

# 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

## Agency origination activity in 2018

With half of 2018 in the rear-view mirror, we wanted to track latest trends in agency issuance volumes. Issuance volumes reflect origination activity, albeit with a 1 to 2-month delay. We looked at issuance volumes for the first half of 2018 (January to June 2018). These reflect mortgages that were originated roughly from November 2017 to April 2018.

As was expected amidst rising interest rates, refi volumes fell across the board from first half 2017 to first half of 2018, plunging 22.0 percent for Ginnie Mae, 16.7 percent for Fannie Mae and 31.7 percent for Freddie Mac. Within the Ginnie Mae space, FHA refi volumes fell 27.9 percent, VA was down 15.8 percent and USDA volume fell by 53.0 percent. Refi volume for each agency is driven by the level of prepayments in the overall market, but also its relative market share in the refi submarket.

Agency purchase originations were up 1.7 percent in the first six months of 2018 over the same period last year. This is consistent with improvements in the broader economy – full employment and rising wages – as well as slight easing of credit availability, all of which facilitate greater home buying activity even as rates rise.

## Agency Issuance Volumes 1H 2017 vs. 1H 2018 (\$ billions)

	Purchase volume			Refinance volume			Total volume		
	1H 2017	1H 2018	% change	1H 2017	1H 2018	% change	1H 2017	1H 2018	% change
Fannie Mae	\$132.8	\$132.4	-0.3%	\$125.2	\$104.3	-16.7%	\$258.0	\$236.7	-8.3%
Freddie Mac	\$79.6	\$92.3	15.9%	\$79.5	\$54.3	-31.7%	\$159.1	\$146.6	-7.9%
Ginnie Mae	\$148.9	\$142.8	-4.1%	\$70.8	\$55.2	-22.0%	\$219.7	\$198.0	-9.9%
<b>Agency Total</b>	<b>\$361.4</b>	<b>\$367.5</b>	<b>1.7%</b>	<b>\$275.5</b>	<b>\$213.8</b>	<b>-22.4%</b>	<b>\$636.8</b>	<b>\$581.3</b>	<b>-8.7%</b>
FHA	\$90.6	\$81.1	-10.5%	\$37.5	\$27.0	-27.9%	\$127.9	\$108.1	-15.5%
VA	\$43.8	\$49.5	13.0%	\$38.2	\$32.1	-15.8%	\$82.1	\$81.6	-0.6%
USDA	\$9.2	\$8.1	-12.6%	\$0.5	\$0.2	-53.0%	\$9.7	\$8.3	-14.4%

Source: Urban Institute calculations based on eMBS data.

Freddie Mac and VA saw purchase volume increases while Fannie Mae, FHA and USDA experienced decreases. Fannie Mae's volume fell slightly (-0.3%) from 1H 2017 to 1H 2018, Ginnie Mae was down 4.1 percent, while Freddie Mac's purchase volume increased by 15.9 percent. Within the Ginnie Mae space, FHA and USDA volumes fell measurably (10.5 and 12.6 percent respectively); VA purchase volume was up 13.0 percent, touching almost \$50 billion. This was VA's highest ever first-half issuance volume. The decline in FHA volumes may be driven by decreased affordability in the lower end of the market or by [greater competition](#) from conventional mortgages with private mortgage insurance.

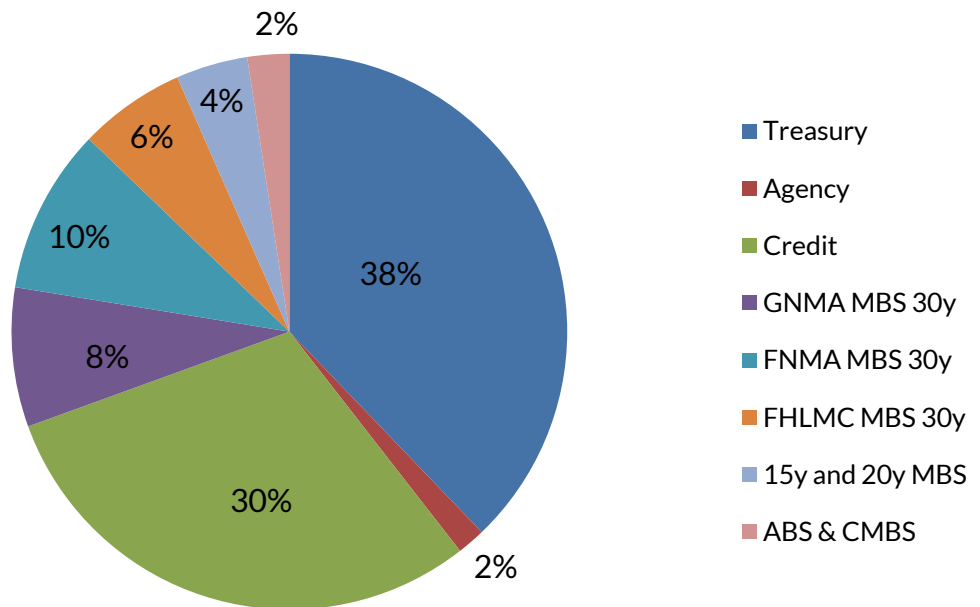
### Highlights this month:

- Ginnie Mae MBS hedged into Japanese yen outyields JGBs by a wider margin in July 2018 (page 7).
- Agency refinance shares declined sharply to the lowest level in 15 years in June 2018, as interest rates stayed high and purchase activity picked up (page 20).
- Total agency gross issuance in the first half of 2018 fell 8.7% year over year, as refinance volumes continued to decline due to higher rates (page 17).
- Ginnie Mae median FICO scores continued to decrease in June 2018, especially for refinance loans and FHA loans (pages 27 and 34).

# Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

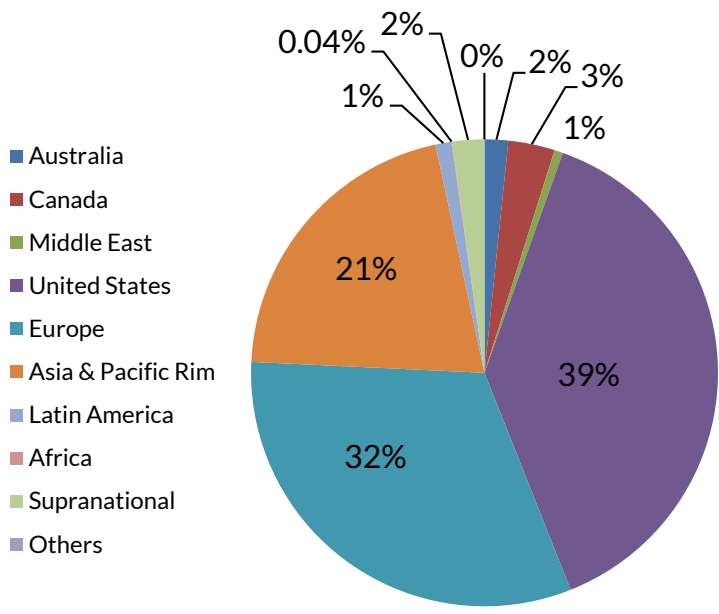
US MBS comprise 28 percent of the Barclays US Aggregate Index- less than either the US Treasury share (38%) or the US Credit share (30%). Fannie Mae 30-year MBS comprises the largest percent of US MBS (10%), while Ginnie Mae 30-year MBS and Freddie Mac 30-year MBS comprise 8 percent and 6 percent of the market, respectively. Mortgages with terms of 15 and 20 years comprise the remaining balance (4%) of the US MBS share. US securities are the largest single 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**



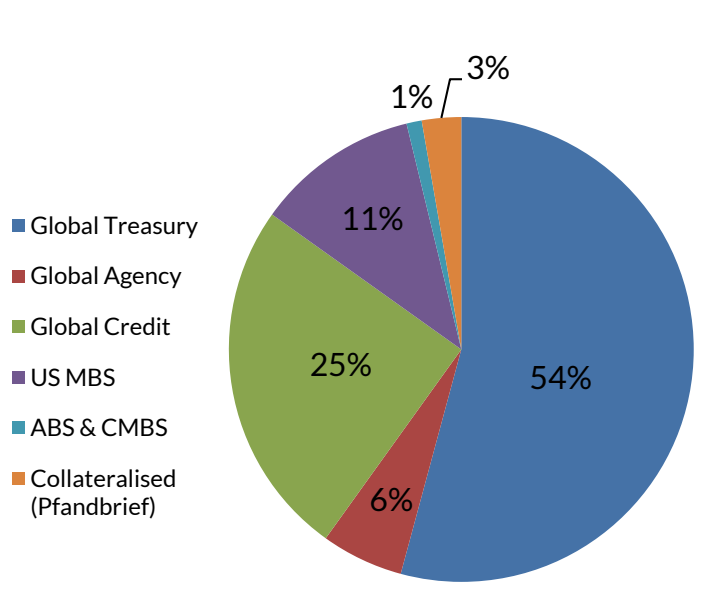
Sources: Bloomberg and State Street Global Advisors. Note: Data as of June 2018.

**Barclays Global Aggregate Index by Country**



Sources: Bloomberg and State Street Global Advisors. Note: Data as of June 2018.

**Barclays Global Aggregate Index by Sector**

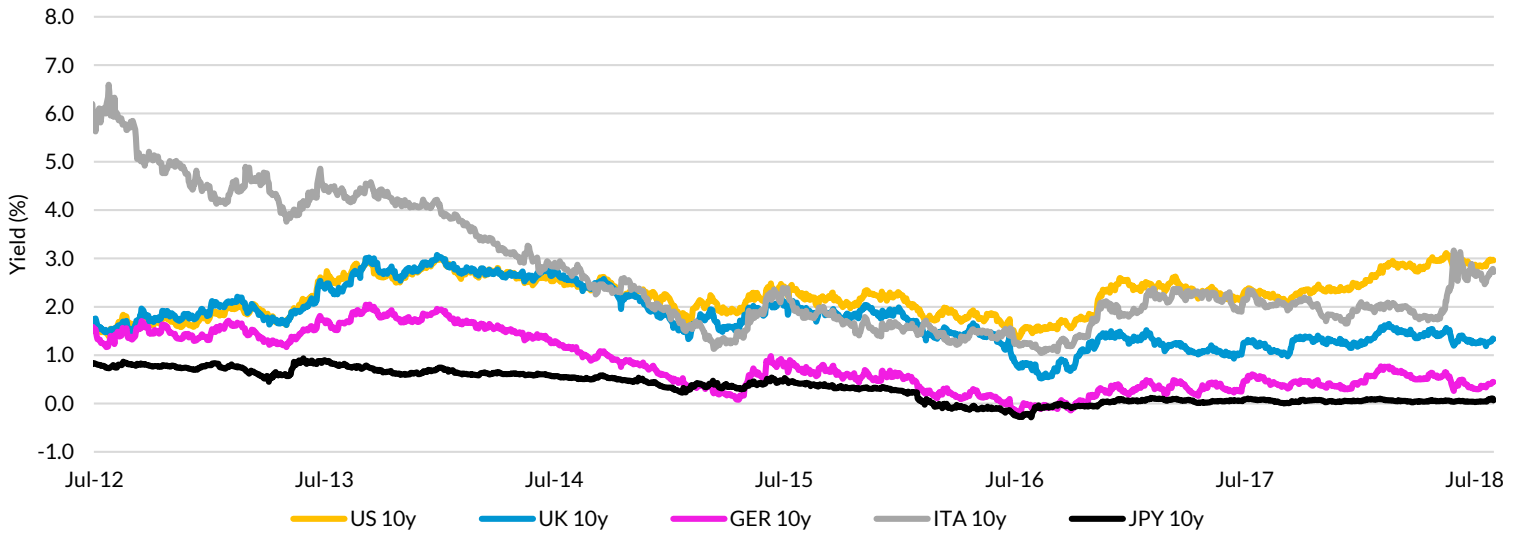


Sources: Bloomberg and State Street Global Advisors. Note: Data as of June 2018.

# Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

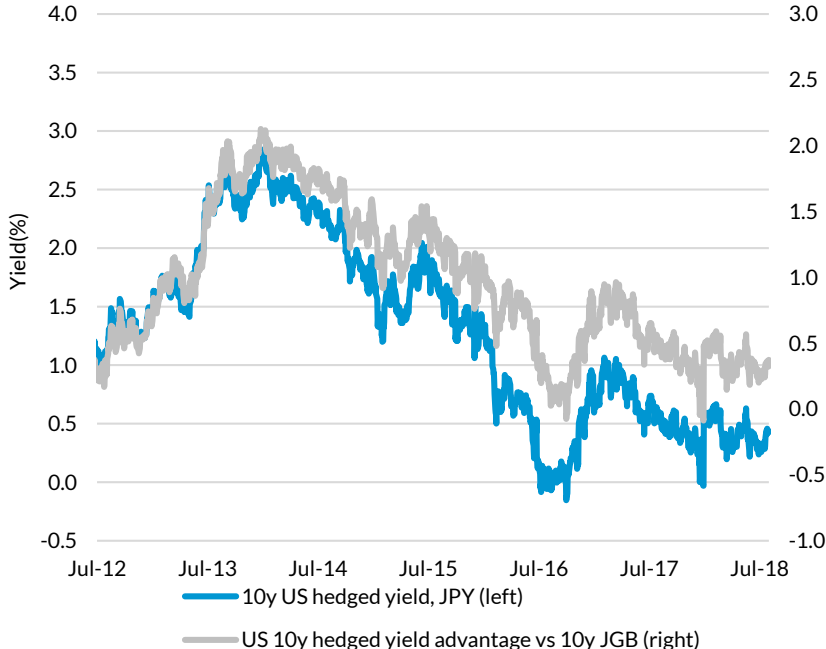
US Treasury interest rates, as measured by the 10-year note, continue to be the highest in the developed world. The US 10-year Treasury note increased to 2.96 percent this month. Interest rates in the UK, Germany, Italy, and Japan all decreased in July to 1.33, 0.44, 2.72, and 0.06 percent, respectively. If Treasury notes are hedged into foreign currencies, 10-year US Treasury yields are 44 basis points (bps) in JPY, and 18 bps in EUR. The hedged yield difference between the 10-year Treasuries and JGBs widened to 37 bps, and the hedged yield difference between the 10-year Treasuries and Bunds widened to -27 bps.

### Global 10-year Treasury Yields



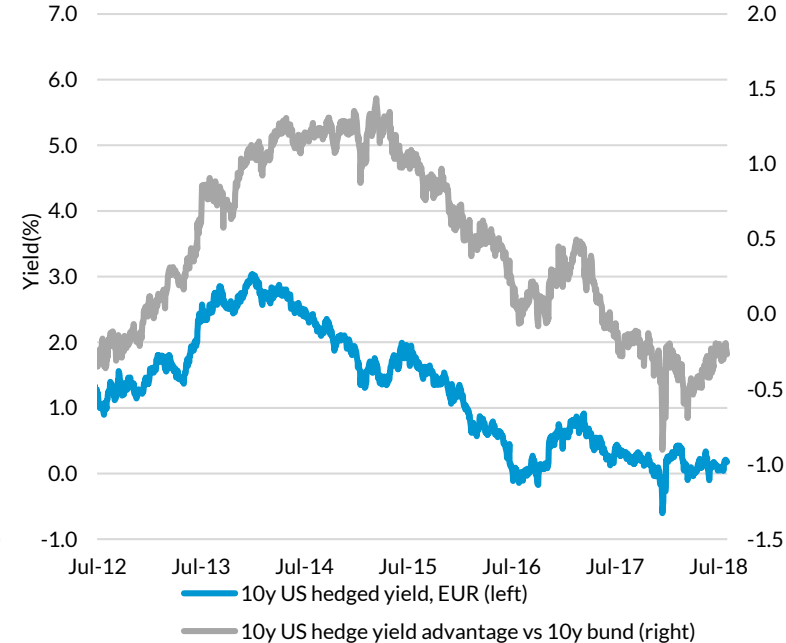
Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2018.

### 10yr US Treasury hedged yield, JPY



Sources: Bloomberg and State Street Global Advisors.  
Note: Data as of July 2018.

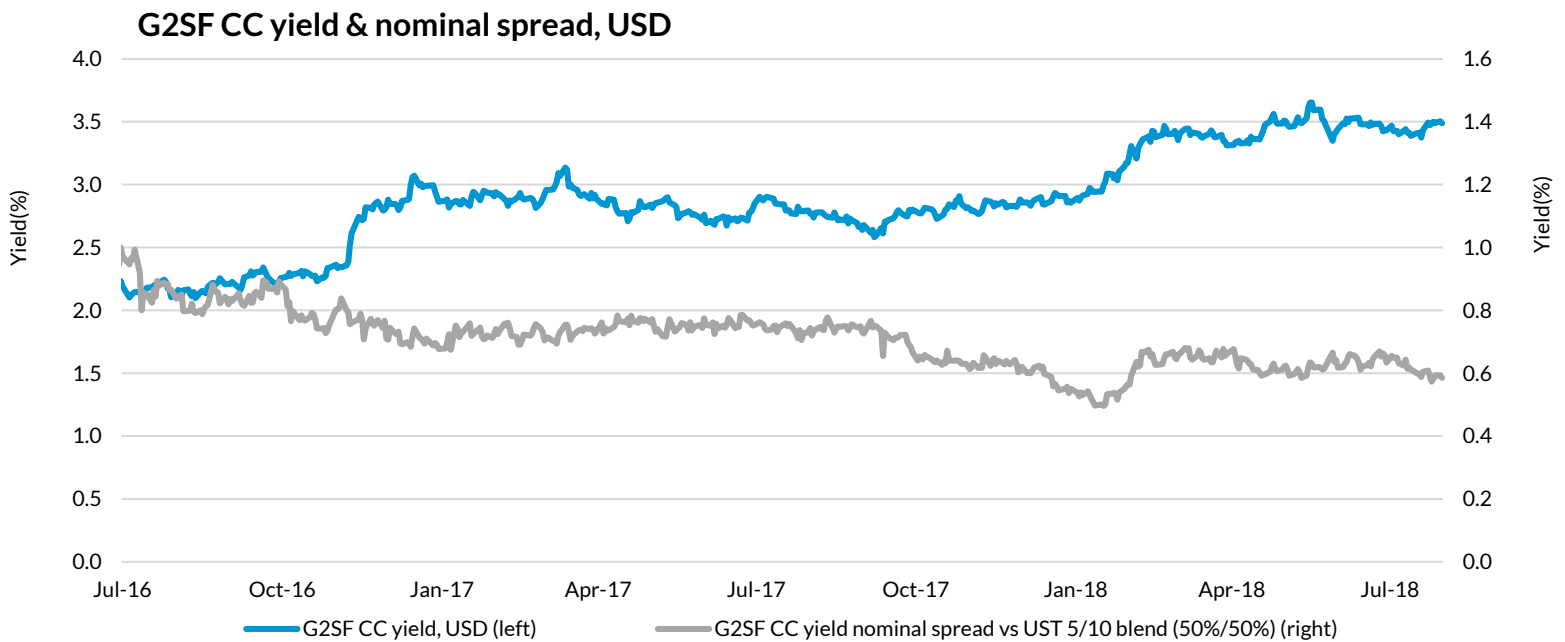
### 10yr US Treasury hedged yield, EUR



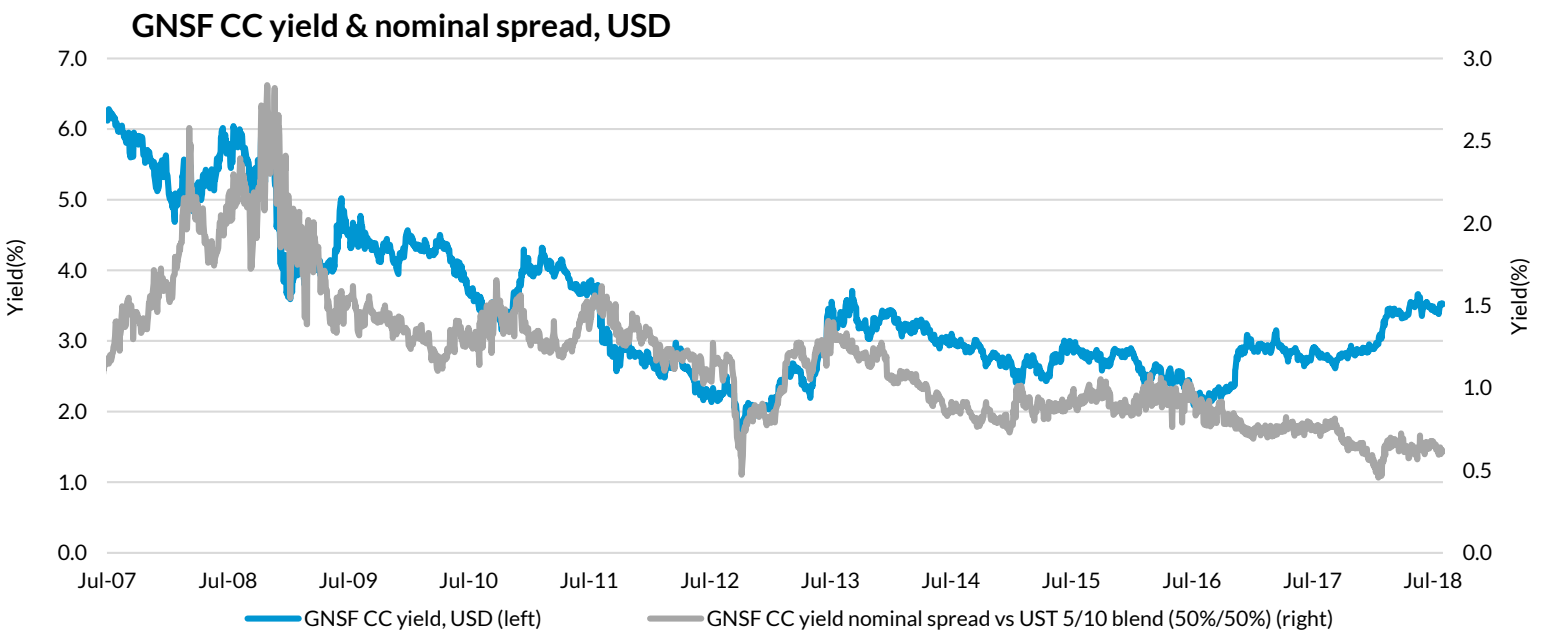
Sources: Bloomberg and State Street Global Advisors  
Note: Data as of July 2018.

# Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The nominal yield on both the current coupon GNMA II and GNMA I securities increased slightly in July 2018. Current coupon Ginnie Mae securities outyield their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 59 and 61 bps on G2SF and GNSF, respectively, a decrease from their June levels.



Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2018.

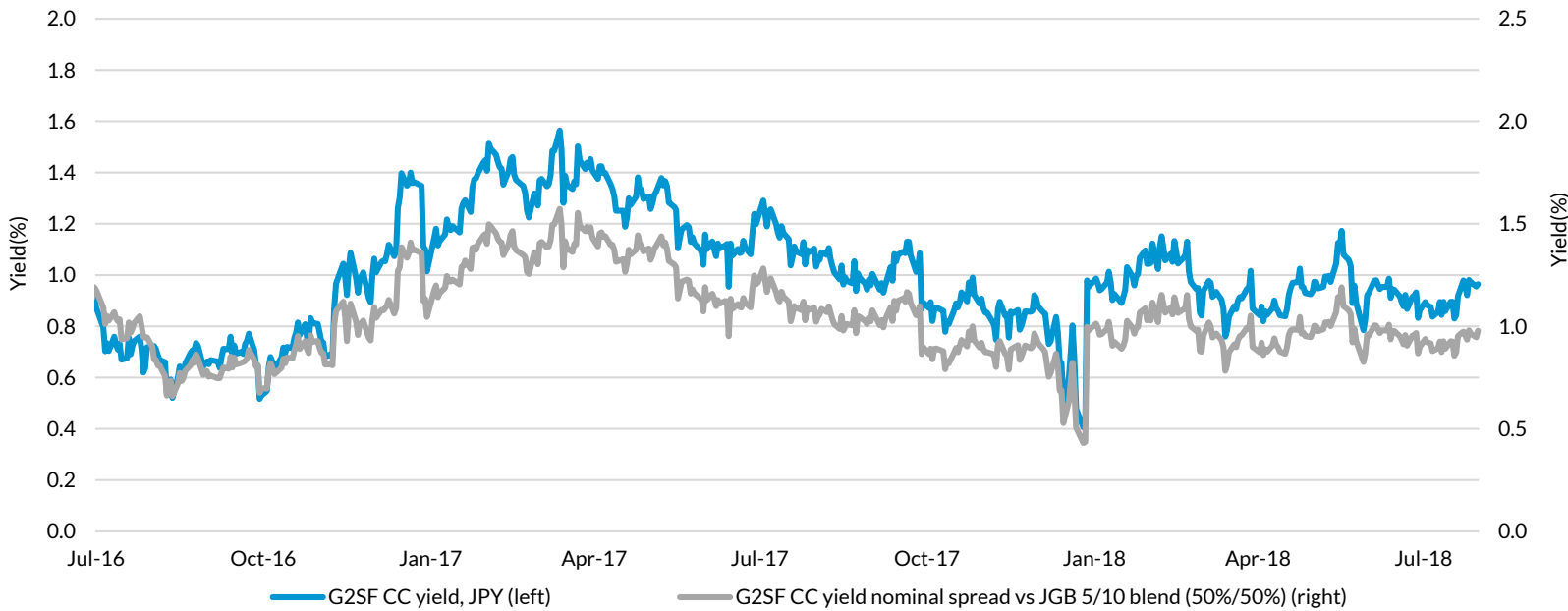


Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2018.

# Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

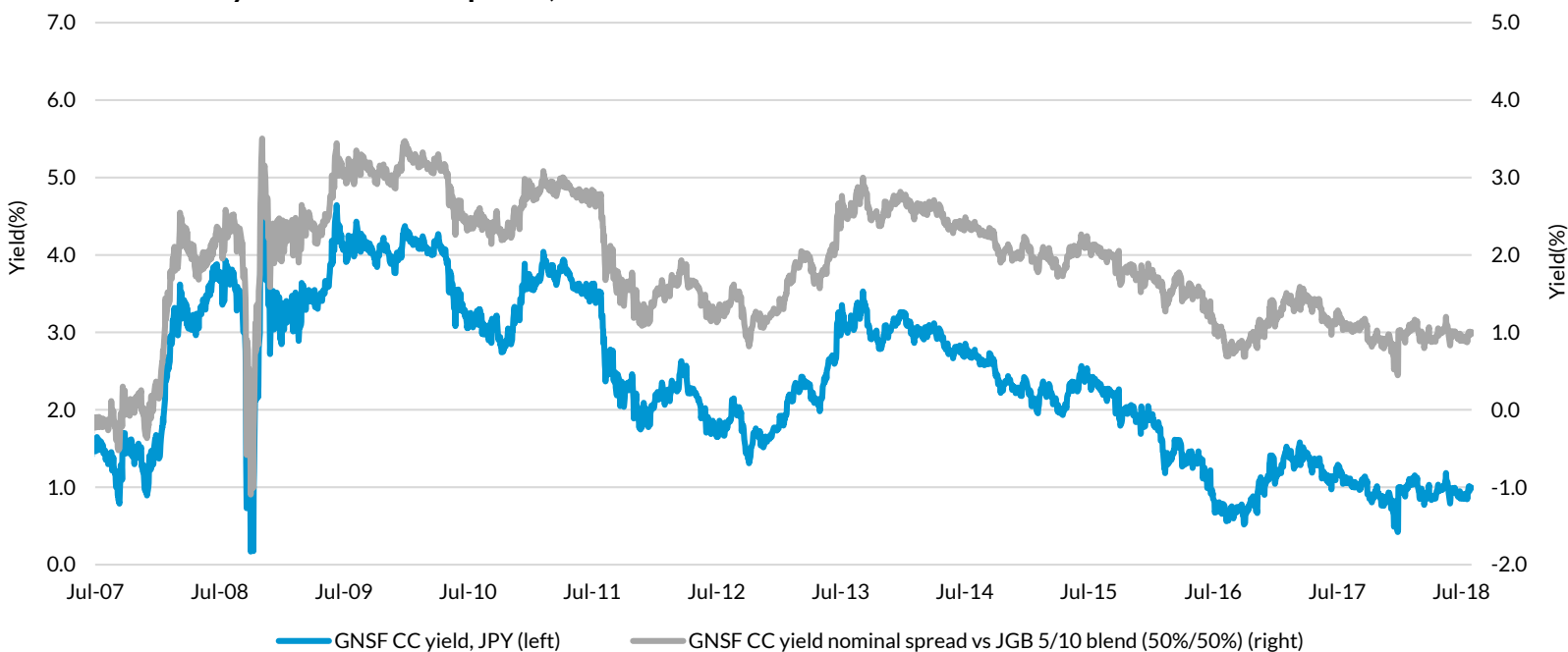
If Ginnie Mae securities are hedged into foreign currencies, they look attractive on a yield basis versus many sovereign alternatives. The figures show that current coupon G2SF and GNSF hedged into Japanese yen yield more than the JGB 5/10 blend by 98 and 101 bps, respectively. These latest spreads have widened compared to June levels.

**G2SF CC yield & nominal spread, JPY**



Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2018.

**GNSF CC yield & nominal spread, JPY**

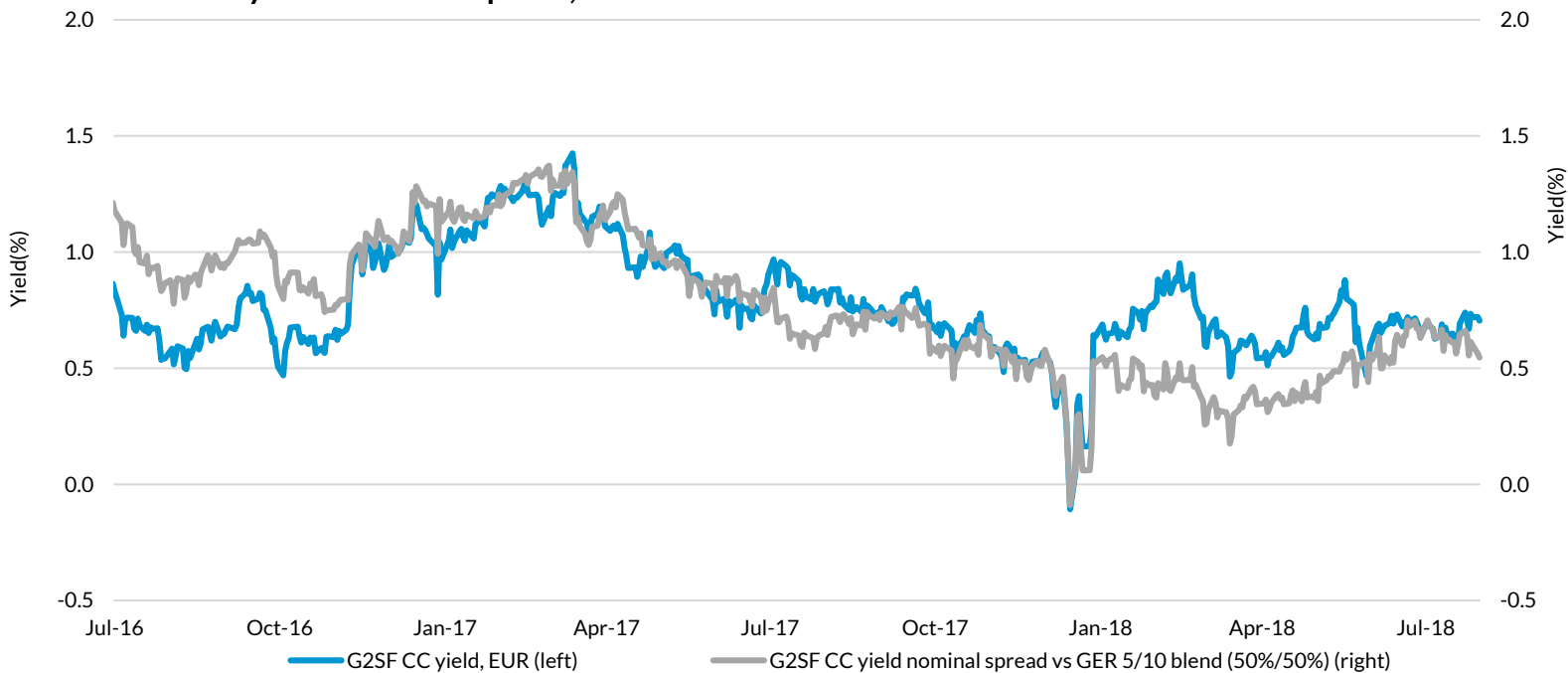


Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2018.

# Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

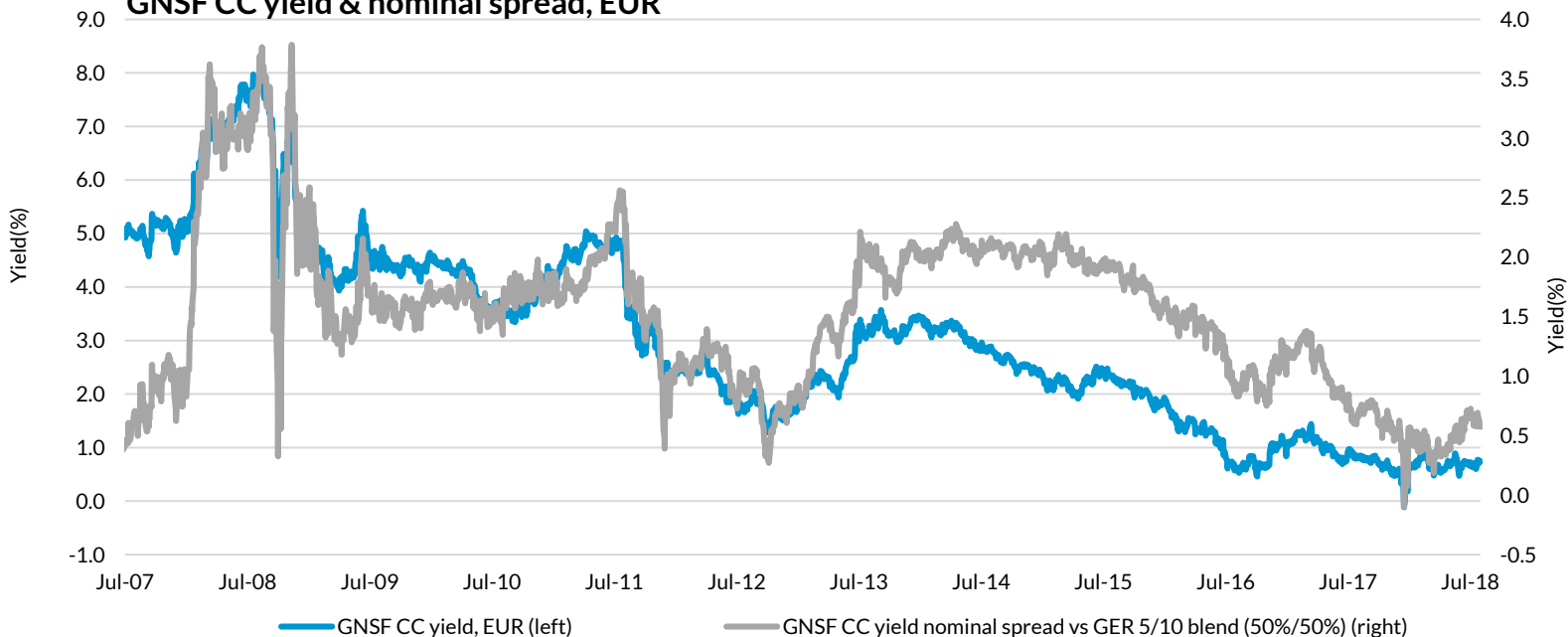
If Ginnie Mae securities are hedged into foreign currencies, they look attractive on a yield basis versus sovereign alternatives. The figures show that current coupon G2SF and GNSF hedged into euros yield more than the average of the German 5/10 blend by 55 and 57 bps, respectively. These latest spreads represent a 10 basis point narrowing from June levels.

**G2SF CC yield & nominal spread, EUR**



Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2018.

**GNSF CC yield & nominal spread, EUR**



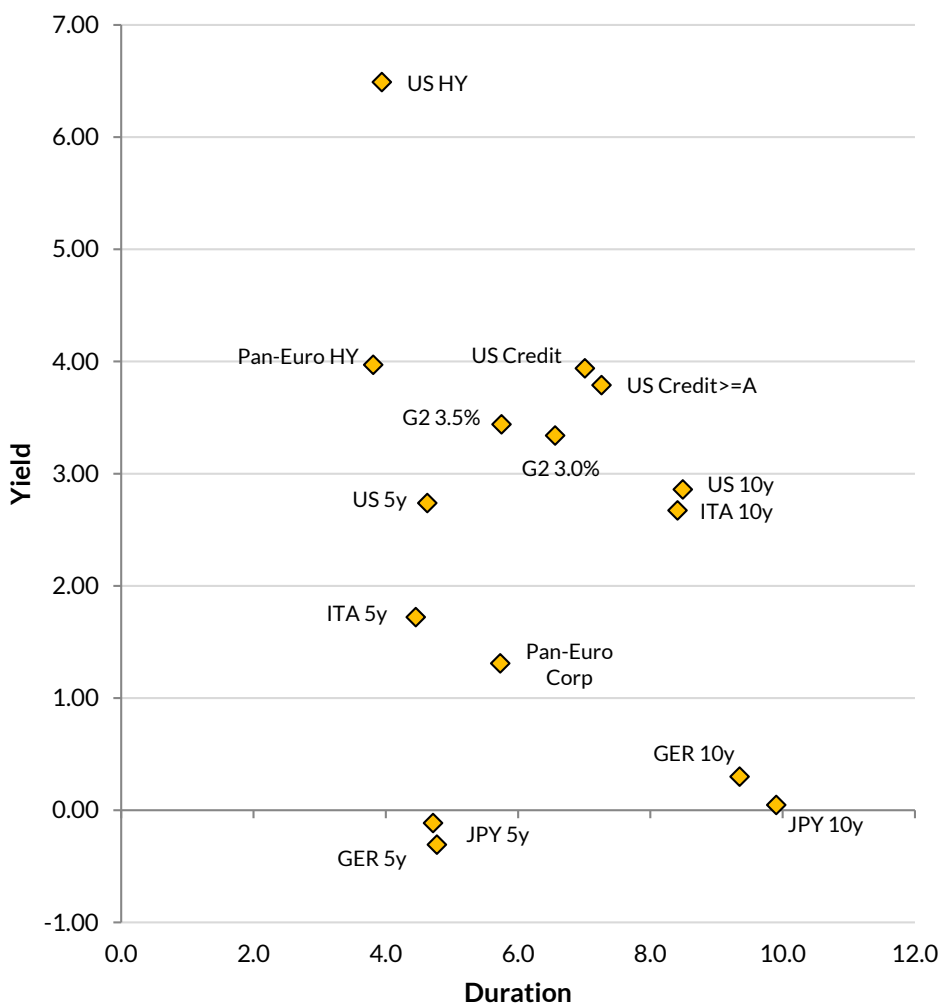
Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2018.



# 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 security class with significantly more yield is the high yield indices, where duration, a measure of sensitivity to interest rate changes, does not fully capture the volatility of the high yield asset class. Investors are unable to match the yield on Ginnie Mae securities, while preserving the full government guarantee, even if they extend their duration significantly.

## Yield versus duration



Security	Duration	Yield
US 5y	4.6	2.85
US 10y	8.4	2.96
GNMA II 3%	6.8	3.37
GNMA II 3.5%	5.9	3.49
JPY 5y	4.9	-0.10
JPY 10y	9.8	0.05
GER 5y	5.2	-0.13
GER 10y	9.9	0.44
ITA 5y	4.4	1.80
ITA 10y	8.4	2.72
US credit	7.0	3.92
US credit >= A	7.3	3.79
US HY	3.9	6.31
Pan-Euro Corp	5.7	1.29
Pan-Euro HY	3.7	3.58

Sources: Bloomberg and State Street Global Advisors. Note: Yields are in base currency of security and unhedged. Data as of July 2018.

# 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, but lower than many alternatives, including the US Investment-Grade Corporate and US and European High Yield indices. However, the standard deviation of the Ginnie Mae index is the lowest of any sector, as it has the least price volatility. The result: the excess return per unit of risk for the mortgage market is the highest of any market over the past decade, as measured by the Sharpe Ratio.

## Average Return (Per Month)

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	-0.03	-0.10	-0.06	0.04	0.22	0.13
3 year	0.09	0.05	0.26	0.09	0.51	0.30
5 year	0.18	0.12	0.29	0.31	0.45	0.48
10 year	0.29	0.24	0.47	0.41	0.73	0.85

## Average Excess Return (Per Month)

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	-0.15	-0.22	-0.18	0.10	0.09	0.20
3 year	0.03	-0.01	0.20	0.14	0.45	0.36
5 year	0.14	0.08	0.25	0.35	0.41	0.51
10 year	0.27	0.22	0.44	0.41	0.70	0.85

## Standard Deviation

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.56	0.79	0.83	0.38	0.59	0.84
3 year	0.53	0.91	1.04	0.94	1.57	1.40
5 year	0.61	0.90	1.07	0.97	1.44	1.22
10 year	0.76	1.18	1.75	1.38	2.98	3.48

## Sharpe Ratio

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield	Pan Euro High Yield*
1 year	-0.27	-0.28	-0.22	0.27	0.16	0.23
3 year	0.05	-0.01	0.19	0.15	0.28	0.26
5 year	0.23	0.09	0.24	0.36	0.28	0.42
10 year	0.36	0.19	0.25	0.30	0.24	0.25

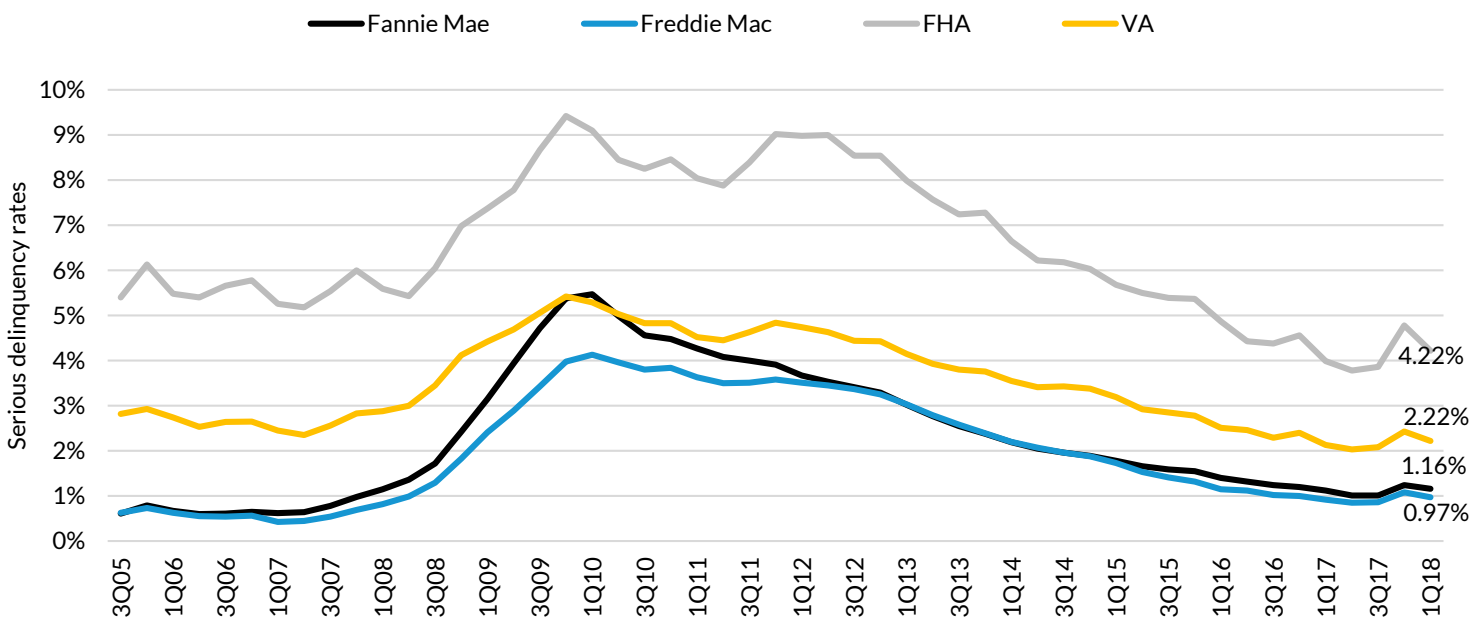
\*Assumes 2% capitalization max per issuer on high yield indices

Sources: Barclays Indices, Bloomberg and State Street Global Advisors Note: Data as of July 2018.

# State of the US Housing Market

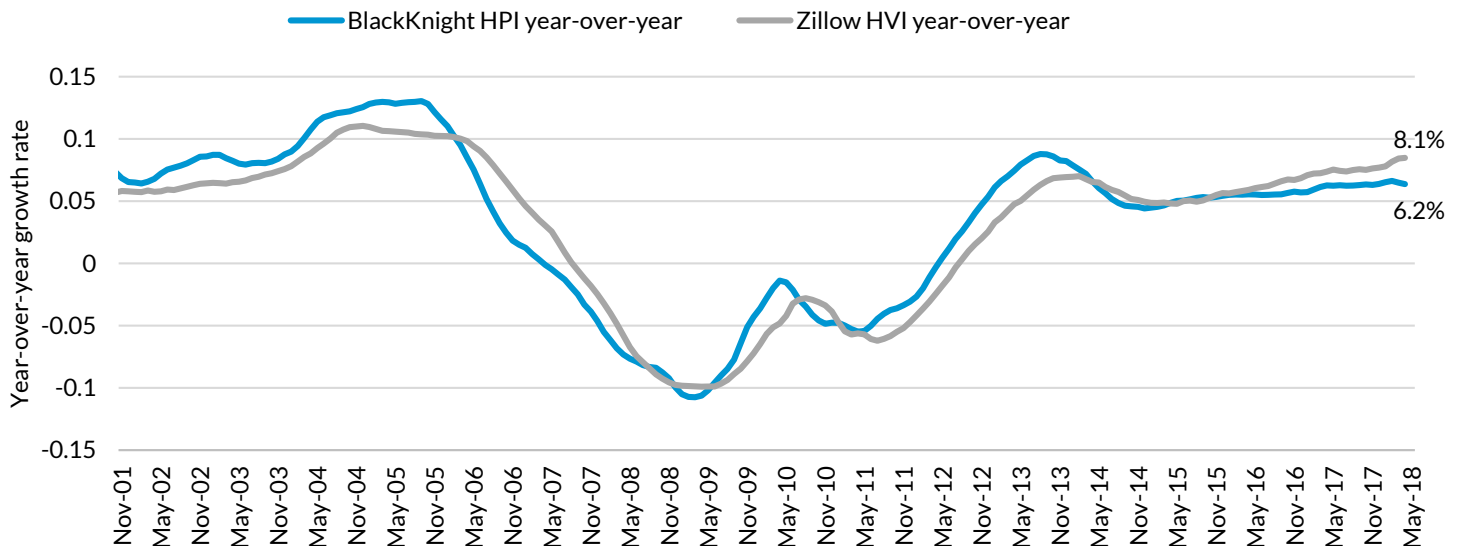
Serious delinquencies for single-family GSE loans, FHA loans, and VA loans declined in Q1 2018, after last quarter's seasonal and hurricane-related uptick. The delinquency rates for FHA and VA went down to 4.22 percent and 2.22 percent, respectively, and delinquency rates for Fannie Mae and Freddie Mac went down to 1.16 and 0.97 percent, respectively. GSE delinquencies remain high relative to 2005-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are at levels lower than 2005-2007. Home price changes turned positive in 2012, and continues to increase approximately 6-8 percent per year, as measured by both Black Knight and Zillow.

## 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 2018.

## National Year-Over-Year HPI Growth



Sources: Black Knight, Zillow, and Urban Institute. Note: Data as of May 2018.

# State of the US Housing Market

Nationally, nominal home prices have improved by 48.0 percent since the trough, and have exceeded their pre-crisis peak valuation on a nominal basis by 10.2 percent. However, the picture is very different for different states, with many states well in excess of the prior peak, while Nevada is 14.8 percent below peak levels and Connecticut is 15.2 percent below peak levels.

State	HPI Changes			YOY	Current HPI % Above Peak
	2000 to Peak	Peak to Trough	Trough to Current		
<b>National</b>	76.3%	-25.6%	48.0%	6.2%	10.2%
Alabama	44.0%	-15.5%	22.2%	5.4%	3.2%
Alaska	69.6%	-3.2%	20.2%	2.3%	16.4%
Arizona	110.3%	-48.0%	68.4%	7.0%	-12.4%
Arkansas	41.5%	-10.1%	20.4%	4.1%	8.3%
California	156.4%	-43.4%	87.6%	9.0%	6.2%
Colorado	40.0%	-12.5%	72.8%	8.8%	51.1%
Connecticut	92.8%	-24.5%	12.9%	1.7%	-14.8%
Delaware	94.1%	-23.5%	25.5%	6.3%	-4.0%
District of Columbia	177.7%	-13.1%	51.6%	2.7%	31.7%
Florida	129.9%	-46.8%	64.0%	6.6%	-12.8%
Georgia	38.4%	-32.6%	58.2%	6.4%	6.7%
Hawaii	162.9%	-21.9%	47.9%	5.3%	15.5%
Idaho	71.6%	-28.3%	61.2%	10.9%	15.6%
Illinois	61.7%	-34.4%	36.6%	3.4%	-10.5%
Indiana	21.3%	-7.3%	26.7%	4.7%	17.5%
Iowa	28.4%	-4.7%	22.3%	3.5%	16.5%
Kansas	34.7%	-9.4%	31.3%	2.0%	18.9%
Kentucky	29.7%	-7.3%	29.2%	5.1%	19.8%
Louisiana	48.7%	-5.4%	23.6%	3.6%	16.9%
Maine	82.6%	-12.4%	28.9%	6.3%	12.9%
Maryland	129.2%	-28.0%	24.1%	3.1%	-10.7%
Massachusetts	93.1%	-22.5%	47.5%	6.1%	14.3%
Michigan	24.5%	-39.5%	68.7%	7.5%	2.1%
Minnesota	66.0%	-27.2%	49.8%	7.1%	9.0%
Mississippi	41.1%	-13.7%	17.2%	-0.7%	1.1%
Missouri	42.7%	-14.4%	25.0%	5.9%	7.0%
Montana	82.0%	-10.2%	46.6%	9.2%	31.7%
Nebraska	26.8%	-6.6%	34.4%	5.0%	25.5%
Nevada	127.2%	-59.4%	109.1%	13.8%	-15.2%
New Hampshire	90.7%	-23.2%	33.0%	6.3%	2.1%
New Jersey	118.1%	-27.6%	23.7%	4.2%	-10.4%
New Mexico	66.8%	-16.1%	18.6%	4.5%	-0.6%
New York	99.4%	-15.1%	36.8%	5.9%	16.1%
North Carolina	40.6%	-15.3%	29.9%	6.3%	10.1%
North Dakota	53.9%	-4.2%	55.3%	2.6%	48.8%
Ohio	21.1%	-18.0%	29.6%	5.6%	6.2%
Oklahoma	37.6%	-2.2%	18.0%	2.1%	15.4%
Oregon	82.6%	-27.7%	72.2%	6.5%	24.4%
Pennsylvania	70.1%	-11.4%	18.7%	2.7%	5.2%
Rhode Island	131.9%	-34.0%	43.4%	8.0%	-5.4%
South Carolina	44.8%	-19.1%	29.2%	5.7%	4.5%
South Dakota	45.3%	-4.2%	35.5%	2.9%	29.8%
Tennessee	35.2%	-11.6%	36.5%	7.1%	20.6%
Texas	33.3%	-5.7%	46.5%	4.8%	38.1%
Utah	55.2%	-21.4%	60.9%	10.8%	26.4%
Vermont	83.5%	-8.7%	23.4%	4.9%	12.7%
Virginia	99.8%	-22.5%	23.8%	3.9%	-4.1%
Washington	85.8%	-28.4%	81.0%	12.0%	29.6%
West Virginia	43.1%	-6.7%	18.7%	1.6%	10.7%
Wisconsin	45.1%	-16.2%	29.0%	6.1%	8.1%
Wyoming	77.9%	-6.5%	23.8%	3.8%	15.7%

Sources: Black Knight and Urban Institute. Note: HPI data as of May 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 05/2018, the latest HPI data period.

# State of the US Housing Market

Ginnie Mae loans constitute 32.2 percent of outstanding agency issuance by loan balance, 33.7 percent of the issuance over the past year. However, the Ginnie Mae share varies widely across states, with the share of outstandings (as measured by loan balance) as low as 17.4 percent in the District of Columbia and as high as 52.3 percent in Mississippi. In general, the Ginnie Mae share is higher in states with lower home prices.

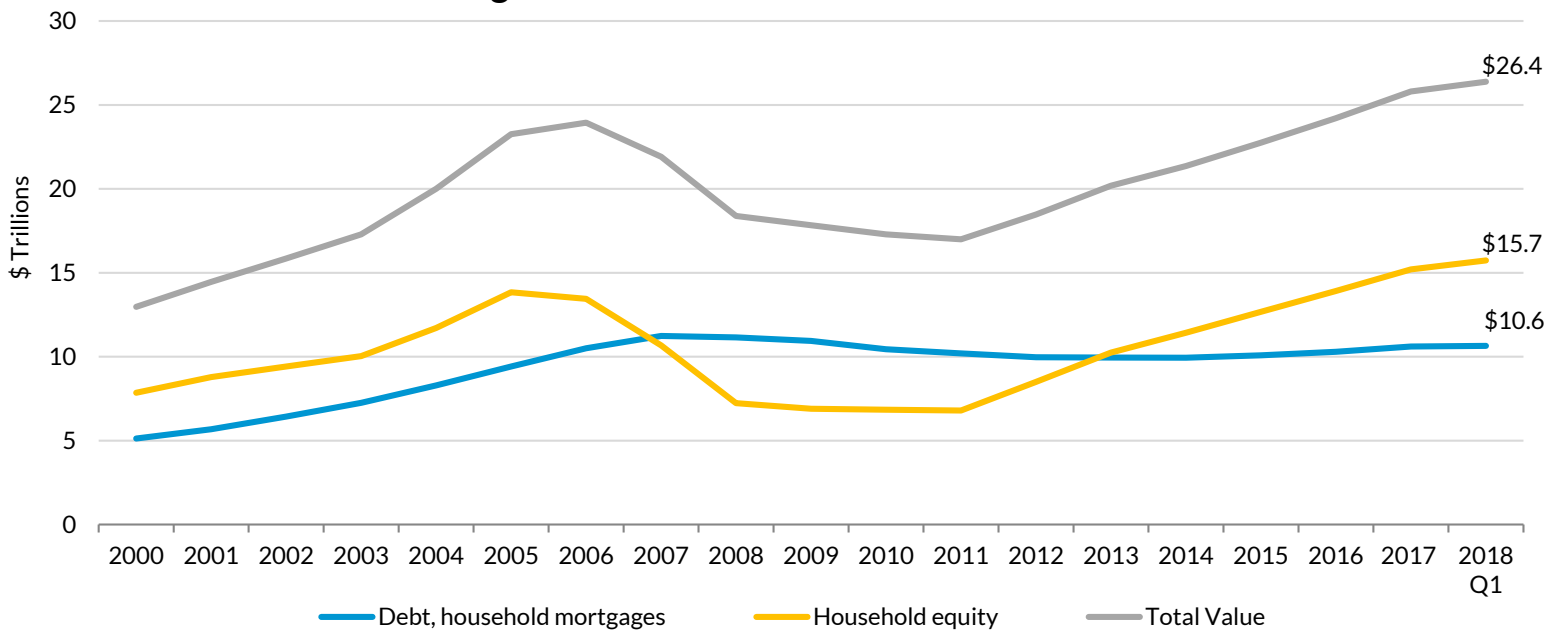
State	Agency Issuance (past 1 year)			Agency Outstanding		
	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)
<b>National</b>	<b>33.7%</b>	<b>213.8</b>	<b>229.8</b>	<b>32.2%</b>	<b>180.1</b>	<b>209.8</b>
Alabama	45.3%	160.9	183.0	47.0%	143.0	169.7
Alaska	52.1%	283.0	245.9	52.0%	257.6	229.4
Arizona	34.1%	208.8	214.1	34.3%	178.3	193.0
Arkansas	44.2%	141.7	167.3	46.6%	123.6	154.0
California	27.8%	344.7	328.2	22.2%	288.5	294.7
Colorado	32.8%	281.1	271.5	30.1%	232.9	239.9
Connecticut	32.7%	214.8	227.1	30.0%	204.0	218.5
Delaware	39.2%	213.1	223.9	37.5%	199.2	209.0
District of Columbia	18.0%	413.6	357.3	17.4%	331.1	334.5
Florida	39.3%	209.4	205.7	36.8%	176.2	186.5
Georgia	41.2%	183.9	207.2	40.8%	156.5	187.8
Hawaii	39.7%	495.0	386.8	31.9%	422.8	348.4
Idaho	34.2%	195.6	199.9	34.8%	165.0	177.8
Illinois	26.8%	177.5	198.6	25.3%	156.5	184.0
Indiana	39.6%	141.3	156.6	39.5%	122.8	142.6
Iowa	26.5%	144.6	162.8	26.9%	126.2	149.9
Kansas	37.0%	155.1	175.9	37.0%	133.9	158.1
Kentucky	40.4%	149.7	166.5	40.1%	134.0	151.3
Louisiana	42.8%	169.8	194.0	43.5%	151.9	178.7
Maine	36.2%	183.4	198.5	33.2%	167.7	181.8
Maryland	44.5%	283.2	264.3	40.1%	254.3	248.2
Massachusetts	24.1%	290.0	281.6	19.8%	255.4	256.5
Michigan	26.0%	145.3	168.3	26.5%	124.5	152.6
Minnesota	25.5%	196.2	209.1	25.5%	171.4	191.6
Mississippi	50.8%	151.7	170.9	52.3%	133.2	159.1
Missouri	36.2%	150.7	172.4	36.4%	133.6	157.3
Montana	31.8%	214.1	216.3	31.5%	184.7	193.7
Nebraska	31.9%	161.5	170.5	35.2%	136.5	155.0
Nevada	37.6%	240.4	228.8	39.6%	200.1	201.6
New Hampshire	32.4%	231.7	224.3	30.2%	210.0	203.6
New Jersey	30.1%	249.4	264.5	28.2%	233.4	249.7
New Mexico	43.5%	178.2	187.4	44.1%	157.6	173.7
New York	27.0%	242.1	267.4	26.4%	207.0	244.2
North Carolina	35.0%	180.1	201.4	35.9%	156.3	185.8
North Dakota	28.2%	210.1	206.9	26.8%	182.2	187.4
Ohio	36.5%	141.7	156.7	37.6%	125.8	144.9
Oklahoma	46.9%	151.6	170.8	50.0%	132.5	158.0
Oregon	27.9%	252.9	256.2	25.4%	212.9	223.9
Pennsylvania	33.8%	167.3	193.1	33.8%	152.6	181.4
Rhode Island	38.2%	225.5	219.6	34.4%	202.5	204.0
South Carolina	40.2%	182.9	192.7	39.2%	159.9	178.6
South Dakota	37.2%	176.2	184.2	37.0%	156.3	166.8
Tennessee	41.0%	181.3	200.1	42.6%	152.1	180.0
Texas	35.5%	195.9	213.7	38.2%	155.8	193.1
Utah	30.2%	236.6	246.7	31.2%	204.1	221.3
Vermont	23.2%	193.3	197.3	20.1%	182.0	183.2
Virginia	45.5%	270.3	259.5	42.0%	244.6	244.9
Washington	31.1%	282.1	284.1	30.0%	235.7	246.8
West Virginia	48.9%	155.0	154.6	46.2%	139.6	147.1
Wisconsin	23.4%	165.1	175.3	21.6%	147.7	161.8
Wyoming	41.7%	211.6	210.6	41.5%	194.6	196.3

Sources: eMBS and Urban Institute. Note: Ginnie Mae share are based on loan balance as of June 2018.

# State of the US Housing Market

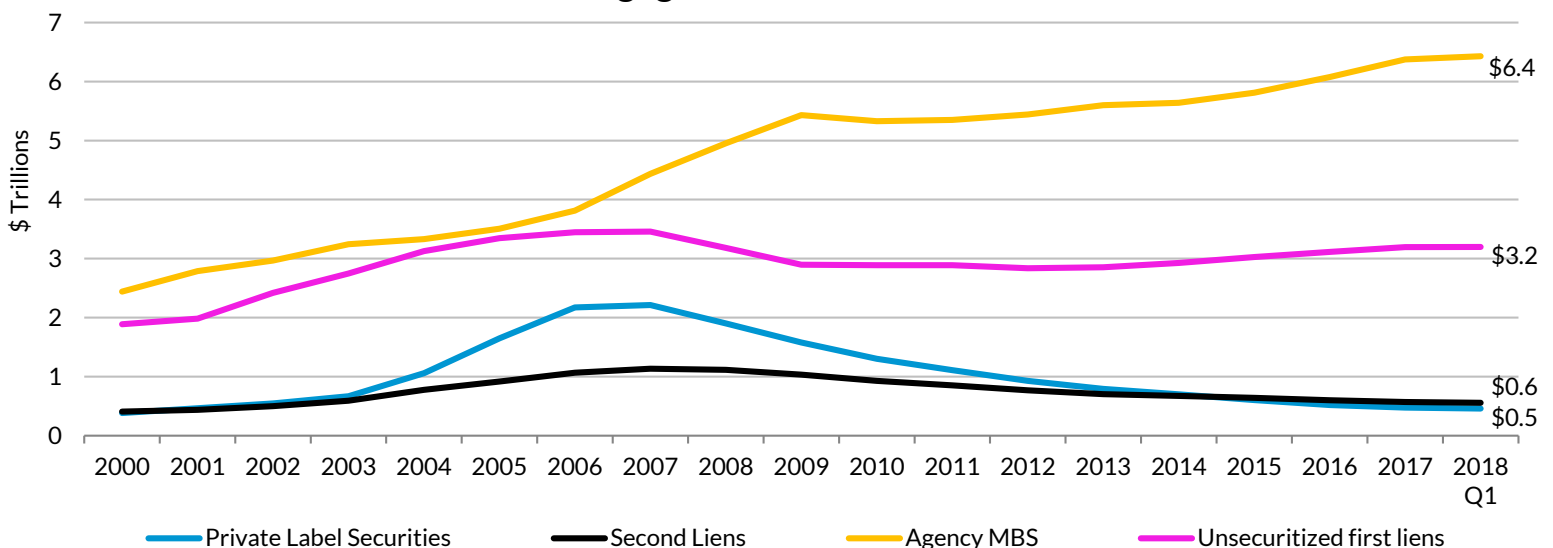
The Federal Reserve's Flow of Funds report has consistently indicated an increasing total value of the housing market driven by growing household equity since 2012, and 2018 Q1 was no different. While total debt and mortgages was stable at \$10.6 trillion, household equity reached a new high of \$15.7 trillion, bringing the total value of the housing market to \$26.4 trillion, 10 percent higher on a nominal crisis than the pre-crisis peak in 2006. Agency MBS make up 59.3 percent of the total mortgage market, private-label securities make up 4.9 percent, and unsecuritized first liens at the GSEs, commercial banks, savings institutions, and credit unions make up 30.1 percent. Second liens comprise the remaining 5.7 percent of the total.

