

GLOBAL MARKETS ANALYSIS REPORT

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



April 2023

Table of Contents

Inside this Month's Global Market Analysis Report...	1
Highlights	2
1 US AGGREGATE AND GLOBAL INDICES	2
1.1 Bloomberg US Aggregate and Global Indices	4
2 Sovereign Debt Product Performance Comparisons	5
2.1 Global 10-Year Treasury Yields (Unhedged)	5
2.2 US Treasury Hedged Yields	6
SECONDARY MORTGAGE MARKET	7
3 Fixed Income Product Performance Comparisons	7
3.1 Ginnie Mae Yields – USD	7
3.2 Ginnie Mae Hedged Yields	8
3.3 Ginnie Mae Yield Spreads – Intermediate Credit	9
3.4 Global Treasury Yield Per Duration	10
4 Prepayments	11
4.1 Aggregate Prepayments (CPR)	11
4.2 Involuntary Prepayments (CDR)	11
4.3 Voluntary Prepayment Rates (CRR)	13
5 Single-Family MBS Pass-Through Issuance	12
5.1 Gross Issuance of Agency MBS	14
5.2 Net Issuance of Agency MBS	16
5.3 Monthly Issuance Breakdown	18
5.4 Percent Refi at Issuance – Single-Family	19
6 Agency Single-Family MBS Outstanding	21
6.1 Outstanding Single-Family Agency MBS	21
6.2 Origination Volume and Share Over Time	22
6.3 Agency Issuance and Agency Outstanding by State	23
6.4 Outstanding Ginnie Mae MBS Volume by Coupon and Vintage Over Time	24
7 Agency REMIC Securities	25
7.1 Monthly REMIC Demand for Ginnie Mae MBS	25
7.2 REMIC Market Snapshot	26
8 MBS Ownership	27
8.1 Commercial Bank Holdings of Agency MBS	27
8.2 Bank and Thrift Residential MBS Holdings	28
8.3 Foreign Ownership of MBS	30

8.4	Foreign Ownership of Agency Debt and Agency MBS	31
9	Fixed Income Liquidity Indicators	32
	PRIMARY MORTGAGE MARKET	33
10	Agency Credit Breakdown	33
10.1	Credit Scores	33
10.2	Loan-to-Value (LTV)	35
10.3	Debt-to-Income (DTI)	37
10.4	High LTV Loans: Ginnie Mae vs. GSEs	39
10.5	Serious Delinquency Rates	40
10.6	Credit Box	41
10.7	Credit Box: Historical	43
11	Forbearance Trends	45
12	Holders of Ginnie Mae Mortgage Servicing Rights	45
13	Agency Nonbank Originators	47
13.1	Bank vs. Nonbank Originators Historical Credit Box, Ginnie Mae vs. GSE	49
13.1.1	(FICO, LTV, DTI)	49
	U.S. HOUSING MARKET	53
14	Housing Affordability	53
14.1	Housing Affordability – Home Price Appreciation	53
14.2	Housing Affordability – Inflation, Wages, and the Price of Real Estate and Rent	54
14.2.1	Housing Affordability – Mortgage Rate Trends	56
14.3	Housing Inventory	57
14.4	Size and Value of the US Housing Market	58
15	Disclosure	59

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

This month's *Highlights* section discusses two ESG investment standards with expanding global adoption, the Sustainable Finance Disclosure Regulation (SFDR) and the SEC's disclosure guidance for investment advisors and investment companies.

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 remains historically low.

Highlights

Ginnie Mae provides investors with information that supports their sustainable investing decisions and solutions, such as the Environmental, Social, and Governance (ESG) stratification record. The ESG stratification record provides pool level aggregate information about the amount of loans and UPB dollars that are in Low- to Moderate-Income (LMI) areas.

In 2021, Ginnie Mae started disclosing ESG status on its Multifamily securities. Green status shows which multifamily MBS have loans backed by properties with one or more “green” features, which include everything from energy efficient windows to water-saving devices. The Federal Housing Administration (FHA) designates which properties contain green features. (https://www.ginniemae.gov/data_and_reports/reporting/Pages/esg.aspx).

Globally, the buildout of a framework for ESG investment continues. The relevant parties continue to expand ESG-related data disclosures and provide ESG-related investment strategies. Regulatory bodies and standard-bearers continue to work toward establishing consistent standards to facilitate decisions by asset managers and offerings by investment advisors that align with regulatory and policy requirements as well as ESG investment goals. This month’s *Highlights* provides a summary of two examples of ESG-related regulation, the European Union’s Sustainable Finance Disclosure Regulation and, the SEC’s ESG Disclosure by Investment Advisors and Investment Companies.

Sustainable Finance Disclosure Regulation

In March 2021, the Sustainable Finance Disclosure Regulation (SFDR) was implemented by the European Union (EU) to assist investors with categorizing and comparing sustainable investments. SFDR requires asset managers and investment advisors to disclose sustainability characteristics or objectives of their financial products in pre-contractual, periodic, and website disclosures. Asset managers and investment advisors also categorize their products according to the level of ESG integration and sustainability objectives.

The SFDR is part of the EU's efforts to promote sustainable finance and combat climate change. As part of its Action Plan on Financing Sustainable Growth, the European Commission proposed the regulation in May 2018 in order to redirect capital flows towards sustainable investments and embed sustainability considerations into financial markets¹. On November 9, 2019, the proposal was officially published in the Official Journal of the European Union after being approved by the European Parliament and Council of the European Union². In the financial sector, the SFDR is designed to promote transparency and comparability of sustainability-related information by building on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) from June 2017³.

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0097>

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088>

³ <https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf>

Among the key requirements of the SFDR are disclosure of ESG integration, pre-contractual and periodic disclosure, website disclosure, product classification, disclosure of adverse sustainability impacts, and reporting on carbon emissions. Additionally, the SFDR requires financial market participants to provide details on how they measure the ESG impact of their investments and what sources of data they use.

Under SFDR, asset managers and financial advisors categorize their financial products into one of three categories: Article 6, Article 8, or Article 9 products, depending on their ESG integration and sustainability objectives.

- Article 6 products are financial products where ESG considerations are not a primary factor in investment making decisions.
- Article 8 financial products offer environmental or social benefits but do not have a specific sustainable investment objective. For Article 8 products, ESG factors are incorporated into investment decision-making and are disclosed.
- Article 9 financial products have a specific environmental or social objective and are designed to promote sustainable investment. Article 9 products demonstrate a clear and measurable impact on environmental or social characteristics and have a sustainable investment objective aligned with the EU's environmental objectives. How sustainable investment objectives are achieved is disclosed, in addition to how the impact of investments is measured and reported.

SEC's Proposed ESG Disclosures for Investment Advisers and Investment Companies

In the United States, the proposed SEC rule and disclosure amendments apply disclosure requirements on registered investment advisors as well as Registered Funds, including disclosures required in a Registered Fund's prospectus.

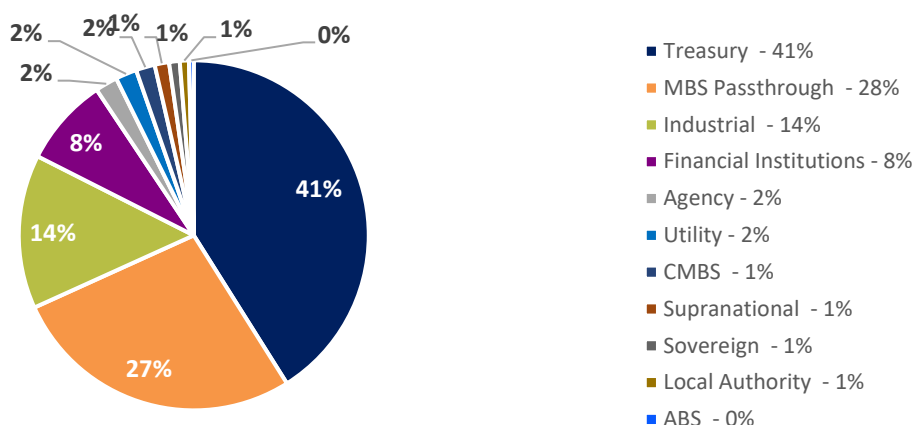
For Registered Funds, disclosure is based upon how important an ESG-related strategy is to the Fund's strategy. Funds may be classified as an Integration Fund, where ESG-related factors are of no more importance than other factors influencing investment decisions, or ESG-Focused Funds, where ESG factors are at minimum a significant concern. If a Registered Fund has a specific ESG-related goal, it is designated as an Impact Fund, which is an ESG-Focused Fund subset.

* <https://www.whitecase.com/insight-alert/sec-proposes-amendments-rules-regulate-esg-disclosures-investment-advisers-investment>

1 US AGGREGATE AND GLOBAL INDICES

1.1 Bloomberg US Aggregate and Global Indices

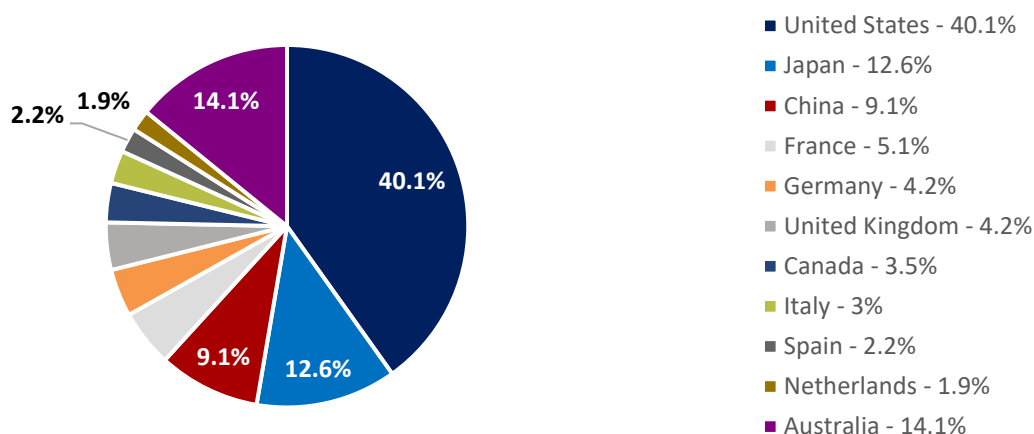
Figure 1. Bloomberg US Aggregate Index



At month-end March, 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 2. 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 40% of the total Bloomberg Global Aggregate Index down slightly from the prior month. Japan's share of fixed income is the second highest at 13%, up slightly from the prior month. 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 March 2023. Figures in charts may not add to 100% due to rounding.

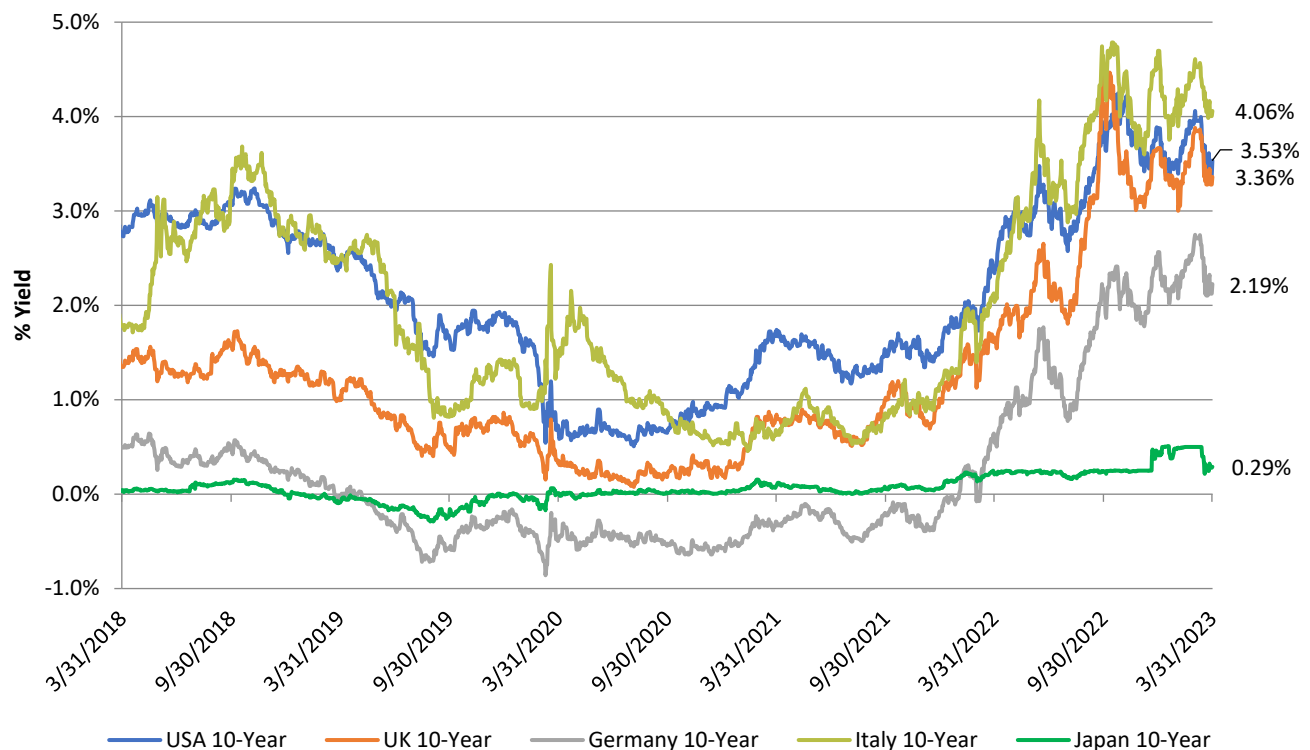
2 SOVEREIGN DEBT PRODUCT PERFORMANCE COMPARISONS

2.1 Global 10-Year Treasury Yields (Unhedged)

The US 10-year Treasury yield moved to 3.53% at month-end March 2023, a MoM decrease of 39 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 decreased to 3.36% at month-end March, a MoM decrease of 46 bps.
- The yield on the German 10-year decreased to 2.19% at month-end March, a MoM decrease of 42 bps.
- The yield on the Italian 10-year decreased to 4.06% at month-end March, a MoM decrease of 41 bps.
- The yield on the Japanese 10-year notes decreased to 0.29% at month-end March, a MoM decrease of 21 bps.

