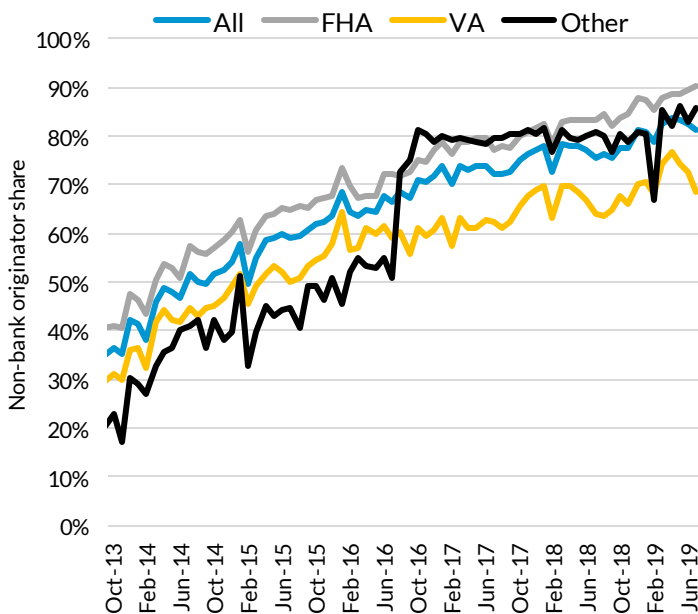
In July 2019, Ginnie Mae’s nonbank share remained flat at 85 percent. The nonbank originator share for FHA continued to grow, reaching a historical high of 92 percent. The nonbank originator share for VA was 77 percent, and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, increased to 85 percent.

Ginnie Mae Nonbank Originator Share: All Loans

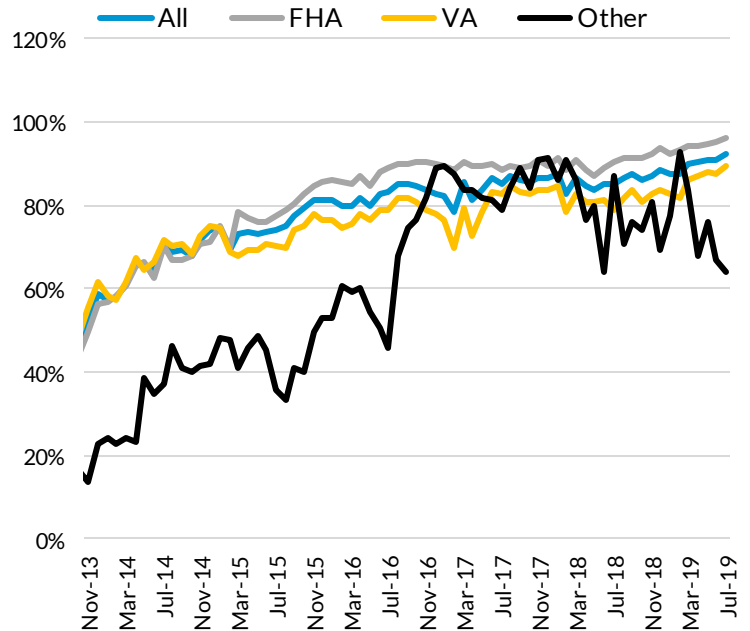


Sources: eMBS and Urban Institute
 Note: Data as of July 2019.

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

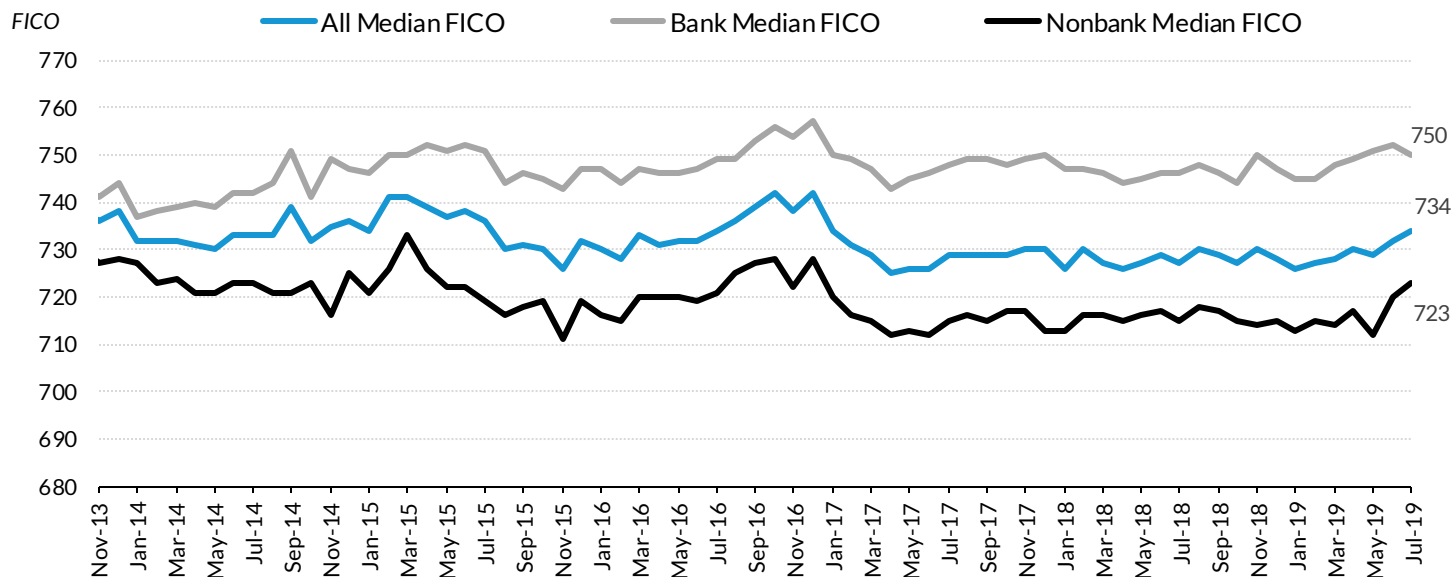


Sources: eMBS and Urban Institute. Note: “Other” refers to loans insured by HUD’s Office of Public and Indian Housing and the Department of Agriculture’s Rural Development. Data as of July 2019.

Nonbank Credit Box

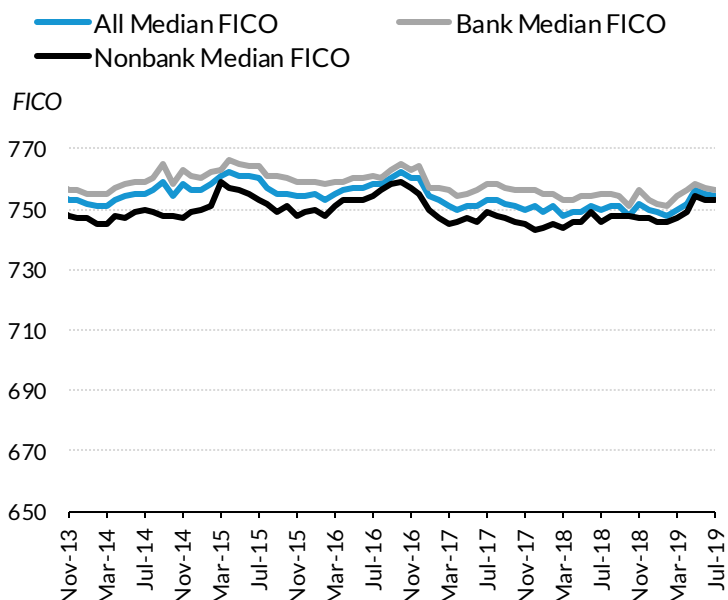
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have been relatively flat since 2014. In contrast,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



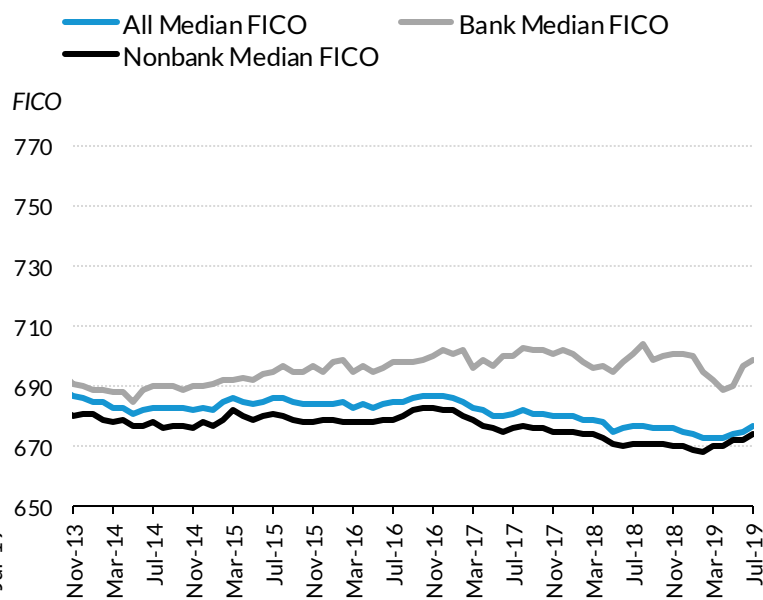
Sources: eMBS and Urban Institute. Note: Data as of July 2019.

GSE FICO: Bank vs. Nonbank



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

Ginnie Mae FICO: Bank vs. Nonbank

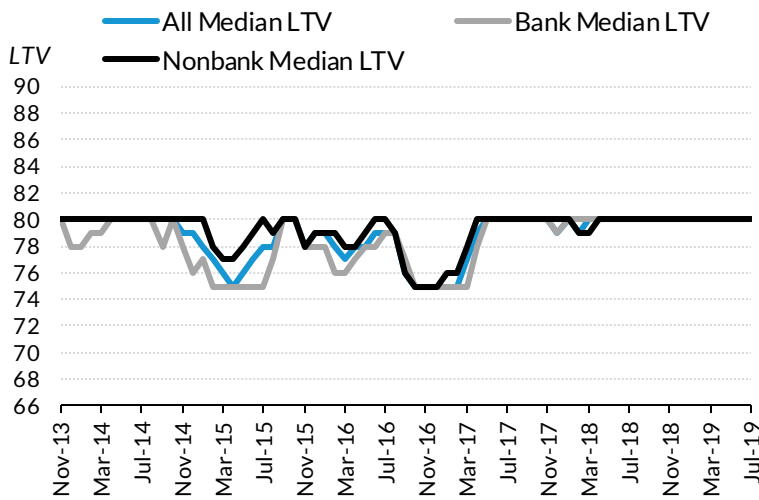


Sources: eMBS and Urban Institute. Note: Data as of July 2019.

Nonbank Credit Box

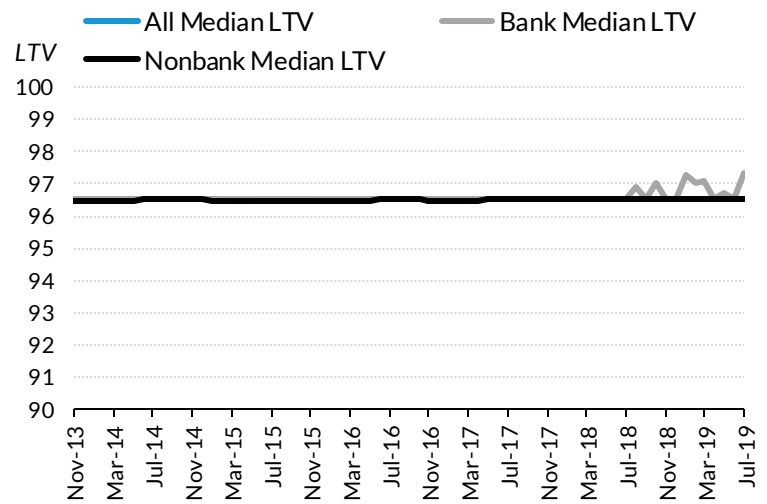
The median LTVs for nonbank and bank originations are comparable, while the median DTI for nonbank loans is higher than for bank loans, indicating that nonbanks are more accommodating in both this and the FICO dimension. Since early 2017, there has been a substantial increase in DTIs, which has partially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



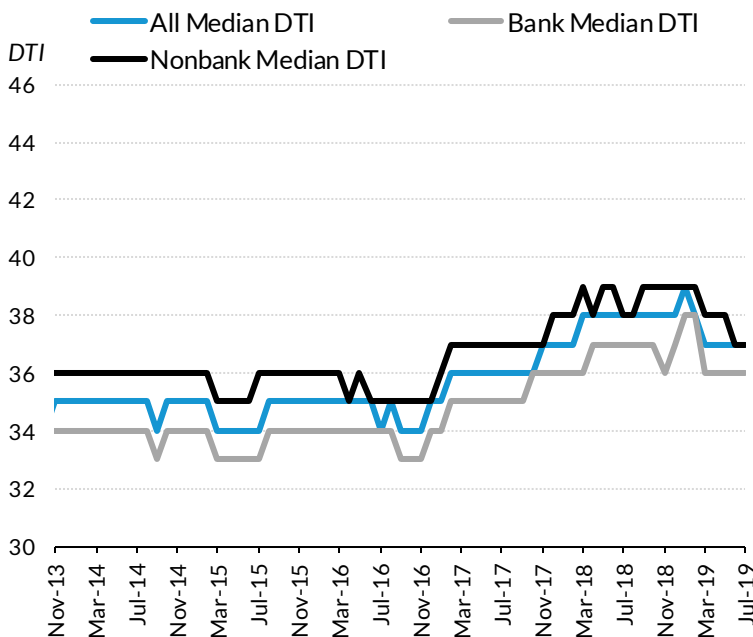
Sources: eMBS and Urban Institute. Note: Data as of July 2019.

Ginnie Mae LTV: Bank vs. Nonbank



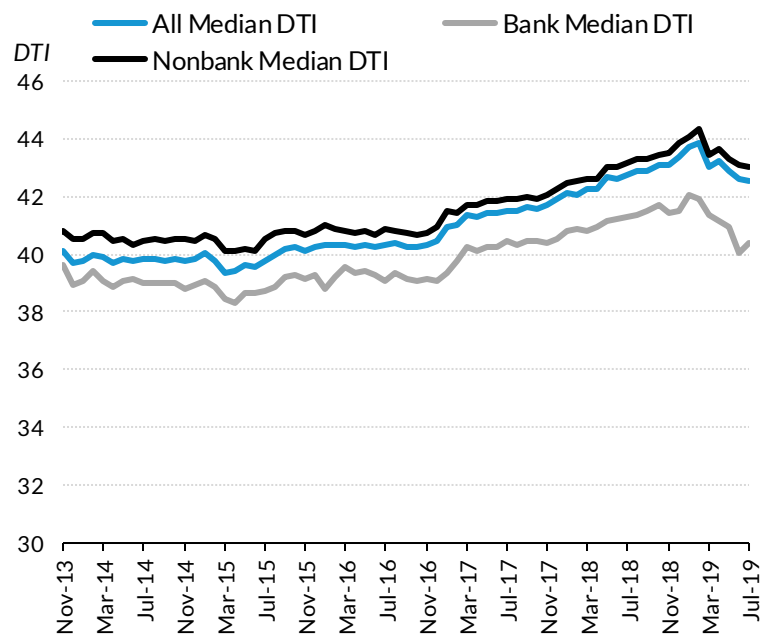
Sources: eMBS and Urban Institute. Note: Data as of July 2019.