## Value of the US Housing Market



Sources: Federal Reserve Flow of Funds and Urban Institute. Data as of Q1 2018.

## Size of the US Residential Mortgage Market



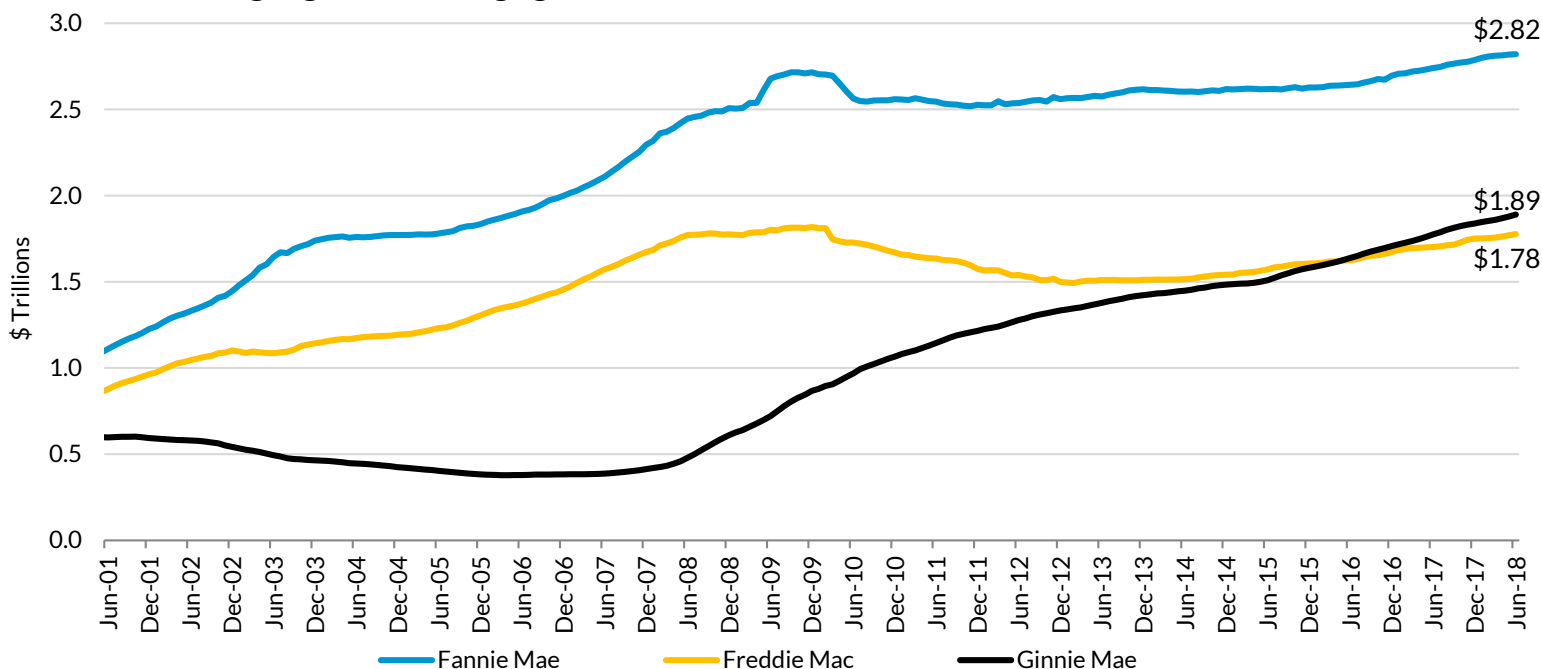
Sources: Federal Reserve Flow of Funds, Inside Mortgage Finance, Fannie Mae, Freddie Mac, eMBS and Urban Institute.

Note: Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions. Data as of Q1 2018.

# State of the US Housing Market

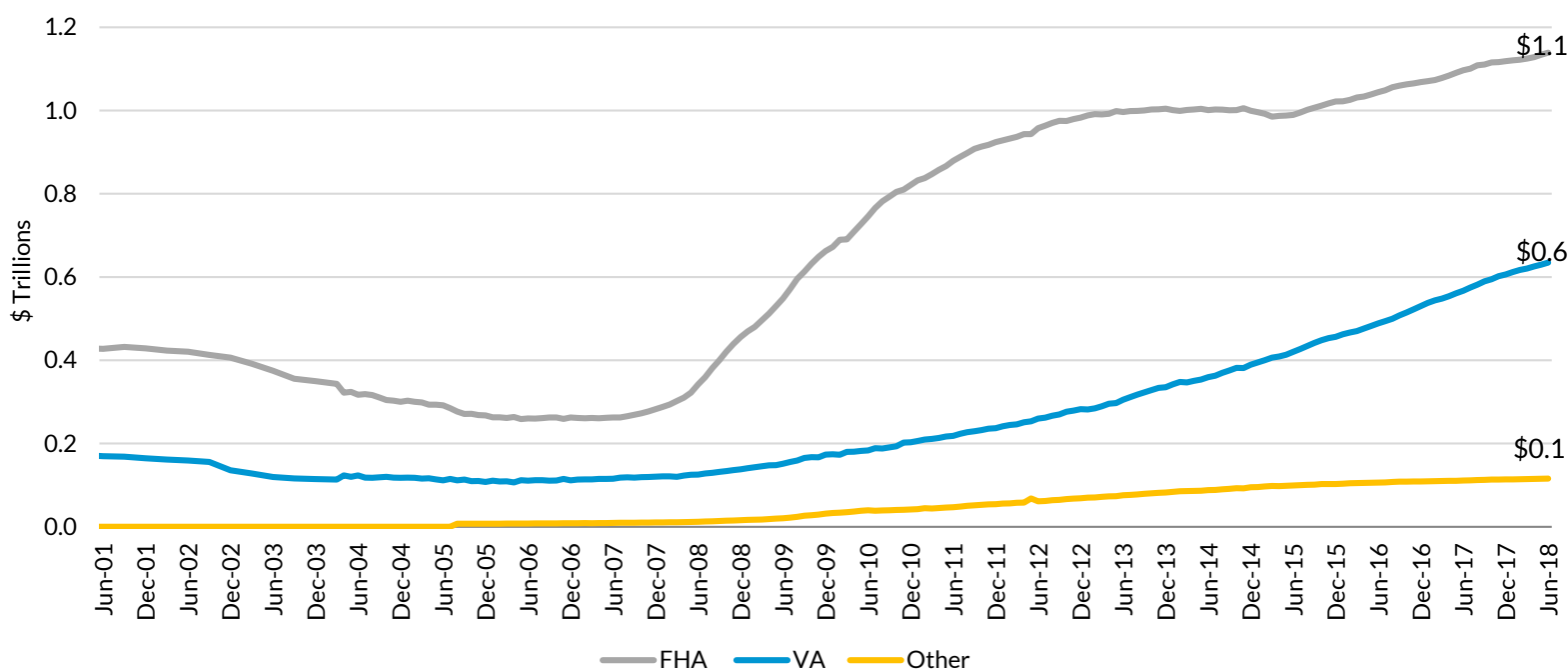
As of June 2018, outstanding securities in the agency market totaled \$6.49 trillion and were 43.5 percent Fannie Mae, 27.4 percent Freddie Mac, and 29.1 percent Ginnie Mae. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, VA has been growing very rapidly, and now comprises 33.6 percent of total Ginnie Mae outstandings.

## Outstanding Agency Mortgage-Backed Securities



Sources: eMBS and Urban Institute Note: Data as of June 2018.

## Outstanding Ginnie Mae Mortgage-Backed Securities

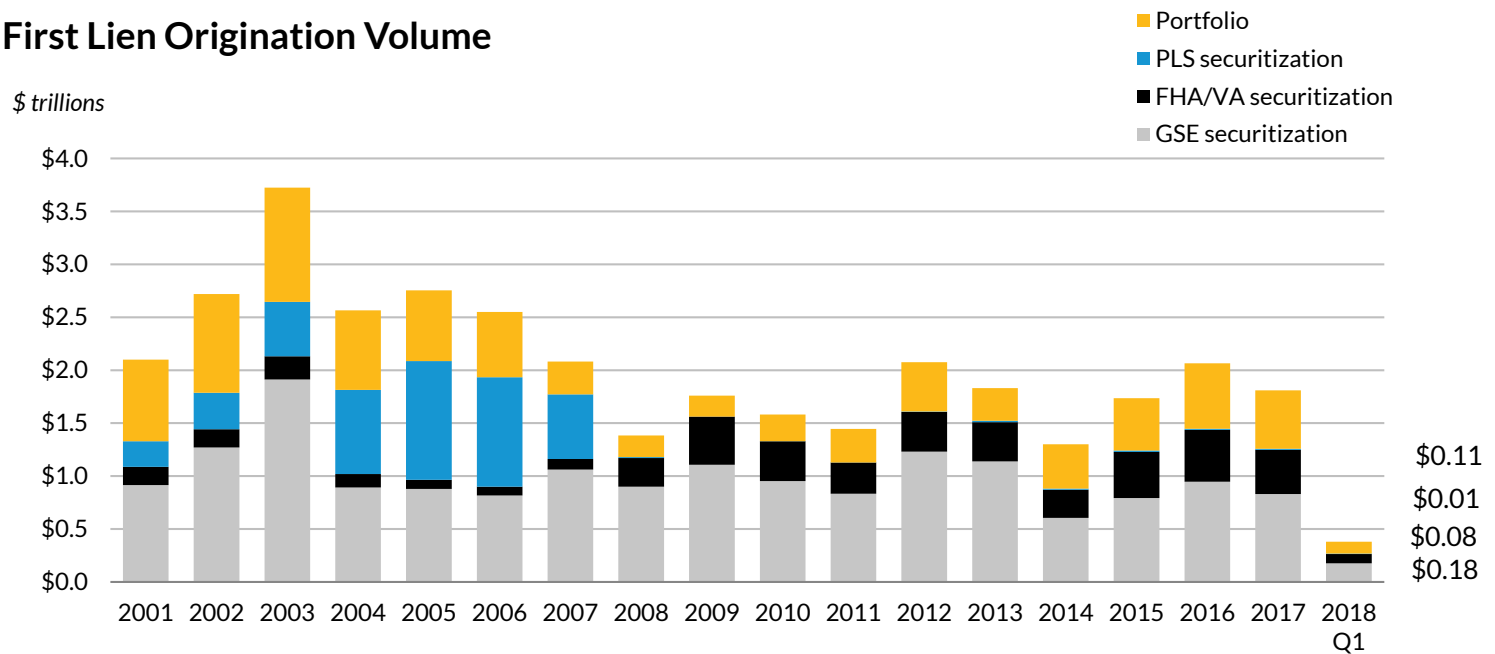


Sources: eMBS and Urban Institute. Note: Data as of June 2018.

# State of the US Housing Market

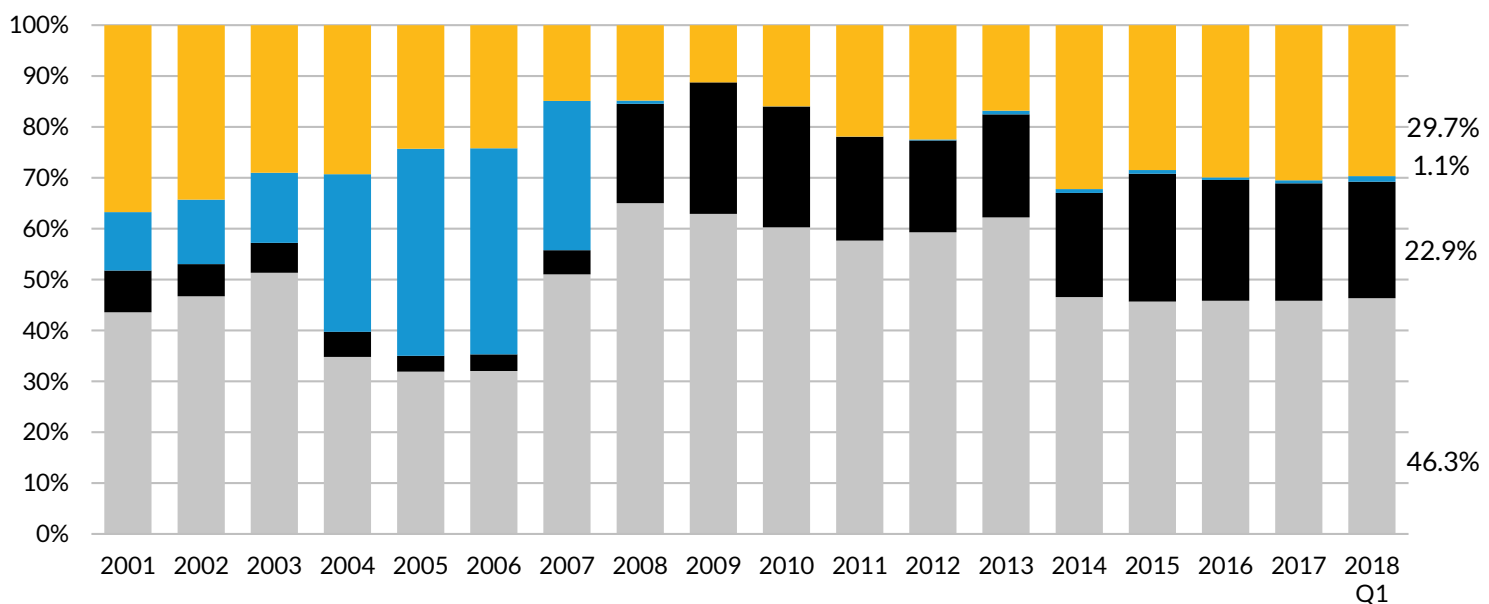
First lien originations totaled \$380 billion in Q1 2018, down 16 percent from the first quarter of 2017, mostly due to high interest rates. The portfolio originations share was 28 percent, the GSE share was around 46 percent, and the FHA/VA share was around 23 percent, all consistent with 2017 shares. Origination of private-label securities was under just over 1 percent, slightly higher than the 2017 share.

## First Lien Origination Volume



Sources: Inside Mortgage Finance and Urban Institute. Note: Data as of Q1 2018.

## First Lien Origination Share



Sources: Inside Mortgage Finance and Urban Institute. Note: Data as of Q1 2018.



# US Agency Market, Originations

Agency gross issuance totaled \$581.3 billion in the first half of 2018, down by 8.7 percent compared to the same time period in 2017. Ginnie Mae gross issuance was down by 9.9 percent and GSE gross issuance was down by 8.1 percent. Within the Ginnie Mae market, FHA is down by 15.6 percent and VA origination is down by 0.4 percent. The decline in origination volume is the result of higher interest rates.

Agency Gross Issuance					
Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total Agency
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 YTD	\$236.7	\$146.6	\$383.3	\$198.0	\$581.3
2018 % Change YOY	-8.3%	-7.9%	-8.1%	-9.9%	-8.7%
2018 Ann.	\$473.4	\$293.3	\$766.7	\$396.0	\$1,162.7

Ginnie Mae Breakdown: Agency Gross Issuance				
Issuance Year	FHA	VA	Other	Total Agency
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 YTD	\$108.1	\$81.6	\$8.3	\$198.0
2018 % Change YOY	-15.6%	-0.4%	-14.7%	-9.9%
2018 Ann.	\$216.2	\$163.2	\$16.6	\$396.0

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 June 2018.

# US Agency Market, Originations

Agency net issuance totaled \$110.7 billion in the first half of 2018, down 22.1 percent compared to 2017. Ginnie Mae net issuance was \$51.2 billion, comprising 46.3 percent of total agency net issuance. Note that Ginnie Mae net issuance in the first half of 2018 is down 24.2 percent year over year. Ginnie Mae net issuance YTD in 2018 is comprised of 56.9 percent VA issuance, 39.4 percent FHA issuance and 3.7 percent other issuance.

Agency Net Issuance					
Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total Agency
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 YTD	\$33.7	\$25.7	\$59.5	\$51.2	\$110.7
2018 %Change YOY	-24.2%	-14.1%	-20.1%	-24.2%	-22.1%
2018 Ann.	\$67.5	\$51.5	\$119.0	\$102.4	\$221.4

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 YTD	\$20.1	\$29.1	\$1.9	\$51.2
2018 %Change YOY	-30.7%	-20.1%	-8.6%	-24.3%
2018 Ann.	\$40.3	\$58.3	\$3.8	\$102.4

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 June 2018.

# US Agency Market, Originations

Agency gross issuance totaled \$102.6 billion in June 2018, up slightly from \$100.1 billion of issuance in May 2018, a seasonal effect. June 2018 levels are below June 2017 issuance of \$110.7 billion.

## Monthly Agency Issuance

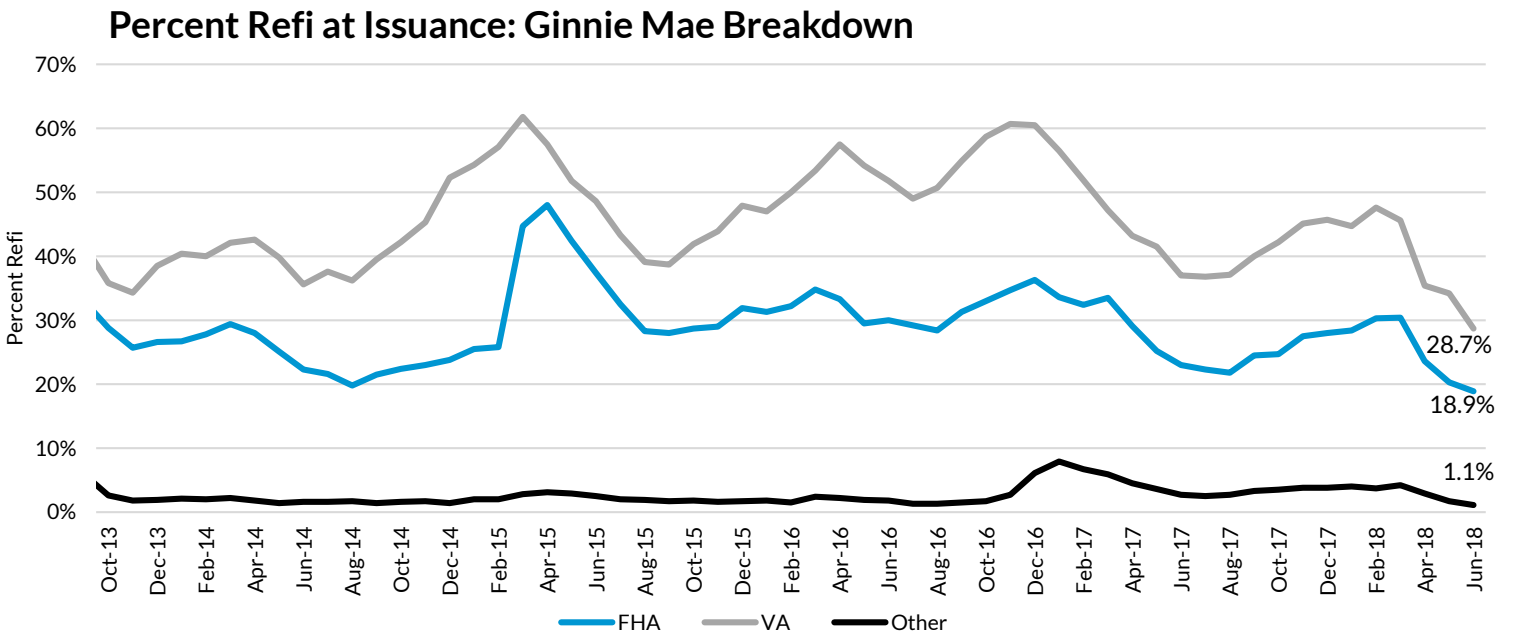
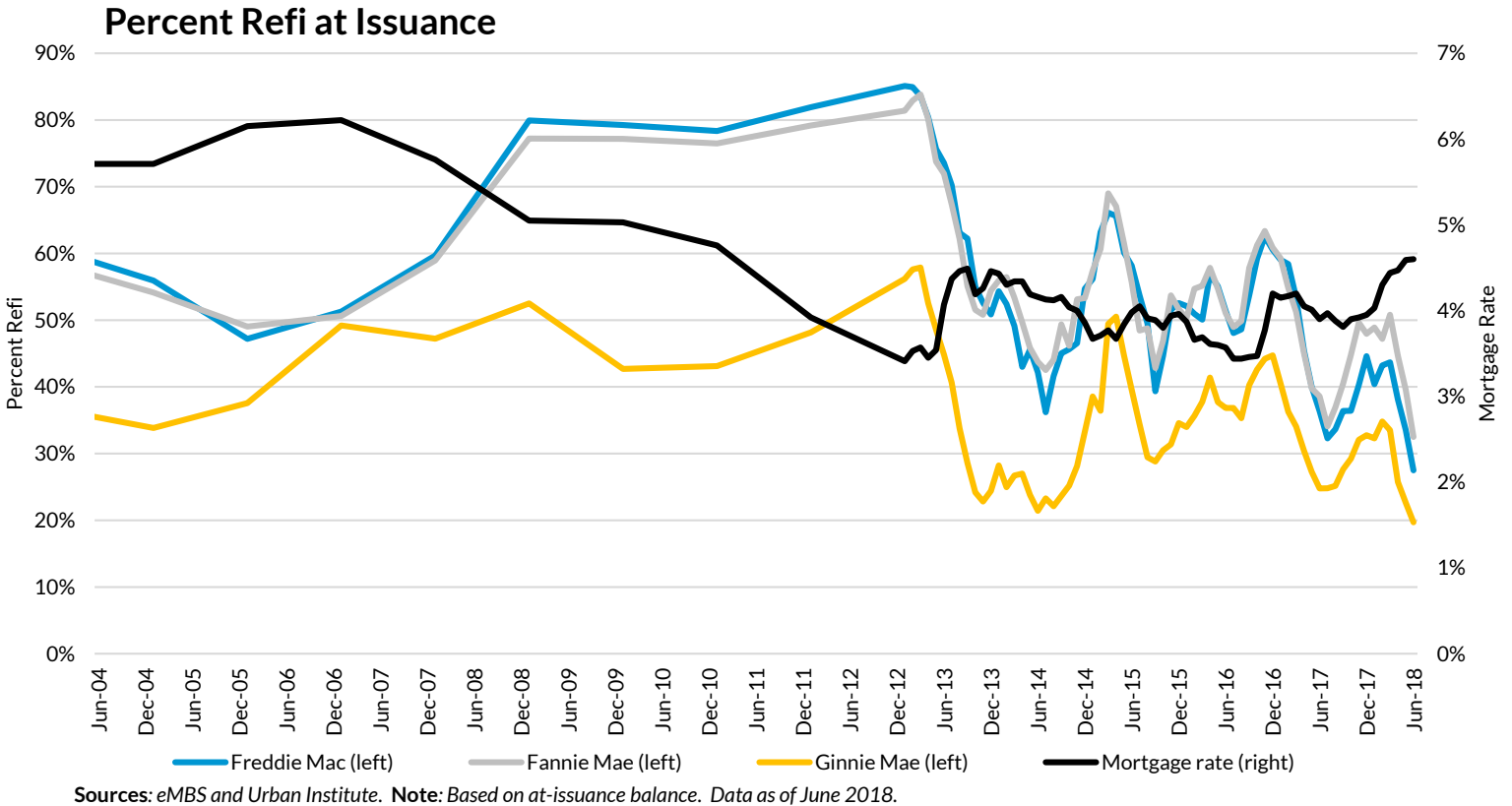
Date	Gross Issuance			Net Issuance		
	Fannie Mae	Freddie Mac	Ginnie Mae	Fannie Mae	Freddie Mac	Ginnie Mae
Jan-15	\$36.8	\$22.9	\$27.5	-\$1.2	\$0.8	\$2.5
Feb-15	\$35.4	\$29.9	\$23.9	\$1.5	\$10.1	\$2.9
Mar-15	\$44.8	\$26.0	\$30.7	\$3.1	\$1.1	\$0.6
Apr-15	\$49.3	\$33.8	\$40.6	-\$1.2	\$3.8	\$4.3
May-15	\$42.4	\$33.2	\$39.4	-\$2.9	\$6.6	\$5.8
Jun-15	\$44.6	\$34.4	\$40.5	\$0.8	\$8.3	\$9.1
Jul-15	\$46.0	\$39.2	\$45.6	\$1.0	\$12.3	\$13.3
Aug-15	\$39.4	\$27.6	\$43.4	-\$2.2	\$3.1	\$14.9
Sep-15	\$45.3	\$30.4	\$39.4	\$7.6	\$7.9	\$12.7
Oct-15	\$41.5	\$28.4	\$39.2	\$4.8	\$6.4	\$12.4
Nov-15	\$28.8	\$23.3	\$35.8	-\$8.1	\$1.3	\$10.6
Dec-15	\$39.7	\$22.8	\$30.3	\$7.1	\$3.2	\$8.2
Jan-16	\$35.6	\$22.5	\$32.5	-\$0.6	\$1.0	\$7.3
Feb-16	\$32.4	\$21.2	\$30.5	\$2.4	\$3.1	\$8.4
Mar-16	\$39.7	\$27.5	\$32.9	\$7.9	\$8.2	\$9.6
Apr-16	\$43.8	\$26.2	\$40.1	\$0.8	-\$0.2	\$8.8
May-16	\$44.2	\$29.9	\$41.6	\$2.4	\$4.4	\$11.4
Jun-16	\$46.7	\$30.1	\$43.9	\$2.7	\$3.0	\$11.9
Jul-16	\$49.8	\$35.3	\$46.1	\$2.3	\$6.3	\$10.8
Aug-16	\$54.9	\$37.9	\$46.7	\$10.4	\$11.0	\$13.8
Sep-16	\$65.8	\$44.0	\$52.5	\$8.7	\$9.0	\$12.5
Oct-16	\$66.0	\$35.9	\$47.4	\$11.8	\$2.7	\$9.3
Nov-16	\$48.8	\$40.2	\$47.2	-\$3.5	\$7.9	\$10.3
Dec-16	\$72.7	\$40.5	\$46.8	\$23.3	\$10.4	\$10.8
Jan-17	\$55.6	\$38.5	\$42.6	\$10.3	\$10.7	\$10.3
Feb-17	\$37.6	\$27.4	\$33.1	\$3.1	\$6.5	\$9.2
Mar-17	\$39.5	\$24.4	\$31.3	\$10.3	\$6.2	\$9.6
Apr-17	\$39.3	\$21.2	\$36.4	\$4.8	\$0.4	\$11.7
May-17	\$40.3	\$22.6	\$36.4	\$7.6	\$2.7	\$13.1
Jun-17	\$45.7	\$25.1	\$39.9	\$8.3	\$2.4	\$13.2
Jul-17	\$45.3	\$27.6	\$40.6	\$5.8	\$3.5	\$12.1
Aug-17	\$49.1	\$29.3	\$42.8	\$12.0	\$6.7	\$15.6
Sep-17	\$47.3	\$27.9	\$40.2	\$7.4	\$3.8	\$10.5
Oct-17	\$42.9	\$34.6	\$38.4	\$6.4	\$12.5	\$10.7
Nov-17	\$43.5	\$37.2	\$37.8	\$4.6	\$13.6	\$8.2
Dec-17	\$45.3	\$30.0	\$36.2	\$9.6	\$8.2	\$6.8
Jan-18	\$47.4	\$21.4	\$35.2	\$12.4	\$0.3	\$7.8
Feb-18	\$40.3	\$21.5	\$31.9	\$8.0	\$2.3	\$7.1
Mar-18	\$35.6	\$21.3	\$29.0	\$4.9	\$3.0	\$6.1
Apr-18	\$36.3	\$26.2	\$32.7	\$1.71	\$6.1	\$9.1
May-18	\$38.9	\$27.5	\$33.7	\$4.5	\$7.2	\$10.6
Jun-18	\$38.2	\$28.8	\$35.6	\$2.2	\$6.8	\$10.5

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 June 2018.

# US Agency Market, Originations

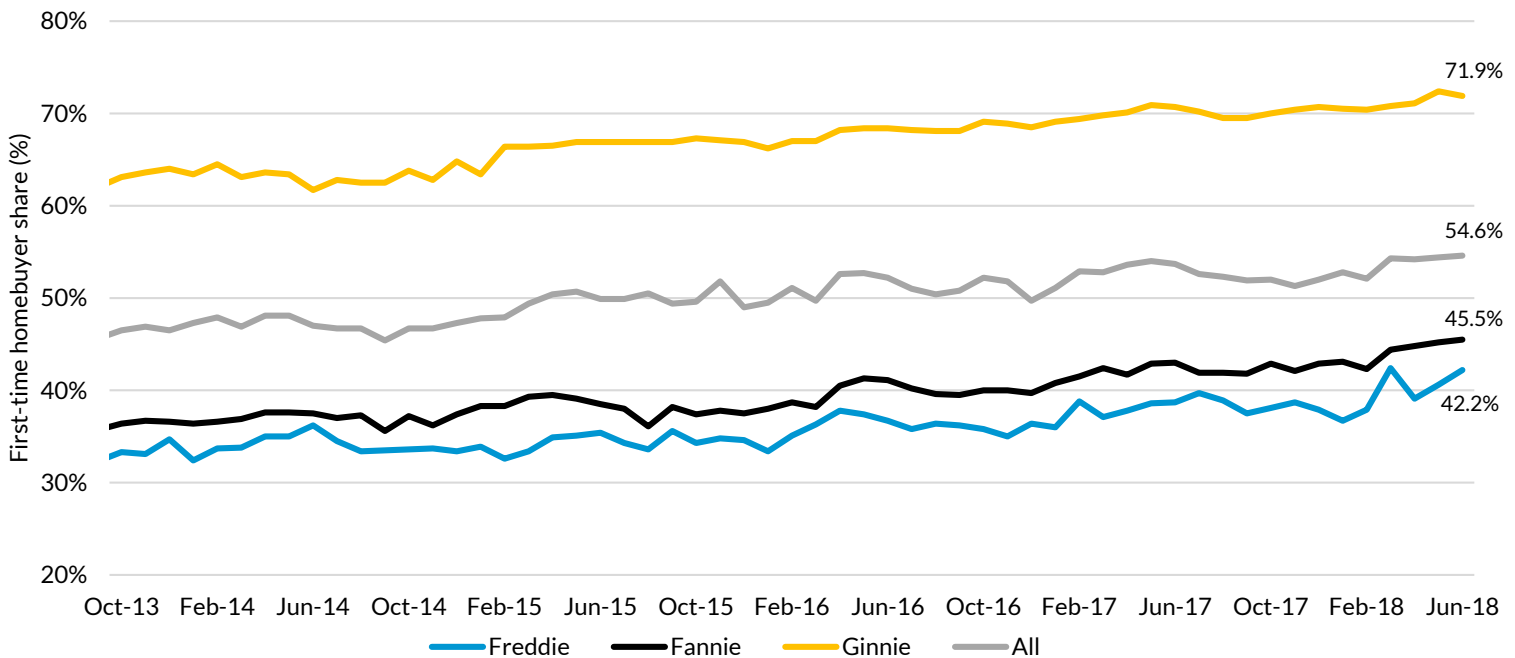
The Ginnie Mae refi share stood at 20 percent in June 2018, below the 33 and 28 percent shares for Fannie Mae and Freddie Mac, respectively. Within Ginnie Mae, VA had the highest refi share at 28.7 percent in June 2018, followed by FHA's 18.9 percent refi share. In June, the refinance share continued to sharply decline for all agencies, reaching the lowest levels in recent years. This is a result of increasing interest rates and the spring uptick in purchase activity.