Figure 3. Global 10-Year Treasury Yields



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

2.2 US Treasury Hedged Yields

The hedged yield for the 10-year Treasury JPY increased MoM 8 bps to 2.21% at month-end March.

The hedged yield for the 10-year Treasury EUR increased MoM 5 bps to 1.28% at month-end March

Figure 4. 7–10yr Total Return Hedged Index, JPY

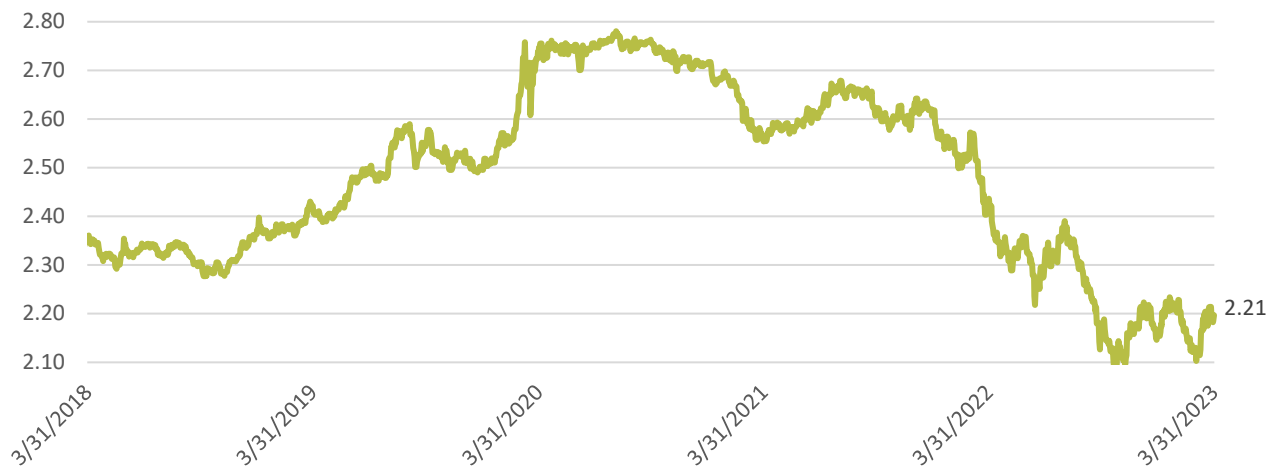


Figure 5. 7–10yr Total Return Hedged, EUR



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

SECONDARY MORTGAGE MARKET

3 FIXED INCOME PRODUCT PERFORMANCE COMPARISONS

3.1 Ginnie Mae Yields – USD

Ginnie Mae II yields were 4.72% in January, increased 65 bps to 5.37% by month-end February, then dropped 42 bps to 4.95% by month-end March. Ginnie Mae I yields were 4.75% in January, increased 52 bps to 5.27% by month-end February, then dropped 33 bps to 4.94% by month-end March. The yields on the Ginnie Mae I were 141 bps higher than the US 10-year Treasury yield at month-end March 2023, an increase of 6 bps MoM. Ginnie Mae II spreads over the US 10-year Treasury yield increased 42 bps YoY to 142 bps over the US 10-year Treasury yield by month-end March 2023.

Figure 6. Ginnie Mae II SF Yield, USD



Figure 7. Ginnie Mae I SF Yield, USD



Sources Bloomberg. Note: Data as of March 2023.

3.2 Ginnie Mae Hedged Yields

The yield for the Ginnie Mae II, hedged in the Japanese Yen stood at 4.04% at month-end March, a 46 bps increase MoM. The yield for the Ginnie Mae II, hedged in the Euro, stood at 3.11% at month-end March, a 43 bps increase MoM.

The yield for the Ginnie Mae I, hedged in the Japanese Yen, stood at 3.96% at month-end March, a 48 bps increase MoM. The yield for the Ginnie Mae I, hedged in the Euro, stood at 3.03% at month-end March, a 45 bps increase MoM.

Figure 8. Ginnie Mae I and II Hedged, JPY

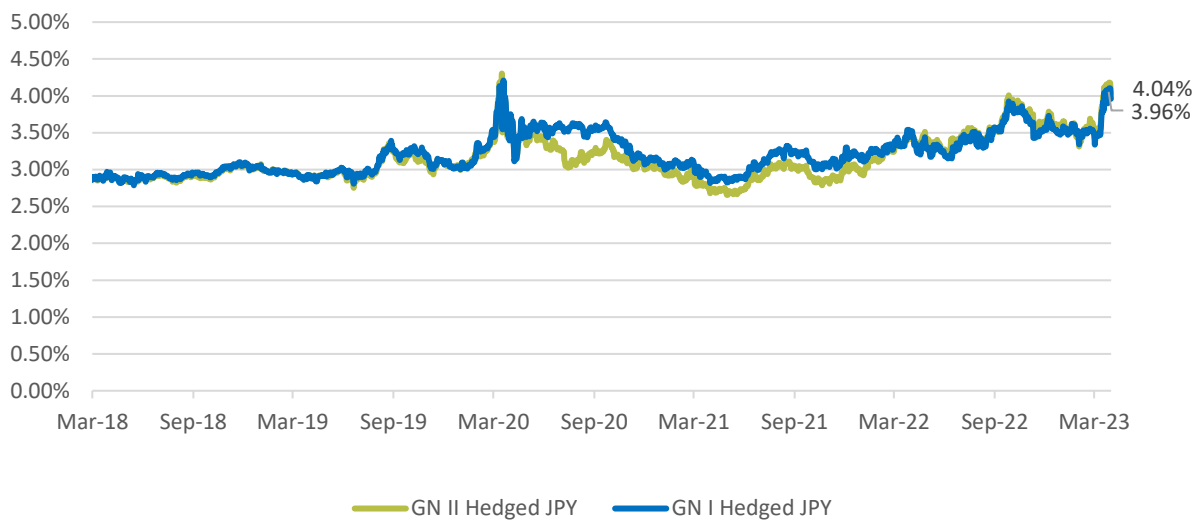
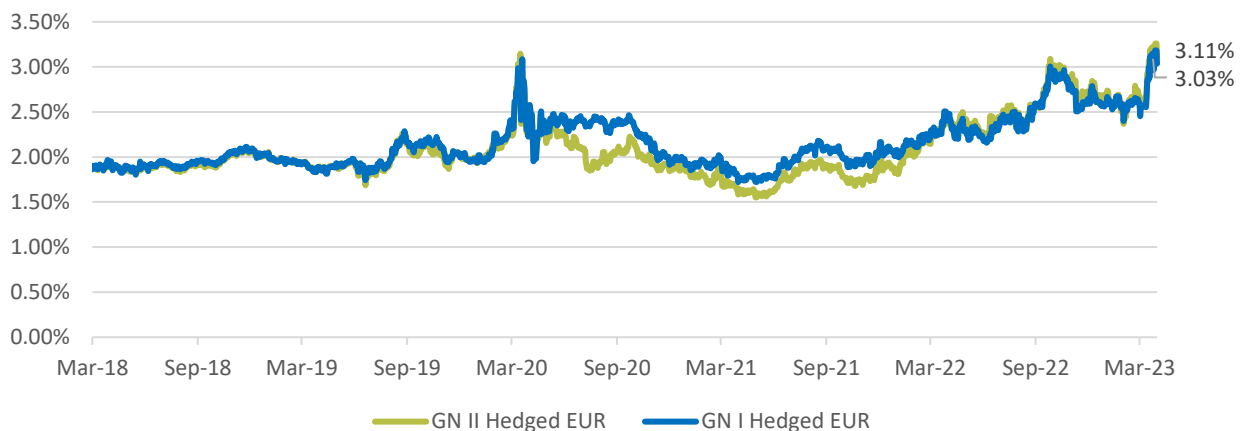


Figure 9. Ginnie Mae I and II Hedged, EUR



Source: Bloomberg. Note: Data as of March 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 0.58% at month-end March. The GNMA II 30-year OAS increased 3 bps MoM as of month-end March. The US Intermediate credit OAS also increased 4 bps MoM as of month-end March.

Figure 10. US GNMA II 30yr MBS OAS versus US Intermediate Credit OAS

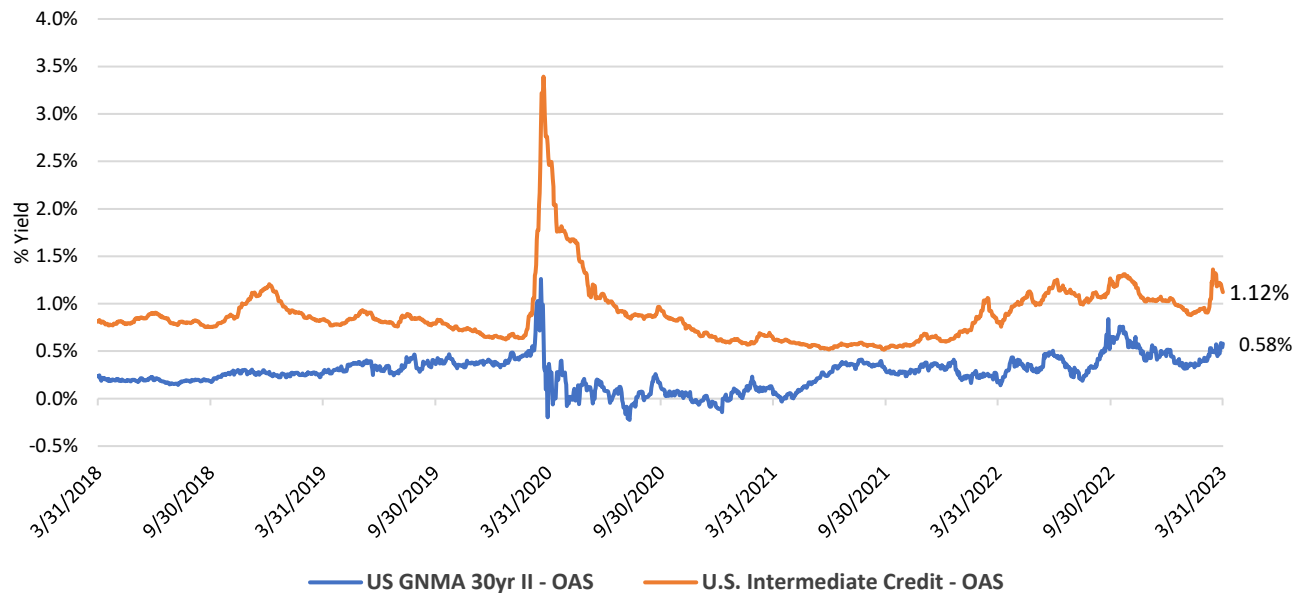


Figure 11. Spread between US Intermediate Credit and US GNMA II 30yr MBS OAS

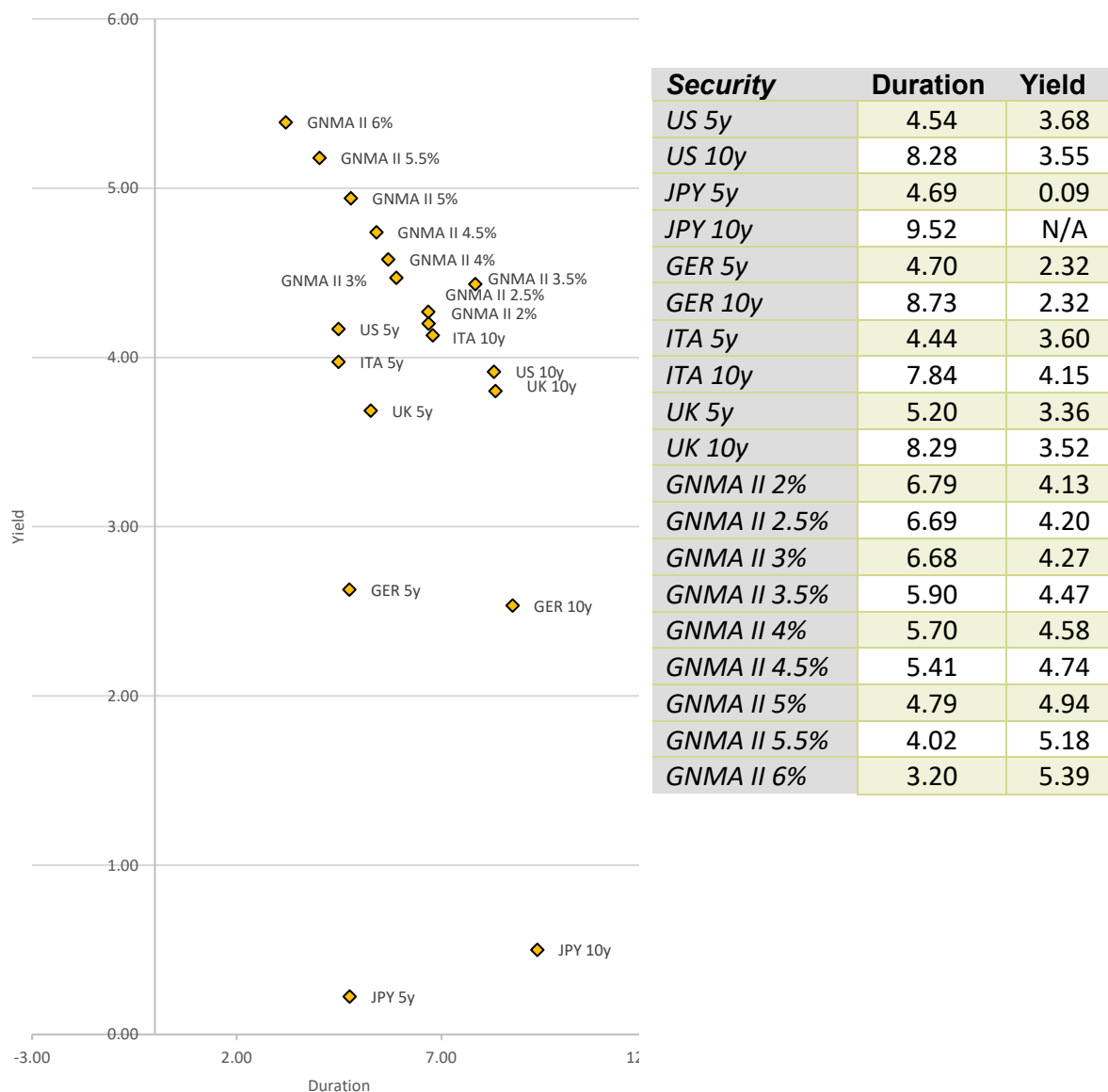


Source: Bloomberg. Note: Data as of March 2023.