GSE DTI: Bank vs. Nonbank



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

Ginnie Mae DTI: Bank vs. Nonbank

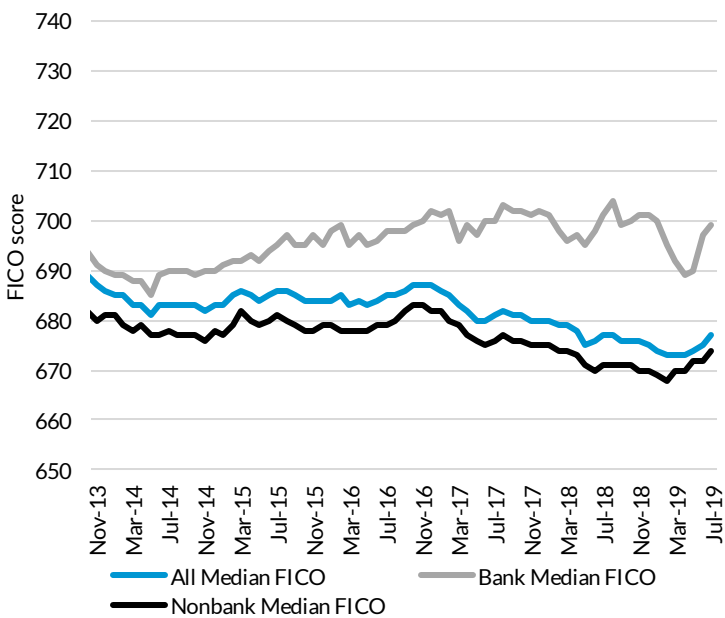


Sources: eMBS and Urban Institute. Note: Data as of July 2019.

Ginnie Mae Nonbank Originators: Credit Box

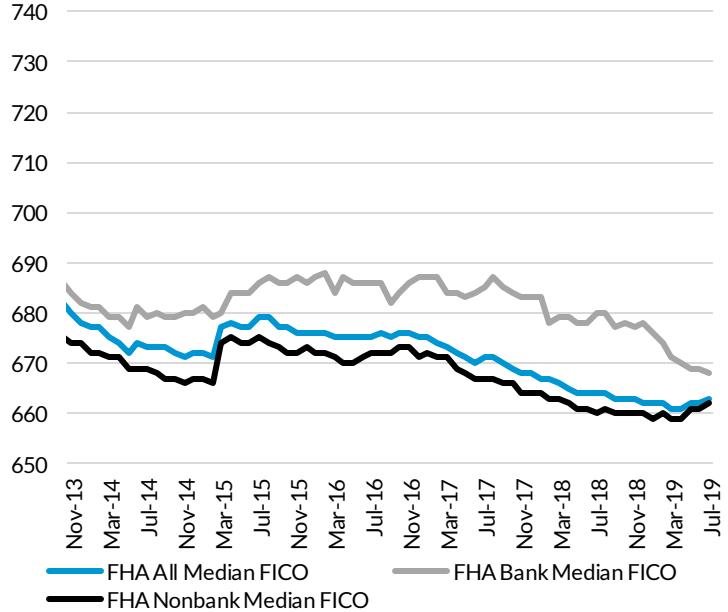
The FICO scores for both Ginnie Mae nonbank and bank originators increased in July 2019. FICO spreads between banks and nonbanks have generally increased since 2013. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



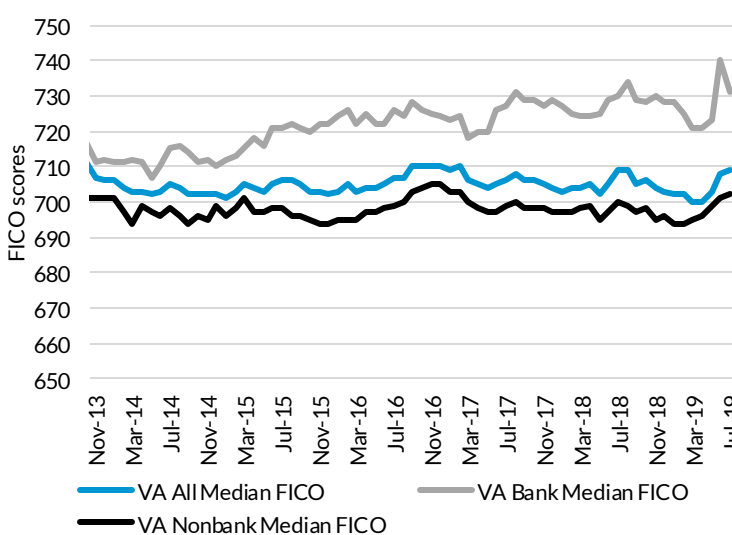
Sources: eMBS and Urban Institute Note: Data as of June 2019.

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



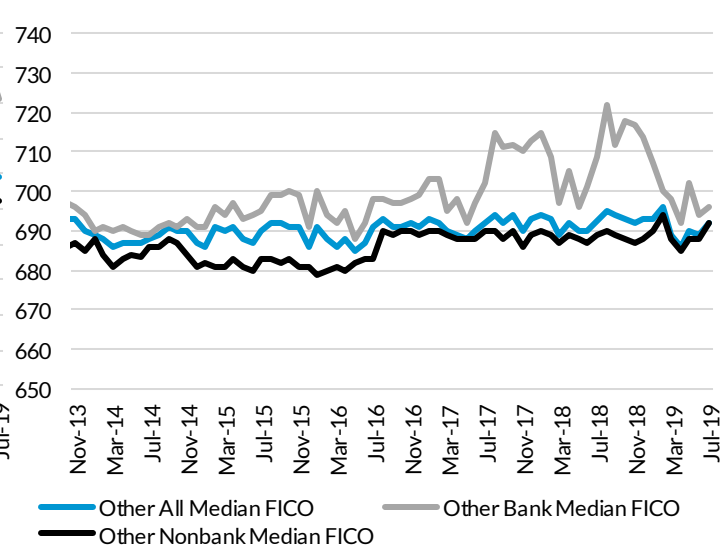
Sources: eMBS and Urban Institute Note: Data as of June 2019.

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



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

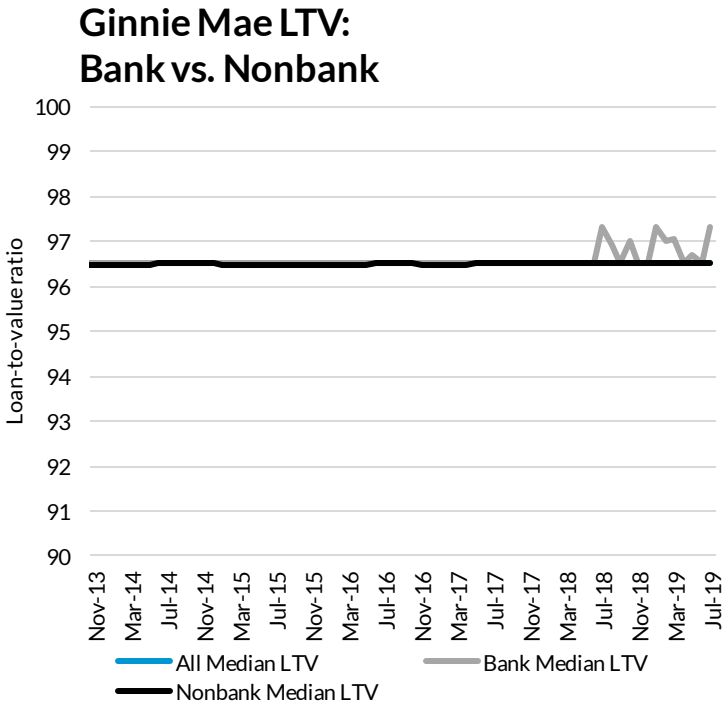
Ginnie Mae Other FICO Scores: Bank vs. Nonbank



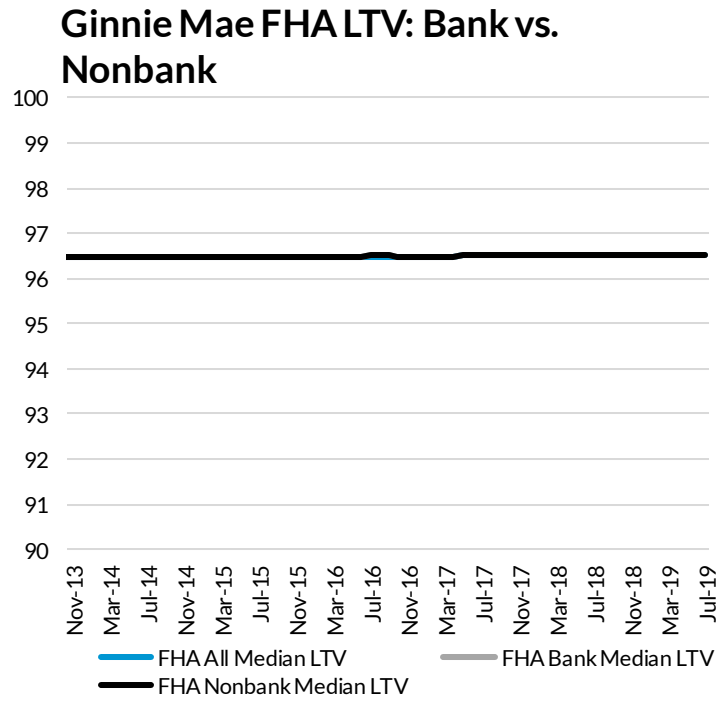
Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of July 2019.

Ginnie Mae Nonbank Originators: Credit Box

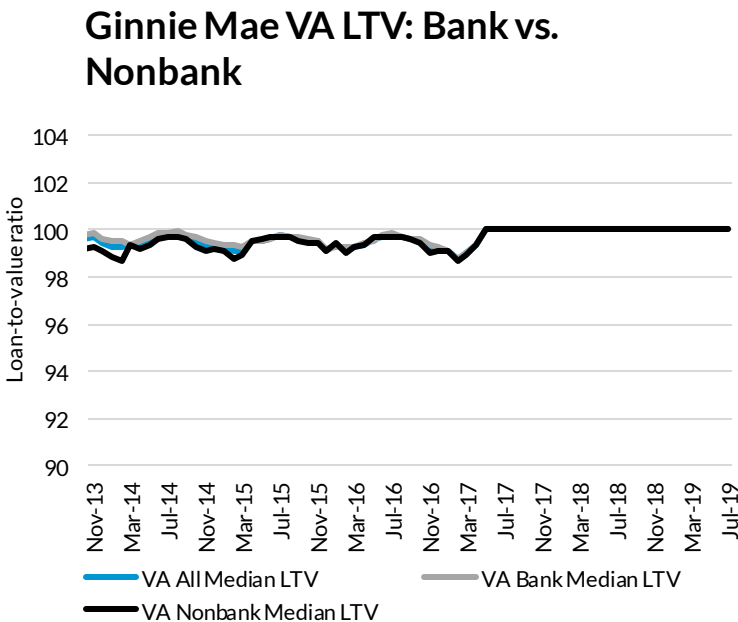
An analysis of the loans backing Ginnie Mae origination indicates that there are virtually no differences in median LTV ratios between bank originated loans and nonbank originated loans.



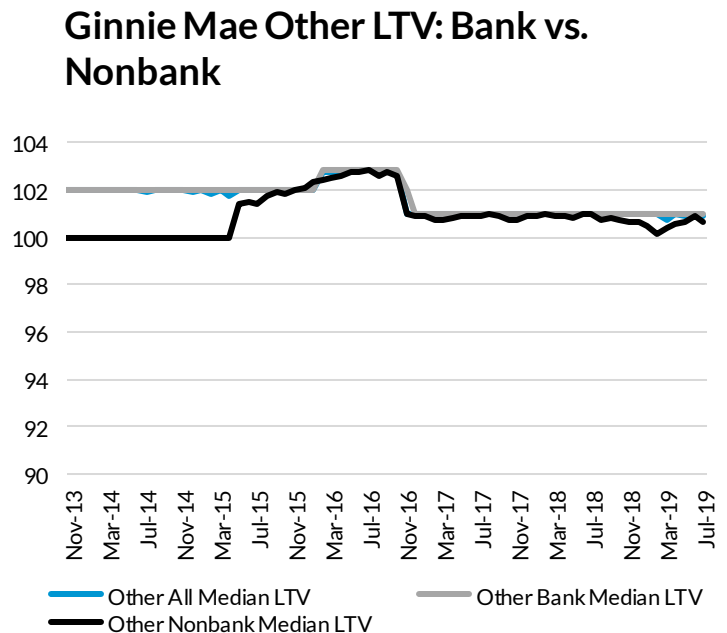
Sources: eMBS and Urban Institute Note: Data as of July 2019.



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



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

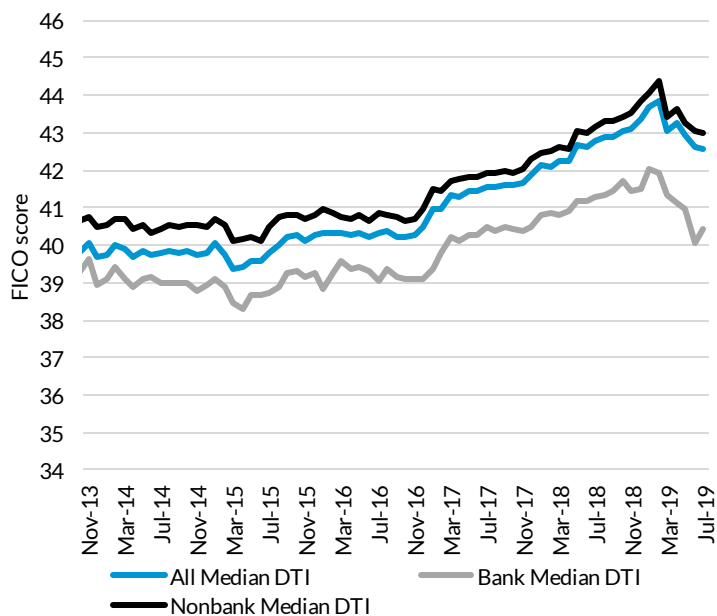


Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of July 2019.