# Credit Box

The first time homebuyer share was near its historical high in June 2018, comprising 71.9 percent of all purchase activity. 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 45.5 percent and 42.2 percent of Fannie and Freddie purchase originations, respectively. The bottom table shows that based on mortgages originated in June 2018, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan and have a lower credit score, a much higher LTV and a similar DTI, thus requiring a higher interest rate.

## First Time Homebuyer Share: Purchase Only Loans



Sources: eMBS and Urban Institute. Note: Data as of June 2018.

	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	233,997	262,447	236,984	268,270	204,781	256,170	220,042	262,642
Credit Score	737.6	754.5	742.0	756.9	678.8	701.3	709.2	740.3
LTV (%)	88.6	79.7	87.4	79.3	97.0	95.5	92.5	84.0
DTI (%)	36.8	37.2	35.2	36.2	41.7	42.6	38.9	38.3
Loan Rate (%)	4.8	4.6	4.6	4.6	4.8	4.6	4.7	4.6

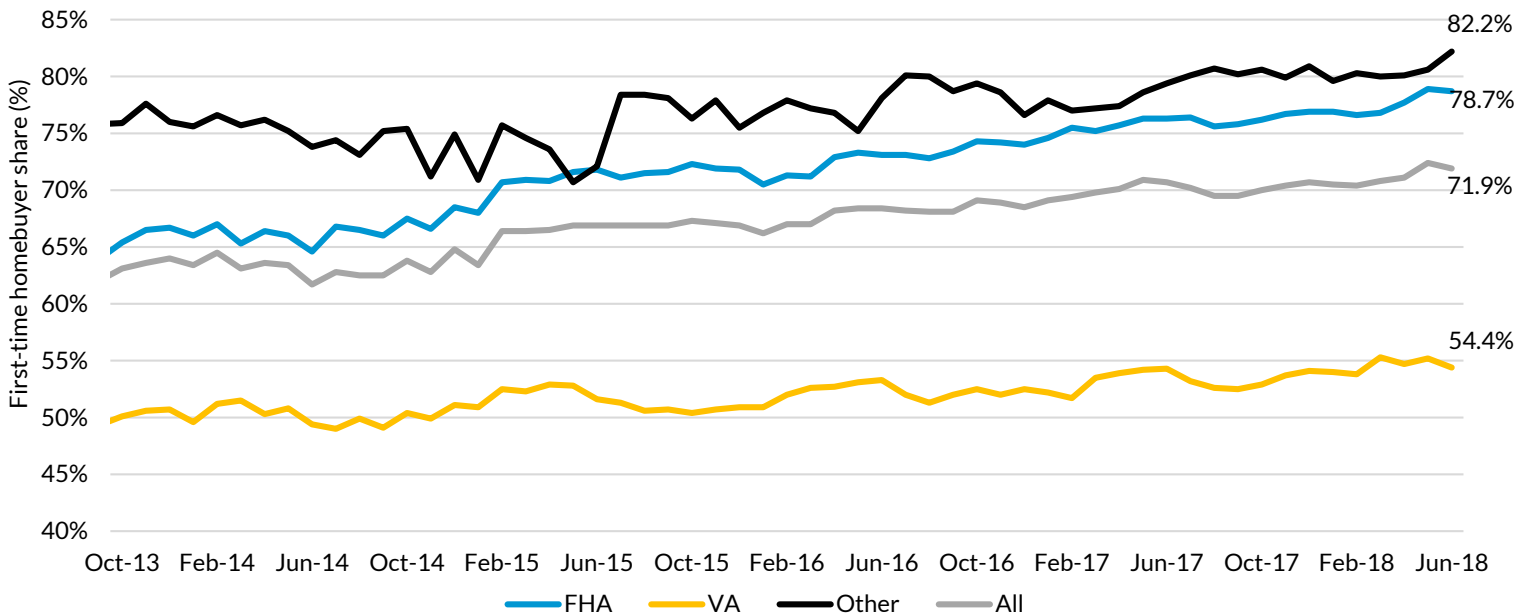
Sources: eMBS and Urban Institute.

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 June 2018.

# Credit Box

Within the Ginnie Mae purchase market, 78.7 percent of FHA loans, 54.4 percent of VA loans and 82.2 percent of other loans represent financing for first time home buyers. The bottom table shows that based on mortgages originated in June 2018, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan and have a lower credit score, and similar LTVs and DTIs, thus requiring a higher interest rate.

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



Sources: eMBS and Urban Institute. Note: Data as of June 2018.

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	200,166	222,504	248,343	301,119	141,043	154,383	204,781	256,170
Credit Score	669.5	674.1	699.5	728.3	693.8	695.6	678.8	701.3
LTV (%)	95.6	94.1	99.9	96.4	99.4	100.0	97.0	95.5
DTI (%)	43.0	43.8	40.8	42.2	35.2	36.0	41.7	42.6
Loan Rate (%)	4.8	4.8	4.6	4.5	4.7	4.7	4.8	4.6

Sources: eMBS and Urban Institute. Note: Data as of June 2018. "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

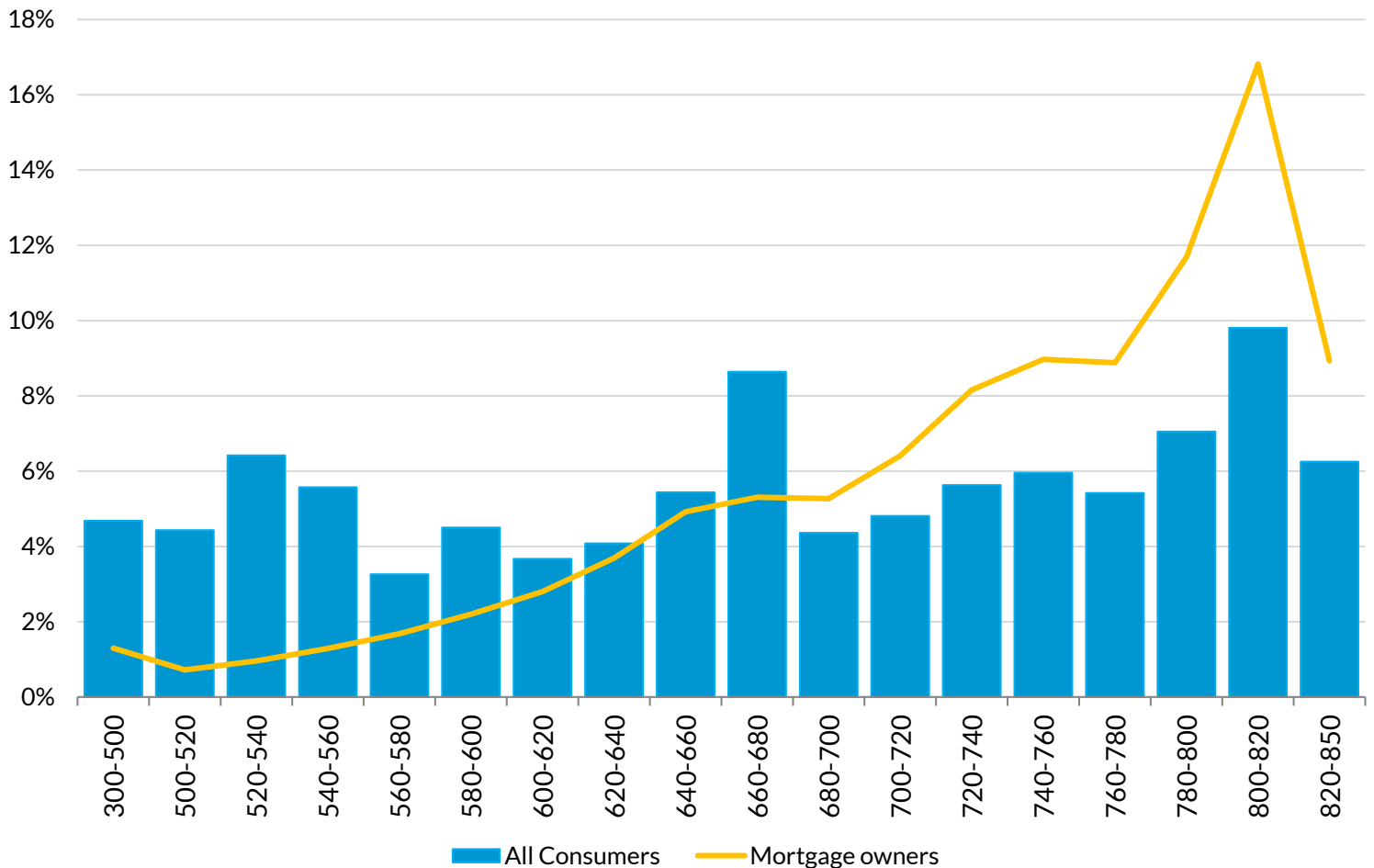
Consumers who have a mortgage are concentrated at the high end of the general credit score spectrum. The top table shows that the median FICO score for all consumers (676) is lower than the 25th percentile of those with a mortgage (680).

## FICO Score Distribution: Mortgage Owners vs All Consumers

All Consumers- Percentiles								
Minimum	P5	P10	P25	P50	P75	P90	P95	Maximum
300	502	524	583	676	772	813	822	839

Mortgage Owners- Percentiles								
Minimum	P5	P10	P25	P50	P75	P90	P95	Maximum
308	569	613	680	751	801	818	824	839



Sources: Credit Bureau Data and Urban Institute.  
 Note: Data as of August 2016.

# June 2018 Credit Box at a Glance

In June 2018, the median Ginnie Mae FICO score was 676 versus 748 for Fannie and 755 for Freddie. Note that the FICO score for the 10<sup>th</sup> percentile was 621 for Ginnie Mae, versus 672 for Fannie and 683 for Freddie. Within the Ginnie Mae market, FHA loans have a median FICO score of 664, VA loans have a median FICO score of 705 and other loans have a median FICO score of 689.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	309,025	643	680	731	775	797	725
Fannie	107,698	683	716	755	785	801	748
Freddie	84,210	690	722	759	787	802	752
Ginnie	117,117	623	645	676	722	769	685

Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	119,304	640	677	722	767	794	719
Fannie	54,239	656	691	733	773	797	730
Freddie	35,676	669	703	743	778	799	738
Ginnie	29,389	608	638	672	714	759	677

All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	428,329	642	679	728	773	797	723
Fannie	161,937	672	707	748	782	800	742
Freddie	119,886	683	716	755	785	801	747
Ginnie	146,506	621	643	676	720	767	683

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	117,117	623	645	676	722	769	685
FHA	71,841	618	638	664	699	736	670
VA	34,629	633	663	712	766	795	713
Other	10,647	639	657	690	730	764	694

Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	29,389	608	638	672	714	759	677
FHA	15,980	599	628	659	693	731	662
VA	13,329	623	653	692	737	776	695
Other	80	604	636	678	723	770	681

All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	146,506	621	643	676	720	767	683
FHA	87,821	614	637	664	698	735	669
VA	47,958	630	660	705	759	791	708
Other	10,727	638	657	689	730	764	694

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 June 2018.



# June 2018 Credit Box at a Glance

In June 2018, 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 10<sup>th</sup> percentile was 84.2 percent for Ginnie Mae, and 51-52 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	309,452	73.0	80.0	95.0	96.5	100.0	88.0
Fannie	107,797	65.0	80.0	85.0	95.0	97.0	83.3
Freddie	84,310	62.0	79.0	80.0	95.0	97.0	82.1
Ginnie	117,345	93.3	96.5	96.5	100.0	102.0	96.6

Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	119,873	43.0	59.0	74.0	80.0	90.0	69.7
Fannie	54,245	39.0	54.0	69.0	77.0	80.0	64.3
Freddie	35,681	40.0	55.0	70.0	79.0	80.0	65.2
Ginnie	29,947	66.3	80.0	86.5	95.0	100.0	84.7

All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	429,325	58.0	75.0	88.0	96.5	99.2	82.9
Fannie	162,042	51.0	69.0	80.0	93.0	97.0	76.9
Freddie	119,991	52.0	70.0	80.0	90.0	95.0	77.1
Ginnie	147,292	84.2	94.8	96.5	100.0	101.0	94.2

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	117,345	93.3	96.5	96.5	100.0	102.0	96.6
FHA	71,976	93.8	96.5	96.5	96.5	96.5	95.3
VA	34,674	91.1	100.0	100.0	102.2	103.3	98.3
Other	10,695	95.7	99.3	101.0	101.0	102.0	99.5

Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	29,947	66.3	80.0	86.5	95.0	100.0	84.7
FHA	16,102	65.4	78.3	86.3	86.5	93.5	81.5
VA	13,726	67.6	82.1	92.4	100.0	101.5	88.5
Other	119	75.1	77.0	86.3	96.0	101.4	85.6

All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	147,292	84.2	94.8	96.5	100.0	101.0	94.2
FHA	88,078	84.5	94.2	96.5	96.5	96.5	92.8
VA	48,400	81.2	94.5	100.0	102.1	103.3	95.5
Other	10,814	95.3	99.2	101.0	101.0	102.0	99.4

Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Data as of June 2018.

# June 2018 Credit Box at a Glance

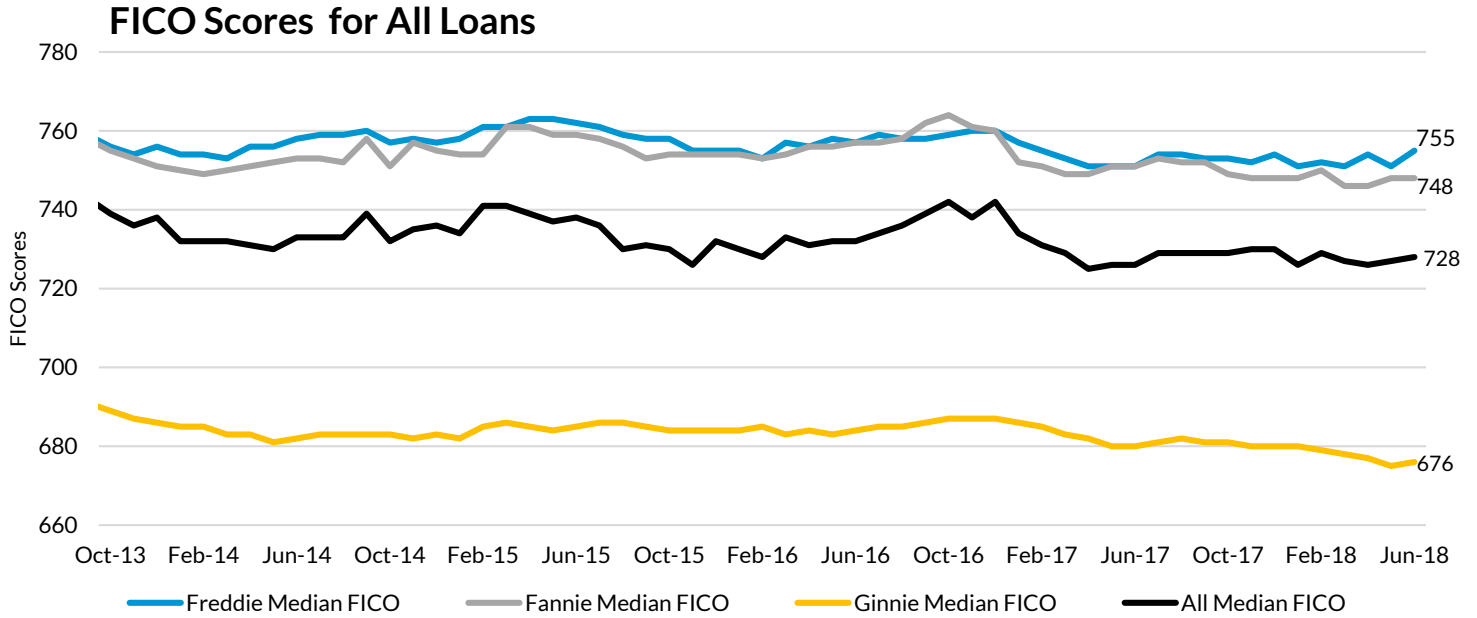
In June 2018, the median Ginnie Mae debt-to-income ratio (DTI) was 42.6 percent, considerably higher than the 37-38 percent median DTIs for Fannie Mae and Freddie Mac. The 90<sup>th</sup> percentile for Ginnie Mae was 54.1 percent, also much higher than the 47.0-48.0 percent DTIs for the GSEs. Within the Ginnie Mae market, the median FHA DTI ratio was 44.1 percent, versus 41.8 percent for VA and 36.3 percent for other lending programs.

Purchase DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	309,044	25.0	32.0	39.7	46.0	50.0	38.4
Fannie	107,796	23.0	30.0	38.0	45.0	48.0	36.8
Freddie	84,309	22.0	29.0	37.0	43.0	47.0	35.6
Ginnie	116,939	29.0	35.6	42.6	49.2	54.1	41.9
Refi DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	115,567	23.0	31.0	39.0	45.6	49.0	37.7
Fannie	53,587	23.0	30.0	39.0	45.0	49.0	37.1
Freddie	35,294	22.0	29.0	37.0	43.0	47.0	35.7
Ginnie	26,686	27.2	34.6	42.6	49.0	54.0	41.4
All DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	424,611	24.0	31.6	39.4	45.9	49.9	38.2
Fannie	161,383	23.0	30.0	38.0	45.0	48.0	36.9
Freddie	119,603	22.0	29.0	37.0	43.0	47.0	35.7
Ginnie	143,625	28.7	35.4	42.6	49.2	54.1	41.8
Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	116,939	29.0	35.6	42.6	49.2	54.1	41.9
FHA	71,987	30.5	37.3	44.2	50.1	54.5	43.2
VA	34,411	27.6	34.5	42.0	48.9	54.2	41.4
Other	10,541	26.3	31.1	36.3	40.3	43.1	35.3
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	26,686	27.2	34.6	42.6	49.0	54.0	41.4
FHA	14,710	28.3	35.8	43.7	49.5	54.2	42.1
VA	11,905	26.0	33.4	41.2	48.2	53.5	40.5
Other	71	15.1	25.5	33.5	39.7	40.8	31.8
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	143,625	28.7	35.4	42.6	49.2	54.1	41.8
FHA	86,697	30.1	37.0	44.1	50.0	54.4	43.0
VA	46,316	27.2	34.2	41.8	48.7	54.1	41.2
Other	10,612	26.3	31.1	36.3	40.3	43.1	35.3

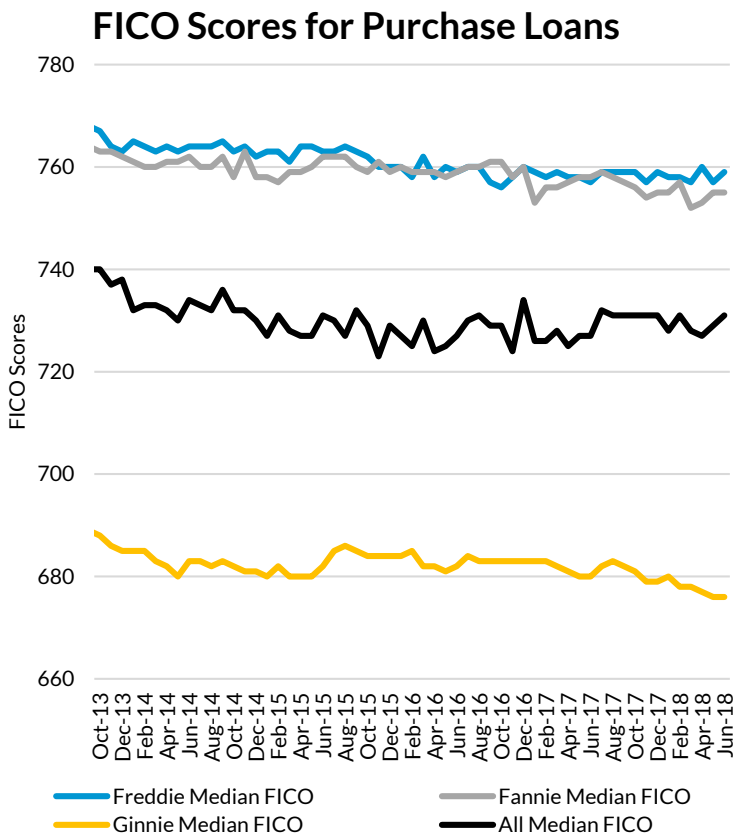
Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2018.

# Credit Box: Historical

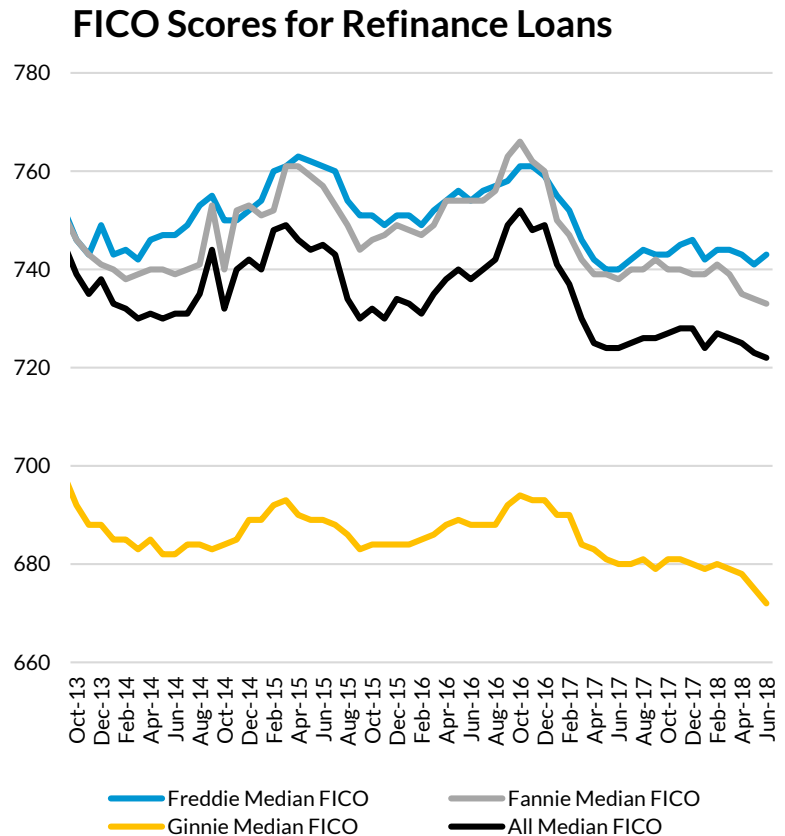
The median FICO score for all agency MBS originated in June now stands at 728, slightly higher than last month. The figures clearly show that the median FICO score for Ginnie Mae borrowers has always been considerably lower than for GSE borrowers. The difference between Ginnie Mae and GSE borrowers is wider in purchase loans than in refi loans.



Sources: eMBS and Urban Institute. Note: Data as of June 2018.



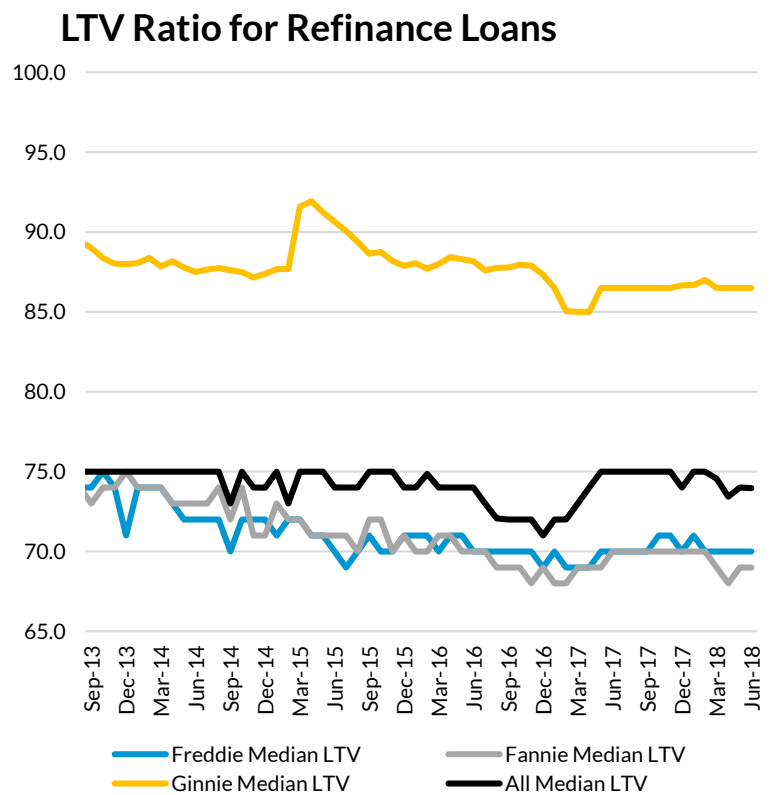
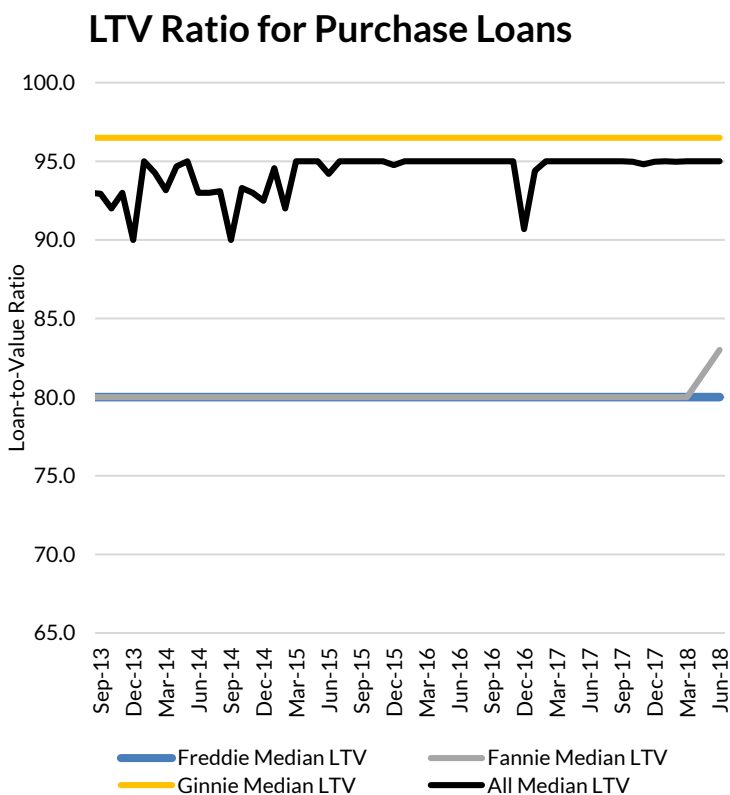
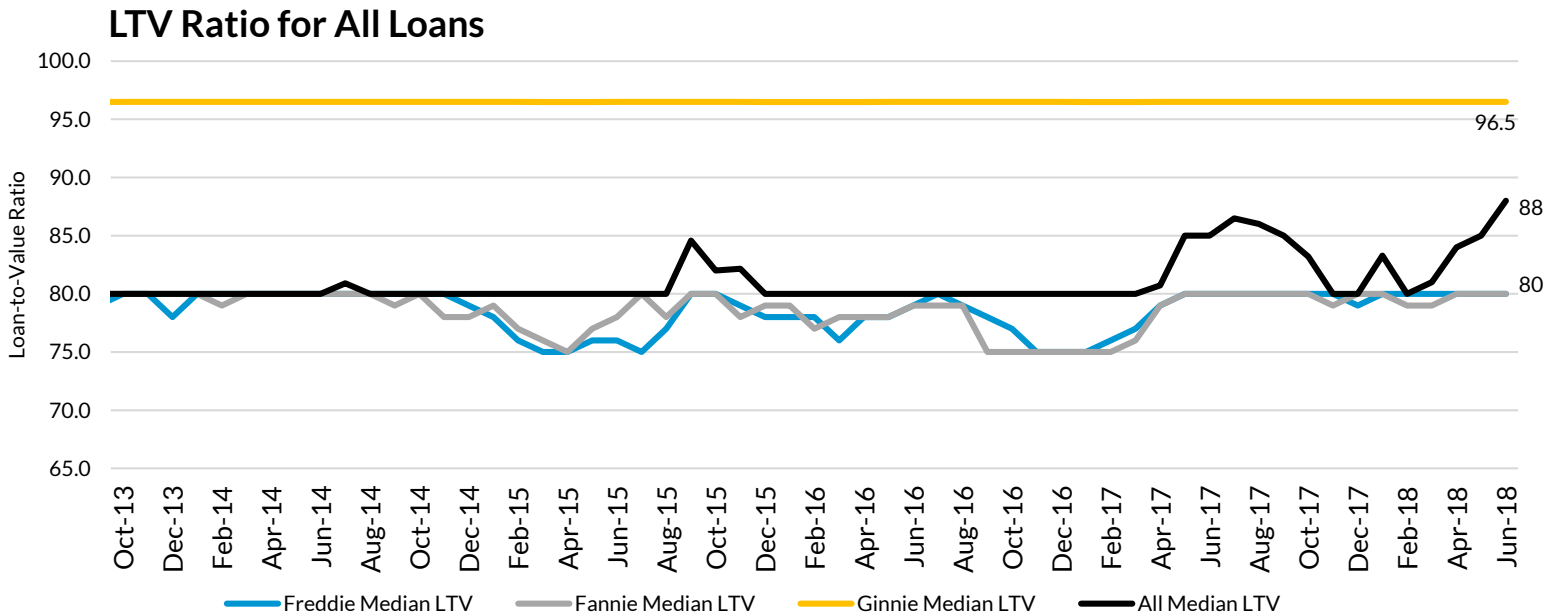
Sources: eMBS and Urban Institute. Note: Data as of June 2018.



Sources: eMBS and Urban Institute. Note: Data as of June 2018.

