

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

How do High DTI Loans Affect Ginnie Mae MBS?

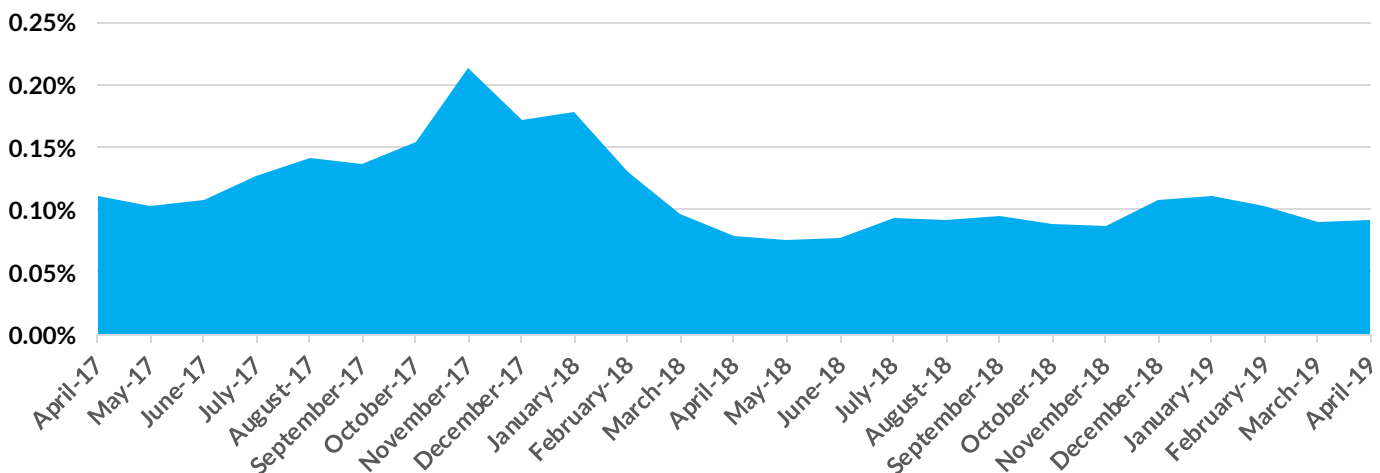
The debt-to-income (DTI) ratios for single-family purchase mortgages have increased steadily since early 2017 for all origination channels. At the end of 2018, the share of purchase originations with DTIs above 43% was close to 60 percent for FHA, 50 percent for VA, 31 percent for Fannie Mae and 27 percent for Freddie Mac backed loans. As a result, mortgage market observers have become increasingly concerned about the default risk of such higher DTI loans, generally those with DTIs above 43 percent.

To understand this risk, it is important to first understand its main driver. The increase in DTIs is a result of recent house price growth far exceeding household income growth, as well as higher interest rates since the lows of 2016. These factors require homebuyers to borrow more in relation to incomes, pushing up DTIs. Between March 2017 and March 2019, cumulative house price appreciation was 10.6% while cumulative wage growth (as measured by hourly earnings) was only 6.2%.

DTI is one of several factors assessing borrower creditworthiness and ability to repay. Mortgage underwriting adopts several factors to evaluate credit risk. These include FICO, LTV, household reserves, and length of credit and employment histories. The health of the economy also may influence prevailing lending guidelines. Historical data shows that DTIs rise during periods of economic growth, rising incomes, and low unemployment, as lenders become more confident lending to the high DTI borrower. Lending guidelines for loans pooled into GNMA MBS are set by FHA, VA, & Rural Housing.

Consequently, it is too early to know if recently originated higher DTI mortgages translate directly into higher defaults. A look at recent delinquent repurchase data in Ginnie Mae MBS translates into a relatively small portion of prepayments due to borrower defaults.

Delinquent Repurchases as a Monthly Share of the Ginnie Mae Single-Family Portfolio



Source: eMBS and Ginnie Mae Calculations.

If high DTI borrowers eventually lead to a higher incidence of default, losses to credit risk takers will be eventually offset by the corporate reserves of Ginnie Mae MBS Issuers for any shortfalls of claims reimbursements from the federal loan programs. Borrower defaults are not a credit risk to MBS investors because of the full faith & credit guaranty provided by Ginnie Mae. However, should higher DTIs contribute to higher defaults, they are to be closely reviewed by investors as defaults are a component of the prepayment risk borne by investors.

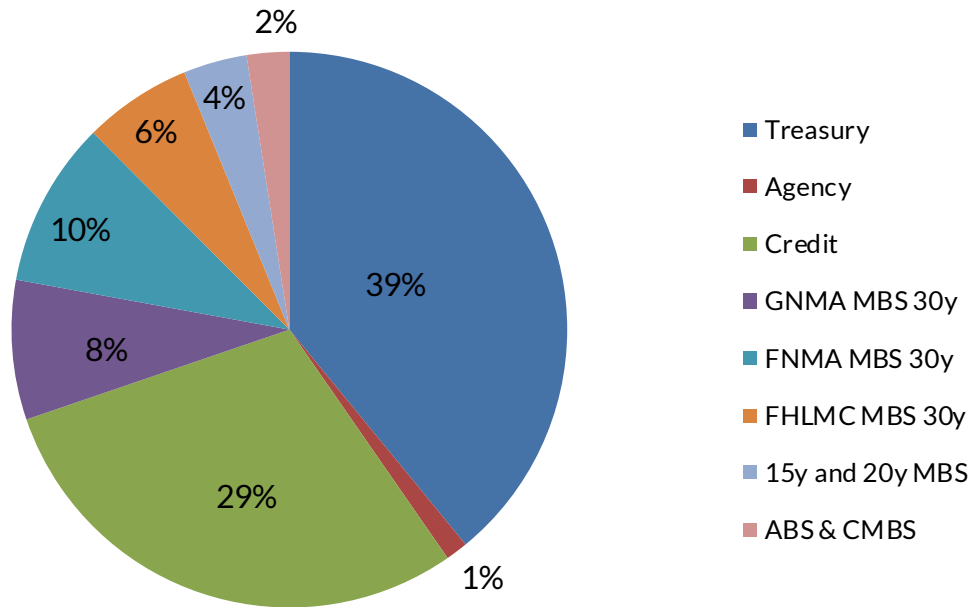
Highlights this month:

- Serious delinquencies rates for single-family GSE loans, FHA loans, and VA all declined in Q1 2019 (page 11).
- The total value of the housing market increased to \$27.5 trillion in Q1 2019 (page 14).
- The median FICO score for Ginnie Mae bank originations declined to 689 in April 2019, the lowest level since October 2014 (page 34).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

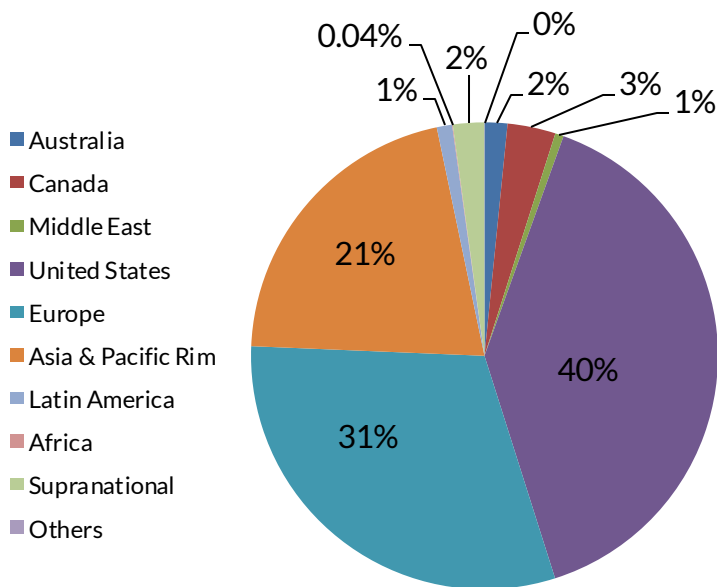
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 28 percent of the Barclays US Aggregate Index - less than either the US Treasury share (39 percent) or the US Credit share (29 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (10 percent), while Ginnie Mae 30-year MBS and Freddie Mac 30-year MBS comprise 8 percent and 6 percent of the market, respectively. Mortgages with terms of 15 and 20 years comprise the remaining balance (4 percent) of the US MBS share. US securities are the single largest contributor to the Barclays Global Aggregate, accounting for 40 percent of the global total. US MBS comprises 12 percent of the global aggregate.

Barclays US Aggregate Index



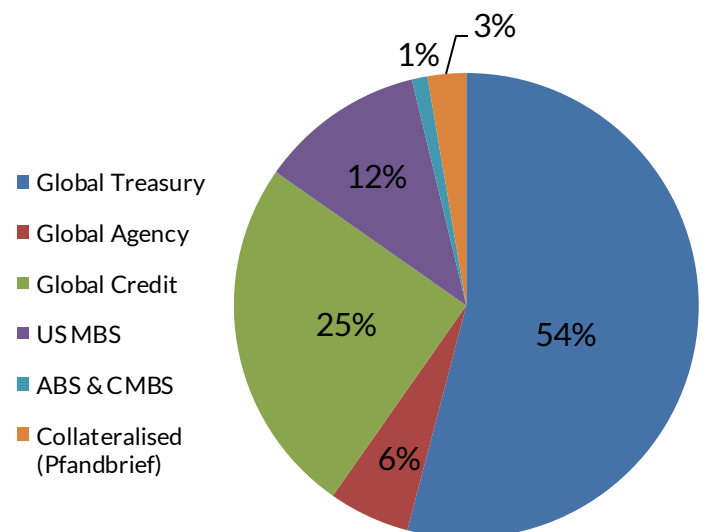
Sources: Bloomberg and State Street Global Advisors. Note: Data as of March 2019.

Barclays Global Aggregate Index by Country



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

Barclays Global Aggregate Index by Sector

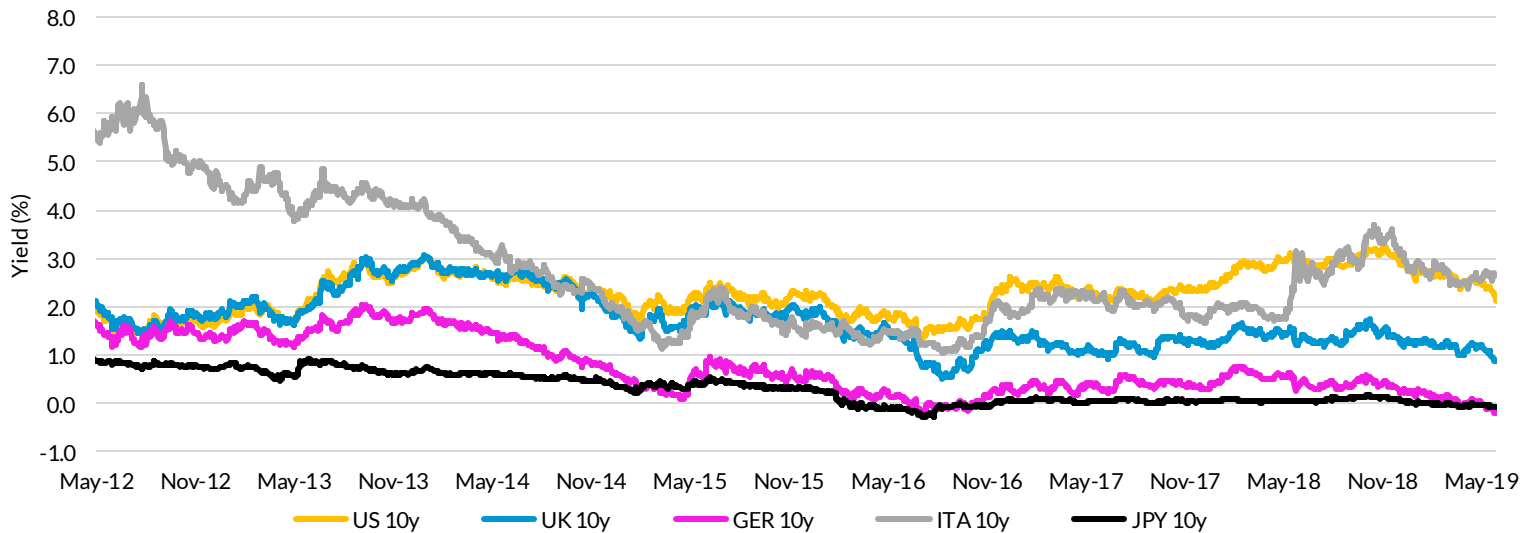


Sources: Bloomberg and State Street Global Advisors. Note: Data as of March 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

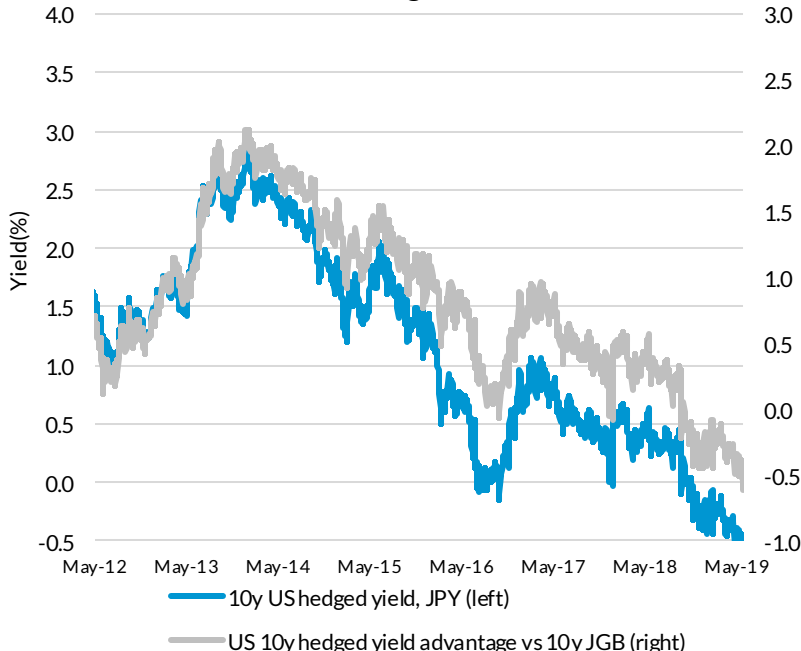
US 10-year Treasury yields have generally been the highest in the developed world over the past few years, but since August 2018, have been neck-in-neck with Italy. In May 2019, yield on the US 10-year note declined 38 bps to 2.12 percent, below the 2.67 percent for the Italian 10-year note. This largely reflects weakness in economic data recently and worries about tariffs and potential trade wars. In the UK, Germany, and Japan, 10-year government bond yields decreased to 0.89, -0.20, and -0.09 percent, respectively. At the end of May, the hedged yield differential between the 10-year Treasury and the 10-year JGB stands at -61 bps, a decline of 22 bps since April. The hedged yield differential between the 10-year Treasury and the Bund and the 10-year Bund stands at -40 bps, an increase of 2 bps since the end of April.

Global 10-year Treasury Yields



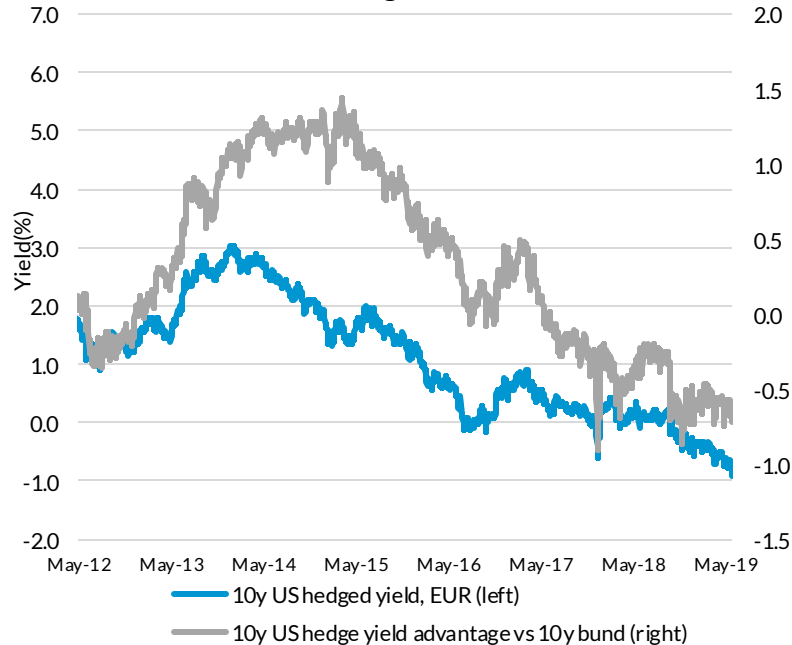
Sources: Bloomberg and State Street Global Advisors. Note: Data as of May 2019.

10yr US Treasury hedged yield, JPY



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

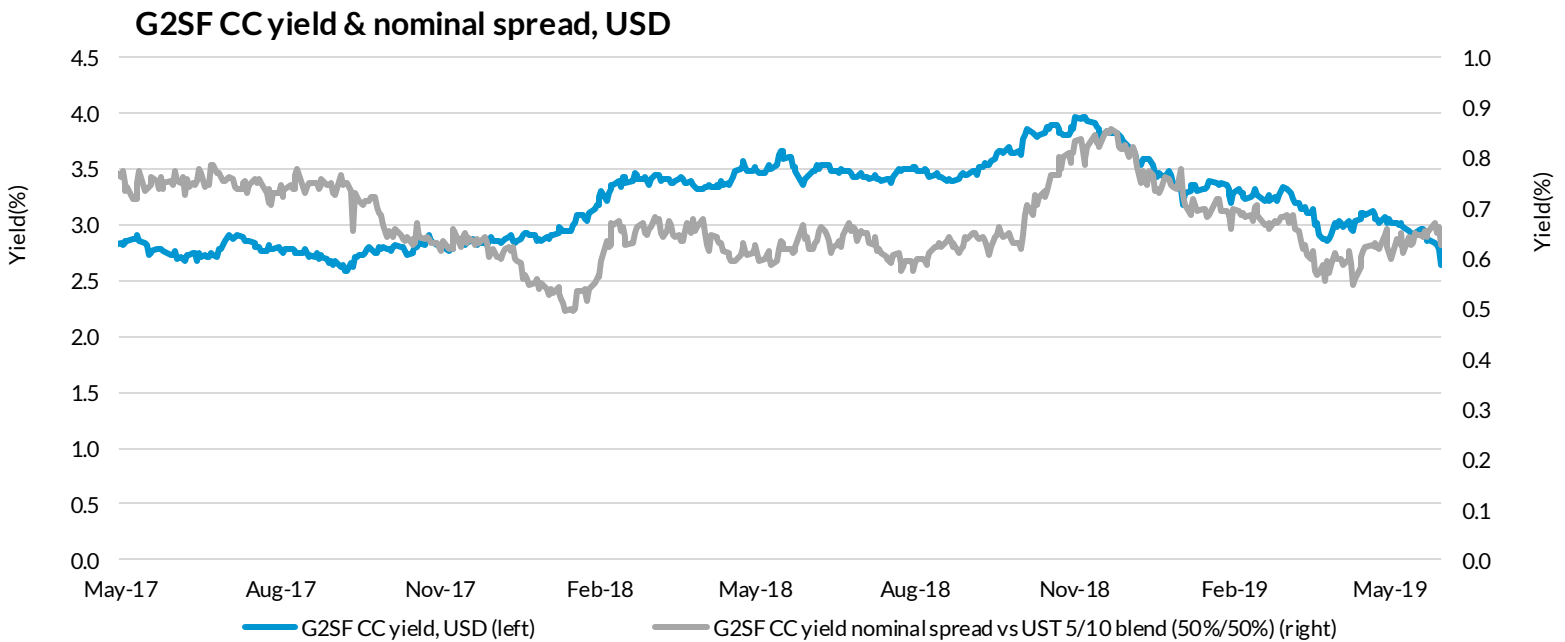
10yr US Treasury hedged yield, EUR



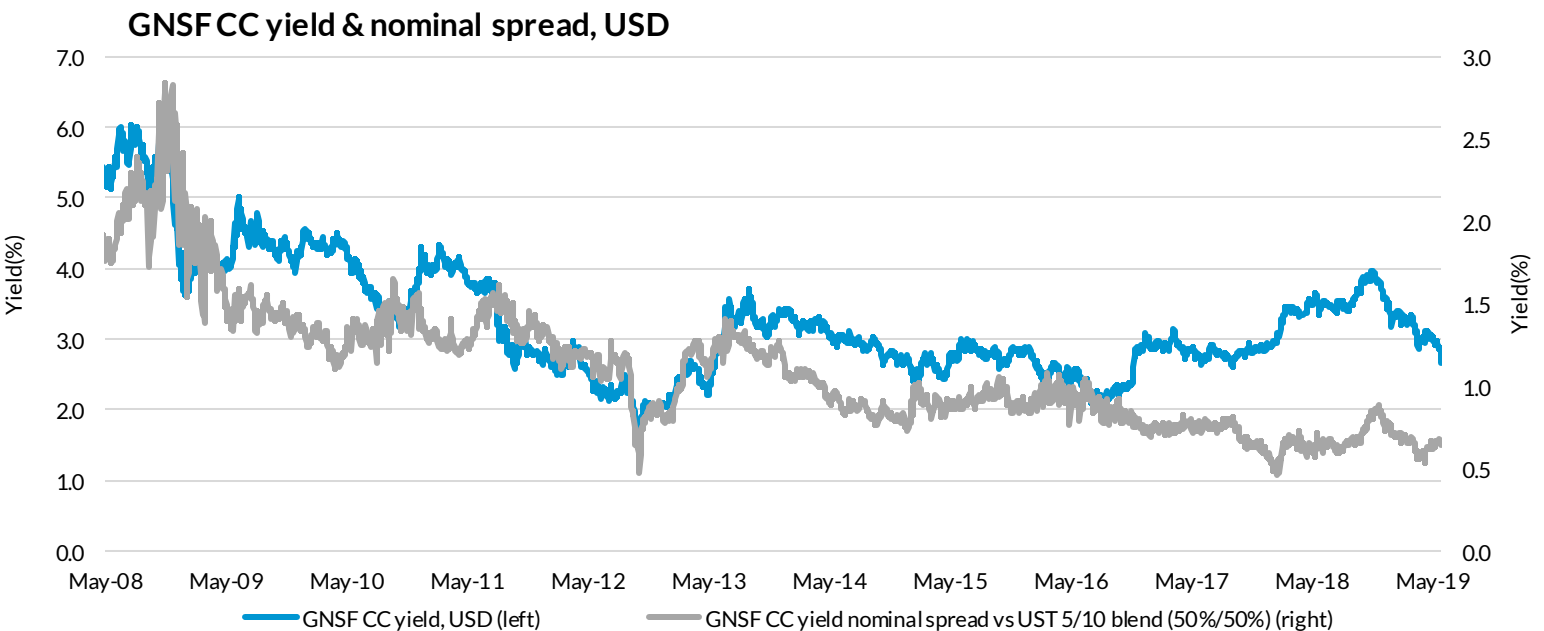
Sources: Bloomberg and State Street Global Advisors. Note: Data as of May 2019.

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 May 2019. Current coupon Ginnie Mae securities outyield their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 63 and 64 bps on G2SF and GNSF, respectively, a tightening of 3 bps since last month.



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

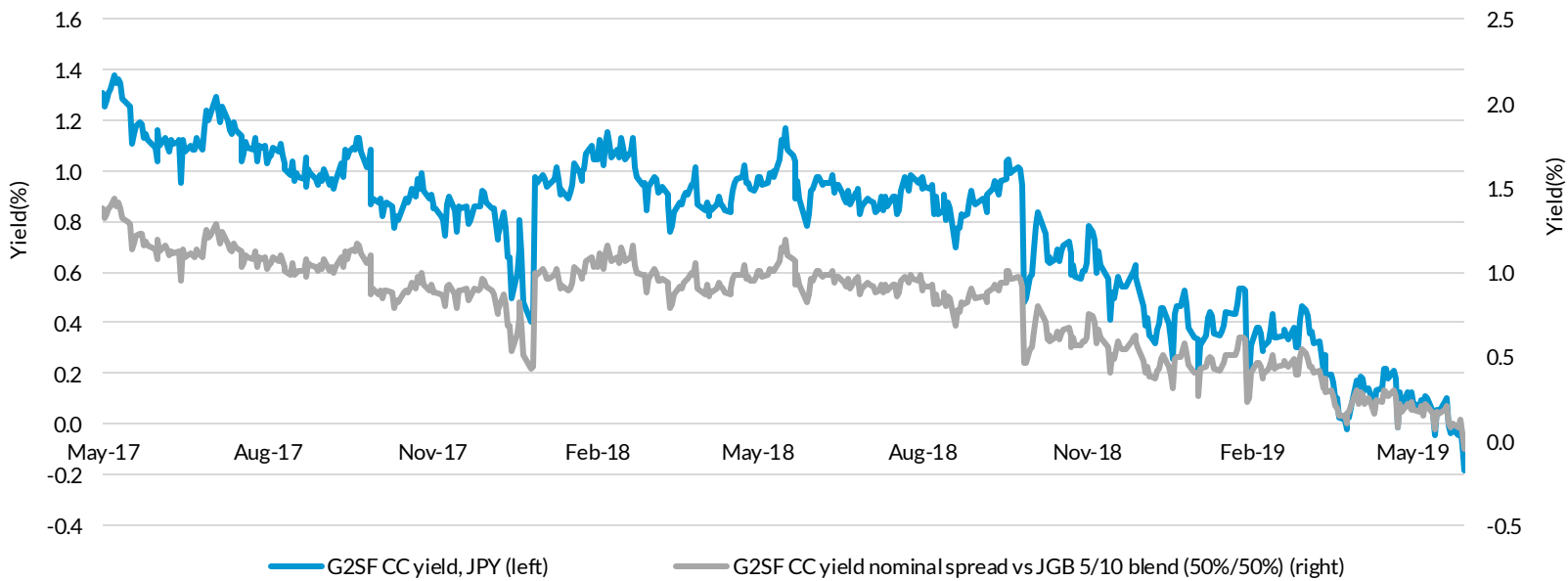


Sources: Bloomberg and State Street Global Advisors. Note: Data as of May 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

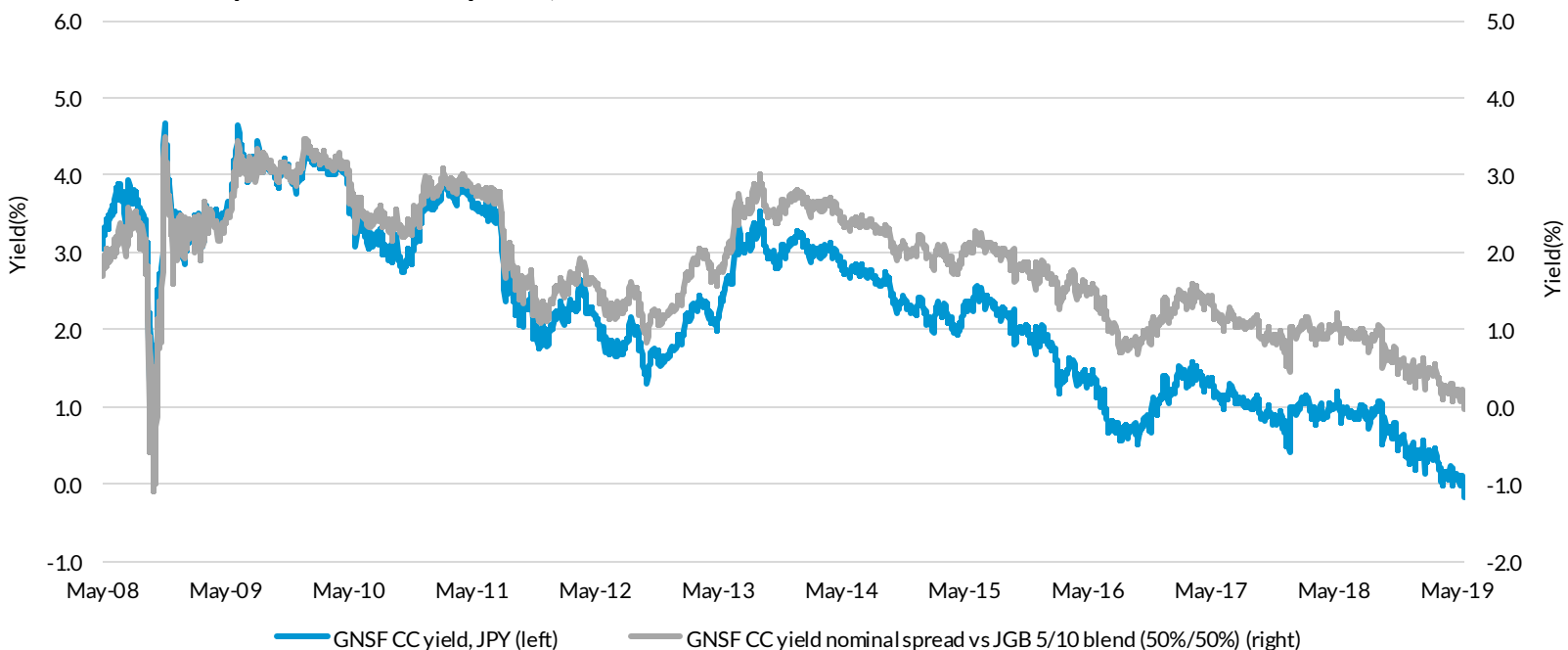
If Ginnie Mae securities are hedged into foreign currencies, they look fair on a yield basis versus many sovereign alternatives. The figures below show that current coupon G2SF and GNSF hedged into Japanese yen have a lower yield than the JGB 5/10 blend by 4 and 3 bps respectively at the end of May. This reflects a 21-22 bps underperformance; it is the first time this yield spread has been negative since 2007.

G2SF CC yield & nominal spread, JPY



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

GNSF CC yield & nominal spread, JPY

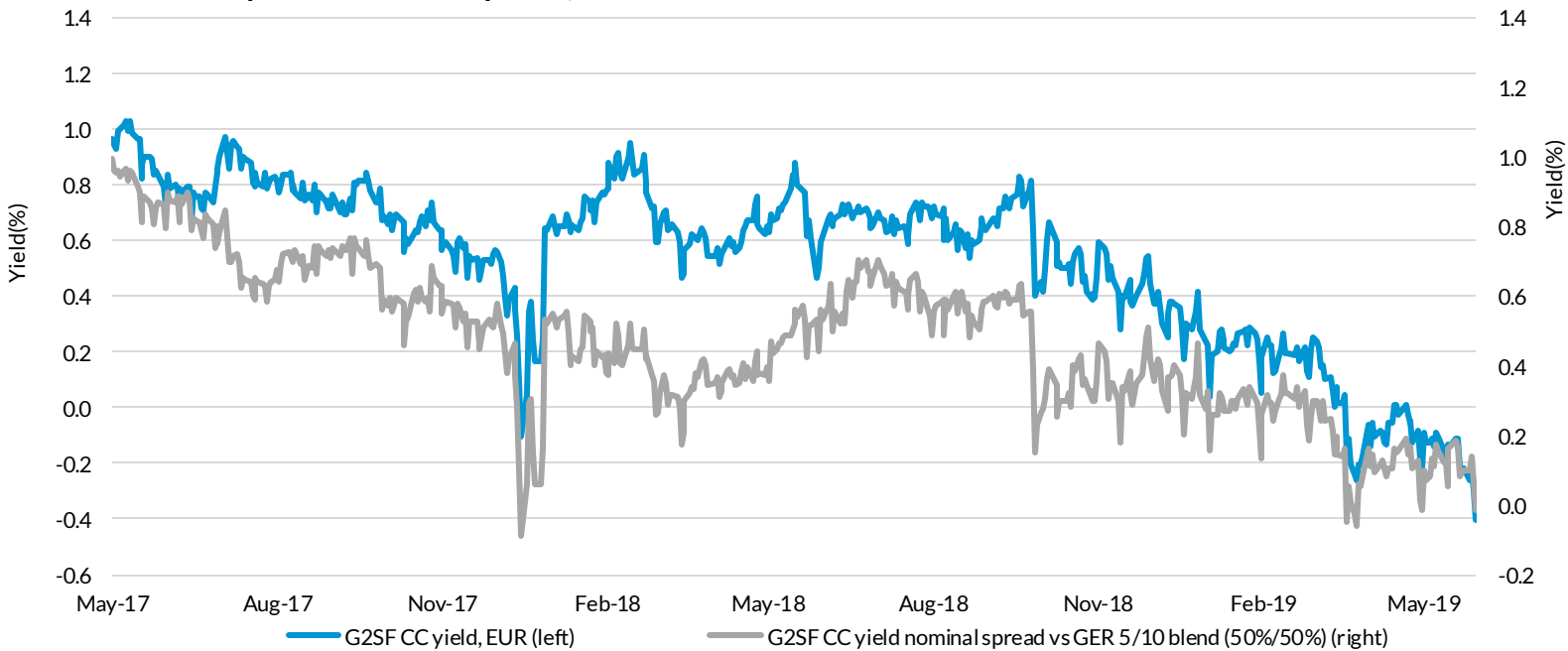


Sources: Bloomberg and State Street Global Advisors. Note: Data as of May 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

If Ginnie Mae securities are hedged into foreign currencies, they look fair on a yield basis versus sovereign alternatives. The figures below show that at the end of May, the current coupon G2SF has a 1 bp lower 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 0. This represents a 3 bp decline for each since the end of April.