Ginnie Mae Nonbank Originators: Credit Box

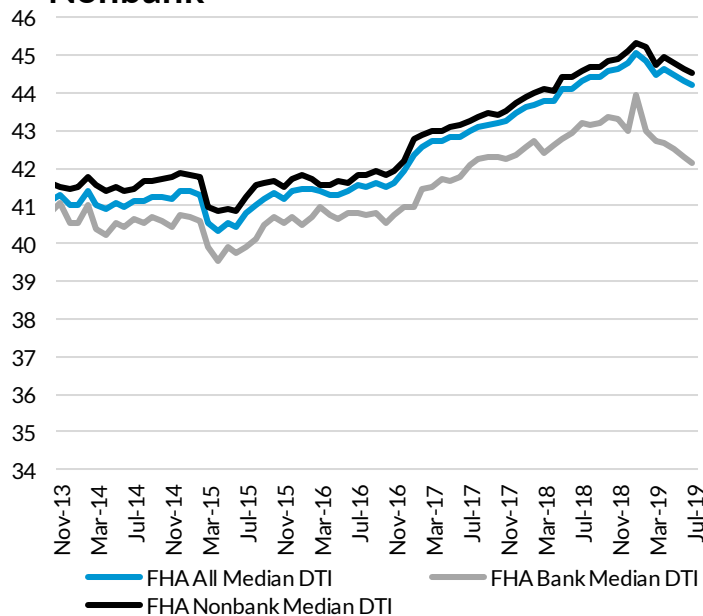
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA loans experienced notable increases since early 2017 for both bank and nonbank originations, while the Other origination DTIs stayed relatively flat. Rising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



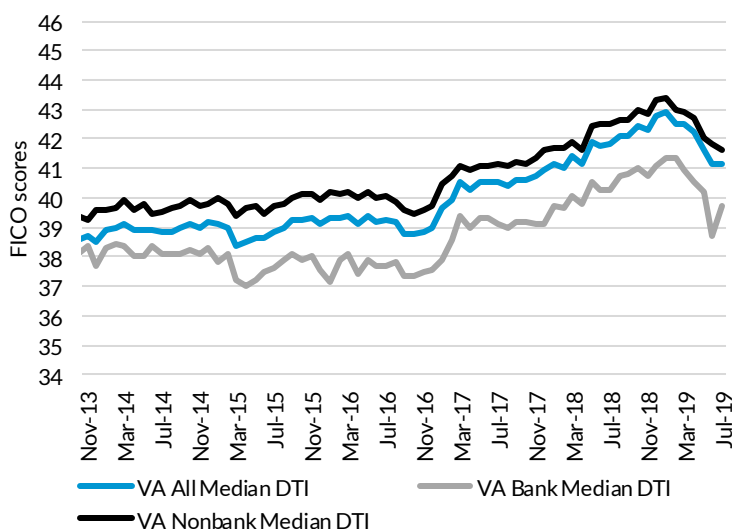
Sources: eMBS and Urban Institute Note: Data as of July 2019.

Ginnie Mae FHA DTI: Bank vs. Nonbank



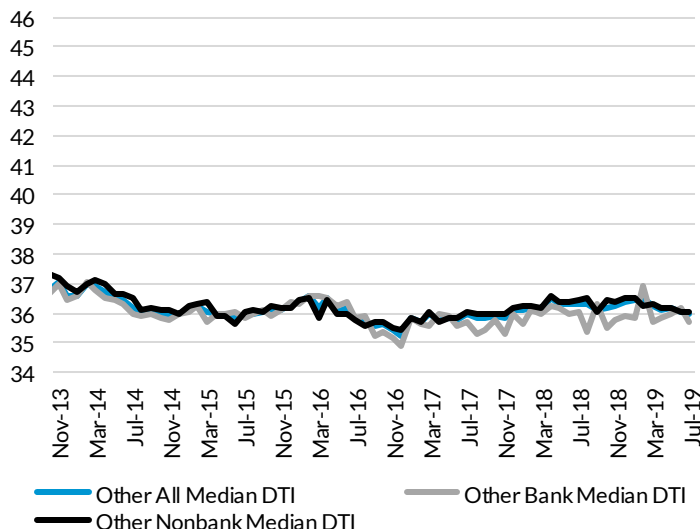
Sources: eMBS and Urban Institute Note: Data as of July 2019.

Ginnie Mae VA DTI: Bank vs. Nonbank



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

Holders of Ginnie Mae MSR s

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

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

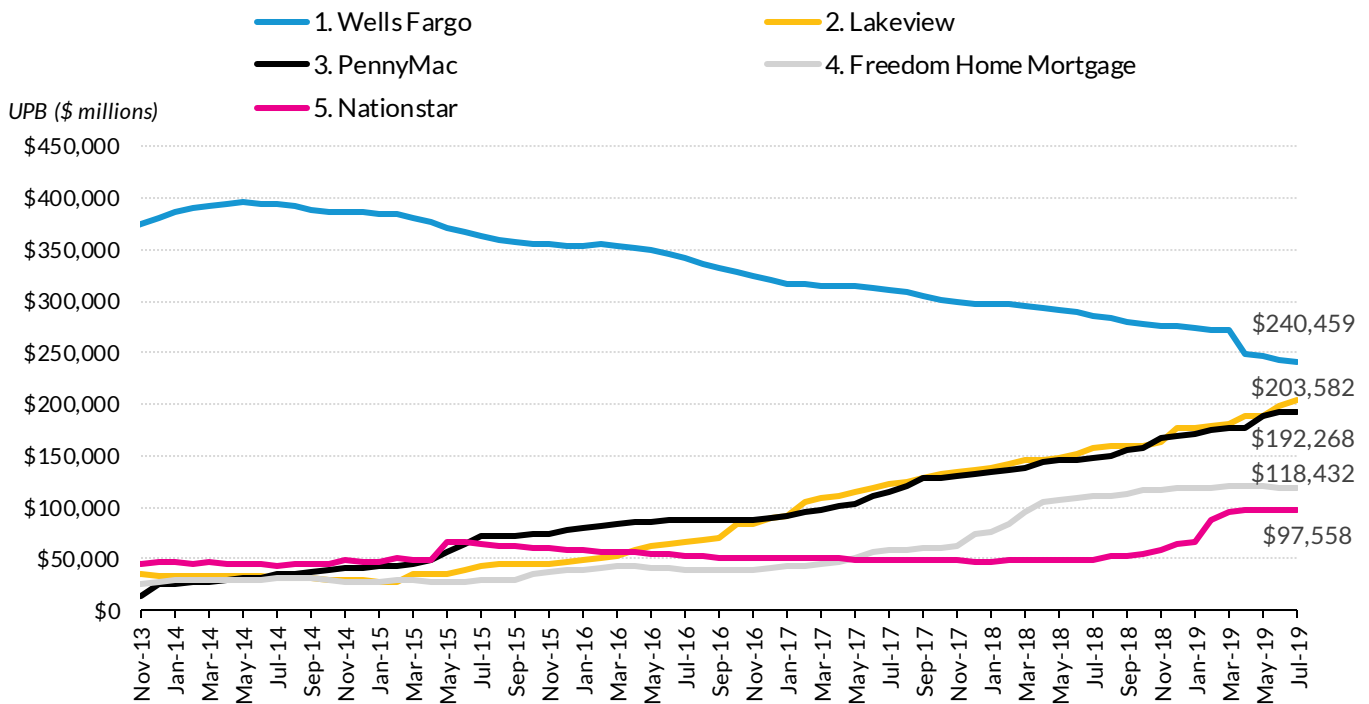
Rank	MSR Holder	UPB (\$ millions)	Share	Cumulative Share
1	Wells Fargo	\$240,459	13.8%	13.8%
2	Lakeview	\$203,582	11.7%	25.5%
3	PennyMac	\$192,268	11.1%	36.6%
4	Freedom Home Mortgage	\$118,432	6.8%	43.4%
5	Nationstar	\$97,684	5.6%	49.0%
6	Quicken Loans	\$66,850	3.8%	52.8%
7	US Bank	\$59,771	3.4%	56.3%
8	JPMorgan Chase	\$44,264	2.5%	58.8%
9	Carrington Home Mortgage	\$42,390	2.4%	61.3%
10	USAA Federal Savings Bank	\$38,240	2.2%	63.5%
11	Caliber Home Loans	\$36,581	2.1%	65.6%
12	Newrez	\$27,187	1.6%	67.1%
13	Navy Federal Credit Union	\$25,886	1.5%	68.6%
14	Amerihome Mortgage	\$24,611	1.4%	70.0%
15	The Money Source	\$22,865	1.3%	71.3%
16	Midfirst Bank	\$22,440	1.3%	72.6%
17	M&T Bank	\$20,355	1.2%	73.8%
18	Suntrust	\$18,859	1.1%	74.9%
19	Ditech Financial	\$18,458	1.1%	75.9%
20	Roundpoint	\$18,261	1.0%	77.0%
21	Home Point Financial	\$17,573	1.0%	78.0%
22	Guild Mortgage	\$16,042	0.9%	78.9%
23	Branch Banking and Trust	\$15,976	0.9%	79.8%
24	Loan Depot	\$15,248	0.9%	80.7%
25	Flagstar Bank	\$15,018	0.9%	81.6%
26	PHH Mortgage	\$14,956	0.9%	82.4%
27	Pingora	\$13,936	0.8%	83.2%
28	Citizens Bank	\$12,597	0.7%	84.0%
29	Bank of America	\$11,734	0.7%	84.6%
30	Fifth Third Bank	\$11,616	0.7%	85.3%

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

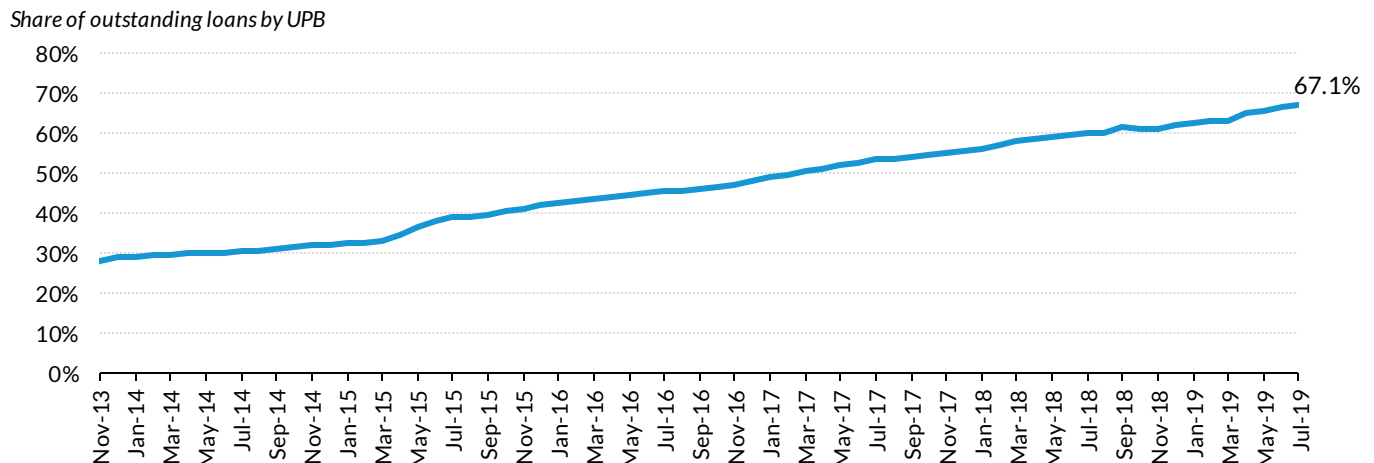
Holders of Ginnie Mae MSR

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, \$192 billion, \$118 billion, and \$98 billion respectively as of July 2019. As of July 2019, nonbanks collectively owned servicing rights for 66.7 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



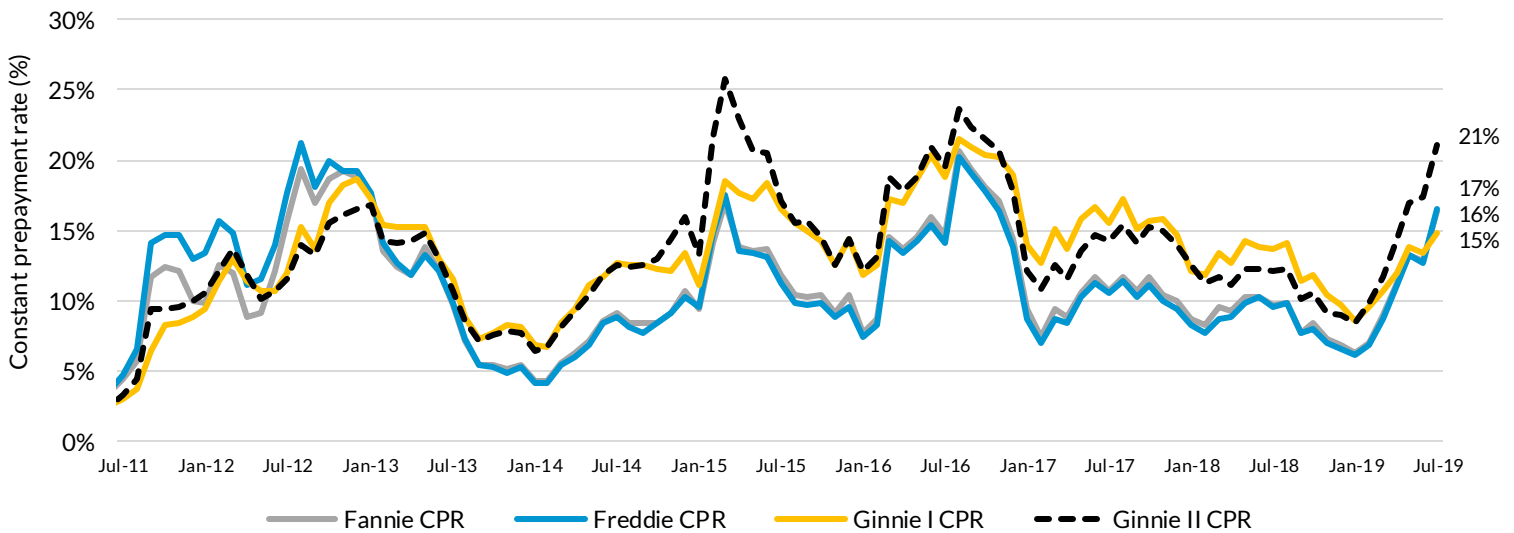
Sources: eMBS and Urban Institute. Note: Data as of July 2019.

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.