# 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 6-12 points lower than their purchase counterparts.

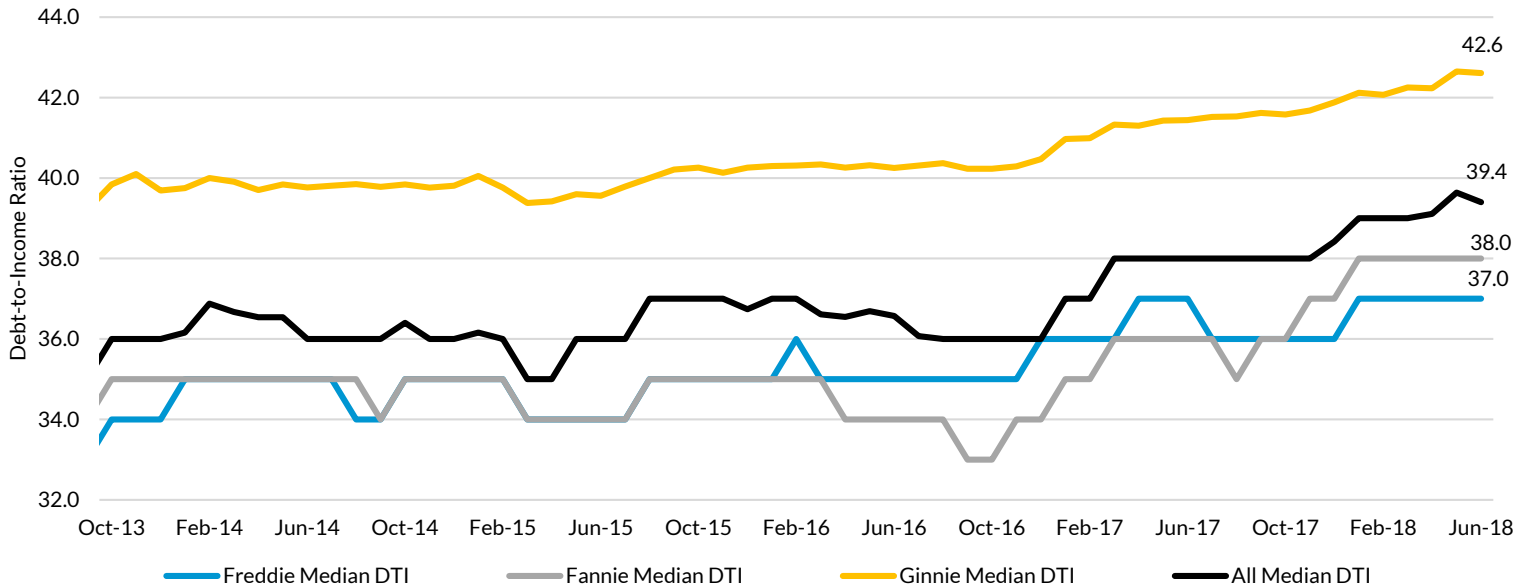


Sources: eMBS and Urban Institute. Note: In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Sources and note apply to all three graphs. Data as of June 2018.

# Credit Box: Historical

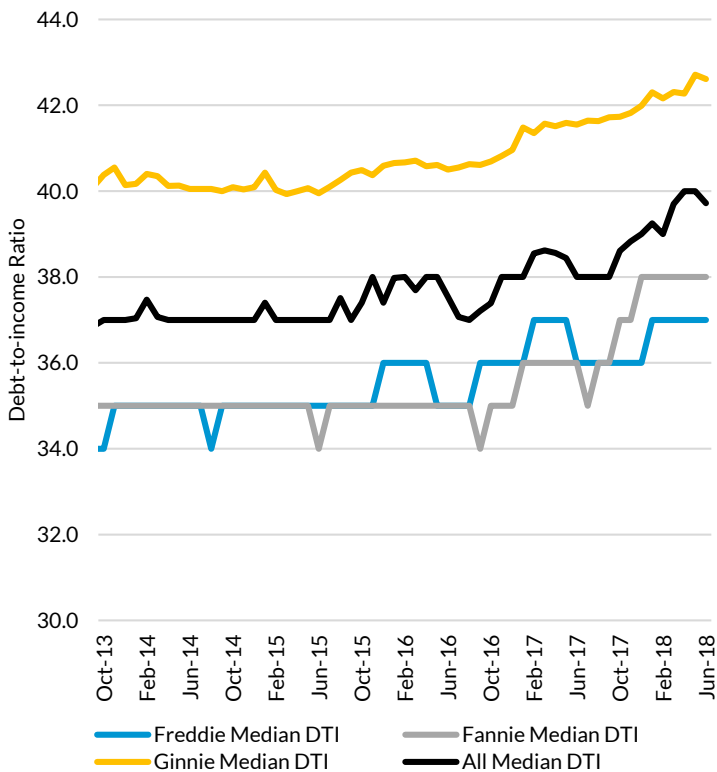
Median debt-to-income ratios on Ginnie Mae loans have historically been in the low 40s, considerably higher than that of the GSEs. DTIs have been inching up over the past year for both Ginnie Mae and GSE loans, with the movement more pronounced for Ginnie Mae loans. Increases in DTIs are very typical in the current environment of rising interest rates and home prices, as borrowers are left with sharply higher monthly payments.

## DTI Ratio for All Loans



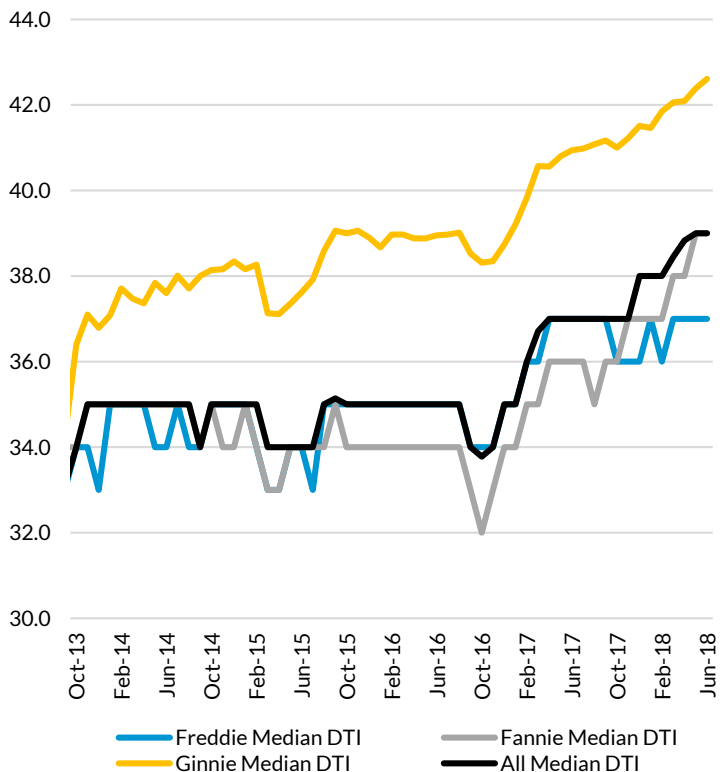
Sources: eMBS and Urban Institute. Note: Data as of June 2018.

## DTI Ratio for Purchase Loans



Sources: eMBS and Urban Institute. Note: Data as of June 2018.

## DTI Ratio for Refinance Loans

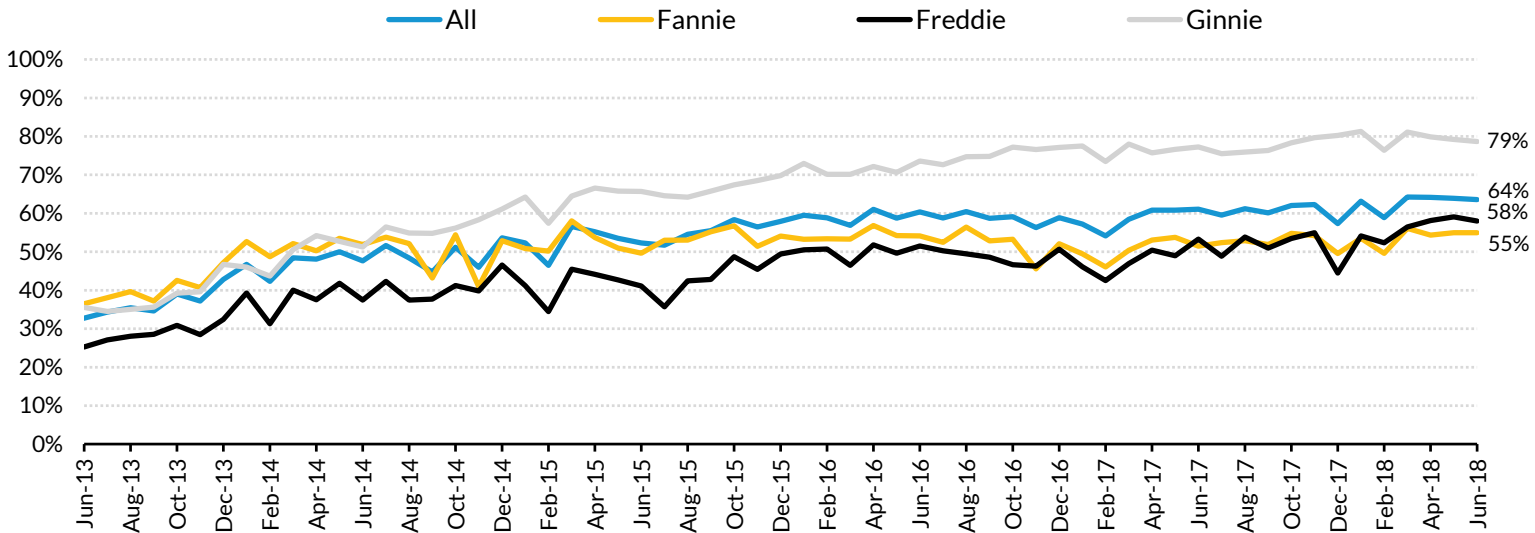


Sources: eMBS and Urban Institute. Note: Data as of June 2018.

# Nonbank Originators

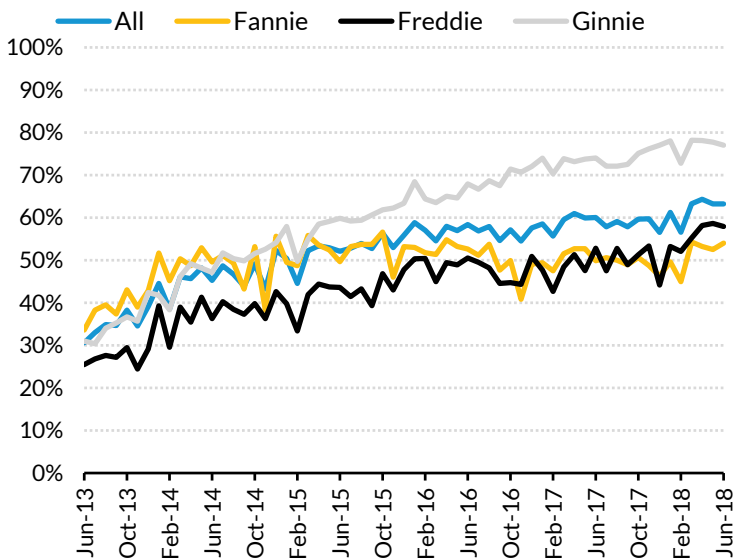
The nonbank origination share has been generally increasing since 2013. In June 2018, the Ginnie Mae nonbank originator share stood at 79 percent. Nonbank originator shares for Freddie Mac stood at 58 percent, and the nonbank originator share for Fannie Mae stayed flat at 55 percent. For Ginnie Mae, the nonbank refi share was higher than the non-bank purchase share. The differences were more modest for the GSEs.

## Nonbank Origination Share: All Loans

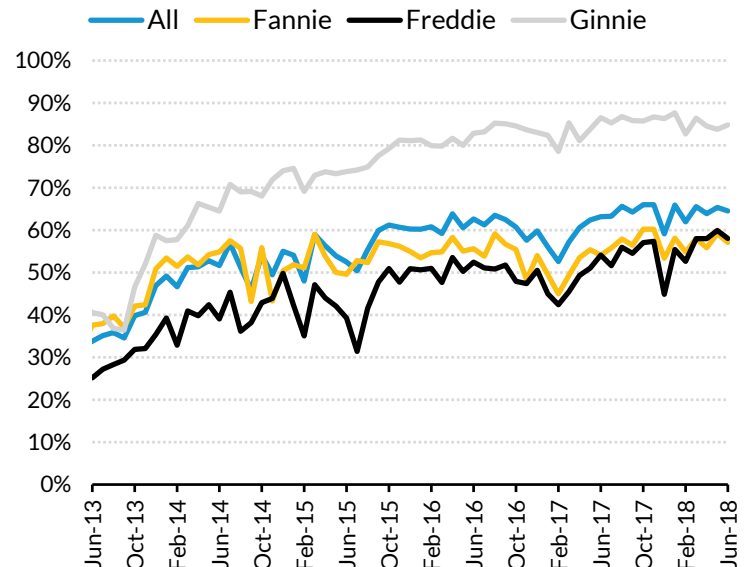


Sources: eMBS and Urban Institute  
 Note: Data as of June 2018.

## Nonbank Origination Share: Purchase Loans



## Nonbank Origination Share: Refinance Loans

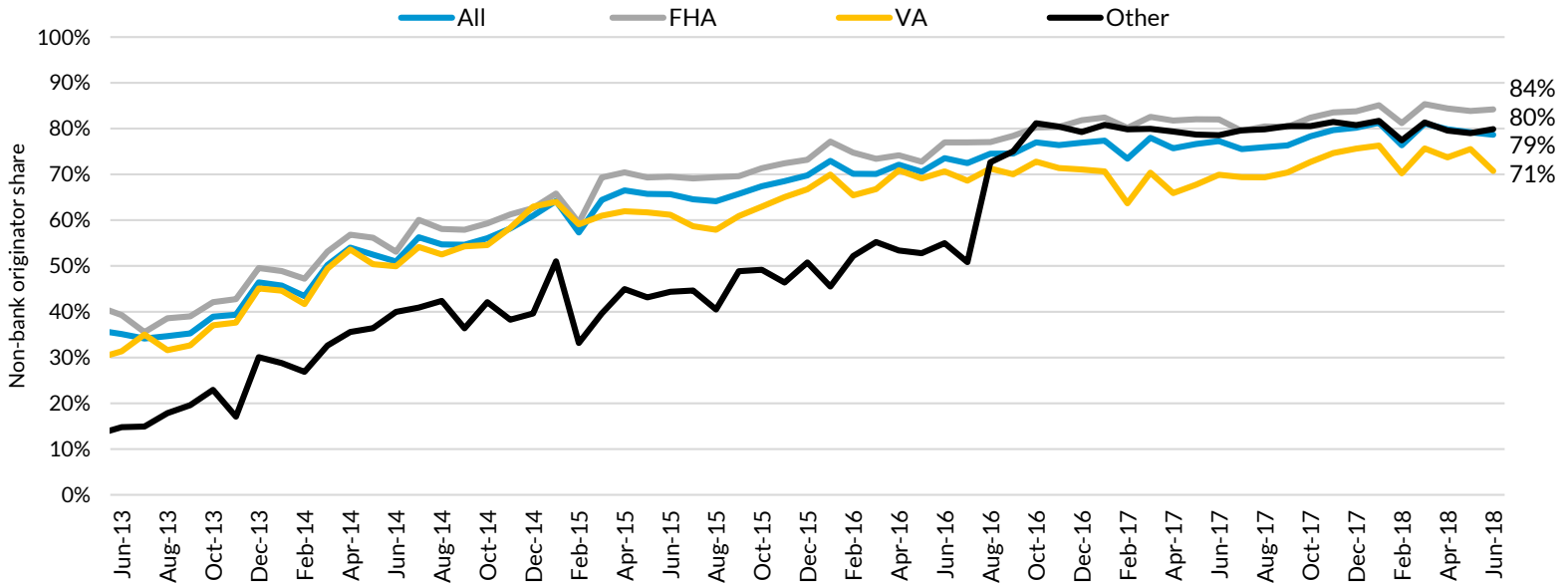


Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2018.

# Ginnie Mae Nonbank Originators

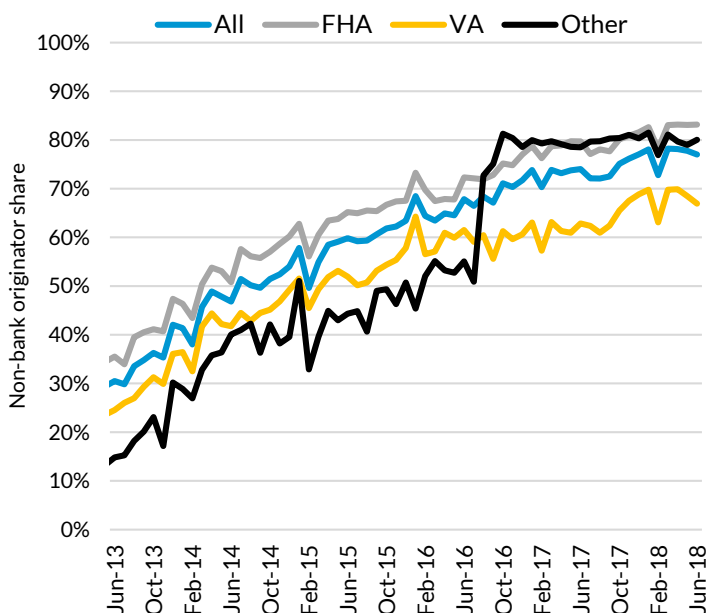
In June 2018, Ginnie Mae's nonbank share remained flat at 79 percent. Nonbank originator shares for FHA loans also remained flat at 84 percent, while the nonbank originator share for other loans increased slightly to 80 percent. The VA nonbank originator share decreased to 71 percent.

## Ginnie Mae Nonbank Originator Share: All Loans

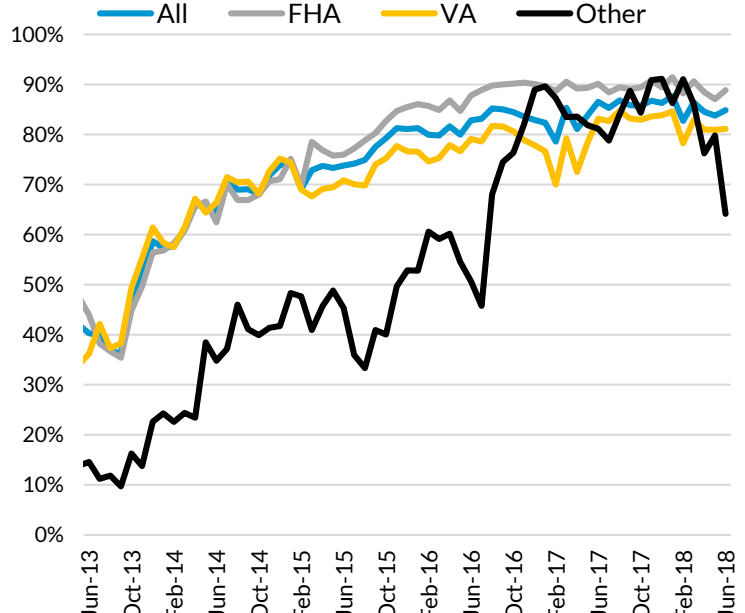


Sources: eMBS and Urban Institute  
 Note: Data as of June 2018.

## Ginnie Mae Nonbank Share: Purchase Loans



## Ginnie Mae Nonbank Share: Refinance Loans

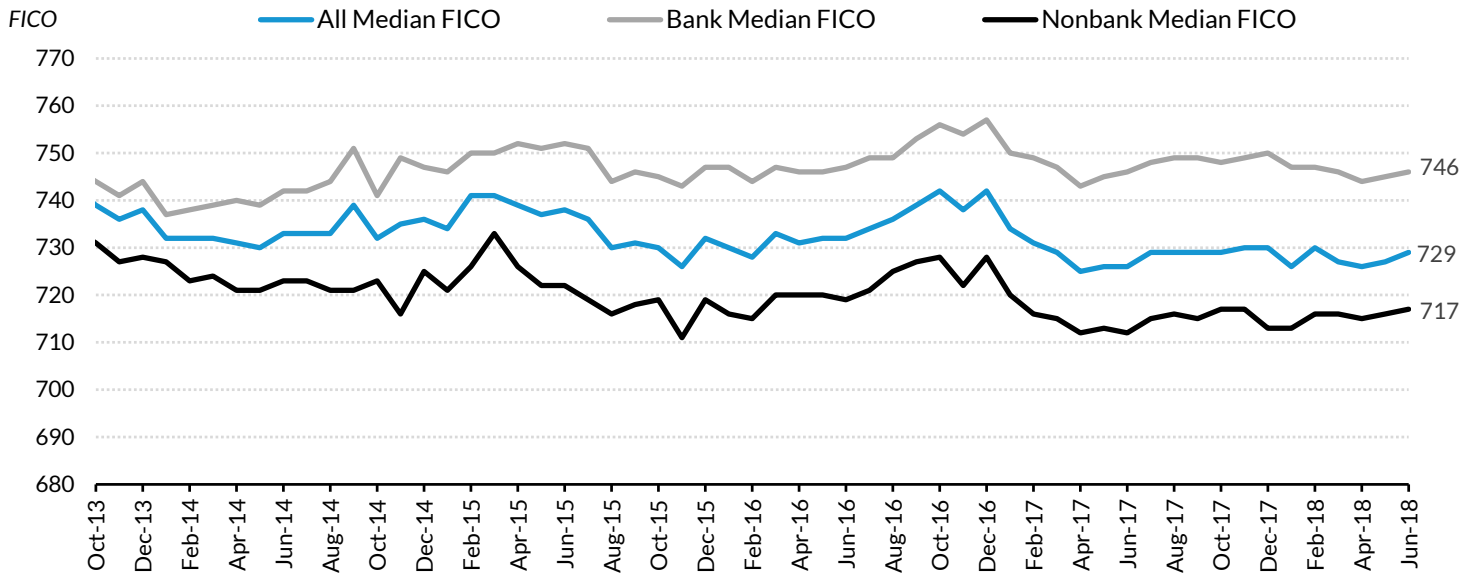


Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2018.

# Nonbank Credit Box

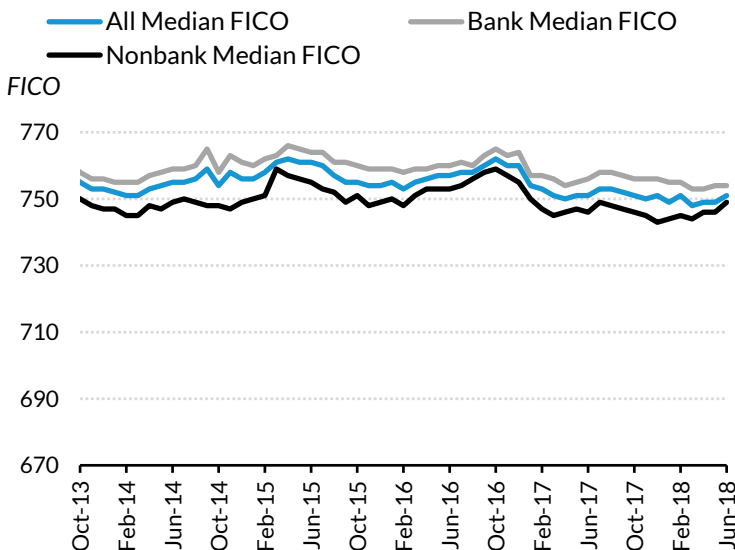
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have declined since 2014 with a further relaxation in FICOs since early 2017. In contrast, within the Ginnie Mae space, FICO scores for bank originations have increased since 2014 while nonbank FICOs have declined. This largely reflects the sharp cut-back in FHA lending by many banks. The FICO scores for both Ginnie Mae bank and nonbank originators have been declining in 2018.

## Agency FICO: Bank vs. Nonbank



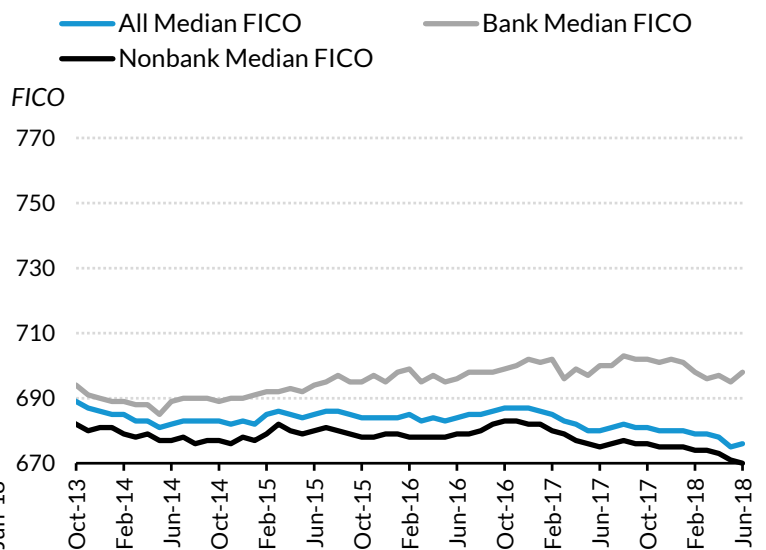
Sources: eMBS and Urban Institute. Note: Data as of June 2018.

## GSE FICO: Bank vs. Nonbank



Sources: eMBS and Urban Institute. Note: Data as of June 2018.

## Ginnie Mae FICO: Bank vs. Nonbank



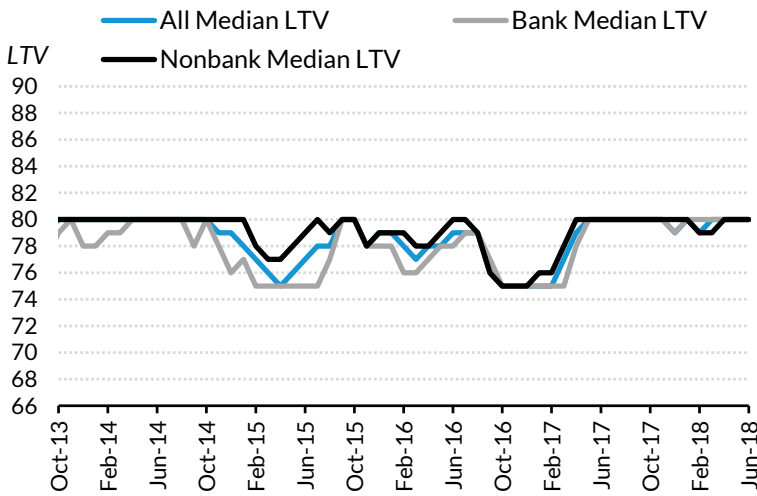
Sources: eMBS and Urban Institute. Note: Data as of June 2018.



# Nonbank Credit Box

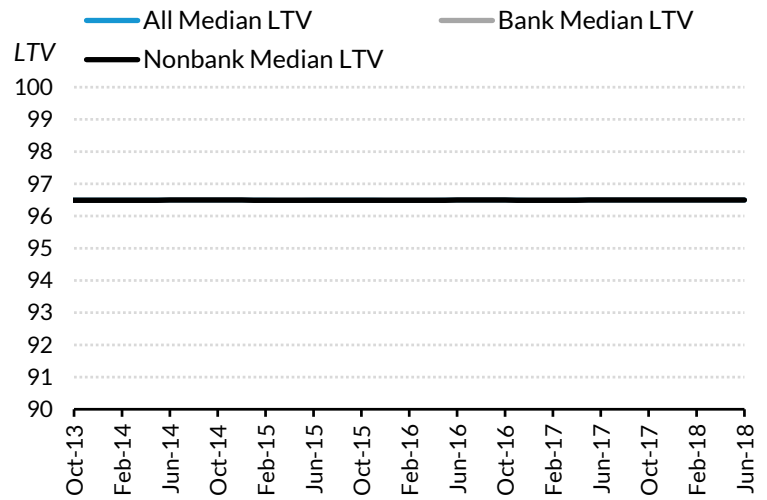
The median LTV ratios for loans originated by nonbanks are similar to that of their bank counterparts, while the median DTIs for nonbank loans are higher, indicating that nonbanks are more accommodating in this as well as in the FICO dimension. Note that since early 2017, there has been a measurable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

## GSE LTV: Bank vs. Nonbank



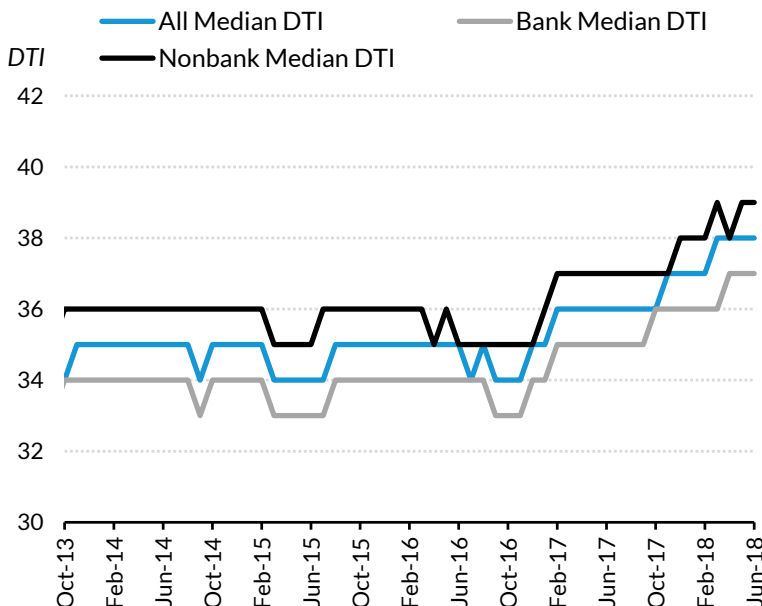
Sources: eMBS and Urban Institute. Note: Data as of June 2018.

## Ginnie Mae LTV: Bank vs. Nonbank



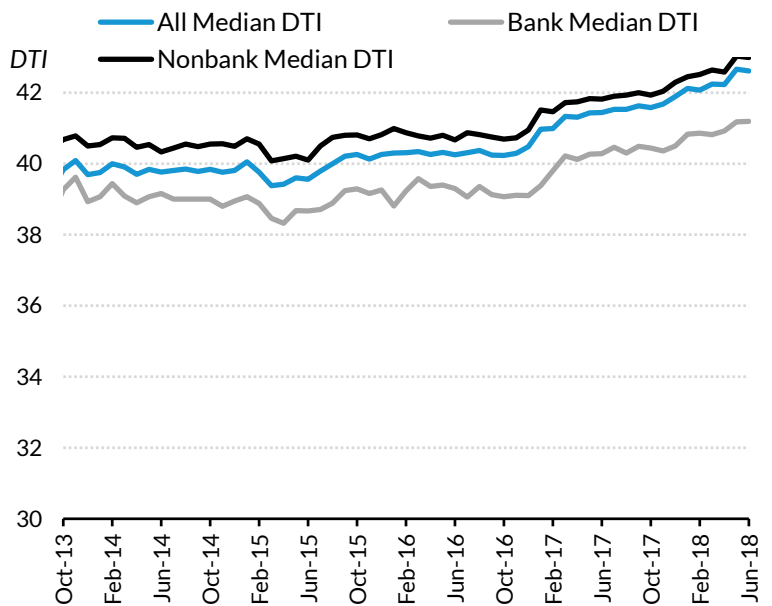
Sources: eMBS and Urban Institute. Note: Data as of June 2018.

## GSE DTI: Bank vs. Nonbank



Sources: eMBS and Urban Institute. Note: Data as of June 2018.

## Ginnie Mae DTI: Bank vs. Nonbank

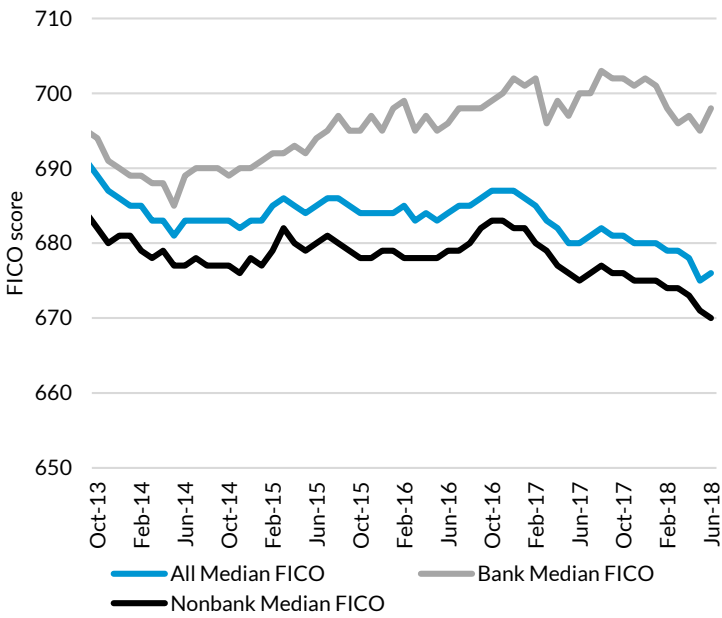


Sources: eMBS and Urban Institute. Note: Data as of June 2018.