G2SF CC yield & nominal spread, EUR



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

GNSFCC yield & nominal spread, EUR



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

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

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

Average Return (Per Month)

Time Period	USMBS Ginnie Mae	USTreasury	USCredit Corp	Pan Euro Credit Corp	USHigh Yield*	Pan Euro High Yield*
1 year	0.44	0.51	0.61	0.27	0.46	0.23
3 year	0.16	0.15	0.32	0.14	0.58	0.31
5 year	0.19	0.19	0.30	0.24	0.37	0.32
10 year	0.27	0.25	0.50	0.46	0.76	0.87

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	0.25	0.33	0.42	0.32	0.28	0.29
3 year	0.05	0.04	0.21	0.20	0.46	0.37
5 year	0.12	0.12	0.23	0.29	0.30	0.37
10 year	0.23	0.21	0.46	0.48	0.72	0.89

Standard Deviation

Time Period	USMBS Ginnie Mae	USTreasury	USCredit Corp	Pan Euro Credit Corp	USHigh Yield*	Pan Euro High Yield*
1 year	0.80	1.11	1.18	0.77	1.78	1.47
3 year	0.67	1.03	1.10	0.80	1.25	1.16
5 year	0.59	0.98	1.12	0.97	1.58	1.33
10 year	0.69	1.01	1.23	1.19	1.83	2.28

Sharpe Ratio

Time Period	USMBS Ginnie Mae	USTreasury	USCredit Corp	Pan Euro Credit Corp	USHigh Yield	Pan Euro High Yield*
1 year	0.31	0.30	0.35	0.42	0.15	0.19
3 year	0.07	0.04	0.19	0.25	0.37	0.32
5 year	0.20	0.12	0.21	0.30	0.19	0.28
10 year	0.33	0.21	0.38	0.40	0.39	0.39

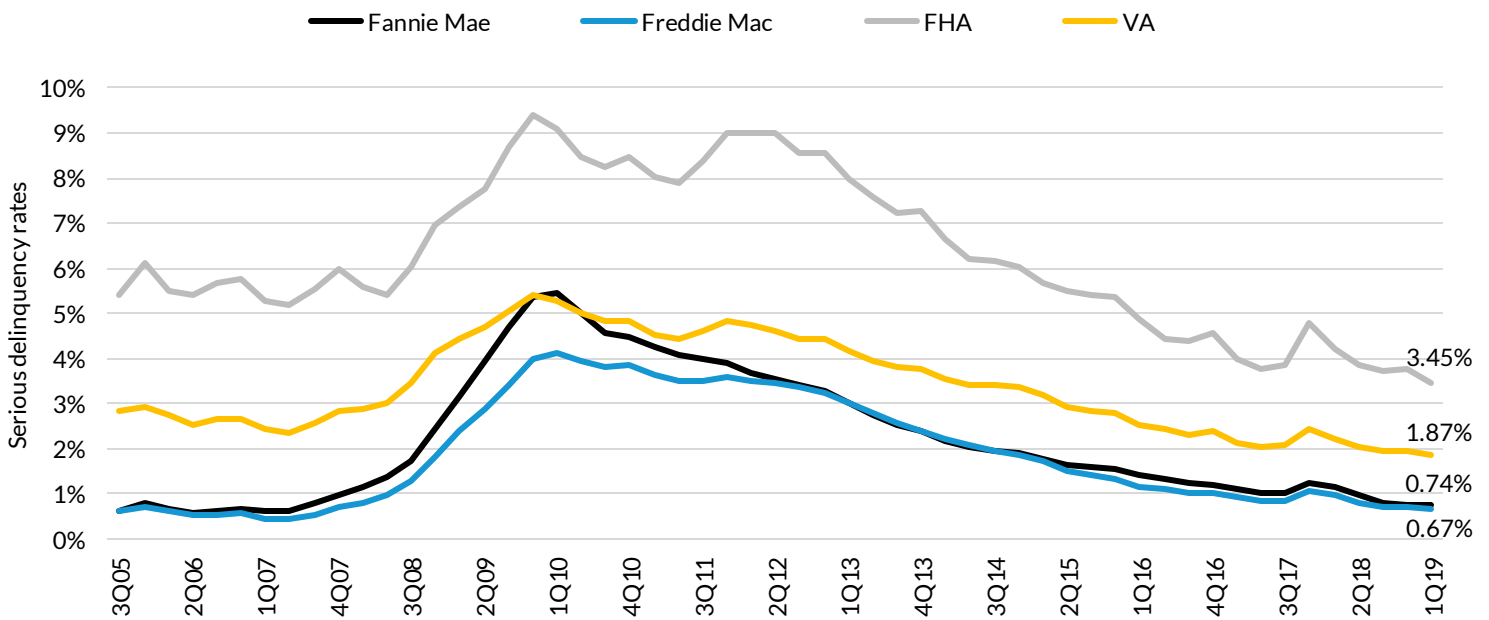
*Assumes 2% capitalization max per issuer on high yield indices

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

State of the US Housing Market

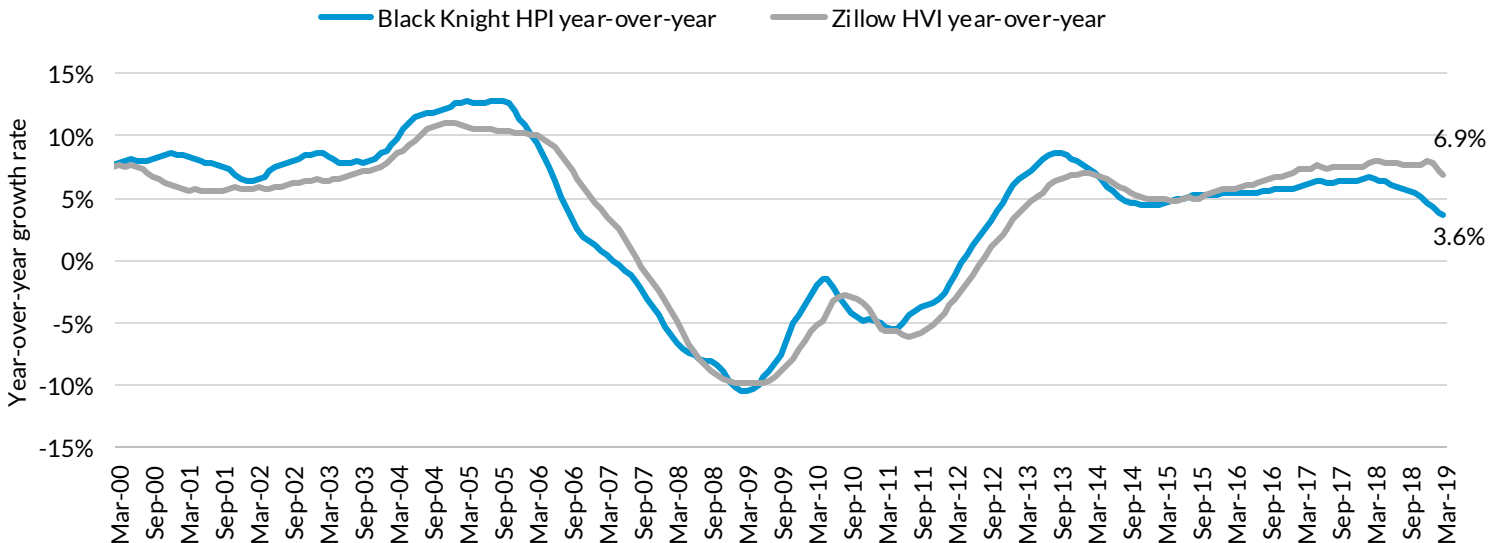
Serious delinquencies rates for single-family GSE loans, FHA loans, and VA declined in Q1 2019. GSE delinquencies remain slightly higher relative to 2006-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are at levels lower than 2006-2007. After touching 6.5 percent in early 2018, year-over-year house price appreciation has slowed considerably in recent months. It stood at 3.6 percent in March 2019 per Black Knight's repeat sales index and at 6.9 percent per Zillow's hedonic index.

Serious Delinquency Rates: Single-Family Loans



Sources: Fannie Mae, Freddie Mac, MBA Delinquency Survey and Urban Institute.
 Note: Serious delinquency is defined as 90 days or more past due or in the foreclosure process. Data as of Q1 2019.

National Year-Over-Year HPI Growth



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

State of the US Housing Market

Nationally, nominal home prices have increased by 50.2 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 11.8 percent. The picture is very different across states, with many states well in excess of the prior peak, while a number of states remain more than 10 percent below peak levels: Connecticut (14.7% below), Florida (11.0% below), Maryland (10.9% below), and Nevada (10.5% below).

State	HPI Changes			YOY	Current HPI % Above Peak
	2000 to Peak	Peak to Trough	Trough to Current		
National	75.7%	-25.6%	50.2%	3.6%	11.8%
Alabama	44.0%	-15.5%	27.7%	6.0%	7.9%
Alaska	69.4%	-3.1%	21.8%	2.0%	17.9%
Arizona	110.2%	-47.9%	75.8%	5.9%	-8.5%
Arkansas	41.7%	-10.6%	22.6%	2.6%	9.6%
California	155.4%	-43.4%	86.1%	1.2%	5.4%
Colorado	40.1%	-12.7%	76.4%	4.4%	53.9%
Connecticut	92.4%	-24.6%	13.2%	2.3%	-14.7%
Delaware	94.6%	-23.6%	27.2%	3.1%	-2.9%
District of Columbia	175.0%	-13.5%	55.3%	4.4%	34.4%
Florida	129.1%	-47.0%	67.9%	4.4%	-11.0%
Georgia	38.3%	-32.1%	62.2%	5.9%	10.1%
Hawaii	162.0%	-22.1%	48.5%	2.1%	15.7%
Idaho	71.5%	-28.4%	72.6%	10.0%	23.6%
Illinois	61.6%	-34.6%	37.6%	2.0%	-10.0%
Indiana	21.4%	-7.6%	32.3%	6.4%	22.2%
Iowa	28.3%	-4.9%	23.2%	2.4%	17.2%
Kansas	34.7%	-9.3%	39.9%	5.8%	27.0%
Kentucky	29.4%	-7.6%	30.7%	3.3%	20.8%
Louisiana	48.7%	-5.1%	21.4%	1.5%	15.2%
Maine	82.4%	-12.5%	35.6%	8.0%	18.6%
Maryland	129.4%	-28.5%	24.7%	1.7%	-10.9%
Massachusetts	92.7%	-22.7%	49.9%	3.2%	15.9%
Michigan	24.1%	-39.7%	73.7%	5.5%	4.7%
Minnesota	66.2%	-27.7%	51.7%	4.1%	9.8%
Mississippi	41.1%	-13.6%	26.3%	5.4%	9.1%
Missouri	42.6%	-14.7%	32.1%	7.4%	12.7%
Montana	81.6%	-10.7%	43.3%	2.8%	27.9%
Nebraska	26.5%	-6.8%	37.7%	3.7%	28.4%
Nevada	126.9%	-59.4%	120.4%	8.0%	-10.5%
New Hampshire	90.7%	-23.6%	35.4%	3.9%	3.5%
New Jersey	118.0%	-27.8%	24.9%	2.5%	-9.9%
New Mexico	66.9%	-16.1%	19.0%	2.9%	-0.2%
New York	98.9%	-15.2%	37.8%	3.7%	16.9%
North Carolina	40.6%	-15.5%	33.5%	5.3%	12.8%
North Dakota	53.9%	-4.0%	51.6%	0.0%	45.5%
Ohio	21.2%	-18.3%	28.7%	2.1%	5.1%
Oklahoma	37.4%	-2.3%	16.6%	2.5%	13.9%
Oregon	82.5%	-27.9%	73.7%	3.5%	25.2%
Pennsylvania	70.4%	-11.6%	21.7%	3.3%	7.5%
Rhode Island	131.3%	-34.4%	46.6%	4.6%	-3.8%
South Carolina	44.8%	-19.2%	31.9%	4.4%	6.6%
South Dakota	45.2%	-4.0%	41.0%	4.8%	35.4%
Tennessee	35.2%	-11.8%	39.9%	5.1%	23.4%
Texas	33.2%	-5.7%	48.2%	3.3%	39.7%
Utah	54.4%	-21.8%	68.1%	7.3%	31.5%
Vermont	83.5%	-7.5%	27.5%	5.1%	18.0%
Virginia	99.5%	-22.7%	24.9%	2.8%	-3.5%
Washington	85.4%	-28.6%	82.5%	3.9%	30.2%
West Virginia	43.1%	-5.9%	16.1%	2.0%	9.2%
Wisconsin	44.9%	-16.3%	32.5%	5.2%	11.0%
Wyoming	77.2%	-5.7%	25.2%	3.2%	18.2%

Sources: Black Knight and Urban Institute. Note: HPI data as of March 2018. Negative sign indicates that state is above earlier peak. Peak refers to the month when HPI reached the highest level for each state/US during the housing boom period, ranging from 09/2005 to 09/2008. Trough represents the month when HPI fell to the lowest level for each state/US after the housing bust, ranging from 01/2009 to 03/2012. Current is 03/2019, the latest HPI data period.

State of the US Housing Market

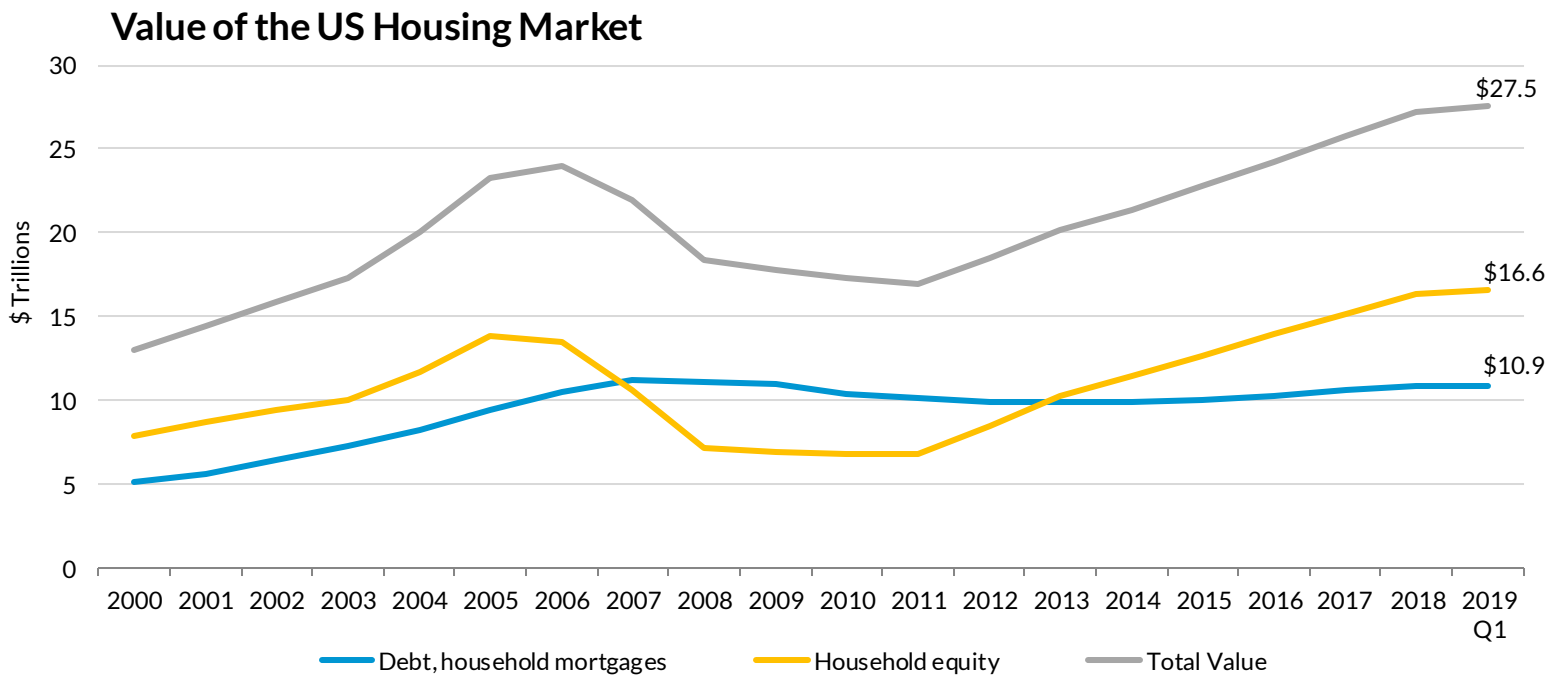
Ginnie Mae MBS constitute 30.6 percent of outstanding agency issuance by loan balance and 33.1 percent of new issuance over the past year. However, the Ginnie Mae share varies widely across states, with the share of outstanding (by loan balance) as low as 16.1 percent in the District of Columbia and as high as 51.6 percent in Alaska. In general, the Ginnie Mae share is higher in states with lower home prices.

State	Agency Issuance (past 1 year)			Agency Outstanding		
	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)
National	33.1%	217.0	231.9	30.6%	165.2	187.6
Alabama	43.5%	165.7	187.5	44.9%	128.8	151.3
Alaska	51.2%	285.8	250.3	51.6%	233.8	198.6
Arizona	31.6%	218.5	221.4	31.6%	166.4	177.8
Arkansas	42.8%	145.1	170.4	44.4%	111.0	137.0
California	27.6%	353.2	335.6	21.2%	270.5	266.9
Colorado	31.7%	298.0	285.5	27.4%	219.9	223.8
Connecticut	31.8%	216.8	226.8	29.5%	183.9	188.7
Delaware	37.0%	216.3	227.3	36.3%	180.9	184.0
District of Columbia	18.6%	423.1	359.9	16.1%	302.2	302.1
Florida	39.8%	212.1	212.0	35.2%	165.1	170.0
Georgia	39.5%	189.7	212.8	38.7%	143.3	169.1
Hawaii	37.8%	492.9	398.4	30.8%	393.1	315.5
Idaho	32.4%	210.9	214.7	31.8%	154.3	165.4
Illinois	26.8%	179.4	198.6	24.7%	142.0	160.4
Indiana	37.4%	145.8	161.0	37.7%	111.5	125.7
Iowa	27.6%	147.6	163.5	25.8%	114.4	131.0
Kansas	36.1%	157.1	176.9	35.6%	120.8	138.6
Kentucky	39.4%	152.5	169.0	39.0%	122.1	132.4
Louisiana	41.8%	172.1	194.0	41.8%	137.4	158.7
Maine	35.1%	188.1	204.3	32.4%	153.5	159.9
Maryland	43.6%	285.2	266.2	39.4%	233.3	218.6
Massachusetts	24.6%	300.0	285.0	19.4%	237.6	227.5
Michigan	25.4%	150.1	171.2	25.2%	113.8	134.4
Minnesota	24.1%	203.5	215.3	24.1%	156.8	170.1
Mississippi	50.1%	155.3	174.7	50.3%	120.2	141.5
Missouri	35.4%	155.0	174.1	35.0%	121.2	138.7
Montana	29.3%	223.6	226.3	29.6%	170.3	176.0
Nebraska	32.0%	168.8	173.9	33.0%	122.9	137.6
Nevada	33.4%	258.2	240.1	35.3%	187.8	190.3
New Hampshire	31.4%	239.4	228.8	29.2%	194.1	180.6
New Jersey	29.4%	255.4	266.7	27.3%	212.0	218.7
New Mexico	41.6%	183.5	190.6	42.5%	141.5	152.6
New York	26.1%	250.9	272.3	25.3%	186.9	214.1
North Carolina	34.0%	186.1	208.2	33.9%	141.8	165.6
North Dakota	29.6%	214.5	207.1	26.2%	167.9	166.0
Ohio	34.7%	145.5	157.8	35.9%	113.0	126.3
Oklahoma	44.8%	155.8	174.3	47.9%	119.1	139.8
Oregon	27.0%	265.2	265.2	23.6%	199.7	206.4
Pennsylvania	32.1%	168.5	195.4	32.6%	137.2	158.1
Rhode Island	38.7%	236.0	226.5	33.6%	188.1	181.9
South Carolina	39.1%	188.3	197.3	37.5%	147.5	160.3
South Dakota	37.6%	179.8	189.5	35.6%	143.6	149.3
Tennessee	39.5%	188.5	205.5	39.9%	139.2	163.4
Texas	34.5%	200.7	218.7	35.6%	142.2	174.5
Utah	28.2%	253.2	261.3	28.1%	191.4	206.3
Vermont	22.4%	189.9	200.4	19.9%	165.9	159.8
Virginia	44.5%	271.4	261.2	41.2%	223.8	216.3
Washington	30.3%	296.6	296.7	27.8%	220.0	227.3
West Virginia	49.2%	155.8	155.3	45.8%	126.8	127.0
Wisconsin	22.2%	170.5	178.7	20.9%	134.8	141.2
Wyoming	41.2%	217.7	218.5	40.1%	178.3	175.8

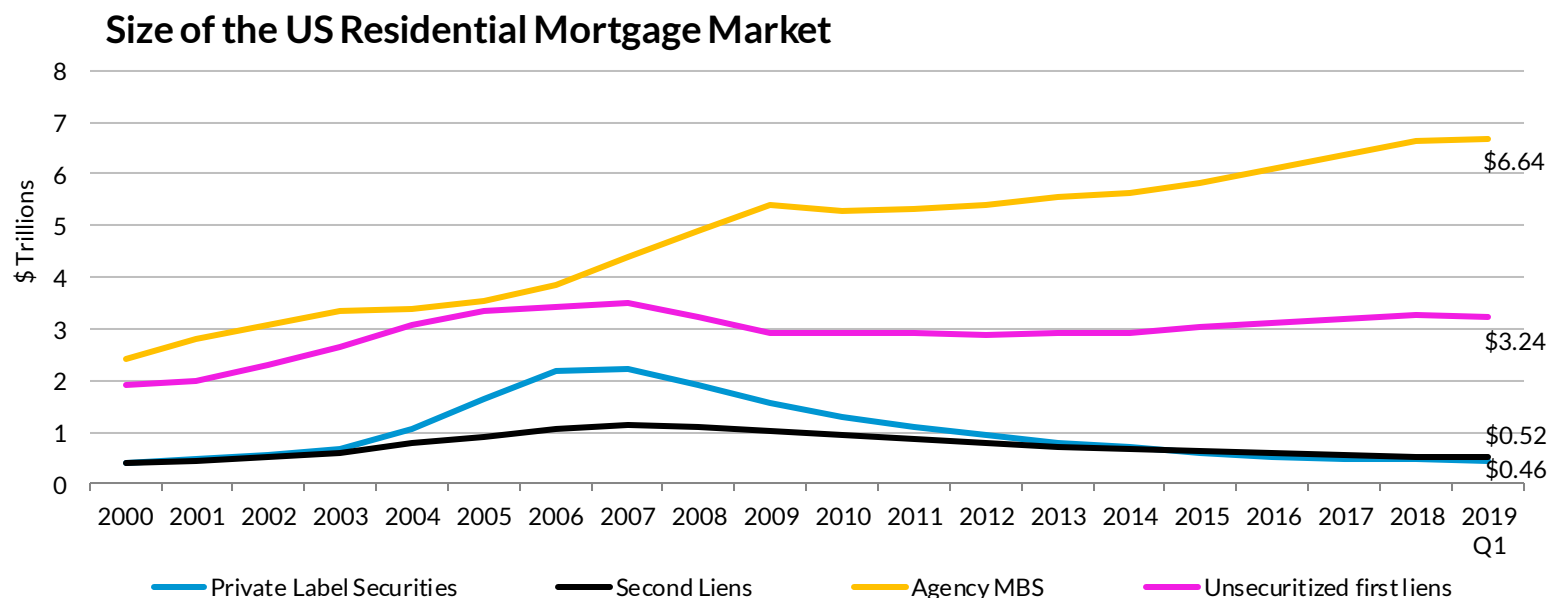
Sources: eMBS and Urban Institute. Note: Ginnie Mae outstanding share are based on loan balance as of April 2019. Ginnie Mae issuance is based on the last 12 months, from May 2018 to April 2019.

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.



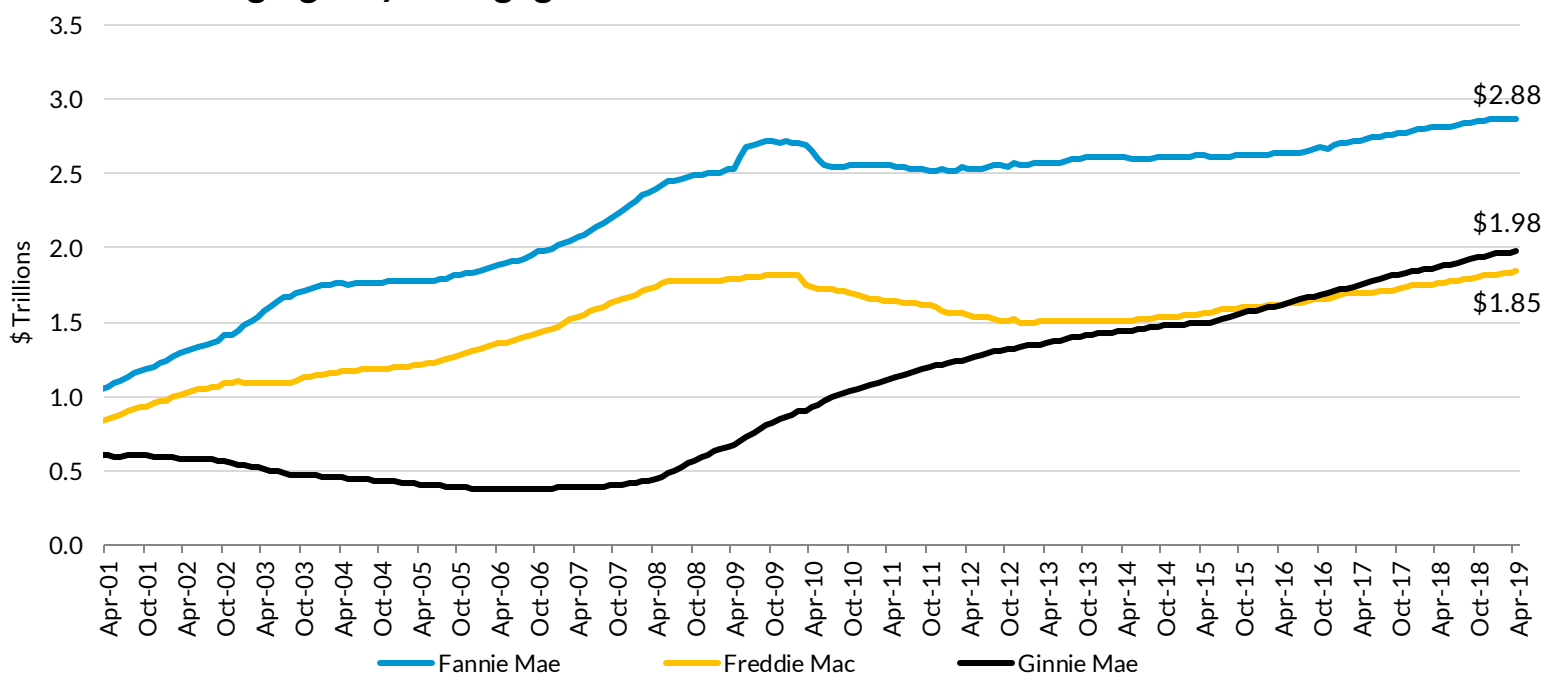
Sources: Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.

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

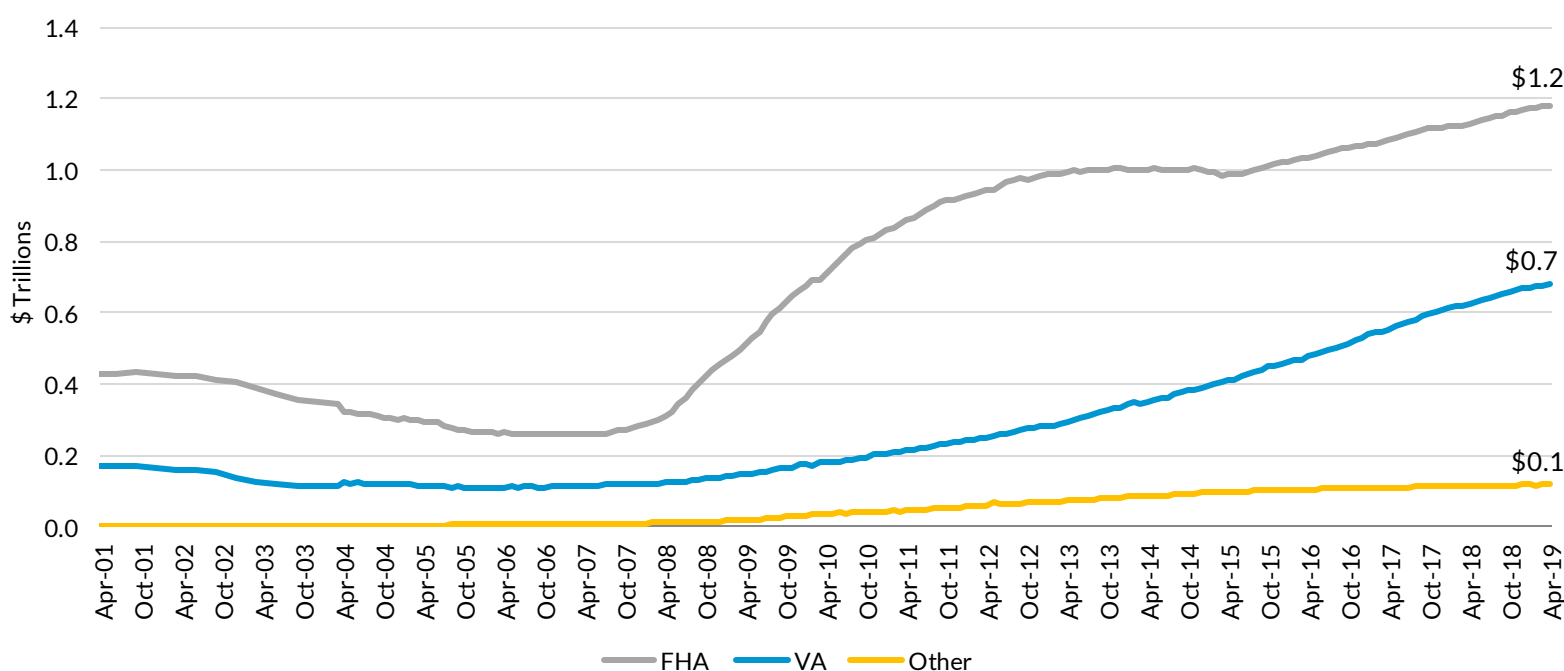
As of April 2019, outstanding securities in the agency market totaled \$6.70 trillion: 42.9 percent Fannie Mae, 27.6 percent Freddie Mac, and 29.6 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. FHA comprises 59.6 percent of total Ginnie Mae MBS outstanding, while VA comprises 34.5 percent.

