GLOBAL MARKETS ANALYSIS REPORT

A Monthly Publication of Ginnie Mae's Office of Capital Markets

March 2023

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Inside this Month's Global Market Analysis Report...

This month's *Highlights* section discusses the relative value of Ginnie Mae II MBS compared to US AAA corporate bonds and the US Treasury 10-year.

Notable insights in this month's Global Market Analysis Report include the following:

- The Agency REMIC Issuance section captures the continued upward trend in coupon rates for REMIC deals as well as the dampened issuance volume, YoY, driven by lower sales and refinance activity.
- The Agency Credit Breakdown section illustrates the leading role that Ginnie Mae continues to play in high-LTV lending and in providing homeownership opportunities to first-time homebuyers.
- The U.S. Housing Market section includes home price indices for each of the U.S. census regions by quarter. The market shows signs of decelerating inflation and mortgage rates this month, as well as home prices beginning to decline nationally. However, inflation and mortgage rates continue to outpace wage growth. This section also includes an analysis of the average price of homes sold to median income, which shows housing affordability remaining historically low.

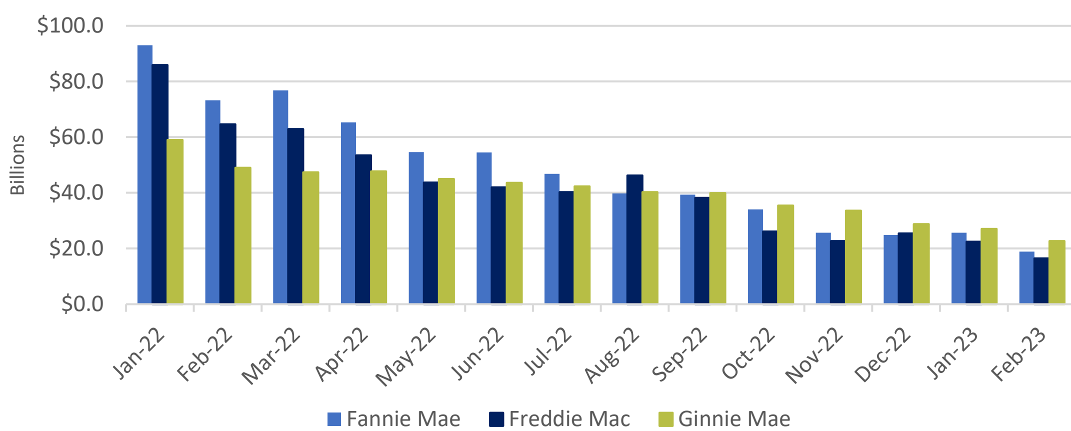
Highlights

The Federal Reserve raised short term rates in the United States from .25% to .50% in March 2022 to 4.5% to 4.75 % in March 2023, 450 bps increase since the beginning of 2022.The European Central Bank raised short term rates from 0% to 3.5% during the same period. Japan maintained its Policy Rate at -.10% through the period. The US Treasury yield curve remained inverted, with the US Treasury 2-year to 10-year note spread closing at the end of February at a spread of 87 basis points with the US Treasury 2-year closing at a yield of 4.797% and the US Treasury 10-year closing at 3.923%. These conditions have led to realignments in global fixed income markets during the first months of 2023. Agency MBS primary, as well as secondary markets, have not been immune to the realignment.

In January and February 2023, Ginnie Mae gross MBS issuance volume was $49.8 billion in unpaid principal balance (UPB) compared to $108.0 billion in January and February 2022. During the same two-month period, Fannie Mae gross issuance volume was $44.6 billion compared to $166.4 billion and Freddie Mac gross issuance volume was $38.9 billion compared to $150.5 billion.

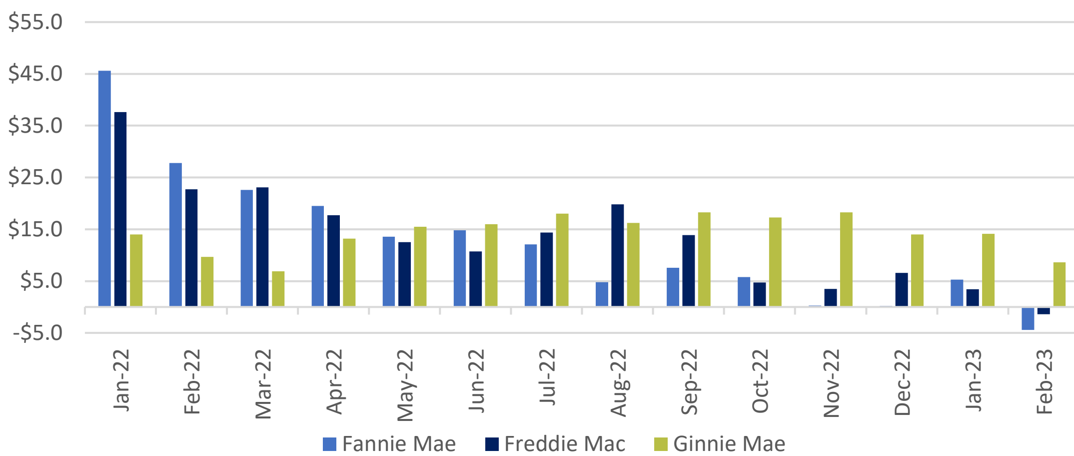
As illustrated in **Figure 1**, through January and February 2023, the GSEs were met with a sharper decline in monthly gross MBS issuance volume in comparison to Ginnie Mae. Freddie Mac gross monthly MBS issuance volume decreased by 74.2% from January/February 2022 versus January/February 2023 while Fannie Mae gross monthly MBS issuance volume decreased by 73.2%. Ginnie Mae gross monthly MBS issuance volume only decreased by 53.9% during the same period. For the fourth consecutive month, Ginnie Mae gross issuance surpassed the GSEs.

Figure 1. Agency Single Family MBS Gross Issuance Amount



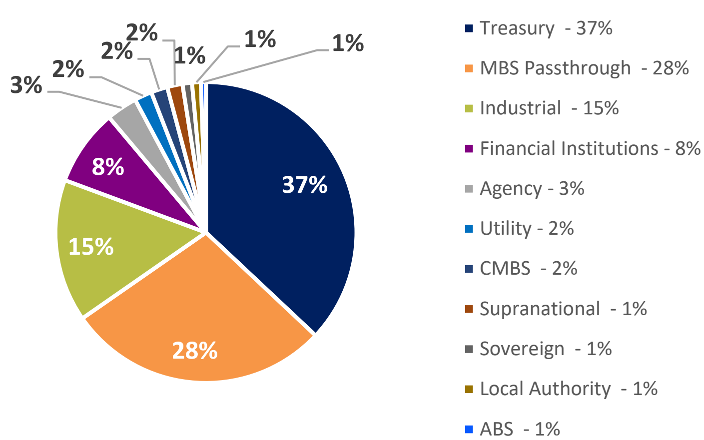
Net MBS issuance amounts for the GSEs were also significantly lower in January and February of 2023 relative to Ginnie Mae. In fact, Fannie Mae experienced a 98.7% decline in monthly net MBS issuance amount from $73.4 billion in the first two months of 2022 to only $900 million in net issuance in the first two months of 2023. Freddie Mac net MBS issuance declined 96.7% from $60.3 billion in January/February 2022 to just $2.0 billion in January/February 2023. Ginnie Mae maintained a net MBS issuance amount of $22.7 billion in January and February 2023 versus $23.7 billion in January and February 2022 as depicted in **Figure 2.**

Figure 2. Agency Single Family MBS Net Issuance Amount



Despite a decline in agency MBS production, US agency MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) continue to contribute approximately 28% in 2023 (see **Section 1.1**) to the Bloomberg US Aggregate Index as shown in **Figure 3.** Since 2018, US MBS has remained a stable contributor to the index.

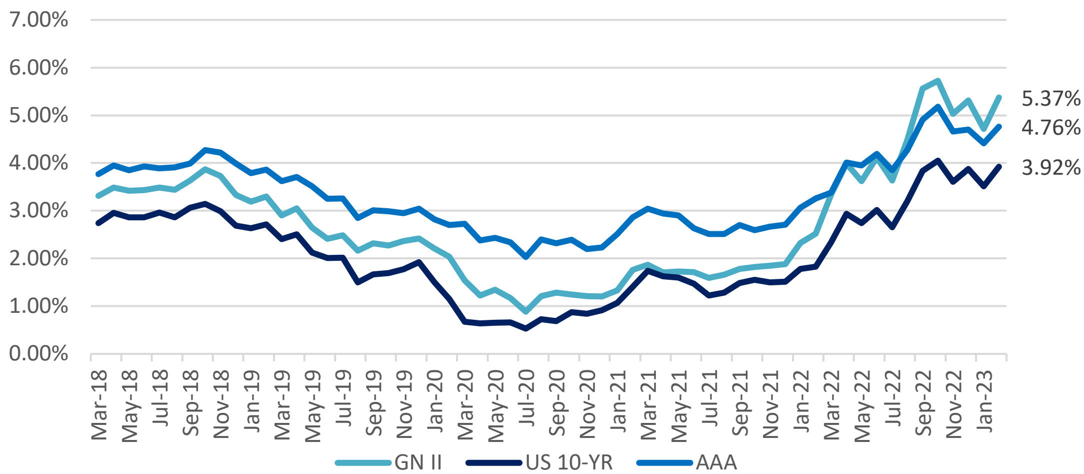
Figure 3. Bloomberg US Aggregate Index 2018



The yield on the GN II SF was at 5.37% compared to 4.76% for Moody's AAA Corporate Bond Index and 3.92% for the US Treasury 10-Year at month-end February 2023. This is a 113.0% YoY increase from 2.52% on the yield for the GN II SF and a 13.9% MoM increase from 4.72%. The yield for the GN II SF has also been consistently higher than the AAA Corporate Bond since August 2022 as shown in **Figure 4.** Thus, showcasing the increasing value of GN II SF MBS relative to the US 10-Yr and AAA Corporate Bonds.

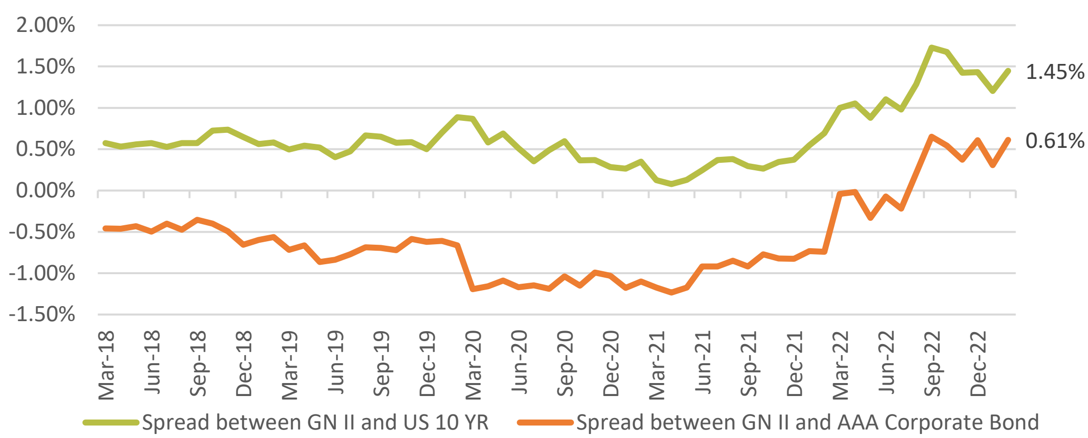
Sources: Ginnie, Freddie Mac, and Fannie Mae loan level disclosure files and Bloomberg data as of February 2018

Figure 4. GN II, US 10-YR, and AAA Corporate Bond Yields



As the yield for the GN II SF increases, so has the spread between the US 10-Yr and AAA Corporate bond indices like Moody's. As illustrated in **Figure 5**, at month-end February 2023, the spread between the GN II SF and US 10-Yr was 1.45% which is a 25 bps MoM increase from 1.20% at month-end January 2023. This also represents a 76 bps YoY increase from a spread of 0.69% at month-end February 2022. At month-end February, the spread between the GN II SF and the AAA Corporate Bond was 0.61% which represents a 30 bps MoM increase from a spread of 0.31% and a 135 bps YoY increase from a spread of -0.74%.

Figure 5. Spread between GN II, US 10-Yr, and AAA Corporate Bond



About 33% of the total SOMA portfolio consists of agency MBS. Of the $14.7 billion decrease, $6.1 billion were Fannie Mae holdings, $5.2 billion were Freddie Mac holdings, and $3.4 billion were Ginnie Mae holdings. Even though Ginnie Mae MBS comprises 24.9% of total agency MBS outstanding, the SOMA Ginnie Mae allocation is underweighted at 20.8% as shown in **Figure 6.**

Sources: Fred and Bloomberg data as of February 2023

Figure 6. SOMA agency MBS Holdings Distribution ($ Billions)

Agency	Single Family AMBS Outstanding Feb 22, 2023	% AMBS Outstanding	SOMA AMBS Holdings Jan 18, 2023	% SOMA Holdings	SOMA AMBS Holdings Feb 15, 2023	% SOMA Holdings
Fannie Mae	$3,578	41.5%	$1,078	41.2%	$1,071	41.2%
Freddie Mac	$2,901	33.6%	$999	38.0%	$989	38.0%
Ginnie Mae	$2,147	24.9%	$544	20.8%	$541	20.8%
Total	$8,626	100.0%	$2,616	100.0%	$2,615	100.0%

The changing demand profile from the Fed for agency MBS holdings is further shown in **Figure 7.** As of March 1, 2023, the liquidated amount of agency MBS holdings is still 58% below the liquidation cap of $35 billion at $14.7 billion.

Figure 7. SOMA agency MBS Liquidations from February 1, 2023 to March 1, 2023 ($ Billions)[1]

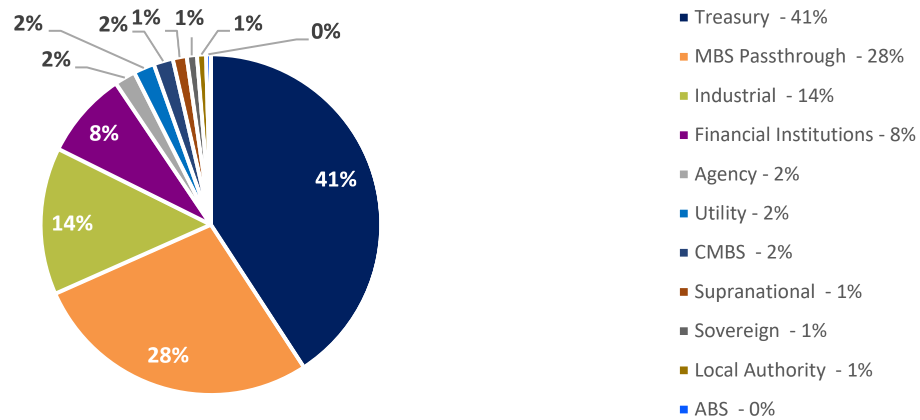
	MBS Holdings as of February 1, 2023	MBS Holdings as of March 1, 2023	Liquidated Amount	Liquidation Cap	Percentage of Liquidation
Total	$2,616.3	$2,601.6	$14.7	$35	42%

[1] The liquidation cap is per calendar month.

1 US AGGREGATE AND GLOBAL INDICES

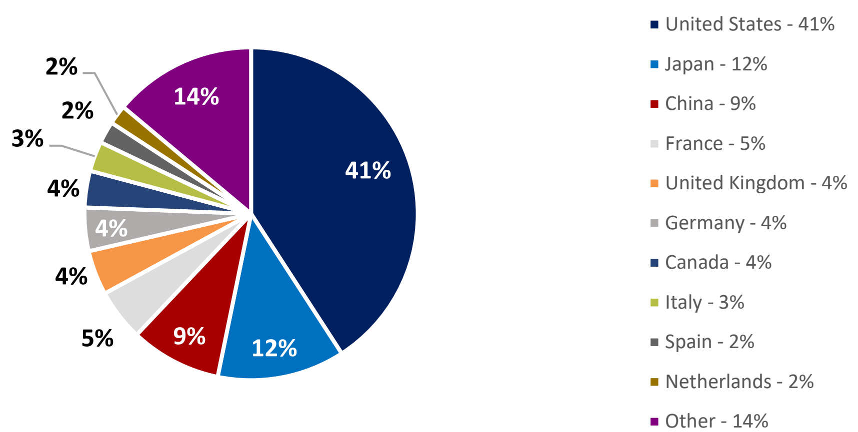
1.1 Bloomberg US Aggregate and Global Indices

Figure 8. Bloomberg US Aggregate Index



At month-end February, US Treasuries contributed approximately 41% to the Bloomberg US Aggregate Index, stable from the prior month. US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) continues to contribute approximately 28%. For the US Aggregate Index, all other changes to the index components were no larger than 1%.

Figure 9. Bloomberg Global Aggregate Index by Country



In the Bloomberg Global Aggregate Index by Country, the US share of fixed income remains the largest share of total outstanding issuance, representing approximately 41% of the total Bloomberg Global Aggregate Index. Japan's share of fixed income is the second highest at 12%. For the Global Aggregate Index, all countries remained stable when compared to the prior month with no changes larger than 1%.

Source: Bloomberg [both charts]. Note: Data as of February 2023. Figures in charts may not add to 100% due to rounding.

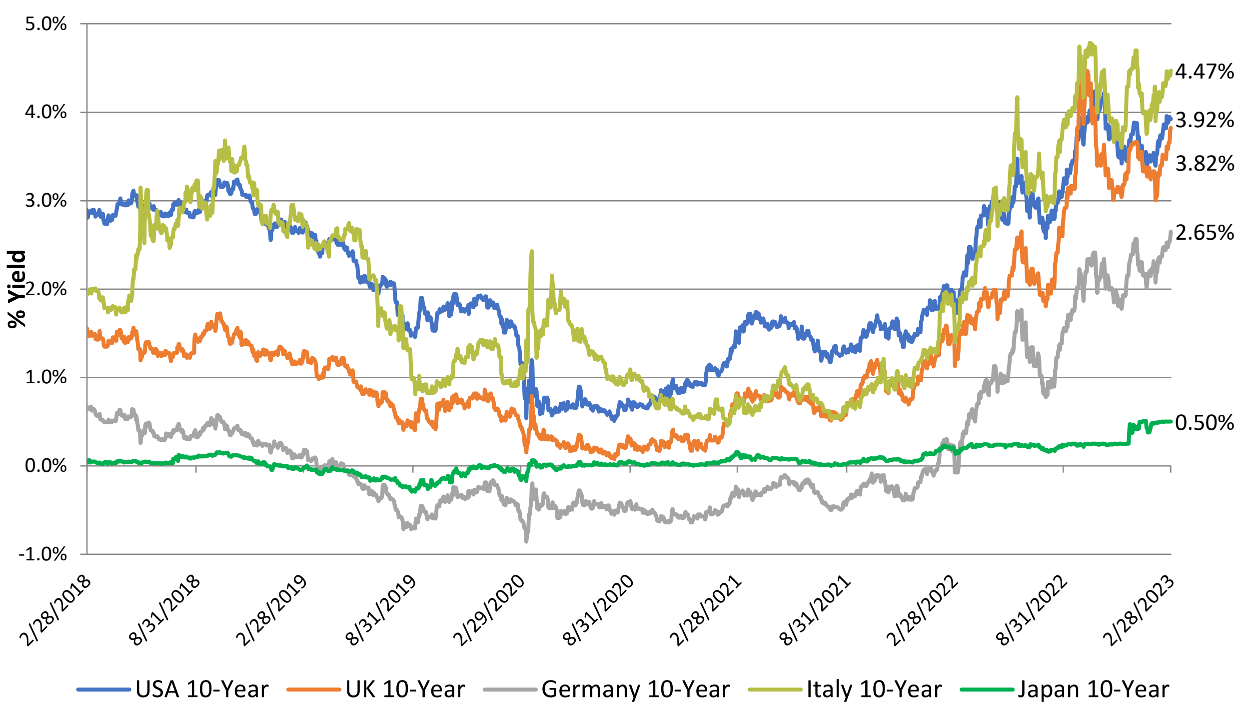
2 SOVEREIGN DEBT PRODUCT PERFORMANCE COMPARISONS

2.1 Global 10-Year Treasury Yields (Unhedged)

The US 10-year Treasury yield moved to 3.92% at month-end February 2023, a MoM increase of 41 bps. US Treasury yields remain the second highest of all the government treasury yields depicted in the figure below behind Italian Treasury yields.

- The yield on the UK 10-year notes increased to 3.82% at month-end February, a MoM increase of 45 bps.
- The yield on the German 10-year increased to 2.65% at month-end February, a MoM increase of 37 bps.
- The yield on the Italian 10-year increased to 4.47% at month-end February, a MoM increase of 32 bps.
- The yield on the Japanese 10-year notes increased to 0.50% at month-end February, a MoM increase of 1 bps.

Figure 10. Global 10-Year Treasury Yields



Source: Bloomberg. Note: Data as of February 2023.

2.2 US Treasury Hedged Yields

- The hedged yield for the 10-year Treasury JPY decreased MoM 8 bps to 2.13% at month-end February.
- The hedged yield for the 10-year Treasury EUR decreased MoM 4 bps to 1.23% at month-end February.

Figure 11. 7–10yr Total Return Hedged Index, JPY

Figure 12. 7–10yr Total Return Hedged, EUR

Source: Bloomberg. Note: Data as of February 2023.

SECONDARY MORTGAGE MARKET

3 FIXED INCOME PRODUCT PERFORMANCE COMPARISONS

3.1 Ginnie Mae Yields – USD

Ginnie Mae II yields were 5.31% in December, decreased 59 bps to 4.72% in January, and increased 65 bps to 5.37% at month-end February. Ginnie Mae I yields were 5.22% in December, decreased 47 bps to 4.75% in January, and increased 52 bps to 5.27% at month-end February. The yields on the Ginnie Mae I were 135 bps higher than the US 10-year Treasury yield at month-end February 2023, an increase of 12 MoM and an increase of 59 bps YoY. Ginnie Mae II spreads over the US 10-year Treasury yield increased 76 bps to 145 bps over the US 10-year Treasury yield at month-end February 2023.

Figure 13. Ginnie Mae II SF Yield, USD

Figure 14. Ginnie Mae I SF Yield, USD

Sources Bloomberg. Note: Data as of February 2023.

3.2 Ginnie Mae Hedged Yields

The yield for the Ginnie Mae II, hedged in the Japanese Yen stood at 3.58% at month-end February, a 16 bps increase MoM. The yield for the Ginnie Mae II, hedged in the Euro, stood at 2.68% at month-end February, a 20 bps increase MoM.

The yield for the Ginnie Mae I, hedged in the Japanese Yen, stood at 3.48% at month-end February, a 3 bps increase MoM. The yield for the Ginnie Mae I, hedged in the Euro, stood at 2.58% at month-end February, a 7 bps increase MoM.

Figure 15. Ginnie Mae I and II Hedged, JPY

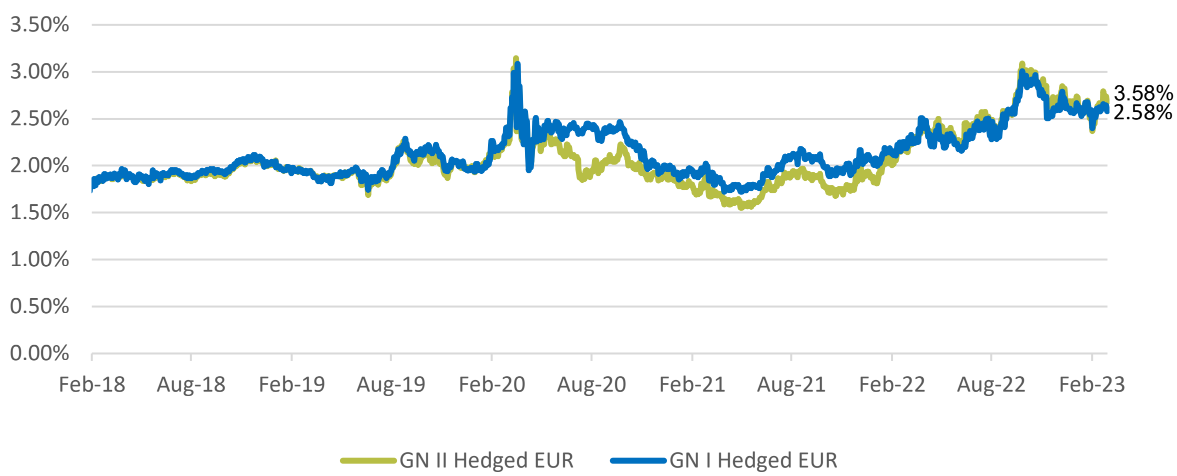
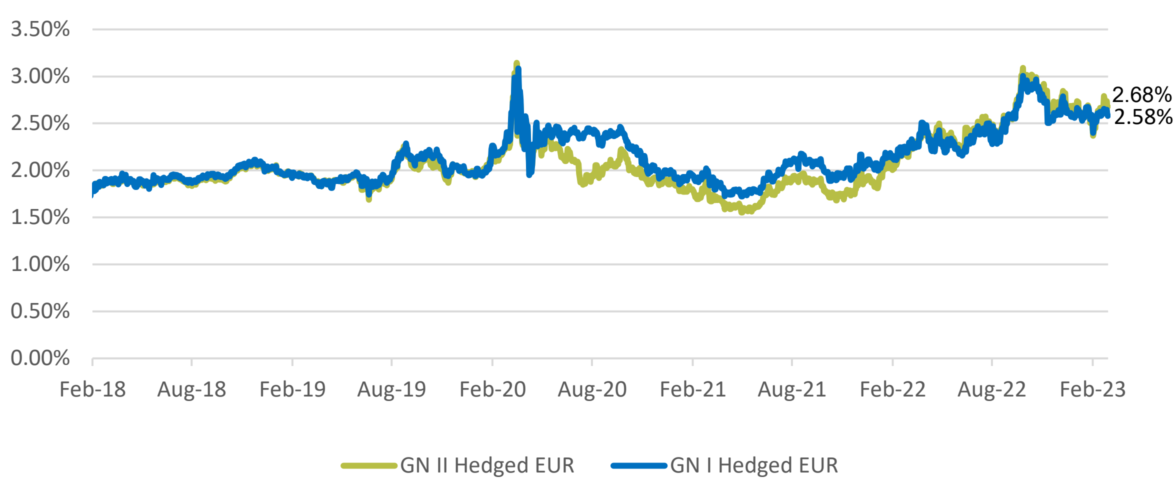


Figure 16. Ginnie Mae I and II Hedged, EUR



Source: Bloomberg. Note: Data as of February 2023.

Note: Hedged yield calculations assume hedge costs for Ginnie Mae securities are equivalent to those for U.S. Treasuries.

3.3 Ginnie Mae Yield Spreads – Intermediate Credit

The yield differential between US Intermediate Credit and GNMA II 30-year OAS remained relatively stable at 0.55% at month-end February. The GNMA II 30-year OAS increased 3 bps MoM as of month-end February. The US Intermediate credit OAS also increased 4 bps MoM as of month-end February.