# Ginnie Mae Nonbank Originators: Credit Box

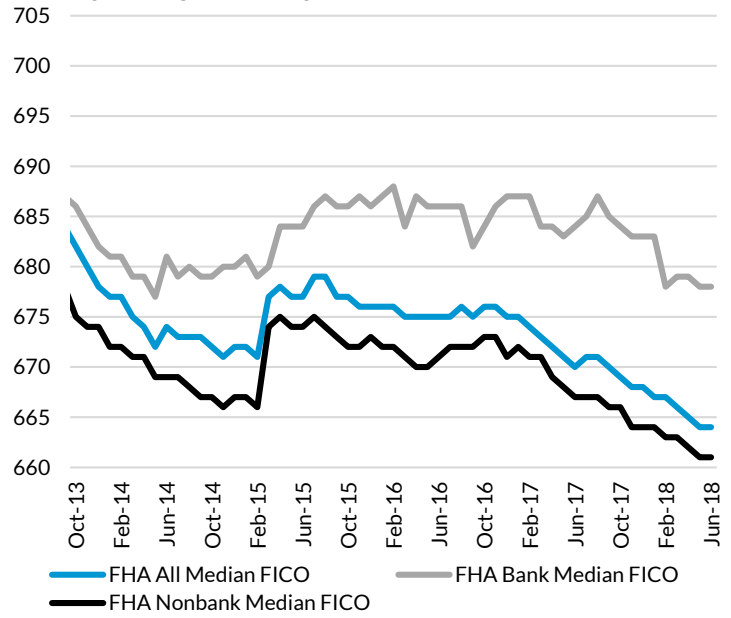
The FICO scores for Ginnie Mae nonbank originators decreased in June 2018, while FICO scores for bank originators increased. The spread in the FICO scores between banks and non-banks remains close to their widest level since the data became available in 2013. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

### Ginnie Mae FICO Scores: Bank vs. Nonbank



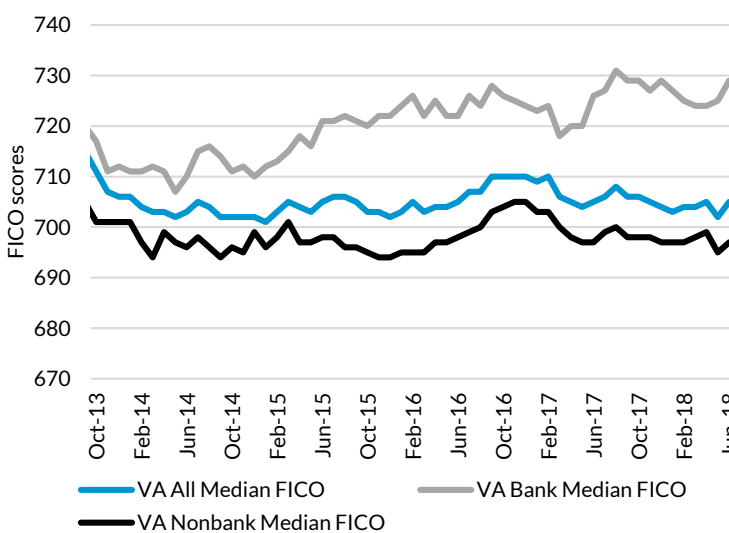
Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



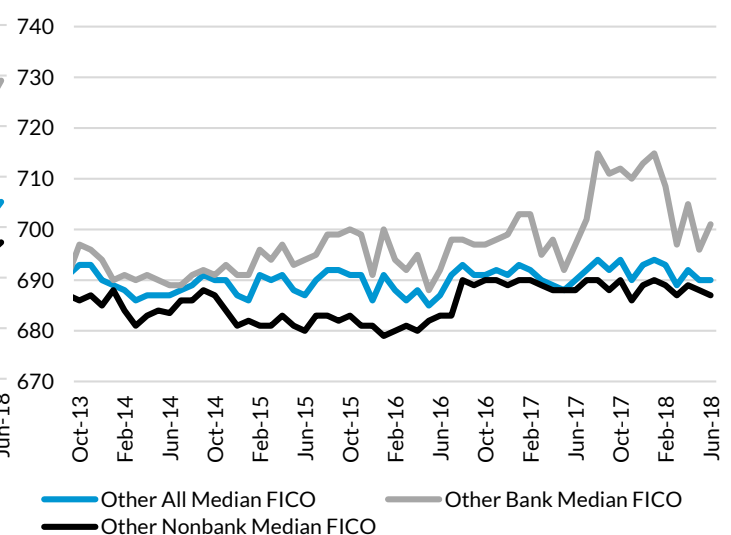
Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae VA FICO Scores: Bank vs. Nonbank



Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae Other FICO Scores: Bank vs. Nonbank

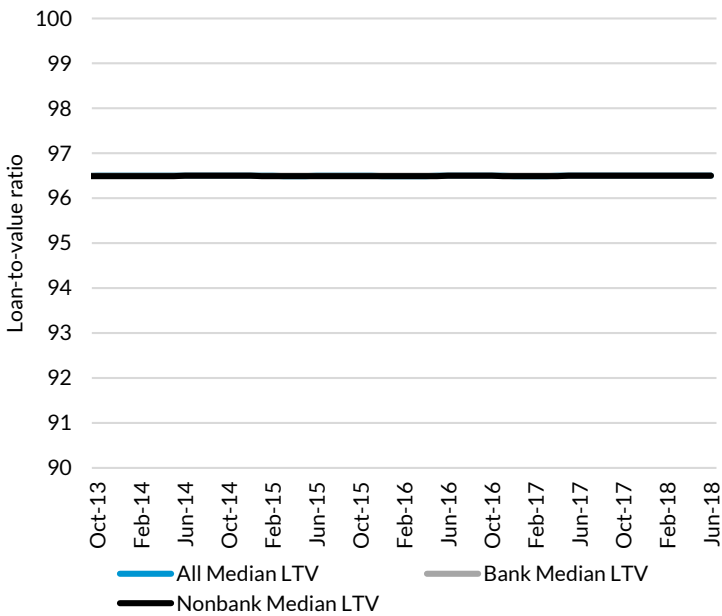


Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2018

# Ginnie Mae Nonbank Originators: Credit Box

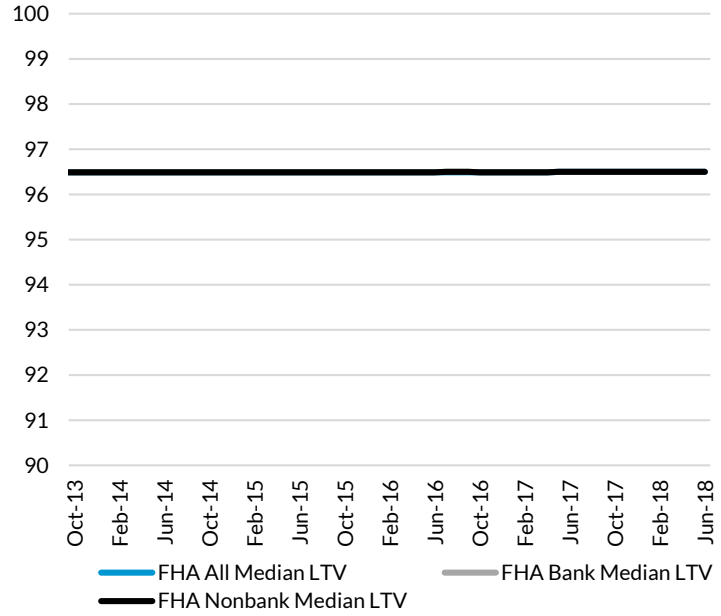
An analysis of the loans backing Ginnie Mae origination indicates that there are virtually no differences in median LTV ratios between bank originated loans and non-bank originated loans.

### Ginnie Mae LTV: Bank vs. Nonbank



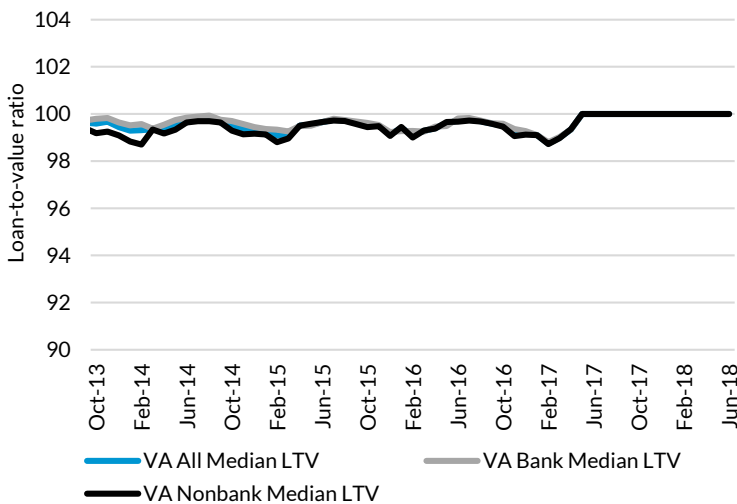
Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae FHA LTV: Bank vs. Nonbank



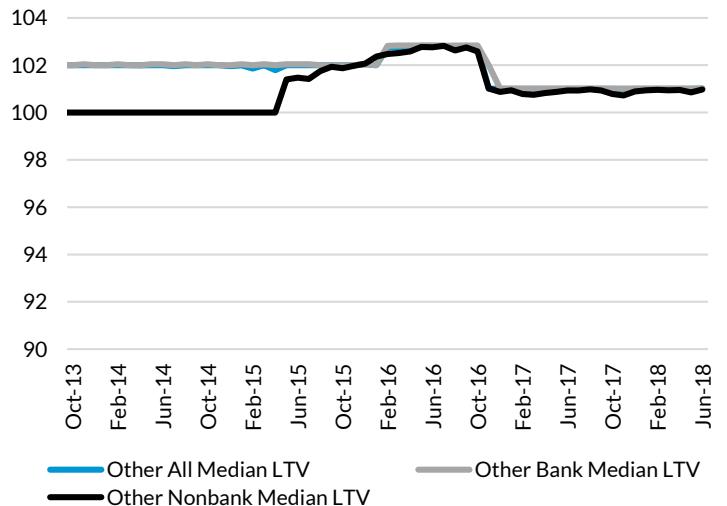
Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae VA LTV: Bank vs. Nonbank



Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae Other LTV: Bank vs. Nonbank

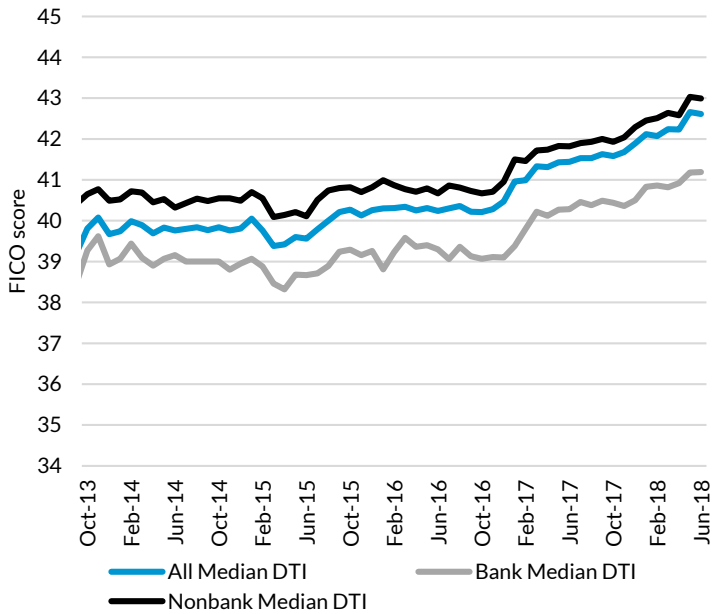


Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2018.

# Ginnie Mae Nonbank Originators: Credit Box

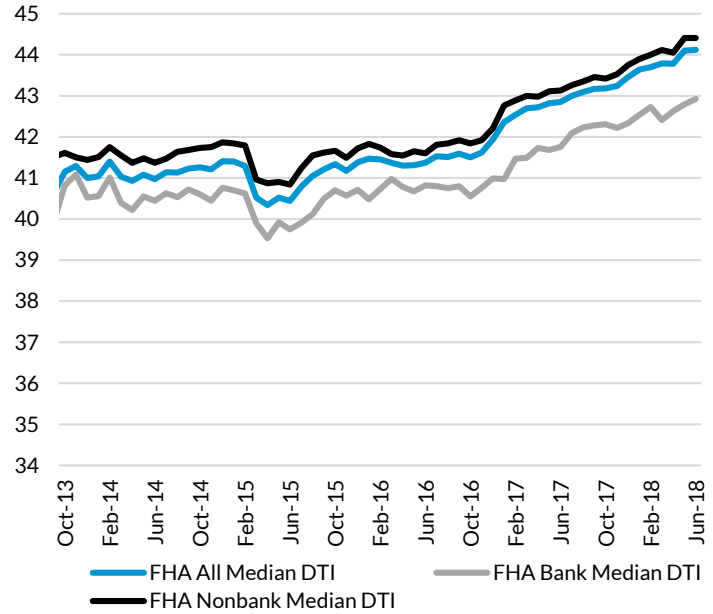
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA loans experienced notable increases since early 2017 for both bank and nonbank originations, while the Other originations' DTIs stayed relatively flat.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

### Ginnie Mae DTI: Bank vs. Nonbank



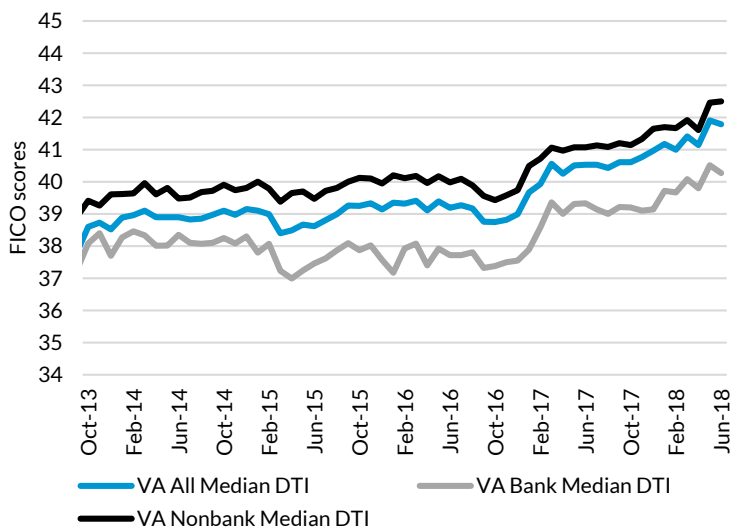
Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae FHA DTI: Bank vs. Nonbank



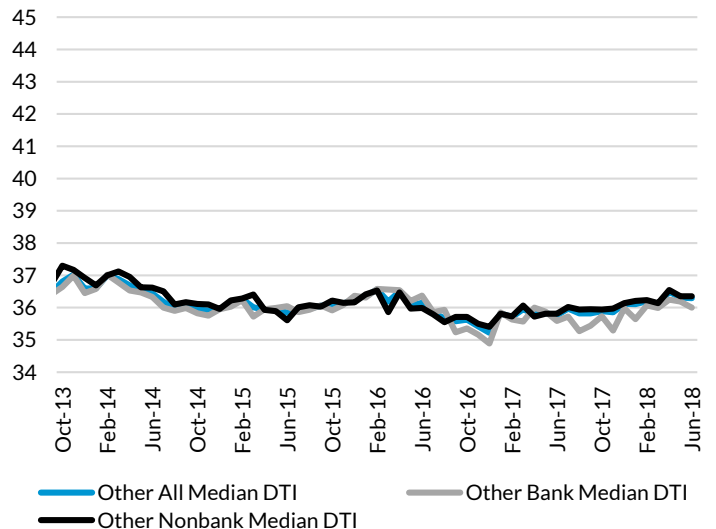
Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae VA DTI: Bank vs. Nonbank



Sources: eMBS and Urban Institute Note: Data as of June 2018

### Ginnie Mae Other DTI: Bank vs. Nonbank



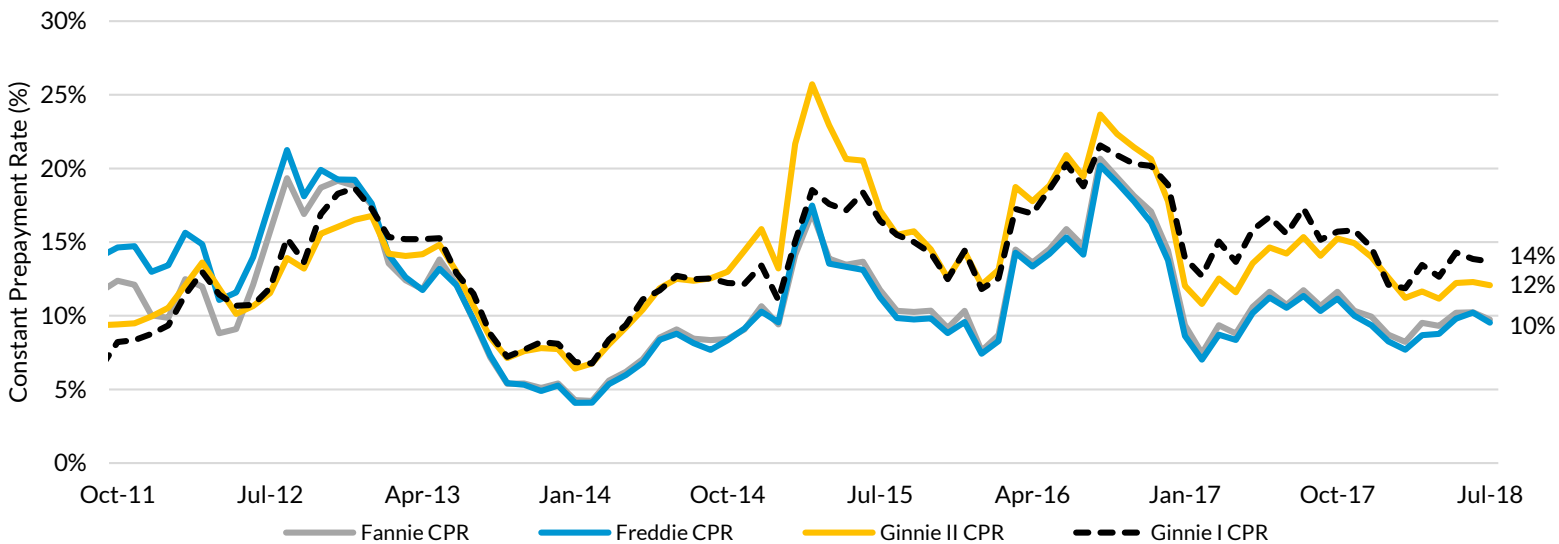
Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2018

# Prepayments

Prepayments on Ginnie Mae securities were lower than on GSE securities from 2011 through mid-2013, but have been higher since. These differences hold across all coupon buckets. The differences are especially pronounced on more recent production. These increased Ginnie speeds reflect the growing share of VA loans, which prepay at faster speeds than either FHA or GSE loans. In addition, FHA streamlined refinances have applied to a wide range of borrowers, and unlike GSE streamlined refinances, requires no credit report and no appraisal. Some of the upfront mortgage insurance premium can also be applied to the refinanced loan. Moreover, both FHA and VA permit refinancing of existing mortgages after 6 months, while the GSEs do not allow refinancing for a year.

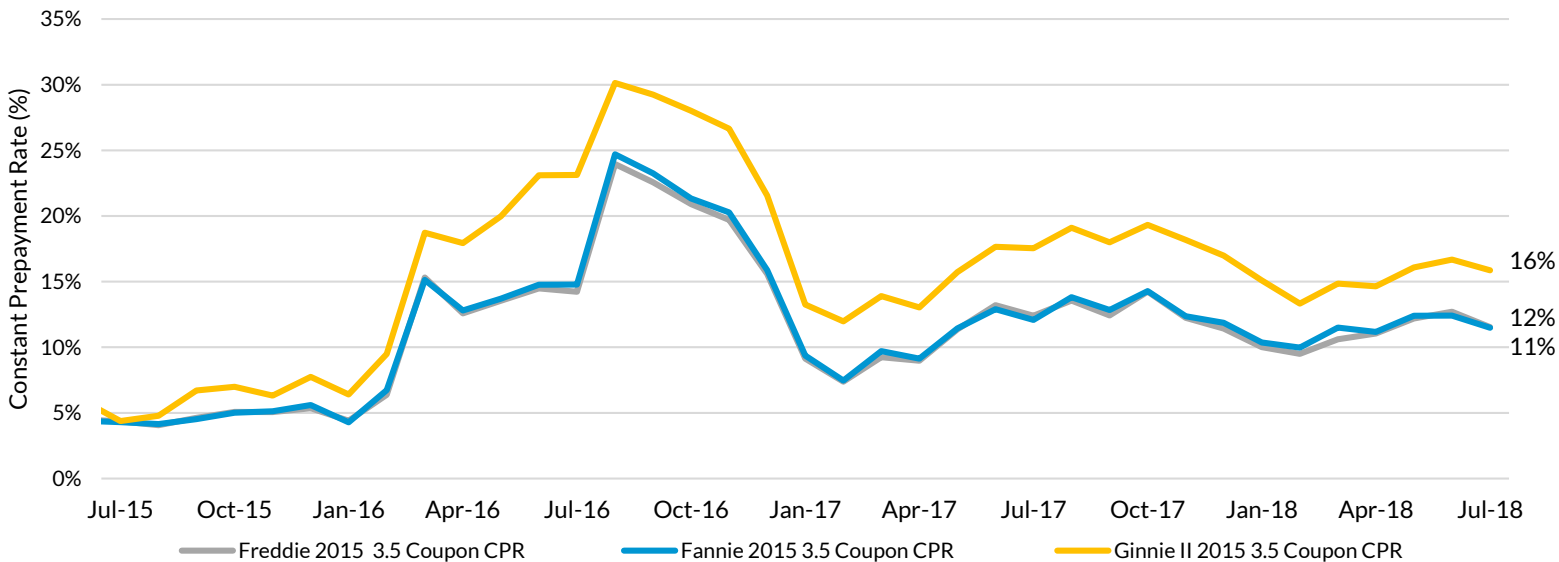
With the increase in interest rates since November 2016, the prepayment speeds for all agencies have slowed down considerably. Over the past year, with the bulk of the mortgage universe finding it non-economic to refinance, the small month to month variations in speeds reflect seasonality, changes in day count and changes in mortgage rates. With mortgage rates substantially above 4%, we would expect prepayments in the coming months to remain at low levels.

## Aggregate Prepayments



Sources: Credit Suisse and Urban Institute. Note: Data as of July 2018.

## 2015 Issued 3.5 Coupon CPR



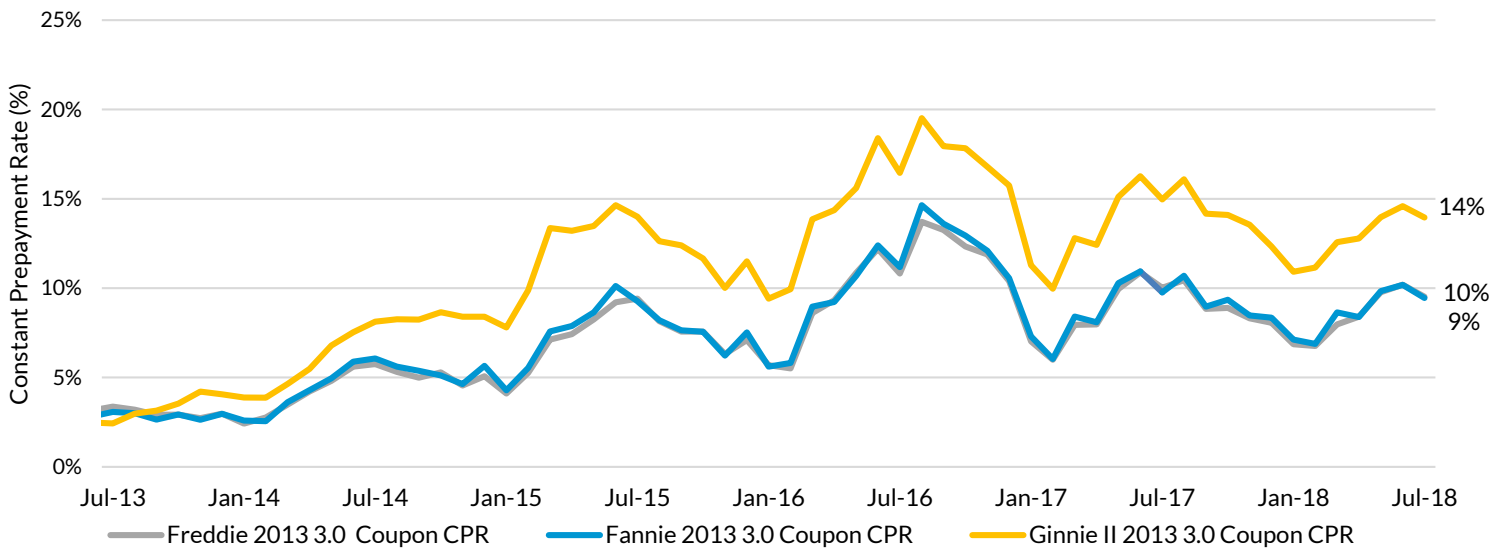
Sources: Credit Suisse and Urban Institute. Note: Data as of July 2018.

# Prepayments

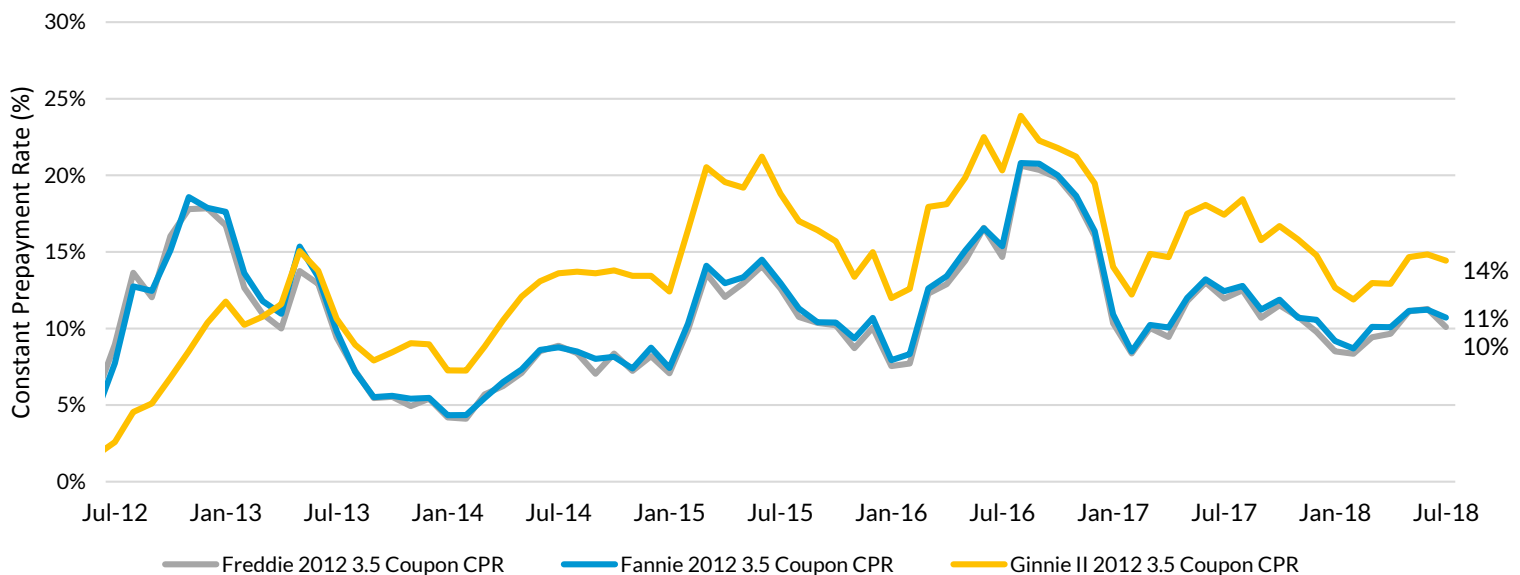
The 2013 Ginnie II 3.0s are prepaying faster than their conventional counterparts. 2012 Ginnie II 3.5s have been faster since mid-2013. The differences accelerated in 2015—potentially due to the FHA mortgage insurance premium (MIP) cut. In January 2015, FHA lowered its MIPs from 135 basis points per annum to 85 basis points per annum; this gives 2012 and 2013 FHA mortgages taken out with MIPs of 125-135 bps a 40-50 basis point rate incentive that conventional mortgages do not have. GSE guarantee fees have gone up over that same period, creating a disincentive for conventional loans. Moreover, recent originations are more heavily VA loans, which are more prepayment responsive than either FHA or Conventional loans.

After a sharp mortgage rate rise in November 2016, the prepayment speeds of Ginnie 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 mortgage rates substantially above 4%, we would expect prepayments in the coming months to stay at low levels.