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 12. Yield vs. Duration



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 March 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 March by 33.1% MoM, while Fannie Mae and Freddie Mac CPRs increased 33.8% and 35.8%, respectively. ARM prepayments have increased for GSEs and Ginnie Mae since February 2023.

Figure 13. Fixed Rate Aggregate 1-Month CPR

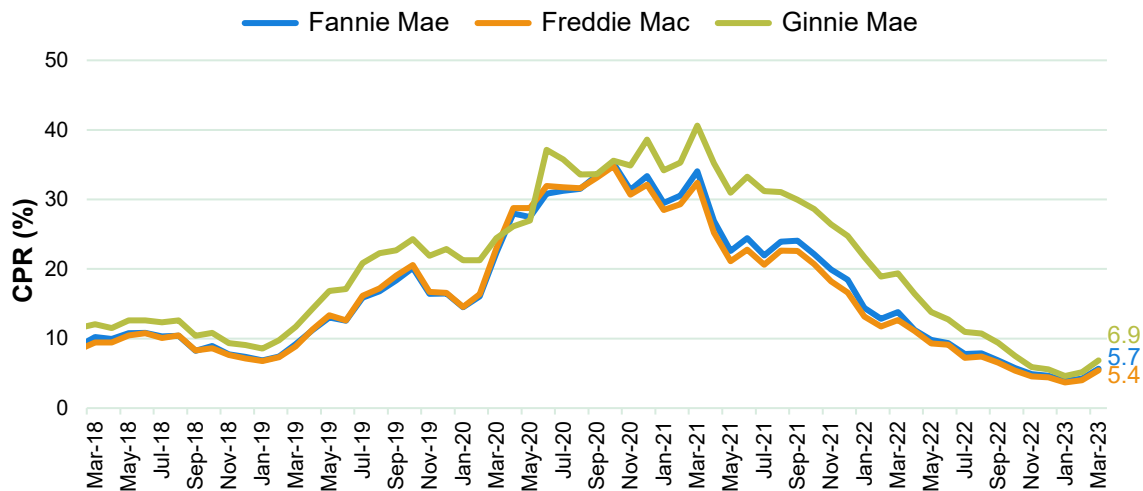
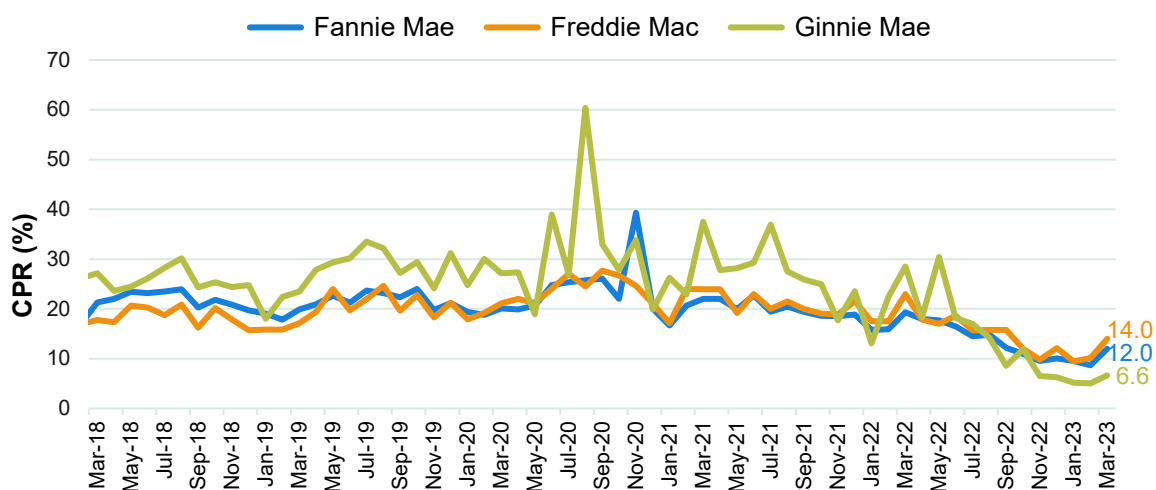


Figure 14. ARM Aggregate 1-Month CPR



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

4.2 Involuntary Prepayments (CDR)

Fixed rate involuntary prepayments (CDR) remain higher for Ginnie Mae than for the GSEs. The spread in 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 continued to remain below Ginnie Mae in March 2023 after slightly overtaking Ginnie Mae in September 2022.

Figure 15. Fixed Rate Aggregate CDR

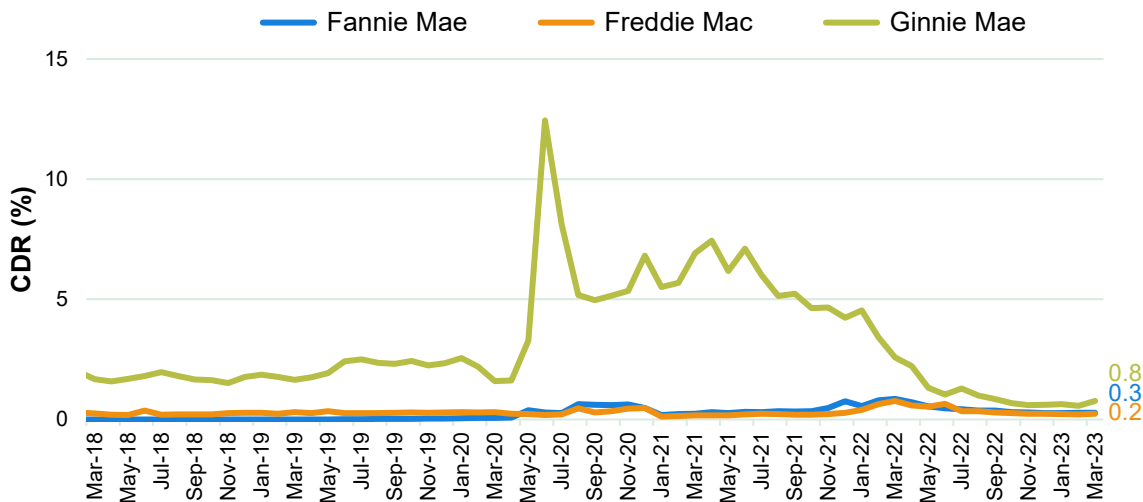
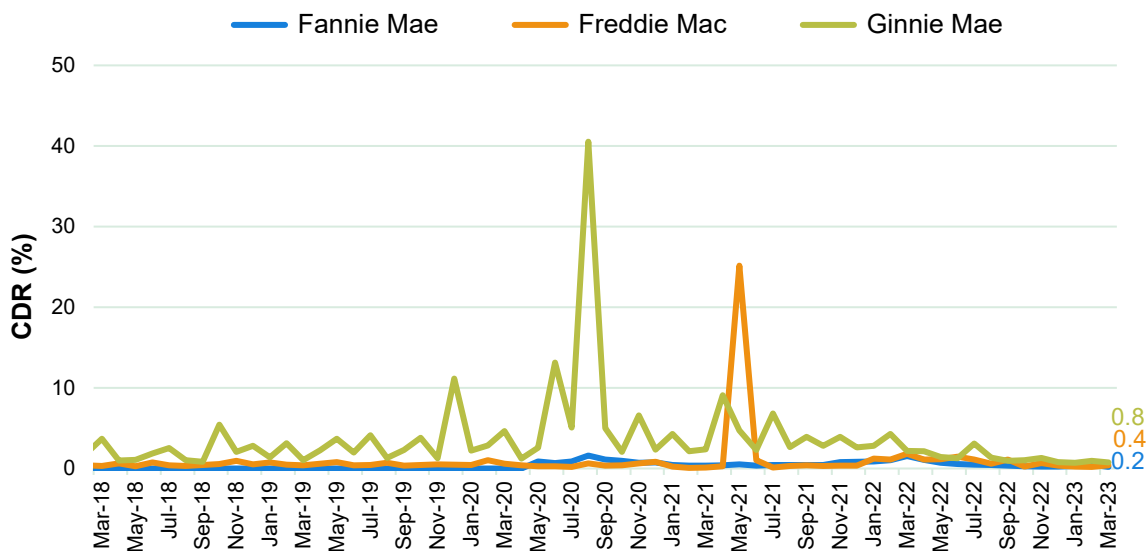


Figure 16. ARM Aggregate CDR



Source: Recursion. Note: Data as of March 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 36.0% MoM and 37.1% MoM in fixed rate aggregate CRR, respectively. Freddie Mac saw a 37.3% MoM increase and Fannie Mae saw a 43.5% MoM increase in ARM aggregate CRR. Ginnie Mae increased 33.0% MoM in fixed rate aggregate CRR and saw a 44.2% MoM increase in ARM aggregate CRR.

Figure 17. Fixed Rate Aggregate CRR

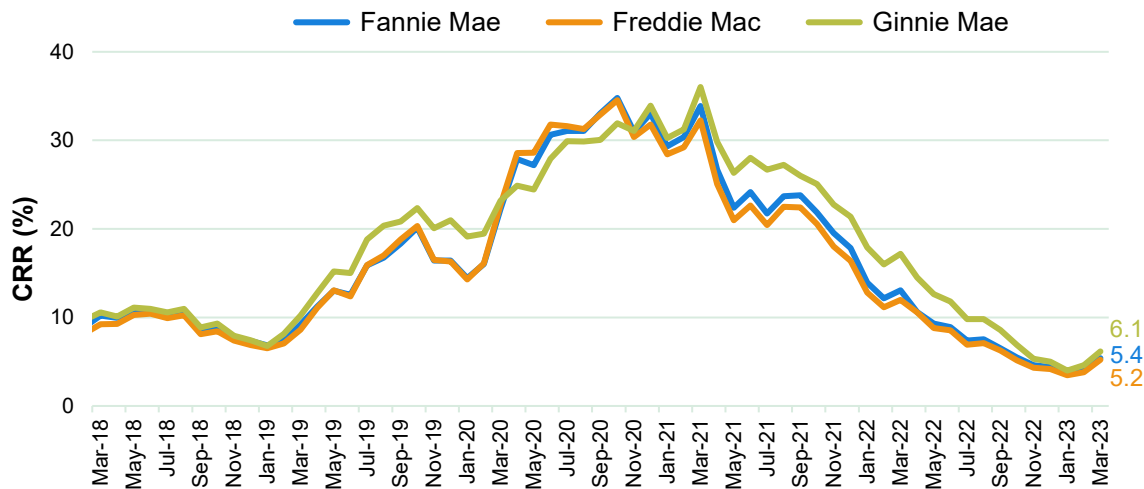
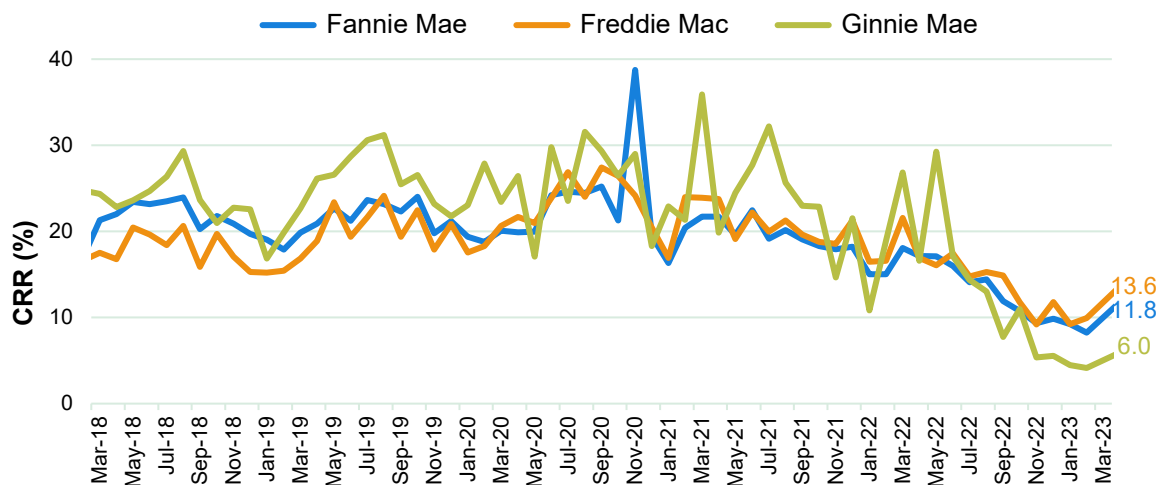


Figure 18. ARM Aggregate CRR



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

5 SINGLE-FAMILY MBS PASS-THROUGH ISSUANCE

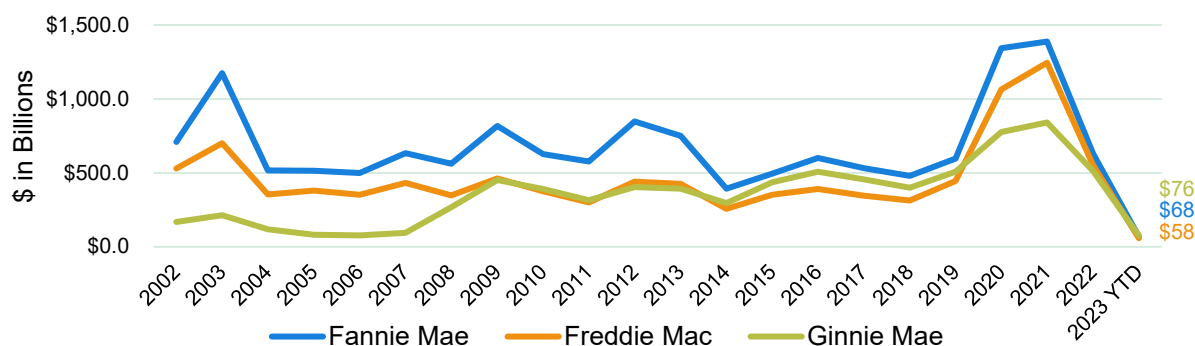
5.1 Gross Issuance of Agency MBS

Agency gross MBS issuance increased by 18% MoM. Freddie Mac, Ginnie Mae and Fannie Mae all saw increases in gross issuance as compared to February.