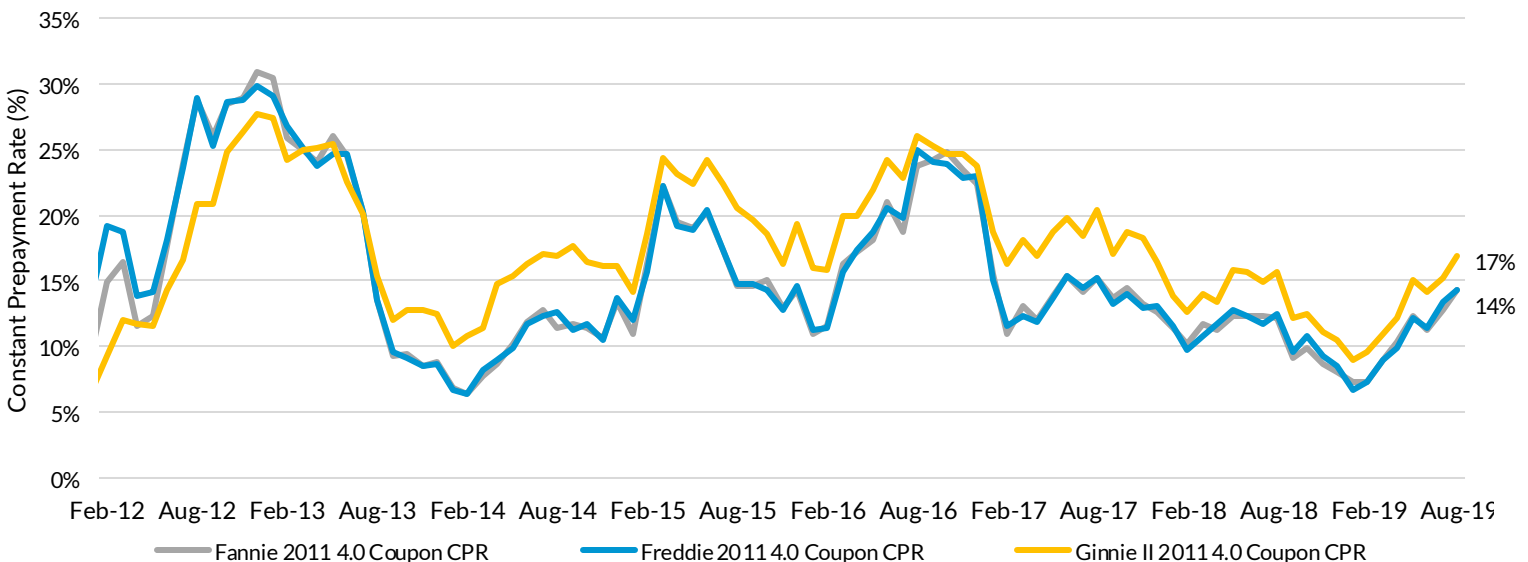
From late 2016 to later 2018, as interest rates increased, the bulk of the mortgage universe found it non-economic to refinance and the prepayment speeds for all agency MBS slowed substantially. The small month-to-month variation in speeds reflected primarily seasonality and changes in day count. With the drop in rates beginning in late 2018, we have seen a notable pick-up in prepayment activity; 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 July 2019.

2011 Issued 4.0 Coupon CPR



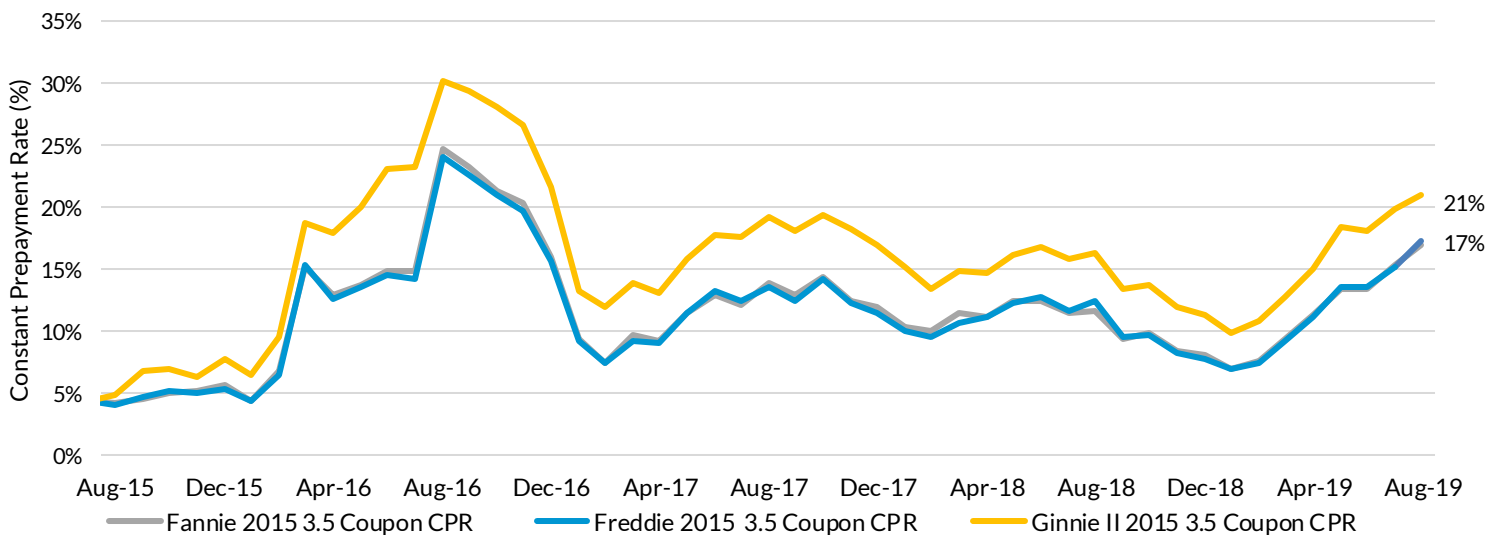
Sources: Credit Suisse and Urban Institute. Note: Data as of August 2019.

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.

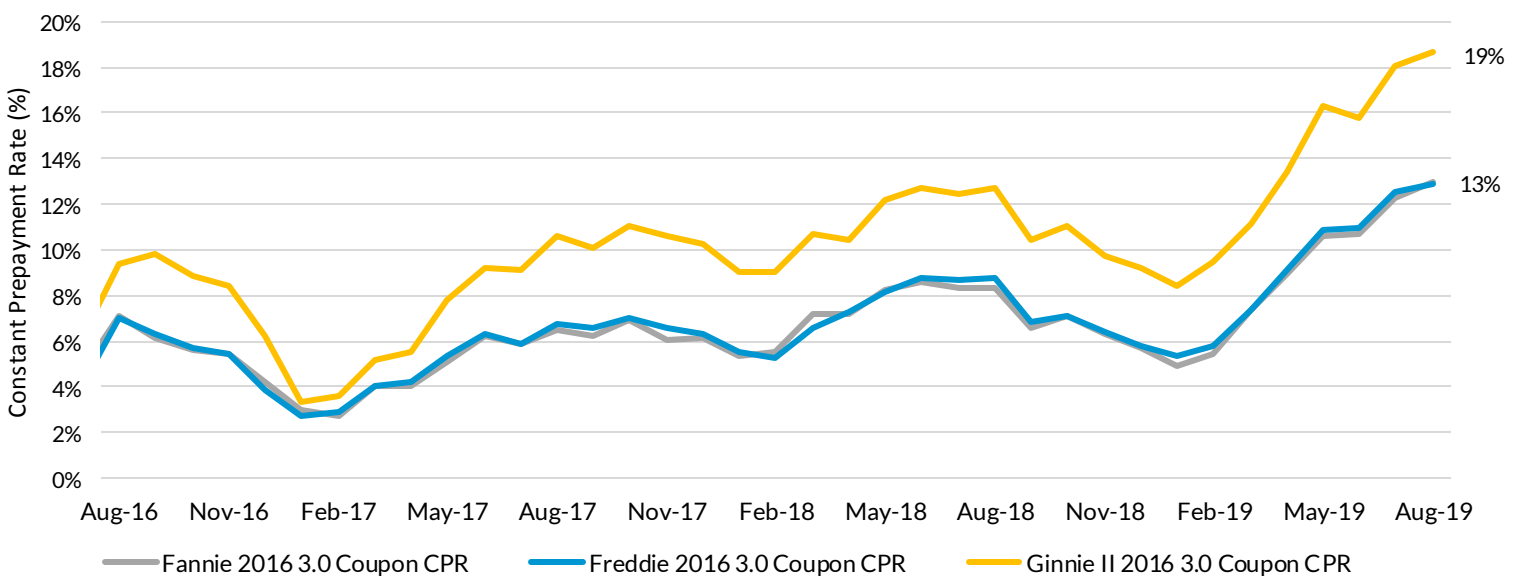
With the increase in interest rates over the 2 year period beginning in November 2016, the prepayment speeds for all agency MBS had slowed. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflected 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 in recent months; we expect more pickup 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 August 2019.

2016 Issued 3.0 Coupon CPR

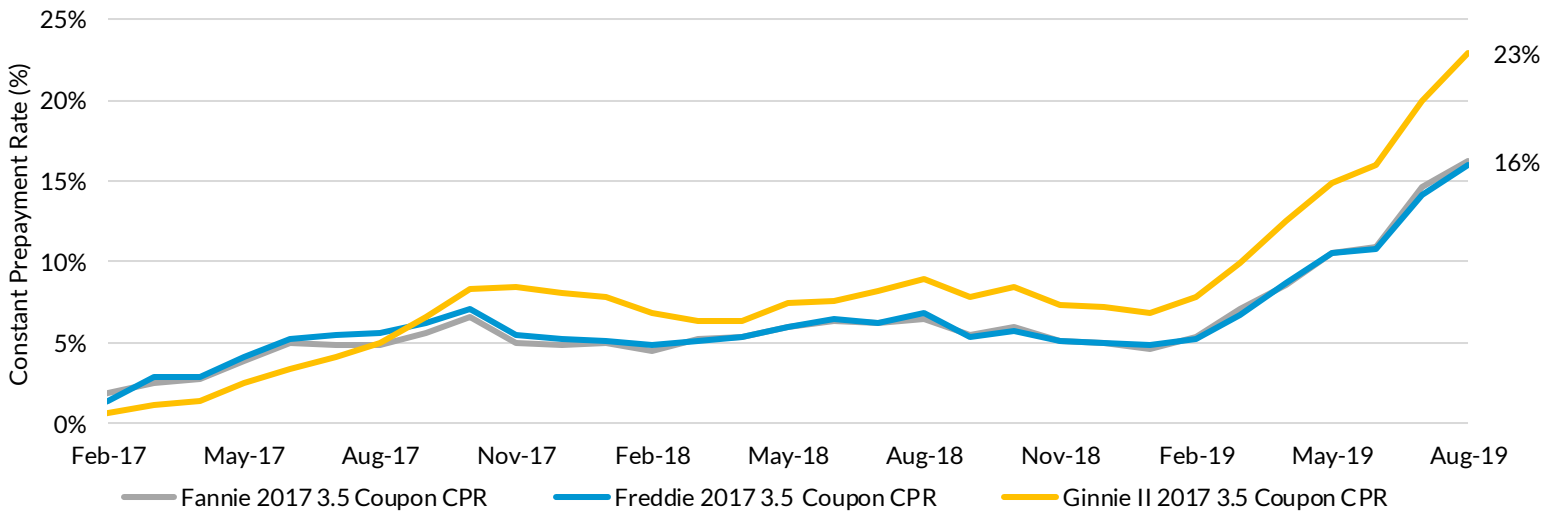


Sources: Credit Suisse and Urban Institute. Note: Data as of August 2019.

Prepayments

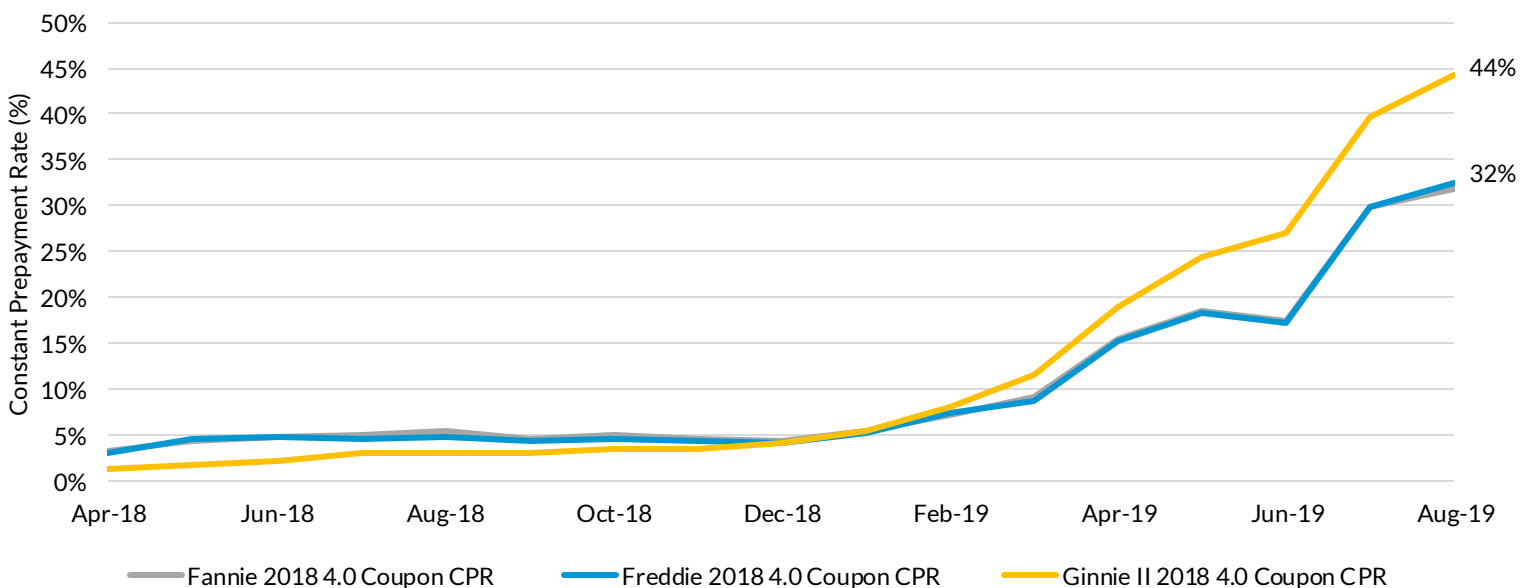
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayment in the early months but are more interest rate responsive thereafter. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of 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 August 2019.