Figure 17. US GNMA II 30yr MBS OAS versus US Intermediate Credit OAS

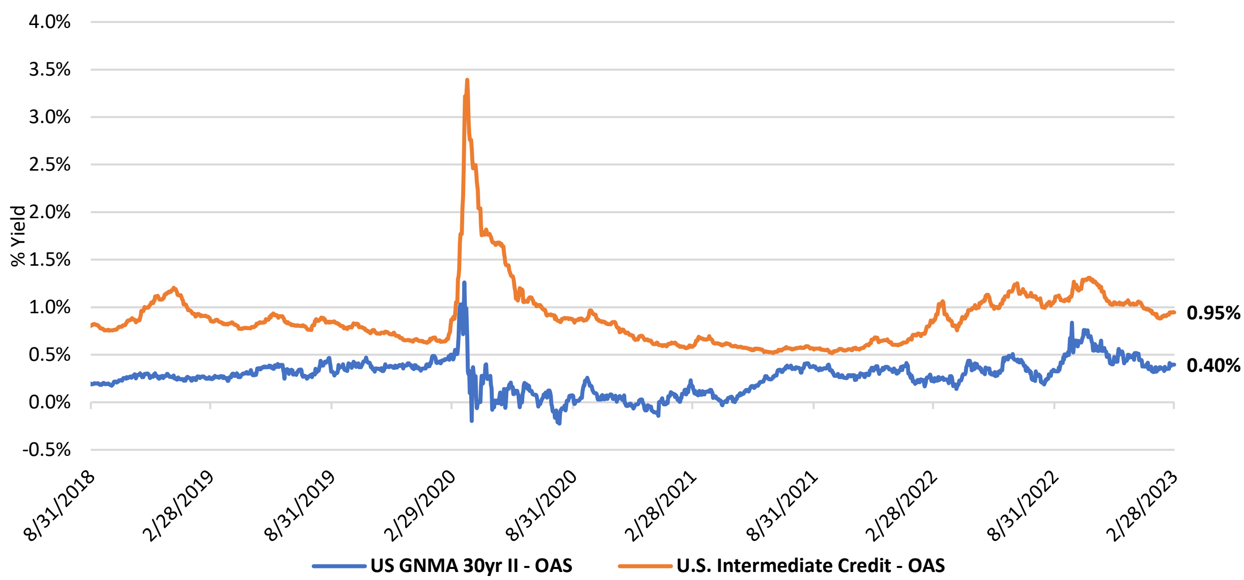


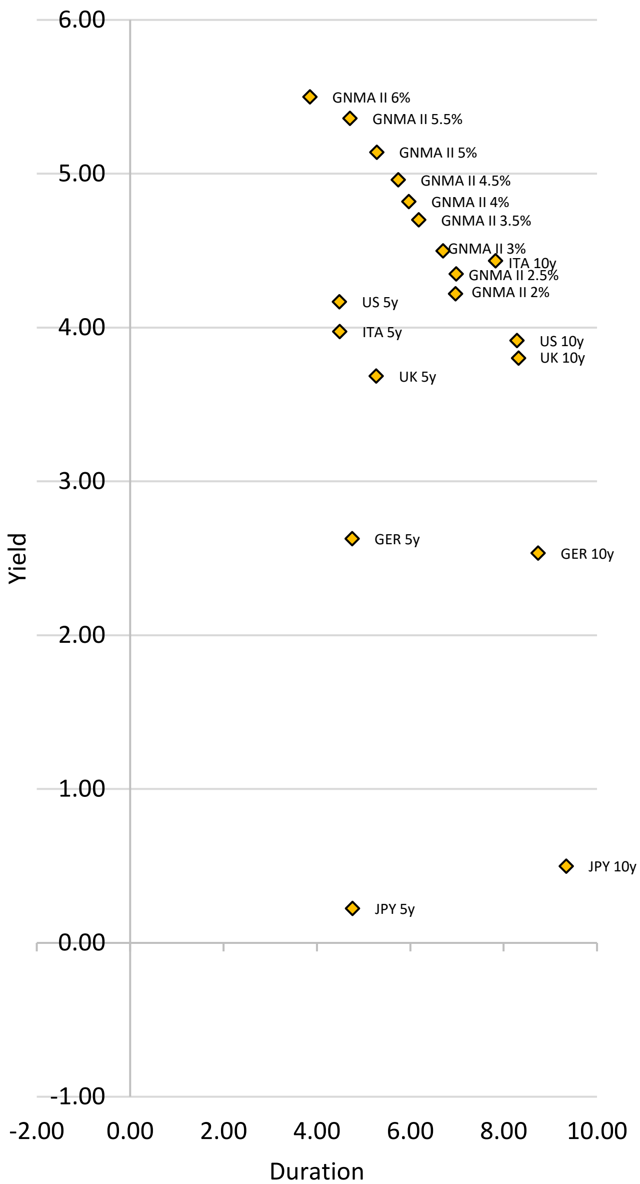
Figure 18. Spread between US Intermediate Credit and US GNMA II 30yr MBS OAS

Source: Bloomberg. Note: Data as of February 2023.

3.4 Global Treasury Yield Per Duration

GNMA MBS continue to offer a higher yield in comparison to other government fixed income securities of various tenors with similar or longer duration. Prepayment risk is a feature of MBS.

Figure 19. Yield vs. Duration



Security	Duration	Yield
US 5y	4.48	4.17
US 10y	8.28	3.92
JPY 5y	4.76	0.22
JPY 10y	9.34	0.50
GER 5y	4.75	2.63
GER 10y	8.74	2.65
ITA 5y	4.49	3.97
ITA 10y	7.83	4.47
UK 5y	5.27	3.69
UK 10y	8.32	3.82
GNMA II 2%	6.97	4.22
GNMA II 2.5%	6.98	4.35
GNMA II 3%	6.70	4.50
GNMA II 3.5%	6.18	4.70
GNMA II 4%	5.97	4.82
GNMA II 4.5%	5.74	4.96
GNMA II 5%	5.28	5.14
GNMA II 5.5%	4.71	5.36
GNMA II 6%	3.85	5.50

Source: Bloomberg. Note: Yield and modified duration for GNMA II securities is based on median prepayment assumptions from surveyed Bloomberg participants. All data is as of February 2023. Yields are in base currency of security and unhedged.

4 PREPAYMENTS

4.1 Aggregate Prepayments (CPR)

Ginnie Mae fixed rate aggregate prepayment speeds increased in February by 11.9% MoM, while both Fannie Mae and Freddie Mac CPRs increased by 8.5%. ARM prepayments have decreased for Fannie Mae and increased for Freddie Mac. ARM prepayments have also dropped for Ginnie Mae for the fourth straight month.

Figure 20. Fixed Rate Aggregate 1-Month CPR

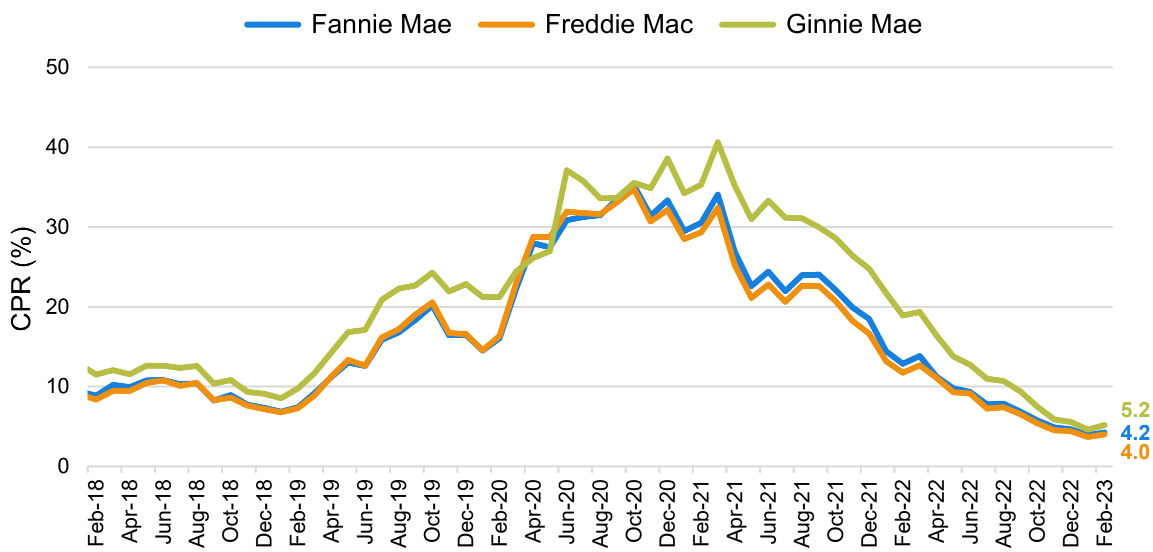
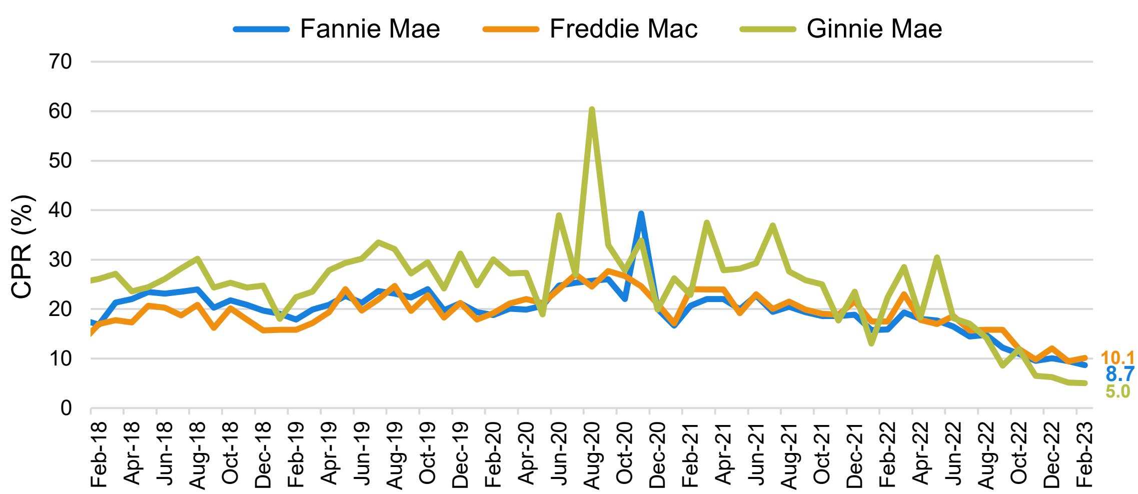


Figure 21. ARM Aggregate 1-Month CPR



Source: Recursion. Note: Data as of February 2023.

4.2 Involuntary Prepayments (CDR)

Fixed rate involuntary prepayments (CDR) remain higher for Ginnie Mae than for the GSEs. The spread in involuntary prepayment speeds between Ginnie Mae and GSE prepayments has converged significantly since Ginnie Mae's CDR peak of 12.4 CDR in June 2020. ARM CDRs for Freddie Mac surpassed Ginnie Mae in February 2023 for the first time since September 2022.

Figure 22. Fixed Rate Aggregate CDR

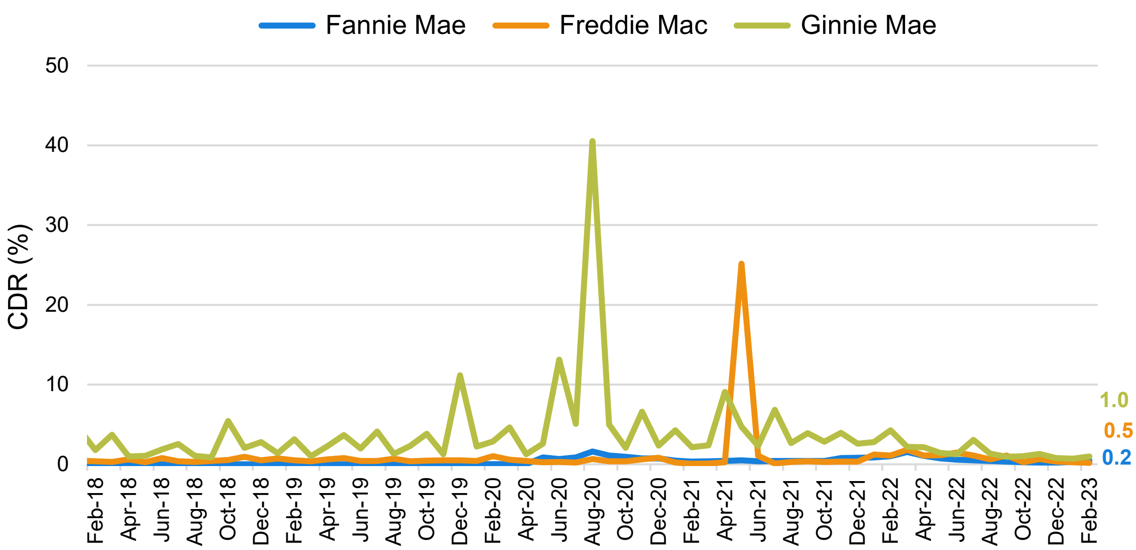
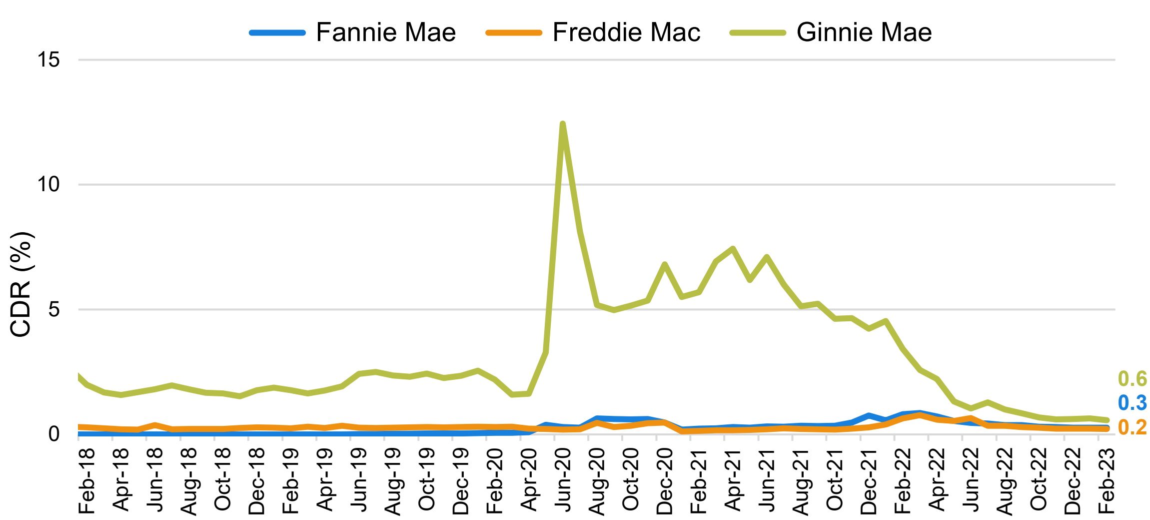


Figure 23. ARM Aggregate CDR



Source: Recursion. Note: Data as of February 2023.

4.3 Voluntary Prepayment Rates (CRR)

Fixed rate voluntary prepayments (CRR) continue to remain higher for Ginnie Mae relative to the GSEs. Fannie Mae and Freddie Mac saw increases of 9.0% MoM and 9.5% MoM in fixed rate aggregate CRR, respectively. Freddie Mac saw a 7.8% MoM increase and Fannie Mae saw a 10.9% MoM decrease in ARM aggregate CRR. Ginnie Mae increased 15.5% MoM in fixed rate aggregate CRR and saw a 7.7% MoM decrease in ARM aggregate CRR.

Figure 24. Fixed Rate Aggregate CRR

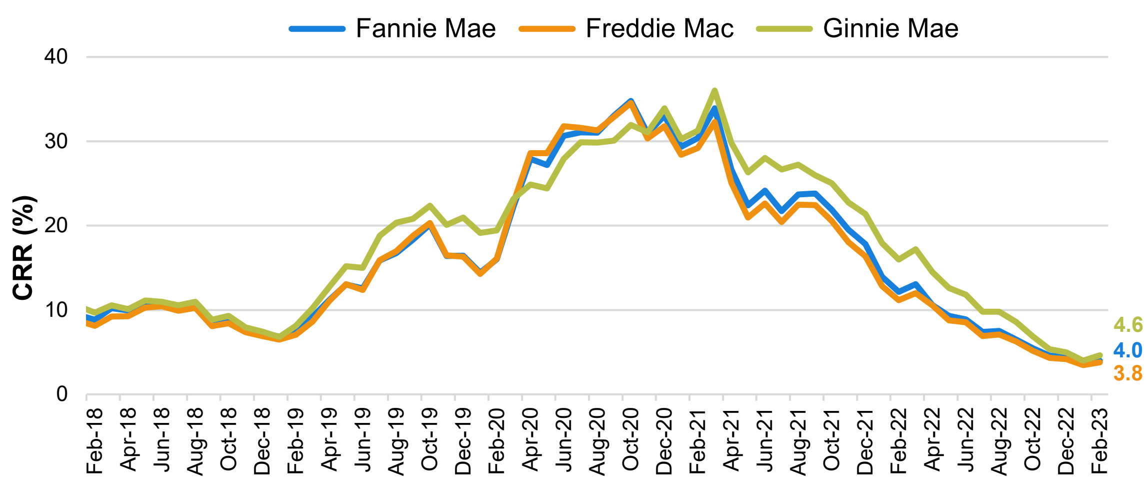
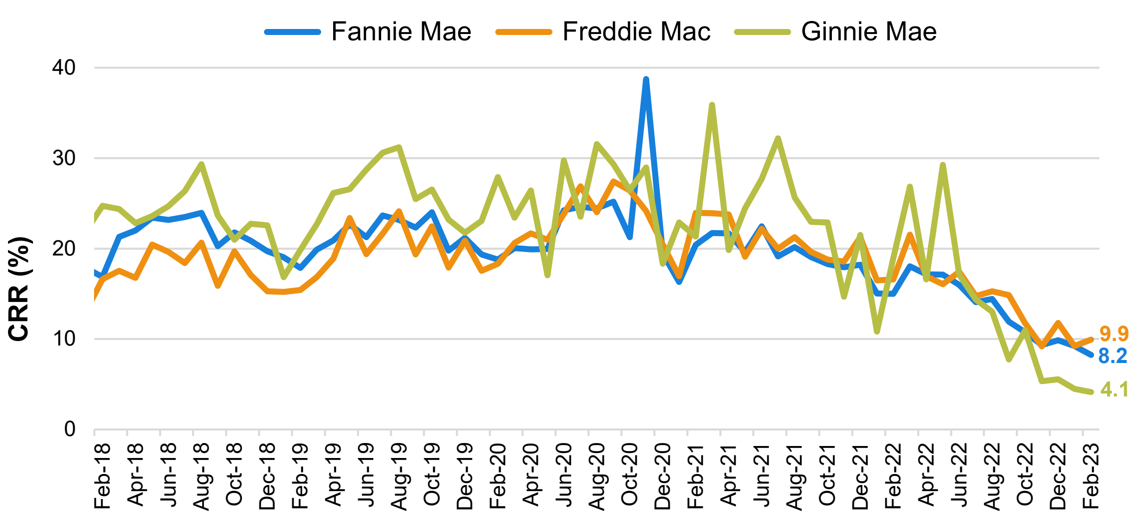


Figure 25. ARM Aggregate CRR



Source: Recursion. Note: Data as of February 2023.

5 SINGLE-FAMILY MBS PASS-THROUGH ISSUANCE

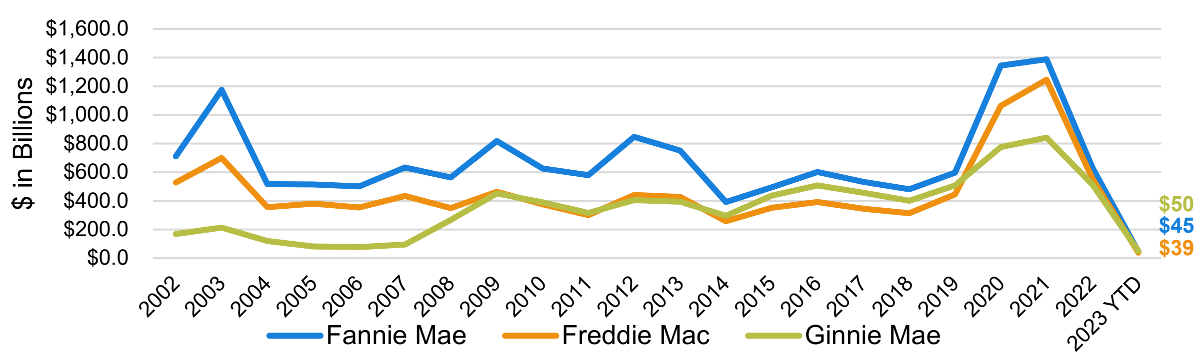
5.1 Gross Issuance of Agency MBS

Agency gross MBS issuance decreased MoM by 22.79%. Freddie Mac, Ginnie Mae and Fannie Mae all saw decreases in gross issuance as compared to January.

Table 1. Agency Gross Issuance ($ in billions)

Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
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	$1,195.6
2019	$597.4	$445.2	$1,042.6	$508.6	$1,551.2
2020	$1,343.4	$1,064.1	$2,407.5	$775.4	$3,182.9
2021	$1,388.0	$1,245.1	$2,633.1	$840.9	$3,474.0
2022	$628.3	$551.6	$1,179.9	$512.3	$1,692.2
2023 YTD	$44.7	$38.9	$83.6	$49.8	$133.4

Figure 26. Agency Gross Issuance



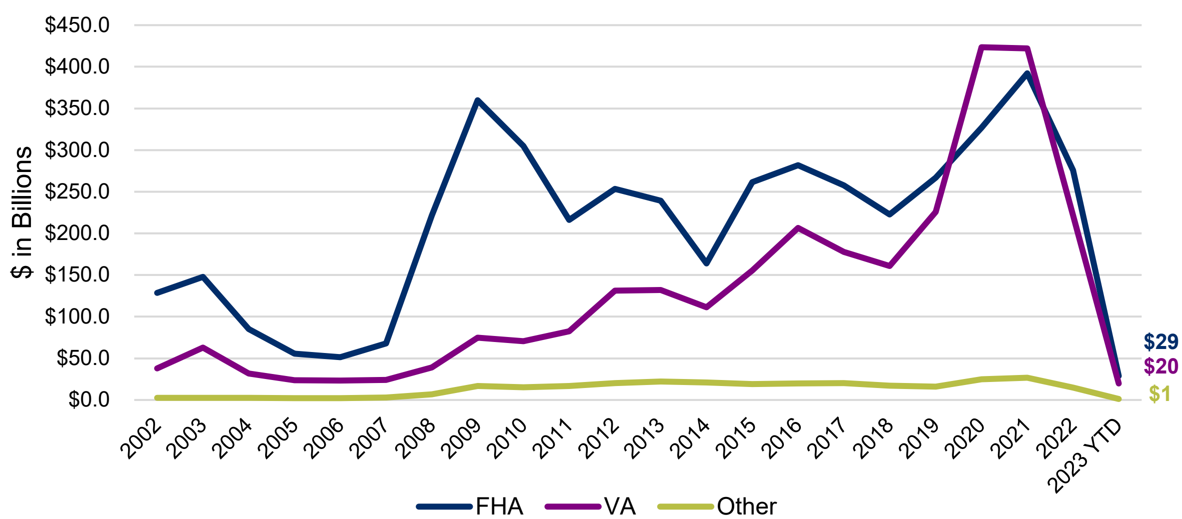
Note: Numbers are rounded to the nearest hundred million. For sums, like “GSE Total”, the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

Ginnie Mae's $22.7 billion in gross issuance in February was approximately 47% below the average monthly issuance for 2022. Table 2 below provides an annualized 2023 value that assumes steady production throughout 2023. At the current pace, Ginnie Mae's gross issuance will be approximately $213.5 billion less than that of 2022.