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	\$68.2	\$58.1	\$126.3	\$76.1	\$202.4

Figure 19. Agency Gross Issuance



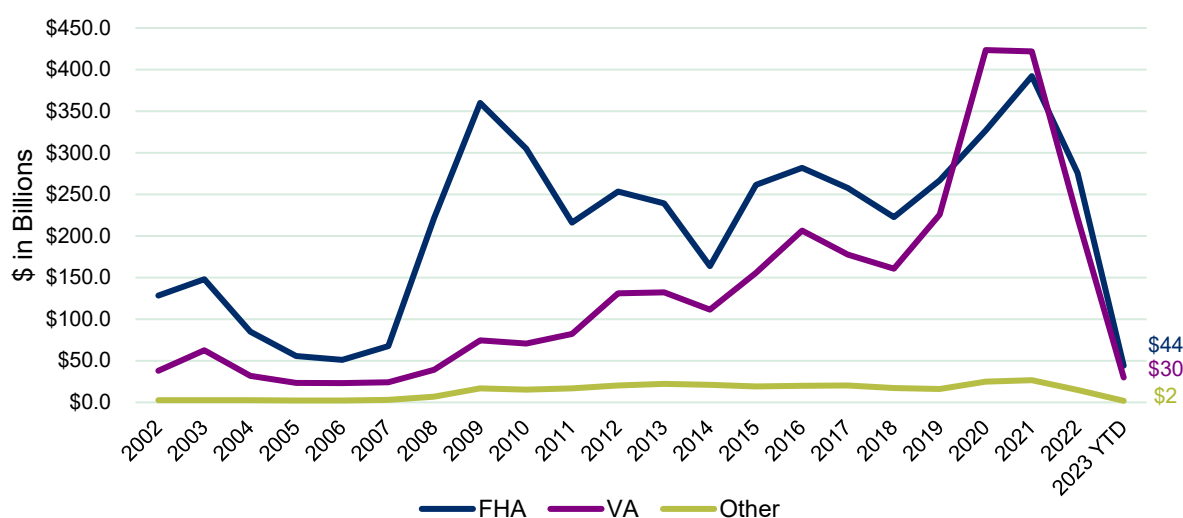
Note: Numbers are rounded to the nearest hundred million. For sums, like "GSE Total", the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

Ginnie Mae's \$26.2 billion in gross issuance in March was approximately 39% below the average monthly issuance for 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	\$44.1	\$30.1	\$1.9	\$76.1

Figure 20. 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.

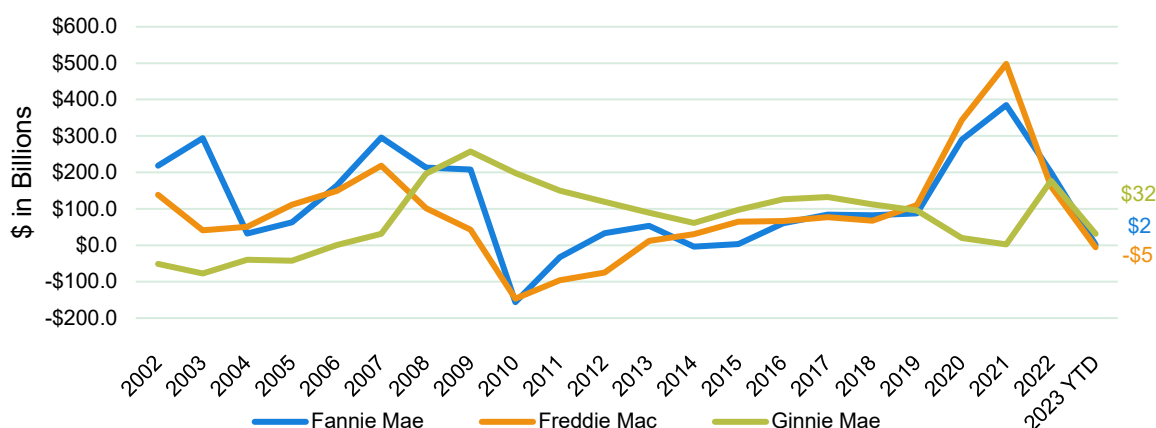
5.2 Net Issuance of Agency MBS

Agency net issuance in March was approximately \$1.9 billion, which represents a 32.1% MoM decrease in net issuance. Ginnie Mae net issuance was \$8.7 billion in March, a 1.2% increase from February 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	\$1.5	-\$5.4	-\$3.9	\$31.5	\$27.6

Figure 21. Agency Net Issuance

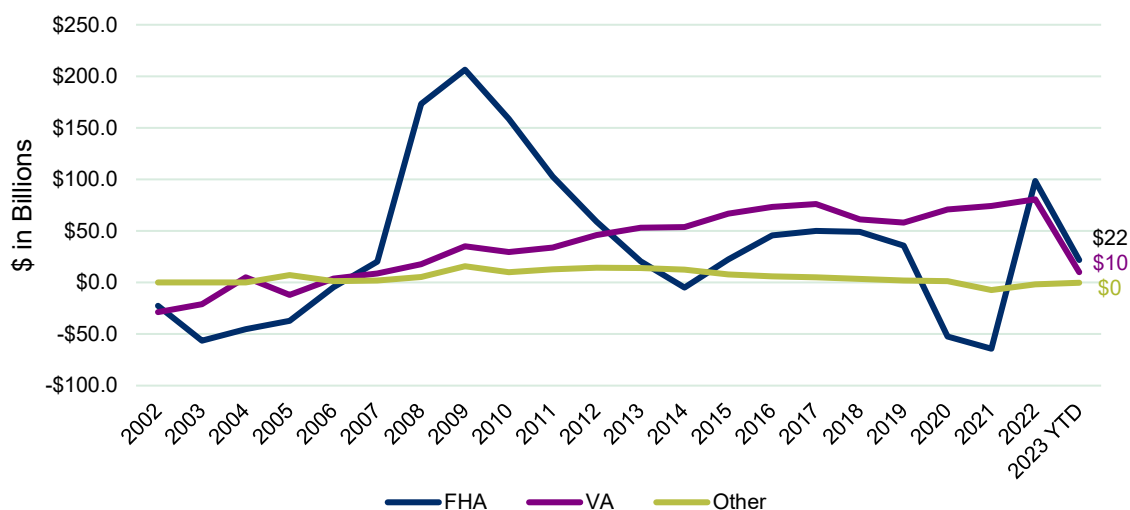


Note: Numbers are rounded to the nearest hundred million. For sums, like "GSE Total", the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

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

<i>Issuance Year</i>	<i>FHA</i>	<i>VA</i>	<i>Other</i>	<i>Total</i>
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	\$21.9	\$9.9	-\$0.3	\$31.5

Figure 22. 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)

Month	Agency Gross Issuance Amount (in \$ Billions)					Agency Net Issuance Amount (in \$ Billions)				
	Fannie Mae	Freddie Mac	Ginnie Mae	GSEs	Total	Fannie Mae	Freddie Mac	Ginnie Mae	GSEs	Total
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
Mar-23	\$23.6	\$19.2	\$26.2	\$42.8	\$69.0	-\$4.4	-\$2.4	\$8.7	-\$6.8	\$1.9

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 March 2023. Beginning with the October 2021 GMAR, the Fannie Mae and Freddie Mac net issuance data have been updated to

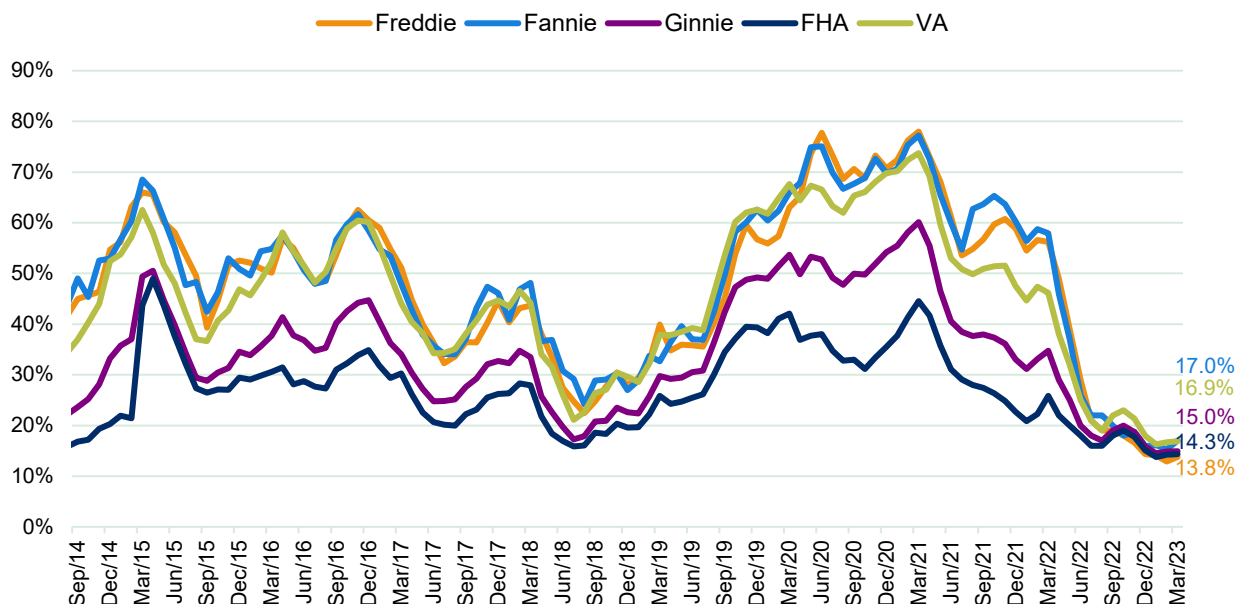
reflect the current UPB of the portfolios. July 2021 through March 2023 GMAR net issuance data reflect the UPB at security issuance for Fannie Mae and Freddie Mac. Note: Numbers are rounded to the nearest hundred million.

5.4 Percent Refi at Issuance – Single-Family

Refinance activity increased for Ginnie Mae in March 2023. Ginnie Mae's MoM increase was approximately 0.8%, with the greater increase taking place with VA lending which was up approximately 1.3% in March MoM. FHA's refinance share increased by approximately 0.5%. In the conventional conforming mortgage market space, Fannie Mae saw an increase of 11.2% MoM and Freddie Mac saw an increase of 7.1% MoM.

- Freddie Mac's refinance percentage rose to 13.8% in March, up from 12.9% in February.
- Fannie Mae's refinance percentage rose to 17.0% in March, up from 15.3% in February.
- Ginnie Mae's refinance percentage rose to 15.0% in March, up from 14.8% in February
- FHA's refinance percentage rose to 14.3% in March, unchanged from February.
- VA's refinance percentage rose to 16.9% in March, up from 16.7% in February.

Figure 23. Percent Refinance at Issuance – Single-Family



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

6 AGENCY SINGLE-FAMILY MBS OUTSTANDING

6.1 Outstanding Single-Family Agency MBS

As of March 2023, outstanding single-family MBS in the agency market totaled \$8.630 trillion: 41.4% Fannie Mae, 33.6% Freddie Mac, and 25.1% Ginnie Mae MBS. Over the past twelve months, Fannie Mae's, Freddie Mac's, and Ginnie Mae's total outstanding MBS increased by approximately 2.1%, 3.8%, and 9.0%, respectively. Fannie Mae outstanding MBS remains larger than Freddie Mac's and Ginnie Mae's by approximately \$672 billion and \$1.4 trillion, respectively.

Ginnie Mae MBS collateral composition has changed dramatically over the past five years. In March 2018, 60.5% of Ginnie Mae outstanding collateral was FHA and 33.3% was VA. In March 2023, FHA collateral comprised 53.1% of Ginnie Mae MBS outstanding and VA collateral comprised 42.0% of Ginnie Mae MBS outstanding.