2018 Issued 4.0 Coupon CPR

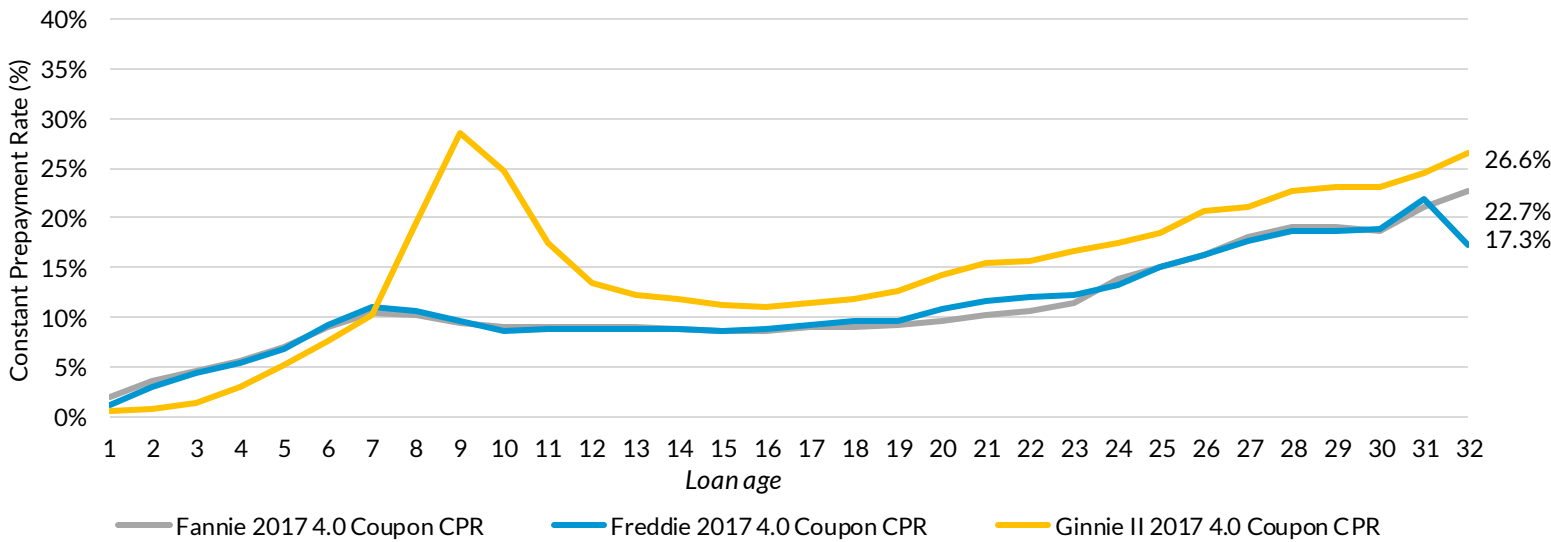


Sources: Credit Suisse and Urban Institute. Note: Data as of August 2019.

Prepayments

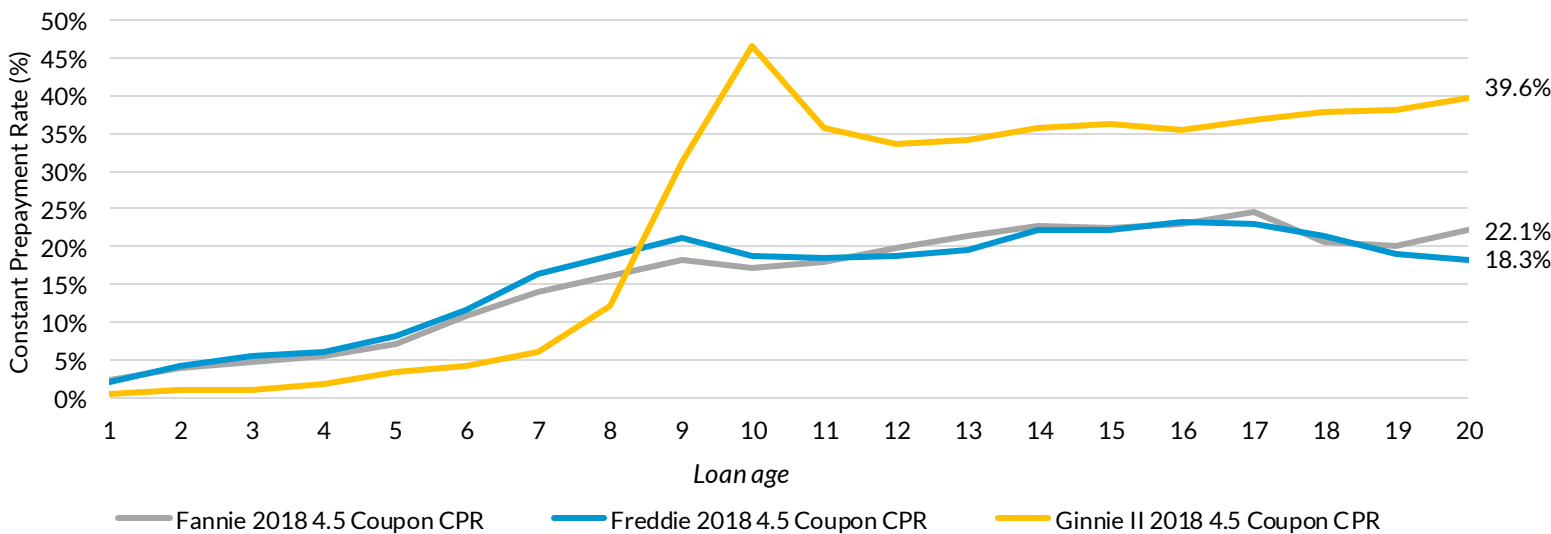
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined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

2018 Issued 4.5 Coupon CPR, by Loan Age



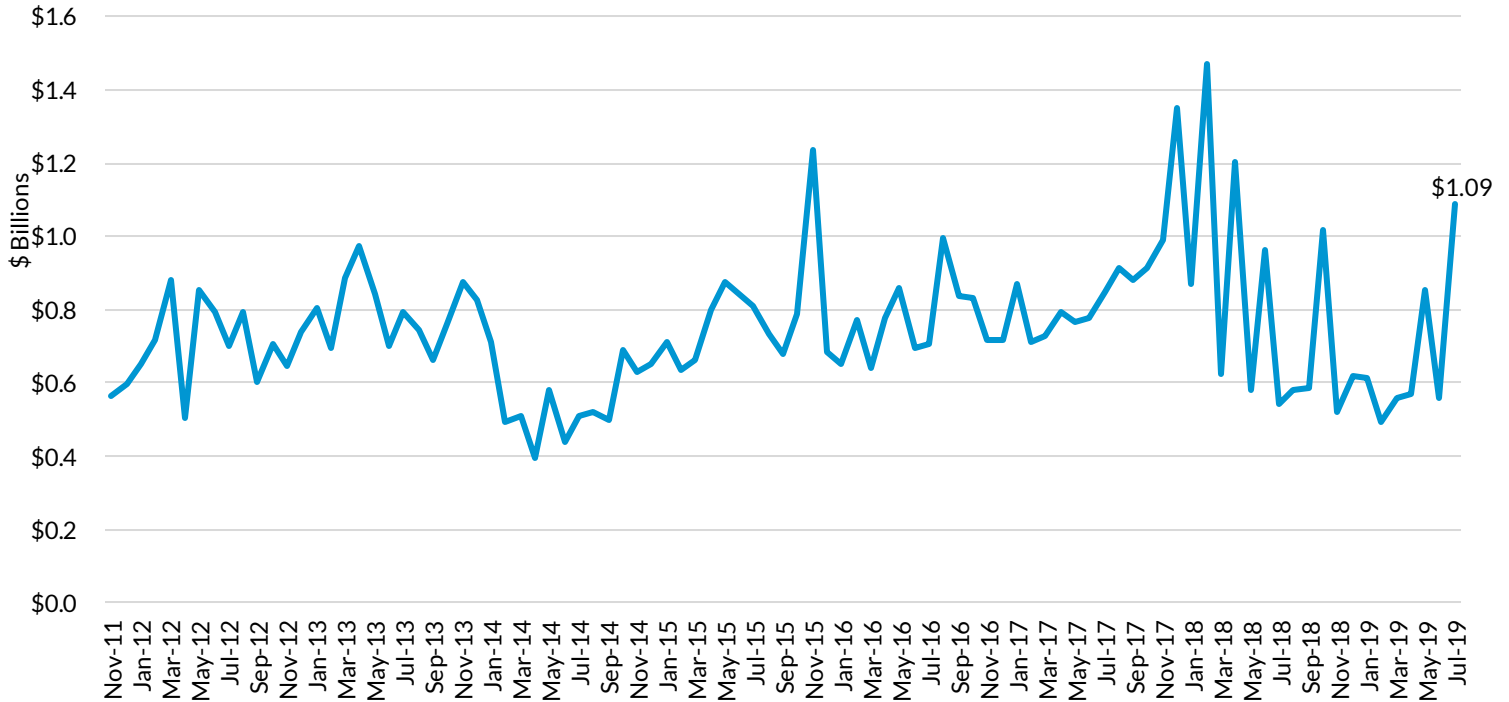
Sources: Credit Suisse and Urban Institute. Note: Data as of August 2019.

Other Ginnie Mae Programs

Reverse Mortgage Volumes

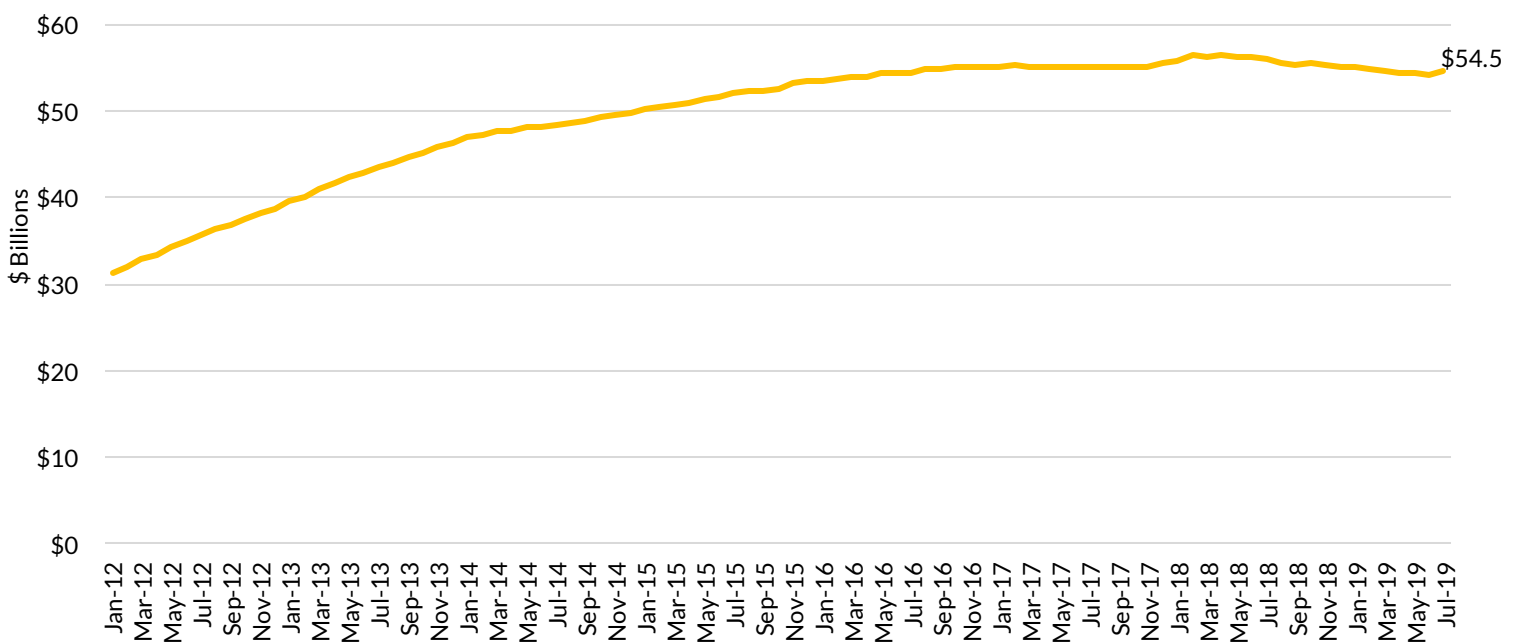
Ginnie Mae reverse mortgage issuance has been volatile in recent months; after decreasing in June, the July 2019 volume increased to \$1.09 billion. Issuance has been declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In July 2019, outstanding reverse mortgage securities totaled \$54.5 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 July 2019.

HMBS Outstanding



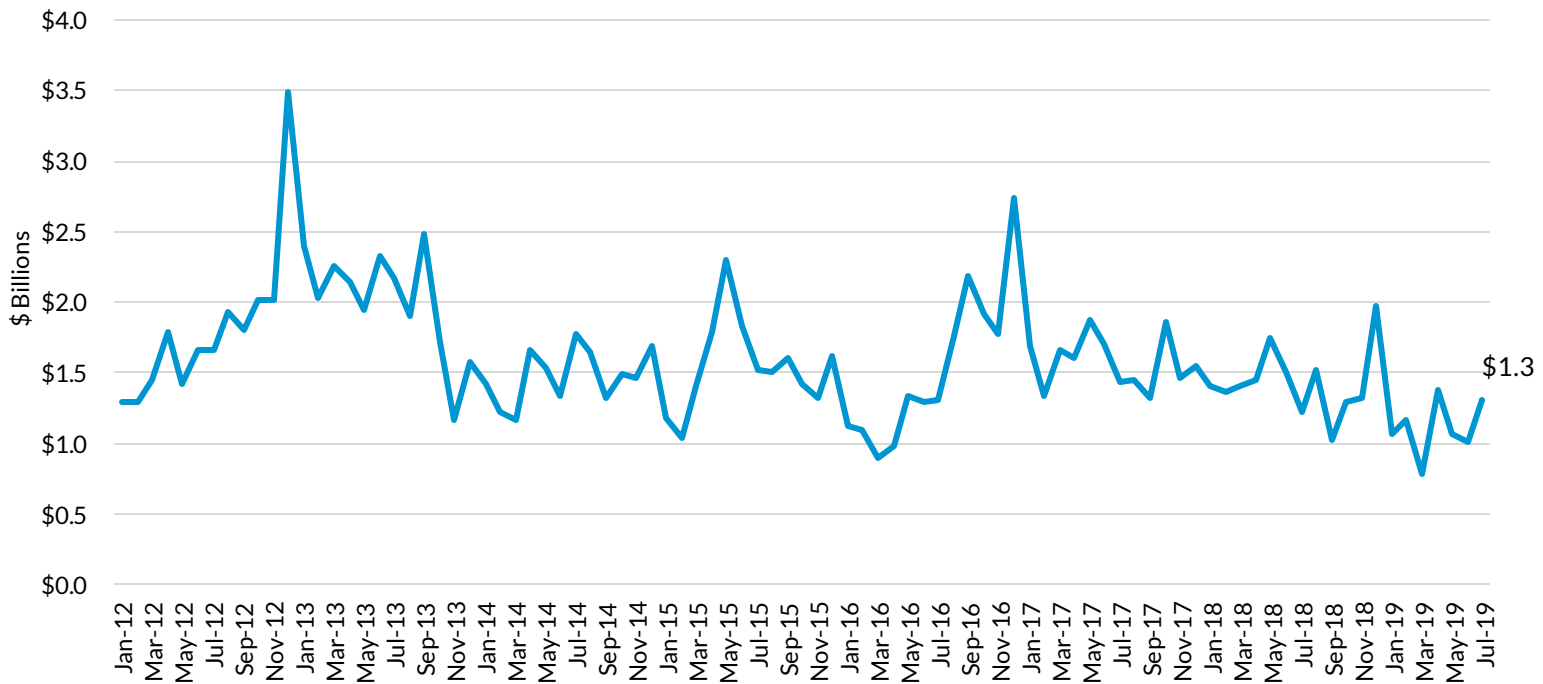
Sources: Ginnie Mae and Urban Institute. Note: Data as of July 2019.