Table 2. Ginnie Mae Gross Issuance Collateral Composition ($ in billions)

Issuance Year	FHA	VA	Other	Total
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	$266.9	$225.7	$16.0	$508.6
2020	$327.0	$423.5	$24.9	$775.4
2021	$392.2	$422.1	$26.7	$840.9
2022	$275.8	$221.7	$14.8	$512.3
2023 YTD	$28.8	$19.8	$1.2	$49.8

Figure 27. Ginnie Mae Gross Issuance



Note: Numbers are rounded to the nearest hundred million. For sums, like "GSE Total", the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

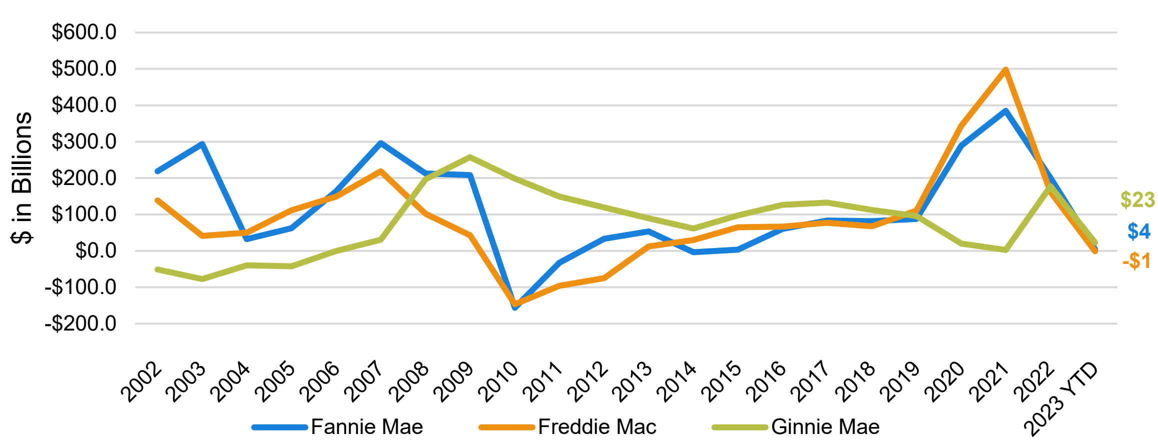
5.2 Net Issuance of Agency MBS

Agency net issuance in February was approximately $2.8 billion, which represents an 87.7% MoM decrease in net issuance. Ginnie Mae net issuance was $8.6 billion in February, a 39.0% decrease from January 2023. Since May 2022, FHA net issuance outpaces VA net issuance MoM, as shown in **Table 4 and Figure 28.**

Table 3. Agency Net Issuance ($ in billions)

Issuance Year	Fannie Mae	Freddie Mac	GSE	Ginnie Mae	Total
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	$53.5	$11.8	$65.3	$89.6	$154.9
2014	$-4.0	$30.0	$26.0	$61.6	$87.7
2015	$3.5	$65.0	$68.4	$97.3	$165.7
2016	$60.5	$66.8	$127.4	$126.1	$253.5
2017	$83.7	$77.0	$160.7	$132.3	$293.0
2018	$81.9	$67.6	$149.4	$112.0	$261.5
2019	$87.4	$110.3	$197.7	$95.7	$293.5
2020	$289.3	$343.5	$632.8	$19.9	$652.7
2021	$384.9	$498.0	$882.9	$2.7	$885.6
2022	$200.4	$161.5	$361.9	$177.4	$539.4
2023 YTD	$3.9	-$1.1	$2.9	$22.7	$25.6

Figure 27. Agency Net Issuance

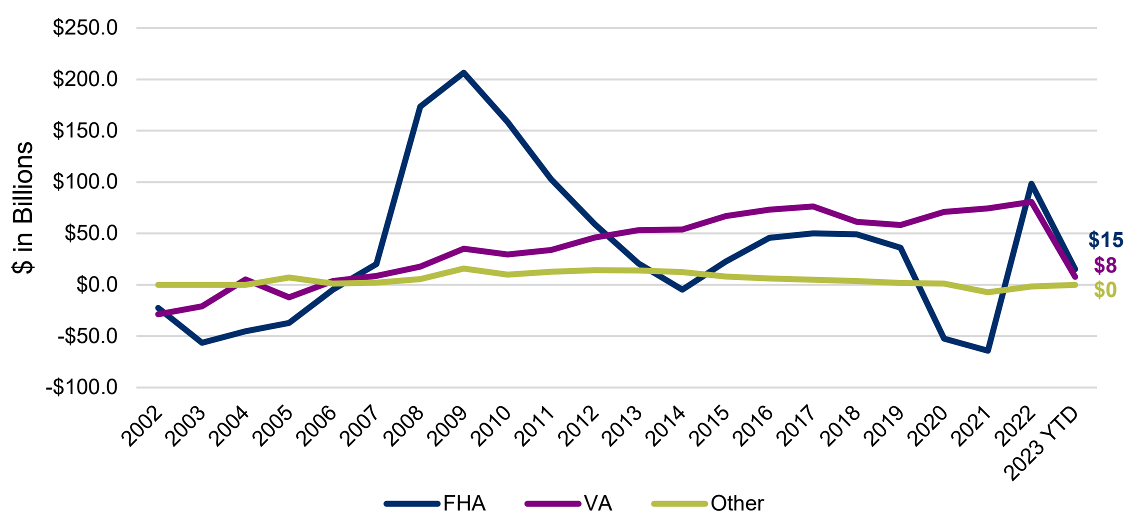


Note: Numbers are rounded to the nearest hundred million. For sums, like "GSE Total", the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

Table 4. Ginnie Mae Net Issuance Collateral Composition ($ in billions)

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	$131.2
2018	$49.2	$61.2	$3.5	$113.9
2019	$35.9	$58.0	$1.9	$95.7
2020	-$52.5	$71.0	$1.3	$19.9
2021	-$64.2	$74.2	-$7.3	$2.7
2022	$98.5	$80.7	-$1.7	$177.4
2023 YTD	$15.3	$7.7	-$0.2	$22.7

Figure 28. Ginnie Mae Net Issuance



Note: Numbers are rounded to the nearest hundred million. For sums, like "GSE Total", the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

5.3 Monthly Issuance Breakdown

Table 5. Ginnie Mae Net Issuance Collateral Composition ($ in billions)

	Agency Gross Issuance Amount (in $ Billions)					Agency Net Issuance Amount (in $ Billions)				
Month	Fannie Mae	Freddie Mac	Ginnie Mae	GSEs	Total	Fannie Mae	Freddie Mac	Ginnie Mae	GSEs	Total
Feb-19	$27.3	$19.9	$23.5	$47.2	$70.7	$1.4	$3.4	$4.6	$4.7	$9.3
Mar-19	$29.6	$27.3	$26.6	$56.9	$83.5	$1.8	$10.3	$5.6	$12.0	$17.6
Apr-19	$33.1	$30.8	$32.9	$63.9	$96.8	$1.3	$10.8	$8.3	$12.0	$20.4
May-19	$44.5	$34.3	$38.8	$78.8	$117.6	$6.7	$9.8	$9.4	$16.6	$26.0
Jun-19	$44.6	$34.0	$43.3	$78.6	$121.9	$1.9	$5.9	$9.0	$7.8	$16.8
Jul-19	$51.7	$36.9	$45.9	$88.6	$134.5	$10.9	$10.1	$11.0	$21.0	$32.0
Aug-19	$71.1	$50.4	$51.2	$121.4	$172.6	$20.8	$17.1	$8.7	$37.9	$46.6
Sep-19	$67.1	$43.0	$52.0	$110.1	$162.1	$14.1	$7.5	$6.5	$21.5	$28.0
Oct-19	$65.0	$46.2	$58.4	$111.2	$169.6	$7.4	$7.1	$11.9	$14.6	$26.5
Nov-19	$68.1	$50.7	$54.3	$118.7	$173.1	$5.2	$8.6	$4.1	$13.8	$18.0
Dec-19	$62.1	$52.5	$52.7	$114.6	$167.3	$10.1	$17.3	$7.4	$27.3	$34.7
Jan-20	$61.7	$51.4	$56.0	$113.1	$169.0	$9.1	$16.5	$8.6	$25.6	$34.2
Feb-20	$56.5	$39.5	$51.2	$96.0	$147.2	$9.4	$7.9	$7.1	$17.4	$24.4
Mar-20	$69.5	$41.4	$53.0	$110.8	$163.9	$17.9	$6.3	$8.8	$24.2	$33.0
Apr-20	$101.6	$76.3	$61.4	$177.9	$239.3	$30.5	$27.5	$10.2	$58.0	$68.2
May-20	$124.3	$70.6	$60.8	$194.9	$255.7	$35.2	$8.2	$5.7	$43.4	$49.1
Jun-20	$118.9	$78.1	$58.5	$197.0	$255.4	$30.0	$15.9	$1.3	$45.9	$47.2
Jul-20	$125.0	$108.1	$66.5	$233.1	$299.5	$23.4	$38.0	-$15.5	$61.4	$45.9
Aug-20	$137.6	$113.6	$73.6	$251.3	$324.8	$34.2	$43.4	-$4.1	$77.6	$73.5
Sep-20	$122.9	$102.1	$72.4	$225.0	$297.5	$16.5	$29.9	$1.0	$46.5	$47.5
Oct-20	$142.3	$124.8	$72.6	$267.1	$339.7	$28.9	$48.3	-$0.3	$77.2	$76.9
Nov-20	$152.4	$131.5	$72.6	$283.9	$356.5	$31.4	$48.4	-$4.5	$79.8	$75.3
Dec-20	$130.8	$126.7	$76.9	$257.5	$334.4	$22.8	$53.1	$1.7	$75.8	$77.5
Jan-21	$141.6	$117.3	$78.2	$258.9	$337.1	$25.9	$37.9	-$6.5	$63.8	$57.3
Feb-21	$118.8	$115.5	$72.3	$234.3	$306.6	$16.8	$44.3	-$0.9	$61.1	$60.2
Mar-21	$143.9	$118.9	$76.9	$262.8	$339.7	$37.6	$44.0	$1.0	$81.6	$82.6
Apr-21	$148.0	$142.3	$85.6	$290.3	$375.9	$26.2	$57.0	-$4.2	$83.3	$79.0
May-21	$132.3	$91.4	$71.7	$223.7	$295.4	$64.9	$38.8	-$3.1	$103.7	$100.6
Jun-21	$108.5	$91.2	$67.7	$199.7	$267.4	$34.0	$33.7	$2.6	$67.8	$70.4
Jul-21	$95.4	$84.6	$69.0	$180.0	$249.0	$27.6	$31.9	-$1.4	$59.5	$58.0
Aug-21	$104.8	$109.3	$66.6	$214.1	$280.8	$27.5	$48.5	$1.4	$76.1	$77.4
Sep-21	$102.9	$105.3	$68.0	$208.3	$276.3	$26.4	$45.6	$3.1	$72.0	$75.1
Oct-21	$105.1	$102.7	$62.5	$207.8	$270.3	$34.6	$46.9	$1.9	$81.5	$83.4
Nov-21	$93.6	$81.1	$60.8	$174.7	$235.5	$29.5	$34.9	$3.1	$64.4	$67.6
Dec-21	$93.7	$85.4	$58.9	$179.1	$238.0	$33.8	$34.4	$5.7	$68.3	$73.9
Jan-22	$93.1	$85.9	$59.0	$179.0	$238.0	$45.6	$37.6	$14.0	$83.2	$97.3
Feb-22	$73.3	$64.6	$49.0	$137.9	$186.9	$27.8	$22.7	$9.7	$50.5	$60.2
Mar-22	$76.8	$62.9	$47.4	$139.7	$187.1	$22.6	$23.1	$6.9	$45.7	$52.6
Apr-22	$65.3	$53.5	$47.8	$118.8	$166.6	$19.5	$17.7	$13.2	$37.2	$50.4
May-22	$54.7	$43.7	$45.0	$98.4	$143.4	$13.6	$12.5	$15.5	$26.1	$41.6
Jun-22	$54.5	$42.0	$43.6	$96.5	$140.1	$14.8	$10.7	$16.0	$25.5	$41.5
Jul-22	$46.8	$40.3	$42.4	$87.1	$129.5	$12.1	$14.4	$18.0	$26.5	$44.5
Aug-22	$39.8	$46.3	$40.3	$86.1	$126.4	$4.8	$19.8	$16.2	$24.6	$40.8
Sep-22	$39.3	$38.2	$39.9	$77.5	$117.4	$7.6	$13.9	$18.3	$21.5	$39.8
Oct-22	$34.1	$26.1	$35.5	$60.2	$95.7	$5.8	$4.7	$17.3	$10.5	$27.8
Nov-22	$25.7	$22.7	$33.6	$48.4	$82.0	$0.3	$3.5	$18.3	$3.8	$22.1
Dec-22	$24.9	$25.5	$28.8	$50.4	$79.2	$0.2	$6.6	$14.0	$6.8	$20.8
Jan-23	$25.7	$22.4	$27.1	$48.1	$75.2	$5.3	$3.4	$14.1	$8.7	$22.8
Feb-23	$18.9	$16.5	$22.7	$35.4	$58.1	-$4.4	-$1.4	$8.6	-$5.8	$2.8

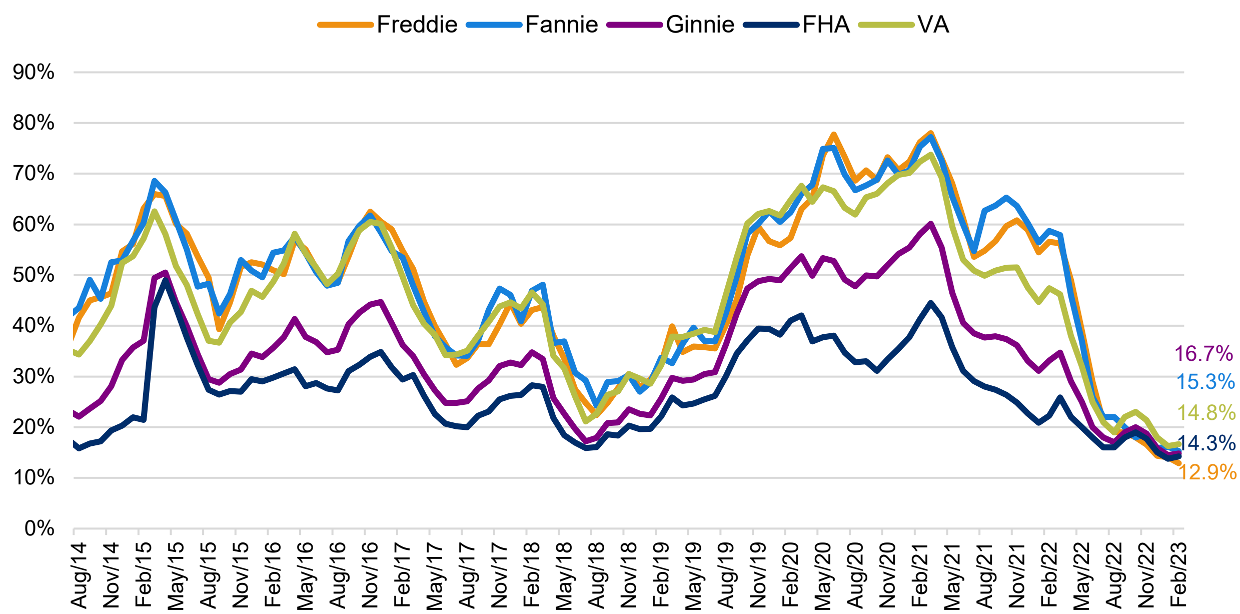
Source: Beginning May 2021, data for Gross and Net Issuance was sourced from Fannie Mae, Freddie Mac, and Ginnie Mae loan level disclosure files. Net issuance is defined here as the difference between prior period UPB and current period UPB. Data as of February 2023. Beginning with the October 2021 GMAR, the Fannie Mae and Freddie Mac net issuance data have been updated to reflect the current UPB of the portfolios. July 2021 through February 2023 GMAR net issuance data reflect the UPB at security issuance for Fannie Mae and Freddie Mac. Note: Numbers are rounded to the nearest hundred million.

5.4 Percent Refi at Issuance – Single-Family

Refinance activity increased for Ginnie Mae in February 2023. Ginnie Mae's MoM increase was approximately 2.3%, with the greater increase taking place with FHA lending which was up approximately 3.4% in February MoM. VA's refinance share increased by approximately 2.4%. However, in the conventional conforming mortgage market space, Fannie Mae saw a decrease of 5.4% MoM and Freddie Mac saw a decrease of 8.4% MoM.

- Freddie Mac's refinance percentage dropped to 12.9% in February, down from 14.1% in January.
- Fannie Mae's refinance percentage dropped to 15.3% in February, down from 16.2% in January.
- Ginnie Mae's refinance percentage rose to 14.8% in February, up from 14.5% in January
- FHA's refinance percentage rose to 14.3% in February, up from 13.8% in January.
- VA's refinance percentage rose to 16.7% in February, up from 16.3% in January.

Figure 29. Percent Refinance at Issuance – Single-Family



Sources: Recursion. Note: Data as of February 2023.

6 AGENCY SINGLE-FAMILY MBS OUTSTANDING

6.1 Outstanding Single-Family Agency MBS

As of February 2023, outstanding single-family MBS in the agency market totaled $8.628 trillion: 41.4% Fannie Mae, 33.6% Freddie Mac, and 25.0% Ginnie Mae MBS. Over the past twelve months, Fannie Mae's, Freddie Mac's, and Ginnie Mae's total outstanding MBS increased by approximately 2.9%, 4.7%, and 8.9%, respectively. Fannie Mae outstanding MBS remains larger than Freddie Mac's and Ginnie Mae's by approximately $674 billion and $1.4 trillion, respectively.

Ginnie Mae MBS collateral composition has changed dramatically over the past five years. In February 2018, 60.5% of Ginnie Mae outstanding collateral was FHA and 33.3% was VA. In February 2023, FHA collateral comprised 53.0% of Ginnie Mae MBS outstanding and VA collateral comprised 42.1% of Ginnie Mae MBS outstanding.

Figure 30. Outstanding Agency Mortgage-Backed Securities

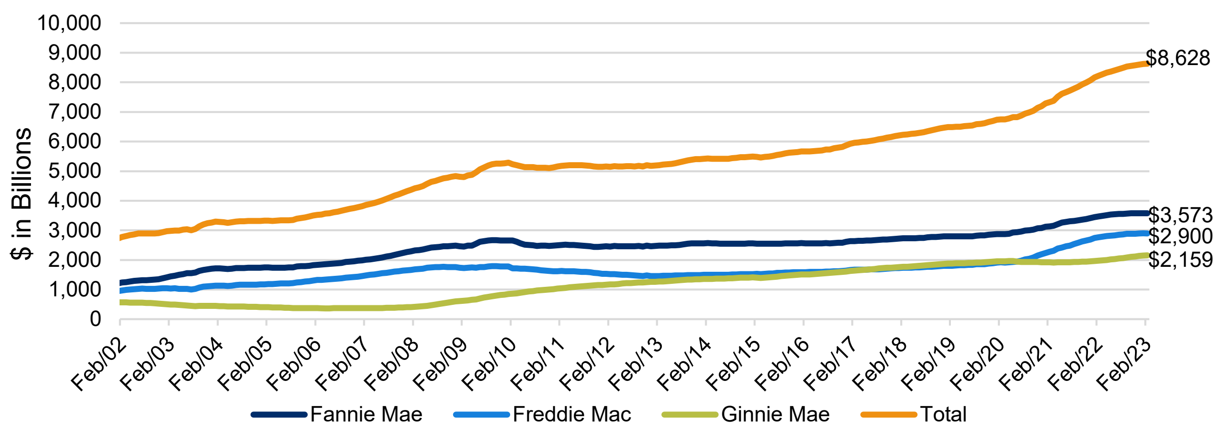
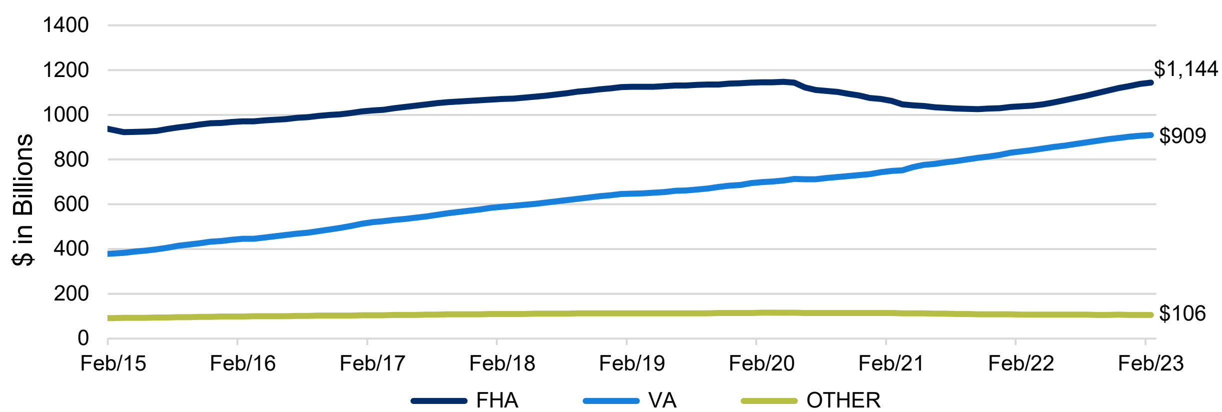


Figure 31. Composition of Outstanding Ginnie Mae Mortgage-Backed Securities



Sources: Recursion. Note: Data as of February 2023.

6.2 Origination Volume and Share Over Time

First lien origination volume continued to decline in Q4 2022, with $335 billion in originations in Q4, which represents a decline in issuance from Q3 2022 of approximately 34%. Ginnie Mae's share of total origination increased from 21.6% to 25.6% in Q4 2022, while Portfolio origination decreased from 26.4% to 25.3% in Q4 2022.

Figure 32. First Lien Origination Volume

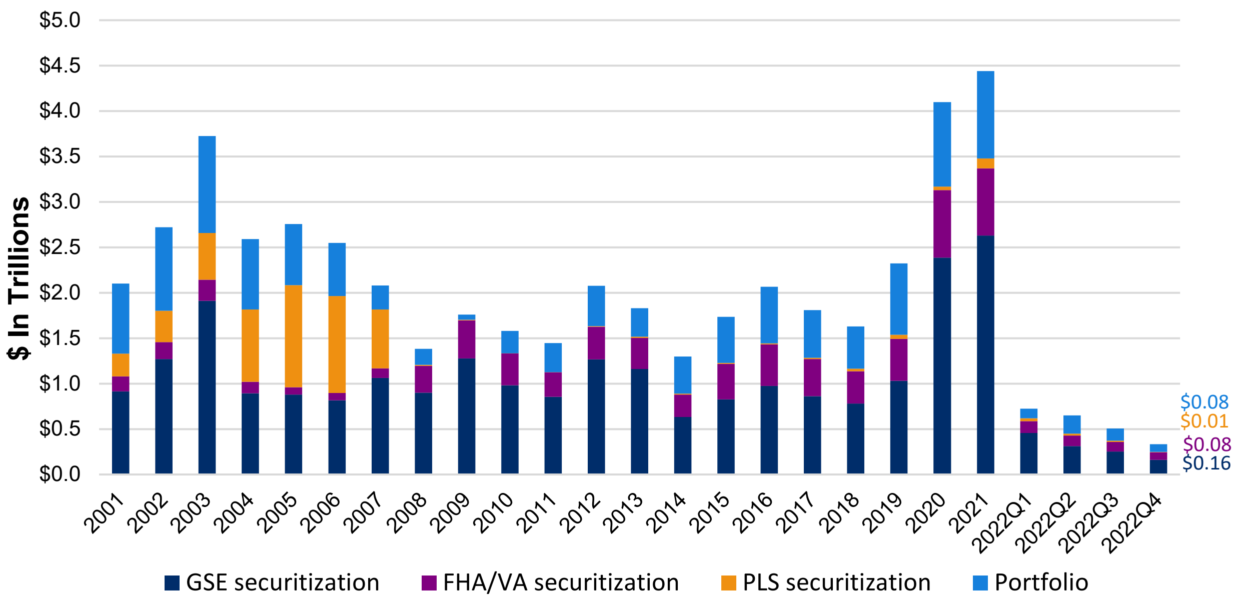
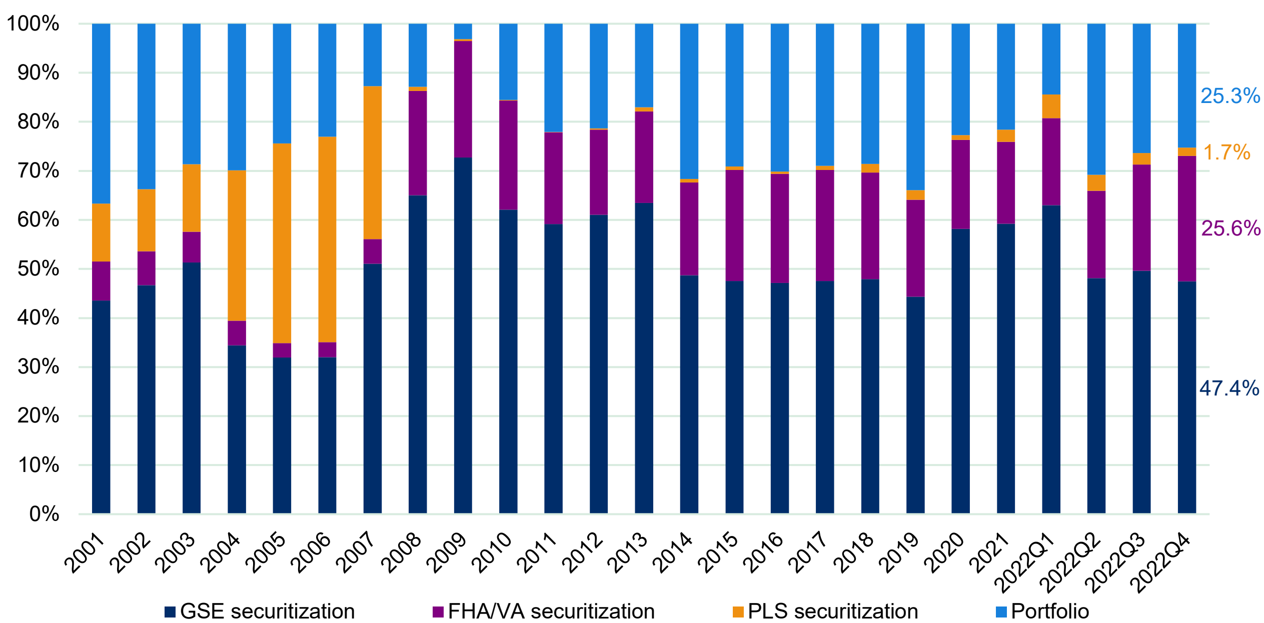


Figure 33. First Lien Origination Share



Source: Inside Mortgage Finance. Note: Data as of Q4 2022.

6.3 Agency Issuance and Agency Outstanding by State

Ginnie Mae MBS represent approximately 31% of new agency issuance over the past year. The share of Ginnie Mae's new agency issuance varies across states, with the highest Ginnie Mae share being in Alaska (53%) and the lowest in the District of Columbia and Virgin Islands (20%). The highest Ginnie Mae outstanding share is also in Alaska (48%) and the lowest also in the District of Columbia (13%). There is currently a 5% difference between Ginnie Mae's share of new agency issuance (31%) and Ginnie Mae's share of agency outstanding (26%).

Table 6. Agency Issuance Breakdown by State

	Agency Issuance (past 1 year)				Agency Outstanding			
National	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)	GNMA Share by UPB	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)
	31%	**2,037,415**	**279.90**	**289.13**	**26%**	**10,740,948**	**204.94**	**210.84**
AK	53%	6,618	332.16	298.60	48%	37,540	261.72	221.01
AL	45%	45,871	223.06	237.86	40%	236,817	157.34	177.68
AR	41%	24,051	191.07	220.62	39%	136,963	132.63	160.89
AZ	29%	60,758	316.03	323.86	24%	273,783	219.86	226.17
CA	24%	135,885	442.59	439.38	16%	685,088	328.03	320.55
CO	29%	45,190	399.71	388.66	23%	213,890	292.45	277.73
CT	30%	19,114	263.49	276.90	25%	106,288	202.67	209.42
DC	20%	1,669	489.79	427.45	13%	8,924	382.25	349.93
DE	34%	9,749	268.16	294.14	31%	51,944	204.37	211.58
FL	34%	181,934	295.47	296.38	32%	850,805	212.68	211.79
GA	38%	106,339	255.57	288.95	33%	498,142	180.63	207.00
HI	40%	6,015	613.57	497.21	32%	33,525	469.18	358.10
IA	30%	14,315	181.15	195.65	22%	82,664	134.12	148.36
ID	28%	11,819	333.16	323.75	23%	63,635	218.63	223.07
IL	27%	68,319	209.13	241.85	22%	367,512	160.21	179.28
IN	33%	52,252	190.99	210.14	30%	279,220	134.54	151.09
KS	33%	16,567	193.14	222.48	29%	96,302	140.27	163.91
KY	39%	31,404	197.36	214.28	34%	165,226	143.92	155.99
LA	46%	38,621	205.15	236.56	40%	200,980	157.97	177.56
MA	24%	21,604	374.59	368.21	16%	113,853	285.22	268.73
MD	40%	55,001	337.82	327.66	33%	292,530	265.59	249.69
ME	31%	6,878	244.55	267.74	26%	37,948	178.19	191.84
MI	25%	50,132	185.74	213.43	20%	275,751	134.14	156.92
MN	21%	25,627	246.99	275.04	18%	159,801	182.50	198.58
MO	33%	44,001	197.83	219.30	29%	244,596	142.43	162.15
MS	52%	22,897	201.15	217.53	48%	122,580	143.87	161.30
MT	26%	5,401	307.29	312.17	23%	32,325	209.43	216.46
NC	32%	82,693	250.97	285.14	29%	414,220	176.39	202.36
ND	32%	3,051	242.11	240.17	24%	17,070	193.27	184.33
NE	30%	10,463	218.09	222.47	26%	64,947	149.60	161.11
NH	26%	6,630	310.87	304.69	22%	38,307	226.91	215.18
NJ	28%	45,091	317.63	334.30	21%	232,051	241.04	254.60
NM	40%	16,550	241.29	251.60	38%	95,181	167.26	178.51
NV	33%	28,226	342.46	332.17	30%	132,909	248.54	235.74
NY	23%	48,325	300.41	340.77	20%	307,398	209.73	248.57
OH	32%	73,976	183.67	201.14	29%	423,679	130.68	149.29
OK	42%	32,120	202.19	223.25	42%	188,940	141.49	162.63
OR	23%	20,487	350.38	360.11	19%	110,513	254.43	253.63
PA	27%	61,413	201.36	245.67	25%	388,753	149.21	182.14
RI	38%	6,917	322.89	297.81	30%	35,698	235.11	213.23
SC	38%	51,015	252.19	261.15	34%	235,056	183.91	192.33
SD	33%	5,053	242.77	244.24	29%	29,355	173.55	177.79
TN	33%	53,574	257.66	280.69	31%	269,654	176.19	204.65
TX	31%	199,462	265.74	300.44	31%	1,092,682	183.11	212.92
UT	22%	19,232	374.40	383.25	18%	95,333	260.87	264.20
VA	43%	82,502	330.62	320.45	36%	446,729	257.25	250.28
VI	20%	121	347.15	412.94	23%	790	248.46	302.04
VT	22%	1,986	236.76	262.90	19%	12,155	181.51	180.92
WA	27%	43,035	395.88	401.96	21%	232,235	285.33	289.58
WI	22%	21,609	210.55	227.18	17%	123,869	157.01	163.39
WV	48%	11,121	194.31	196.32	44%	59,758	144.51	145.55
WY	38%	4,732	265.73	267.95	35%	25,034	206.46	201.84

Source: Recursion. Note: Outstanding balance is based on loan balance as of February 2023. Ginnie Mae issuance is based on the last 12 months, from January 2022 to February 2023. Values above are based on loan level disclosure data, thus excluding loan balances for the first 6 months that loans are in a pool. This accounts for the difference in share of outstanding MBS represented above & in Outstanding Single-Family Agency MBS.