Outstanding Agency Mortgage-Backed Securities



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

Outstanding Ginnie Mae Mortgage-Backed Securities

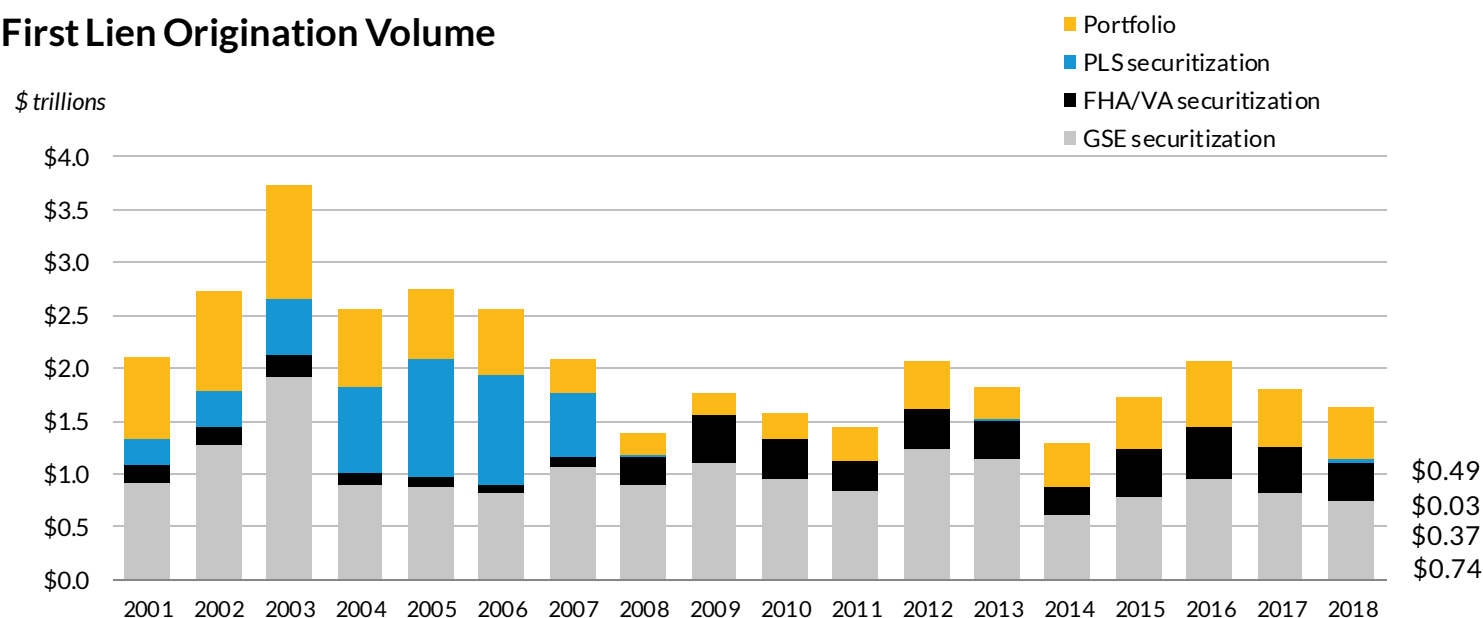


Sources: eMBS and Urban Institute. Note: Data as of April 2019.

State of the US Housing Market

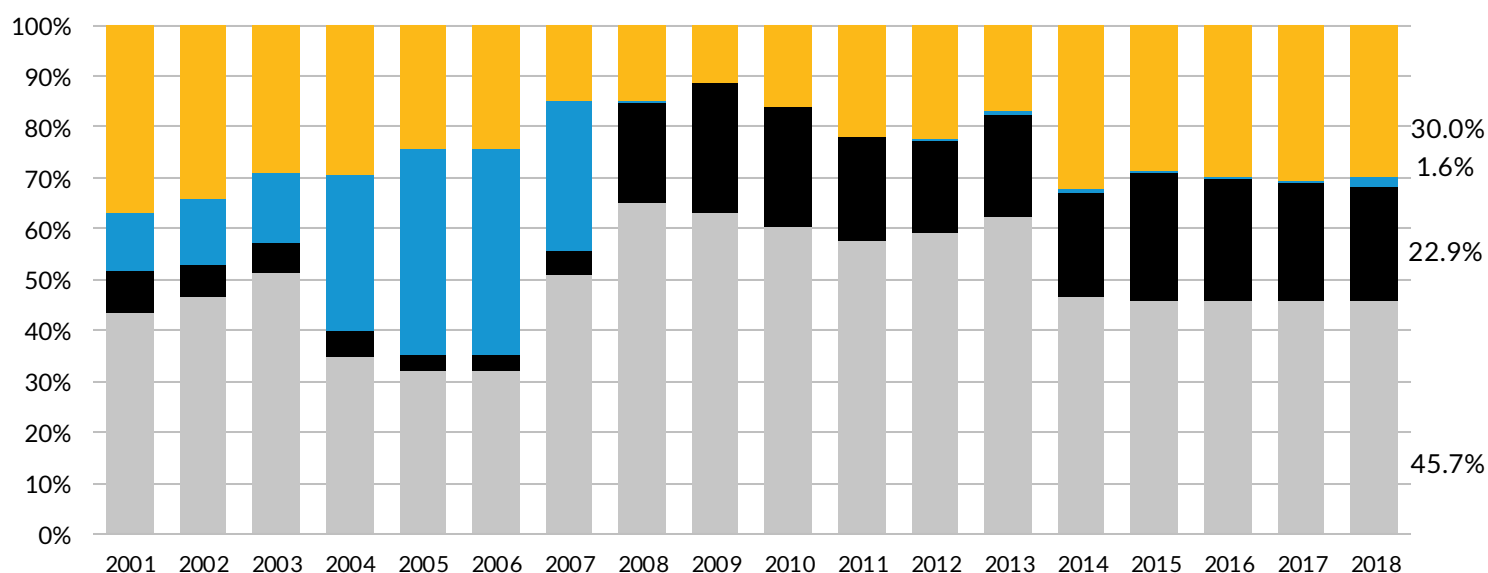
First lien originations totaled \$1.63 trillion in 2018, down slightly from 2017, as higher interest rates curtailed refinance activity. The share of bank portfolio originations was 30.0 percent in the 2018, slightly below the 2017 level. The GSE share was 45.7 percent, on par with 2017. The FHA/VA share remained constant at 22.9 percent. Private-label securities comprised 1.6 percent of originations, higher than the 2017 share of 0.6 percent.

First Lien Origination Volume



Sources: Inside Mortgage Finance and Urban Institute. Note: Data as of Q4 2018.

First Lien Origination Share



Sources: Inside Mortgage Finance and Urban Institute. Note: Data as of Q4 2018.

US Agency Market, Originations

Agency gross issuance was \$332.5 billion in the first four months of 2019, down 12.3 percent compared to the same period in 2018. Ginnie Mae gross issuance was down by 13.5 percent and GSE gross issuance was down by 11.7 percent. Within the Ginnie Mae market, FHA was down by 8.3 percent and VA origination was down by 17.9 percent. The decline in origination volume is the result of lower origination volumes in January and February 2019, versus the same period a year earlier, as well as Ginnie Mae and VA actions to curb rapid VA refinancing speeds.

Agency Gross Issuance					
Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	\$202.8	\$157.9	\$360.6	\$102.2	\$462.8
2001	\$506.9	\$378.2	\$885.1	\$171.5	\$1,056.6
2002	\$710.0	\$529.0	\$1,238.9	\$169.0	\$1,407.9
2003	\$1,174.4	\$700.5	\$1,874.9	\$213.1	\$2,088.0
2004	\$517.5	\$355.2	\$872.6	\$119.2	\$991.9
2005	\$514.1	\$379.9	\$894.0	\$81.4	\$975.3
2006	\$500.2	\$352.9	\$853.0	\$76.7	\$929.7
2007	\$633.0	\$433.3	\$1,066.2	\$94.9	\$1,161.1
2008	\$562.7	\$348.7	\$911.4	\$267.6	\$1,179.0
2009	\$817.1	\$462.9	\$1,280.0	\$451.3	\$1,731.3
2010	\$626.6	\$377.0	\$1,003.5	\$390.7	\$1,394.3
2011	\$578.2	\$301.2	\$879.3	\$315.3	\$1,194.7
2012	\$847.6	\$441.3	\$1,288.8	\$405.0	\$1,693.8
2013	\$749.9	\$426.7	\$1,176.6	\$393.6	\$1,570.2
2014	\$392.9	\$258.0	\$650.9	\$296.3	\$947.2
2015	\$493.9	\$351.9	\$845.7	\$436.3	\$1,282.0
2016	\$600.5	\$391.1	\$991.6	\$508.2	\$1,499.8
2017	\$531.3	\$345.9	\$877.3	\$455.6	\$1,332.9
2018	\$480.9	\$314.1	\$795.0	\$400.6	\$1,195.3
2019 YTD	\$123.4	\$97.2	\$220.6	\$112.0	\$332.5
2019 YTD % Change YOY	-22.7%	7.6%	-11.7%	-13.5%	-12.3%
2019 Ann.	\$370.1	\$291.6	\$661.7	\$335.9	\$997.6

Ginnie Mae Breakdown: Agency Gross Issuance				
Issuance Year	FHA	VA	Other	Total
2000	\$80.2	\$18.8	\$3.2	\$102.2
2001	\$133.8	\$34.7	\$3.1	\$171.5
2002	\$128.6	\$37.9	\$2.5	\$169.0
2003	\$147.9	\$62.7	\$2.5	\$213.1
2004	\$85.0	\$31.8	\$2.5	\$119.2
2005	\$55.7	\$23.5	\$2.1	\$81.4
2006	\$51.2	\$23.2	\$2.3	\$76.7
2007	\$67.7	\$24.2	\$3.0	\$94.9
2008	\$221.7	\$39.0	\$6.9	\$267.6
2009	\$359.9	\$74.6	\$16.8	\$451.3
2010	\$304.9	\$70.6	\$15.3	\$390.7
2011	\$216.1	\$82.3	\$16.9	\$315.3
2012	\$253.4	\$131.3	\$20.3	\$405.0
2013	\$239.2	\$132.2	\$22.2	\$393.6
2014	\$163.9	\$111.4	\$21.0	\$296.3
2015	\$261.5	\$155.6	\$19.2	\$436.3
2016	\$281.8	\$206.5	\$19.9	\$508.2
2017	\$257.6	\$177.8	\$20.2	\$455.6
2018	\$222.6	\$160.8	\$17.2	\$400.6
2019 YTD	\$63.3	\$45.0	\$3.6	\$112.0
2019 YTD % Change YOY	-8.3%	-17.9%	-34.2%	-13.5%
2019 Ann.	\$190.0	\$135.1	\$10.7	\$335.9

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 April 2019.

US Agency Market, Originations

Agency net issuance totaled \$65.0 billion in the first four months of 2019, down 5.5 percent compared to the same period in 2018. Ginnie Mae net issuance was \$28.4 billion, comprising 43.7 percent of total agency net issuance. Ginnie Mae net issuance was down 5.5 percent compared to the same period in 2019. Ginnie Mae net issuance in the first four months of 2019 was comprised of 54.9 percent VA and 46.1 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	\$9.2	\$27.4	\$36.6	\$28.4	\$65.0
2019 YTD % Change YOY	-65.9%	133.6%	-5.5%	-5.5%	-5.5%
2019 Ann.	\$27.6	\$82.1	\$109.7	\$85.3	\$195.0

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	\$13.1	\$15.6	-\$0.2	\$28.4
2019 YTD % Change YOY	31.8%	-18.7%	-119.7%	-5.5%
2019 Ann.	\$39.2	\$46.7	-\$0.6	\$85.3

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 April 2019.

US Agency Market, Originations

Agency gross issuance moves inversely to interest rates, generally declining as interest rates have risen, rising when interest rates fall, but the seasonal trend is also very strong. This table allows for a comparison with the same month in previous years. April 2019 gross agency issuance of \$96.8 billion is slightly above the April 2018 level of \$95.2 billion.

Monthly Agency Issuance

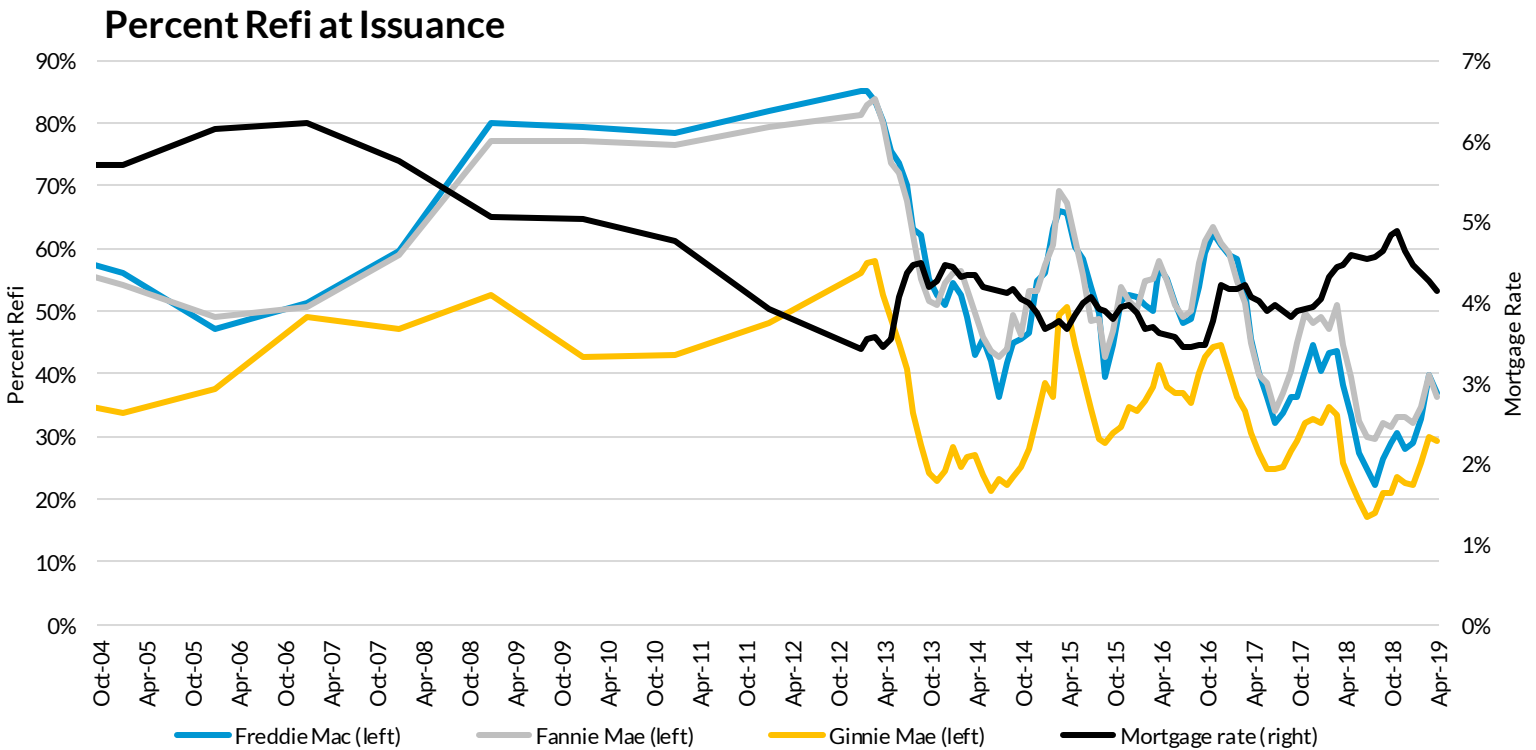
Date	Gross Issuance				Net Issuance			
	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-16	\$35.6	\$22.5	\$32.5	\$90.6	-\$0.6	\$1.0	\$7.3	\$7.8
Feb-16	\$32.4	\$21.2	\$30.5	\$84.1	\$2.4	\$3.1	\$8.4	\$13.9
Mar-16	\$39.7	\$27.5	\$32.9	\$100.1	\$7.9	\$8.2	\$9.6	\$25.8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

Sources: eMBS and Urban Institute.

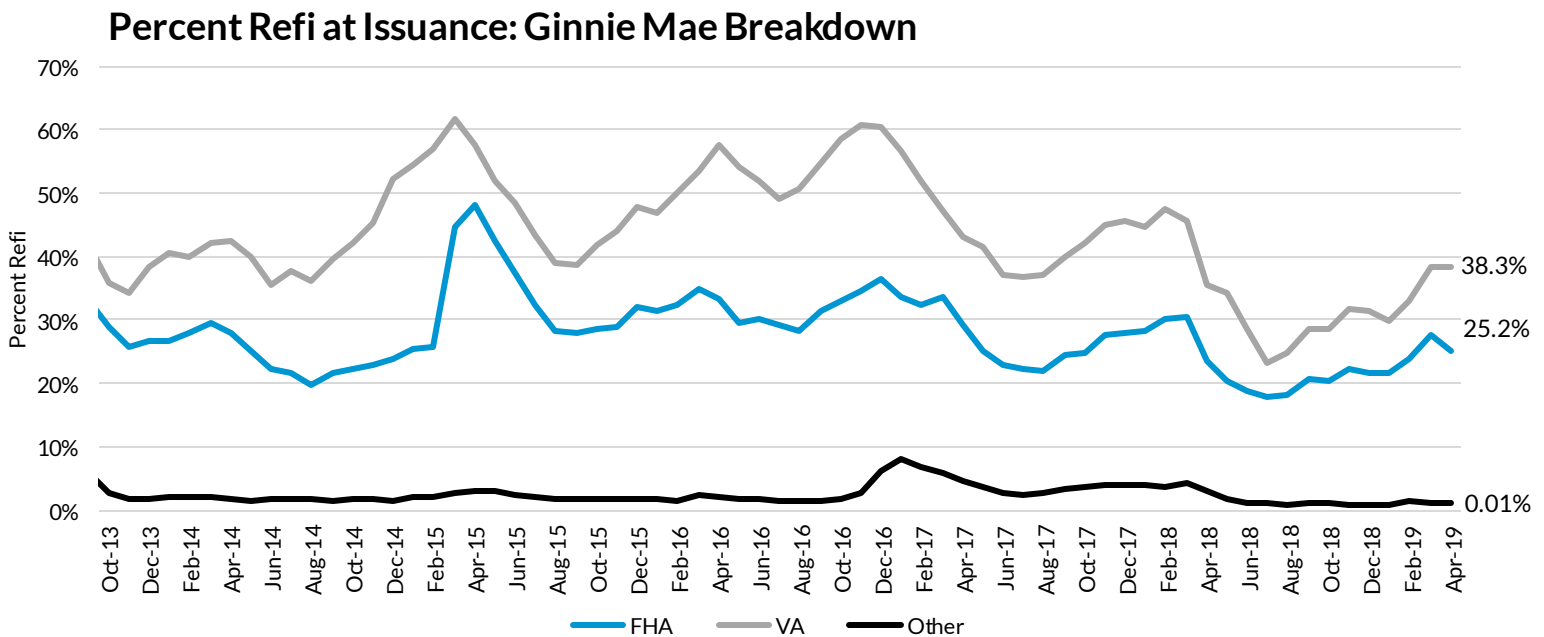
Note : Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of April 2019.

US Agency Market, Originations

The Ginnie Mae refi share stood at 29 percent in April 2019, below the 36-37 percent share for both Fannie Mae and Freddie Mac. Within Ginnie Mae, VA had the highest refi share at 38 percent in April 2019, followed by FHA's 25 percent. In the spring and summer of 2018, refi share for all agencies fell sharply due to rising interest rates and seasonal upticks in purchase activity. The refi share stabilized after the summer surge in purchase activity ended; it ticked up in early 2019 as rates trended down.



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

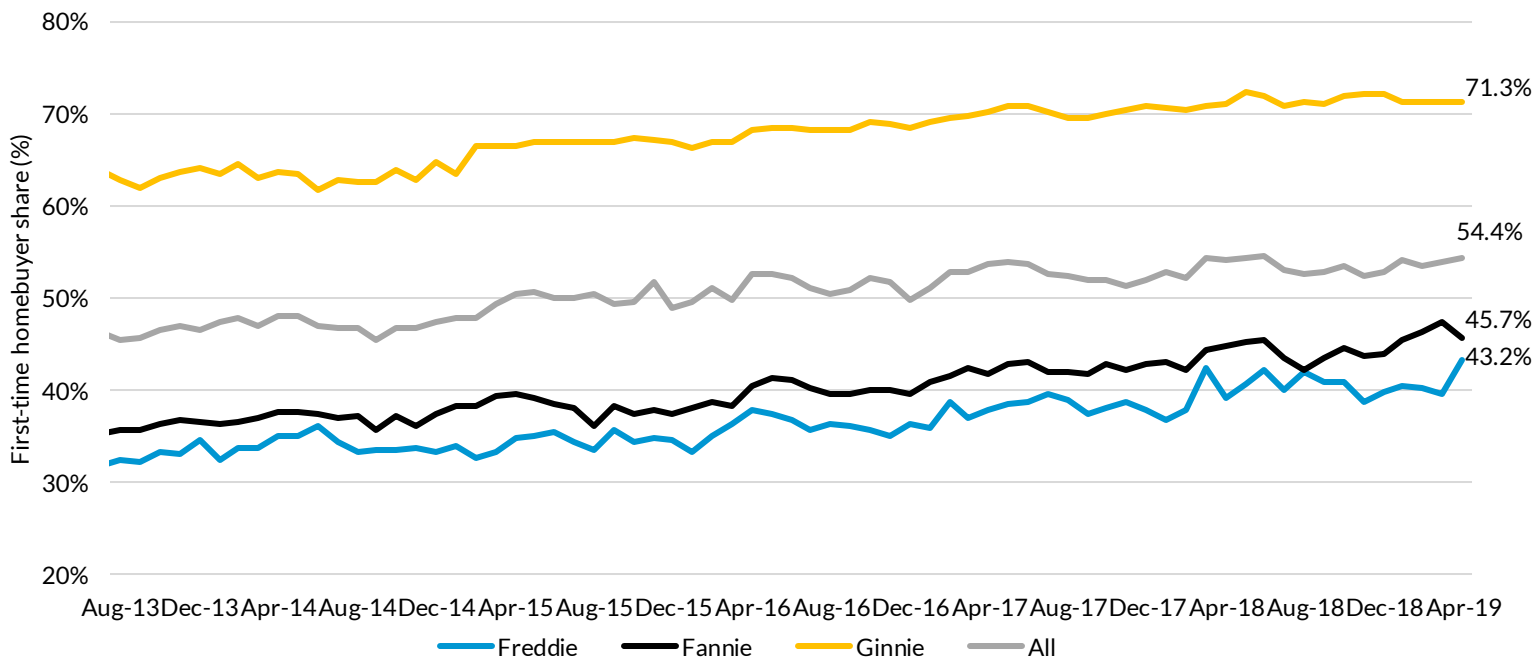


Sources: eMBS and Urban Institute. Note: Based on at-issuance balance. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of April 2019.

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 71.3 percent in April 2019, just below the 72.4 percent historical high reached in May 2018. 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 45.7 percent and 43.2 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in April 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 April 2019.

	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	243,488	270,072	251,604	273,614	212,670	257,684	230,512	267,882
Credit Score	738.3	753.1	743.0	757.6	675.2	698.1	708.8	739.2
LTV (%)	88.7	80.0	87.0	79.3	96.9	95.4	92.3	84.1
DTI (%)	36.3	37.2	35.1	36.3	42.2	43.3	38.9	38.6
Loan Rate (%)	4.7	4.6	4.6	4.5	4.8	4.6	4.7	4.6

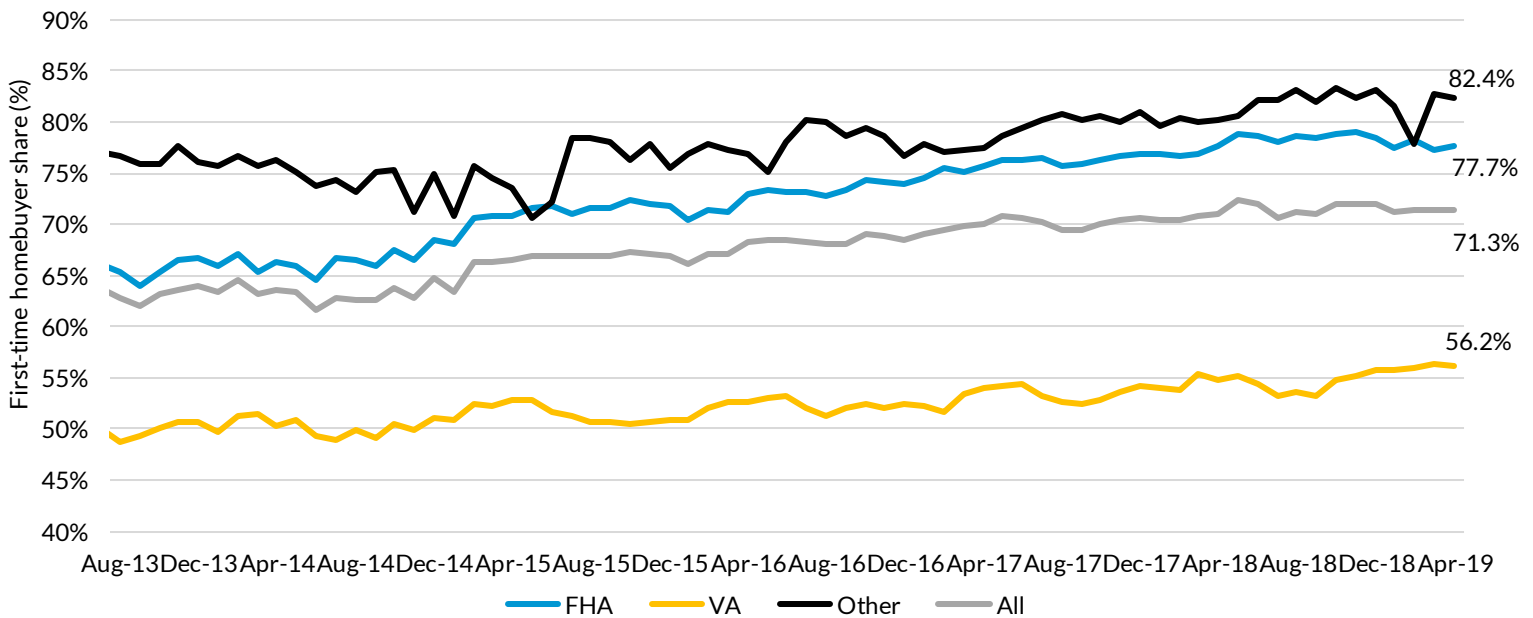
Sources: eMBS and Urban Institute.

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 April 2019.

Credit Box

Within the Ginnie Mae purchase market, 77.7 percent of FHA loans, 56.2 percent of VA loans and 82.4 percent of other loans represent financing for first-time home buyers in April 2019. The bottom table shows that based on mortgages originated in April 2019, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, higher LTV and lower DTI.

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



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

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	207,135	223,444	250,589	301,096	142,646	156,096	212,670	257,684
Credit Score	666.1	670.2	695.0	726.5	690.4	693.2	675.2	698.1
LTV (%)	95.5	94.0	99.8	96.6	99.2	99.0	96.9	95.4
DTI (%)	43.5	44.3	41.1	42.9	35.1	36.0	42.2	43.3
Loan Rate (%)	4.8	4.7	4.6	4.4	4.7	4.7	4.8	4.6

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

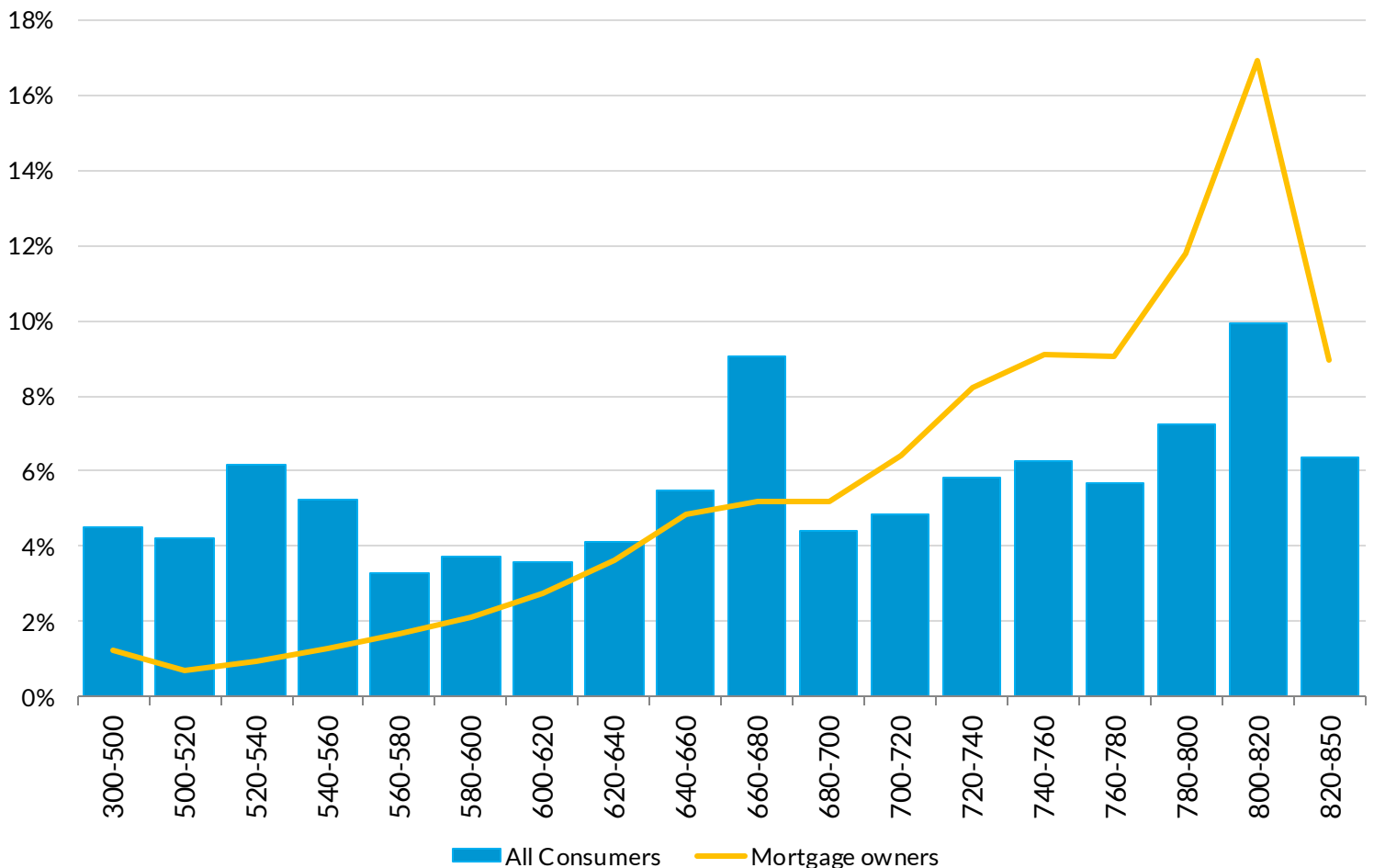
Credit Box

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.

April 2019 Credit Box at a Glance

In April 2019, the median Ginnie Mae FICO score was 673 versus 749 for Fannie and 755 for Freddie. Note that the FICO score for the 10th percentile was 616 for Ginnie Mae, versus 677 for Fannie and 685 for Freddie. Within the Ginnie Mae market, FHA loans have a median FICO score of 661, VA loans have a median FICO score of 700 and other loans have a median FICO score of 686.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	255,957	641	680	732	775	797	725
Fannie	83,496	684	716	754	784	800	747
Freddie	77,637	691	723	760	787	801	752
Ginnie	94,824	619	642	673	719	767	682
Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	130,057	642	680	725	768	793	720
Fannie	50,081	665	699	739	775	797	735
Freddie	43,901	676	709	747	779	798	741
Ginnie	36,075	607	639	673	714	757	676
All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	386,014	641	680	729	773	796	723
Fannie	133,577	677	709	749	781	799	743
Freddie	121,538	685	718	755	785	801	748
Ginnie	130,899	616	641	673	717	764	680

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	94,824	619	642	673	719	767	682
FHA	58,462	611	635	661	696	734	667
VA	29,752	629	659	707	762	792	709
Other	6,610	631	654	686	727	762	691
Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	36,075	607	639	673	714	757	676
FHA	18,701	600	630	659	692	727	661
VA	17,310	620	652	692	737	774	692
Other	64	578	677	726	769	800	712
All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	130,899	616	641	673	717	764	680
FHA	77,163	609	633	661	695	732	666
VA	47,062	626	656	700	753	787	702
Other	6,674	631	654	686	728	762	691

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 April 2019.