Other Ginnie Mae Programs

Multifamily Market

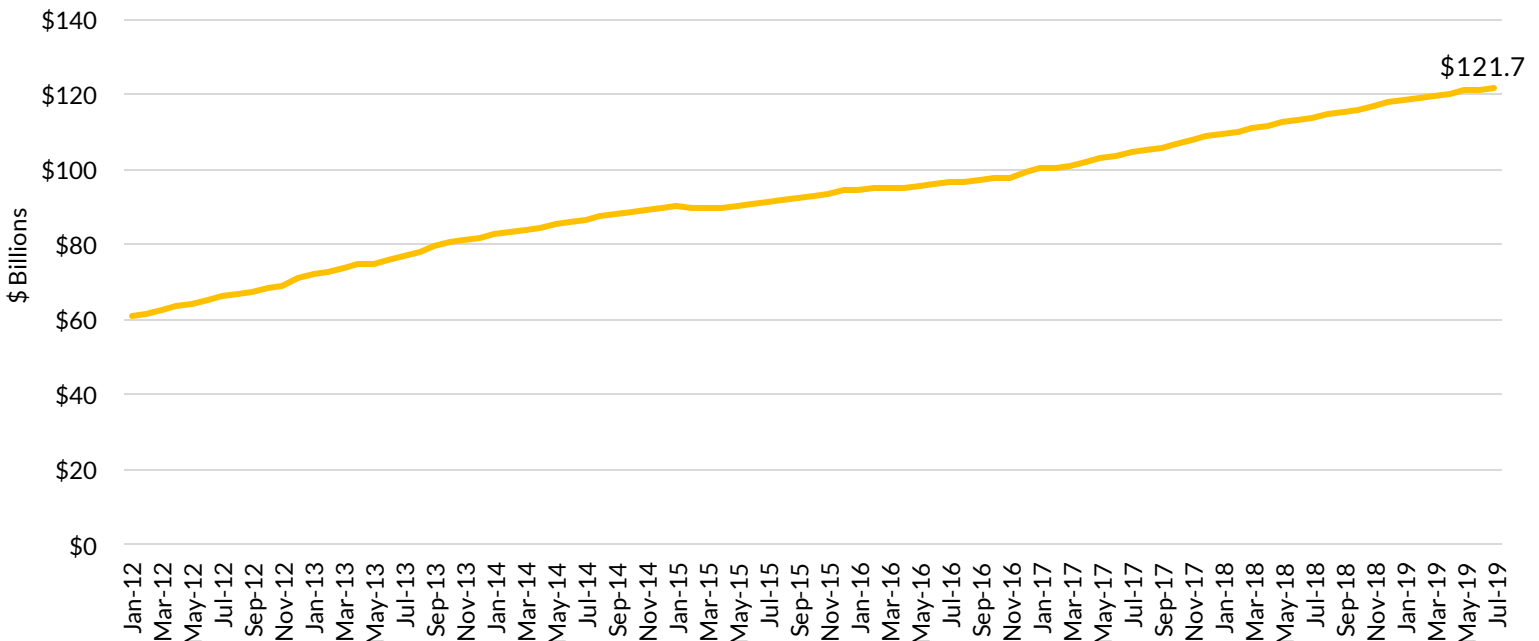
Ginnie Mae multifamily issuance volume in July 2019 totaled \$1.3 billion, in increase from the past month but still below average issuance levels over the past 18 months. Outstanding multifamily securities totaled \$121.2 billion in July.

Ginnie Mae Multifamily MBS Issuance



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

Ginnie Mae Multifamily MBS Outstanding

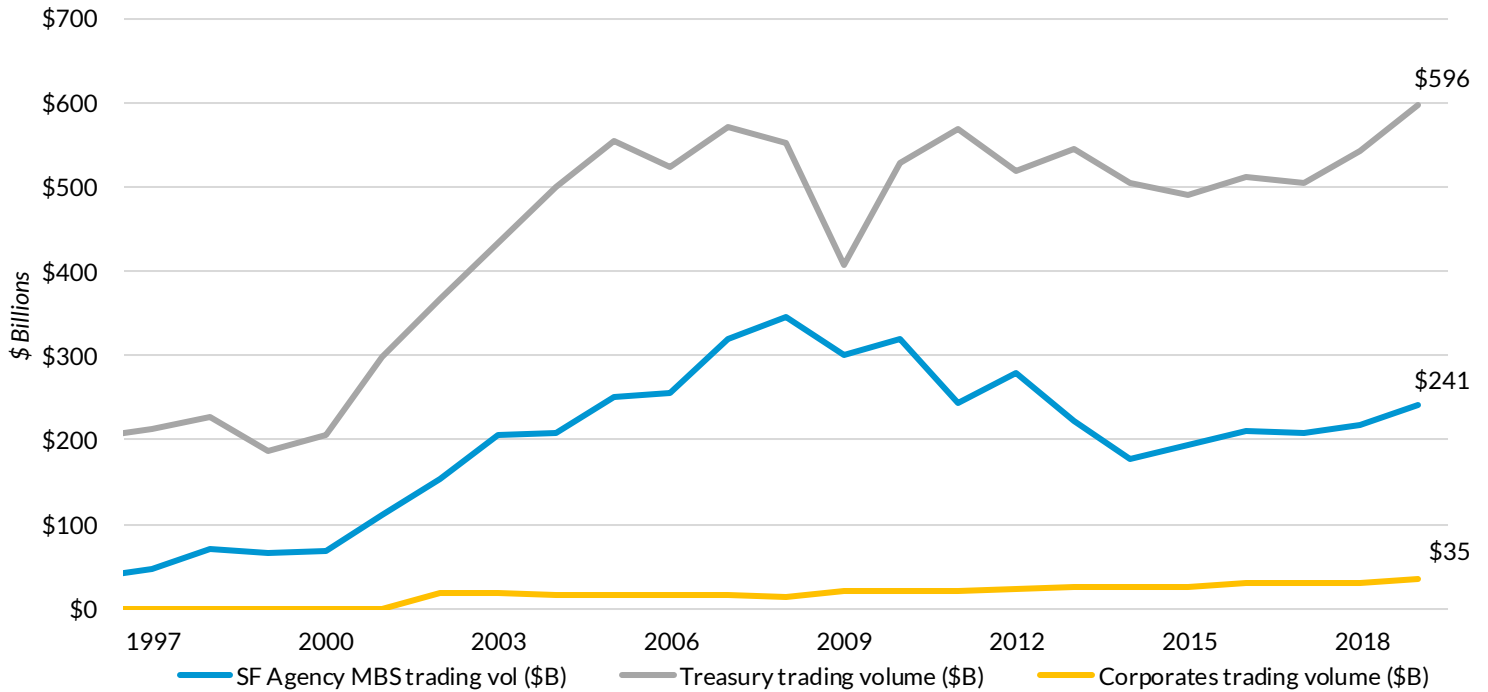


Sources: Ginnie Mae and Urban Institute. Note: Data as of July 2019.

Market Conditions

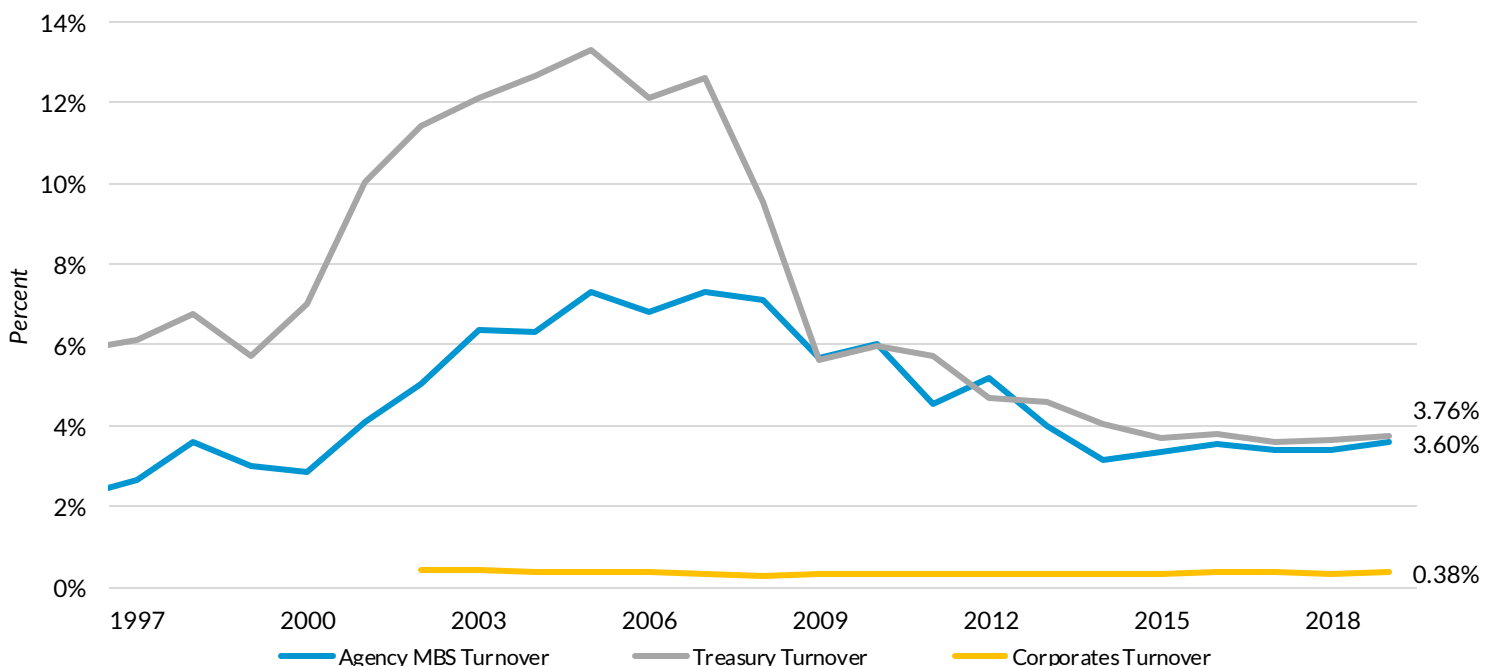
Agency MBS trading volume was \$241 billion/day on average 2019 YTD, more robust than in the 2014-2018 period, but well below the pre-crisis peak of \$345 billion in 2008. In contrast, average daily trading volume for Treasuries now exceeds the pre-crisis peak. Agency MBS turnover in 2019 YTD also has been slightly higher than the 2014-2018 period; in the first five months of 2019, average daily MBS turnover was 3.60 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 August 2019.

Average Daily Turnover by Sector

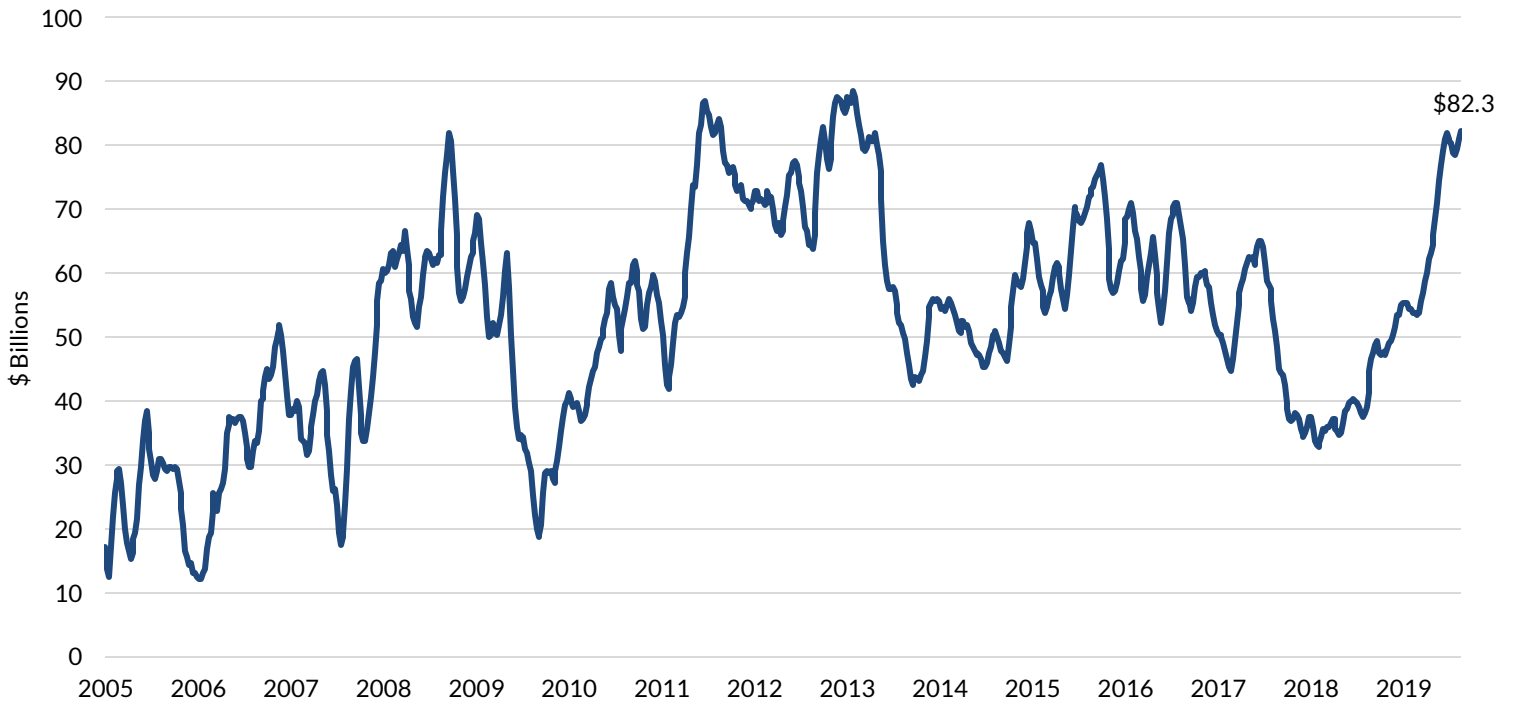


Sources: SIFMA and Urban Institute. Note: Data as of August 2019.