6.4 Outstanding Ginnie Mae MBS Volume by Coupon and Vintage Over Time

As of February 2023, the weighted average coupon (WAC) on outstanding Ginnie Mae MBS increased slightly from 3.13% in January 2023 to 3.16% in February 2023. **Figure 35** illustrates that loans originated since 2019 account for 76% of Ginnie Mae MBS collateral outstanding.

Figure 34. Outstanding Ginnie Mae MBS Balance, by Coupon

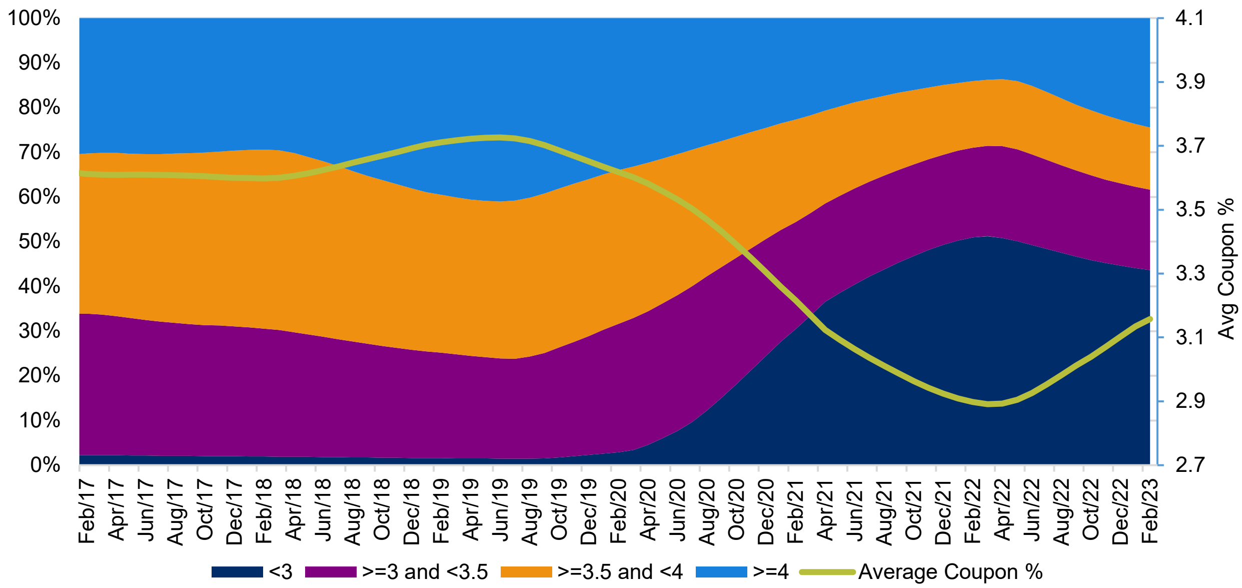
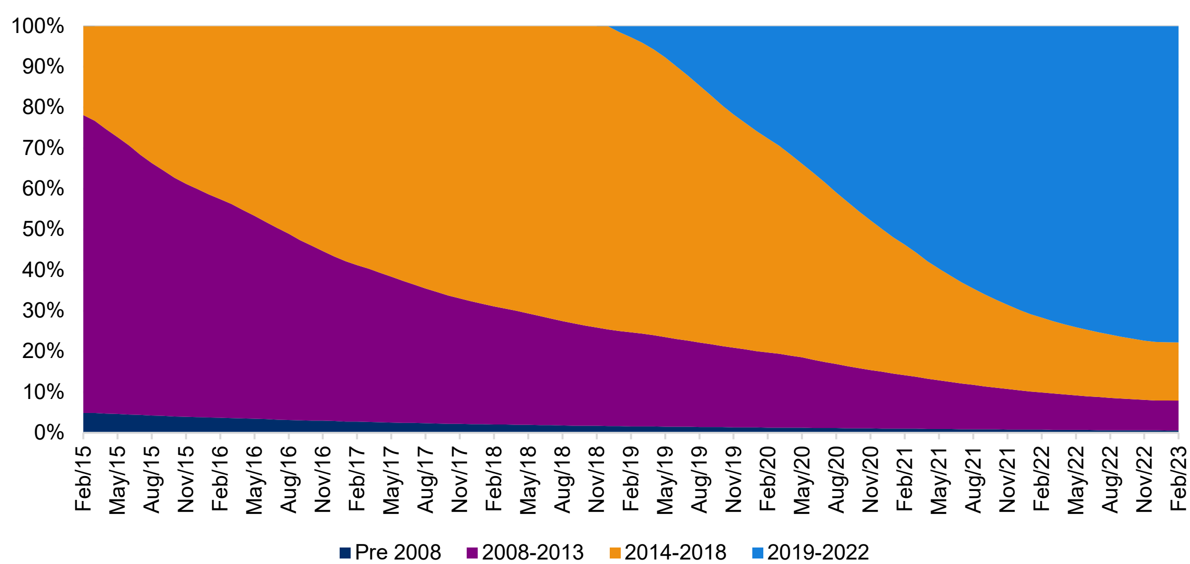


Figure 35. Outstanding Ginnie Mae MBS Balance, by Vintage



Sources: Recursion. Note: February 2023 data points reflect the current composition of balances by coupon and vintage; factor data is not applied to prior date balance compositions. Average coupon is weighted by remaining principal balance.

7 AGENCY REMIC SECURITIES

7.1 Monthly REMIC Demand for Ginnie Mae MBS

In February 2023, $11.7 billion of Ginnie Mae MBS were securitized into Real Estate Mortgage Investment Conduits (REMICs) as underlying collateral. This represents a roughly 23.5% decrease YoY from $15.3 billion in February 2022, but an 82.8% MoM increase from $6.4 billion in January 2023.

Of that, approximately $932.2 million were multifamily MBS having coupons over 4.01%. $8.9 billion were single-family MBS having coupons over 5.01%.

Figure 36. Ginnie Mae Single-Family and Multifamily MBS Securitized into REMICs

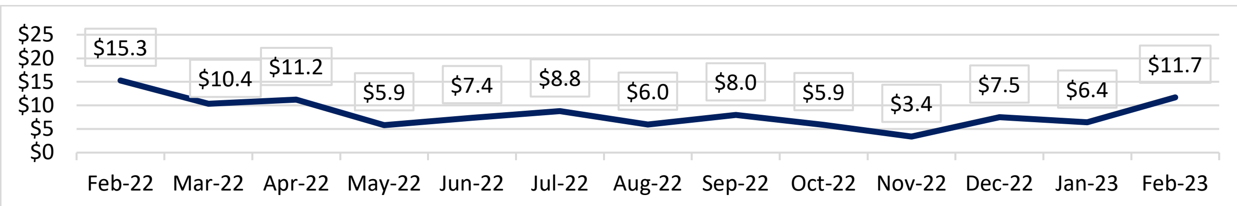


Table 7. February 2023 REMIC Collateral Coupon Distribution

Net Coupon (%)	Approx. Ginnie Mae MBS amount securitized into REMIC Deals ($MM)[2]	% Breakdown of REMIC Collateral by coupon[17]
Multifamily		
3.01-3.50	158.0	8.7%
3.51-4.00	584.3	32.3%
4.01-4.50	817.2	45%
4.51-5.00	115.0	6%
5.01-5.50		
Subtotal	**1,807.9**	**100%**
Single-Family		
2.51-3.00	113.2	1.14%
3.01-3.50	44.3	0.45%
3.51-4.00	11.2	0.11%
4.01-4.50	113.8	1.15%
4.51-5.00	651.3	6.58%
5.01-5.50	1,465.8	14.80%
5.51-6.00	5,397.9	54.51%
6.01-6.50	1,937.5	19.57%
6.51-7.00	168.1	1.70%
Subtotal	**9,903.0**	1.14%
Grand Total	**11,710.9**	**100.0%**

Source: Ginnie Mae Disclosure Files

[2] *Totals may not sum due to rounding.*

7.2 REMIC Market Snapshot

In February 2023, Ginnie Mae's Single-Family REMIC collateral WAC decreased MoM by 13 bps which is the first decrease since October 2022. Additionally, Freddie Mac's Single-Family REMIC collateral WAC decreased by 35 basis points while Fannie Mae increased 43 bps MoM. This is the first decrease for Freddie Mac since October 2022 and the third consecutive month of an increase in rates for Fannie Mae.

- In February 2023, Ginnie Mae REMIC issuance volume was $13.0 billion, the first month since April 2022 where REMIC issuance volume was more than $10.0 billion.
- In February 2023, Ginnie Mae, Fannie Mae, and Freddie Mac all had an increase in total REMIC issuance volume; this is the first month since September 2021 where the GSEs and Ginnie Mae saw an increase in REMIC issuance.

Figure 37. REMIC Issuance by Agency

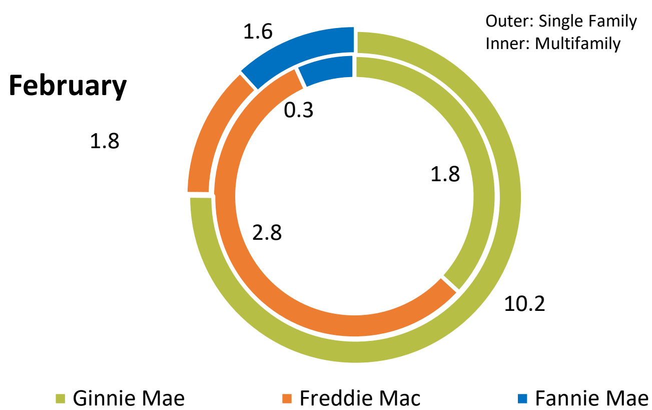


Table 8. Monthly REMIC Issuance by Agency

	SF REMIC Issuance Volume ($B)	% of SF REMIC Issuance Volume	Number of SF REMIC Trans-actions	MF REMIC Issuance Volume ($B)	% of MF REMIC Issuance Volume	Number of MF REMIC Trans-actions
Ginnie Mae	6.4	84.9	9	1.2	29.7	7
Freddie Mac	0.5	6.8	6	2.7	70.3	3
Fannie Mae	0.6	8.4	3	0.0	0.0	0
Total[3]	7.6	100	18	3.9	100	10

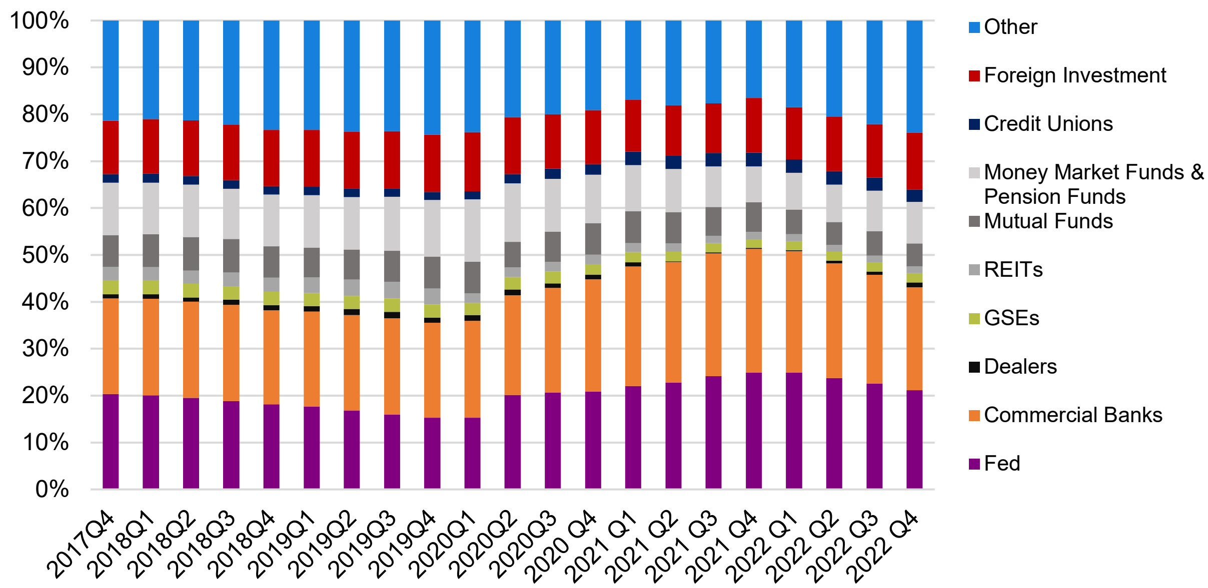
Source: Ginnie Mae, Fannie Mae, and Freddie Mac Disclosure Files

3 *Totals may not sum due to rounding.*

8 MBS OWNERSHIP

As of Q4 2022, the largest holders of agency debt (agency MBS + agency notes and bonds) included commercial banks (22%), the Federal Reserve (21%), and foreign investors (12%). The Federal Reserve's share decreased slightly to 21% in the fourth quarter of 2022 from 23% in the third quarter. Along with the Federal Reserve, commercial banks are also the largest holders of agency MBS. Out of their approximately $2.8 trillion in holdings as of the end of December 2022, $2.1 trillion was held by the top 25 domestic banks.

Figure 38. Who Owns Total Agency Debt?



Source: Federal Reserve Flow of Funds. Note: The "other" category includes primarily life insurance companies, state and local governments, households and nonprofits. Data as of Q4 2022.

8.1 Commercial Bank Holdings of Agency MBS

Table 9. Commercial Bank Holdings of Agency MBS

	Commercial Bank Holdings ($Billions)								Week Ending			
	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	8-Feb	15-Feb	22-Feb	1-Mar
Largest 25 Domestic Banks	2,122.4	2,117.0	2,115.5	2,096.8	2,067.6	2,052.0	2,056.5	2,054.5	2,058.5	2,062.3	2,052.6	2,048.5
Small Domestic Banks	735.8	731.8	738.3	712.4	692.2	690.9	677.3	663.5	668.3	665.9	668.2	657.6
Foreign Related Banks	36.5	38.0	35.1	37.4	35.9	39.3	36.6	30	24.5	26.1	25.7	25.7
Total, Seasonally Adjusted	**2,894.7**	**2,886.8**	**2,888.9**	**2,846.6**	**2,795.7**	**2,782.2**	**2,770.4**	**2,748.0**	**2,751.3**	**2,754.3**	**2,746.5**	**2,731.8**

Source: Federal Reserve Bank. Note: Small domestic banks include all domestically chartered commercial banks not included in the top 25. Data as of February 2023.

8.2 Bank and Thrift Residential MBS Holdings

In Q3 2022, MBS holdings at banks and thrifts continued to decrease. Like Q2 2022, the decrease was driven by GSE pass-throughs, Private MBS, and agency CMO holdings, with GSE pass-throughs seeing the largest decrease. In contrast, Ginnie Mae pass-throughs saw an increase of 0.2%. Total bank and thrift MBS holdings decreased by approximately 14.9% from Q3 2021 and 7.3% from Q2 2022. Out of the $2.4 trillion in MBS holdings at banks and thrifts as of Q3 2022, $1.5 trillion were GSE pass-throughs and $352 billion were Ginnie Mae pass-throughs.

Table 10. Bank and Thrift Residential MBS Holdings

	All Banks & Thrifts ($ in billions)						All MBS ($ in billions)	
Year	Total	GSE PT	GNMA PT	Private MBS	Agency CMO	Private CMO	Banks	Thrifts
2001	$730.84	$270.59	$109.53	$37.62	$236.91	$76.18	$606.91	$203.37
2002	$832.50	$376.11	$101.46	$20.08	$244.98	$89.88	$702.44	$209.66
2003	$899.89	$461.72	$75.11	$19.40	$236.81	$106.86	$775.66	$206.45
2004	$1,011.01	$572.40	$49.33	$20.55	$208.18	$160.55	$879.75	$234.31
2005	$1,033.77	$566.81	$35.92	$29.09	$190.70	$211.25	$897.06	$242.69
2006	$1,124.46	$628.52	$31.13	$42.32	$179.21	$243.28	$983.49	$223.42
2007	$1,149.10	$559.75	$31.58	$26.26	$174.27	$357.24	$971.42	$264.59
2008	$1,218.77	$638.78	$100.36	$12.93	$207.66	$259.04	$1,088.00	$211.73
2009	$1,275.52	$629.19	$155.00	$7.53	$271.17	$212.64	$1,161.67	$184.07
2010	$1,433.38	$600.80	$163.13	$7.34	$397.30	$181.61	$1,233.28	$200.09
2011	$1,566.88	$627.37	$214.81	$3.28	$478.82	$167.70	$1,359.24	$207.64
2012	$1,578.86	$707.87	$242.54	$17.16	$469.27	$138.67	$1,430.63	$148.22
2013	$1,506.60	$705.97	$231.93	$26.11	$432.60	$114.15	$1,363.65	$142.94
2014	$1,539.32	$733.71	$230.45	$20.33	$449.90	$104.94	$1,409.84	$129.48
2015	$1,643.56	$823.10	$292.30	$11.14	$445.39	$71.63	$1,512.67	$130.89
2016	$1,736.93	$930.67	$323.46	$7.40	$419.80	$55.60	$1,576.07	$160.86
2017	$1,844.15	$1,010.83	$367.70	$4.63	$413.97	$47.01	$1,672.93	$171.22
1Q17	$1,762.38	$950.72	$329.91	$7.03	$419.34	$55.39	$1,589.93	$172.45
2Q17	$1,798.66	$985.12	$335.47	$6.38	$417.89	$53.79	$1,635.11	$163.55
3Q17	$1,838.93	$1,012.89	$351.86	$5.65	$418.08	$50.45	$1,661.84	$177.09
4Q17	$1,844.15	$1,010.83	$367.70	$4.63	$413.97	$47.01	$1,672.93	$171.22
1Q18	$1,809.98	$991.57	$360.71	$3.92	$412.41	$41.37	$1,635.52	$174.46
2Q18	$1,806.58	$976.92	$368.88	$7.45	$414.41	$38.92	$1,631.65	$174.93
3Q18	$1,794.39	$966.52	$373.21	$2.42	$416.20	$36.04	$1,618.29	$176.10
2018	$1,814.97	$980.56	$380.43	$2.69	$416.59	$34.69	$1,634.99	$179.98
1Q19	$1,844.99	$1,001.61	$383.49	$3.06	$422.18	$34.65	$1,673.40	$171.59
2Q19	$1,907.13	$1,037.93	$407.97	$2.90	$421.56	$36.76	$1,727.65	$179.47
3Q19	$1,975.78	$1,079.82	$427.10	$4.74	$428.69	$35.44	$1,786.74	$189.04
2019	$1,985.38	$1,089.41	$426.85	$4.62	$428.99	$35.52	$1,796.29	$189.09
1Q20	$2,107.66	$1,173.36	$448.34	$4.65	$443.73	$37.57	$1,907.02	$200.64
2Q20	$2,195.19	$1,228.87	$441.06	$5.00	$478.11	$42.14	$1,946.36	$248.83
3Q20	$2,310.42	$1,349.48	$415.24	$4.43	$499.50	$41.78	$2,040.61	$269.81
4Q20	$2,520.90	$1,537.54	$390.66	$3.94	$548.65	$40.10	$2,210.22	$310.68
1Q21	$2,690.92	$1,713.78	$374.63	$4.88	$555.35	$42.28	$2,350.94	$339.98
2Q21	$2,781.91	$1,825.80	$352.77	$4.77	$555.45	$43.12	$2,431.76	$350.15
3Q21	$2,858.59	$1,886.78	$353.12	$4.24	$565.51	$48.95	$2,487.32	$371.27
4Q21	$2,906.04	$1,915.48	$352.71	$4.45	$577.98	$55.42	$2,529.78	$376.26
1Q22	$2,799.22	$1,817.72	$368.43	$4.04	$548.60	$60.43	$2,476.12	$323.10
2Q22	$2,623.79	$1,665.94	$369.20	$3.81	$523.01	$61.83	$2,321.17	$302.62
3Q22	$2,431.57	$1,520.24	$352.02	$3.29	$496.72	$59.30	$2,156.16	$275.41
Change:								
2Q22-3Q22	-7.3%	-8.7%	-4.7%	-13.6%	-5.0%	-4.1%	-7.1%	-9.0%
3Q21-3Q22	-14.9%	-19.4%	-0.3%	-22.3%	-12.2%	21.1%	-13.3%	-25.8%

Source: Inside Mortgage Finance. Notes: Data as of Q3 2022

Table 11. Top 20 Bank and Thrift Residential MBS Investors ($ in millions)

	Institution	Total	GSE PT	GNMA PT	Agency CMO	Non-Agency	Share
1	BANK OF AMERICA CORPORATION	$448,327.00	$376,124.00	$65,016.00	$7,038.00	$149.00	18.4%
2	WELLS FARGO & COMPANY	$230,903.00	$161,579.00	$66,412.00	$2,847.00	$65.00	9.5%
3	CHARLES SCHWAB	$173,008.00	$97,210.00	$6,137.00	$69,661.00	$0.00	7.1%
4	JPMORGAN CHASE & CO.	$146,574.00	$70,263.00	$61,958.00	$91.00	$14,262.00	6.0%
5	Truist Bank	$108,697.00	$53,669.00	$12,382.00	$39,508.00	$3,138.00	4.5%
6	U.S. BANCORP	$103,431.40	$67,470.00	$22,443.20	$13,518.10	$0.10	4.3%
7	CITIGROUP INC.	$83,110.00	$73,174.00	$6,488.00	$2,530.00	$918.00	3.4%
8	PNC Bank, National Association	$68,253.30	$56,515.30	$4,389.40	$6,219.70	$1,129.00	2.8%
9	Silicon Valley Bank	$65,587.00	$48,005.00	$7,860.00	$9,722.00	$0.00	2.7%
10	CAPITAL ONE FINANCIAL CORPORATION	$61,577.50	$29,729.40	$14,004.70	$17,478.10	$365.40	2.5%
11	MORGAN STANLEY	$49,019.00	$34,203.00	$7,652.00	$7,164.00	$0.00	2.0%
12	BANK OF NEW YORK MELLON CORP	$41,178.00	$30,530.00	$1,302.00	$7,203.00	$2,143.00	1.7%
13	USAA Federal Savings Bank	$40,447.00	$34,160.00	$2,027.00	$4,260.00	$0.00	1.7%
14	State Street Bank and Trust Company	$36,143.50	$14,552.00	$5,553.00	$14,349.50	$1,689.00	1.5%
15	TD Bank USA/TD Bank NA	$29,579.30	$947.80	$81.70	$28,508.70	$41.00	1.2%
16	The Huntington National Bank	$28,292.80	$11,753.20	$9,272.30	$7,125.50	$141.80	1.2%
17	KeyBank National Association	$24,956.00	$3,940.80	$211.20	$20,804.00	$0.00	1.0%
18	Citizens Bank, National Association	$22,339.10	$12,379.30	$4,908.60	$5,051.20	$0.00	0.9%
19	HSBC Bank USA, National Association	$22,123.40	$6,672.60	$9,532.50	$5,917.30	$1.00	0.9%
20	Ally Bank	$20,683.00	$12,868.00	$1,967.00	$1,707.00	$4,141.00	0.9%
	Total Top 20	$1,804,229.3	$1,195,745.4	$309,597.6	$270,702.1	$28,183.3	74.2%

Source: Inside Mortgage Finance. Notes: Data as of Q3 2022.

8.3 Foreign Ownership of MBS

For the month of January 2023, foreign ownership of MBS represents $1.20 trillion in agency MBS, up approximately $36 billion from December 2022. Total foreign ownership includes $567 billion held by foreign private institutions and $635 billion held by foreign official institutions. The pre-Covid foreign ownership peak of approximately 17.5% has fallen to 14.0% as of January 2023.