## 2013 Issued 3.0 Coupon CPR



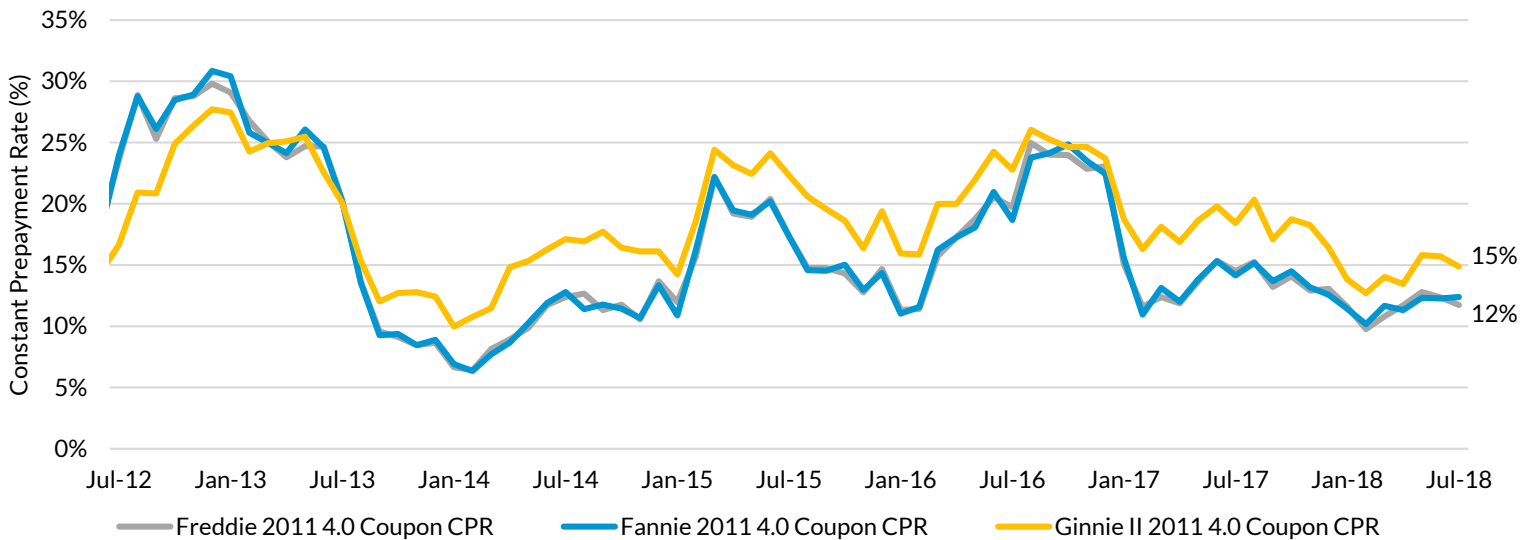
## 2012 Issued 3.5 Coupon CPR



# Prepayments

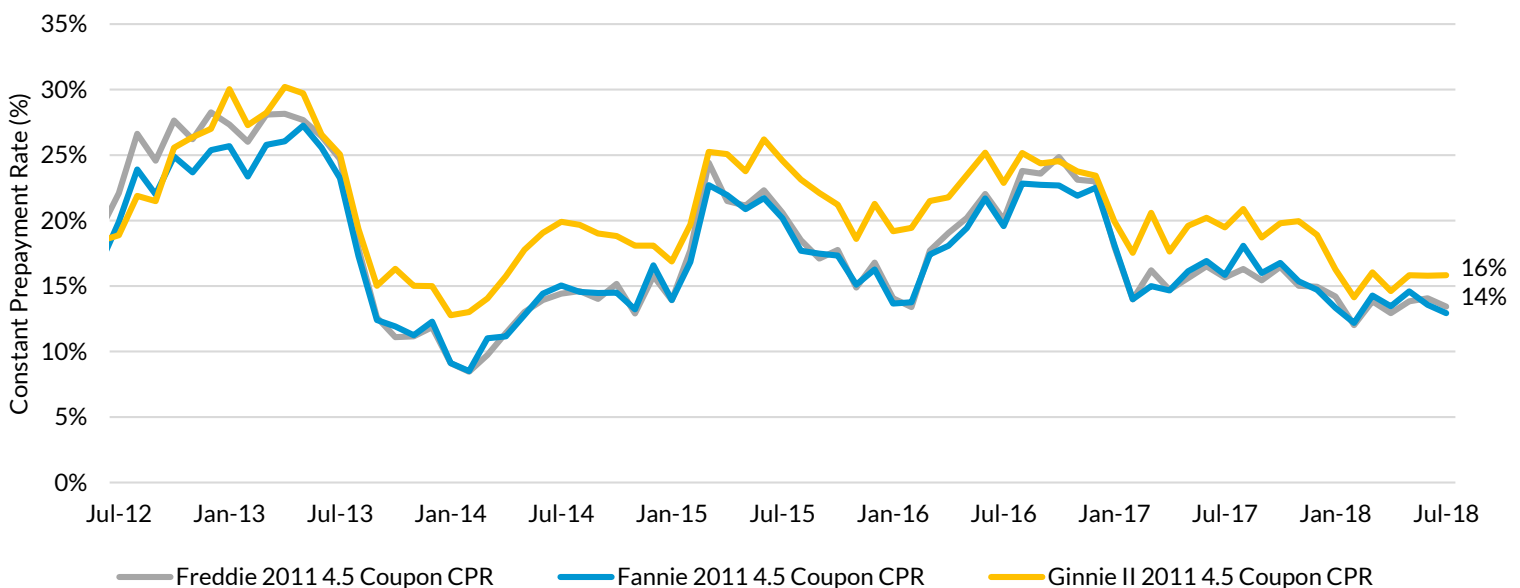
The 2011 Ginnie II 4.0s and 4.5s have been prepaying faster than their conventional counterparts since late 2013. Faster VA mortgage prepays plus simplifications to the FHA streamlined programs in 2013 are likely contributors to the faster speeds. However, as mortgage rates rose sharply since November 2016, the speeds for all agencies have slowed down considerably. 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 mortgage rates substantially above 4%, we would expect prepayments in the coming months to stay muted. Note that recent month speeds on both the Ginnie Mae II 4 and 4.5% coupons are well below same month 2017 speeds.

## 2011 Issued 4.0 Coupon CPR



Sources: Credit Suisse and Urban Institute. Note: Data as of July 2018.

## 2011 Issued 4.5 Coupon CPR



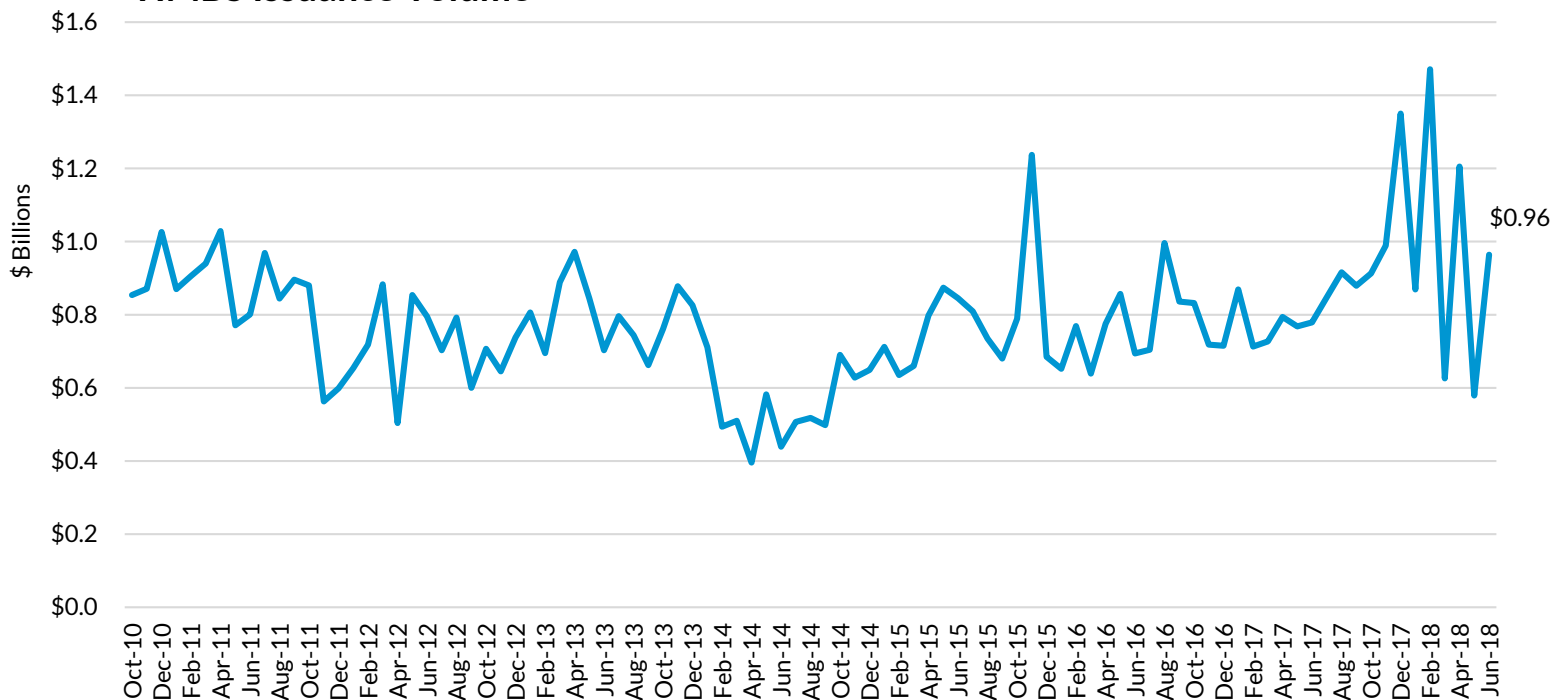
Sources: Credit Suisse and Urban Institute. Note: Data as of July 2018.

# Other Ginnie Mae Programs

## Reverse Mortgage Volumes

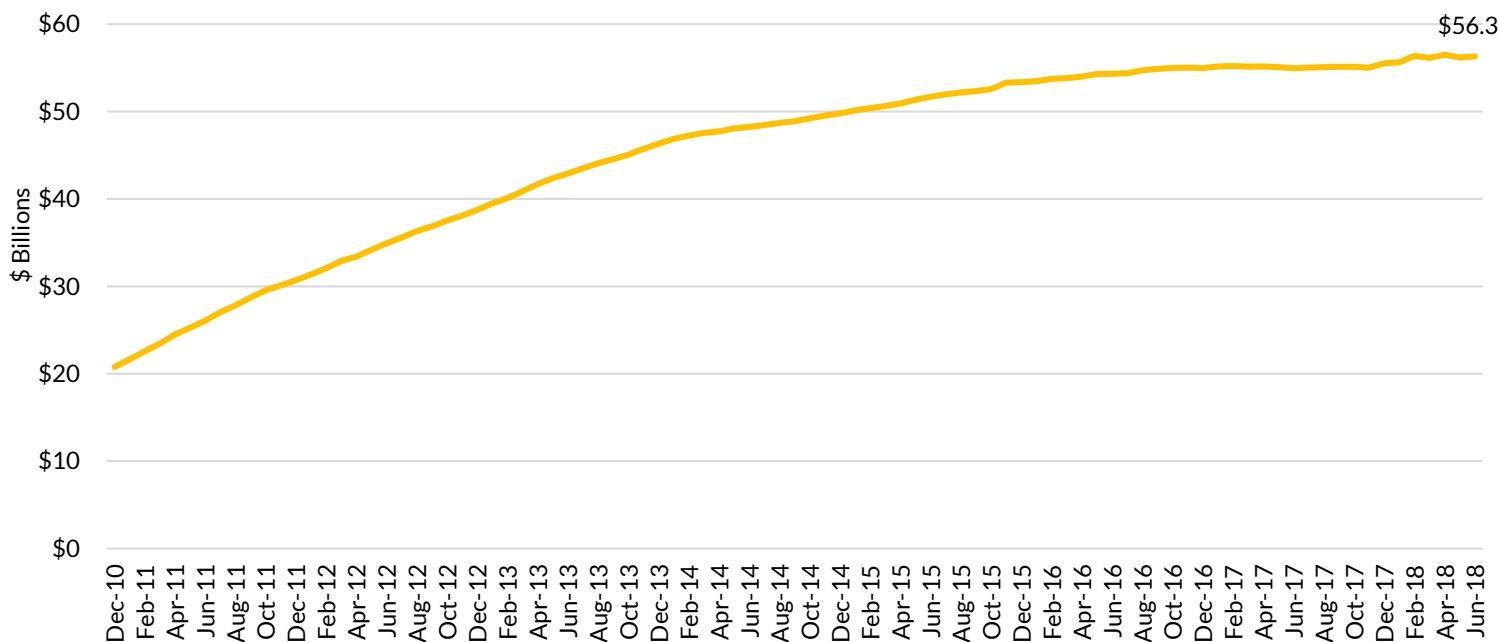
Ginnie Mae reverse mortgage issuance has been volatile in recent months. The June 2018 volume is closer to recent historical levels. The choppiness the past few months was largely due to the implementation of the new, lower principal limit factors that went into effect in March 2018. In June 2018, reverse mortgage issuance stood at \$0.96 billion, and outstanding securities totaled \$56.3 billion.

### HMBS Issuance Volume



Sources: Ginnie Mae and Urban Institute. Note: Data as of June 2018.

### HMBS Outstanding



Sources: Ginnie Mae and Urban Institute. Note: Data as of June 2018.

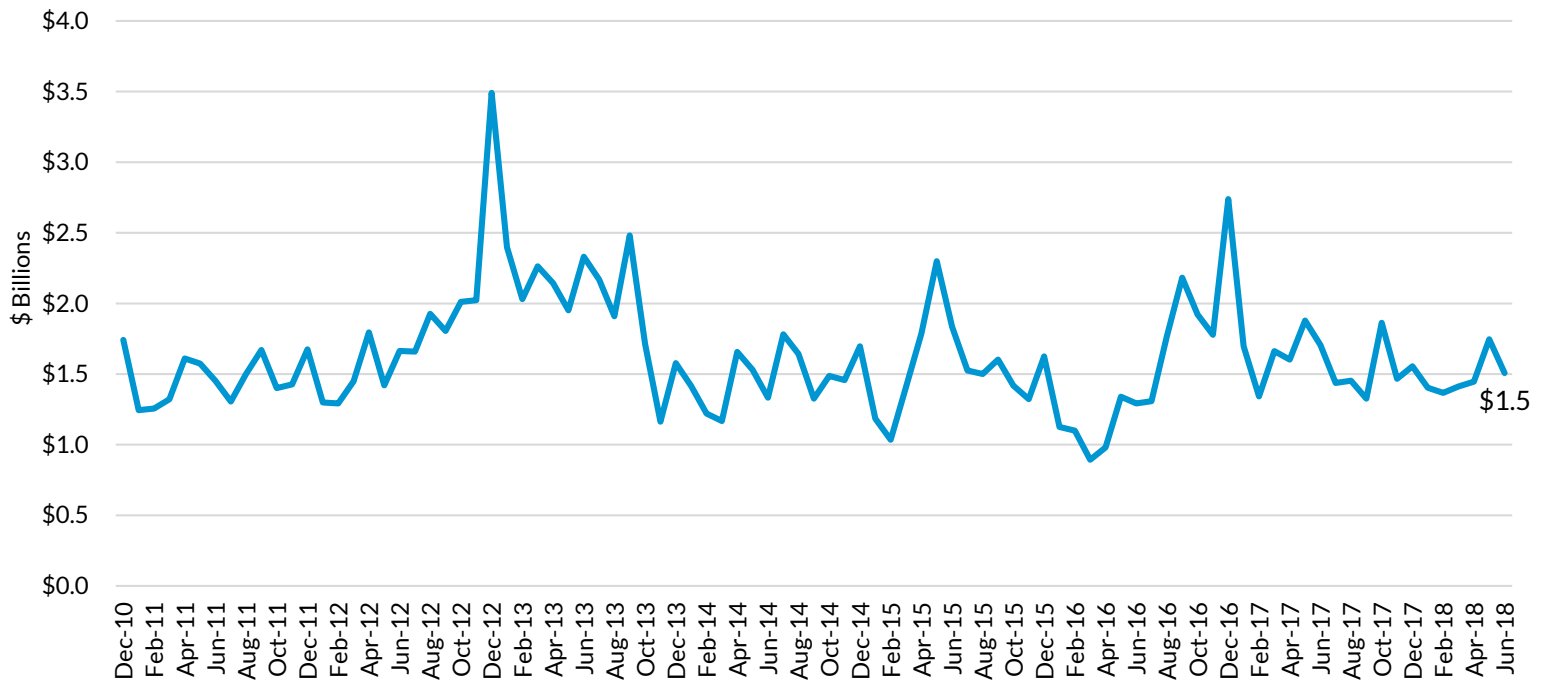


# Other Ginnie Mae Programs

## Multifamily Market

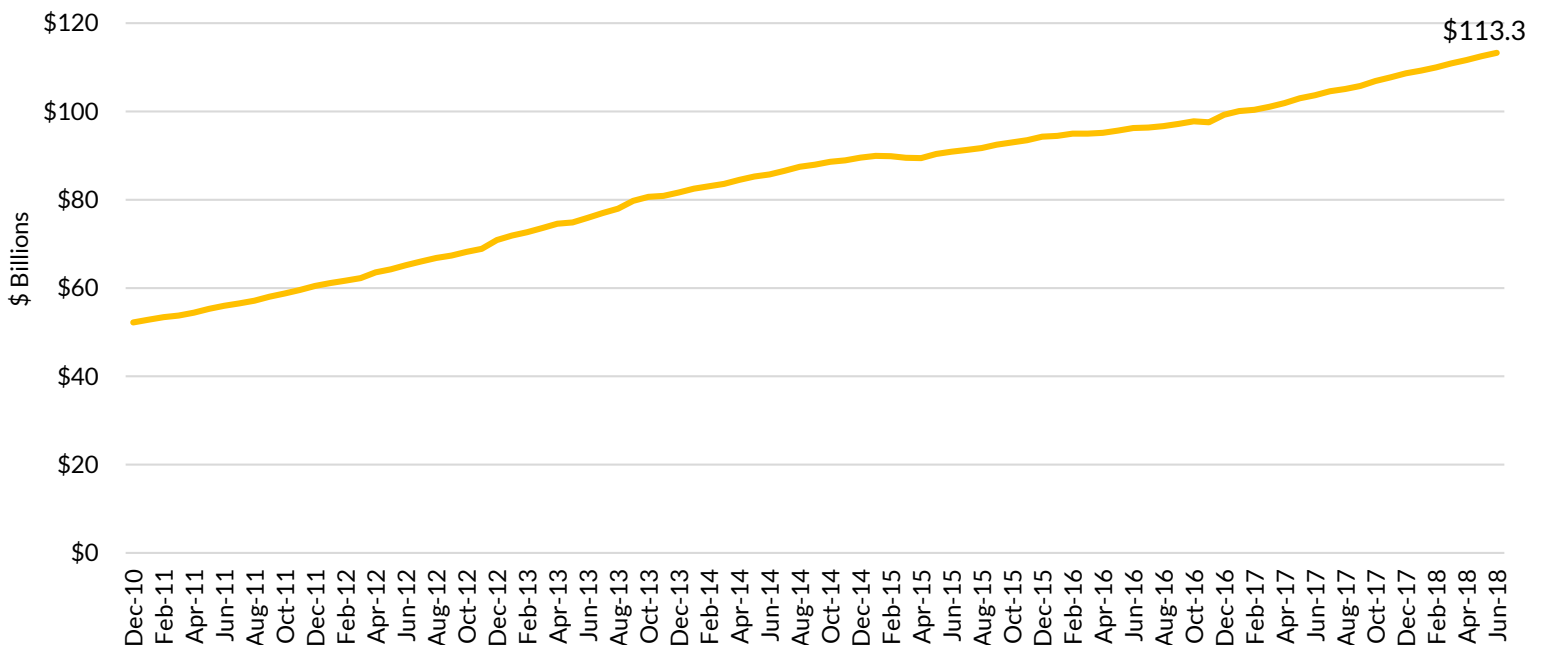
Ginnie Mae multifamily issuance volumes in June totaled \$1.5 billion. Outstanding multifamily securities totaled \$113.3 billion in June.

### Ginnie Mae Multifamily MBS Issuance



Sources: Ginnie Mae and Urban Institute. Note: Data as of June 2018.

### Ginnie Mae Multifamily MBS Outstanding

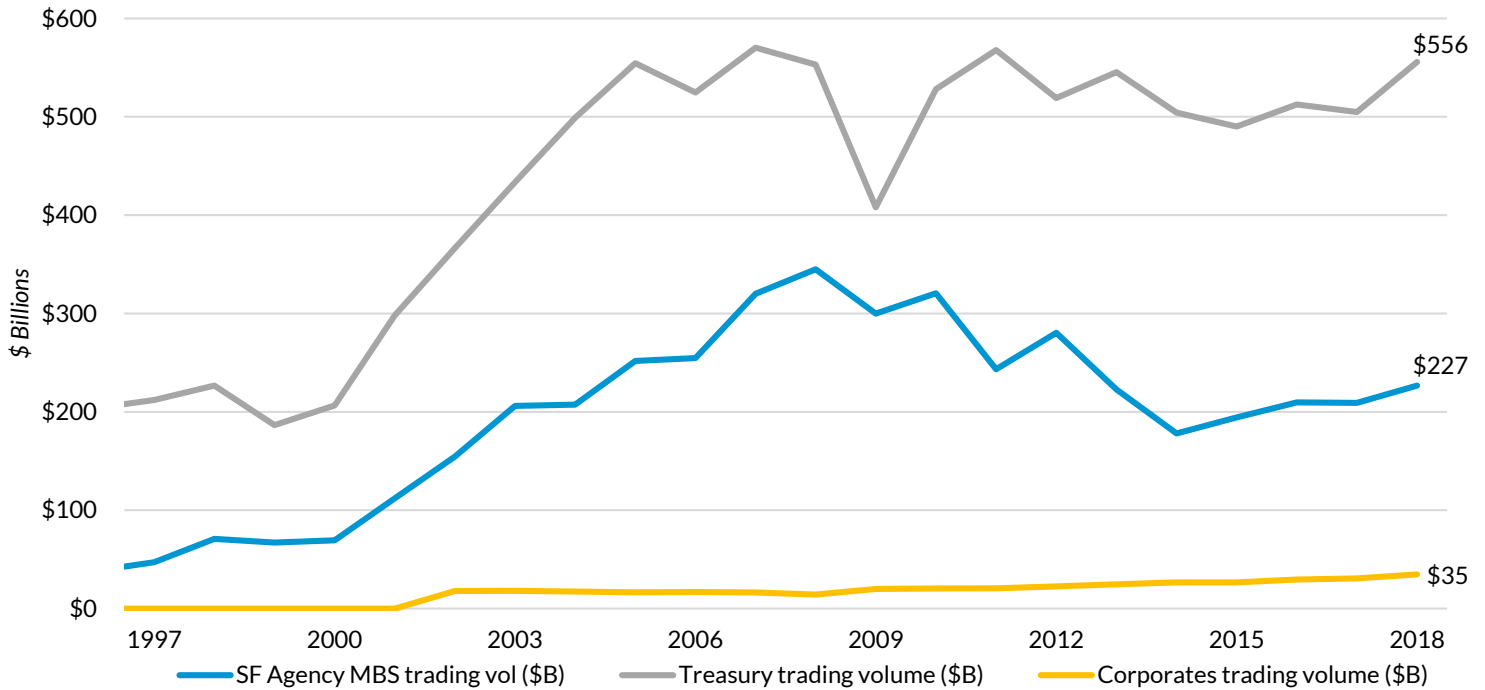


Sources: Ginnie Mae and Urban Institute. Note: Data as of June 2018.

# Market Conditions

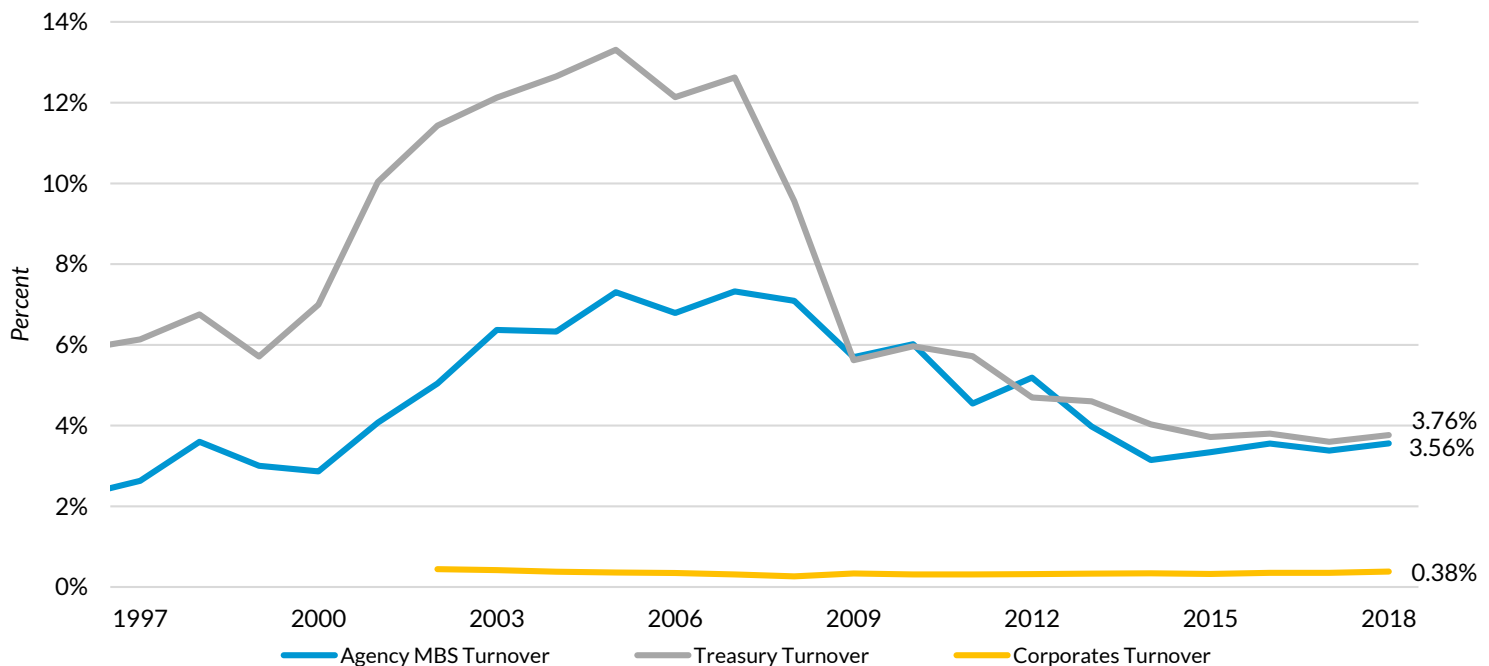
Agency MBS trading volume was \$227 billion/day in June 2018; slightly more robust than in the 2014-2017 period. Agency MBS turnover has also been higher in 2018 than in the 2014-2017 period; in the first five months of 2018, average daily MBS turnover was 3.56 percent versus 3.38 percent in 2017. Both average daily mortgage and Treasury turnover are down from their pre-crisis peaks. Corporate turnover is miniscule relative to either Agency MBS or Treasury turnover.

## Average Daily Fixed Income Trading Volume by Sector



Sources: SIFMA and Urban Institute. Note: Data as of June 2018.

## Average Daily Turnover by Sector

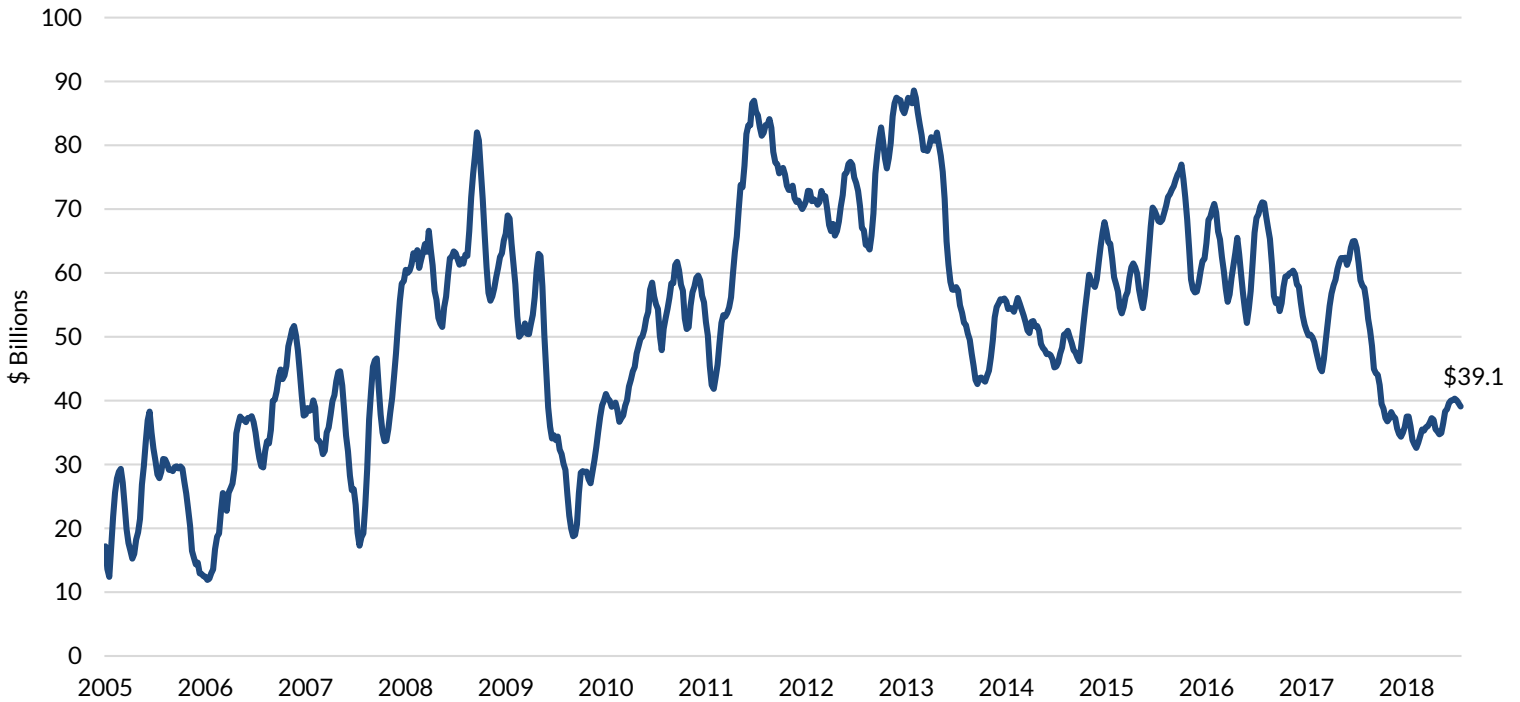


Sources: SIFMA and Urban Institute. Note: Data as of June 2018.

# Market Conditions

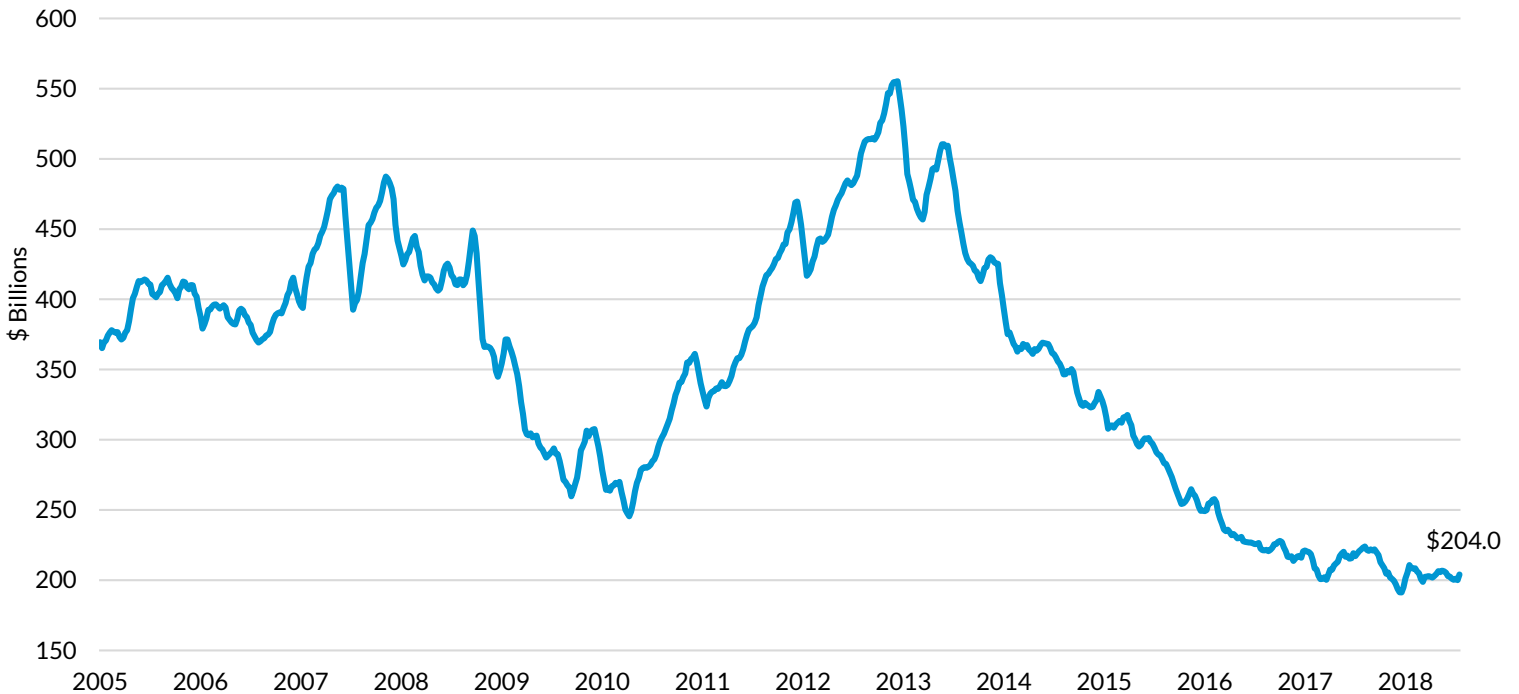
Dealer net positions in agency MBS are down from the 2012-2013 time period, but remain within historic range. Gross positions are likely to have fallen. The volume of repurchase activity is near its lowest level in 13 years. This reflects banks cutting back on lower margin businesses.