Market Conditions

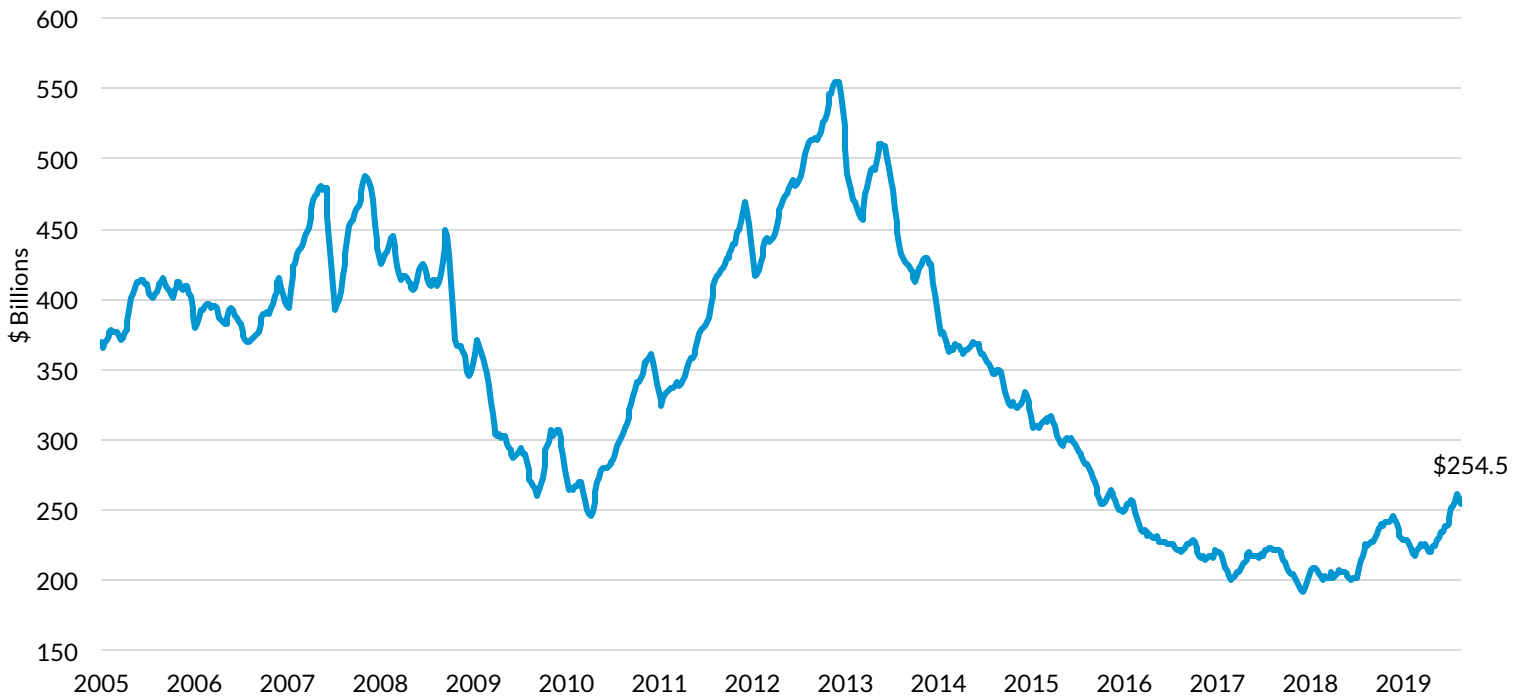
Dealer net positions are near their post-crisis highs. By contrast, dealer gross positions have fallen dramatically. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

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 August 2019.

Repo Volume: Securities In



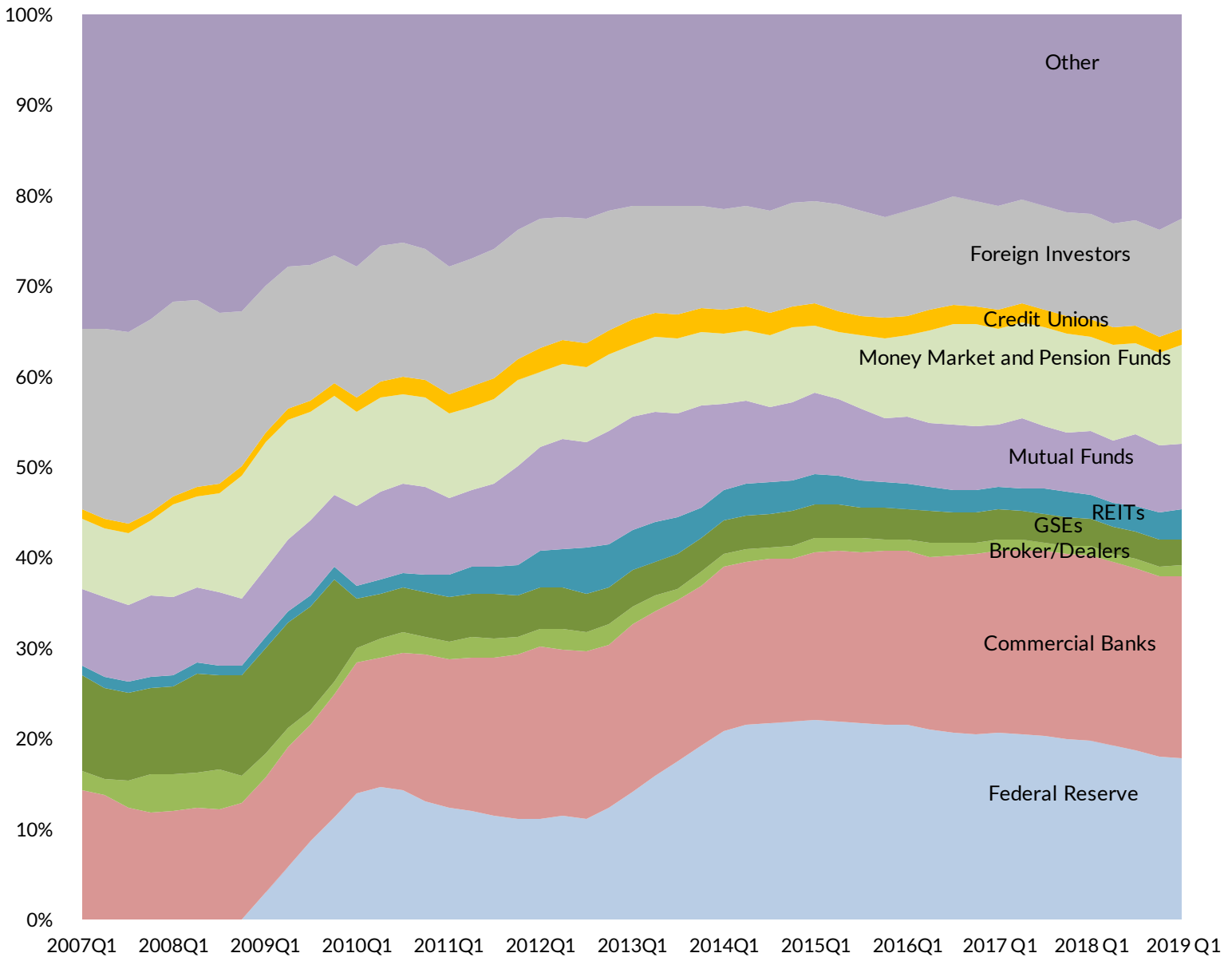
Sources: Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute. Note: Data as of August 2019.

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?

Share of Total Agency Debt by Owner

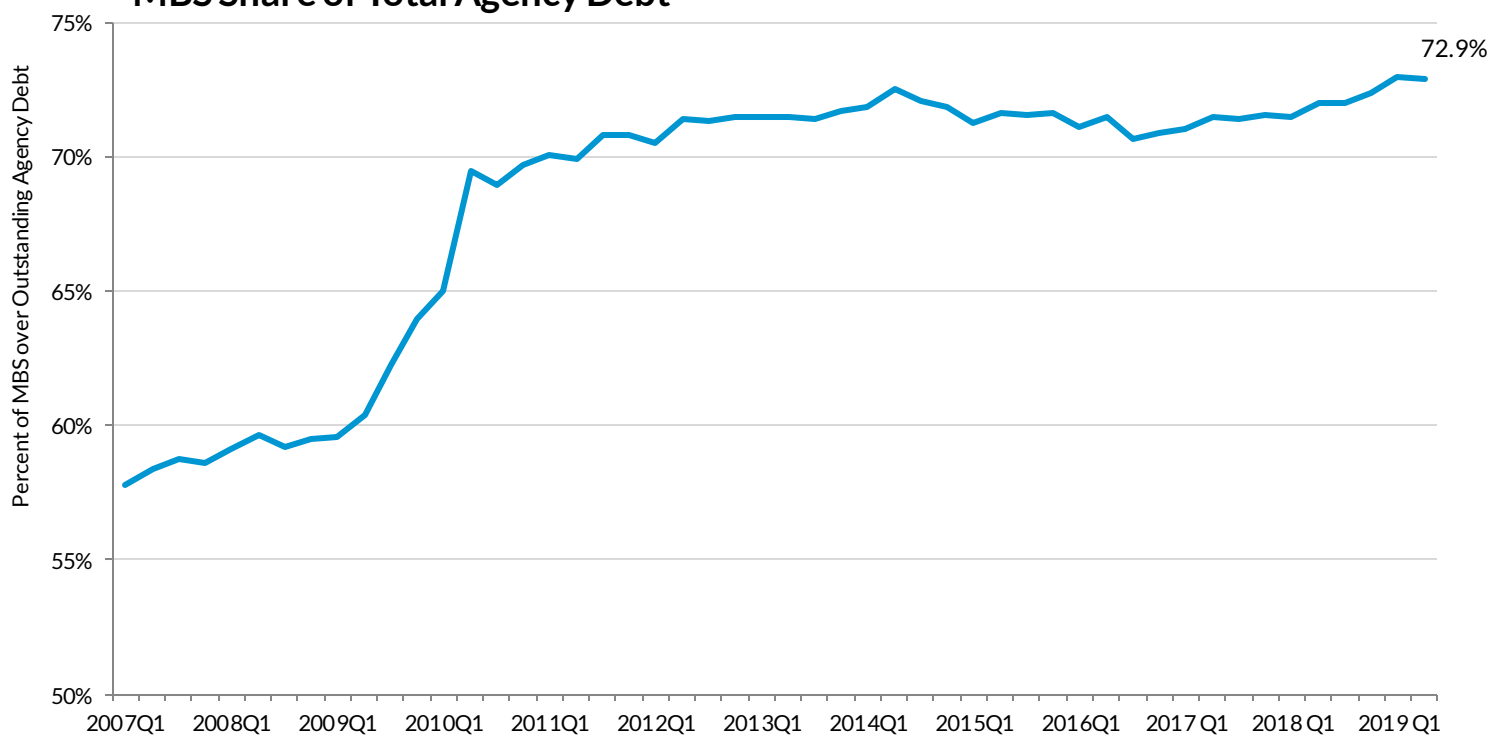


Sources: Federal Reserve Flow of Funds and Urban Institute. Note: Data as of Q1 2019.

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 \$2.0 trillion in holdings as of the end of August 2019, \$1.5 trillion was held by the top 25 domestic banks.

MBS Share of Total Agency Debt



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

	Commercial Bank Holdings (\$Billions)									Week Ending			
	Jul-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug 7	Aug 14	Aug 21	Aug 28	
Largest 25 Domestic Banks	1,314.8	1,388.2	1,399.1	1,411.8	1,431.5	1,433.5	1,456.1	1,458.2	1,449.2	1,460.5	1,460.8	1,482.3	
Small Domestic Banks	485.4	491.6	492.1	495.0	501.4	503.2	510.2	516.5	514.9	516.8	517.9	516.5	
Foreign Related Banks	27.3	25.9	25.8	26.3	25.4	28.9	28.2	28.9	30.8	32.8	34.4	35.6	
Total, Seasonally Adjusted	1,827.5	1,905.7	1,917.0	1,933.1	1,958.3	1,965.6	1,994.5	2,003.6	1,994.9	2,010.1	2,013.1	2,034.4	

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 August 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

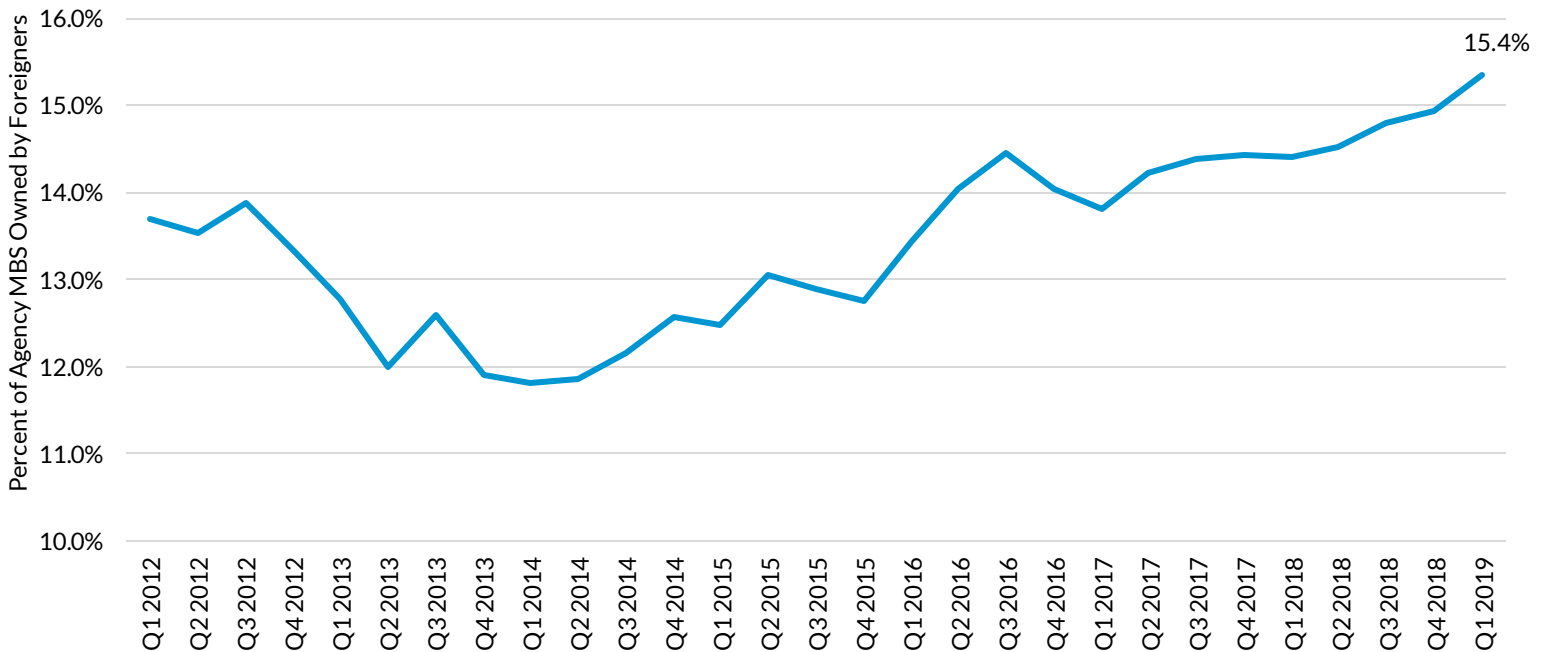
Top Bank & Thrift Residential MBS Investors		Total (\$MM)	GSE PT (\$MM)	GNMA PT (\$MM)	Agency REMIC (\$MM)	Non-Agency (\$MM)	Market Share
1	Bank of America Corporation	\$321,350	\$189,813	\$120,254	\$11,182	\$101	16.8%
2	Wells Fargo & Company	\$242,666	\$170,698	\$67,268	\$3,437	\$1,263	12.7%
3	JP Morgan 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