April 2019 Credit Box at a Glance

In April 2019, the median loan-to-value ratio (LTV) was 96.5 percent for Ginnie Mae, and 80 percent for both Fannie Mae and Freddie Mac. The 90th percentile was 101 percent for Ginnie Mae, and 95-97 percent for Fannie Mae and 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	256,895	73.0	80.0	95.0	96.5	100.0	87.8
Fannie	83,591	66.0	80.0	86.0	95.0	97.0	83.5
Freddie	78,270	63.0	79.0	80.0	95.0	95.0	82.0
Ginnie	95,034	93.2	96.5	96.5	100.0	102.1	96.5

Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	131,400	45.0	60.0	75.0	84.0	95.0	71.5
Fannie	50,085	41.0	56.0	69.0	78.0	80.0	65.1
Freddie	44,502	42.0	57.0	70.0	79.0	80.0	66.0
Ginnie	36,813	70.2	82.4	86.5	98.2	100.0	87.1

All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	388,295	58.0	75.0	86.3	96.5	99.0	82.3
Fannie	133,676	51.0	68.0	80.0	91.0	97.0	76.6
Freddie	122,772	51.0	69.0	80.0	90.0	95.0	76.2
Ginnie	131,847	83.2	93.6	96.5	100.0	101.0	93.8

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	95,034	93.2	96.5	96.5	100.0	102.1	96.5
FHA	58,586	93.3	96.5	96.5	96.5	96.5	95.2
VA	29,802	91.7	100.0	100.0	102.2	103.0	98.4
Other	6,646	94.8	98.9	101.0	101.0	102.0	99.2

Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	36,813	70.2	82.4	86.5	98.2	100.0	87.1
FHA	18,618	67.6	80.0	86.5	86.5	97.1	82.9
VA	18,122	73.3	86.7	96.6	100.0	102.0	91.3
Other	73	66.4	78.9	90.9	98.1	99.2	87.5

All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	131,847	83.2	93.6	96.5	100.0	101.0	93.8
FHA	77,204	83.0	89.9	96.5	96.5	96.5	92.2
VA	47,924	82.2	95.0	100.0	100.9	102.7	95.7
Other	6,719	94.5	98.8	101.0	101.0	102.0	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 April 2019.

April 2019 Credit Box at a Glance

In April 2019, the median Ginnie Mae debt-to-income ratio (DTI) was 43.2 percent, considerably higher than the 37-38 percent median DTI for Freddie Mac and Fannie Mae. The 90th percentile for Ginnie Mae was 54.6 percent, also much higher than the 47-48 percent DTI for the GSEs. Within the Ginnie Mae market, the median FHA DTI ratio was 44.6 percent, versus 42.2 percent for VA and 36.1 percent for other lending programs.

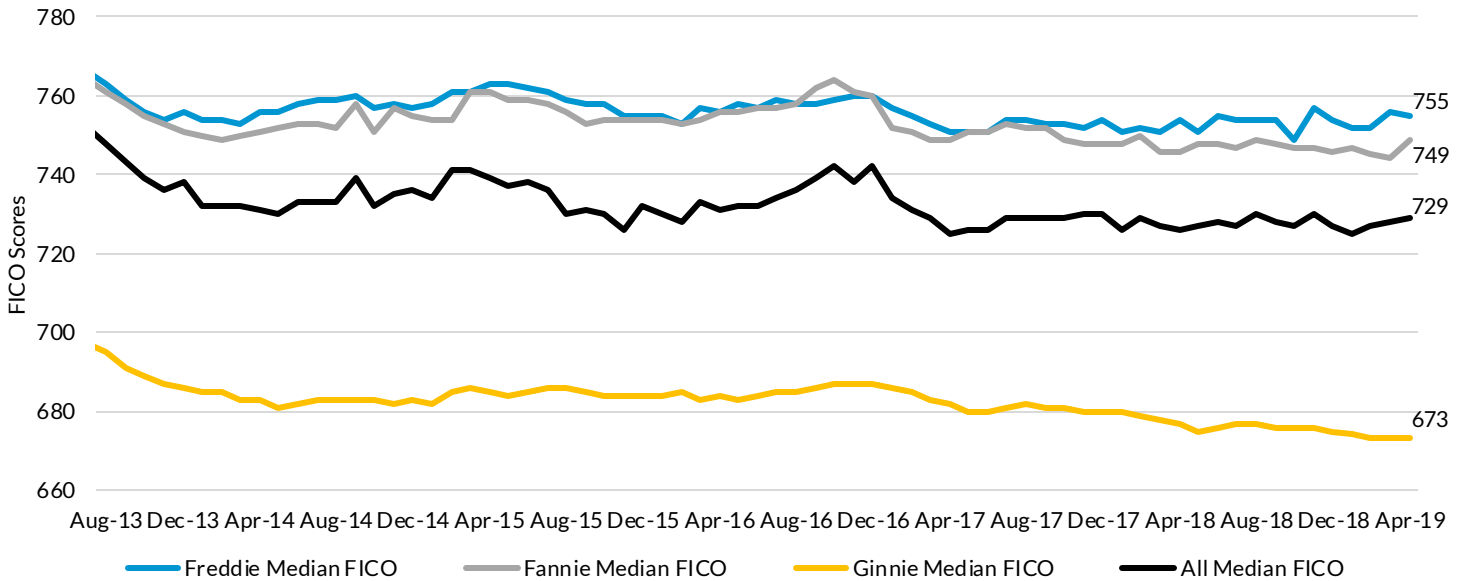
Purchase DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	256,494	25.0	32.0	39.7	45.8	50.0	38.4
Fannie	83,586	23.0	30.0	38.0	44.0	48.0	36.6
Freddie	78,258	22.0	29.0	37.0	43.0	47.0	35.5
Ginnie	94,650	29.5	36.2	43.3	49.8	54.6	42.5
Refi DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	123,727	23.0	30.0	38.0	44.6	49.0	37.1
Fannie	49,975	23.0	30.0	38.0	44.0	48.0	36.3
Freddie	44,428	22.0	28.0	36.0	43.0	46.0	35.0
Ginnie	29,324	27.8	34.9	43.1	49.9	54.8	41.9
All DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	380,221	24.0	31.0	39.0	45.0	49.9	38.0
Fannie	133,561	23.0	30.0	38.0	44.0	48.0	36.4
Freddie	122,686	22.0	29.0	37.0	43.0	47.0	35.3
Ginnie	123,974	29.1	35.9	43.2	49.8	54.6	42.4
Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	94,650	29.5	36.2	43.3	49.8	54.6	42.5
FHA	58,593	31.0	37.8	44.7	50.8	54.8	43.7
VA	29,469	28.1	35.1	42.5	49.2	54.7	41.9
Other	6,588	26.3	31.1	36.1	40.0	43.0	35.2
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	29,324	27.8	34.9	43.1	49.9	54.8	41.9
FHA	15,764	28.7	36.2	44.5	50.8	55.0	42.9
VA	13,515	26.8	33.4	41.5	48.8	54.3	40.9
Other	45	20.8	27.0	33.9	38.7	41.9	32.2
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	123,974	29.1	35.9	43.2	49.8	54.6	42.4
FHA	74,357	30.5	37.5	44.6	50.8	54.9	43.5
VA	42,984	27.7	34.6	42.2	49.1	54.6	41.6
Other	6,633	26.3	31.0	36.1	40.0	43.0	35.2

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

Credit Box: Historical

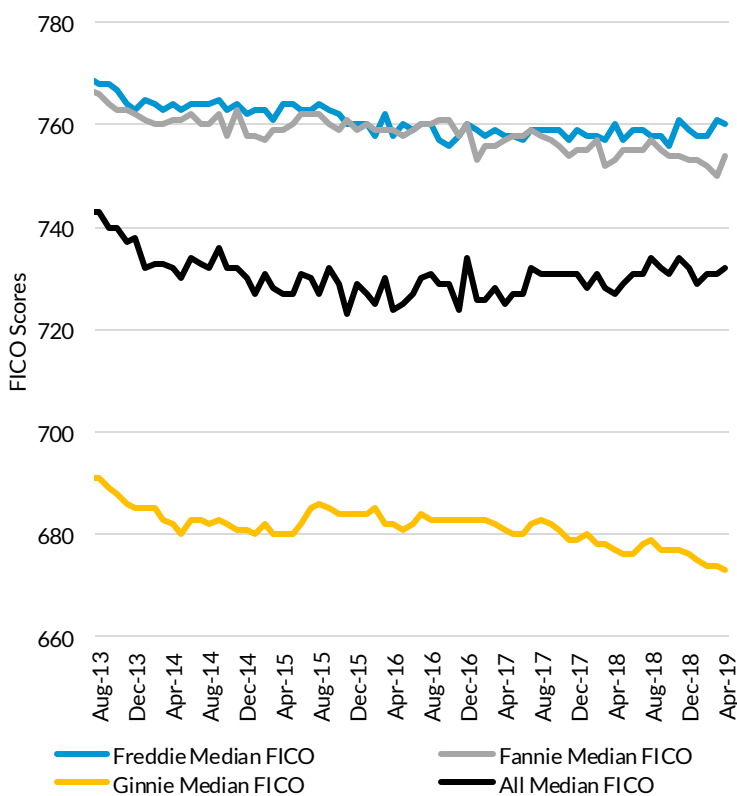
The median FICO score for all agency loans originated in April 2019 was 729, slightly higher than in March 2019. The figures show that the median FICO score for Ginnie Mae borrowers has always been considerably lower than for GSE borrowers. Since early 2019, the median FICO score for Ginnie borrowers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

FICO Scores for All Loans



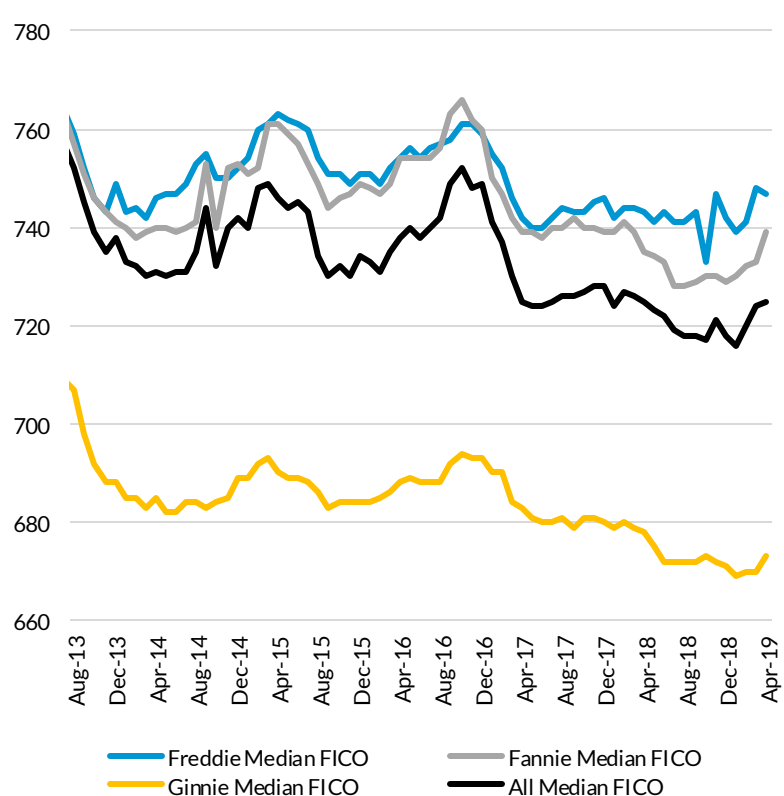
Sources: eMBS and Urban Institute. Note: Data as of April 2019.

FICO Scores for Purchase Loans



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

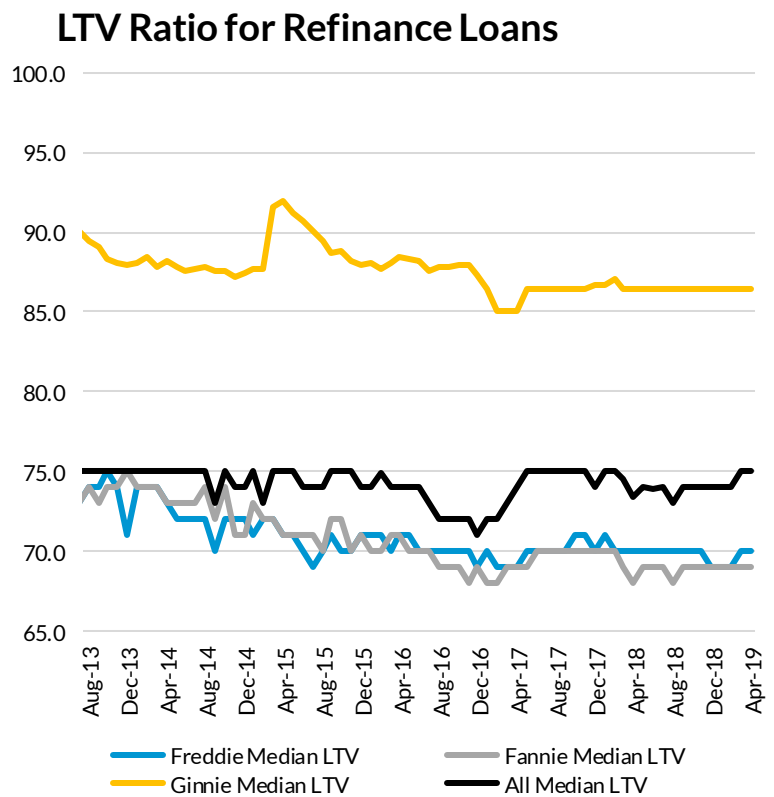
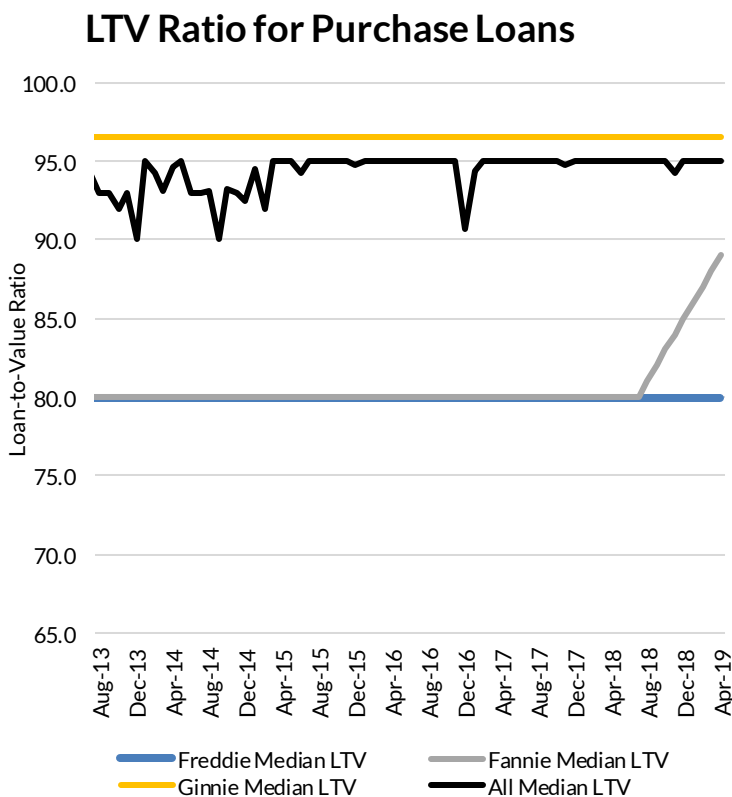
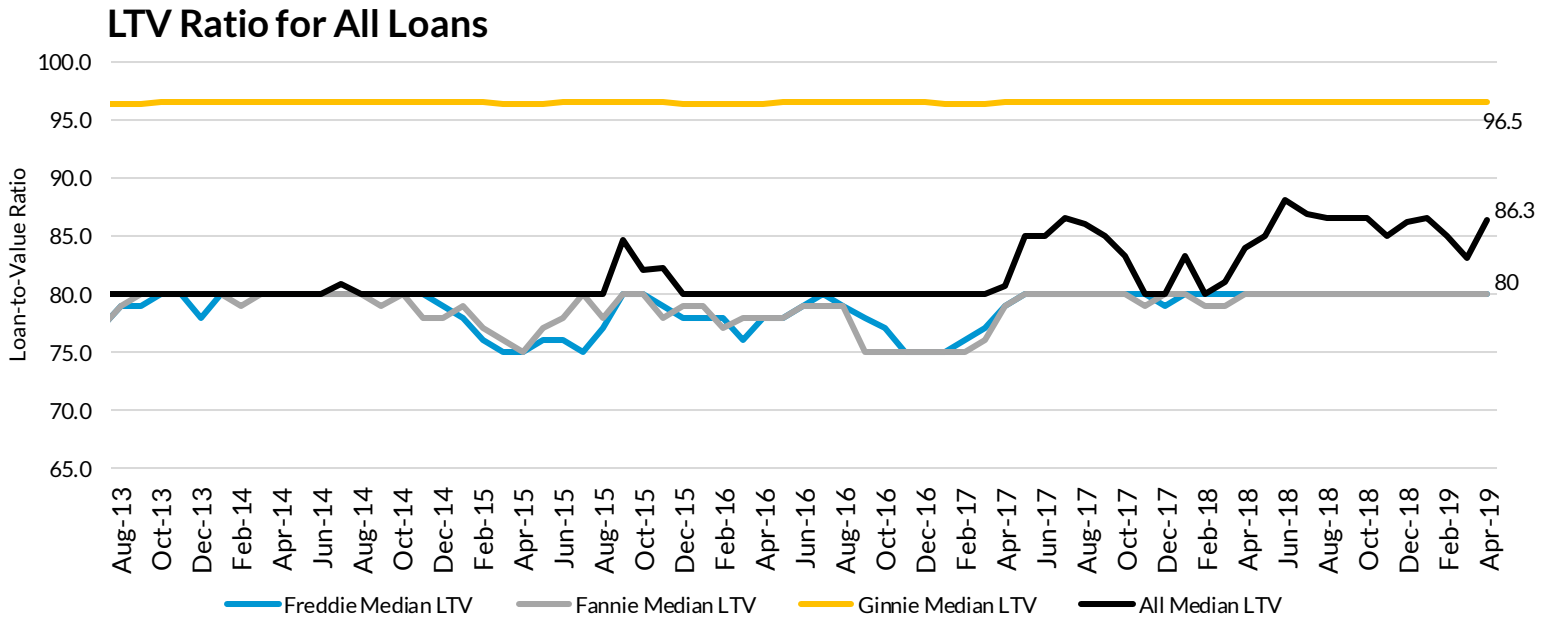
FICO Scores for Refinance Loans



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

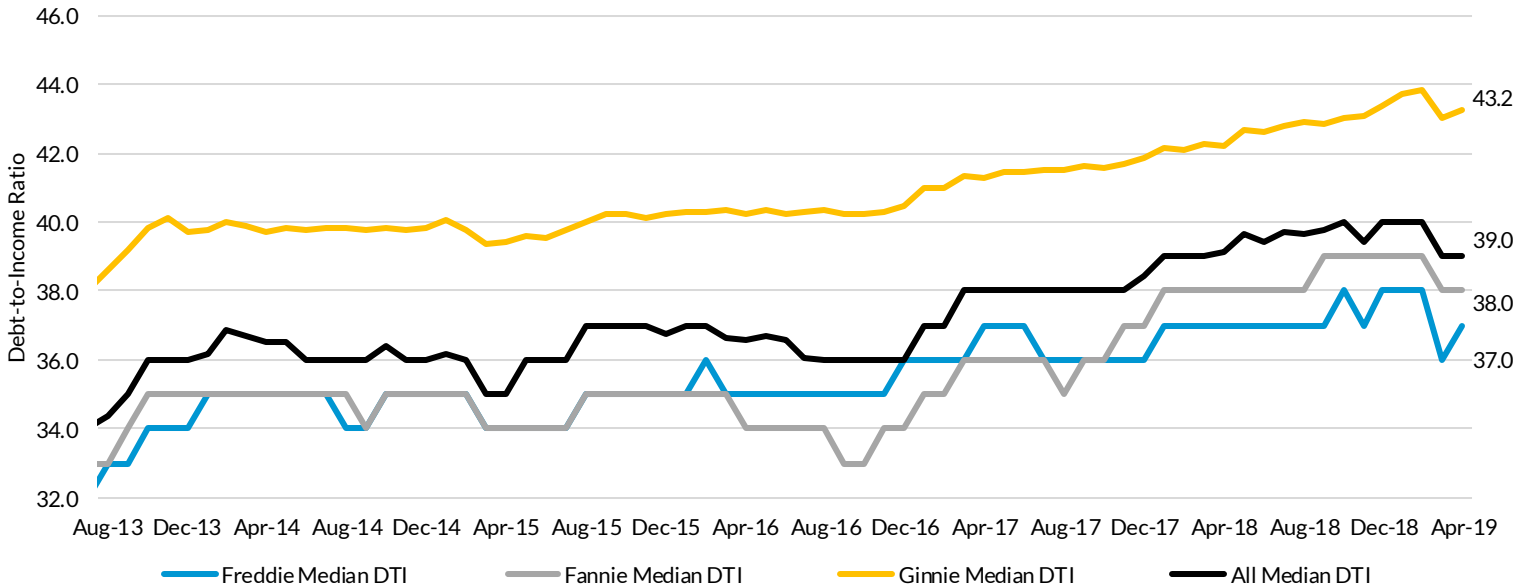


Sources: eMBS and Urban Institute. Note: In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting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

Credit Box: Historical

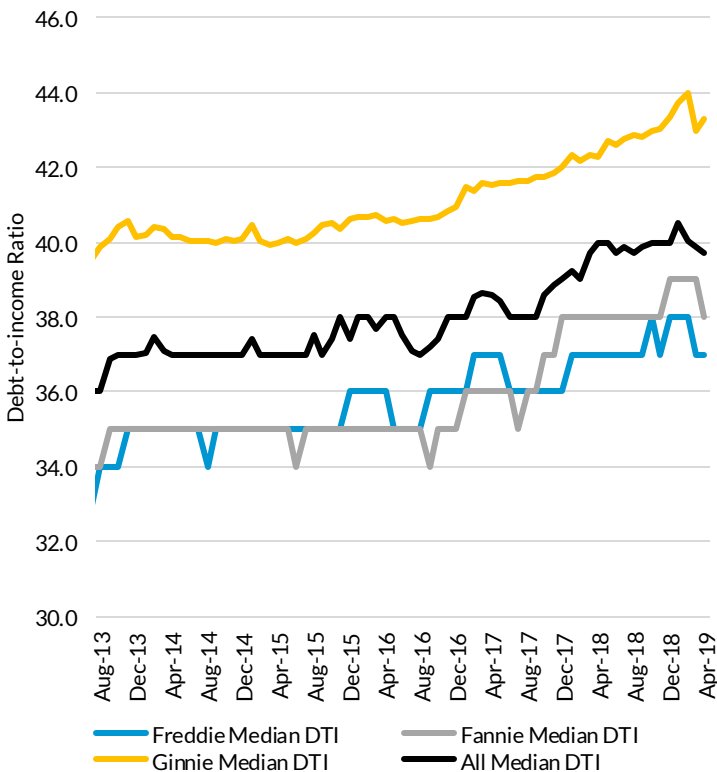
Median debt-to-income ratios on Ginnie Mae loans have historically been in the low 40s, considerably higher than for the GSEs. DTIs have increased over the past two years for both Ginnie Mae and GSE loans, with the movement more pronounced for Ginnie Mae. Increases in DTI are very typical in an environment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

DTI Ratio for All Loans



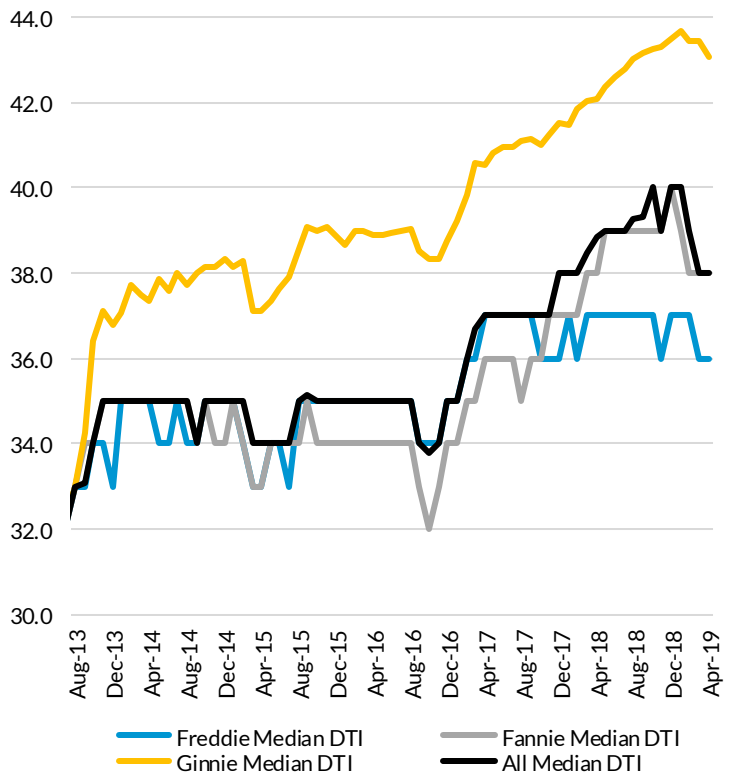
Sources: eMBS and Urban Institute. Note: Data as of April 2019.

DTI Ratio for Purchase Loans



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

DTI Ratio for Refinance Loans

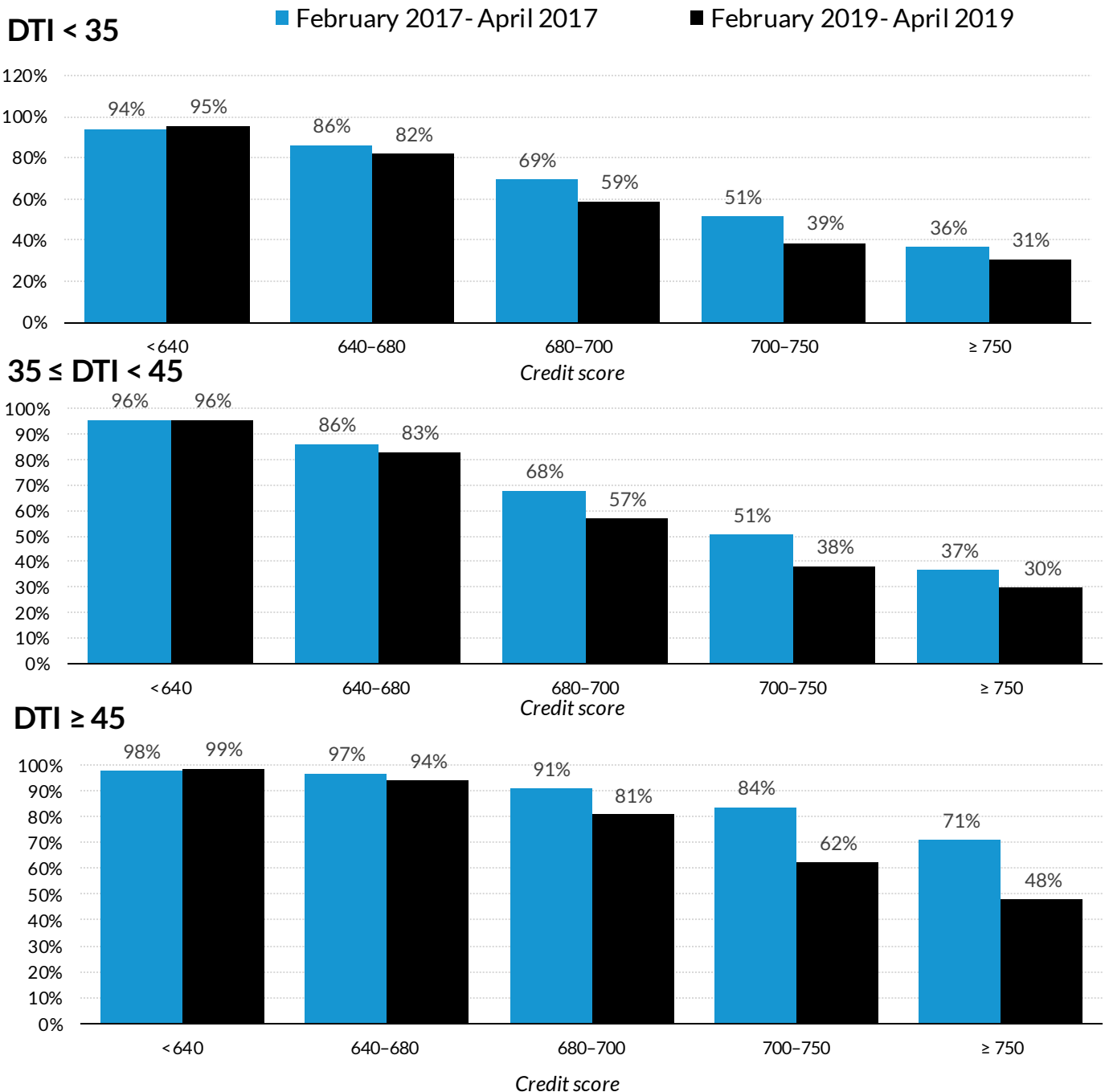


Sources: eMBS and Urban Institute. Note: Data as of April 2019.

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 February 2019–April 2019, Ginnie Mae accounted for 95 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 February 2019–April 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 81 percent; it was 57-59 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 69.6 percent of its issuances since in February 2019–April 2019 having LTVs of 95 or above, compared to 20.3 percent for the GSEs. The GSEs have increased their high-LTV lending share from 14.2 percent in February 2017–April 2017, while Ginnie Mae has seen a slight decline, down from 70.2 percent. As home prices and interest rates 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
February 2017-April 2017	70.2%	14.2%	31.5%
February 2019-April 2019	69.6%	20.3%	36.2%

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

February 2017-April 2017

DTI	FICO					All
	<640	640–680	680–700	700–750	\geq 750	
< 35	2.9%	6.0%	3.4%	8.1%	9.6%	29.9%
35–45	5.3%	10.5%	5.6%	12.3%	10.2%	43.8%
\geq 45	3.5%	8.1%	3.7%	6.7%	4.3%	26.3%
All	11.7%	24.6%	12.7%	27.1%	24.0%	100.0%

February 2019-April 2019

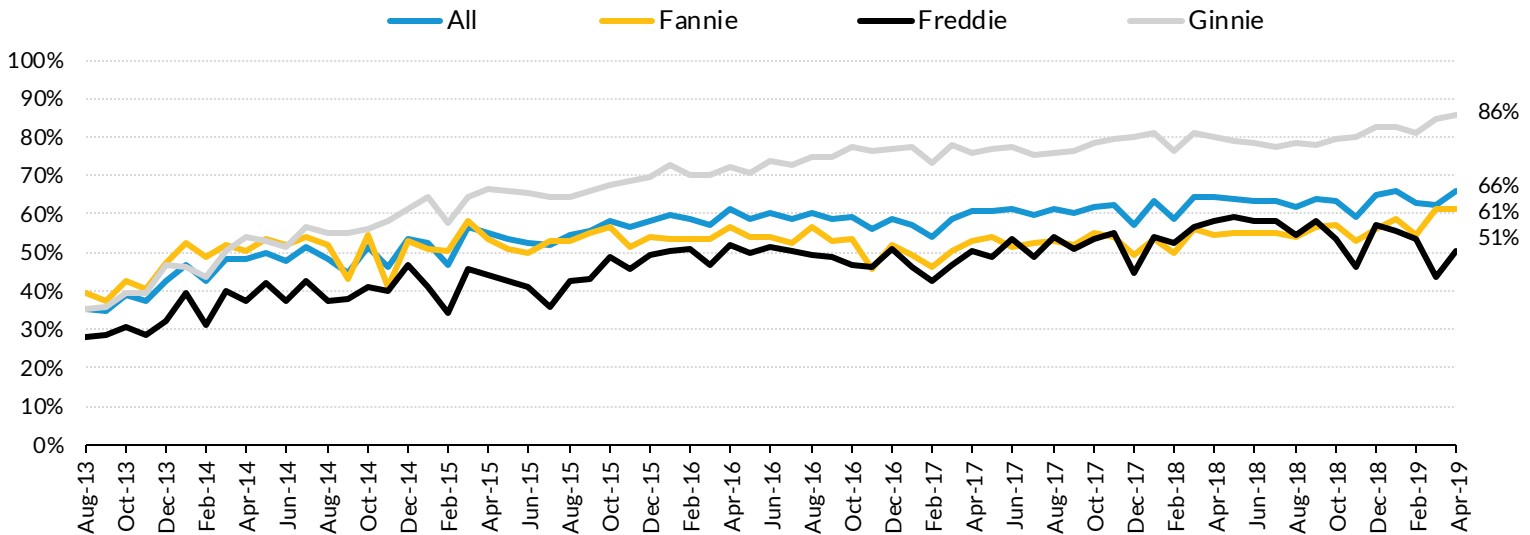
DTI	FICO					All
	<640	640–680	680–700	700–750	\geq 750	
< 35	2.8%	4.2%	2.4%	6.3%	7.8%	23.6%
35–45	5.7%	8.8%	4.7%	11.2%	9.8%	40.1%
\geq 45	5.7%	9.6%	4.6%	9.7%	6.8%	36.3%
All	14.2%	22.7%	11.6%	27.2%	24.4%	100.0%

Sources: eMBS and Urban Institute.