Figure 39. Foreign Share of Agency MBS Market

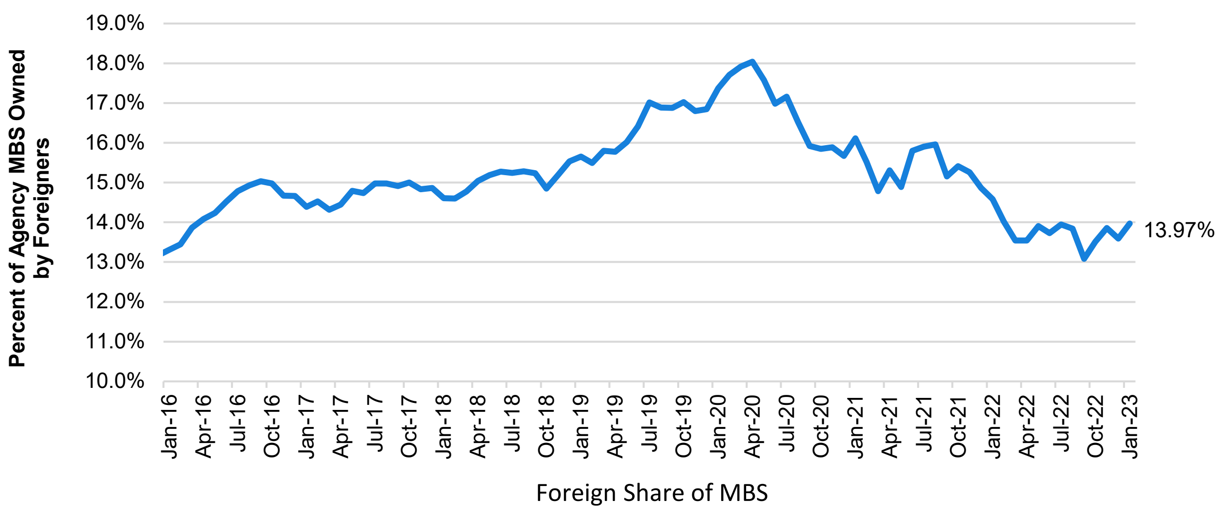
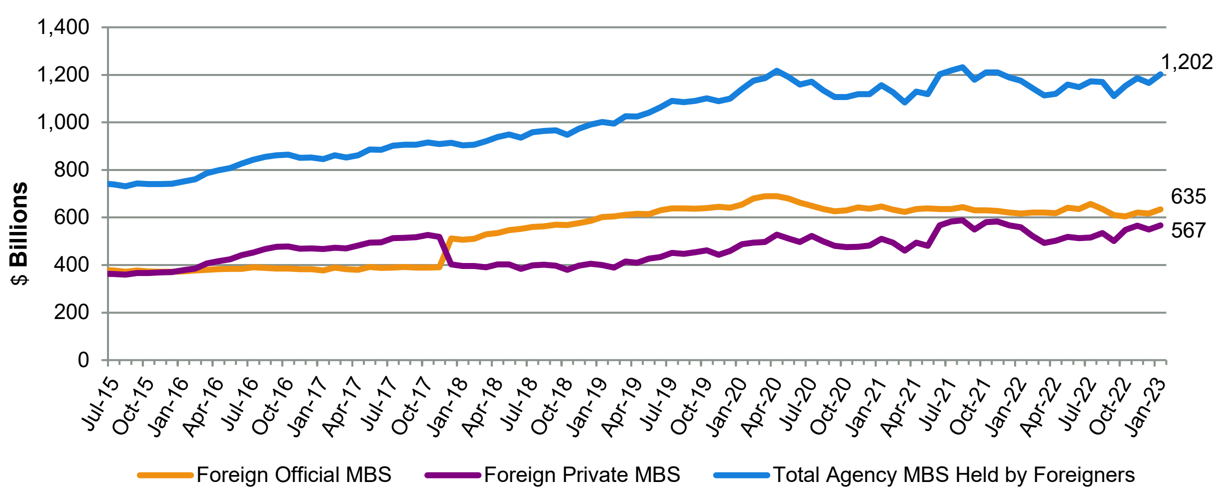


Figure 40. Monthly Foreign MBS Holdings



Sources: Recursion and Treasury International Capital (TIC) [Top Chart], Treasury International Capital (TIC) [Bottom Chart] Notes: 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. Data as of January 2023.

8.4 Foreign Ownership of Agency Debt and Agency MBS

The largest holders of agency MBS were Japan, China and Taiwan. As of December 2022, these three own 58% of all foreign owned US MBS. Between December 2021 and December 2022, Japan and Taiwan have decreased their agency MBS holdings while China's holdings have increased. Japan's holdings have decreased by $23.4 billion, Taiwan's holdings have decreased by $33.7 billion, and China's holdings have increased by $50.9 billion.

Table 12. All Agency Debt

Country	*Level of Holdings ($ Millions)*				*Change in Holdings ($ Millions)*			
	3/1/2022	**6/1/2022**	**9/1/2022**	**12/1/2022**	**Q1 2022**	**Q2 2022**	**Q3 2022**	**Q4 2022**
Japan	259,844	231,432	232,765	278,612	-42,135	-28,412	1,333	45,847
China	219,549	244,320	241,461	253,532	16,881	24,771	-2,859	12,071
Taiwan	233,340	222,670	209,453	210,687	-11,035	-10,670	-13,217	1,234
Canada	73,723	76,391	89,313	100,601	-4,501	2,668	12,922	11,288
United Kingdom	48,436	66,195	56,323	62,982	-24,575	17,759	-9,872	6,659
Luxembourg	33,384	42,630	38,350	50,205	-1,174	9,246	-4,280	11,855
South Korea	40,328	37,963	35,643	38,777	-1,723	-2,365	-2,320	3,134
Cayman Islands	31,972	34,965	35,067	35,475	-3,234	2,993	102	408
Ireland	20,589	20,200	17,680	22,687	-734	-389	-2,520	5,007
France	17,127	16,718	16,212	19,947	257	-409	-506	3,735
Other	186,810	199,603	191,418	207,063	-8,079	12,793	-8,185	15,645
Total	**1,165,102**	**1,193,087**	**1,163,685**	**1,280,568**	**-80,052**	**27,985**	**-29,402**	**116,883**

Table 13. Agency MBS

Country	*Level of Holdings ($ Millions)*		
	12/1/2021	*12/1/2022*	*YoY Change in Holdings ($ Millions)*
Japan	301,979	278,612	-23,367
China	202,668	253,532	50,864
Taiwan	244,375	210,687	-33,688
Canada	78,224	100,601	22,377
United Kingdom	73,011	62,982	-10,029
Luxembourg	34,558	50,205	15,647
South Korea	42,051	38,777	-3,274
Cayman Islands	35,206	35,475	269
Ireland	21,323	22,687	1,364
France	16,870	19,947	3,077
Other	194,889	207,063	12,174
Total	**1,245,154**	**1,280,568**	**35,414**

Source: Treasury International Capital (TIC). Note: Level of agency debt Holdings by month data as of Q4 2022. Agency MBS as of December 2022. Revised to include top 10 holders of agency debt listed as of December 2022.

9 FIXED INCOME LIQUIDITY INDICATORS

The agency MBS average daily trading volume in February 2023 was $255 billion, which is up from a monthly average of $241 billion for calendar year 2022. In February 2023, agency MBS average daily trading volume saw a 3.4% decrease MoM. *See footnote below for update on "Average Daily Turnover by Sector" data.*

Figure 41. Average Daily Trading Volume by Sector

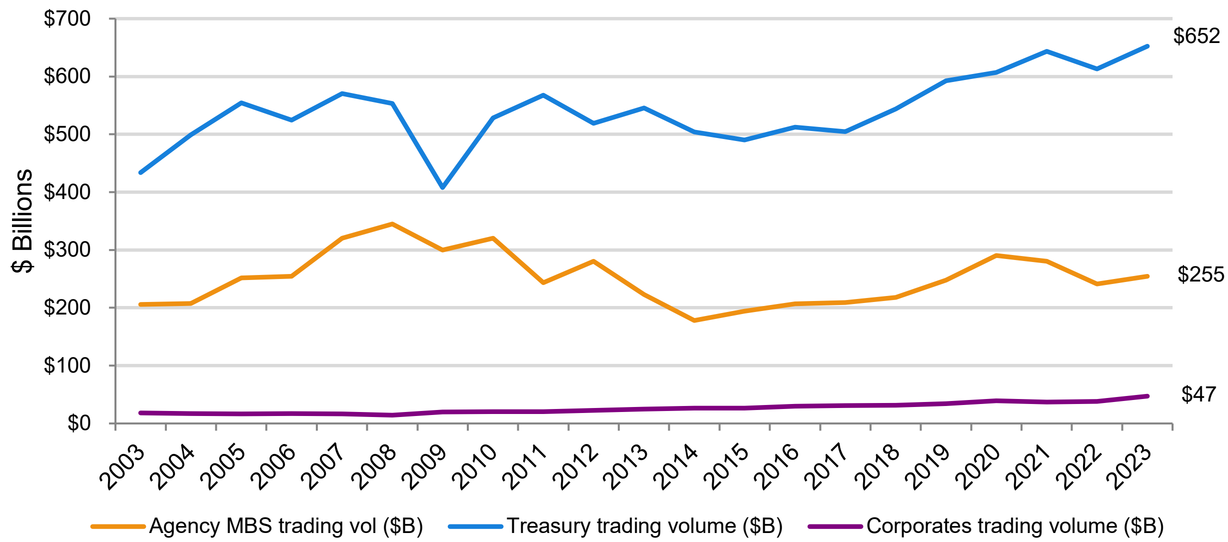
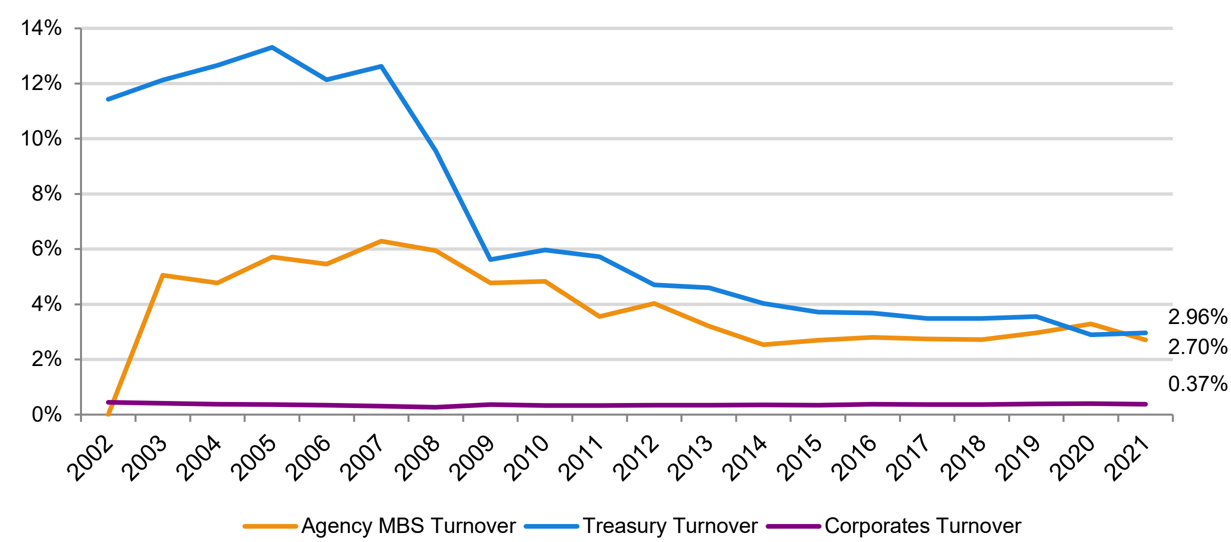


Figure 42. Average Daily Turnover by Sector



Source: SIFMA. Note: Data as of February 2023 for Average Daily Trading Volume by Sector and as of December 2021 for agency MBS in Average Daily Turnover by Sector. The MBS outstanding database for Turnover by Sector is under maintenance and is not updated in this report.

PRIMARY MORTGAGE MARKET

10 AGENCY CREDIT BREAKDOWN

The tables below outline the population distributions of FICOs, DTIs, and LTVs between the agencies and between FHA, VA, and other Ginnie Mae loan sources as of the end of February 2023. The distribution statistics capture some key differences in the populations served by the agencies.

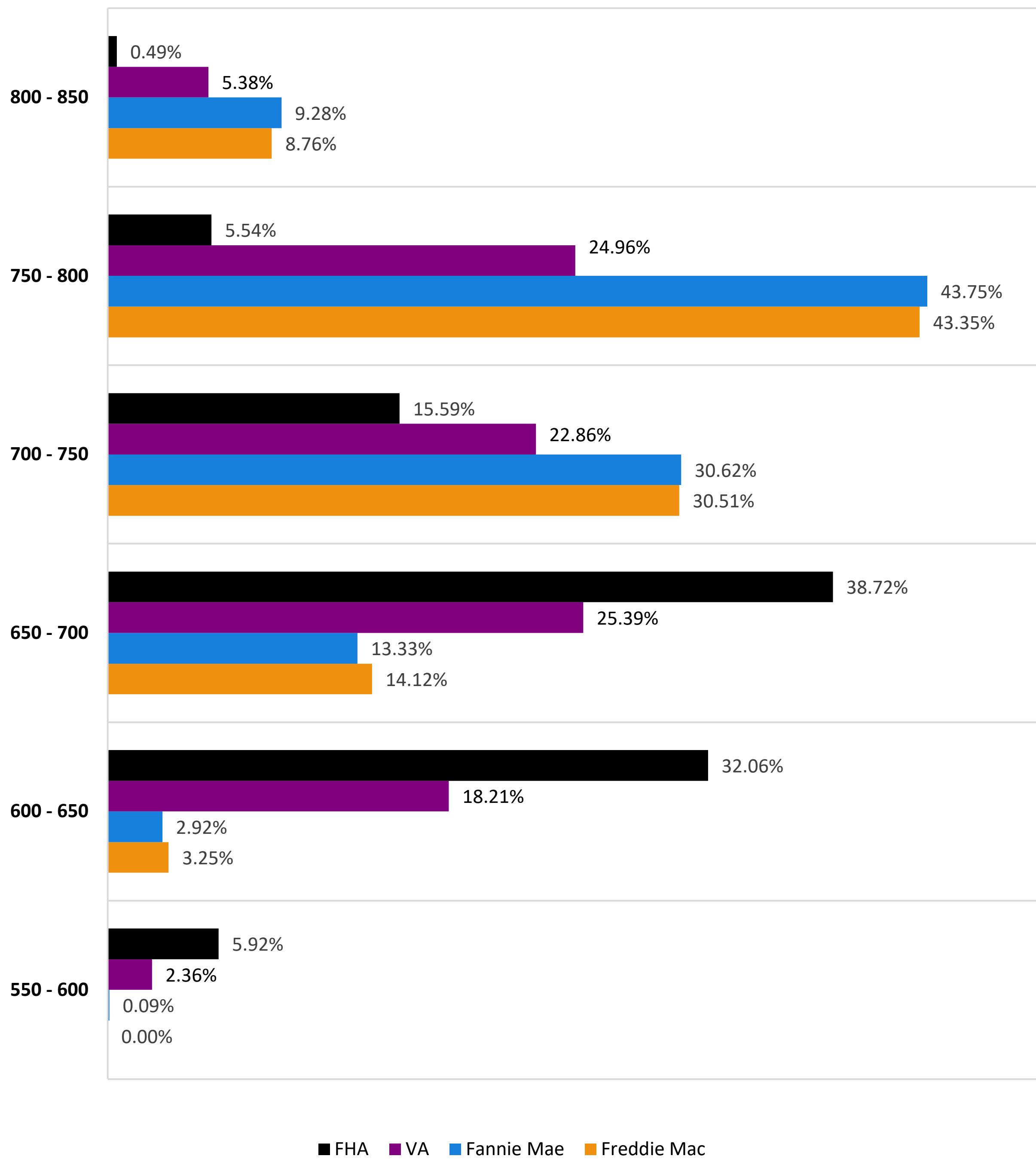
10.1 Credit Scores

Table 14. Share of Loans by FICO Score

			Purchase FICO				
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	184,732	647	687	738	776	797	729
Fannie	58,810	692	724	759	786	800	752
Freddie	56,812	694	725	759	785	800	752
Ginnie	69,110	624	648	682	731	775	690
			Refi FICO				
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	44,860	625	656	702	751	785	702
Fannie	16,649	661	695	736	772	795	731
Freddie	13,081	649	680	719	760	788	719
Ginnie	15,130	594	623	652	687	727	656
			All FICO				
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	229,592	642	680	731	773	795	724
Fannie	75,459	683	717	754	783	800	747
Freddie	69,893	682	716	753	782	799	746
Ginnie	84,240	619	643	676	723	770	684
			Purchase FICO: Ginnie Mae Breakdown By Source				
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	69,110	624	648	682	731	775	690
FHA	41,793	620	642	668	702	739	674
VA	24,378	635	669	723	770	795	718
Other	2,939	633	656	690	730	761	694
			Refi FICO: Ginnie Mae Breakdown By Source				
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	15,130	594	623	652	687	727	656
FHA	9,332	588	617	644	672	700	645
VA	5,781	607	636	671	713	753	675
Other	17	670	688	719	750	773	720
			All FICO: Ginnie Mae Breakdown By Source				
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	84,240	619	643	676	723	770	684
FHA	51,125	612	637	664	697	735	668
VA	30,159	628	660	710	763	792	710
Other	2,956	634	656	691	730	762	694

Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files. Note: All averages are rounded to the nearest whole number.

Figure 43. FICO Distributions by Agency



Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files.

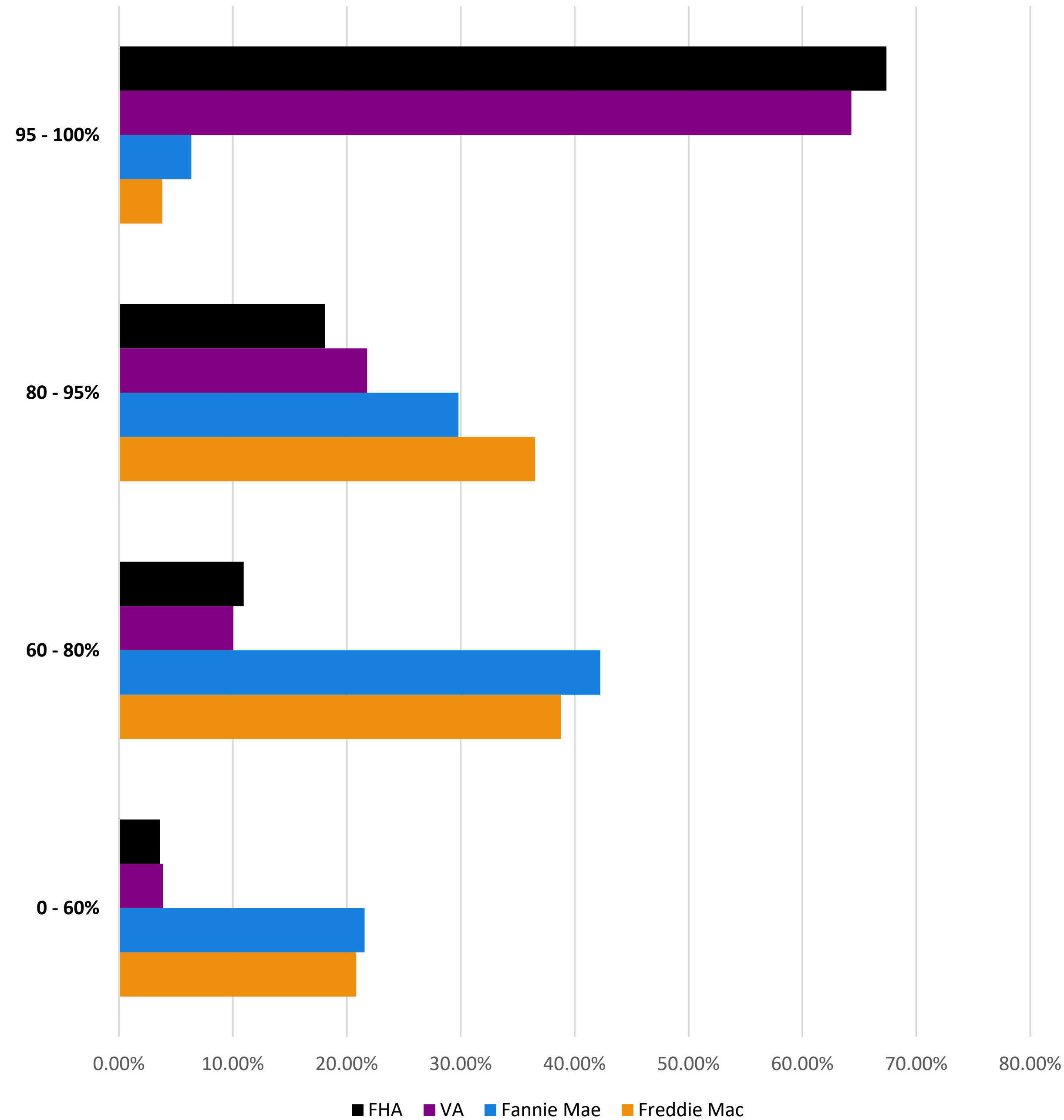
10.2 Loan-to-Value (LTV)

Table 15. Share of Loans by LTV

Names	Number of Loans	P10	P25	Median	P75	P90	Mean
Purchase LTV							
All	184,923	65	80	93	98	100	86
Fannie	58,873	57	75	80	95	95	80
Freddie	56,845	54	75	80	95	95	80
Ginnie	69,205	90	97	98	100	100	96
Refi LTV							
All	44,976	36	53	68	80	84	64
Fannie	16,653	31	46	60	70	80	58
Freddie	13,082	32	47	60	73	80	58
Ginnie	15,241	56	69	80	85	93	76
All LTV							
All	229,899	54	75	88	97	98	82
Fannie	75,526	47	65	80	90	95	75
Freddie	69,927	47	67	80	91	95	76
Ginnie	84,446	77	91	98	100	100	93
Purchase LTV: Ginnie Mae Breakdown By Source							
All	69,205	90	97	98	100	100	96
FHA	41,837	92	97	98	98	98	96
VA	24,417	86	100	100	100	102	97
Other	2,951	93	98	101	101	101	98
Refi LTV: Ginnie Mae Breakdown By Source							
All	15,241	56	69	80	85	93	76
FHA	9,386	52	66	76	81	81	72
VA	5,838	64	77	89	91	100	84
Other	17	51	60	83	98	100	78
All LTV: Ginnie Mae Breakdown By Source							
All	84,446	77	91	98	100	100	93
FHA	51,223	75	90	98	98	98	91
VA	30,255	79	90	100	100	102	94
Other	2,968	92	98	101	101	101	98

Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files. Note: All averages are rounded to the nearest whole number.

Figure 44. Loan-to Value by Agency



Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files.

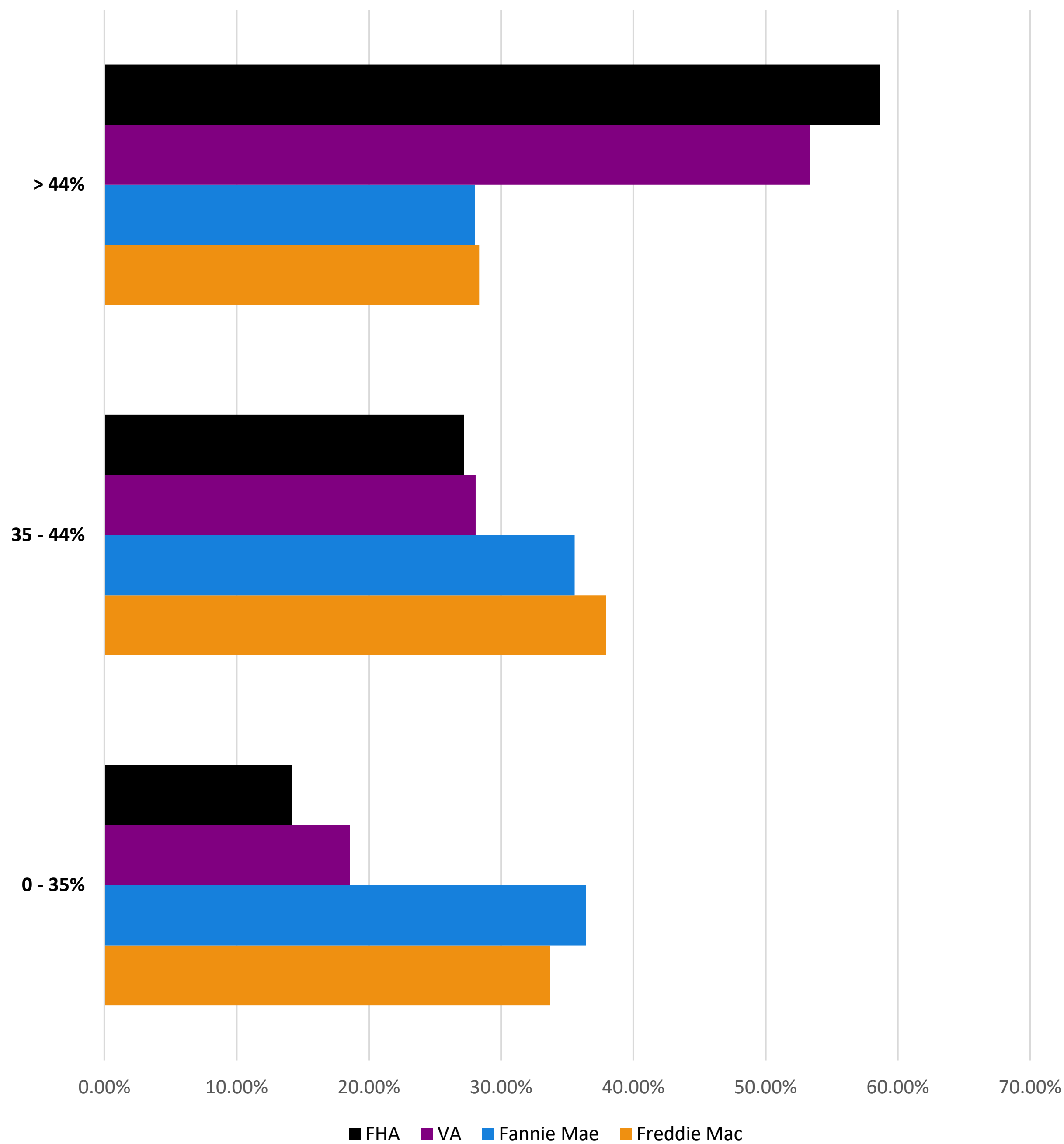
10.3 Debt-to-Income (DTI)

Table 16. Share of Loans by DTI

Names	Number of Loans	P10	P25	Median	P75	P90	Mean
				Purchase DTI			
All	184,583	27	35	42	48	51	41
Fannie	58,873	25	32	40	46	49	38
Freddie	56,845	25	32	40	45	49	38
Ginnie	68,865	32	39	46	52	56	45
				Refi DTI			
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	44,877	26	33	41	45	50	40
Fannie	16,653	23	31	39	44	48	38
Freddie	13,082	25	33	40	45	48	39
Ginnie	15,142	29	36	44	50	54	43
				All DTI			
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	229,460	27	34	42	47	51	40
Fannie	75,526	24	32	40	45	49	38
Freddie	69,927	25	32	40	45	49	38
Ginnie	84,007	32	39	45	51	55	44
				Purchase DTI: Ginnie Mae Breakdown By Source			
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	68,865	32	39	46	52	56	45
FHA	41,832	34	40	47	52	55	45
VA	24,079	31	38	46	52	57	45
Other	2,954	27	32	37	40	42	36
				Refi DTI: Ginnie Mae Breakdown By Source			
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	15,142	29	36	44	50	54	43
FHA	9,359	29	37	44	50	55	43
VA	5,766	29	36	43	49	54	42
Other	17	27	34	38	41	43	36
				All DTI: Ginnie Mae Breakdown By Source			
Names	**Number of Loans**	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	84,007	32	39	45	51	55	44
FHA	51,191	33	40	46	52	55	45
VA	29,845	31	38	45	51	56	44
Other	2,971	27	32	37	40	42	36

Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files. Note: All averages are rounded to the nearest whole number.

Figure 45. Debt-to Income by Agency



Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files.