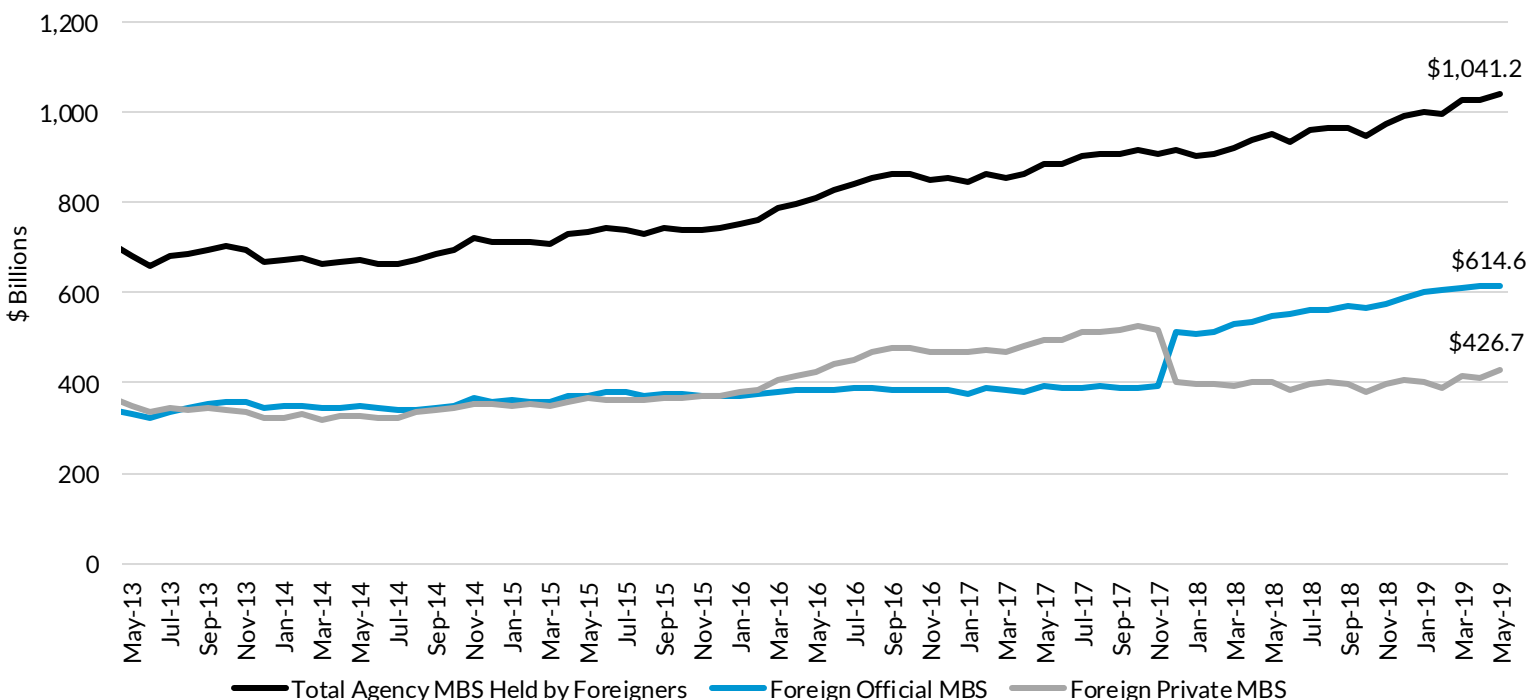
Foreign investors held 15.4 percent of agency MBS in Q1 2019, up from a low of 11.8 percent in Q1 2014. For the month of May 2019, this represents \$1.04 trillion in Agency MBS, \$426.7 billion held by foreign private institutions and \$614.6 billion held by foreign private institutions and \$614.6 billion held by foreign institutions.

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 May 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 May 2019, we estimate China has increased their agency MBS holdings by \$31.1 billion, Taiwan has increased their holdings by \$16.7 billion, and Japan has increased their holdings by \$39.0 billion.

Agency MBS+ Agency Debt

Country	Level of Holdings (\$Millions)*						Change in Holdings (\$Millions)*				
	Jun-18	Sep-18	Dec-18	Mar-19	Apr-19	May-19	Q3 2018	Q4 2018	Q1 2019	Apr-19	May-19
Japan	257,547	254,511	262,771	284,323	276,622	298,151	-3,036	8,260	21,552	-7,701	21,529
Taiwan	250,009	250,639	261,231	265,992	264,460	266,772	630	10,592	4,761	-1,532	2,312
China	180,635	190,203	188,921	208,540	213,992	213,678	9,568	-1,282	19,619	5,452	-314
Ireland	46,817	48,220	48,045	46,623	50,412	50,718	1,403	-175	-1,422	3,789	306
Luxembourg	36,372	38,800	50,079	44,561	47,524	47,055	2,428	11,279	-5,518	2,963	-469
South Korea	44,039	43,944	44,735	42,604	42,755	43,393	-95	791	-2,131	151	638
Bermuda	27,866	27,610	27,721	29,104	29,294	29,993	-256	111	1,383	190	699
Cayman Islands	31,017	31,638	31,379	30,375	33,588	35,181	621	-259	-1,004	3,213	1,593
Malaysia	12,710	12,874	12,671	12,395	12,430	12,351	164	-203	-276	35	-79
Netherlands	11,995	12,229	9,618	9,400	10,522	10,770	234	-2,611	-218	1,122	248
Rest of World	125,197	128,807	130,345	129,998	137,661	135,545	3,610	1,538	-347	7,663	-2,116
Total	1,024,200	1,039,475	1,067,516	1,103,915	1,119,260	1,143,607	15,275	28,041	36,399	15,345	24,347

Agency MBS Only (Estimates)

Country	Level of Holdings (\$Millions)*						Change in Holdings (\$Millions)*				
	Jun-18	Sep-18	Dec-18	Mar-19	Apr-19	May-19	Q3 2018	Q4 2018	Q1 2019	Apr-19	May-19
Japan	253,972	250,851	258,909	280,366	271,847	292,968	-3,121	8,058	21,457	-8,519	21,121
Taiwan	249,773	250,397	260,976	265,731	264,145	266,430	624	10,579	4,755	-1,586	2,285
China	176,345	185,811	184,287	203,791	208,262	207,458	9,466	-1,524	19,504	4,471	-804
Ireland	37,832	39,021	38,339	36,677	38,411	37,692	1,189	-682	-1,662	1,734	-720
Luxembourg	34,012	36,384	47,530	41,949	44,372	43,633	2,372	11,146	-5,581	2,423	-738
South Korea	33,064	32,708	32,879	30,455	28,096	27,482	-356	171	-2,424	-2,359	-615
Bermuda	24,969	24,644	24,592	25,897	25,425	25,793	-325	-53	1,306	-473	368
Cayman Islands	24,384	24,847	24,214	23,033	24,729	25,565	463	-634	-1,181	1,696	836
Malaysia	12,319	12,474	12,249	11,962	11,908	11,784	155	-225	-286	-54	-124
Netherlands	11,437	11,658	9,015	8,782	9,777	9,961	221	-2,643	-233	994	184
Rest of World	95,510	98,414	98,276	97,137	98,010	92,505	2,904	-138	-1,139	873	-5,505
Total	953,612	967,209	991,264	1,025,779	1,024,980	1,041,269	13,597	24,055	34,515	-799	16,289

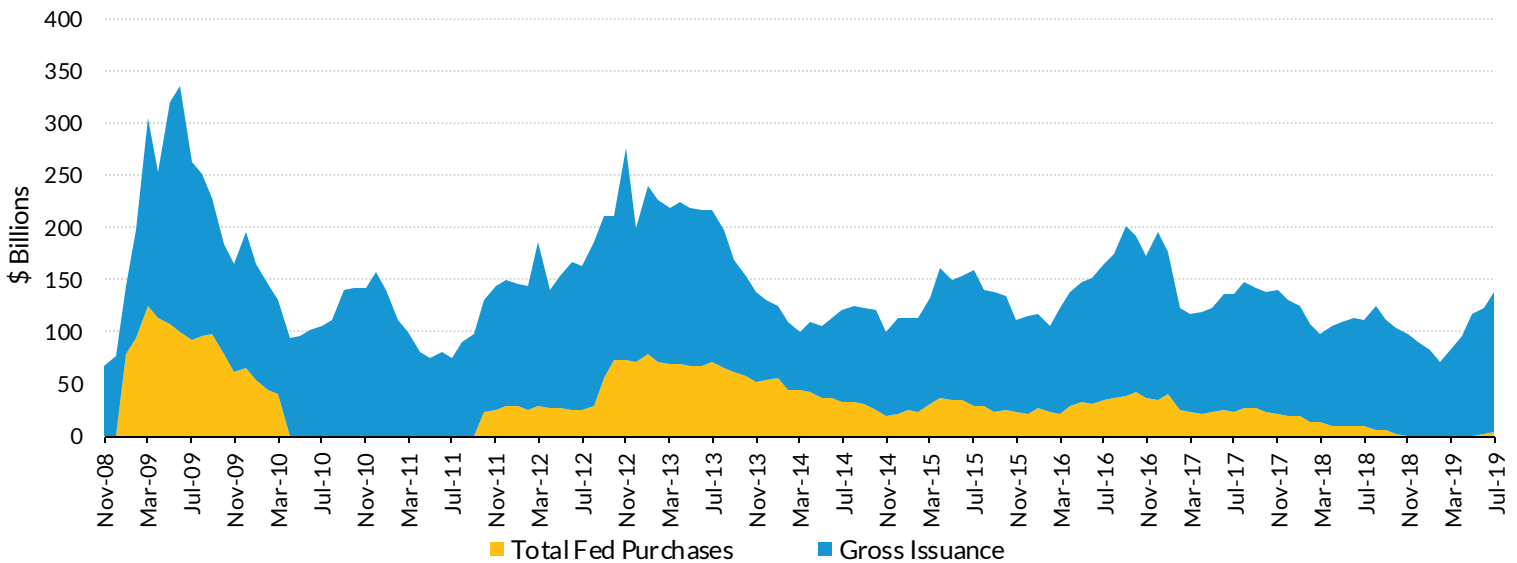
Sources : Treasury International Capital (TIC) and Urban Institute.

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 May 2019.

MBS Ownership

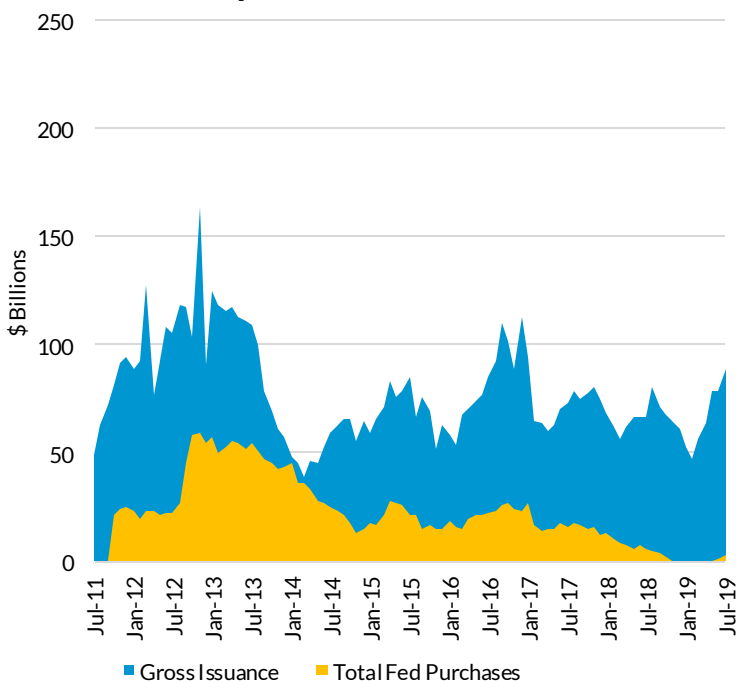
The Federal Reserve is actively winding down its mortgage portfolio; MBS purchases are very low. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross 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 2.45 percent in July.

Total Fed Absorption



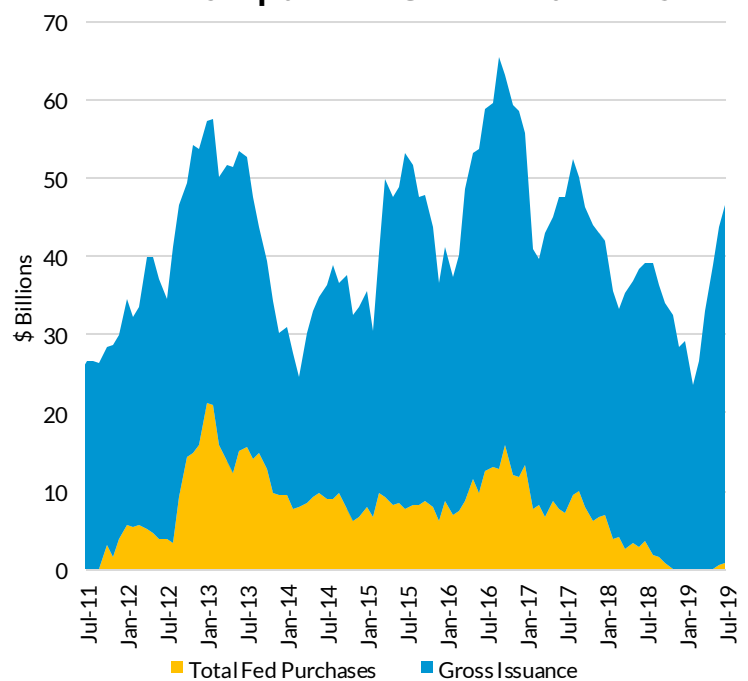
Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of July 2019.

Fed Absorption of GSE MBS



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

Fed Absorption of Ginnie Mae MBS



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

Disclosures

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Tracking Code: 2746516.2.1.GBL.INST

Expiration Date: 09/30/2020