Nonbank Originators

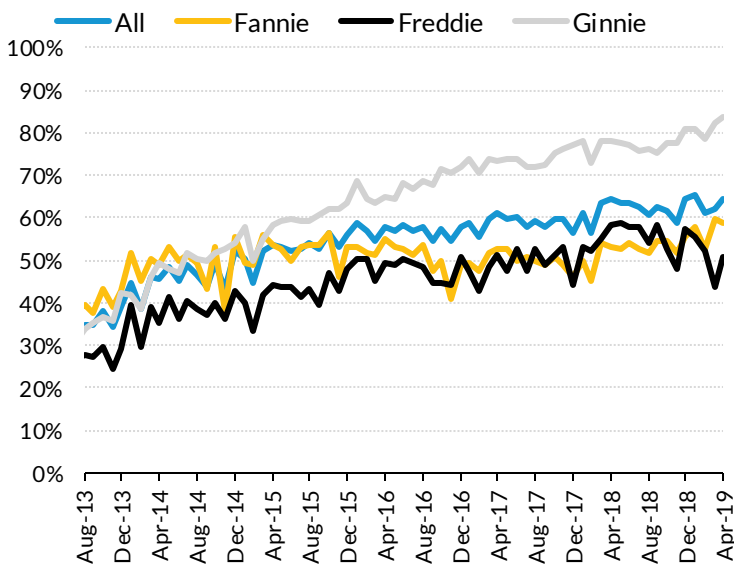
The nonbank origination share has been generally increasing since 2013. In April 2019, the Ginnie Mae nonbank originator share increased to 86 percent, the highest recorded share. This is considerably higher than the GSEs' 51-61 percent share. For Ginnie Mae, the nonbank share for refis was higher than for purchases. The differences were more modest for the GSEs.

Nonbank Origination Share: All Loans

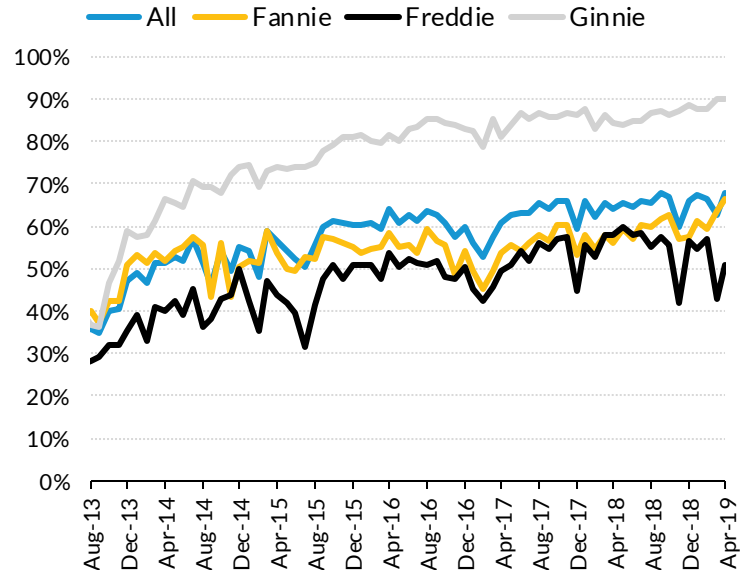


Sources: eMBS and Urban Institute
 Note: Data as of April 2019.

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

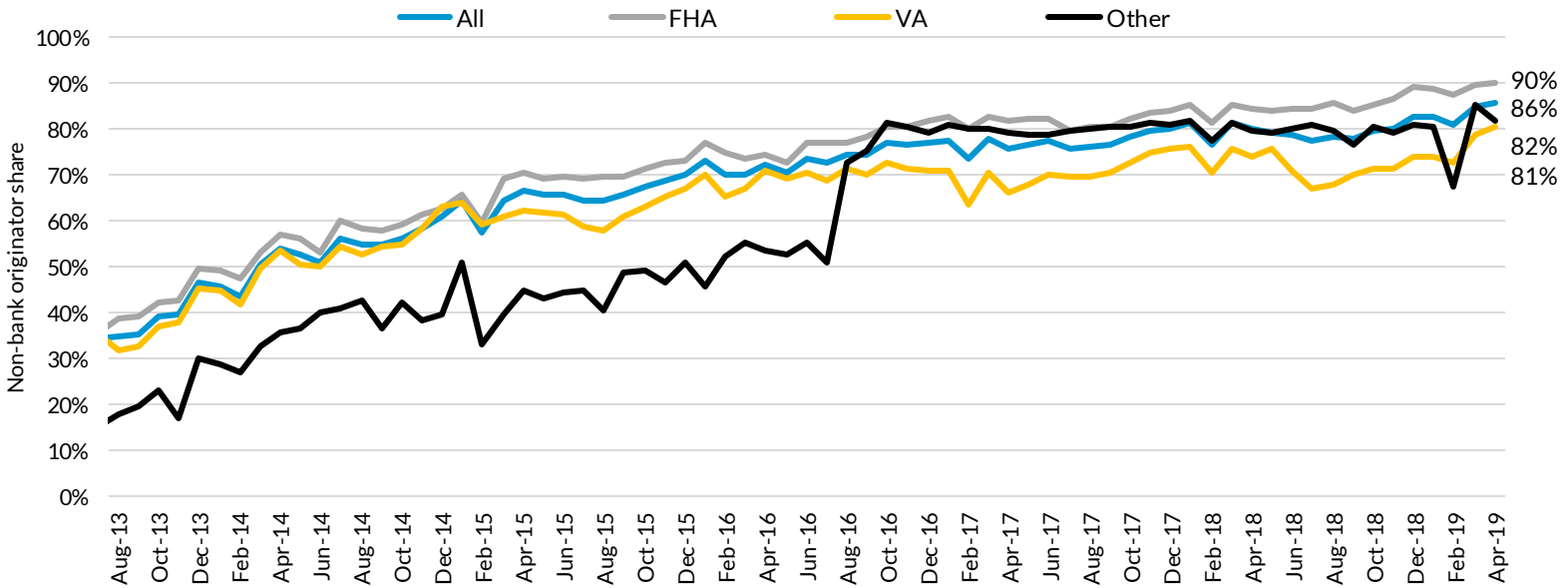


Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of April 2019.

Ginnie Mae Nonbank Originators

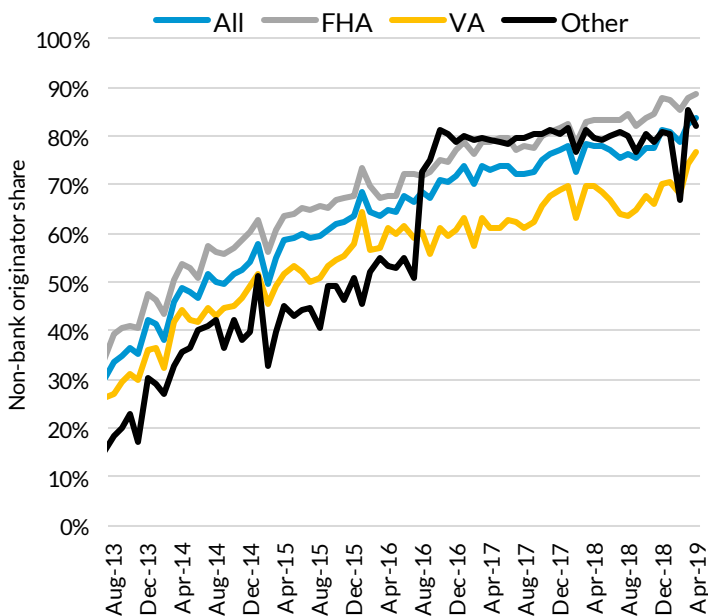
In April 2019, Ginnie Mae’s nonbank share stood at 86 percent, a historical high. The nonbank originator share for FHA remained at its historical high of 90 percent. The nonbank originator share for VA was 81 percent, and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, decreased to 82 percent.

Ginnie Mae Nonbank Originator Share: All Loans

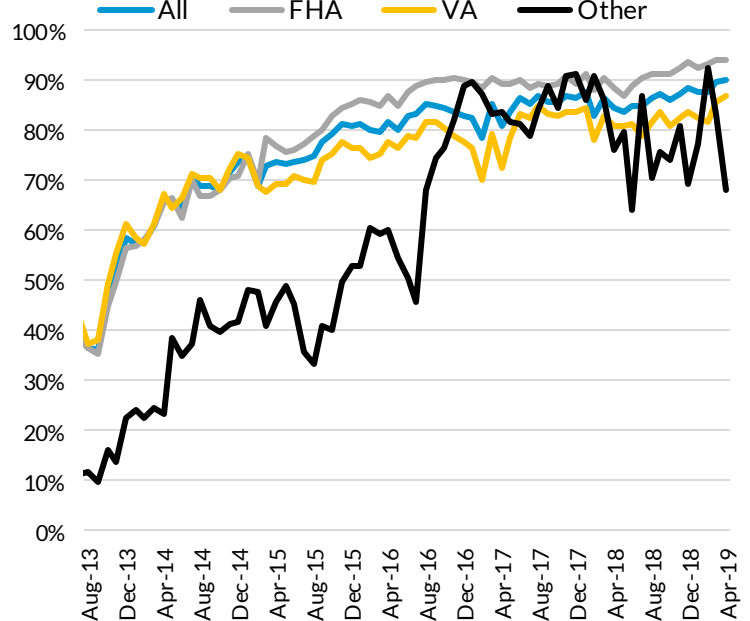


Sources: eMBS and Urban Institute
 Note: Data as of April 2019.

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

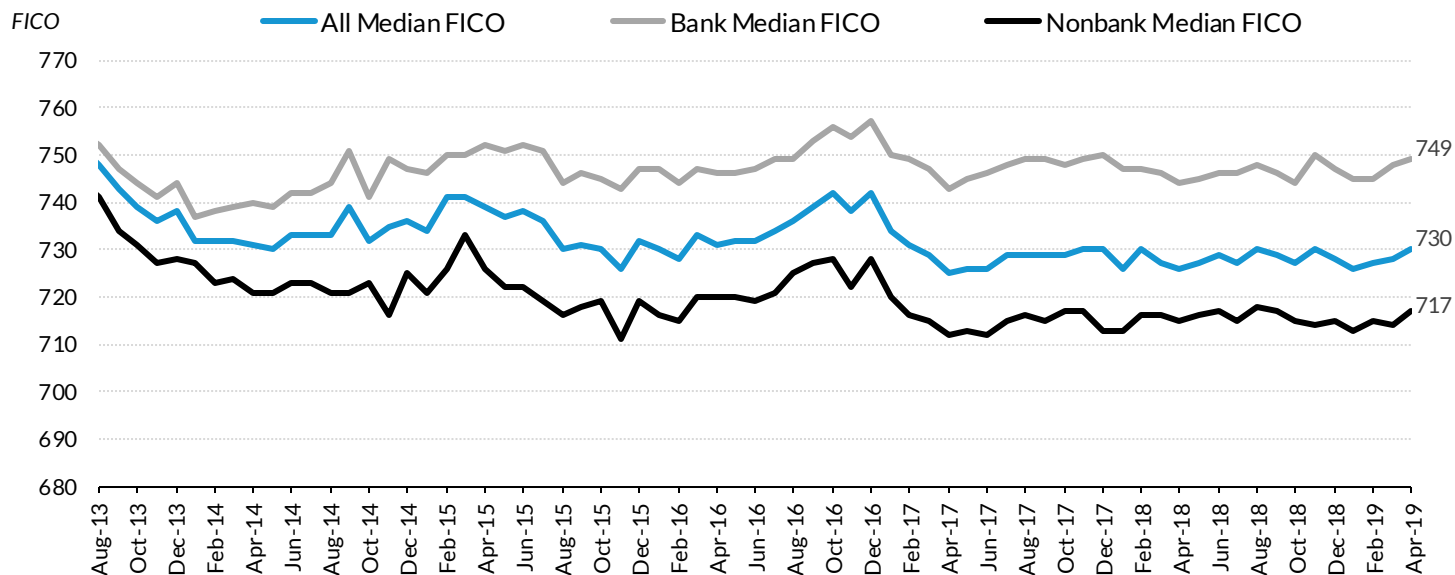


Sources: eMBS and Urban Institute. Note: “Other” refers to loans insured by HUD’s Office of Public and Indian Housing and the Department of Agriculture’s Rural Development. Data as of April 2019.

Nonbank Credit Box

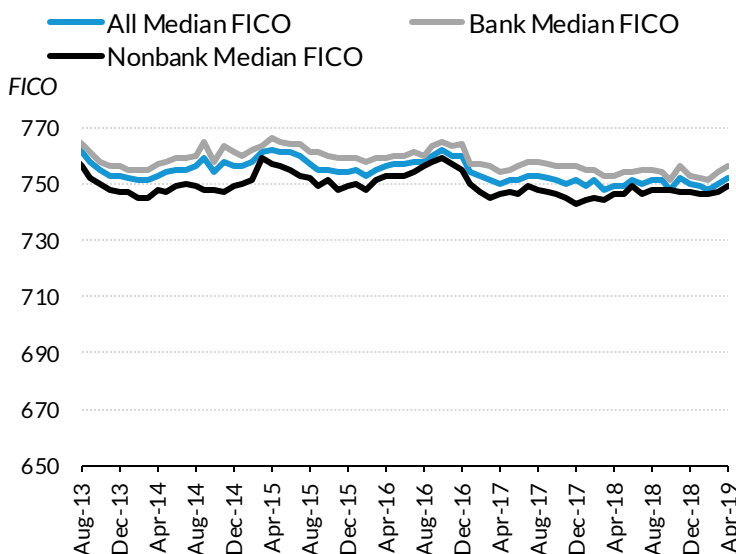
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have declined since 2014 with a further relaxation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

Agency FICO: Bank vs. Nonbank



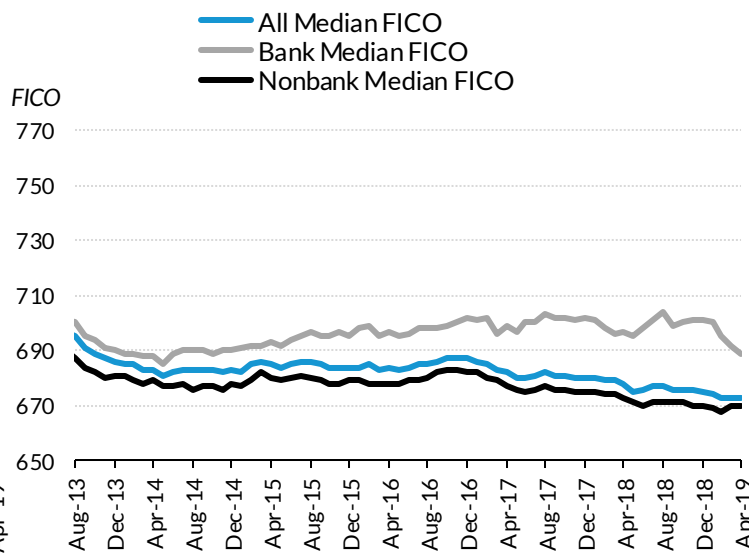
Sources: eMBS and Urban Institute. Note: Data as of April 2019.

GSE FICO: Bank vs. Nonbank



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

Ginnie Mae FICO: Bank vs. Nonbank

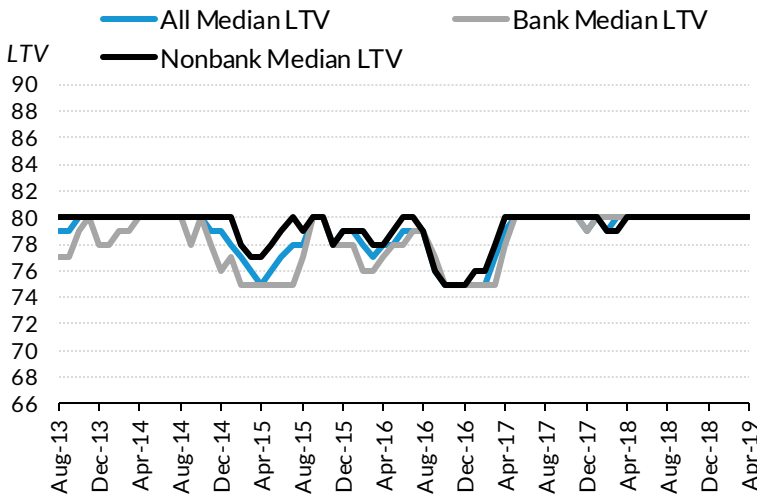


Sources: eMBS and Urban Institute. Note: Data as of April 2019.

Nonbank Credit Box

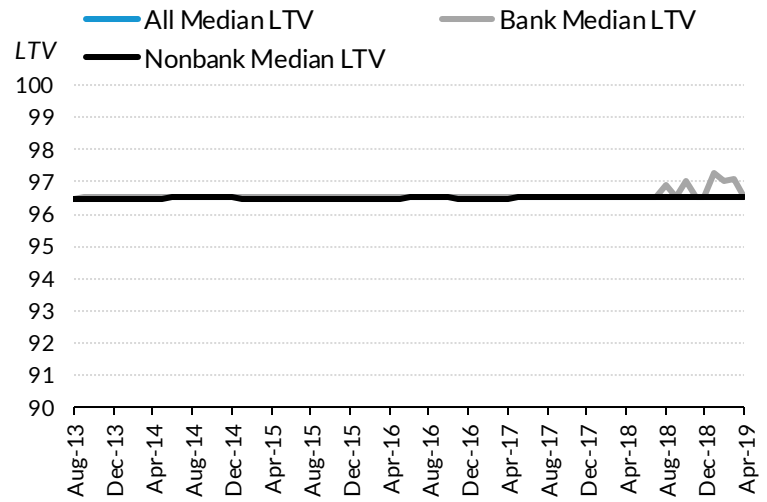
The median LTV ratios for loans originated by nonbanks are similar to that of their bank counterparts, while the median DTIs for nonbank loans are higher, indicating that nonbanks are more accommodating in this dimension as well as in the FICO dimension. Note that since early 2017, there has been a measurable increase in DTIs. This is true for both bank and non-bank originations. Rising DTIs are to be expected amid rising rates and strong house price appreciation. DTIs trended down in early 2019 as rates fell.

GSE LTV: Bank vs. Nonbank



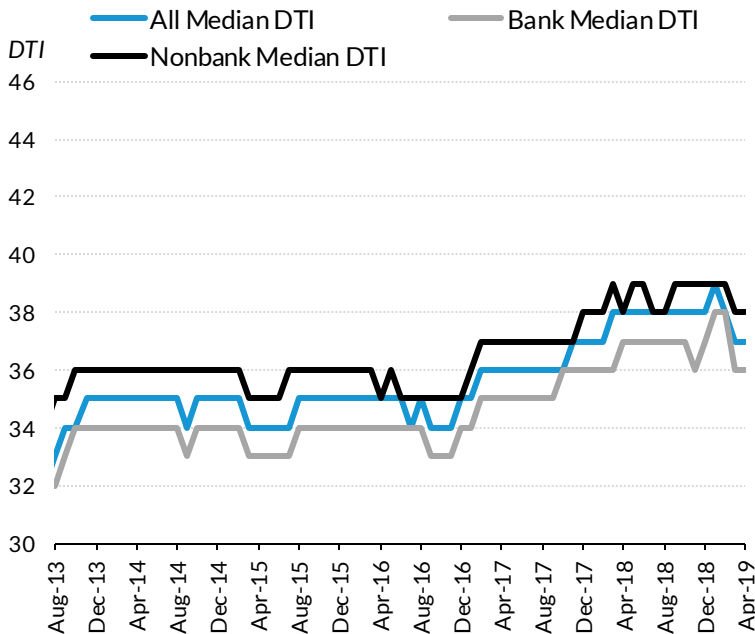
Sources: eMBS and Urban Institute. Note: Data as of April 2019.

Ginnie Mae LTV: Bank vs. Nonbank



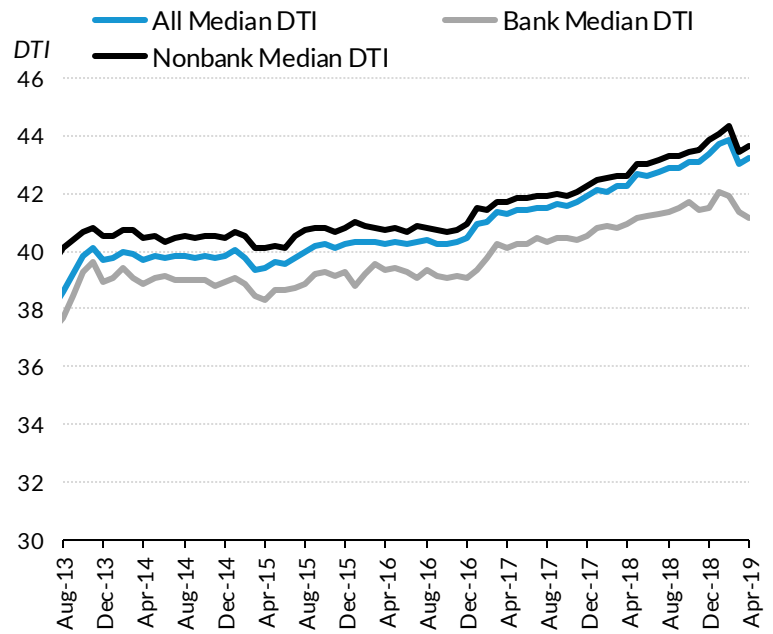
Sources: eMBS and Urban Institute. Note: Data as of April 2019.

GSE DTI: Bank vs. Nonbank



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

Ginnie Mae DTI: Bank vs. Nonbank

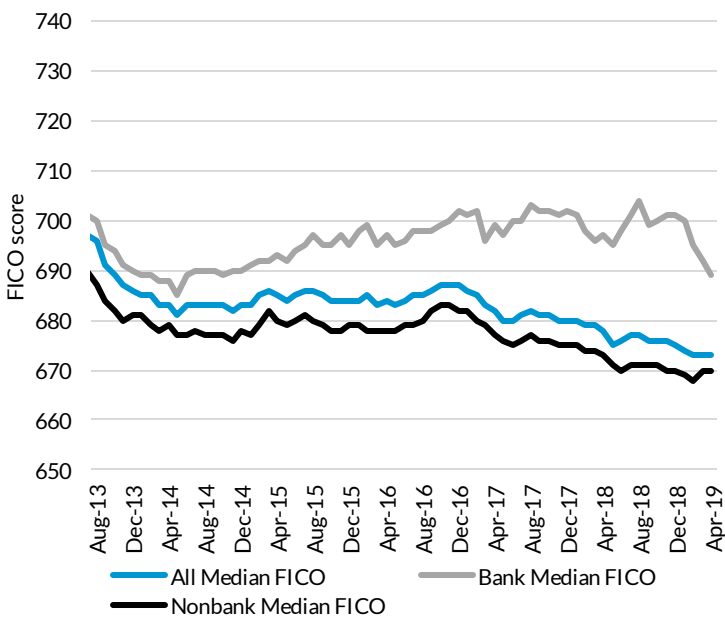


Sources: eMBS and Urban Institute. Note: Data as of April 2019.

Ginnie Mae Nonbank Originators: Credit Box

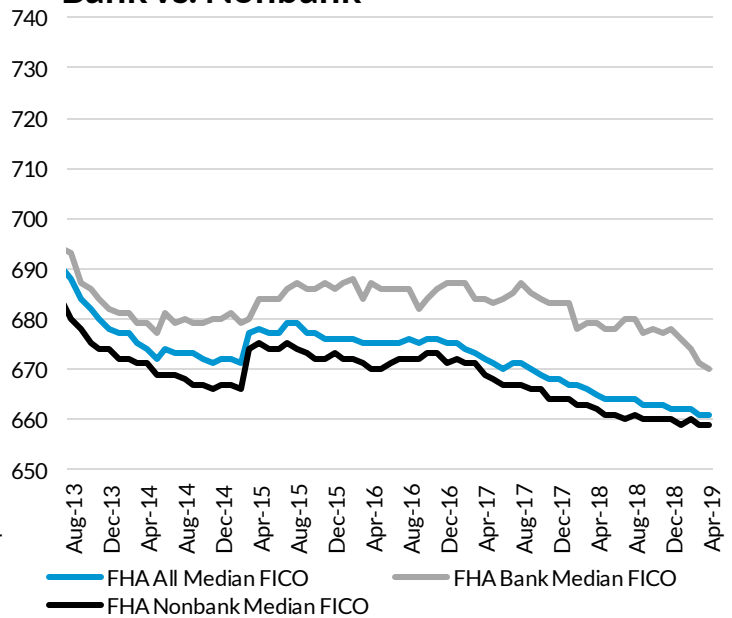
The FICO scores for Ginnie Mae nonbank originators were flat, while FICO scores for bank originations continued to fall in April 2019. The spread in the FICO scores between banks and nonbanks has increased since 2013, but narrowed in 2019 as bank FICOs have fallen. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



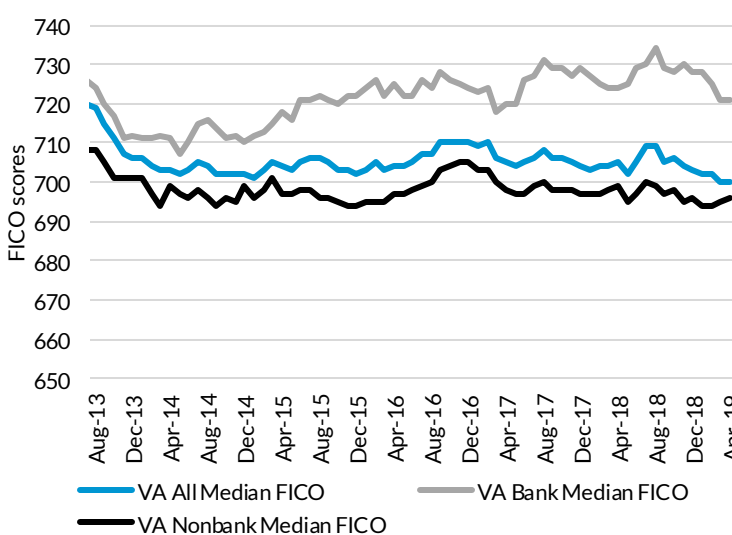
Sources: eMBS and Urban Institute Note: Data as of April 2019.

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



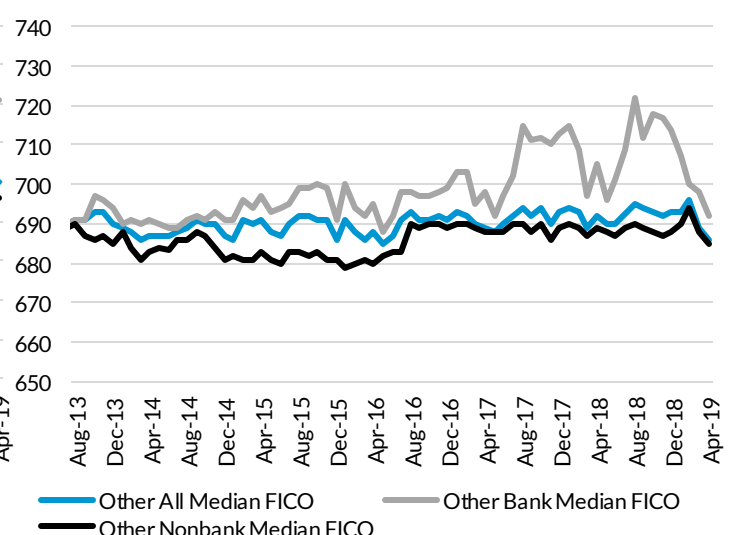
Sources: eMBS and Urban Institute Note: Data as of April 2019.

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



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

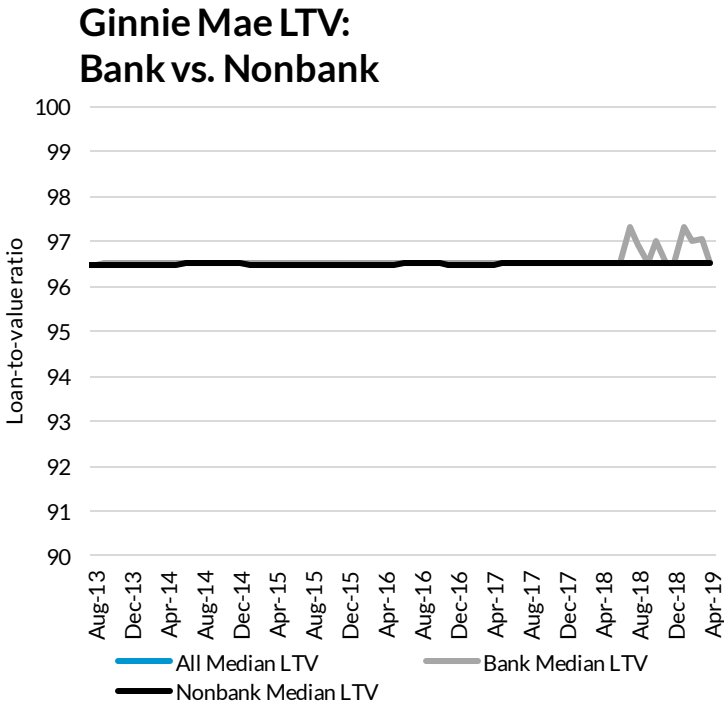
Ginnie Mae Other FICO Scores: Bank vs. Nonbank



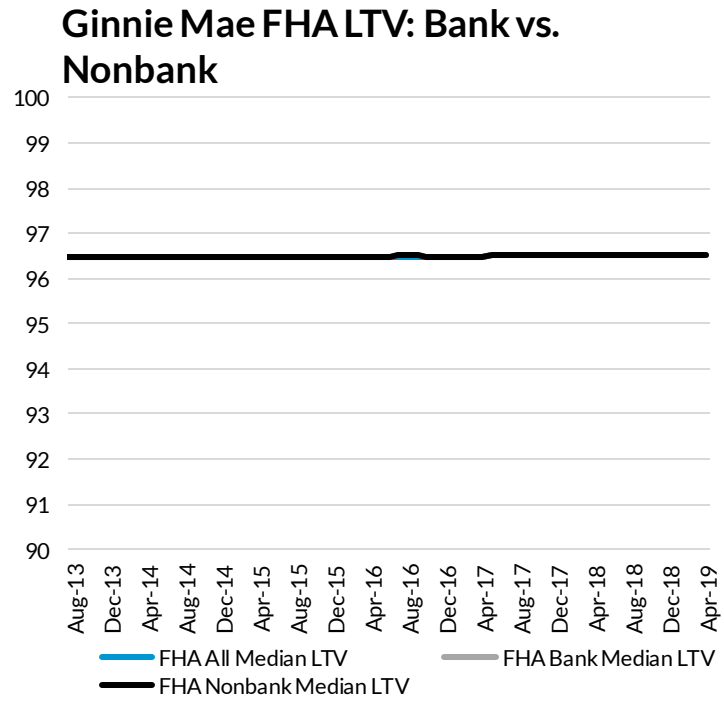
Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of April 2019.