10.4 High LTV Loans: Ginnie Mae vs. GSEs

From December 2020 – February 2021 to December 2022 – February 2023, the share of high-LTV agency loans going to borrowers with:

- FICO scores above 750 has decreased by approximately 0.7%
- DTIs below 35% decreased by approximately 30%

In that period, the share of high-LTV loans increased in the Ginnie Mae guarantee book by approximately 27% and in the GSE portfolios by approximately 190%. Still, Ginnie Mae maintains its key role of expanding credit access to low-to-moderate income borrowers as it continues to dominate high-LTV lending, with 70.99% of its issuances between December 2022 and February 2023 having LTVs of 95 or above, compared to 23.90% for the GSEs.

Table 17. Share of Loans with LTV > 95

	Ginnie Mae	*GSE*	*All*
Dec 2020 - Feb 2021	55.80%	8.25%	19.22%
Dec 2022 - Feb 2023	70.99%	23.90%	41.32%

Table 18. Agency Market Share by DTI and FICO for Loans with LTV > 95 (Dec 2020-Feb 2021)

	FICO					
DTI	<650	650-700	700-750	≥750	NA	All
<35	1.90%	4.38%	6.06%	9.89%	0.13%	22.37%
35-45	4.11%	8.84%	9.74%	10.36%	0.03%	33.08%
≥45	3.91%	7.93%	6.80%	5.59%	0.02%	24.25%
NA	1.68%	3.45%	3.24%	3.66%	8.29%	20.31%
All	**11.60%**	**24.60%**	**25.84%**	**29.50%**	**8.47%**	**100.00%**

Table 19. Agency Market Share by DTI and FICO for Loans with LTV > 95 (Dec 2022-Feb 2023)

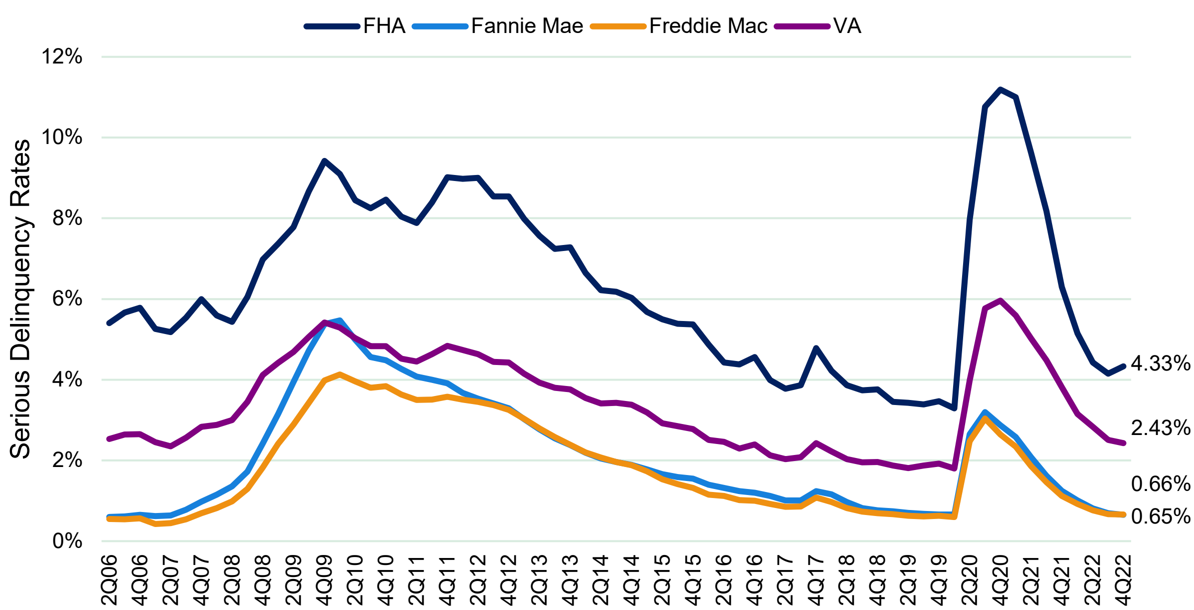
	FICO					
DTI	<650	650-700	700-750	≥750	NA	All
<35	2.01%	3.02%	4.23%	6.30%	0.06%	15.61%
35-45	5.70%	8.62%	10.36%	11.25%	0.05%	35.98%
≥45	8.26%	14.01%	13.05%	11.54%	0.06%	46.91%
NA	0.29%	0.21%	0.15%	0.19%	0.67%	1.50%
All	**16.25%**	**25.86%**	**27.79%**	**29.27%**	**0.83%**	**100.00%**

Sources: Recursion and Ginnie Mae. Data as of February 2023.

10.5 Serious Delinquency Rates

Serious delinquency rates for single-family GSE and VA loans continued to fall in Q4 2022, while FHA loans saw an increase for the first time since Q4 2020. From Q3 2022 to Q4 2022, Fannie and Freddie serious delinquencies decreased by 4 and 1 bps, respectively. Ginnie Mae collateral's serious delinquency rates decreased less than the GSE rates in absolute terms, with VA dropping 8 bps but FHA increasing 18 bps. This overall decline in serious delinquency rates is consistent with the decrease in the number of loans in forbearance captured in Section 11 below.

Figure 46. Serious Delinquency Rates: Single-Family Loans



Sources:

1. *Fannie Mae and Freddie Mac Monthly Summary Reports*
2. *MBA Delinquency Survey*

Note: Serious delinquency is defined as 90 days or more past due or in the foreclosure process. Data as of Q3 2022.

10.6 Credit Box

The first-time homebuyer share for agency purchase loans was 54.7% in February 2023, up slightly from 53.9% in January 2023 and up from 52.4% in February 2022. Ginnie Mae and Fannie Mae's first-time homebuyer shares, 68.7% and 46.7% respectively in February 2023, have remained relatively flat YoY. Freddie Mac's first-time homebuyer share has increased 17.6% YoY. Table 20 shows that based on mortgages originated in February 2023, the average GSE first-time homebuyer was more likely to have a lower credit score, and higher LTVs compared to the average GSE repeat homebuyer. Ginnie Mae's first-time homebuyers were more likely to have lower loan amounts and credit scores while DTI and loan rate were very similar.

Figure 47. First-Time Homebuyer Share: Purchase Only Loans

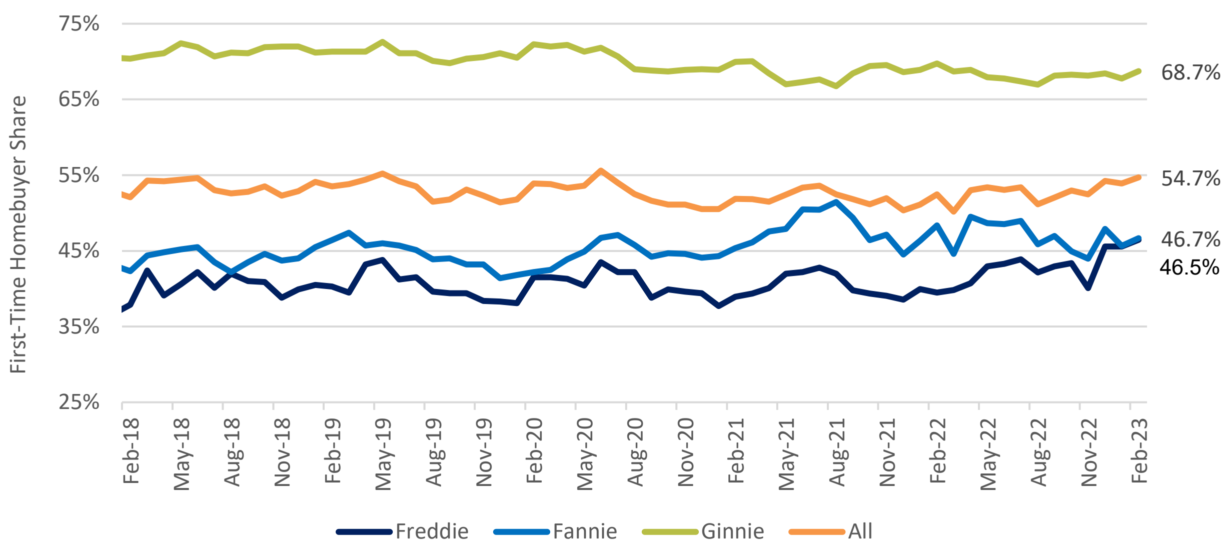


Table 20. Agency First-Time Homebuyer Share Summary

	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount $	320,953	329,562	328,480	329,810	298,112	355,359	313,991	334,861
Credit Score	744.7	757.3	747.0	756.3	683.3	703.1	720.9	746.0
LTV (%)	86.3	75.3	85.6	76.2	97.4	94.4	90.5	79.5
DTI (%)	37.2	37.4	36.7	37.1	43.6	44.4	39.6	38.7
Loan Rate (%)	5.5	5.5	5.4	5.5	5.3	5.2	5.4	5.4

Sources: Fannie Mae. Freddie Mac. and Ginnie Mae disclosure files.

Within the Ginnie Mae purchase market, 76.4% of FHA loans, 53.2% of VA loans, and 84.4% of other loans provided financing for first-time home buyers in February 2023. While other and VA loans increased MoM, FHA loans remained relatively stable MoM. Table 21 shows that based on mortgages originated in February 2023 the credit profile of the average VA first-time homebuyer differed from the average VA repeat buyer. The average VA first-time homebuyer took out 15.2% smaller loans, had a 22-point lower credit score, 4.5% higher LTVs and had a 10 bps higher interest rate. FHA's first-time homebuyers are much more like their repeat buyers, with only 4.9% smaller loans, 10 bps higher in interest rate, and 2.4% higher LTVs. Because FHA provides one of few credit options for borrowers with lower credit scores, repeat borrowers with weaker credit profiles are often limited to FHA financing; FHA's repeat buyers continue to have lower credit scores than their first-time home buyers. For VA and conventional borrowers alike, repeat buyers tend to have higher credit scores than first-time homebuyers.

Figure 48. First-time Homebuyer Share: Ginnie Mae Breakdown

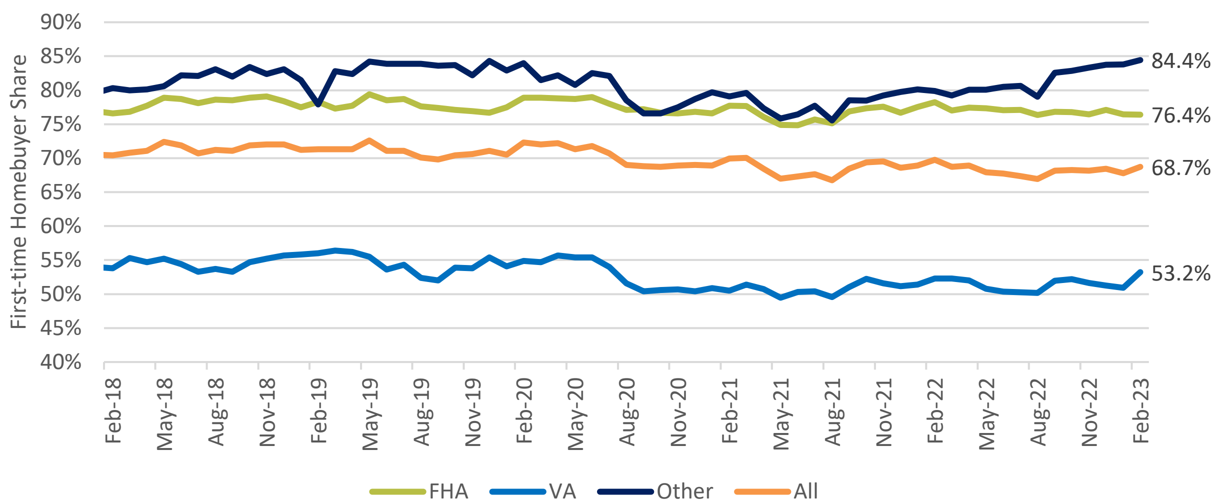


Table 21. Ginnie Mae First-Time Homebuyer Share Breakdown Summary

	FHA		VA		Other		Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount $	290,406	305,532	341,390	402,407	185,606	200,132	298,112	355,359
Credit Score	672.1	669.1	707.6	729.7	695.9	704.3	683.3	703.1
LTV (%)	96.7	94.3	98.8	94.3	98.4	98.5	97.4	94.4
DTI (%)	44.8	45.6	42.7	43.9	35.0	35.7	43.6	44.4
Loan Rate (%)	5.4	5.3	5.2	5.1	5.3	5.3	5.3	5.2

Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files.

10.7 Credit Box: Historical

The median FICO score for all agency loans originated in February 2023 was 727, which represents an 11-point decline YoY from February 2022. The trend in declining median FICO scores has been much more pronounced for refinance loans. Ginnie Mae median FICO scores have decreased 3 points between February 2022 and February 2023 to 671. As of February 2023, average FICO scores for refinances have dropped for Fannie Mae and Freddie Mac borrowers by 9 and 20 points YoY respectively.

Figure 49. FICO Scores for All Loans

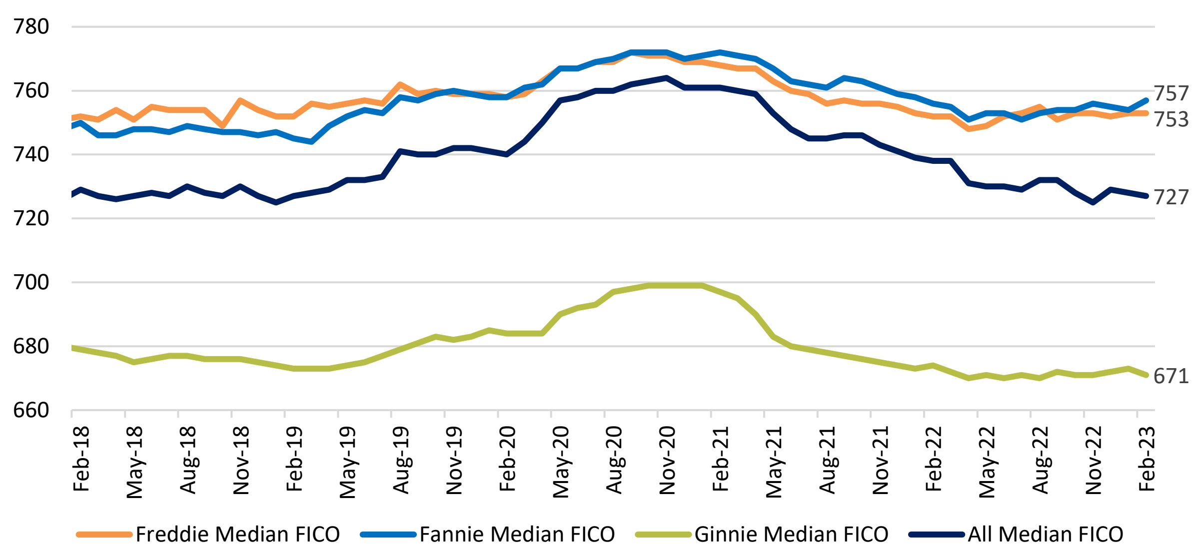


Figure 50. FICO Scores for Purchase Loans

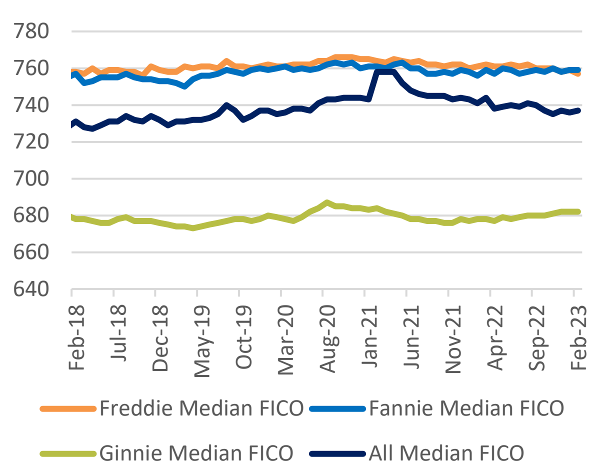
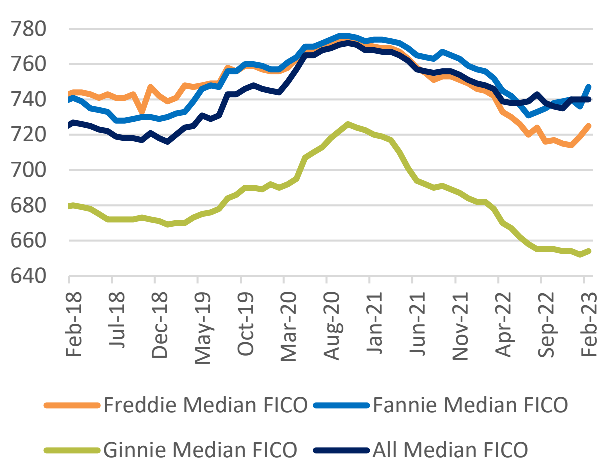


Figure 51. FICO Scores for Refinance Loans



Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files

In February 2023, the median LTV for Ginnie Mae loans was 98.2% compared to 80% for Fannie Mae and Freddie Mac, owing primarily to the lower down-payment requirements for government loan programs. Freddie Mac and Fannie Mae each saw increases in median LTV YoY from 73% and 71% respectively in February 2023 whereas Ginnie Mae LTVs remained relatively flat from 97.8% over that same period. In February 2023, median DTIs for Ginnie Mae, Freddie Mac, and Fannie Mae were 44.7%, 40.0%, and 39.0% respectively. In February 2022, median DTIs for Ginnie Mae, Fannie Mae, and Freddie Mac was 42.9%, 36.0%, and 37.0%.

Figure 52. LTV Ratio for All Loans

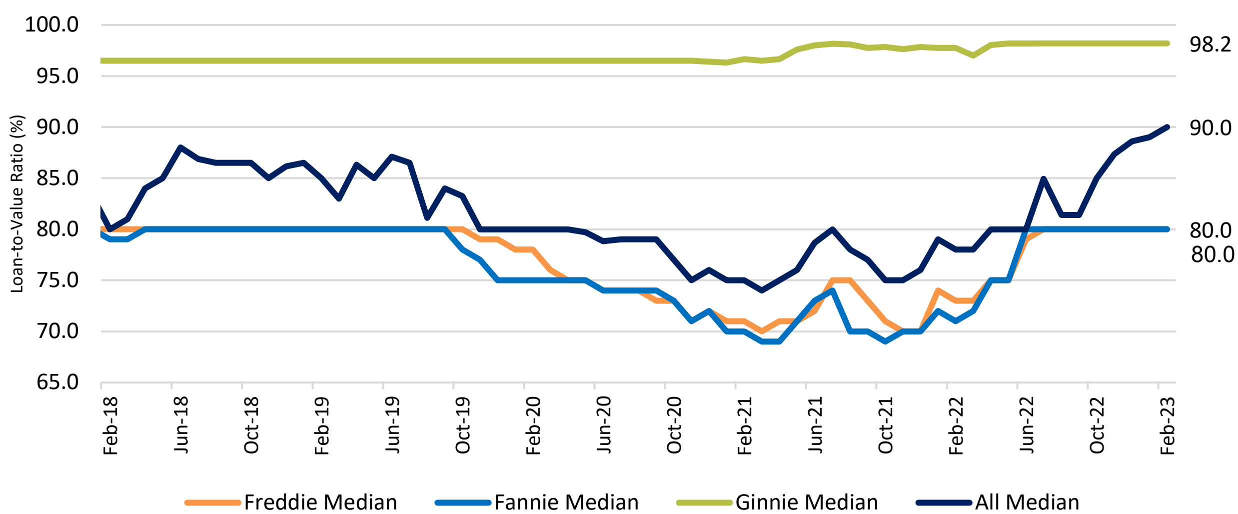
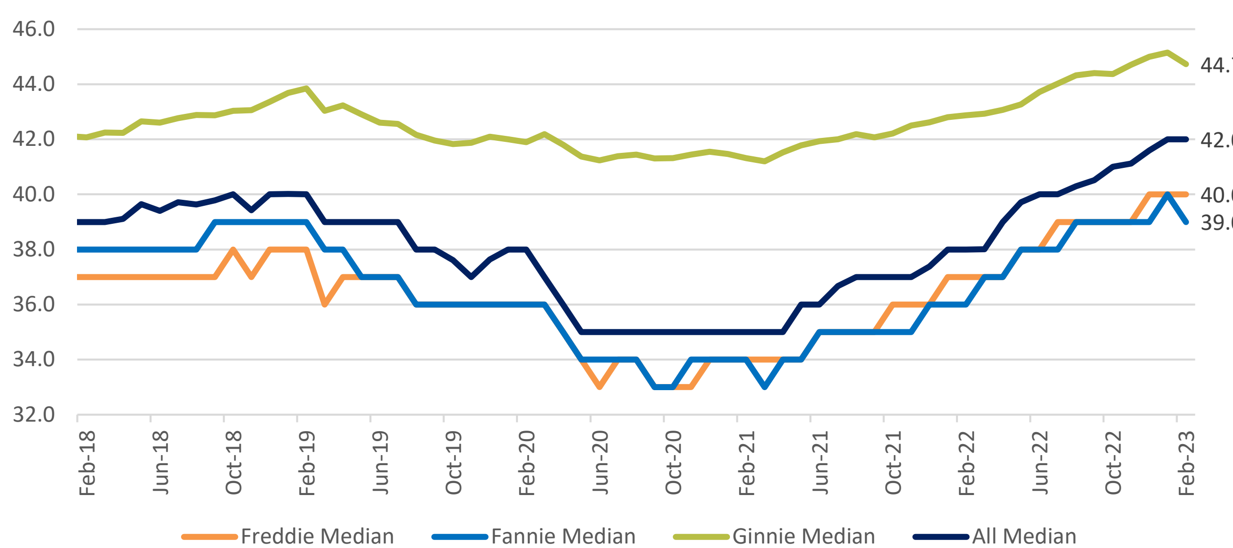


Figure 53. DTI Ratio for All Loans



Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files.

11 FORBEARANCE TRENDS

At the end of February 2023, 117,774 Ginnie Mae loans were in forbearance. The number of loans in forbearance removed from MBS pools in February was 513 while 117,261 loans in forbearance still remain in pools. The number of loans in forbearance, removed from pools, and loans that remained in pools has decreased compared to the month prior. The median current principal balance for Ginnie Mae, FHA, and VA was higher for loans in forbearance originated by nonbanks than banks in all subsets.

Table 22. Forbearance Snapshot

All Loans in Forbearance – February 2023						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	656	3.6	$204,742	74.1	75.0	117,774
Bank	672	3.8	$148,393	81.4	85.9	12,048
Nonbank	655	3.5	$211,505	73.5	74.2	105,715
FHA	652	3.6	$200,641	77.7	78.4	86,278
Bank	670	3.9	$145,920	84.5	88.4	9,781
Nonbank	651	3.6	$207,948	77.1	77.6	76,489
VA	666	3.3	$259,036	58.9	61.4	22,660
Bank	677	3.5	$192,399	61.1	70.8	1,525
Nonbank	666	3.3	$263,533	58.8	61.0	21,133
Loans in Forbearance and Removed from Pools – February 2023						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	668	3.5	$165,890	66.4	62.2	513
Bank	664	4.3	$90,940	77.4	77.2	163
Nonbank	668	3.4	$201,929	63.7	59.6	350
FHA	659	3.7	$158,174	69.3	68.7	340
Bank	663	4.3	$99,654	75.1	75.9	124
Nonbank	657	3.5	$191,459	67.5	67.0	216
VA	684	3.1	$263,633	54.4	46.8	120
Bank	689	3.7	$157,251	91.7	74.6	14
Nonbank	683	3.1	$270,252	50.8	44.9	106
Loans in Forbearance that Remain in Pools – February 2023						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	656	3.6	$204,903	74.1	75.0	117,261
Bank	672	3.8	$149,073	81.4	86.0	11,885
Nonbank	655	3.5	$211,515	73.5	74.2	105,365
FHA	652	3.6	$200,924	77.7	78.4	85,938
Bank	670	3.9	$146,502	84.6	88.4	9,657
Nonbank	651	3.6	$208,000	77.1	77.6	76,273
VA	666	3.3	$259,003	58.9	61.5	22,540
Bank	677	3.5	$192,456	60.9	70.8	1,511
Nonbank	666	3.3	$263,510	58.8	61.1	21,027

*Sources: Ginnie Mae loan level MBS disclosure and forbearance file and Ginnie Mae Issuer Operational Performance Profile (IOPP) -Peer Group Listings. Notes: Data as of February 2023; *Averages weighted by remaining principal balance of the loans.*

12 HOLDERS OF GINNIE MAE MORTGAGE SERVICING RIGHTS

Table 23 shows the 30 largest owners of mortgage servicing rights (MSR) by UPB for loans collateralizing Ginnie Mae MBS. The top 30 firms collectively own 86.28% of Ginnie Mae MSRs (see Cumulative Share). Twenty-three of these top 30 are non-depository institutions, the remaining 7 are depository institutions. As of February 2023, over half (53.47%) of the Ginnie Mae MSRs are owned by the top six firms.