Figure 24. Outstanding Agency Mortgage-Backed Securities

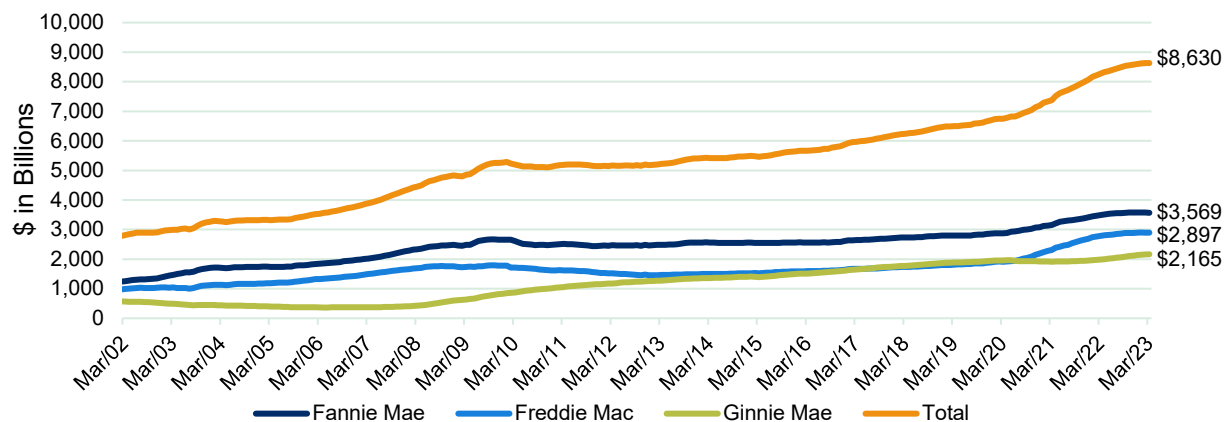
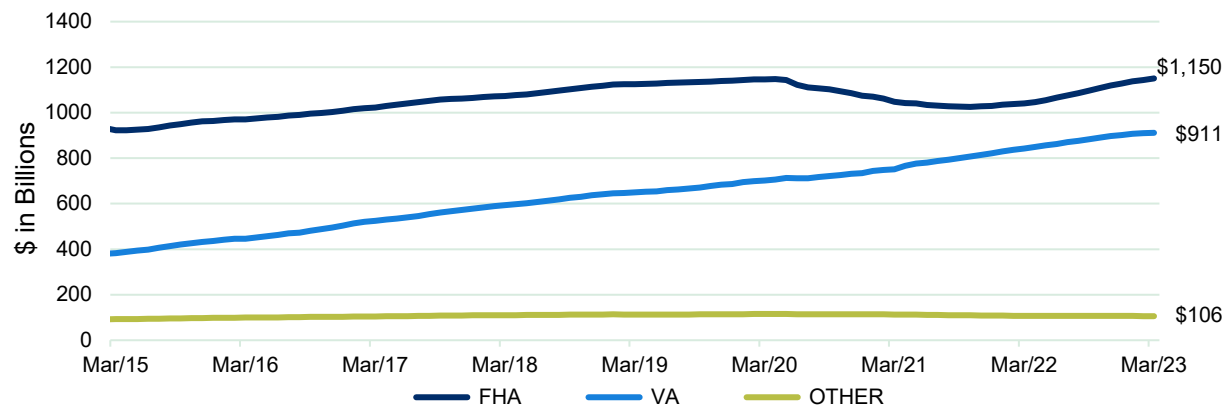


Figure 25. Composition of Outstanding Ginnie Mae Mortgage-Backed Securities



Sources: Recursion. Note: Data as of March 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 26. First Lien Origination Volume

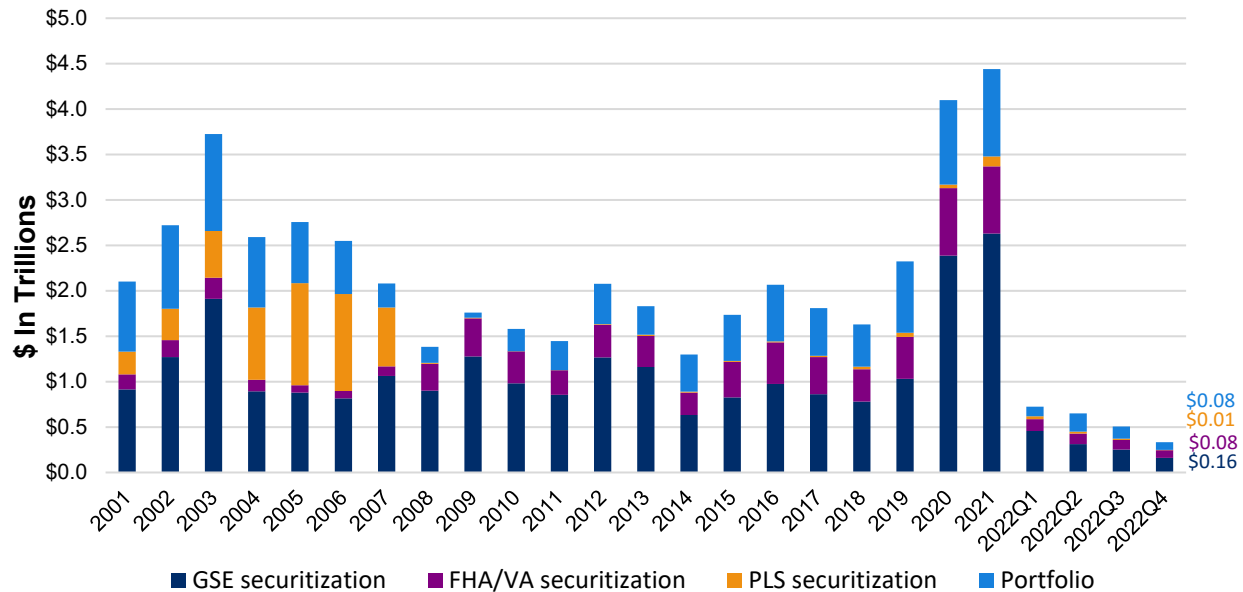
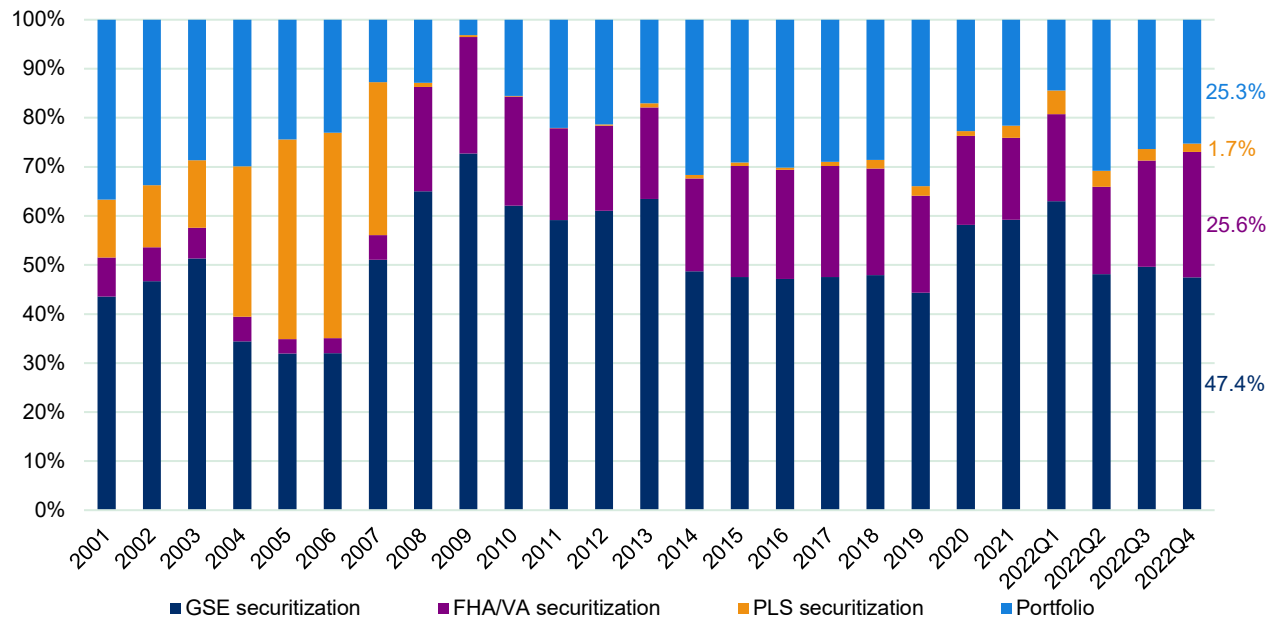


Figure 27. First Lien Origination Share



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

6.3 Agency Issuance and Agency Outstanding by State

Ginnie Mae MBS represent approximately 32% 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 (54%) and the lowest in the District of Columbia (21%). 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 6% difference between Ginnie Mae's share of new agency issuance (32%) and Ginnie Mae's share of agency outstanding (26%).

Table 6. Agency Issuance Breakdown by State

National	Agency Issuance (past 1 year)				Agency Outstanding			
	GNMA Share	GNMA Loan	GNMA Avg. Loan Size	GSE Avg. Loan Size (000)	GNMA Share by UPB	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)
	32%	1,910,282	279.90	289.13	26%	10,765,545	204.94	210.84
AK	54%	6,104	332.16	298.60	48%	37,524	261.72	221.01
AL	46%	43,763	223.06	237.86	40%	237,380	157.34	177.68
AR	42%	22,893	191.07	220.62	39%	137,129	132.63	160.89
AZ	30%	56,994	316.03	323.86	24%	274,727	219.86	226.17
CA	26%	124,427	442.59	439.38	17%	686,942	328.03	320.55
CO	30%	41,811	399.71	388.66	23%	214,166	292.45	277.73
CT	32%	17,772	263.49	276.90	25%	106,605	202.67	209.42
DC	21%	1,561	489.79	427.45	13%	8,979	382.25	349.93
DE	35%	9,016	268.16	294.14	31%	52,047	204.37	211.58
FL	35%	171,896	295.47	296.38	32%	853,678	212.68	211.79
GA	39%	101,006	255.57	288.95	34%	499,756	180.63	207.00
HI	41%	5,448	613.57	497.21	32%	33,545	469.18	358.10
IA	30%	13,400	181.15	195.65	22%	82,720	134.12	148.36
ID	28%	11,171	333.16	323.75	23%	63,763	218.63	223.07
IL	28%	63,642	209.13	241.85	22%	368,349	160.21	179.28
IN	34%	49,319	190.99	210.14	30%	279,847	134.54	151.09
KS	33%	15,618	193.14	222.48	29%	96,431	140.27	163.91
KY	40%	29,725	197.36	214.28	34%	165,426	143.92	155.99
LA	47%	36,487	205.15	236.56	40%	201,636	157.97	177.56
MA	26%	19,658	374.59	368.21	16%	114,099	285.22	268.73
MD	41%	50,461	337.82	327.66	34%	293,189	265.59	249.69
ME	32%	6,426	244.55	267.74	26%	38,020	178.19	191.84
MI	25%	47,059	185.74	213.43	20%	276,312	134.14	156.92
MN	22%	23,497	246.99	275.04	18%	159,935	182.50	198.58
MO	34%	41,438	197.83	219.30	29%	244,884	142.43	162.15
MS	53%	21,770	201.15	217.53	48%	122,757	143.87	161.30
MT	27%	4,950	307.29	312.17	23%	32,302	209.43	216.46
NC	33%	78,260	250.97	285.14	29%	415,042	176.39	202.36
ND	33%	2,867	242.11	240.17	24%	17,072	193.27	184.33
NE	31%	9,787	218.09	222.47	26%	64,962	149.60	161.11
NH	27%	6,119	310.87	304.69	22%	38,362	226.91	215.18
NJ	29%	41,986	317.63	334.30	21%	232,760	241.04	254.60
NM	41%	15,618	241.29	251.60	38%	95,294	167.26	178.51
NV	35%	26,142	342.46	332.17	30%	133,320	248.54	235.74
NY	24%	44,962	300.41	340.77	20%	308,046	209.73	248.57
OH	33%	69,338	183.67	201.14	29%	424,484	130.68	149.29
OK	42%	30,560	202.19	223.25	42%	189,160	141.49	162.63
OR	24%	18,980	350.38	360.11	19%	110,643	254.43	253.63
PA	28%	57,572	201.36	245.67	26%	389,387	149.21	182.14
RI	39%	6,406	322.89	297.81	30%	35,789	235.11	213.23
SC	39%	48,589	252.19	261.15	34%	235,985	183.91	192.33
SD	34%	4,776	242.77	244.24	29%	29,349	173.55	177.79
TN	34%	50,823	257.66	280.69	31%	269,959	176.19	204.65
TX	32%	189,321	265.74	300.44	31%	1,096,718	183.11	212.92
UT	23%	17,865	374.40	383.25	18%	95,553	260.87	264.20
VA	44%	76,677	330.62	320.45	36%	447,226	257.25	250.28
VI	22%	121	347.15	412.94	23%	796	248.46	302.04
VT	23%	1,858	236.76	262.90	19%	12,180	181.51	180.92
WA	28%	39,344	395.88	401.96	21%	232,362	285.33	289.58
WI	24%	20,233	210.55	227.18	17%	124,071	157.01	163.39
WV	49%	10,439	194.31	196.32	44%	59,890	144.51	145.55
WY	39%	4,327	265.73	267.95	35%	24,987	206.46	201.84

Source: Recursion. Note: Outstanding balance is based on loan balance as of March 2023. Ginnie Mae issuance is based on the last 12 months, from February 2022 to March 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 March 2023, the weighted average coupon (WAC) on outstanding Ginnie Mae MBS increased slightly from 3.16% in February 2023 to 3.18%. **Figure 35** illustrates that loans originated since 2019 account for 75% of Ginnie Mae MBS collateral outstanding.