Ginnie Mae Nonbank Originators: Credit Box

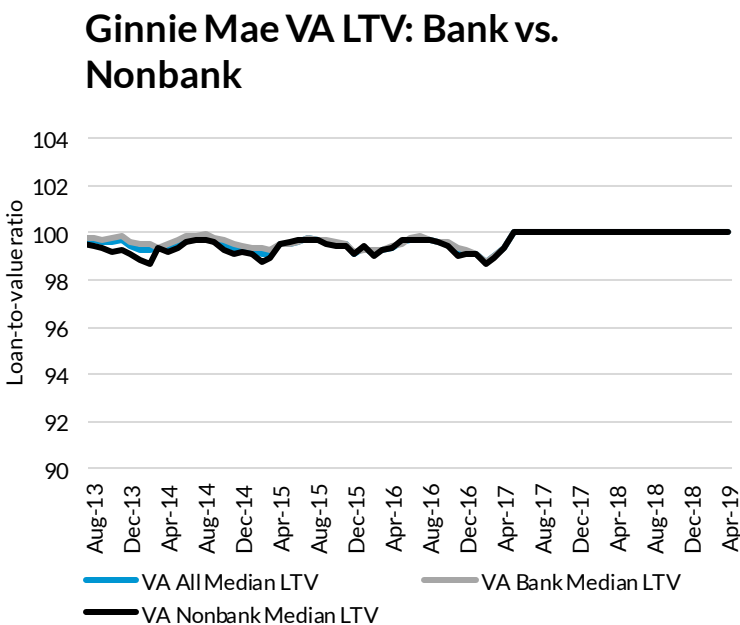
An analysis of the loans backing Ginnie Mae origination indicates that there are virtually no differences in median LTV ratios between bank originated loans and nonbank originated loans.



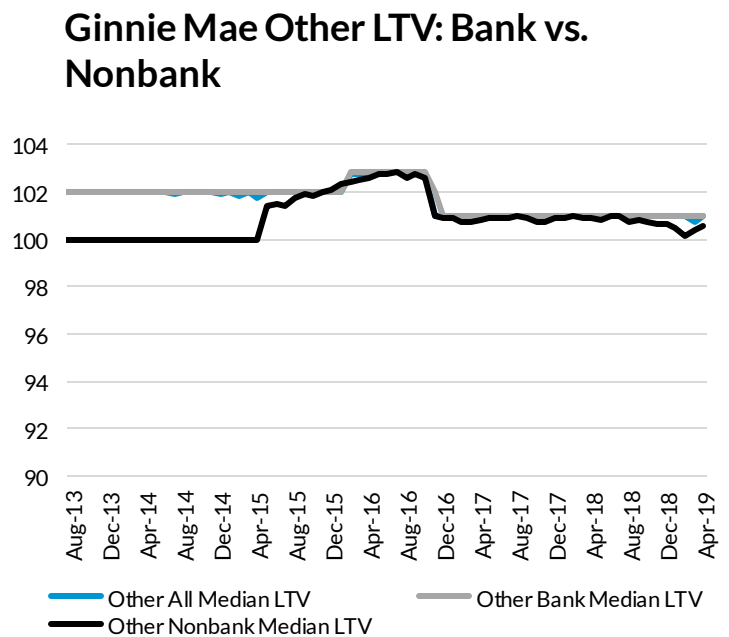
Sources: eMBS and Urban Institute Note: Data as of April 2019.



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



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

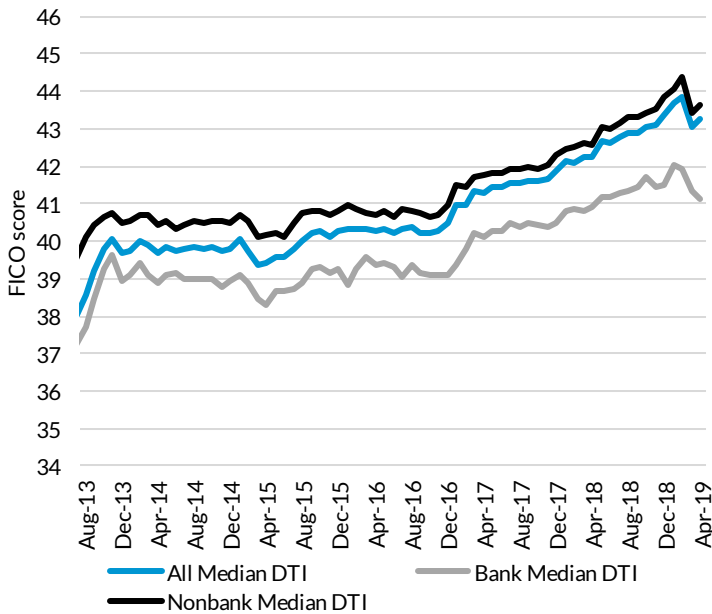


Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of April 2019.

Ginnie Mae Nonbank Originators: Credit Box

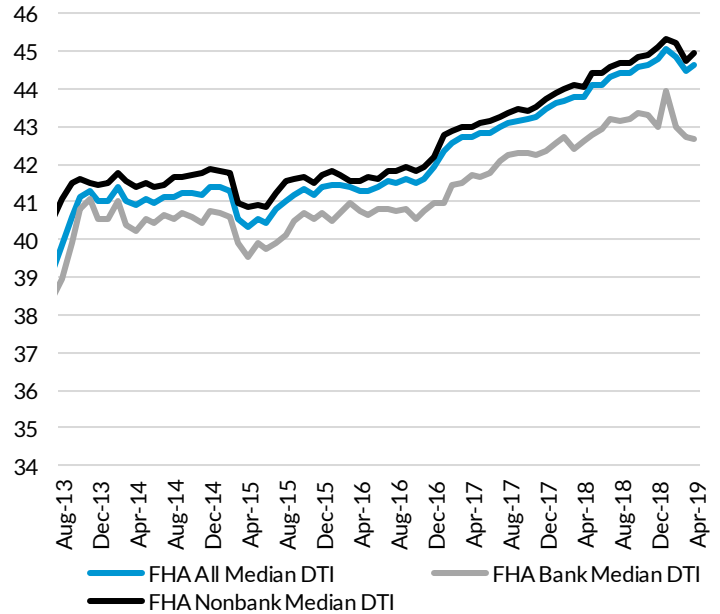
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA loans experienced notable increases since early 2017 for both bank and nonbank originations, while the Other origination DTIs stayed relatively flat. Rising DTIs are expected in a rising rate environment. Ginnie Mae DTIs trended down in March 2019 amid lower rates, but picked back up slightly in April.

Ginnie Mae DTI: Bank vs. Nonbank



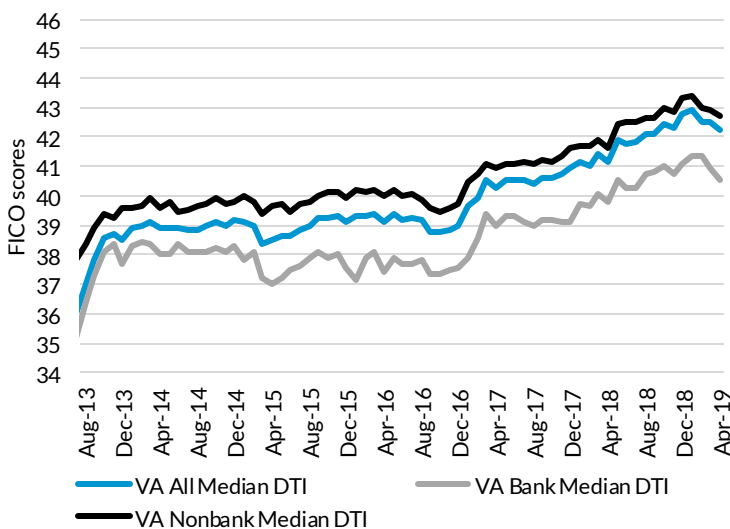
Sources: eMBS and Urban Institute Note: Data as of April 2019.

Ginnie Mae FHA DTI: Bank vs. Nonbank



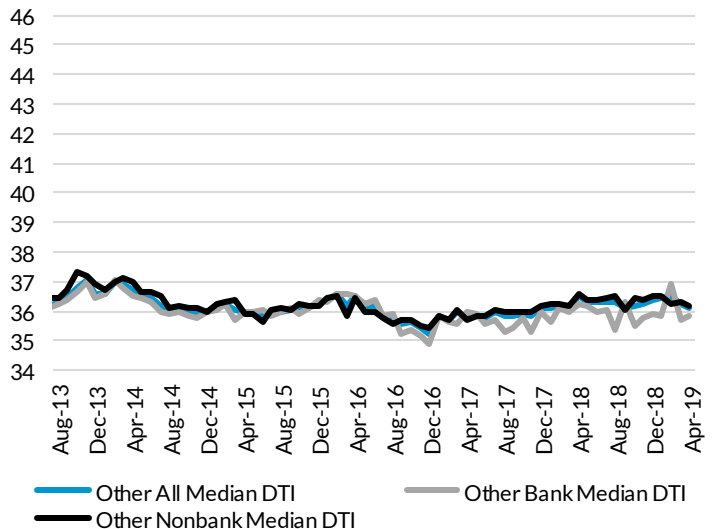
Sources: eMBS and Urban Institute Note: Data as of April 2019.

Ginnie Mae VA DTI: Bank vs. Nonbank



Sources: eMBS and Urban Institute Note: Data as of April 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 April 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 April 2019, over half (51.3 percent) of the Ginnie Mae MSR s are owned by the top six firms. The top 30 firms collectively own 84.6 percent. Eighteen of these 30 are non-depositories, the remaining 12 are depository institutions.

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

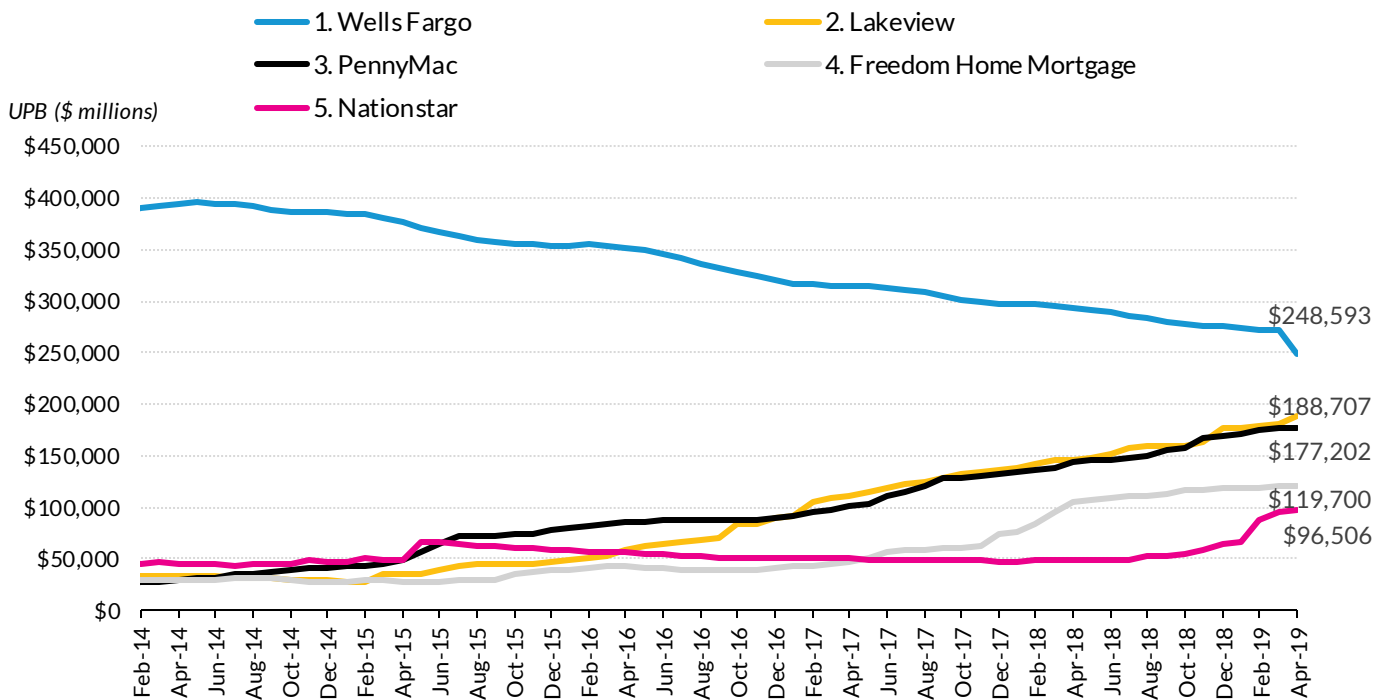
Rank	MSR Holder	UPB (\$ millions)	Share	Cumulative Share
1	Wells Fargo	\$248,593	14.2%	14.2%
2	Lakeview	\$188,707	10.8%	25.0%
3	PennyMac	\$177,202	10.1%	35.2%
4	Freedom Home Mortgage	\$119,700	6.8%	42.0%
5	Nationstar	\$96,506	5.5%	47.5%
6	Quicken Loans	\$66,498	3.8%	51.3%
7	US Bank	\$60,954	3.5%	54.8%
8	JPMorgan Chase	\$55,088	3.2%	58.0%
9	Caliber Home Loans	\$47,388	2.7%	60.7%
10	Carrington Home Mortgage	\$43,705	2.5%	63.2%
11	USAA Federal Savings Bank	\$37,924	2.2%	65.4%
12	Newrez	\$28,127	1.6%	67.0%
13	Navy Federal Credit Union	\$25,118	1.4%	68.4%
14	Midfirst Bank	\$23,545	1.3%	69.7%
15	Amerihome Mortgage	\$22,589	1.3%	71.0%
16	The Money Source	\$22,010	1.3%	72.3%
17	M&T Bank	\$21,260	1.2%	73.5%
18	Suntrust	\$18,916	1.1%	74.6%
19	Ditech Financial	\$17,933	1.0%	75.6%
20	Home Point Financial	\$17,331	1.0%	76.6%
21	Branch Banking and Trust	\$16,276	0.9%	77.5%
22	Guild Mortgage	\$16,095	0.9%	78.5%
23	Roundpoint	\$15,993	0.9%	79.4%
24	Pingora	\$14,641	0.8%	80.2%
25	Loan Depot	\$14,375	0.8%	81.0%
26	Flagstar Bank	\$14,093	0.8%	81.8%
27	Ocwen	\$13,153	0.8%	82.6%
28	Bank of America	\$12,222	0.7%	83.3%
29	Citizens Bank	\$12,138	0.7%	84.0%
30	PNC	\$10,987	0.6%	84.6%

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

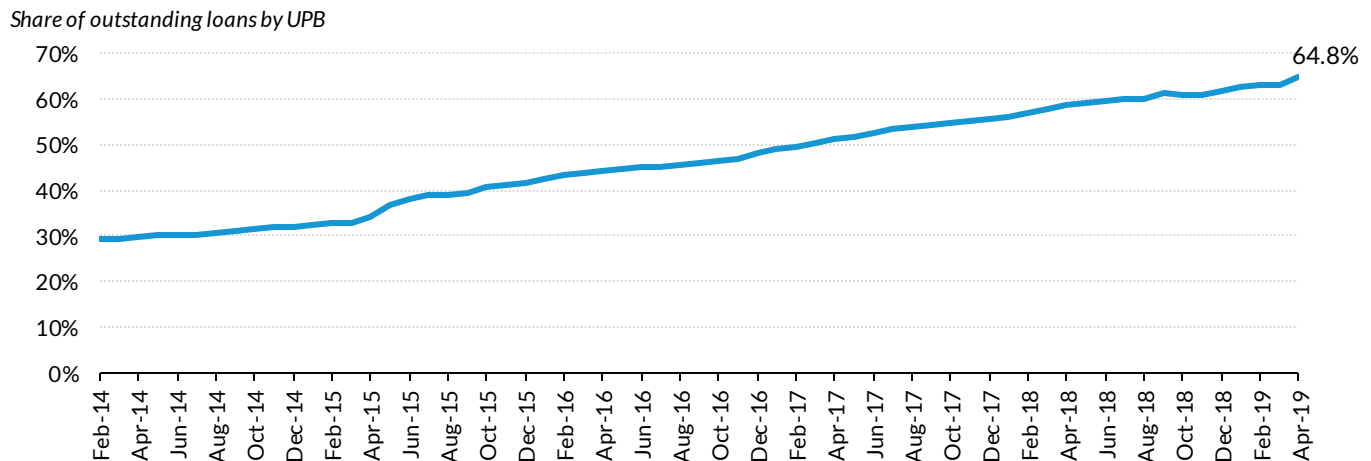
Holders of Ginnie Mae MSR

The composition of the largest owners of Ginnie Mae MSR has evolved quite a bit over time. In December 2013, Wells Fargo and JP Morgan Chase were the two largest owners of Ginnie Mae MSRs, holding \$375 billion and \$139 billion in servicing UPB respectively. Although Wells Fargo is still the largest player, its portfolio has shrunk to \$249 billion. Lakeview, PennyMac, Freedom Home Mortgage, and Nationstar (all nonbanks) make up the remainder of the top five largest holders of MSRs, owning \$189 billion, \$177 billion, \$119 billion, and \$97 billion respectively as of April 2019. JPMorgan Chase is no longer in the top five. As of April 2019, nonbanks collectively owned servicing rights for 64.8 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



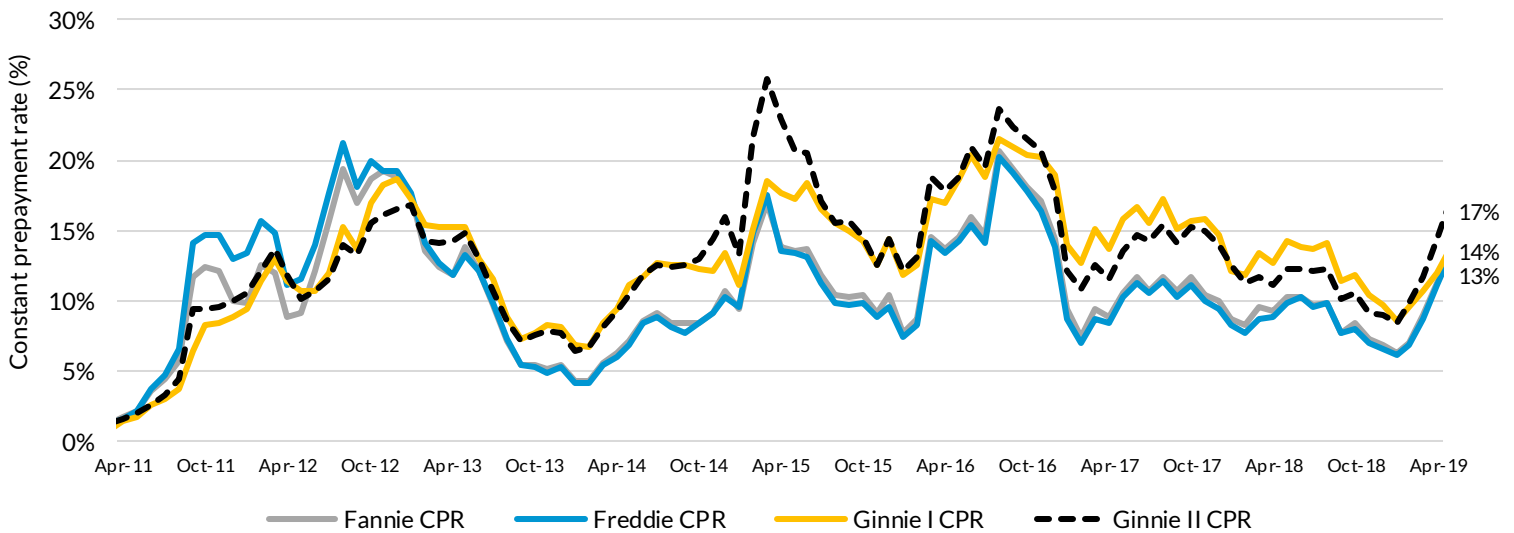
Sources: eMBS and Urban Institute. Note: Data as of April 2019.

Prepayments

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

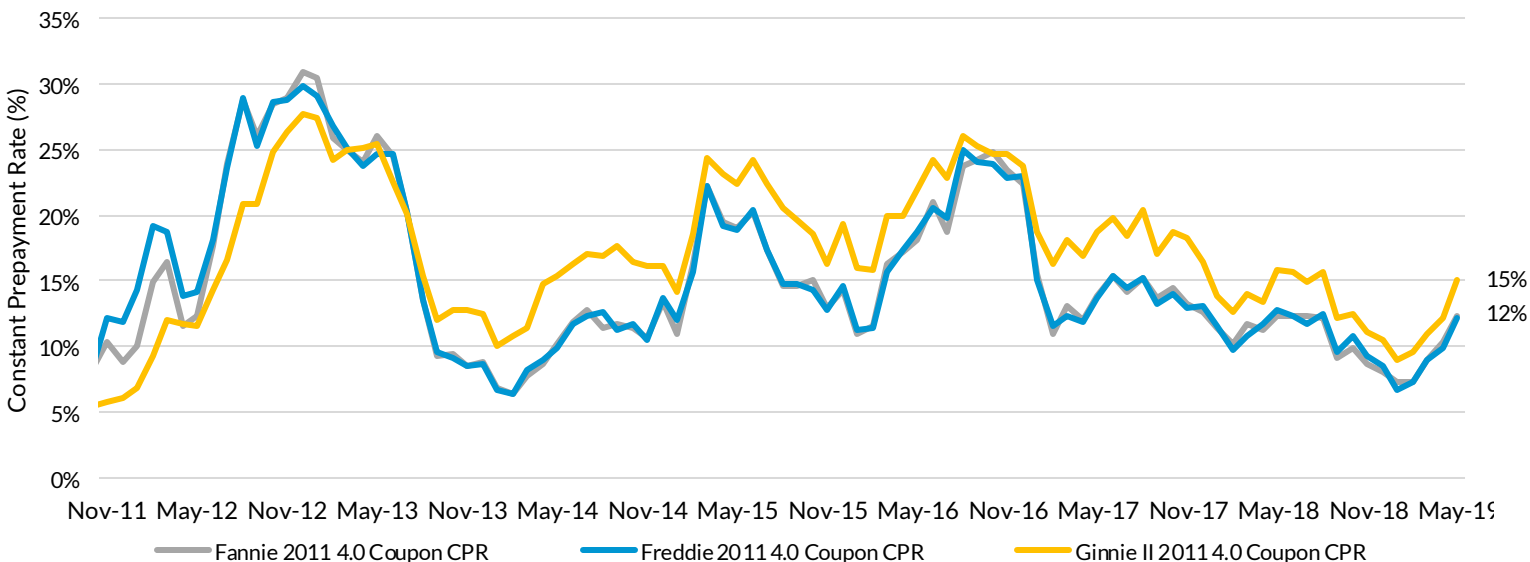
With the increase in interest rates since November 2016, the prepayment speeds for all agencies have slowed down considerably. Over the past 18 months, with the bulk of the mortgage universe finding it non-economical to refinance, the small month to month variation in speeds reflects seasonality, changes in day count and changes in rates. With the drop in rates beginning in late 2018, we have seen some pick up in prepayment activity in recent months; we expect more as borrowers realize and act on the opportunity to refinance at attractive rates.

Aggregate Prepayments



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

2011 Issued 4.0 Coupon CPR



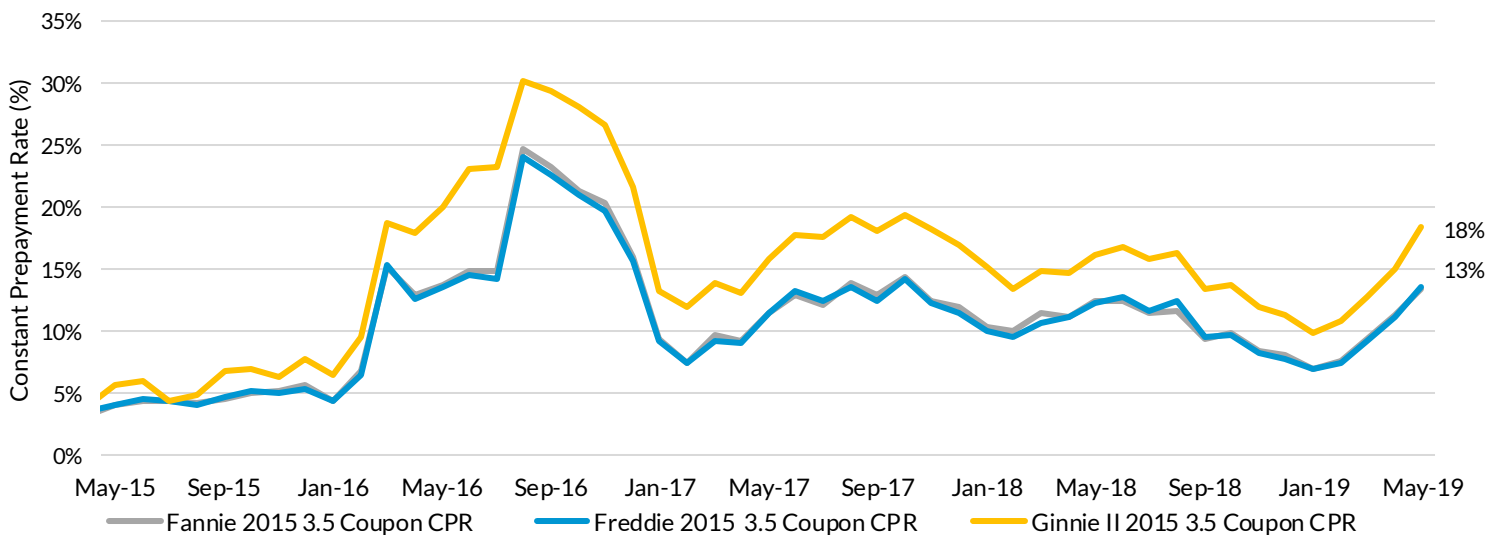
Sources: Credit Suisse and Urban Institute. Note: Data as of May 2019.

Prepayments

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

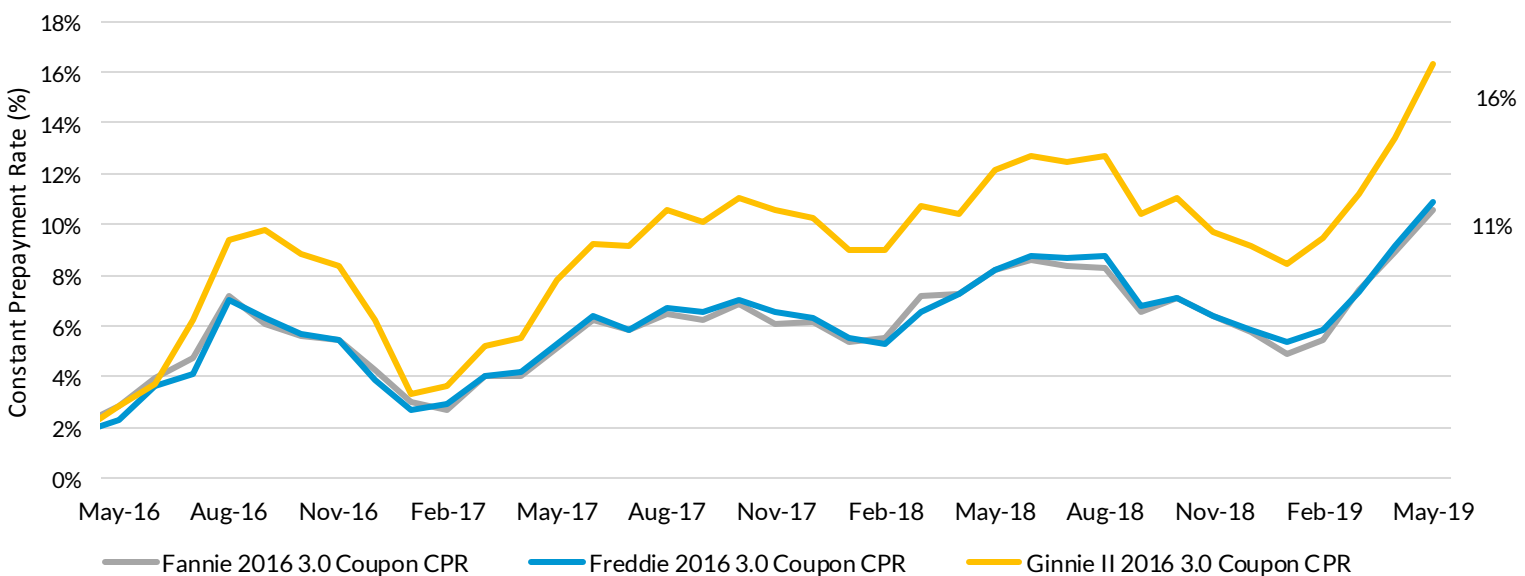
After a sharp mortgage rate increase in November 2016, the prepayment speeds of Ginnie Mae and conventional loans both fell dramatically. Over the past year, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflect seasonality,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

2015 Issued 3.5 Coupon CPR



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

2016 Issued 3.0 Coupon CPR

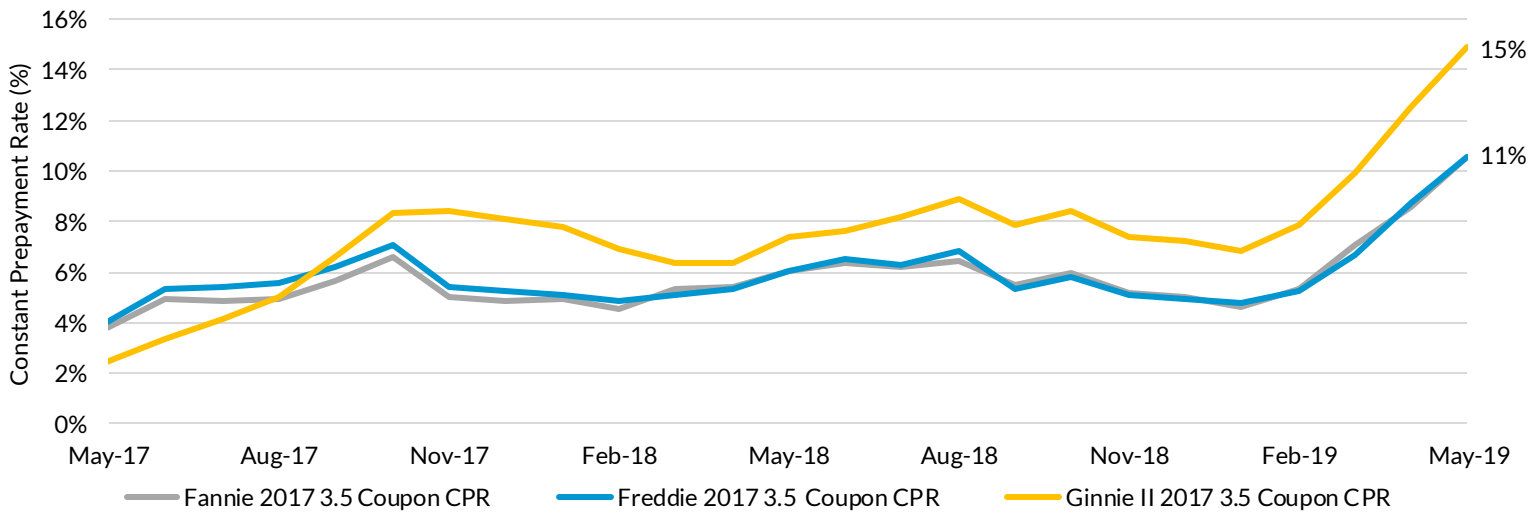


Sources: Credit Suisse and Urban Institute. Note: Data as of May 2019.