Table 23. Top 30 Holders of Ginnie Mae Mortgage Servicing Rights (MSRs), by UPB

MSR Holder	*Rank*			*UPB*		*Cumulative Share*		
	Current	*Year prior*	*Change*	*($ millions)*	*Share*		*CPR*	*CDR*
LAKEVIEW LOAN SERVIC	1	3	↑	$280,187,901,914	13.0%	12.98%	5.13%	0.45%
DBA FREEDOM HOME MOR	2	1	↓	$262,871,385,336	12.2%	25.15%	5.96%	0.93%
PENNYMAC LOAN SERVIC	3	2	↓	$249,902,941,595	11.6%	36.72%	5.09%	0.55%
NATIONSTAR MORTGAGE,	4	6	↑	$128,400,622,380	5.9%	42.67%	6.19%	0.68%
NEWREZ LLC	5	7	↑	$121,843,686,646	5.6%	48.31%	4.89%	0.59%
WELLS FARGO BANK, NA	6	4	↓	$111,337,153,097	5.2%	53.47%	5.21%	0.22%
ROCKET MORTGAGE, LLC	7	5	↓	$104,986,613,951	4.9%	58.33%	6.85%	0.38%
CARRINGTON MORTGAGE	8	9	↑	$91,138,578,871	4.2%	62.55%	5.93%	0.76%
U. S. BANK, NA	9	11	↑	$52,264,793,577	2.4%	64.97%	4.13%	0.50%
UNITED WHOLESALE MOR	10	10	↔	$47,439,028,645	2.2%	67.16%	3.13%	0.18%
PLANET HOME LENDING,	11	15	↑	$44,856,159,223	2.1%	69.24%	3.82%	0.18%
LOANDEPOT.COM,LLC	12	12	↔	$37,027,463,140	1.7%	70.96%	4.92%	0.67%
MORTGAGE RESEARCH CE	13	13	↔	$34,036,834,207	1.6%	72.53%	4.91%	0.23%
AMERIHOME MORTGAGE C	14	20	↑	$32,556,811,533	1.5%	74.04%	3.10%	0.24%
NAVY FEDERAL CREDIT	15	16	↑	$29,242,834,933	1.4%	75.39%	5.22%	0.37%
GUILD MORTGAGE COMPA	16	19	↑	$22,488,176,705	1.0%	76.44%	4.94%	0.45%
THE MONEY SOURCE INC	17	18	↑	$20,935,736,912	1.0%	77.41%	5.84%	0.70%
TRUIST BANK	18	17	↓	$20,273,367,217	0.9%	78.34%	5.81%	1.10%
CROSSCOUNTRY	19	21	↑	$18,322,573,266	0.8%	79.19%	3.98%	0.31%
NEW AMERICAN FUNDING	20	22	↑	$17,969,037,024	0.8%	80.02%	5.08%	0.48%
VILLAGE CAPITAL & IN	21	23	↑	$16,947,939,402	0.8%	80.81%	6.48%	0.64%
MOVEMENT MORTGAGE,LL	22	29	↑	$16,755,815,483	0.8%	81.59%	3.38%	0.22%
CMG MORTGAGE, INC.	23	28	↑	$15,810,873,452	0.7%	82.32%	3.99%	0.57%
IDAHO HOUSING AND FI	24	25	↑	$14,781,948,299	0.7%	83.00%	4.11%	0.79%
CITIZENS BANK N.A.	25	24	↓	$13,866,095,231	0.6%	83.64%	4.27%	0.33%
PHH MORTGAGE CORPORA	26	30	↑	$13,250,230,792	0.6%	84.26%	4.99%	0.58%
FLAGSTAR BANK, N.A.	27	N/A	↑	$11,890,032,536	0.6%	84.81%	3.55%	0.12%
MIDFIRST BANK	28	26	↓	$11,347,585,892	0.5%	85.33%	5.99%	1.33%
JP MORGAN CHASE BANK	29	N/A	↑	$10,285,951,092	0.5%	85.81%	5.78%	1.63%
SUN WEST MORTGAGE CO	30	N/A	↑	$10,127,312,803	0.5%	86.28%	5.22%	0.20%

Source: Deloitte. Data as of February 2023

13 AGENCY NONBANK ORIGINATORS

Total agency non-bank origination share experienced a decrease in February 2023, by approximately 3.2% MoM. This decrease in non-bank origination share was driven primarily by Freddie Mac (non-bank origination share down 8.2% MoM). The Ginnie Mae non-bank share fell to 87.5% as of February 2023 but has remained consistently higher than the GSEs, largely driven by origination share of refinance mortgage loans. GSE origination volume of purchase mortgage loans has been the primary driver in the MoM decline of agency non-bank origination share.

Figure 54. Agency Nonbank Originator Share (All, Purchase, Refi)

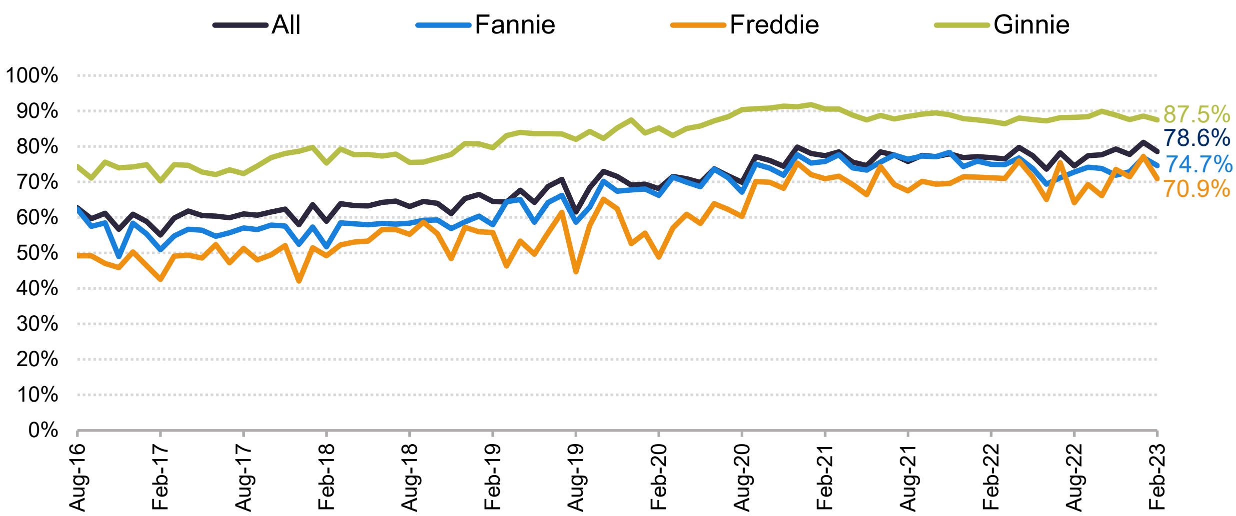


Figure 55. Nonbank Origination Share: Purchase Loans

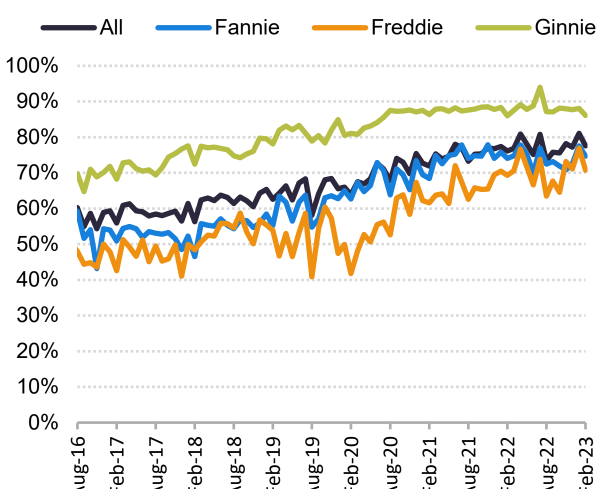
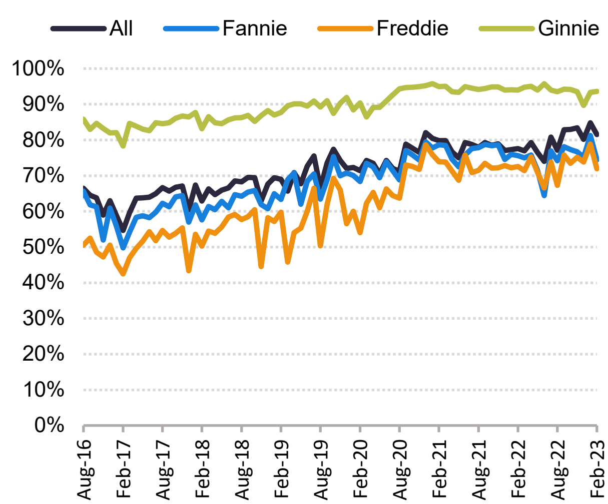


Figure 56. Nonbank Origination Share: Refi Loans



Sources: Recursion. Notes: Data as of February 2023.

Ginnie Mae's total non-bank originator share remained relatively stable in February 2023. Ginnie Mae continues to have a very high proportion of nonbank originations, with a rate of 87.5% in February 2023. The percent of Ginnie Mae's Other non-bank refinanced loans remained at 88.4% in February 2023.

Figure 57. Ginnie Mae Nonbank Originator Share (All, Purchase, Refi)

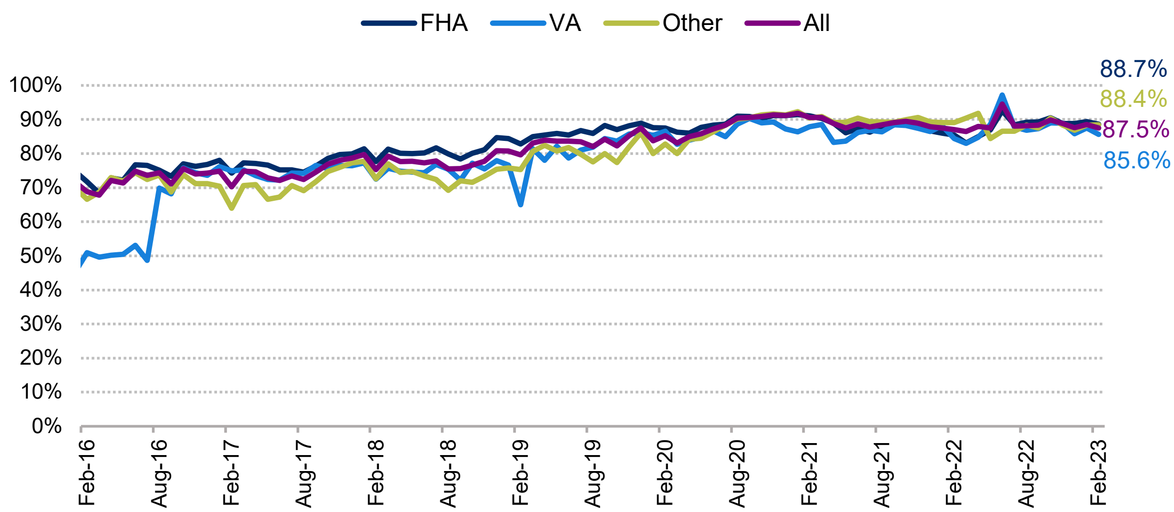


Figure 58. Ginnie Mae Nonbank Share: Purchase Loans

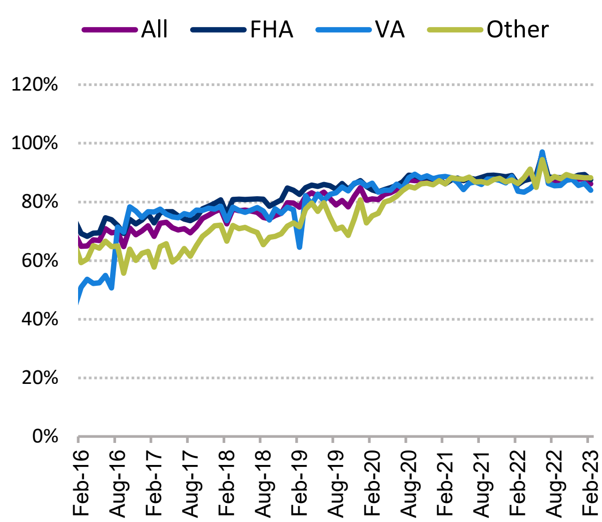
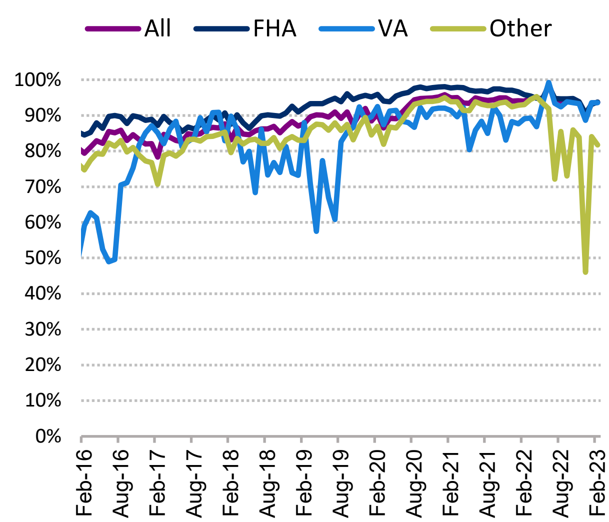


Figure 59. Ginnie Mae Nonbank Share: Refi Loans



Sources: Recursion. Notes: Data as of February 2023.

13.1 Bank vs. Nonbank Originators Historical Credit Box, Ginnie Mae vs. GSE

13.1.1 (FICO, LTV, DTI)

The mortgage loan originations of non-banks continue to have a consistently lower median FICO score than their bank counterparts across all agencies. The spread between non-bank and bank FICO scores increased by 4 points from January 2023 to February 2023. The agency median FICO decreased by 2 points to 727 MoM.

Figure 60. Agency FICO: Bank vs. Nonbank

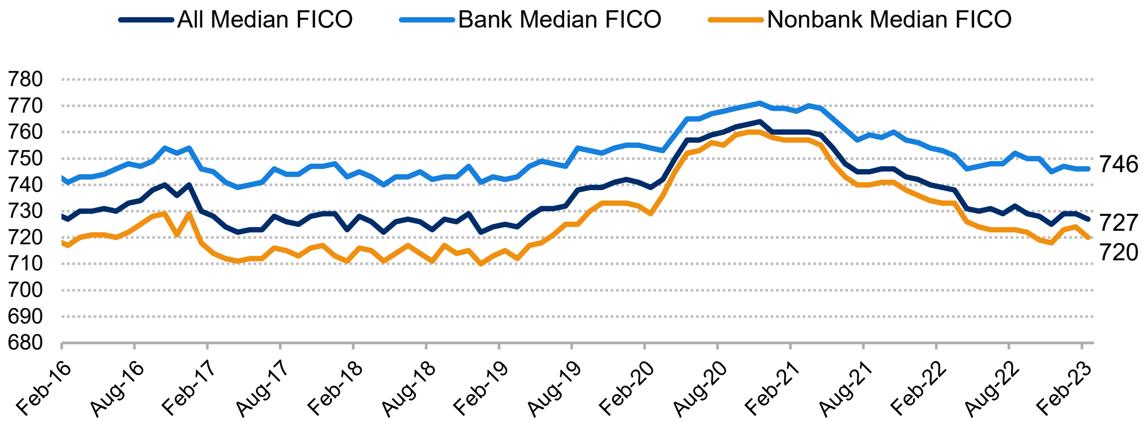


Figure 61. GSE FICO: Bank vs. Nonbank

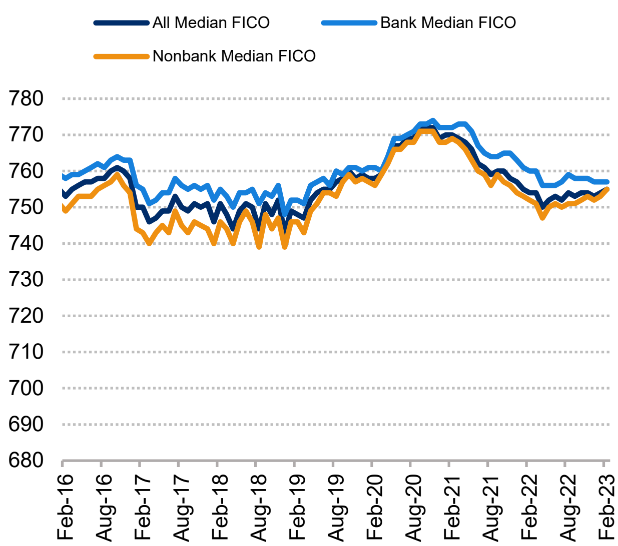
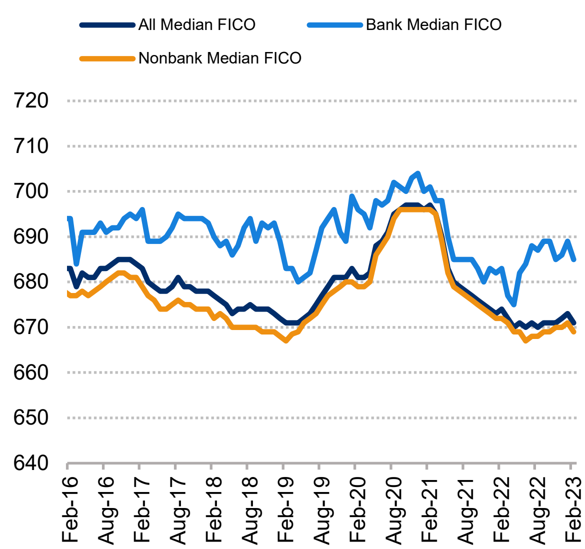


Figure 62. Ginnie Mae FICO: Bank vs. Nonbank



Sources: Recursion: Notes: Data as of February 2023.

The median LTV for all GSE originators remained the same in February 2023 MoM at 80%. Ginnie Mae median bank and non-bank LTV remained flat at 98.19% MoM. Ginnie Mae median DTI decreased MoM to approximately 45% in February 2023 in non-bank originations.

Figure 63. GSE LTV: Bank vs. Nonbank

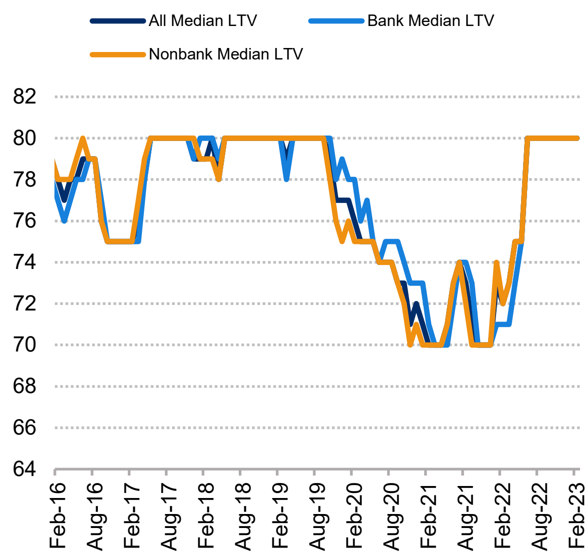


Figure 64. Ginnie Mae LTV: Bank vs. Nonbank

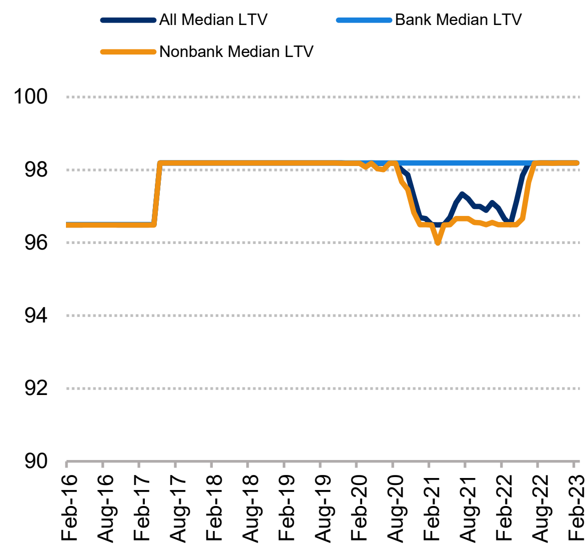


Figure 65. GSE DTI: Bank vs. Nonbank

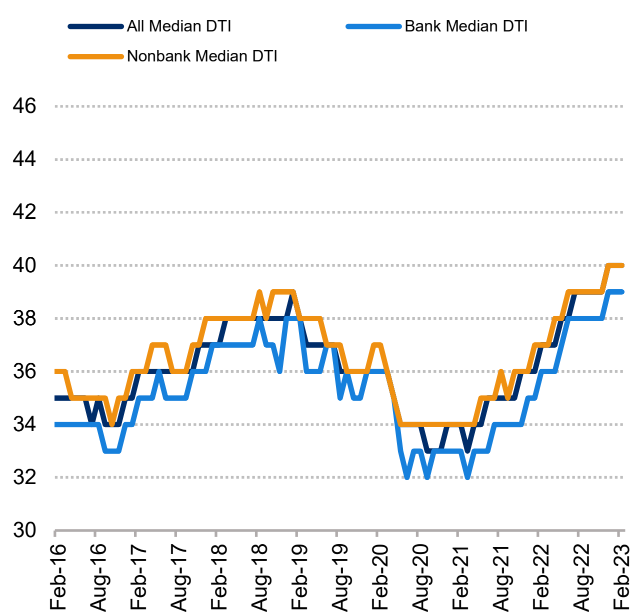
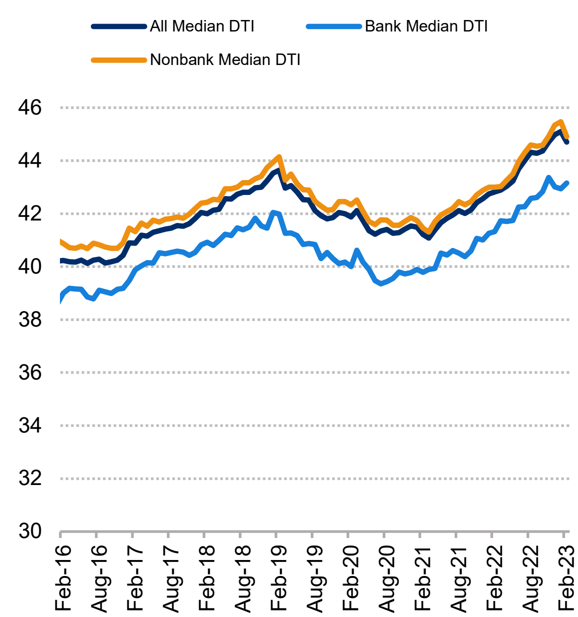


Figure 66. Ginnie Mae DTI: Bank vs. Nonbank



Sources: Recursion. Notes: Data as of February 2023.

In February 2023, the median FICO score for Ginnie Mae bank decreased 4 points to 685 and non-bank decreased 2 points to 669 MoM. The median FICO for all Ginnie originations decreased 2 points to 671 MoM. The gap between banks and non-banks is most apparent in VA lending (28-point spread).

Figure 67. Ginnie Mae FICO Score: Bank vs. Nonbank

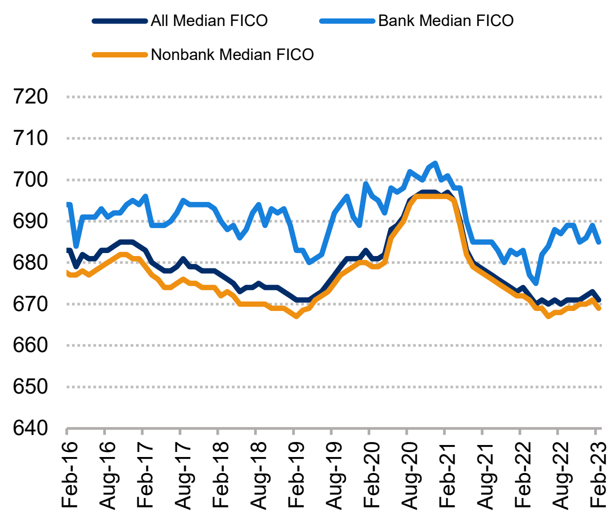


Figure 68. Ginnie Mae FHA FICO Score: Bank vs. Nonbank

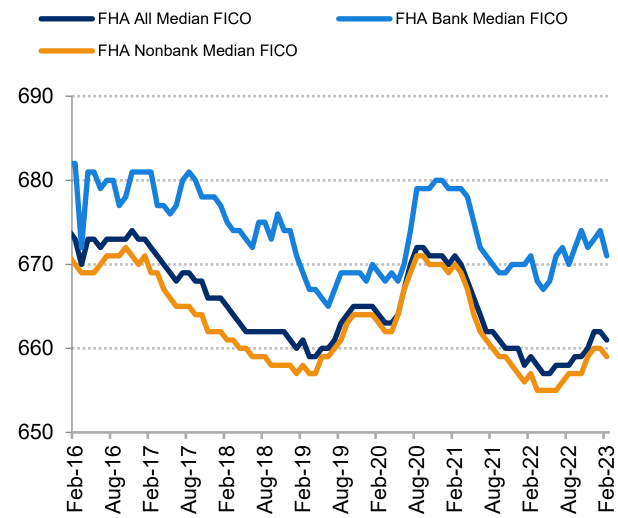


Figure 69. Ginnie Mae VA FICO Score: Bank vs. Nonbank

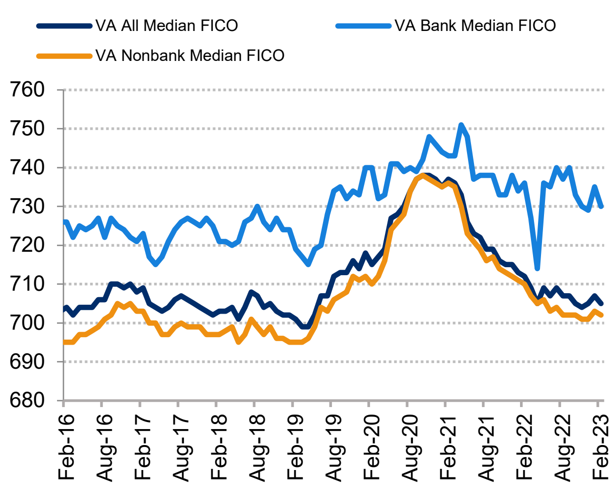
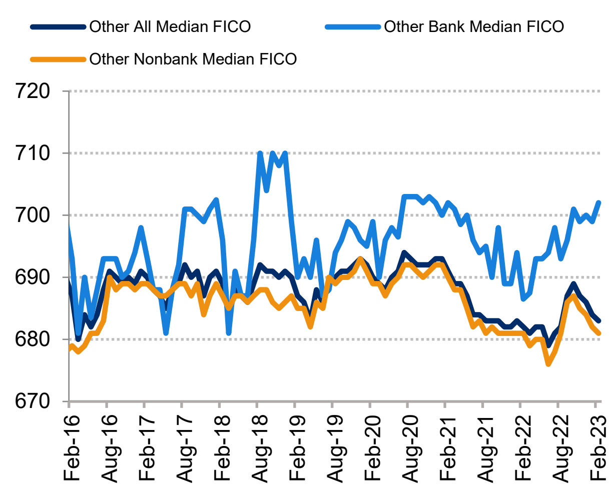


Figure 70. Ginnie Mae Other FICO Score: Bank vs. Nonbank



Sources: Recursion. Notes: Data as of February 2023.

Median DTI for Ginnie Mae nonbank originations has been consistently higher than the median DTI for Ginnie Mae bank originations. This is a trend evident for all Ginnie Mae-eligible loan types except for the "Other" category, where the spread between median bank and nonbank DTI is relatively small.