### 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 July 2018.

### Repo Volume: Securities In



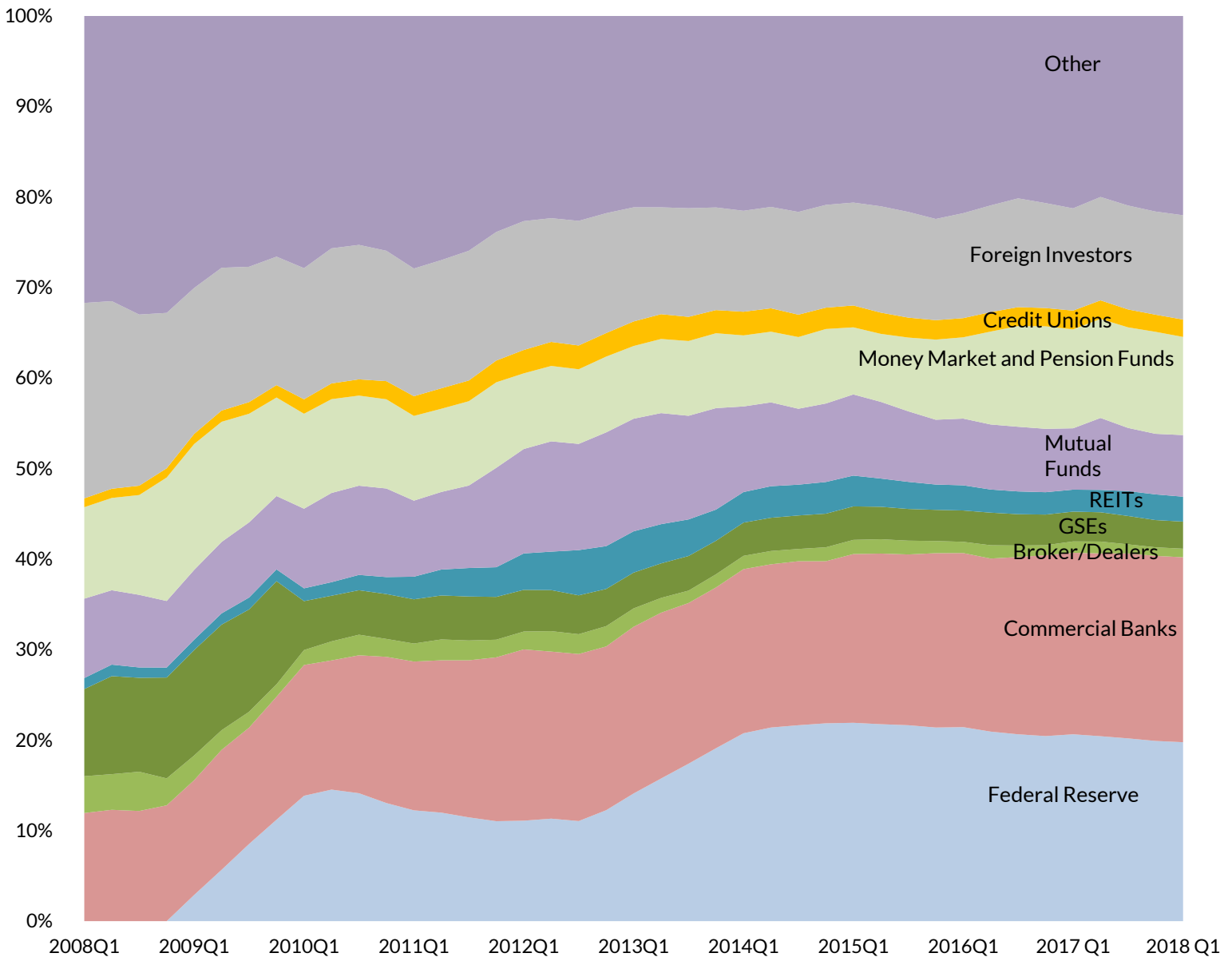
Sources: Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute. Note: Data as of July 2018.

# MBS Ownership

The largest holders of agency debt (Agency MBS + Agency notes and bonds) include the Federal Reserve (20 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?

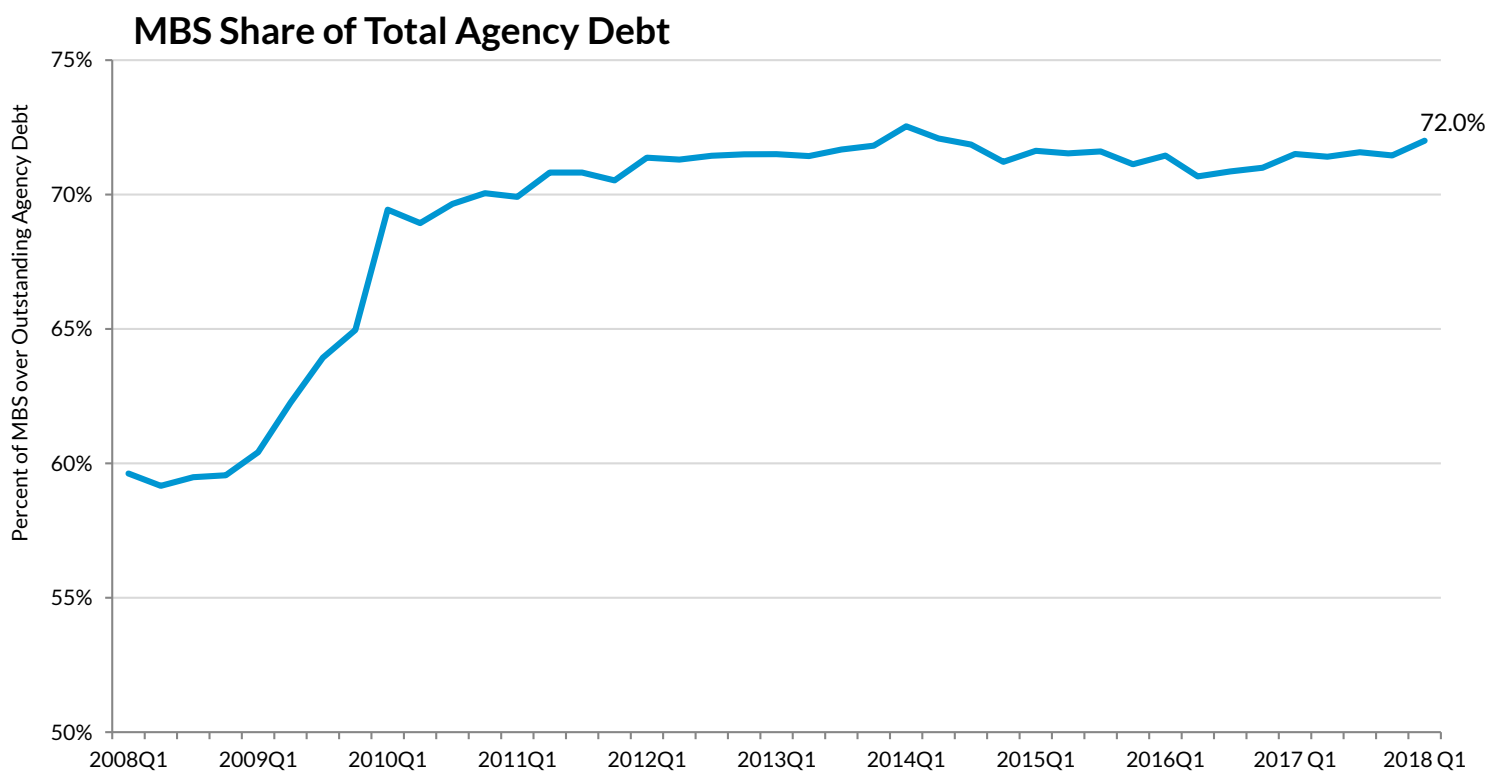
Share of Total Agency Debt by Owner



Sources: Federal Reserve Flow of Funds and Urban Institute. Note: Data as of Q1 2018.

# 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. For Q1 2018, the MBS share of total agency debt stood at 72.0 percent. Commercial banks are now the largest holders of Agency MBS. Out of their \$1.8 trillion in holdings as of the end of July 2018, \$1.3 trillion of it was held by the top 25 domestic banks.



Sources: Federal Reserve Flow of Funds and Urban Institute. Note: Data as of Q1 2018.

	Commercial Bank Holdings (\$Billions)								Week Ending			
	Jun-18	Dec-18	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	July 4	July 11	July 18	July 25
Largest Domestic Banks	1,264.2	1,302.9	1,294.6	1,281.7	1,285.2	1,286.7	1,297.1	1,312.6	1,319.2	1,322.8	1,319.1	1,318.6
Small Domestic Banks	468.8	478.6	479.1	478.5	477.1	479.4	478.7	481.7	482.8	483.0	483.3	483.1
Foreign Related Banks	11.7	35.2	33.2	32.1	33.7	33.8	30.8	32.6	30.0	29.5	29.0	27.0
Total, Seasonally Adjusted	1,744.7	1,816.7	1,806.9	1,792.3	1,796.0	1,799.9	1,806.6	1,826.9	1,832.0	1,835.3	1,831.4	1,828.7

Sources: Federal Reserve Bank and Urban Institute. Note: Data as of July 2018.

# MBS Ownership

Out of the \$1.8 trillion in MBS holdings at banks and thrifts, \$1.4 trillion is in agency pass-through form: \$1.0 trillion in GSE pass-throughs and \$360.7 billion in Ginnie Mae pass-throughs. There are another \$412.4 billion in Agency CMOs. Non-agency holdings total \$45.3 billion. Ginnie Mae pass-throughs have been the fastest growing sector in the past 2 years. MBS holdings at banks and thrifts declined slightly in Q1 2018, although over the past 2 years, the growth has been quite strong, with Ginnie pass-throughs the fastest growing sector.

## Bank and Thrift Residential MBS Holdings

	All Banks & Thrifts (\$Billions)						
	Total	Agency MBS	GSE PT	GNMA PT	Agency CMO	Private MBS	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

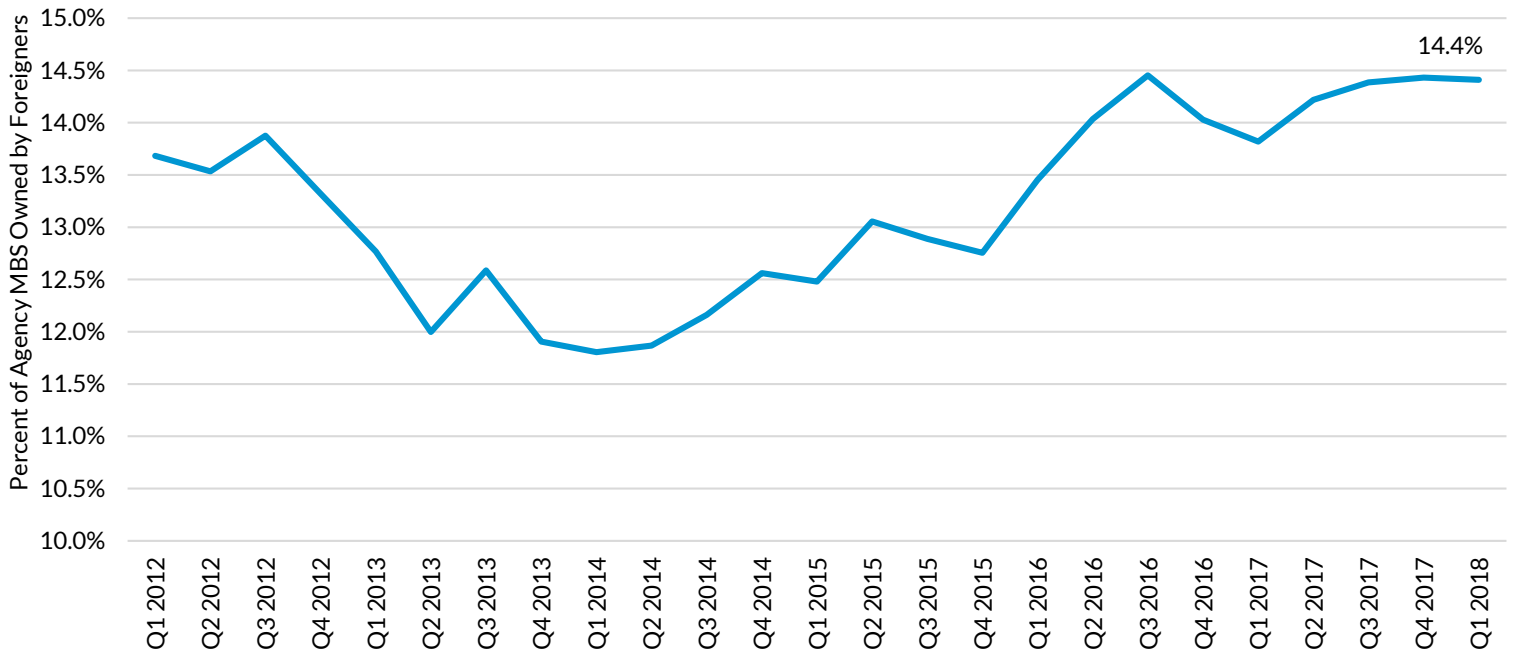
Top Bank & Thrift Residential MBS Investors		Total (\$MM)	GSE PT (\$MM)	GNMA PT (\$MM)	Agency REMIC (\$MM)	Non-Agency (\$MM)	Market Share
1	Bank of America Corporation	\$308,503	\$179,430	\$115,594	\$13,187	\$292	17.00%
2	Wells Fargo & Company	\$238,554	\$181,671	\$48,097	\$4,517	\$4,269	13.20%
3	JP Morgan Chase & Co.	\$97,801	\$59,735	\$27,066	\$397	\$10,603	5.40%
4	U.S. Bancorp.	\$76,594	\$35,012	\$12,490	\$29,091	\$1	4.20%
5	Charles Schwab Bank	\$73,074	\$43,574	\$11,650	\$17,850	\$0	4.00%
6	Citigroup Inc.	\$58,153	\$43,410	\$1,522	\$9,051	\$4,170	3.20%
7	Capital One Financial Corporation	\$54,663	\$17,339	\$13,837	\$22,337	\$1,149	3.00%
8	Bank of New York Mellon Corp.	\$50,822	\$30,439	\$1,872	\$16,767	\$1,744	2.80%
9	PNC Bank, National Association	\$43,169	\$33,176	\$4,508	\$2,683	\$2,801	2.40%
10	Branch Banking and Trust Company	\$39,124	\$13,200	\$6,517	\$18,829	\$578	2.20%
11	State Street Bank and Trust Company	\$29,674	\$10,079	\$5,902	\$9,478	\$4,215	1.60%
12	E*TRADE Bank	\$24,153	\$13,087	\$4,723	\$6,343	\$0	1.30%
13	KeyBank National Association	\$24,067	\$827	\$1,052	\$22,187	\$0	1.30%
14	Morgan Stanley	\$23,004	\$9,133	\$7,235	\$6,636	\$0	1.30%
15	SunTrust Bank	\$22,490	\$11,513	\$10,920	\$0	\$56	1.20%
16	HSBC Banks USA, National Association	\$21,641	\$5,590	\$7,464	\$8,584	\$3	1.20%
17	Regions Bank	\$18,111	\$10,922	\$4,747	\$2,439	\$3	1.00%
18	MUFG Union Bank, National Association	\$17,628	\$5,845	\$4,826	\$6,264	\$693	1.00%
19	Ally Bank	\$17,147	\$9,798	\$2,877	\$2,251	\$2,221	0.90%
20	The Northern Trust Company	\$16,506	\$9,054	\$1	\$7,419	\$32	0.90%
<b>Total Top 20</b>		<b>\$1,254,875</b>	<b>\$722,832</b>	<b>\$292,901</b>	<b>\$206,312</b>	<b>\$32,831</b>	<b>69.10%</b>

Sources: Inside Mortgage Finance and Urban Institute. Note: Data as of Q1 2018.

# MBS Ownership

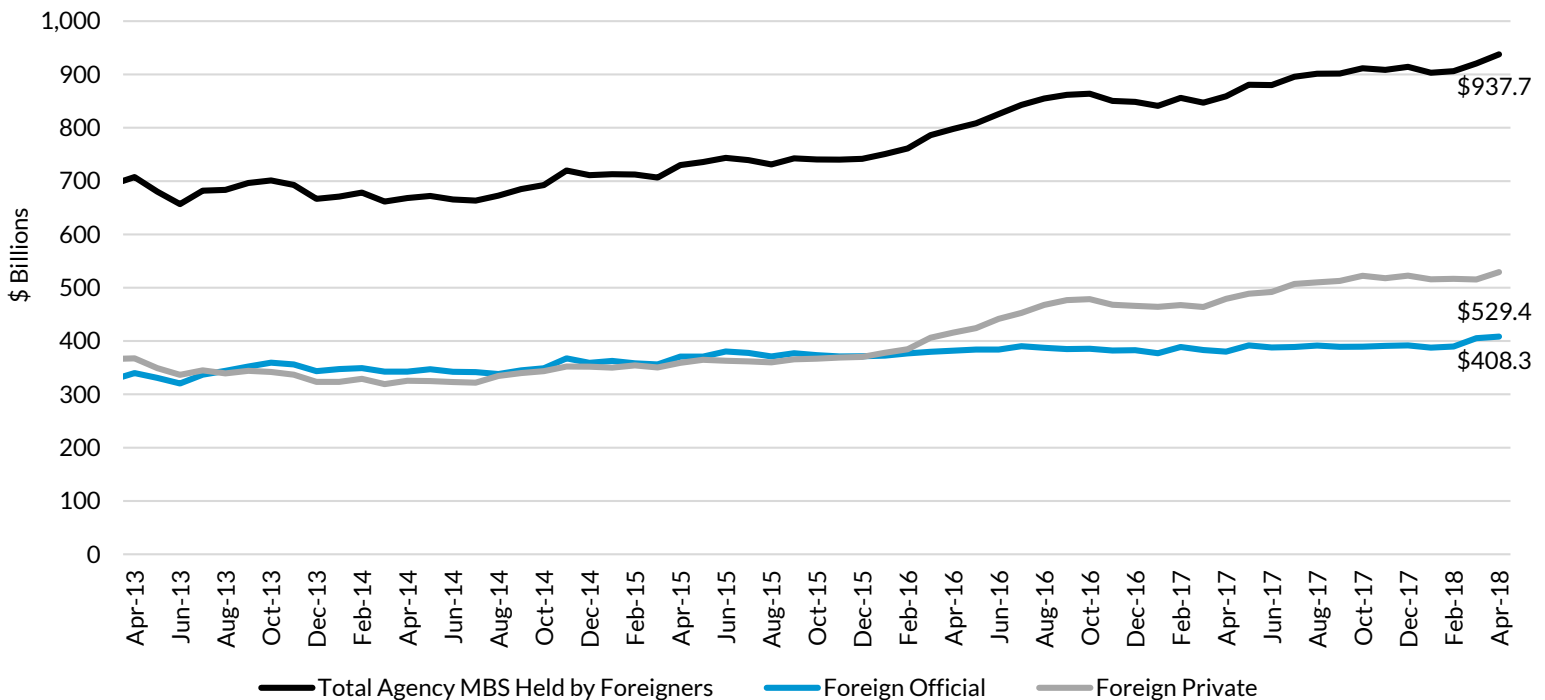
Foreign investors held 14.4 percent of agency MBS in Q1 2018, up from the lows in 2013. For the month of March 2018, this represents \$937.7 billion in Agency MBS; \$408.3 billion held by foreign official institutions and \$529.4 billion held by foreign private investors.

## Foreign Share of Agency MBS



Sources: SIFMA and Treasury International Capital (TIC). Note: Data as of Q1 2018.

## Monthly Agency MBS Holdings by Foreigners



Sources: Treasury International Capital (TIC) and Urban Institute. Note: Data as of March 2018.

# MBS Ownership

The largest foreign holders of Agency MBS are Taiwan, Japan and China; these three comprise around 70 percent of all foreign holdings. Since June of 2017 we estimate Japan and Taiwan have expanded their holdings, while China has contracted their holdings. We estimate Japan has added around \$19 billion in agency MBS between June 2017 and March 2018, and Taiwan has added around \$31 billion in agency MBS.

## Agency MBS+ Agency Debt

Country	Level of Holdings (\$Millions)*					Change in Holdings (\$Millions)*			
	Jun-17	Sep-17	Dec-17	Mar-18	Apr-18	Q3 2017	Q4 2017	Q1 2018	Apr-18
Taiwan	227,195	229,030	234,234	245,182	246,833	1,835	5,204	10,948	1,651
Japan	228,466	244,261	241,067	246,344	259,270	15,795	-3,194	5,277	12,926
China	183,393	177,580	170,702	173,169	171,410	-5,813	-6,878	2,467	-1,759
South Korea	46,791	47,581	45,467	44,099	42,534	790	-2,114	-1,368	-1,565
Ireland	44,229	46,648	51,525	49,164	50,072	2,419	4,877	-2,361	908
Luxembourg	31,289	33,026	37,575	39,336	41,085	1,737	4,549	1,761	1,749
Cayman Islands	32,682	29,016	28,374	29,026	28,154	-3,666	-642	652	-872
Bermuda	26,767	27,125	28,904	28,055	27,918	358	1,779	-849	-137
Switzerland	17,312	18,675	16,794	13,063	12,361	1,363	-1,881	-3,731	-702
Malaysia	12,365	13,162	12,751	12,139	12,552	797	-411	-612	413
Rest of World	129,723	124,357	125,465	124,266	125,395	-5,366	1,108	-1,199	1,129
<b>Total</b>	<b>980,212</b>	<b>990,461</b>	<b>992,858</b>	<b>1,003,843</b>	<b>1,017,584</b>	<b>10,249</b>	<b>2,397</b>	<b>10,985</b>	<b>13,741</b>

## Agency MBS Only (Estimates)

Country	Level of Holdings (\$Millions)*					Change in Holdings (\$Millions)*			
	Jun-17	Sep-17	Dec-17	Mar-18	Apr-18	Q3 2017	Q4 2017	Q1 2018	Apr-18
Taiwan	227,073	228,914	234,127	245,049	246,724	1,841	5,213	10,942	1,656
Japan	221,528	237,689	234,985	238,777	253,081	16,161	-2,704	4,914	13,183
China	177,546	172,042	165,576	166,792	166,194	-5,504	-6,465	2,161	-1,543
South Korea	33,891	35,362	34,158	30,030	31,026	1,471	-1,204	-2,044	-1,088
Ireland	33,663	36,640	42,262	37,641	40,647	2,977	5,623	-2,914	1,299
Luxembourg	28,314	30,208	34,967	36,091	38,431	1,894	4,759	1,605	1,859
Cayman Islands	24,897	21,642	21,549	20,536	21,209	-3,255	-93	244	-584
Bermuda	23,156	23,705	25,738	24,117	24,697	549	2,034	-1,038	-3
Switzerland	13,867	15,412	13,774	9,306	9,288	1,545	-1,638	-3,911	-575
Malaysia	11,905	12,726	12,348	11,637	12,142	821	-379	-636	430
Rest of World	94,872	91,345	94,913	86,258	94,306	-3,527	3,567	-3,024	2,418
<b>Total</b>	<b>890,712</b>	<b>905,684</b>	<b>914,397</b>	<b>906,235</b>	<b>937,745</b>	<b>14,972</b>	<b>8,713</b>	<b>6,297</b>	<b>17,051</b>

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

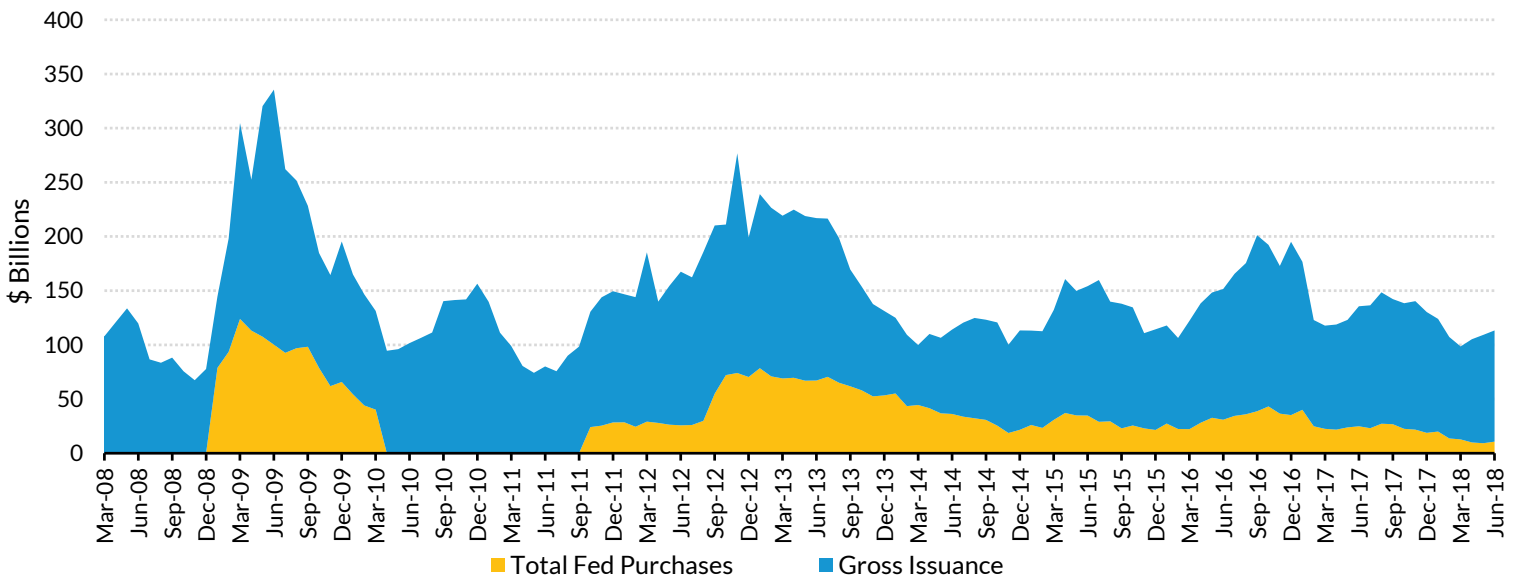
Note: \*calculated based on June 2017 report with amount asset backed per country. Revised to include Top 10 holders of MBS listed as of June 2017. Monthly data as of April 2018.



# MBS Ownership

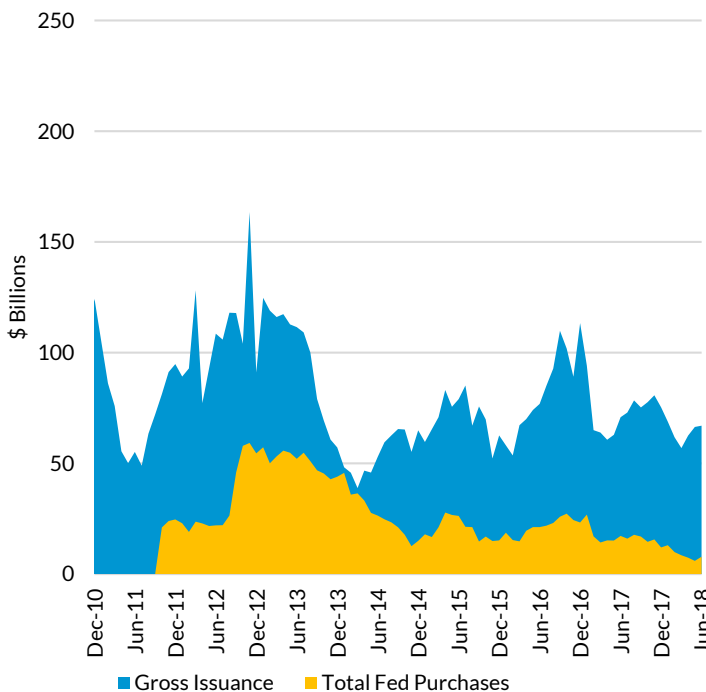
The Fed has begun to wind down their portfolio, and we are beginning to see the effects in slower absorption rates. During the period October 2014-September 2017, the Fed had ended its purchase program, but was reinvesting funds from mortgages and agency debt into the mortgage market, absorbing 20-30 percent of agency gross issuance. With the wind down started in October 2017, the Fed will continue to reinvest, but by less than their run off. In June 2018, total Fed purchases decreased to \$9.1 billion, yielding Fed absorption of gross issuance of 10.4 percent, near the lowest level since the Fed began its second mortgage purchase program. The Fed absorbed 8.1 percent of Ginnie Mae issuance and 11.7 percent of GSE issuance, respectively.

## Total Fed Absorption



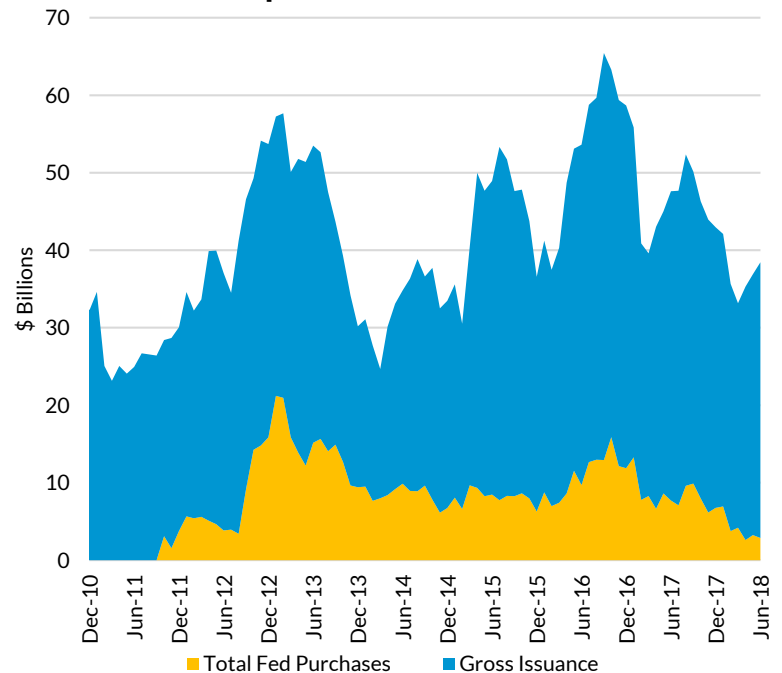
Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of June 2018.

## Fed Absorption of GSE MBS



Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of June 2018.

## Fed Absorption of Ginnie Mae MBS



Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of June 2018.

All the information contained in this document is as of date Indicated unless otherwise noted. The information provided does not constitute investment advice and it should not be relied on as such. All information has been obtained from sources believed to be reliable, but its accuracy is not guaranteed. The views expressed in this material are the views of Urban Institute and State Street Global Advisors as of August 16, 2018 and are subject to change based on market and other conditions. This document contains certain statements that may be deemed forward-looking statements. Please note that any such statements are not guarantees of any future performance and actual results or developments may differ materially from those projected.

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Expiration Date: 8/31/2019

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