Prepayments

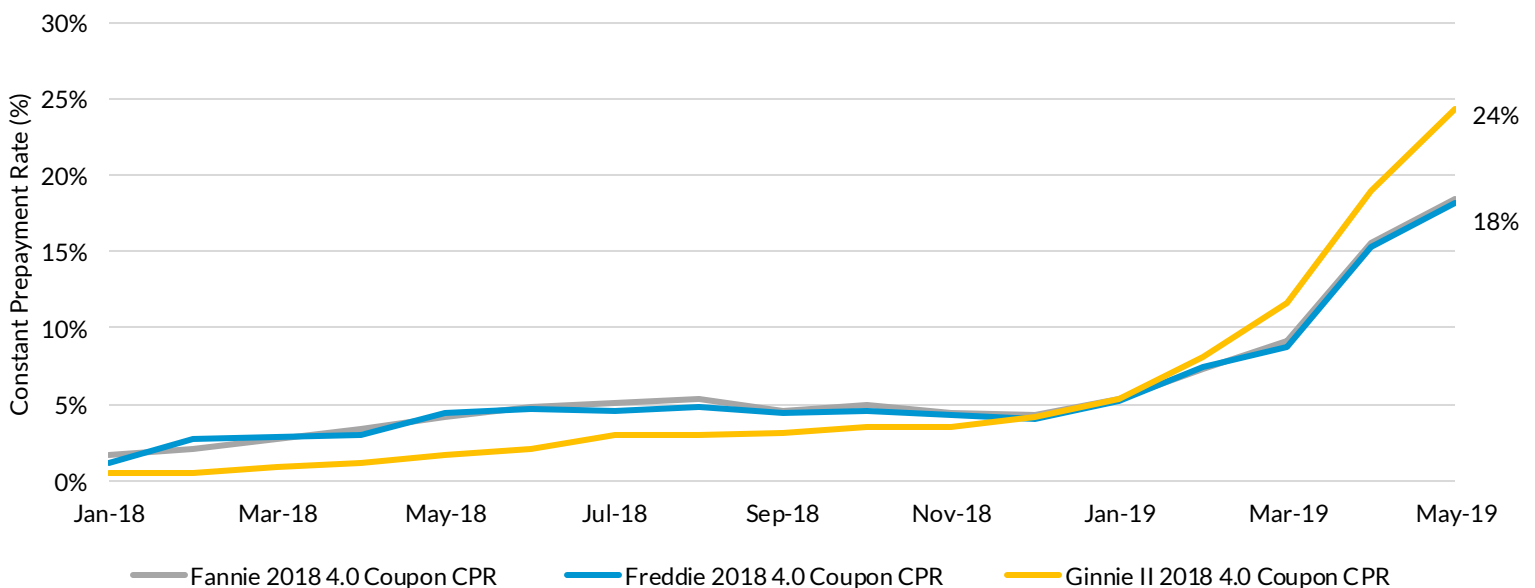
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayments in the early months. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of those vintage years. Despite slower seasoning, 2017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

2017 Issued 3.5 Coupon CPR



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

2018 Issued 4.0 Coupon CPR

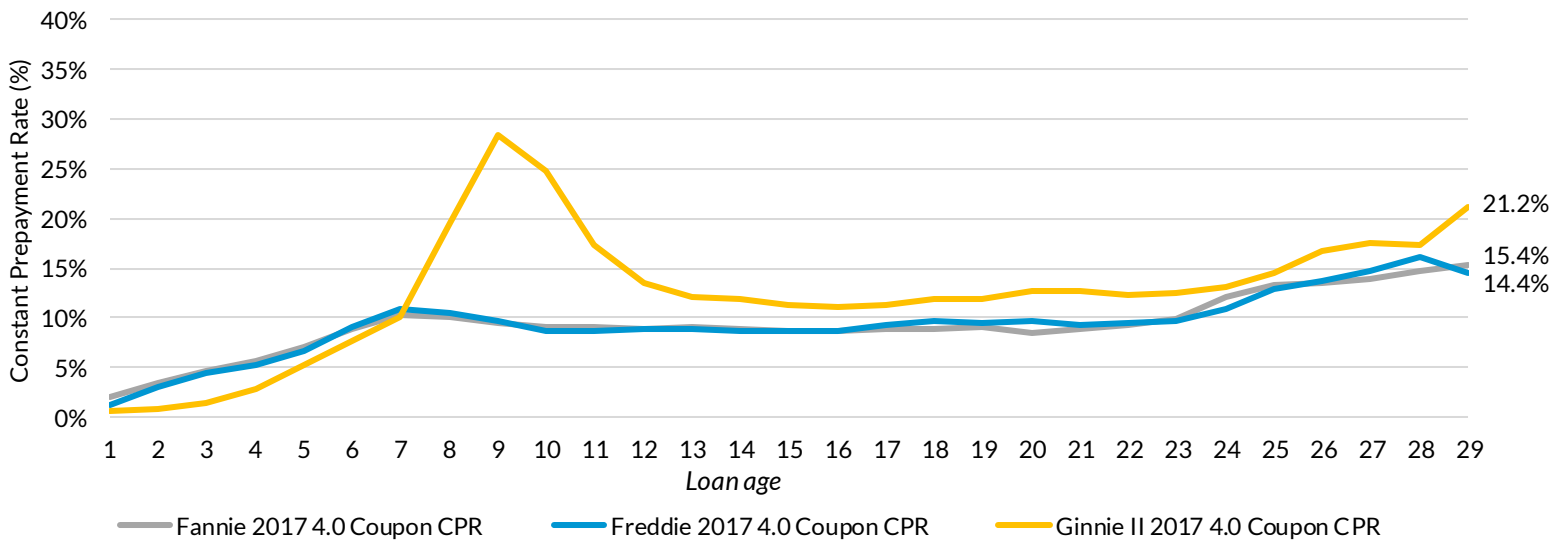


Sources: Credit Suisse and Urban Institute. Note: Data as of May 2019.

Prepayments

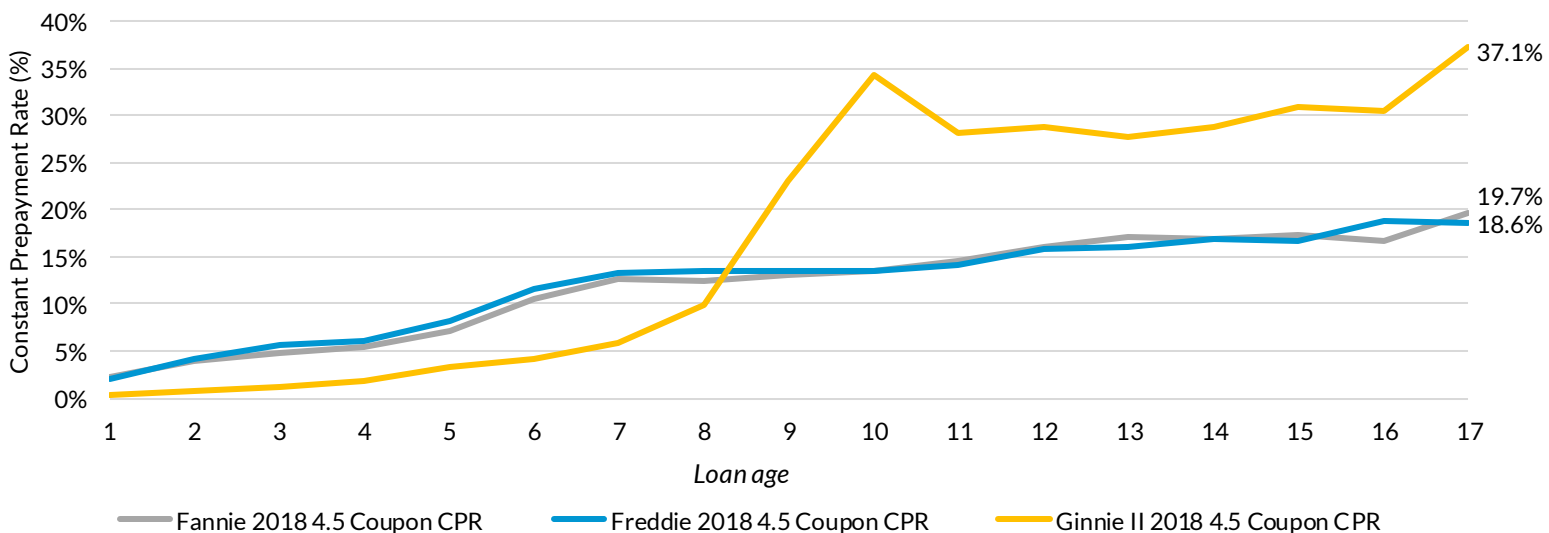
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined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

2017 Issued 4.0 Coupon CPR, by Loan Age



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

2018 Issued 4.5 Coupon CPR, by Loan Age



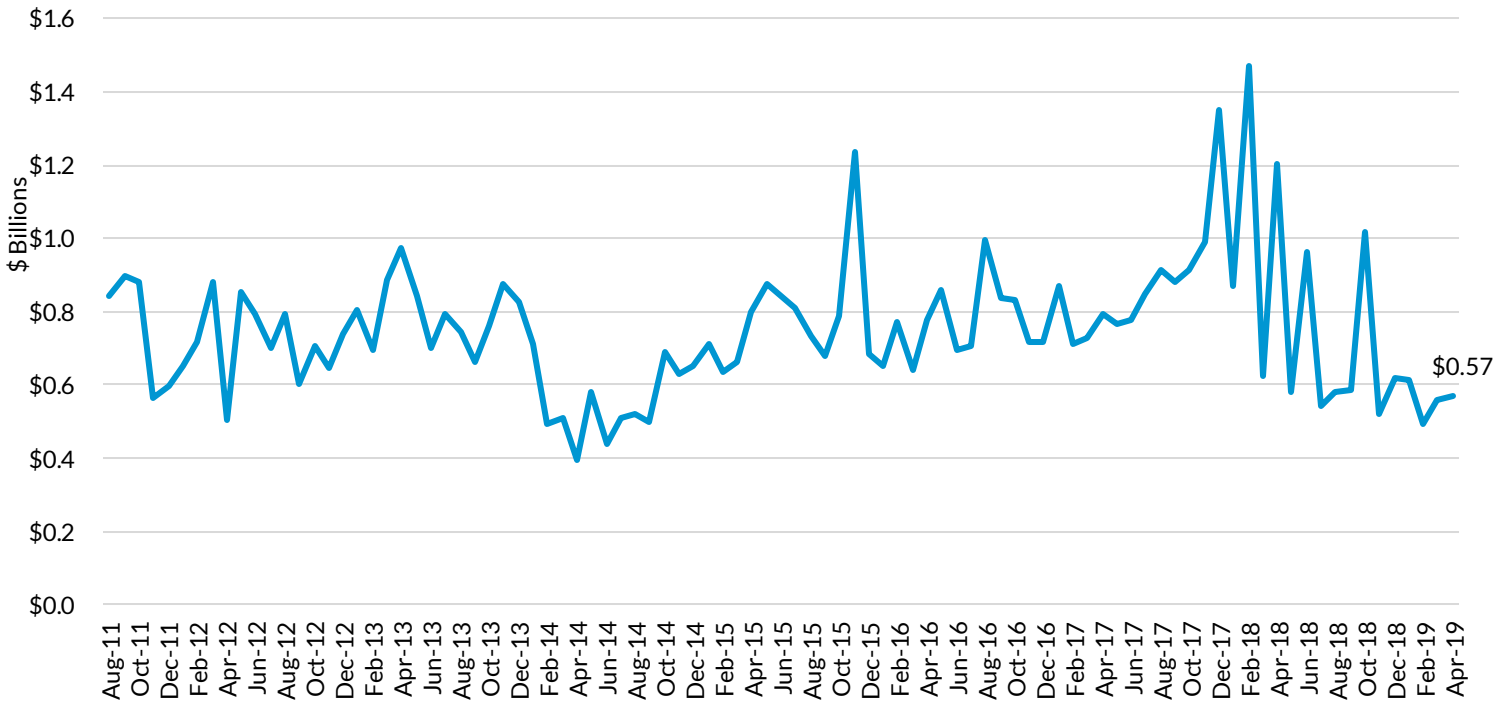
Sources: Credit Suisse and Urban Institute. Note: Data as of May 2019.

Other Ginnie Mae Programs

Reverse Mortgage Volumes

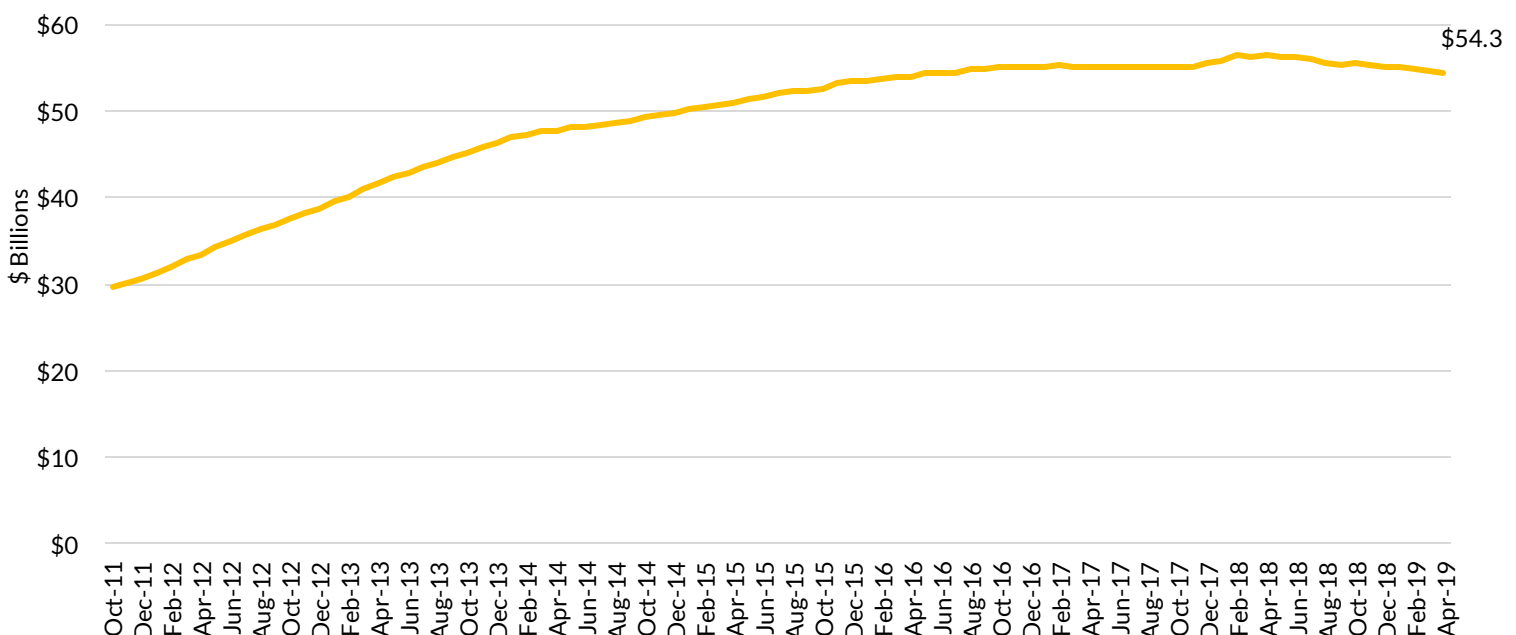
Ginnie Mae reverse mortgage issuance has been volatile in recent months. The April 2019 volume increased slightly to \$0.57 billion, near the lower end of the range in recent years. Issuance has been declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In April 2019, outstanding reverse mortgage securities totaled \$54.3 billion, lower compared to recent past, reflecting a lower volume of new issuances.

HMBS Issuance Volume



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

HMBS Outstanding



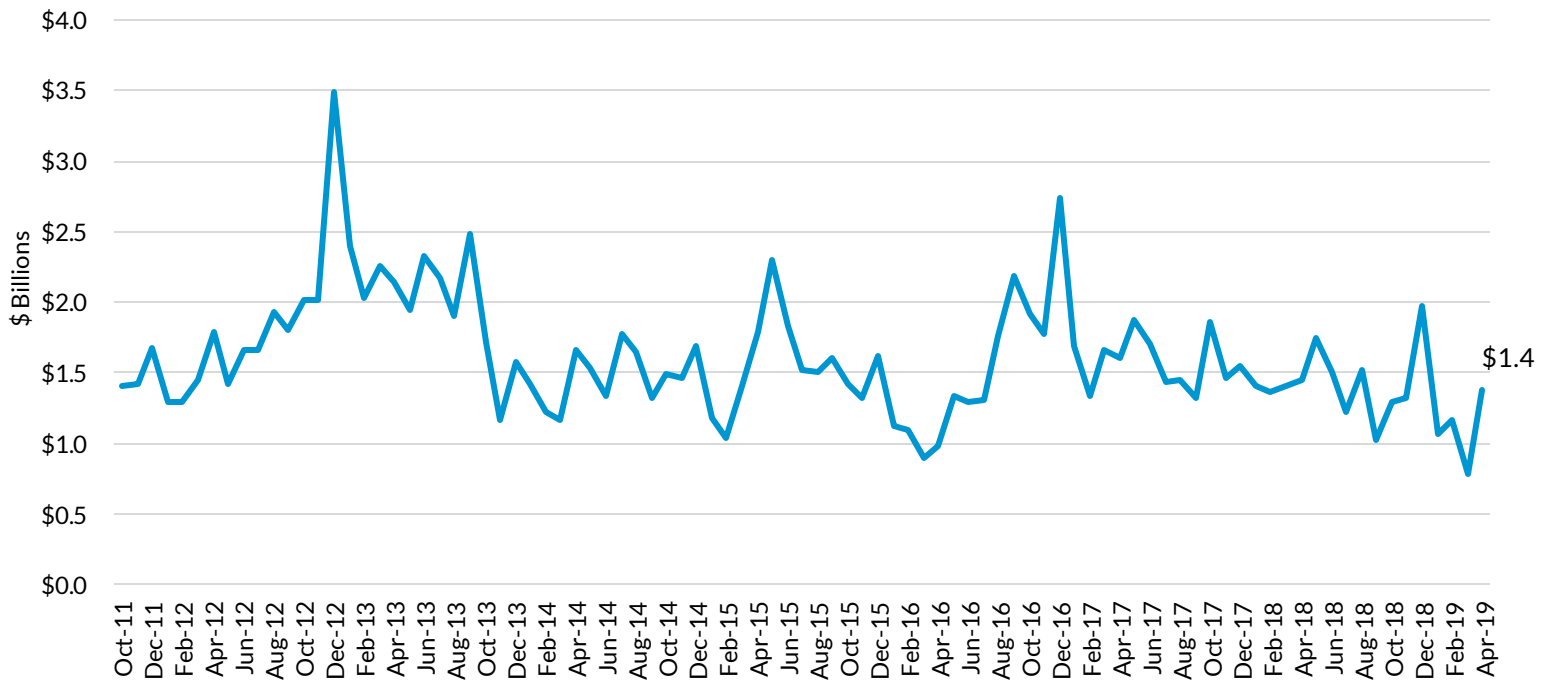
Sources: Ginnie Mae and Urban Institute. Note: Data as of April 2019.

Other Ginnie Mae Programs

Multifamily Market

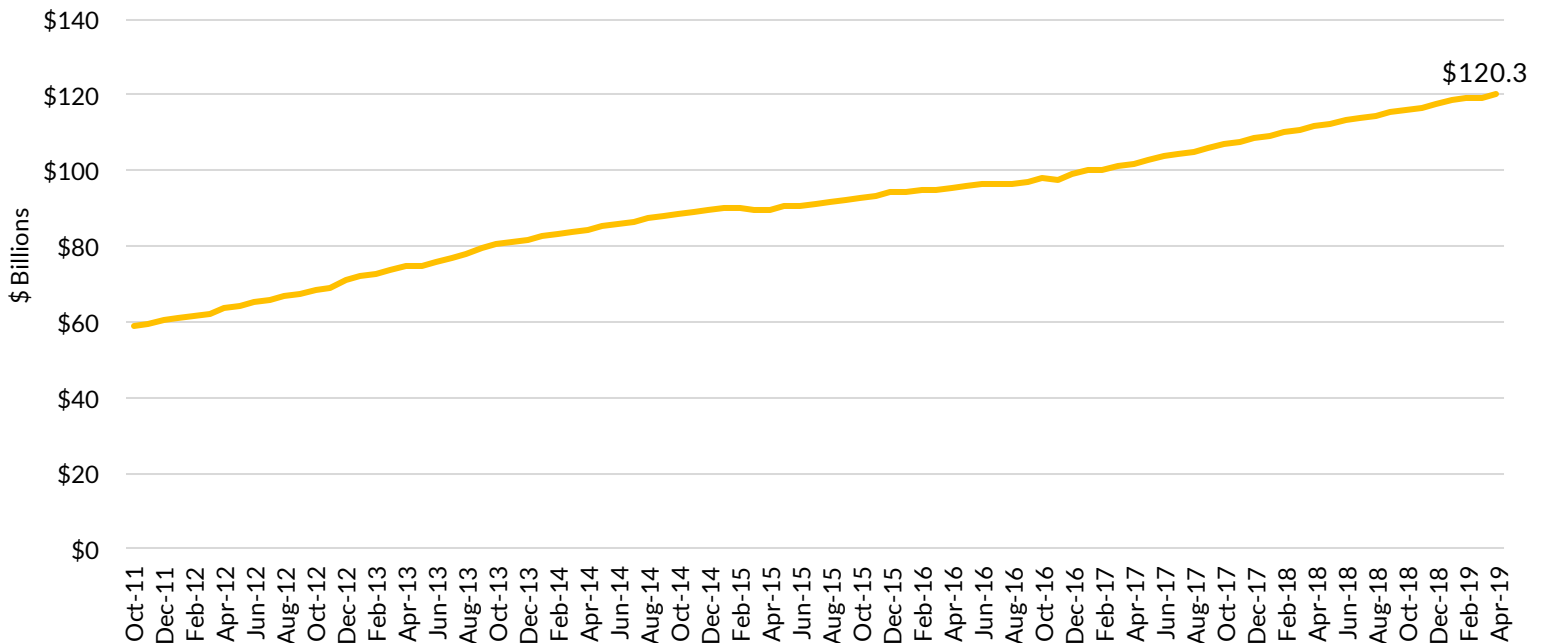
Ginnie Mae multifamily issuance volume in April 2019 totaled \$1.4 billion, below average issuance levels over the past 18 months, but an increase from last month. Outstanding multifamily securities totaled \$120.3 billion in April.

Ginnie Mae Multifamily MBS Issuance



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

Ginnie Mae Multifamily MBS Outstanding

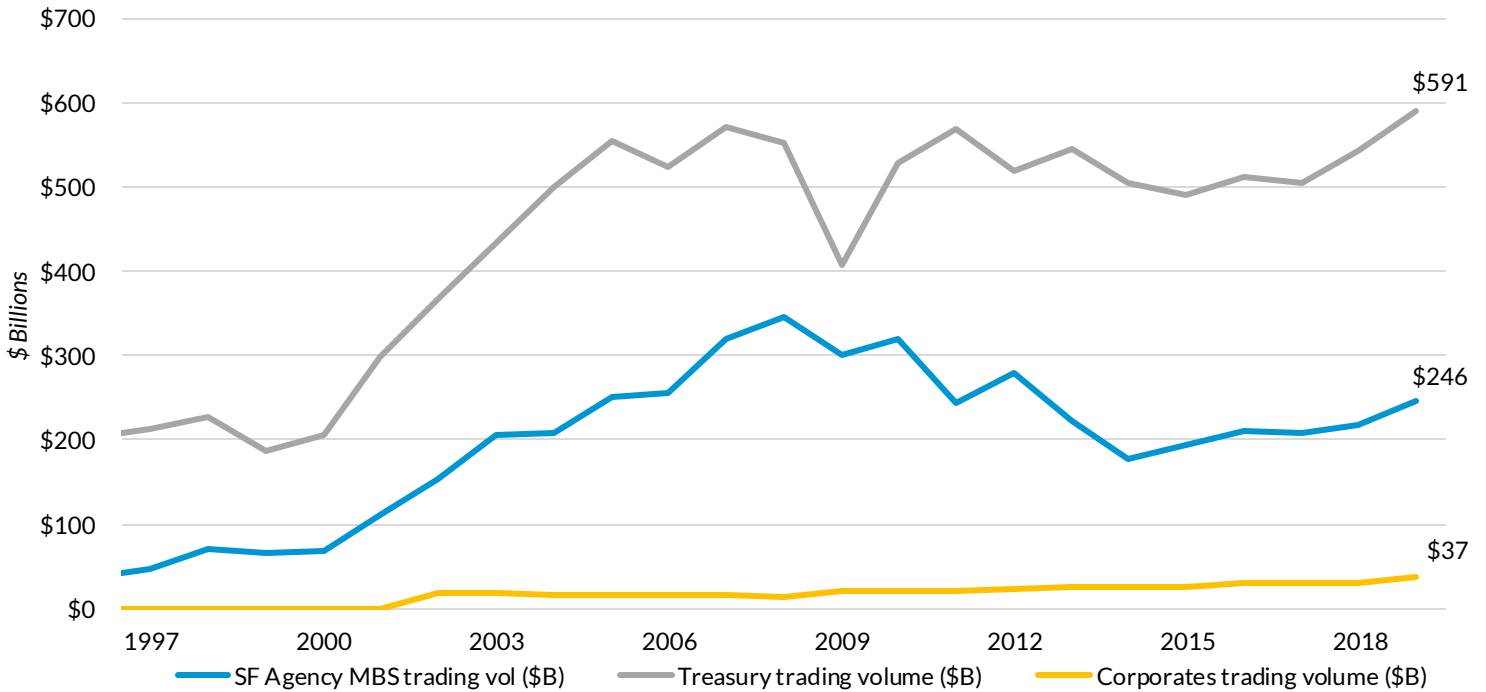


Sources: Ginnie Mae and Urban Institute. Note: Data as of April 2019.

Market Conditions

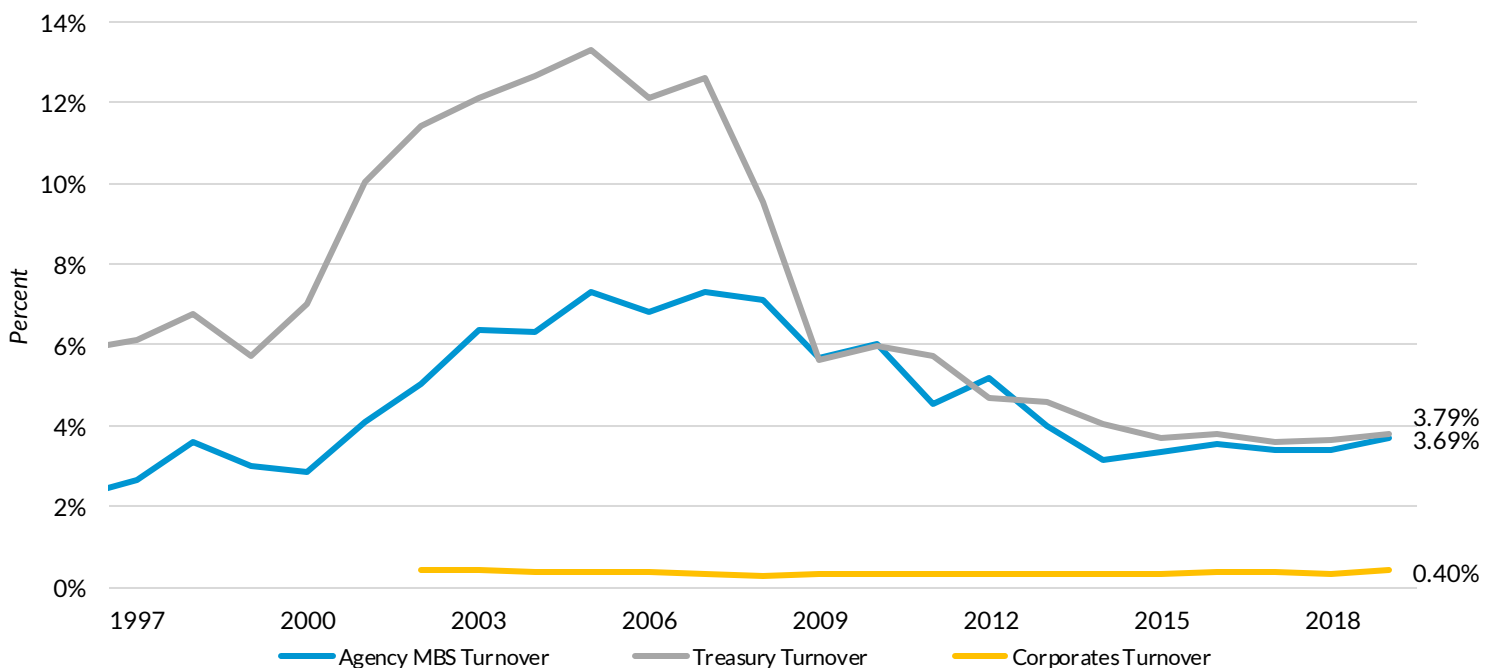
Agency MBS trading volume was \$246 billion/day on average 2019 YTD, more robust than in the 2014-2018 period. Agency MBS turnover in 2019 YTD also has been slightly higher than the 2014-2018 period; in the first four months of 2019, averagedaily MBS turnover was 3.69 percent, above the 2018 average 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 May 2019.

Average Daily Turnover by Sector

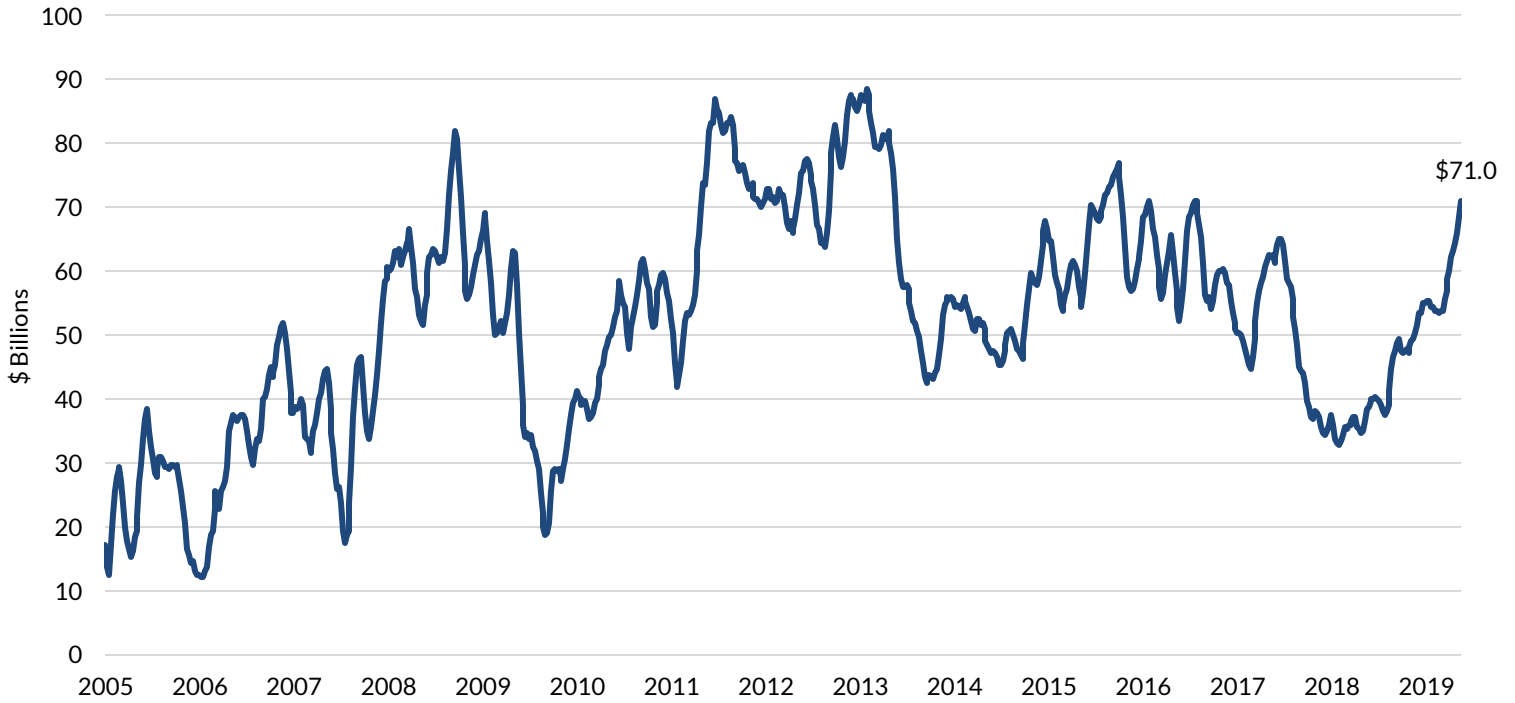


Sources: SIFMA and Urban Institute. Note: Data as of May 2019.