Figure 71. Ginnie Mae DTI: Bank vs. Nonbank

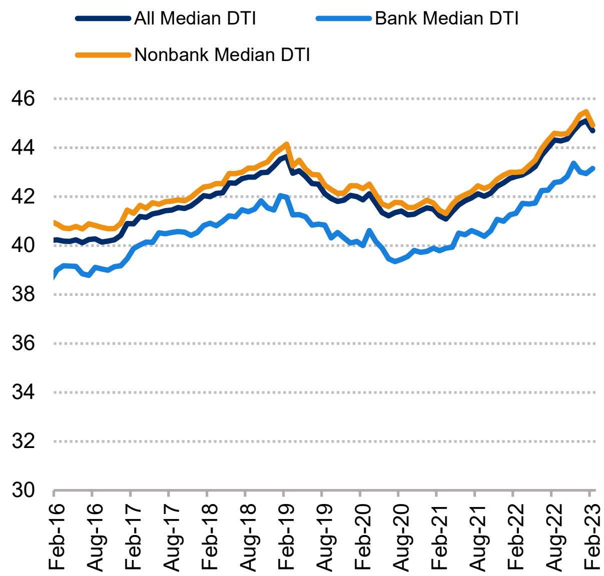


Figure 72. Ginnie Mae FHA DTI: Bank vs. Nonbank

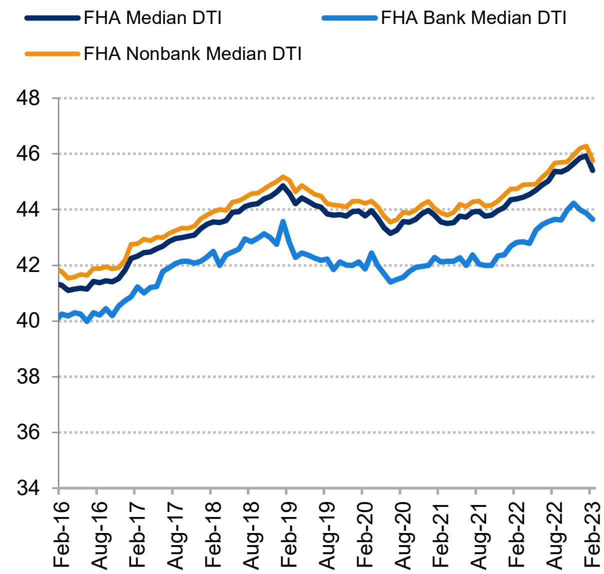


Figure 73. Ginnie Mae VA DTI: Bank vs. Nonbank

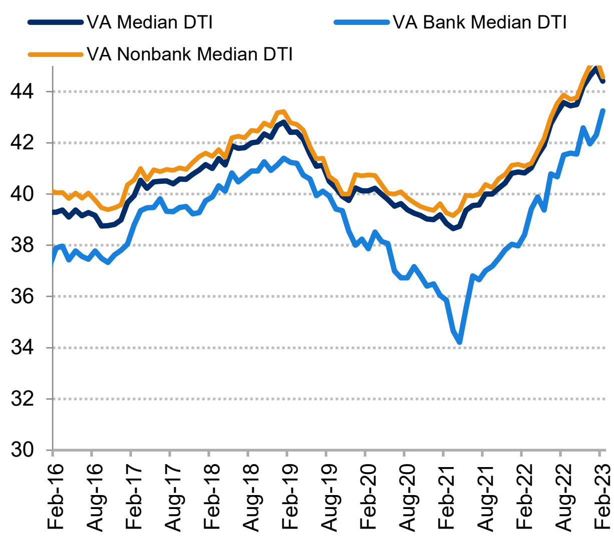
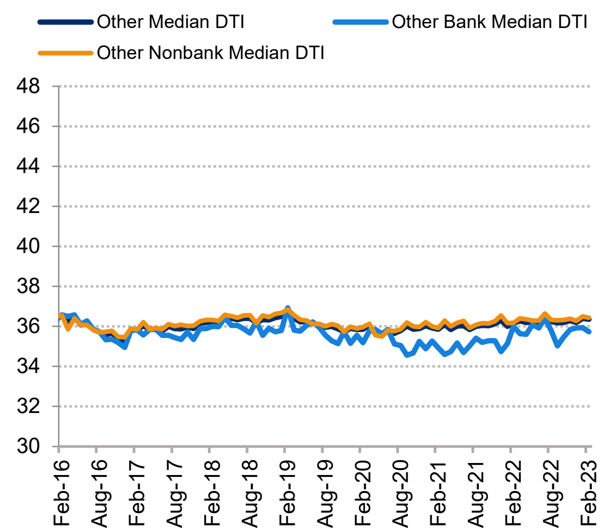


Figure 74. Ginnie Mae Other DTI: Bank vs. Nonbank



Sources: Recursion. Notes: Data as of February 2023.

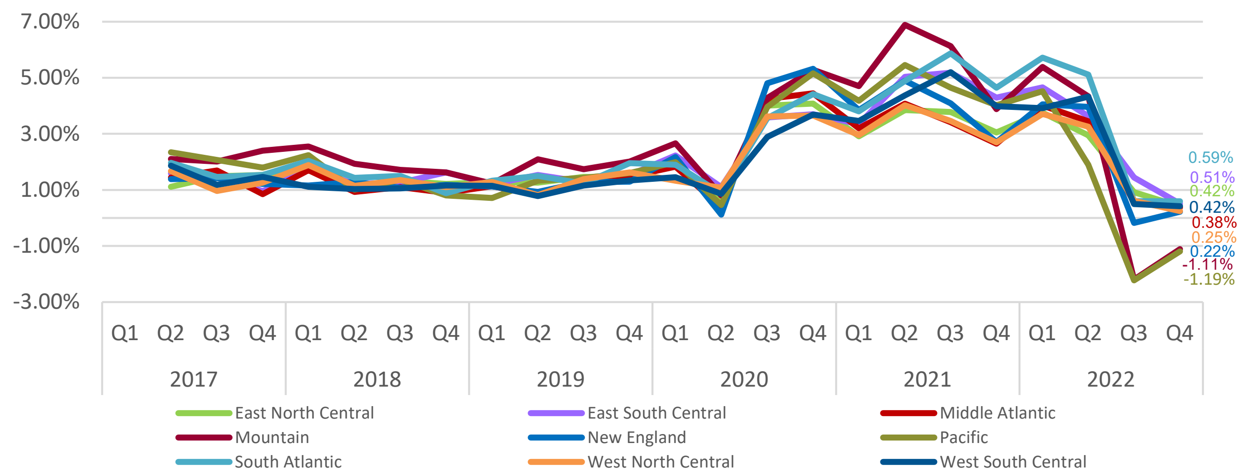
U.S. HOUSING MARKET

14 HOUSING AFFORDABILITY

14.1 Housing Affordability – Home Price Appreciation

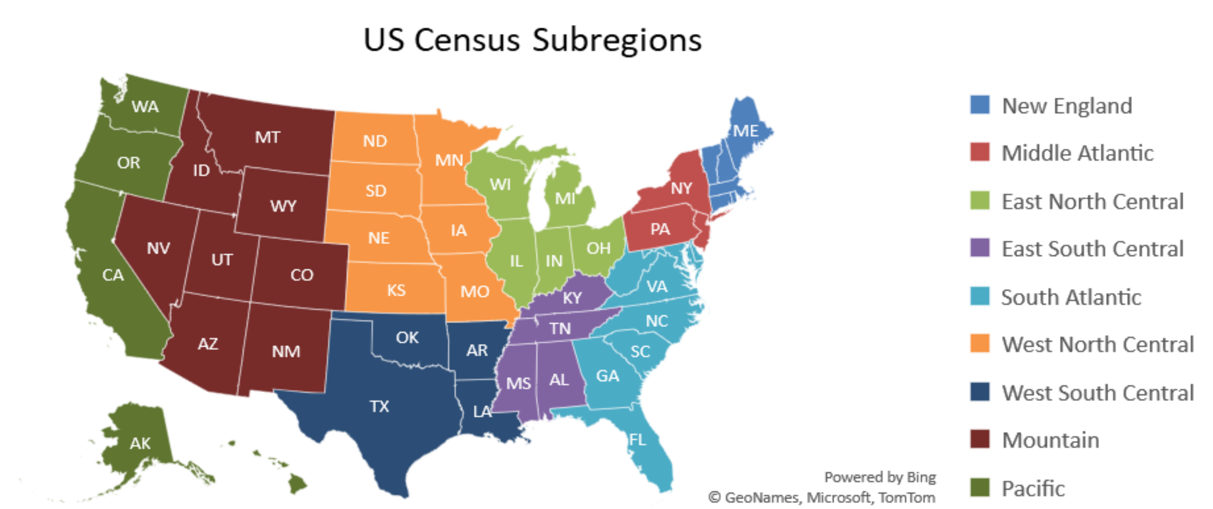
Home prices are beginning to decelerate, with HPI's dropping in all regions but the Mountain, Pacific, and New England regions between October 2022 and December 2022. Notably, the Pacific region experienced a -1.11% Q/Q change in HPI between 2022 Q3 and 2022 Q4 compared to -2.20% Q/Q change in HPI from 2022 Q2 to 2022 Q3. The New England and Pacific regions saw a 40 bps and 103 bps increase in the Q/Q change in HPI, respectively.

Figure 75. Regional HPI Trend Analysis Q/Q



Source: HPI data from FHFA.US Census Subregions as defined by the US Census Bureau.

Figure 76. FHFA US Census Subregions as defined by the US Census Bureau



Source: HPI data from FHFA.US Census Subregions as defined by the US Census Bureau.

14.2 Housing Affordability – Inflation, Wages, and the Price of Real Estate and Rent

As of February 2023, inflation was 6.0%, down from 6.3% the month prior. Nationally, rents are down 0.25% YoY as of month-end February 2023. However, the MoM declining rent trend in January 2023 did not continue in February as February 2023 observed a 1.7% MoM increase in median rent. Wage growth saw a minor decrease from 6.2% in January 2023 to 6.1% in February 2023. December 2022 reporting data shows YoY home price appreciation has now slowed to 5.7%, down from 7.7% in November 2022.

Figure 77. Inflation | 12-Month Percent Change in CPI

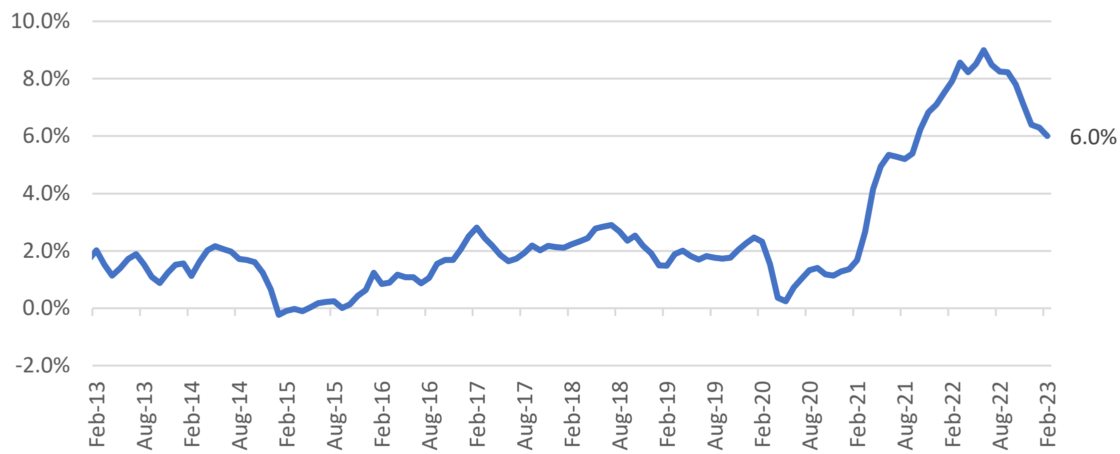
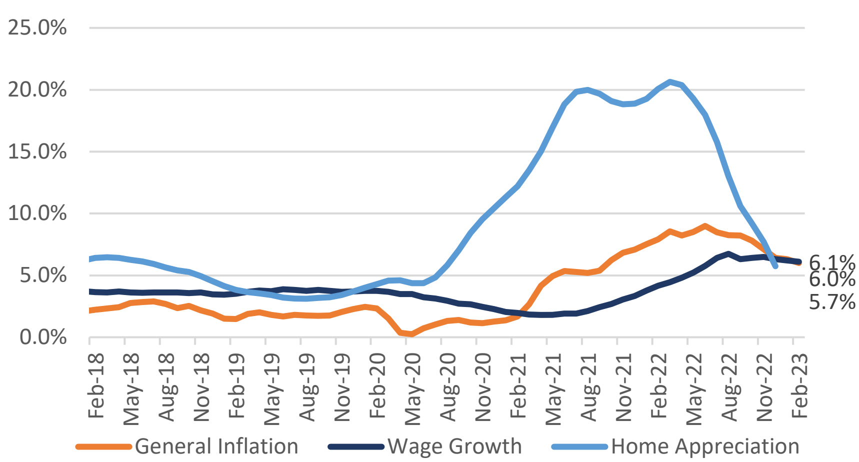


Figure 78. Asset Price Appreciation vs. Wage Increases

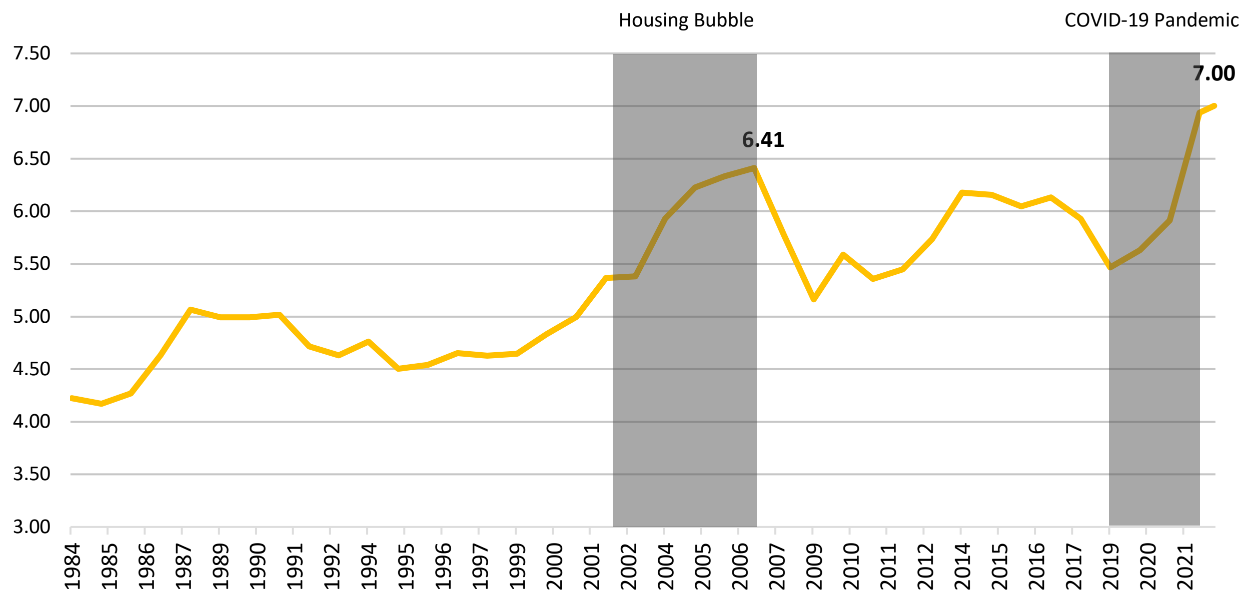


Metric	*Statistic*
General Inflation	*6.0%*
Home Price Appreciation (YoY)	*5.7%*
Rental Price Appreciation (Median Rent Change YoY)	*-0.25%*
Wage Growth	*6.1%*

Sources: Bureau of Labor Statistics – Consumer Price Index and Wage-Growth Data; Rent.com - Rental Price Appreciation; S&P/Case-Schiller U.S. National Home Price Index – Home Price Appreciation.

Home affordability remains at a historic low, as the ratio of the average price of sold homes to median incomes is at a historically high level. Historically, this ratio has been around 5:1; the current 7:1 sales price to median income ratio exceeds the maximum value observed during the housing bubble (6.4:1). With the increase in mortgage rates, declining home price appreciation, and home prices even dropping in some regions in the country, this ratio may drop back down to historically normal levels.

Figure 79. Average Price of Homes Sold to Median Income Ratio

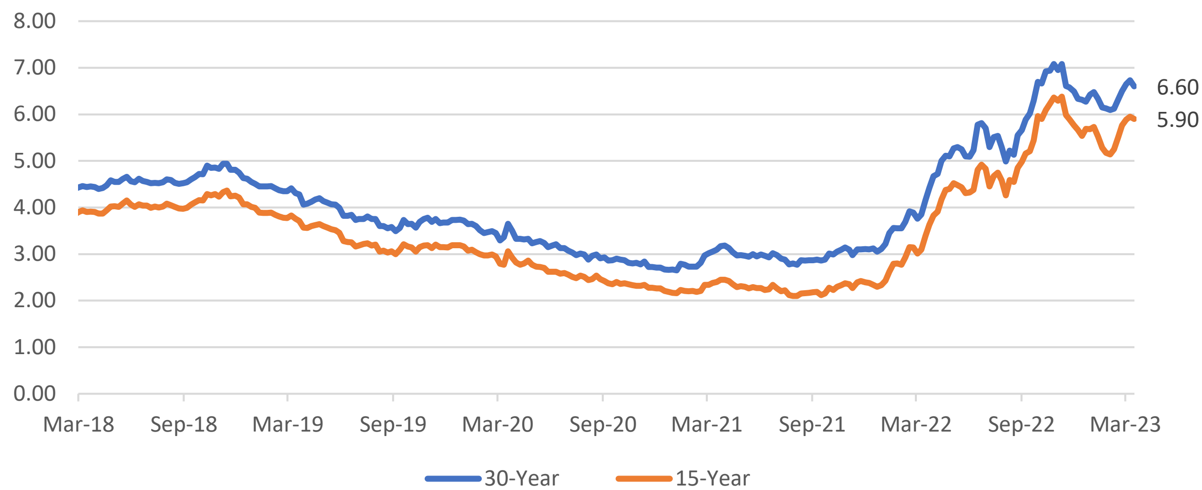


Source: FRED Average Home Sales Data, FRED Median Income Data

14.2.1 Housing Affordability – Mortgage Rate Trends

The Federal Funds Target Rate was increased by 25 bps on March 22, 2023 to a range of 4.75% and 5.00% per the FOMC.[4] As of March 16, 2023, the average 30-year and 15-year fixed rate mortgage rates were 6.60% and 5.90% respectively. The average 30-year fixed rate mortgage rate increased 28 bps and the average 15-year fixed rate mortgage rate increased 39 bps MoM from February 16, 2023.

Figure 80. Average Fixed Rate Mortgage Rates



Sources: FRED data as of March 2023

[4] https://www.federalreserve.gov/newsevents/pressreleases/monetary20230322a.htm

14.3 Housing Inventory

As of January 2023, there was 7.9 months of housing inventory on the market, a decrease from 9.0 in December 2022. As housing affordability continues to remain high (See above section 14.2) single-family home sales are unlikely to play a large role in the resolution of the housing shortfall. Multifamily construction volume metrics, shown in **Figure 82** increased in 2022; number of starts increased by 15.0% and numbers of permits increased by 10.7% while number of completions remained relatively stable.

Figure 81. Single-Family Housing Inventory

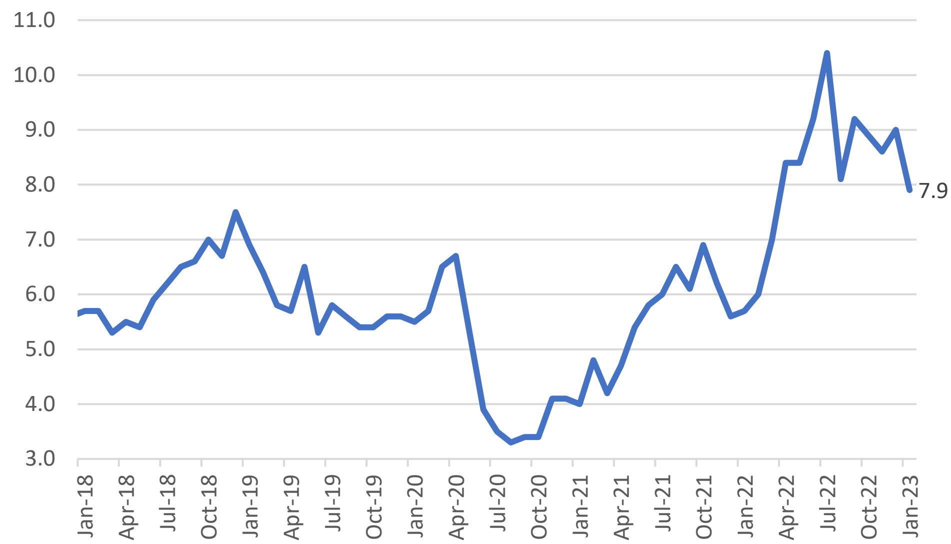
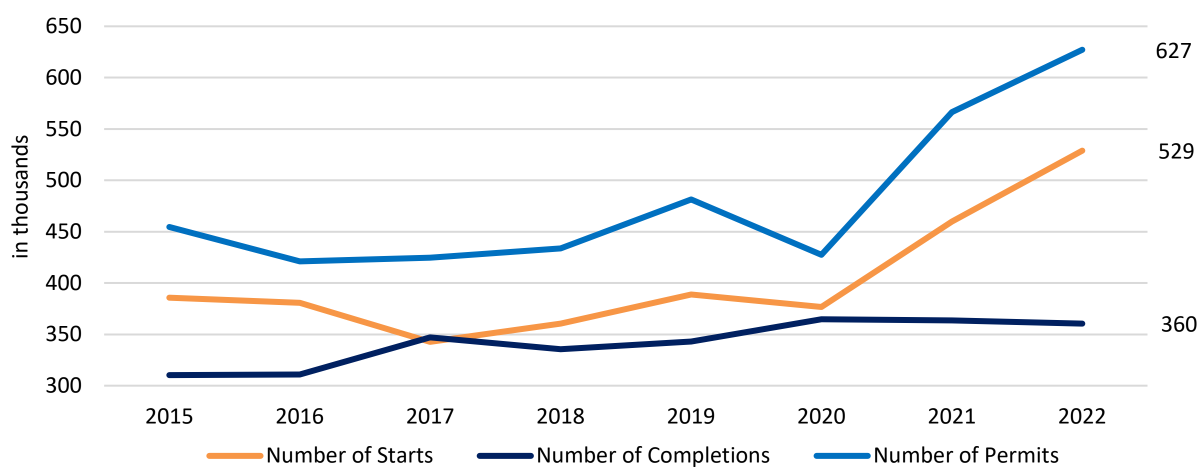


Figure 82. Multifamily Construction Metrics: Permits, Starts, Completions



Source: FRED data as of December 2022 and New Residential Construction, US Census Bureau

14.4 Size and Value of the US Housing Market

The total value of the single-family housing market reached $42.5 trillion in 2022. The total value of the US housing market is up 123% from its trough in 2011. From 2021 to 2022 mortgage debt outstanding increased from $11.4 trillion to $12.2 trillion and household equity increased from $24.5 trillion to $30.3 trillion. Thus, the expansion in the housing market is being driven primarily by increases in home values, as illustrated in the Housing Affordability Section. At $8.7 trillion in 2022, agency single family MBS continues to account for a growing percentage of the total mortgage debt outstanding, up to 67% of total mortgage debt from just 52% in 2011.

Figure 83. Value of the US Housing Market

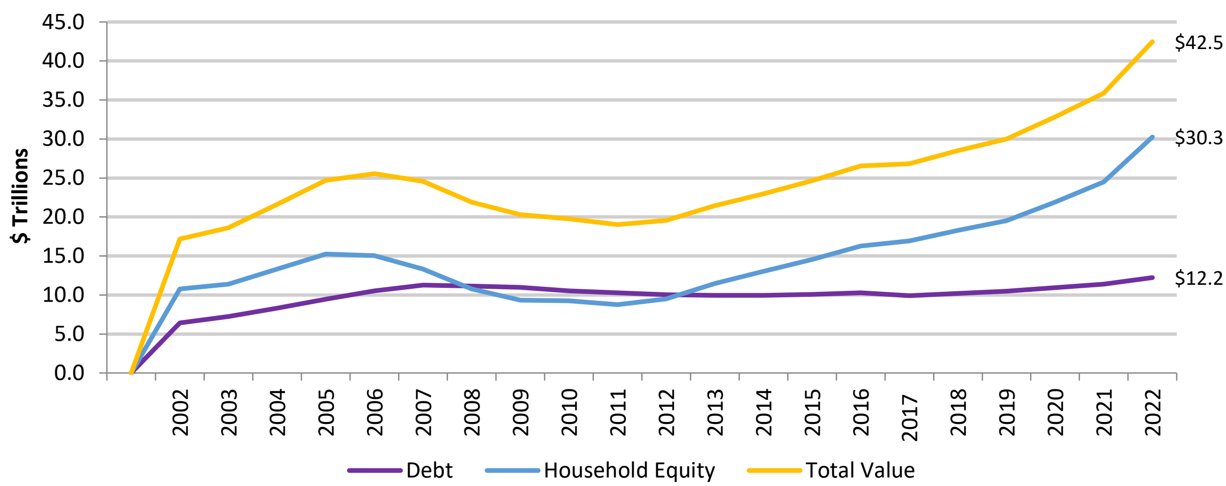
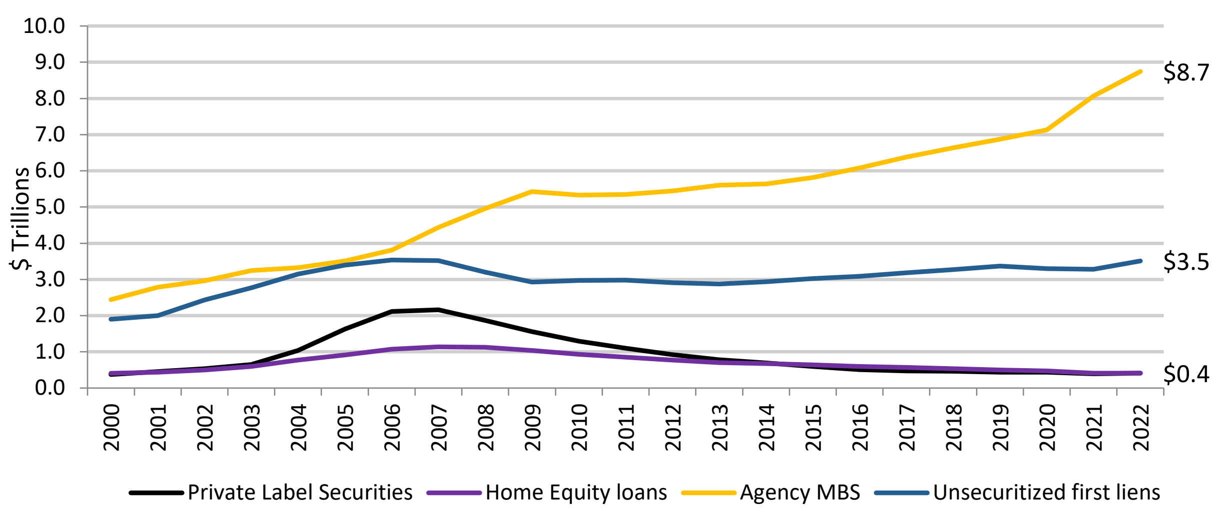


Figure 84. Size of the US Residential Mortgage Market.



Source: Federal Reserve Flow of Funds Data as of Q4 2022.

15 DISCLOSURE

"The data provided in the Global Markets Analysis Report (hereinafter, the "report") should be considered as general information only and is current only as of its specified date, unless otherwise noted. No information contained herein is, and should not be construed to be, investment advice. Nor does any information contained herein constitute an offer to sell, or is a solicitation of an offer to buy, securities.

The information contained herein is based upon information generally available to the public from sources believed to be reliable as of the specified date. The accuracy of the information contained herein is based on the corresponding accuracy of the issuer data as reported to the Government National Mortgage Association (hereinafter, "Ginnie Mae").

Therefore, if there is insufficient or inaccurate data to support calculations of any specific disclosure information, Ginnie Mae disclaims any and all liability relating to that information, including, without limitation, any express or implied representations or warranties for statements or errors contained in, or omissions from, the report.

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