Figure 28. Outstanding Ginnie Mae MBS Balance, by Coupon

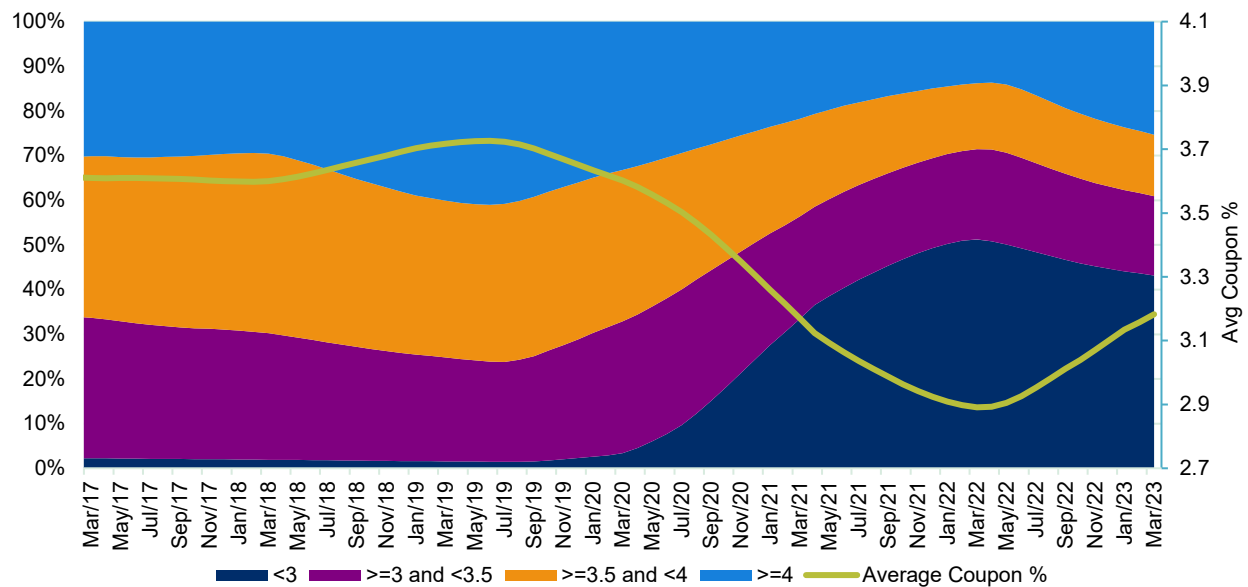
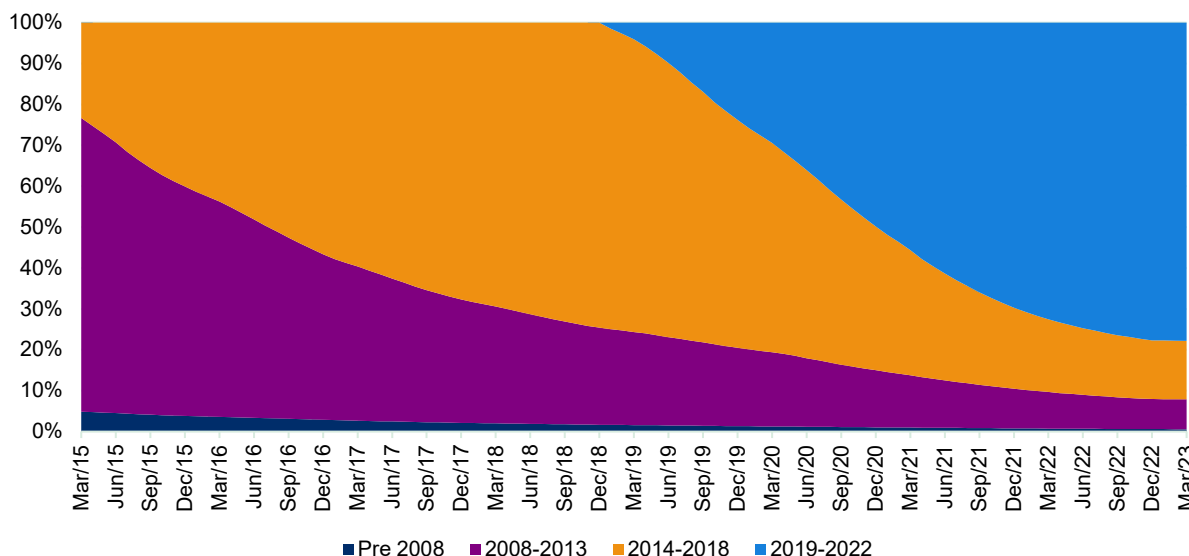


Figure 29. Outstanding Ginnie Mae MBS Balance, by Vintage



Sources: Recursion. Note: March 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 March 2023, \$7.5 billion of Ginnie Mae MBS were securitized into Real Estate Mortgage Investment Conduits (REMICs) as underlying collateral. This represents a roughly 27.9% decrease YoY from \$10.4 billion in March 2022, and a 36.3% MoM decrease from \$11.7 billion in February 2023. Of that, approximately \$195.9 million were multifamily MBS having coupons over 4.01%. \$6.2 billion were single-family MBS having coupons over 5.01%.

Figure 30. Ginnie Mae Single-Family and Multifamily MBS Securitized into REMICs

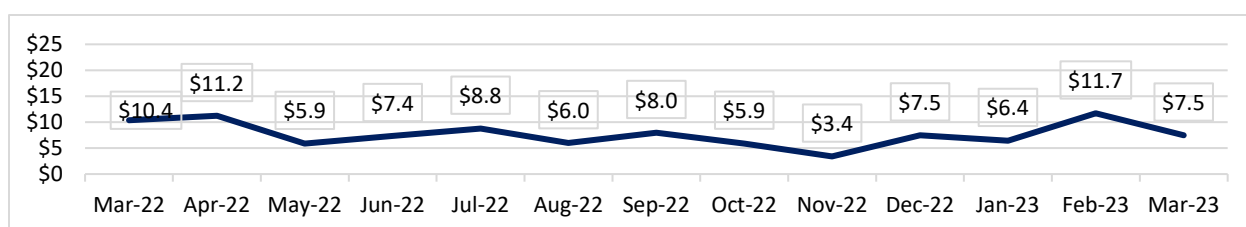


Table 7. February 2023 REMIC Collateral Coupon Distribution

Net Coupon (%)	Approx. Ginnie Mae MBS amount securitized into REMIC Deals (\$MM) ⁴	% Breakdown of REMIC Collateral by coupon ¹⁷
Multifamily		
3.51-4.00	304.8	60.9%
4.01-4.50	120.2	24.0%
5.01-5.50	75.7	15.1%
Subtotal	500.7	100.0%
Single-Family		
2.51-3.00	17.1	0.2%
3.01-3.50	86.5	1.2%
4.01-4.50	267.4	3.8%
4.51-5.00	363.4	5.2%
5.01-5.50	432.2	6.2%
5.51-6.00	3,549.2	51.0%
6.01-6.50	2,097.2	30.1%
6.51-7.00	149.8	2.2%
Subtotal	6,962.9	100.0%
Grand Total	7,463.5	100.0%

Source: Ginnie Mae Disclosure Files

⁴Totals may not sum due to rounding.

7.2 REMIC Market Snapshot

In March 2023, Ginnie Mae's Single-Family REMIC collateral WAC increased MoM by 8 basis points which is the smallest monthly increase since April 2022.

- In March 2023, Ginnie Mae REMIC Issuance volume was \$8.76 billion, the fourth consecutive month where REMIC issuance volume was more than \$8.5 billion. A streak of this length hasn't happened since the first quarter of 2022.
- In March 2023, Freddie Mac's Multifamily REMIC collateral WAC decreased by 125 basis points, offering only two deals in March compared with four in February. As a result, the rate has been brought within 10 basis points of Ginnie Mae's Multifamily REMIC collateral WAC.
- In March 2023, Ginnie Mae, Fannie Mae, and Freddie Mac all had total REMIC issuance volume above \$2.0 billion; this is the first month of this occurrence since October 2022.

Figure 31. REMIC Issuance by Agency

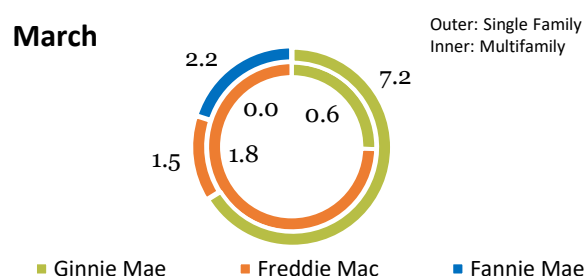


Table 8. Monthly REMIC Issuance by Agency

	SF REMIC Issuance Volume (\$B)	% of SF REMIC Issuance Volume	Number of SF REMIC Transactions	MF REMIC Issuance Volume (\$B)	% of MF REMIC Issuance Volume	Number of MF REMIC Transactions
Ginnie Mae	7.2	66.1	10	0.6	25.4	5
Freddie Mac	1.5	13.9	7	1.8	74.6	2
Fannie Mae	2.2	20.0	7	0.0	0.0	0
Total⁵	10.8	100.0	24	2.5	100.0	7

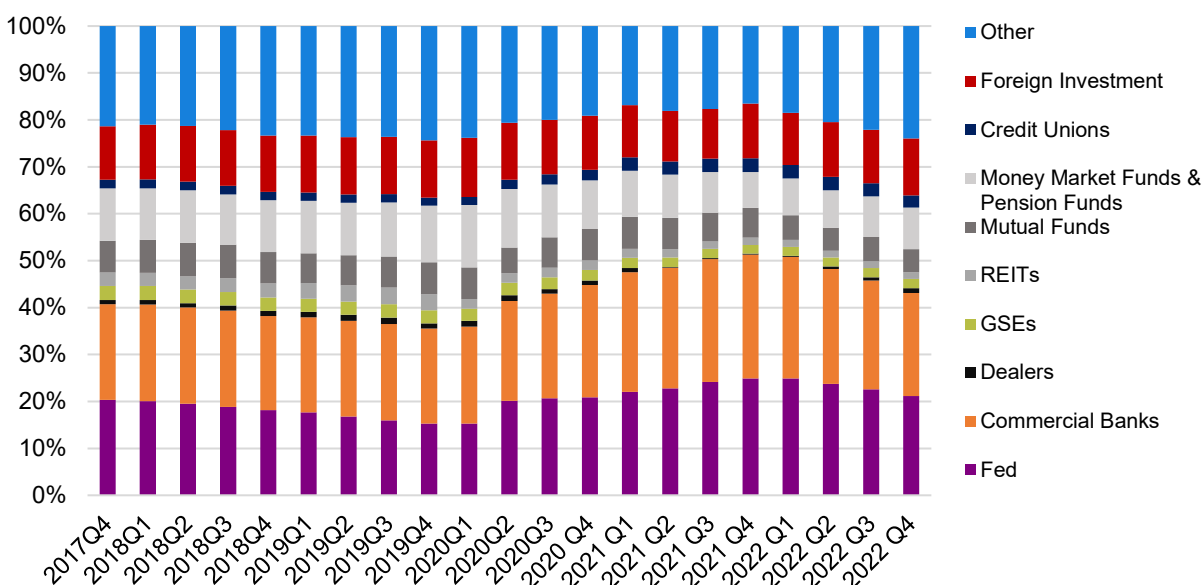
Source: Ginnie Mae Disclosure Files

⁵ 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 32. 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			
	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	8-Mar	15-Mar	22-Mar	29-Mar
Largest 25 Domestic Banks	2,117.0	2,115.5	2,096.8	2,067.6	2,052.0	2,056.5	2,054.5	1,961.4	1,955.6	1,960.8	1,948.3	1,937.6
Small Domestic Banks	731.8	738.3	712.4	692.2	690.9	677.3	663.5	764.0	749.0	735.6	714.7	619.2
Foreign Related Banks	38.0	35.1	37.4	35.9	39.3	36.6	30.0	27.0	27.2	30.5	28.5	27.8
Total, Seasonally Adjusted	2,886.8	2,888.9	2,846.6	2,795.7	2,782.2	2,770.4	2,748.0	2,752.4	2,731.8	2,726.9	2,691.5	2,584.6

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

Year	All Banks & Thrifts (\$ in billions)						All MBS (\$ in billions)	
	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)

	<i>Institution</i>	<i>Total</i>	<i>GSE PT</i>	<i>GNMA PT</i>	<i>Agency CMO</i>	<i>Non-Agency</i>	<i>Share</i>
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 32. Foreign Share of Agency MBS Market