Market Conditions

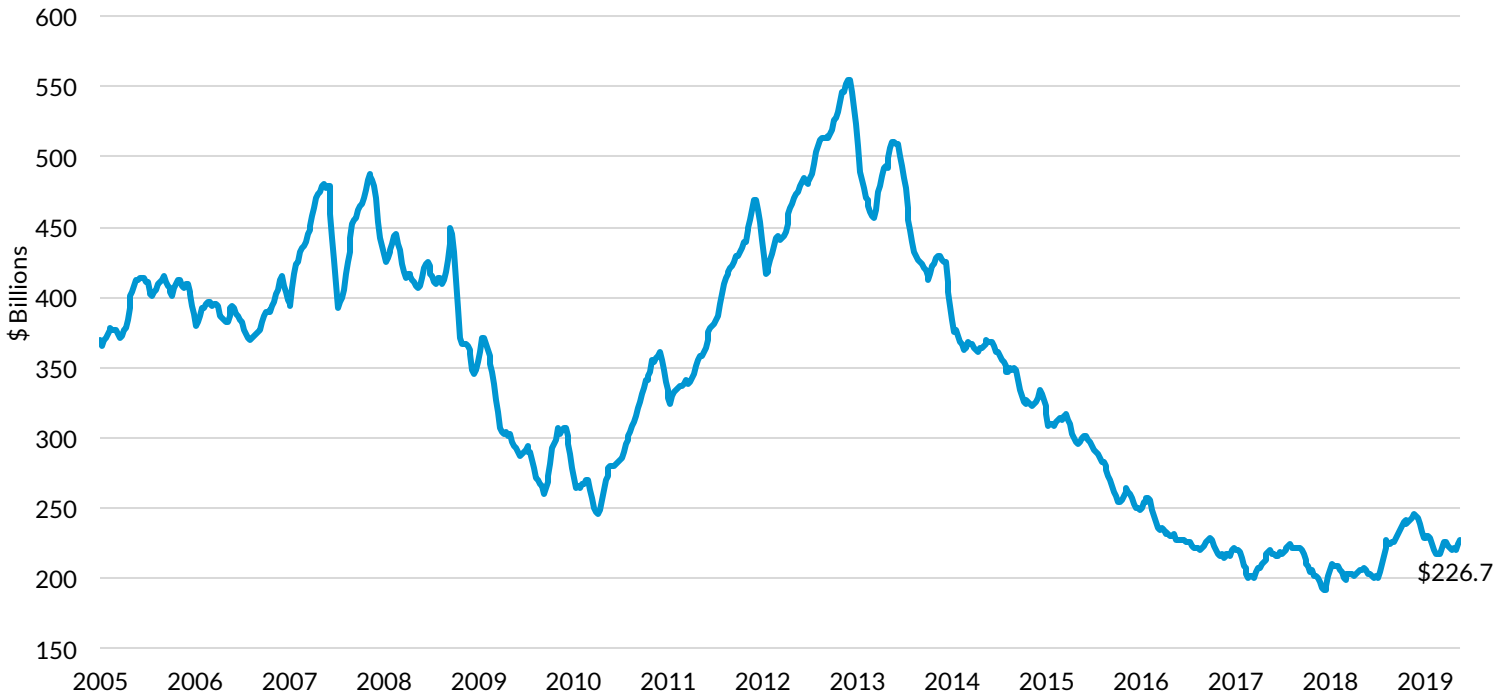
While dealer net positions are down from the 2012-2013 period, they are at the top end of their range since 2014. Gross dealer positions have fallen more than net positions. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting 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 May 2019.

Repo Volume: Securities In



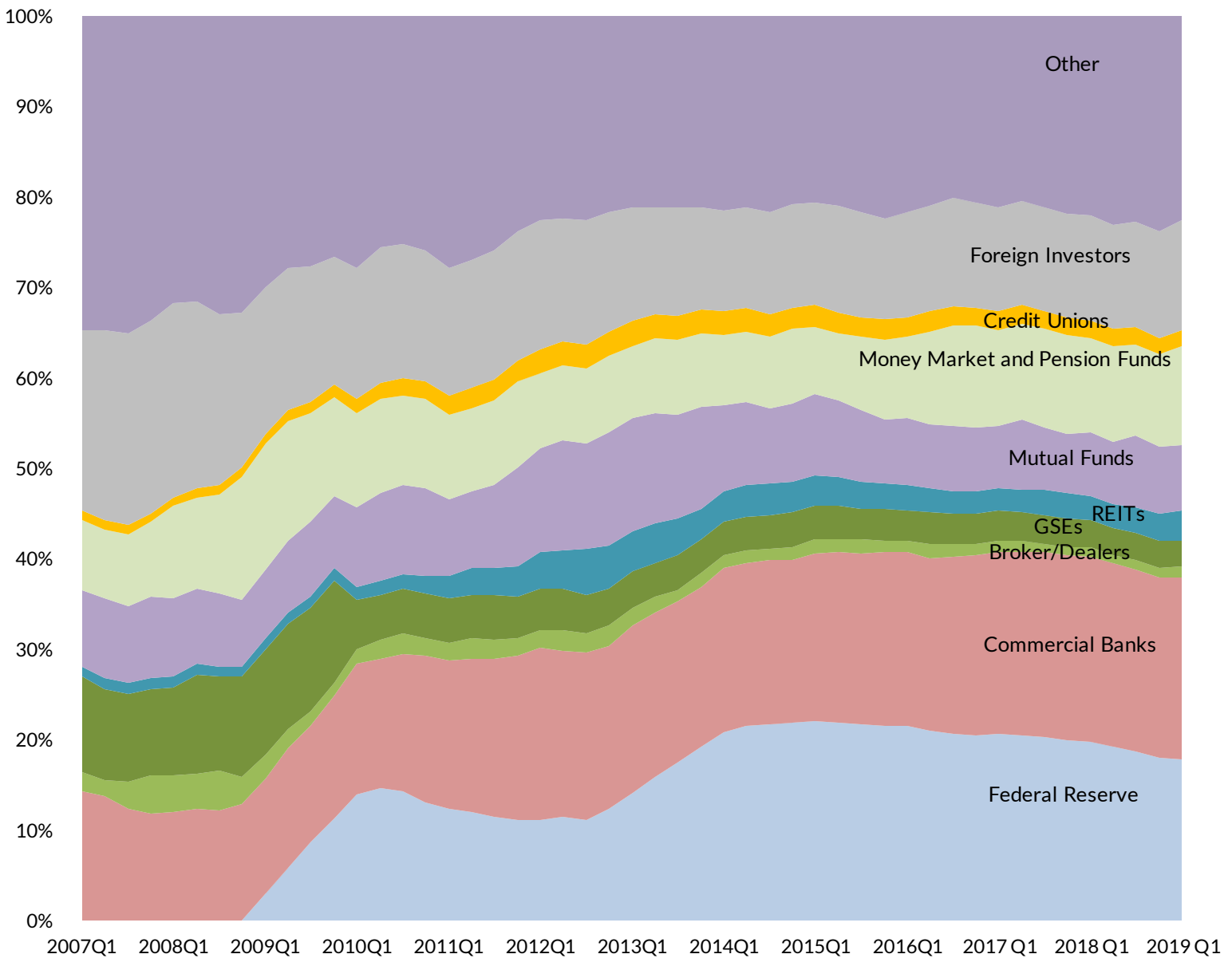
Sources: Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute. Note: Data as of May 2019.

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?

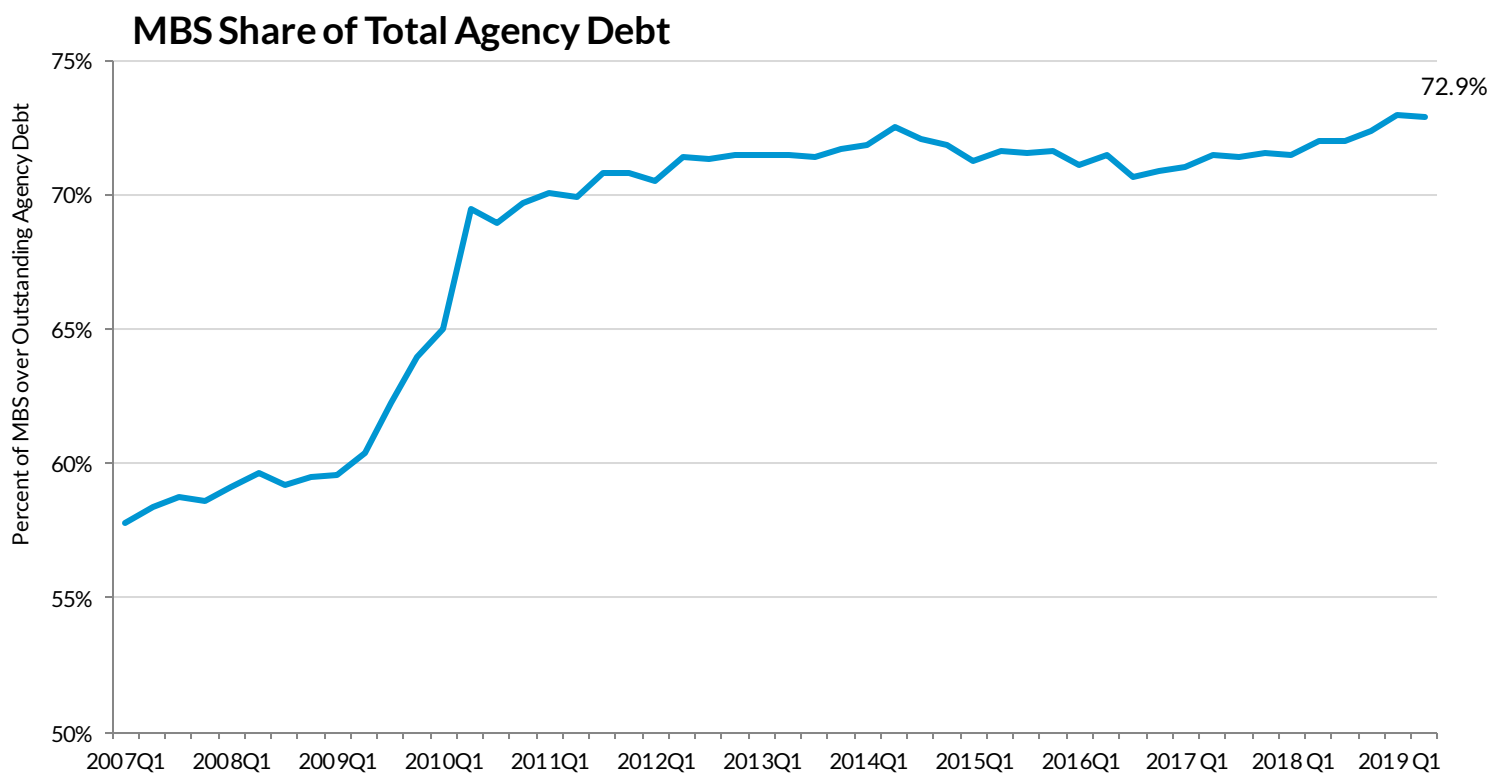
Share of Total Agency Debt by Owner



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 nearly \$2.0 trillion in holdings as of the end of May 2019, \$1.4 trillion was held by the top 25 domestic banks.



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

	Commercial Bank Holdings (\$Billions)								Week Ending			
	Apr-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-18	Apr-18	May 1	May 8	May 15	May 22
Largest Domestic Banks	1,284.4	1,319.8	1,332.9	1,360.1	1,389.2	1,398.8	1,413.1	1,434.8	1,439.6	1,440.4	1,435.1	1,432.2
Small Domestic Banks	481.5	484.8	482.2	485.3	490.6	492.0	495.0	499.5	501.6	499.9	499.7	501.3
Foreign Related Banks	33.6	12.3	24.6	27.7	25.4	25.4	25.6	26.3	26.8	26.5	28.7	32.7
Total, Seasonally Adjusted	1,799.5	1,816.9	1,839.7	1,873.1	1,905.2	1,916.2	1,933.7	1,960.6	1,968.0	1,966.8	1,963.5	1,966.2

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

MBS Ownership

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

Bank and Thrift Residential MBS Holdings

	All Banks & Thrifts (\$Billions)						
	Total	Agency MBS PT	GSE PT	GNMA PT	Agency CMO	Private MBS PT	Private CMO
2000	\$683.90	\$392.85	\$234.01	\$84.26	\$198.04	\$21.57	\$71.43
2001	\$810.50	\$459.78	\$270.59	\$109.53	\$236.91	\$37.62	\$76.18
2002	\$912.36	\$557.43	\$376.11	\$101.46	\$244.98	\$20.08	\$89.88
2003	\$982.08	\$619.02	\$461.72	\$75.11	\$236.81	\$19.40	\$106.86
2004	\$1,113.89	\$724.61	\$572.40	\$49.33	\$208.18	\$20.55	\$160.55
2005	\$1,139.68	\$708.64	\$566.81	\$35.92	\$190.70	\$29.09	\$211.25
2006	\$1,207.09	\$742.28	\$628.52	\$31.13	\$179.21	\$42.32	\$243.28
2007	\$1,236.00	\$678.24	\$559.75	\$31.58	\$174.27	\$26.26	\$357.24
2008	\$1,299.76	\$820.12	\$638.78	\$100.36	\$207.66	\$12.93	\$259.04
2009	\$1,345.74	\$854.40	\$629.19	\$155.00	\$271.17	\$7.53	\$212.64
2010	\$1,433.38	\$847.13	\$600.80	\$163.13	\$397.30	\$7.34	\$181.61
2011	\$1,566.88	\$917.10	\$627.37	\$214.81	\$478.82	\$3.28	\$167.70
2012	\$1,578.86	\$953.76	\$707.87	\$242.54	\$469.27	\$17.16	\$138.67
2013	\$1,506.60	\$933.73	\$705.97	\$231.93	\$432.60	\$26.11	\$114.15
2014	\$1,539.32	\$964.16	\$733.71	\$230.45	\$449.90	\$20.33	\$104.94
2015	\$1,643.56	\$1,115.40	\$823.10	\$292.30	\$445.39	\$11.14	\$71.63
1Q16	\$1,660.58	\$1,133.29	\$833.25	\$300.04	\$448.63	\$10.27	\$68.39
2Q 16	\$1,684.33	\$1,169.67	\$867.64	\$302.03	\$440.25	\$9.11	\$65.29
3Q16	\$1,732.36	\$1,227.52	\$924.81	\$302.71	\$435.77	\$7.90	\$61.17
4Q16	\$1,736.93	\$1,254.13	\$930.67	\$323.46	\$419.80	\$7.40	\$55.60
1Q17	\$1,762.38	\$1,280.63	\$950.72	\$329.91	\$419.34	\$7.03	\$55.39
2Q17	\$1,798.66	\$1,320.59	\$985.12	\$335.47	\$417.89	\$6.38	\$53.79
3Q17	\$1,838.93	\$1,364.75	\$1,012.89	\$351.86	\$418.08	\$5.65	\$50.45
4Q17	\$1,844.15	\$1,378.53	\$1,010.83	\$367.70	\$413.97	\$4.63	\$47.01
1Q18	\$1,809.98	\$1,352.28	\$991.57	\$360.71	\$412.37	\$3.92	\$41.37
2Q18	\$1,806.58	\$1,345.80	\$976.92	\$368.88	\$414.41	\$7.45	\$38.92
3Q18	\$1,794.39	\$1,339.72	\$966.52	\$373.21	\$416.20	\$2.42	\$36.04
4Q18	\$1,814.97	\$1,361.00	\$980.56	\$380.43	\$419.59	\$2.69	\$34.69
1Q19	\$1,844.99	\$1,385.10	\$1,001.61	\$383.49	\$422.18	\$3.06	\$34.65

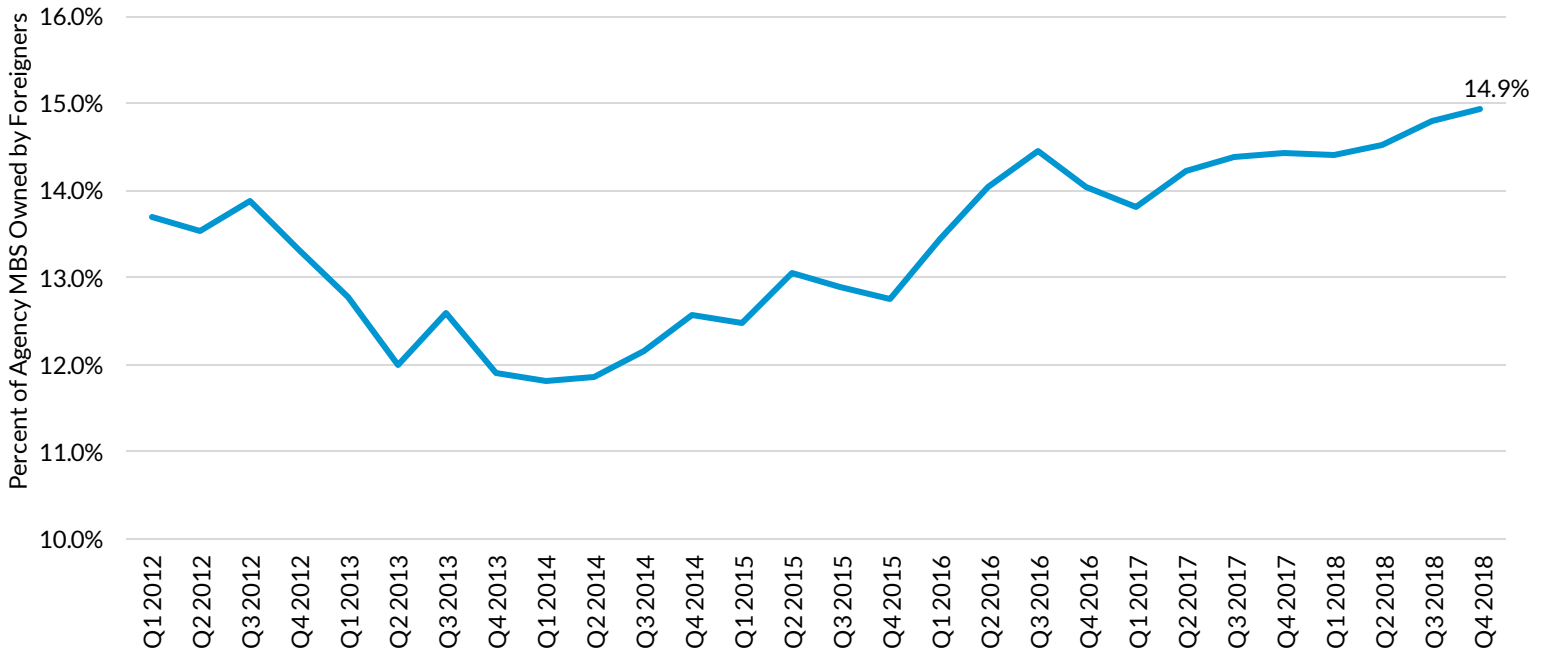
Top Bank & Thrift Residential MBS Investors		Total (\$MM)	GSE PT (\$MM)	GNMA PT (\$MM)	Agency REMIC (\$MM)	Non-Agency (\$MM)	Market Share
1	Bank of America Corporation	\$309,006	\$185,044	\$112,425	\$11,429	\$108	16.7%
2	Wells Fargo & Company	\$236,916	\$166,022	\$65,826	\$3,612	\$1,456	12.8%
3	JP Morgan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

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

MBS Ownership

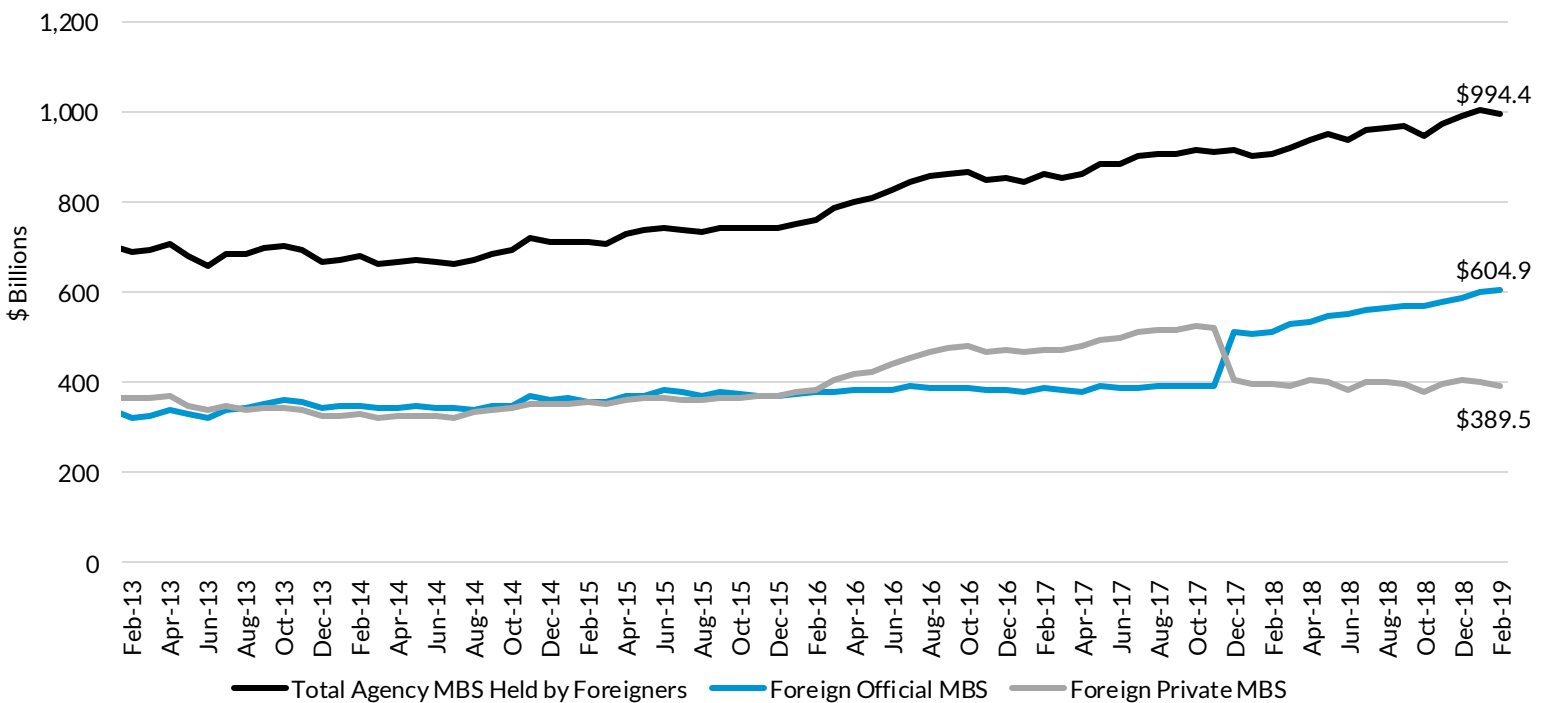
Foreign investors held 14.9 percent of agency MBS in Q4 2018, up from a low of 11.8 percent in Q1 2014. For the month of February 2019, this represents \$994.4 billion in Agency MBS; \$389.5 billion held by foreign private institutions and \$604.9 billion held by foreign official investors.

Foreign Share of Agency MBS



Sources: SIFMA and Treasury International Capital (TIC). Note: Data as of Q4 2018.

Monthly Agency MBS Holdings by Foreigners



Sources: Treasury International Capital (TIC) and Urban Institute. Note: Data as of February 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 February 2019, we estimate China has increased their agency MBS holdings by \$24.9 billion, Taiwan has increased their holdings by \$12.2 billion, and Japan has increased their holdings by \$1.6 billion.

Agency MBS+ Agency Debt

Country	Level of Holdings (\$Millions)*					Change in Holdings (\$Millions)*			
	Jun-18	Sep-18	Dec-18	Jan-19	Feb-19	Q3 2018	Q4 2018	Jan-19	Feb-19
Japan	257,547	254,511	262,772	261,455	259,400	-3,036	8,261	-1,317	-2,055
Taiwan	250,009	250,639	261,231	261,674	262,222	630	10,592	443	548
China	180,635	190,203	188,921	202,985	205,776	9,568	-1,282	14,064	2,791
Ireland	46,817	48,220	48,045	46,539	46,150	1,403	-175	-1,506	-389
Luxembourg	36,372	38,800	50,079	51,171	43,875	2,428	11,279	1,092	-7,296
South Korea	44,039	43,944	44,735	43,027	43,124	-95	791	-1,708	97
Bermuda	27,866	27,610	28,004	27,664	28,598	-256	394	-340	934
Cayman Islands	31,017	31,638	31,379	31,900	29,621	621	-259	521	-2,279
Malaysia	12,710	12,874	12,671	12,624	12,447	164	-203	-47	-177
Netherlands	11,995	12,229	9,618	9,586	9,257	234	-2,611	-32	-329
Rest of World	125,197	128,761	130,294	130,887	129,090	3,564	1,533	593	-1,797
Total	1,024,200	1,039,429	1,067,749	1,079,512	1,069,560	15,229	28,320	11,763	-9,952

Agency MBS Only (Estimates)

Country	Level of Holdings (\$Millions)*					Change in Holdings (\$Millions)*			
	Jun-18	Sep-18	Dec-18	Jan-19	Feb-19	Q3 2018	Q4 2018	Jan-19	Feb-19
Japan	253,972	250,853	258,898	257,525	255,594	-3,119	8,045	-1,374	-1,931
Taiwan	249,773	250,398	260,975	261,415	261,971	625	10,578	439	556
China	176,345	185,814	184,272	198,268	201,209	9,469	-1,541	13,996	2,940
Ireland	37,832	39,027	38,309	36,661	36,584	1,195	-718	-1,648	-77
Luxembourg	34,012	36,385	47,522	48,576	41,362	2,373	11,136	1,055	-7,214
South Korea	33,064	32,715	32,843	30,961	31,440	-349	128	-1,882	479
Bermuda	24,969	24,646	24,865	24,479	25,514	-323	219	-386	1,035
Cayman Islands	24,384	24,851	24,192	24,608	22,559	467	-660	416	-2,048
Malaysia	12,319	12,474	12,247	12,194	12,031	155	-227	-53	-163
Netherlands	11,437	11,658	9,013	8,973	8,663	221	-2,645	-41	-310
Rest of World	95,510	98,386	98,126	98,248	97,484	2,876	-260	123	-765
Total	953,612	967,205	991,261	1,001,906	994,409	13,593	24,056	10,645	-7,497

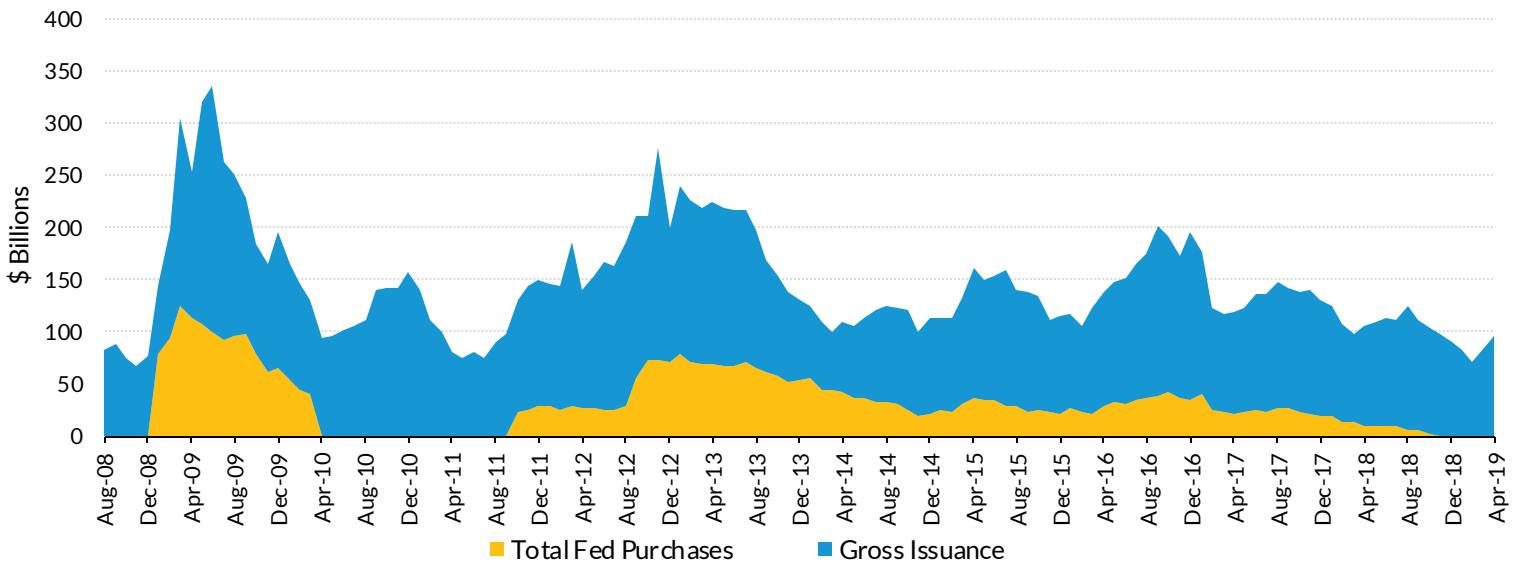
Sources : Treasury International Capital (TIC) and Urban Institute.

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 February 2019.

MBS Ownership

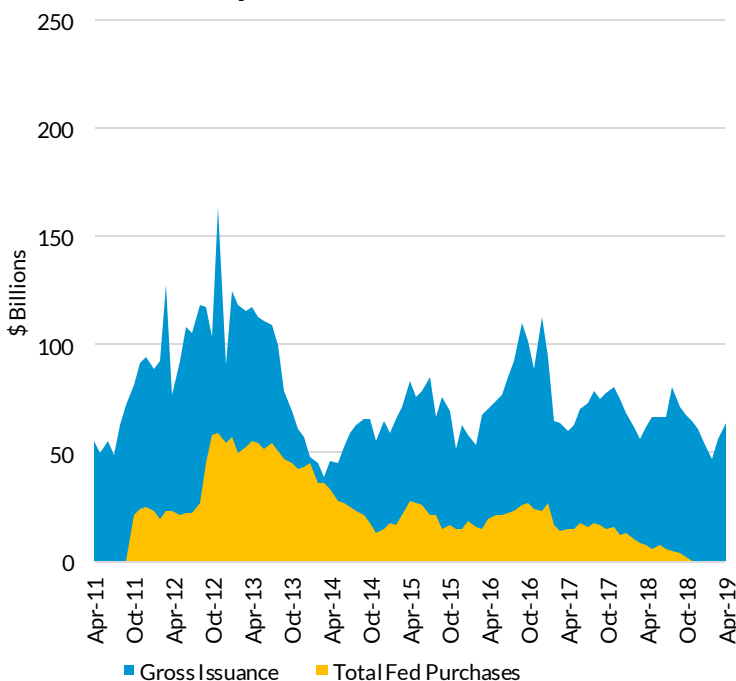
The Federal Reserve is actively winding down its mortgage portfolio, absorbing very little new issuance. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross issuance. In October 2017, the Fed began to taper their mortgage holdings, initially letting securities run off at the rate of \$4 billion per month in Q4, 2017; \$8 billion per month in Q1, 2018; \$12 billion per month in Q2; \$16 billion per month in Q3; and \$20 billion per month in Q4, 2018 and thereafter. With the Fed now at its maximum taper, Fed absorption of gross issuance is 0.2 percent.

Total Fed Absorption



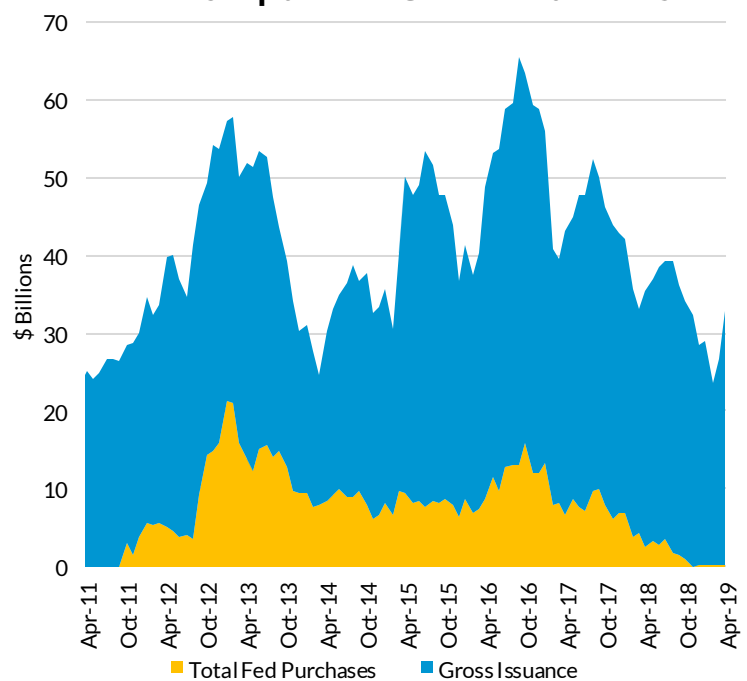
Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of April 2019.

Fed Absorption of GSE MBS



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

Fed Absorption of Ginnie Mae MBS



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

Disclosures

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