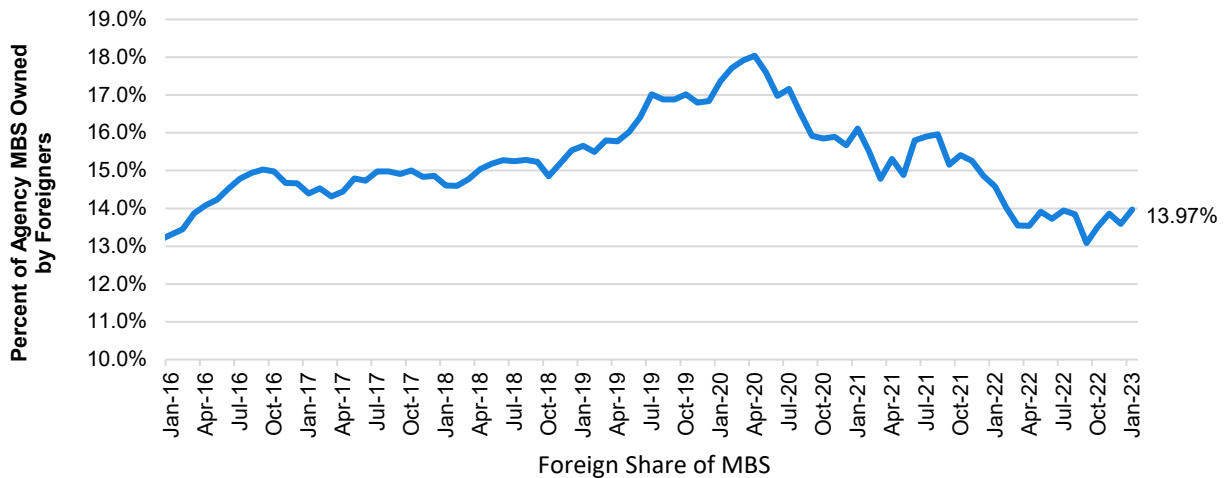
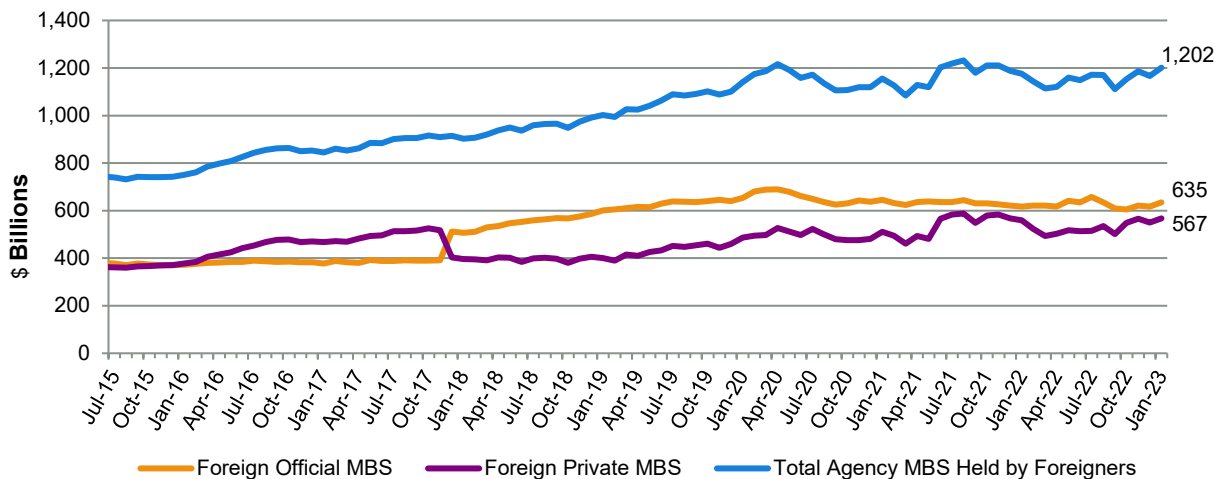


Figure 33. Monthly Foreign MBS Holdings



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 March 2023 was \$251 billion, which is up from a monthly average of \$241 billion for calendar year 2022. In March 2023, agency MBS average daily trading volume stayed consistent MoM. See footnote below for update on “Average Daily Turnover by Sector” data.

Figure 34. Average Daily Trading Volume by Sector

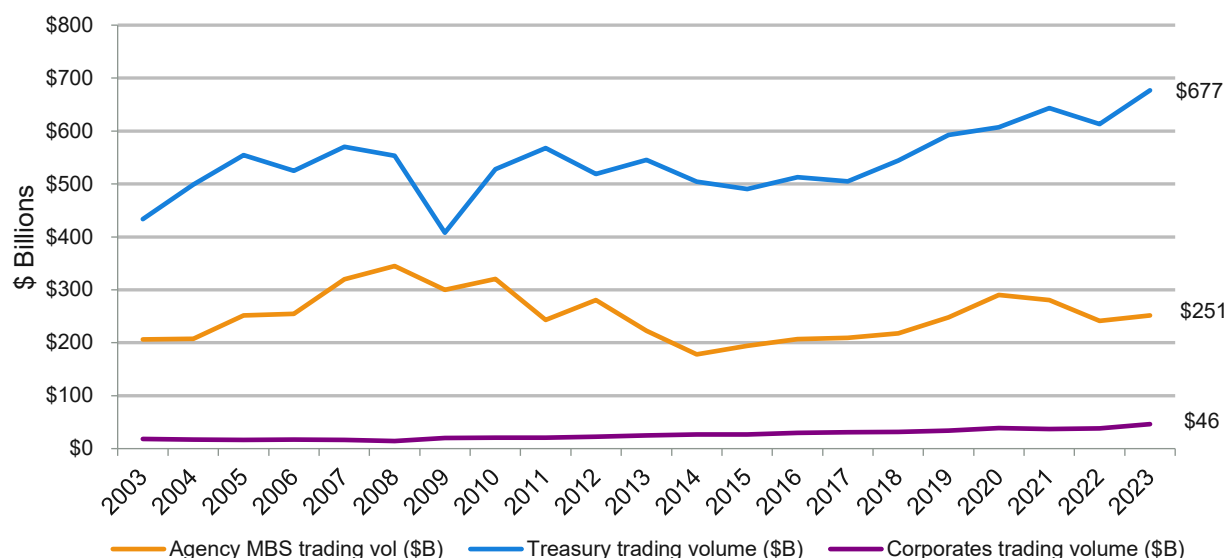
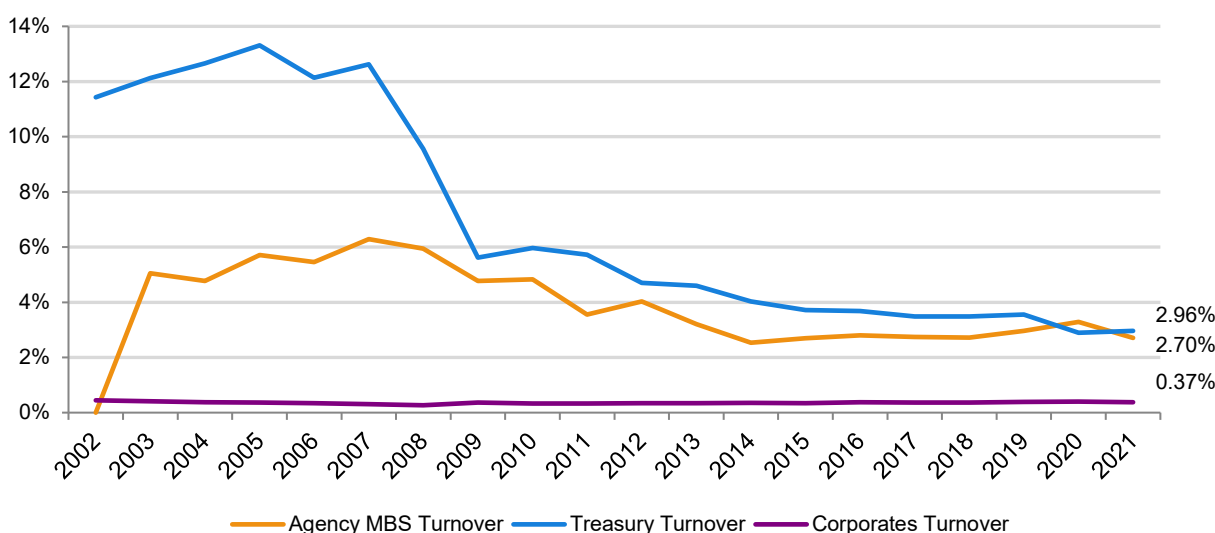


Figure 35. Average Daily Turnover by Sector



Source: SIFMA. Note: Data as of March 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 FICO's, DTIs, and LTVs between the agencies and between FHA, VA, and other Ginnie Mae loan sources as of the end of March 2023. The distribution statistics capture some key differences in the populations served by the agencies.

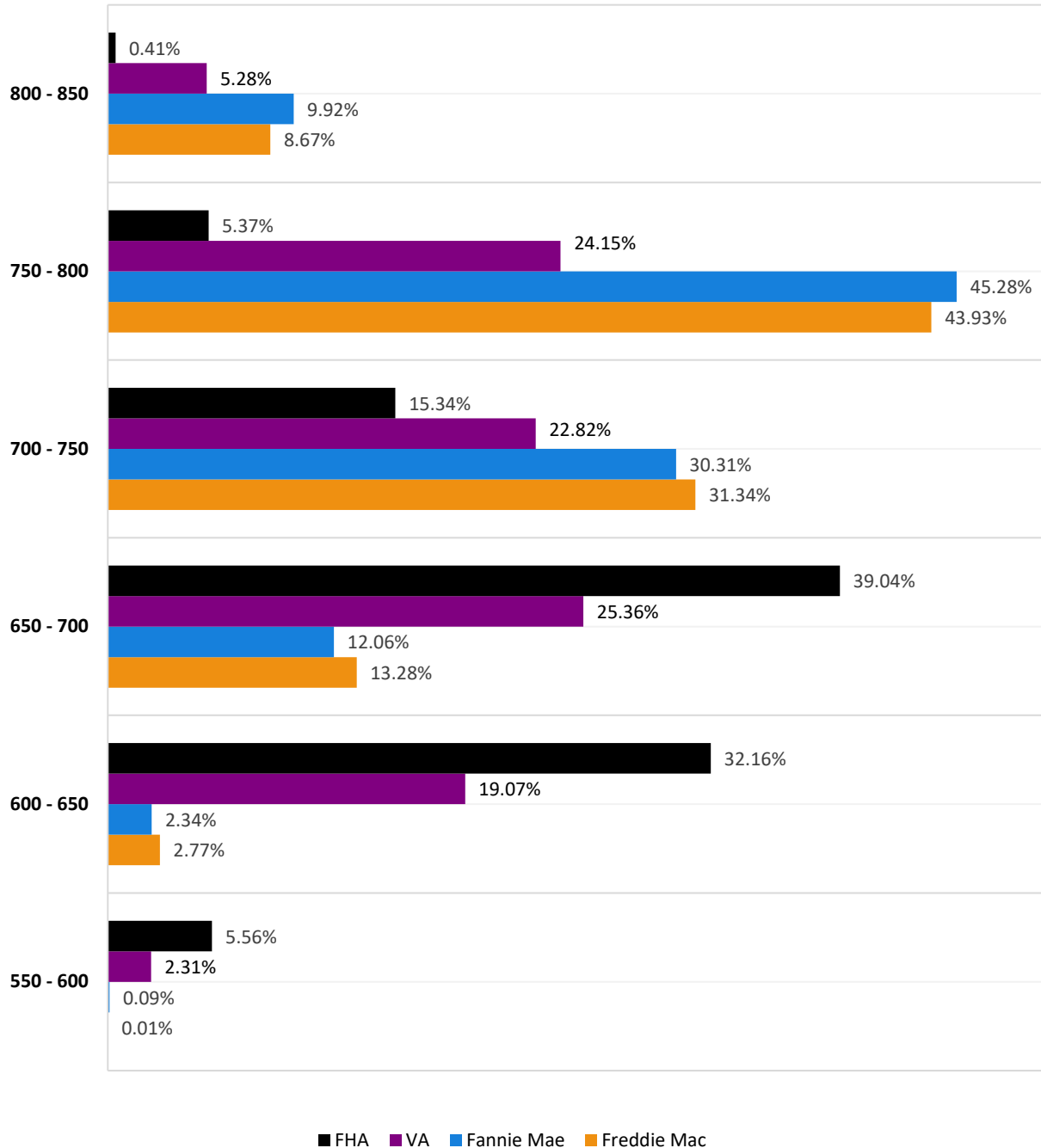
10.1 Credit Scores

Table 14. Share of Loans by FICO Score

Purchase FICO							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	168,194	649	690	740	777	797	731
Fannie	58,548	696	727	760	786	801	754
Freddie	49,216	696	726	759	785	800	752
Ginnie	60,430	625	649	683	732	775	691
Refi FICO							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	42,249	627	660	706	755	787	706
Fannie	16,696	666	701	742	775	797	736
Freddie	10,620	653	684	723	763	789	722
Ginnie	14,933	599	627	657	692	732	660
All FICO							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	210,443	644	683	734	774	796	726
Fannie	75,244	688	722	757	784	800	750
Freddie	59,836	686	718	754	782	799	747
Ginnie	75,363	621	645	677	724	770	685
Purchase FICO: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	60,430	625	649	683	732	775	691
FHA	35,979	621	643	669	702	740	675
VA	21,718	634	668	722	770	795	718
Other	2,733	633	657	696	734	763	697
Refi FICO: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	14,933	599	627	657	692	732	660
FHA	9,406	593	623	649	678	708	650
VA	5,516	608	639	675	719	757	678
Other	11	643	675	691	750	786	708
All FICO: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	75,363	621	645	677	724	770	685
FHA	45,385	615	639	665	697	735	670
VA	27,234	629	660	710	763	792	710
Other	2,744	633	657	696	734	764	697

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

Figure 36. FICO Distributions by Agency



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

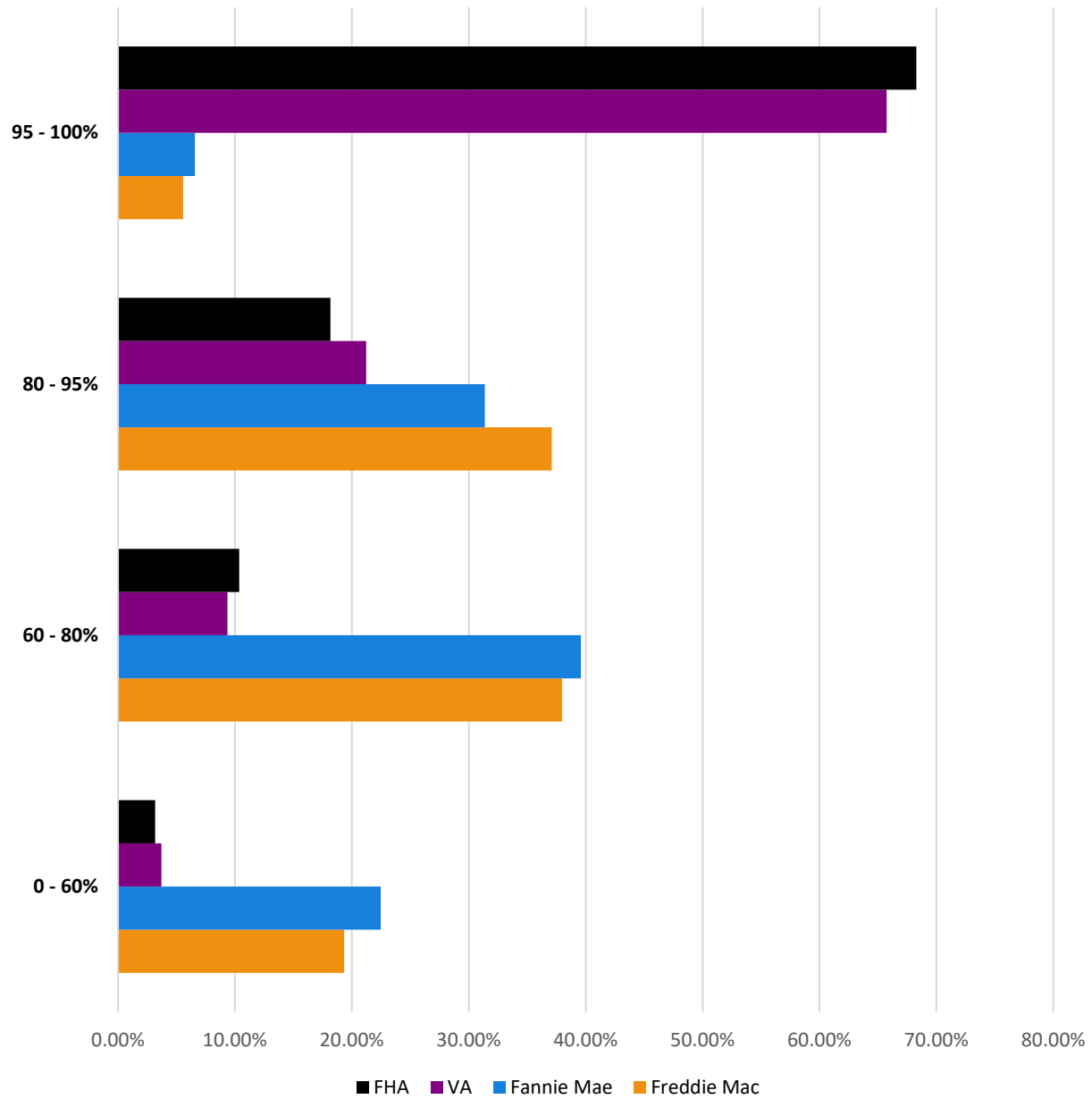
10.2 Loan-to-Value (LTV)

Table 15. Share of Loans by LTV

<i>Purchase LTV</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	168,393	66	80	95	98	100	86
<i>Fannie</i>	58,596	57	75	80	95	95	80
<i>Freddie</i>	49,230	57	75	84	95	95	81
<i>Ginnie</i>	60,567	91	98	98	100	100	97
<i>Refi LTV</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	42,132	35	51	68	80	85	64
<i>Fannie</i>	16,696	29	43	59	70	79	56
<i>Freddie</i>	10,620	32	46	60	74	80	59
<i>Ginnie</i>	14,816	57	70	80	84	92	77
<i>All LTV</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	210,525	53	75	89	97	98	82
<i>Fannie</i>	75,292	45	65	80	90	95	75
<i>Freddie</i>	59,850	48	69	80	95	95	77
<i>Ginnie</i>	75,383	77	90	98	100	100	93
<i>Purchase LTV: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	60,567	91	98	98	100	100	97
<i>FHA</i>	36,077	92	98	98	98	98	96
<i>VA</i>	21,744	88	100	100	100	102	97
<i>Other</i>	2,746	92	98	101	101	101	98
<i>Refi LTV: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	14,816	57	70	80	84	92	77
<i>FHA</i>	9,461	54	68	78	81	81	73
<i>VA</i>	5,344	63	77	89	91	100	84
<i>Other</i>	11	53	78	86	95	102	80
<i>All LTV: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	75,383	77	90	98	100	100	93
<i>FHA</i>	45,538	75	86	98	98	98	91
<i>VA</i>	27,088	79	91	100	100	102	94
<i>Other</i>	2,757	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 37. Loan-to Value by Agency



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

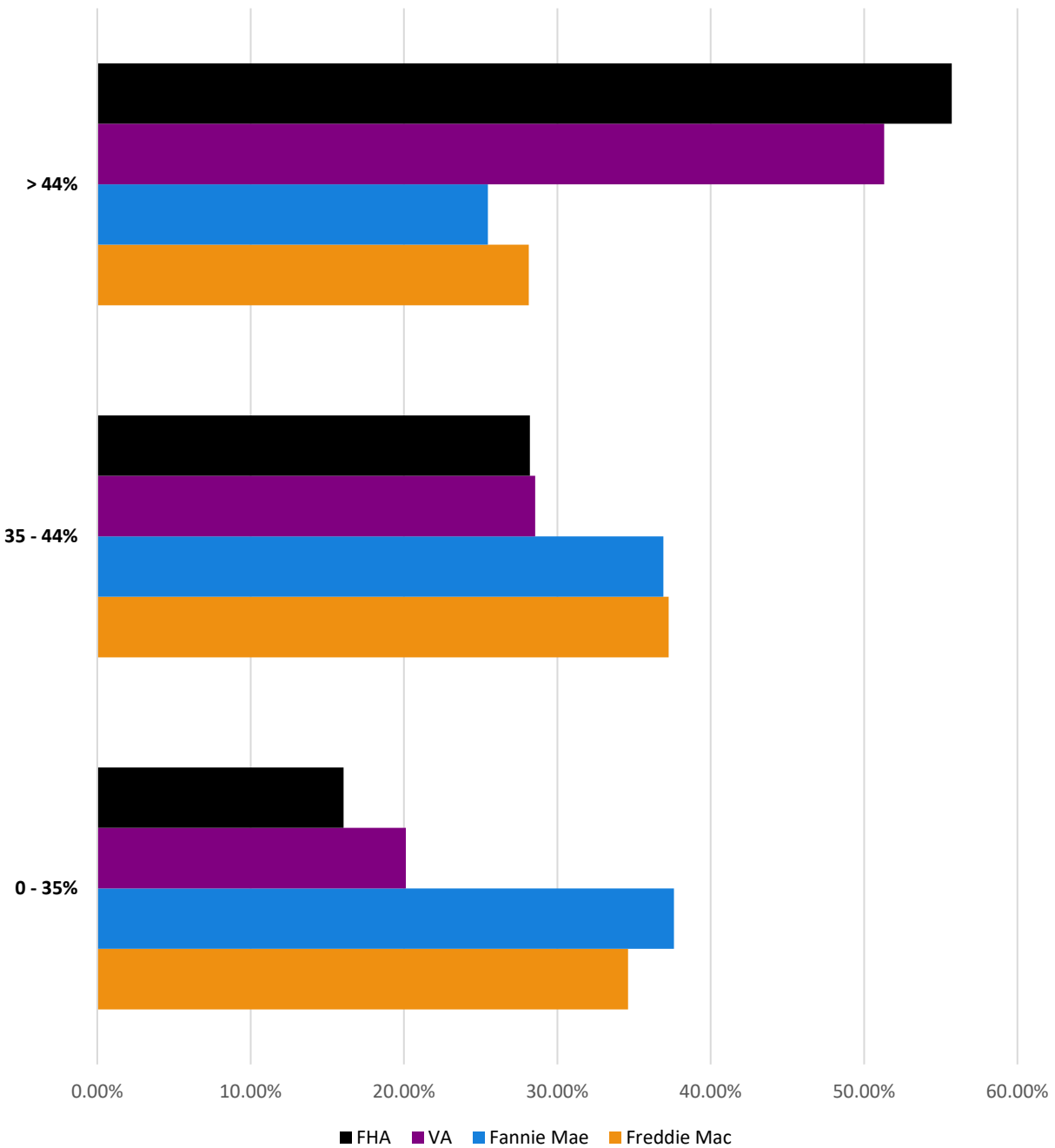
10.3 Debt-to-Income (DTI)

Table 16. Share of Loans by DTI

Purchase DTI							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	168,121	27	34	42	47	50	40
<i>Fannie</i>	58,596	24	32	39	45	48	38
<i>Freddie</i>	49,230	25	32	40	45	49	38
<i>Ginnie</i>	60,295	31	38	45	51	55	44
Refi DTI							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	42,024	25	32	40	45	50	39
<i>Fannie</i>	16,696	23	30	38	43	47	36
<i>Freddie</i>	10,620	25	32	40	45	48	38
<i>Ginnie</i>	14,708	29	36	44	50	55	43
All DTI							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	210,145	26	34	41	47	50	40
<i>Fannie</i>	75,292	24	31	39	45	48	37
<i>Freddie</i>	59,850	25	32	40	45	49	38
<i>Ginnie</i>	75,003	31	38	45	51	55	44
Purchase DTI: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	60,295	31	38	45	51	55	44
<i>FHA</i>	36,069	33	40	46	52	55	45
<i>VA</i>	21,483	31	38	45	51	56	44
<i>Other</i>	2,743	27	31	36	40	42	35
Refi DTI: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	14,708	29	36	44	50	55	43
<i>FHA</i>	9,428	29	37	44	50	55	43
<i>VA</i>	5,269	28	35	43	49	54	42
<i>Other</i>	11	33	35	37	41	42	37
All DTI: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	75,003	31	38	45	51	55	44
<i>FHA</i>	45,497	32	39	46	51	55	45
<i>VA</i>	26,752	30	37	45	51	56	44
<i>Other</i>	2,754	27	31	36	40	42	35

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

Figure 38. 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 January 2021 – March 2021 to January 2023 – March 2023, the share of high-LTV agency loans going to borrowers with:

- FICO scores above 750 has increased by approximately 3.5%
- DTIs below 35% decreased by approximately 27.4%

In that period, the share of high-LTV loans increased in the Ginnie Mae guarantee book by approximately 31% and in the GSE portfolios by approximately 229%. 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 71.16% of its issuances between January 2023 and March 2023 having LTVs of 95 or above, compared to 24.17% for the GSEs.

Table 17. Share of Loans with LTV > 95

	Ginnie Mae	GSE	All
Jan 2021 - Mar 2021	54.27%	7.35%	18.14%
Jan 2023 - Mar 2023	71.16%	24.17%	41.83%

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

	FICO					
<i>DTI</i>	<650	650-700	700-750	≥750	NA	All
<35	1.96%	4.41%	5.85%	9.35%	0.14%	21.73%
35-45	4.20%	8.93%	9.34%	9.74%	0.04%	32.25%
≥45	3.96%	7.82%	6.56%	5.35%	0.03%	23.71%
NA	1.86%	3.83%	3.55%	4.00%	9.06%	22.31%
All	11.98%	24.99%	25.30%	28.45%	9.28%	100.00%

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

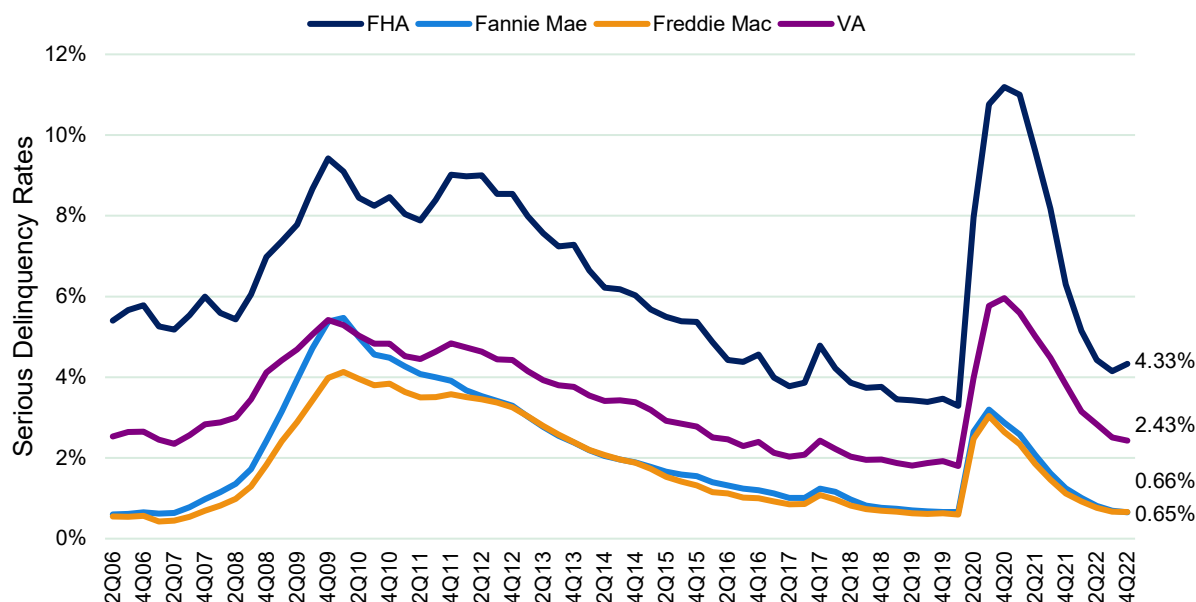
	FICO					
<i>DTI</i>	<650	650-700	700-750	≥750	NA	All
<35	2.11%	3.03%	4.19%	6.38%	0.06%	15.77%
35-45	5.84%	8.69%	10.31%	11.36%	0.06%	36.26%
≥45	8.19%	13.75%	12.90%	11.50%	0.05%	46.40%
NA	0.30%	0.22%	0.16%	0.20%	0.69%	1.57%
All	16.44%	25.69%	27.57%	29.44%	0.86%	100.00%

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 38. 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 54.9% in March 2023, up slightly from 54.7% in February 2023 and up from 50.2% in March 2022. Ginnie Mae and Fannie Mae's first-time homebuyer shares, 68.3% and 47.6% respectively in March 2023, have remained relatively flat YoY. Freddie Mac's first-time homebuyer share has increased 18.0% YoY. Table 20 shows that based on mortgages originated in March 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 39. First-Time Homebuyer Share: Purchase Only Loans

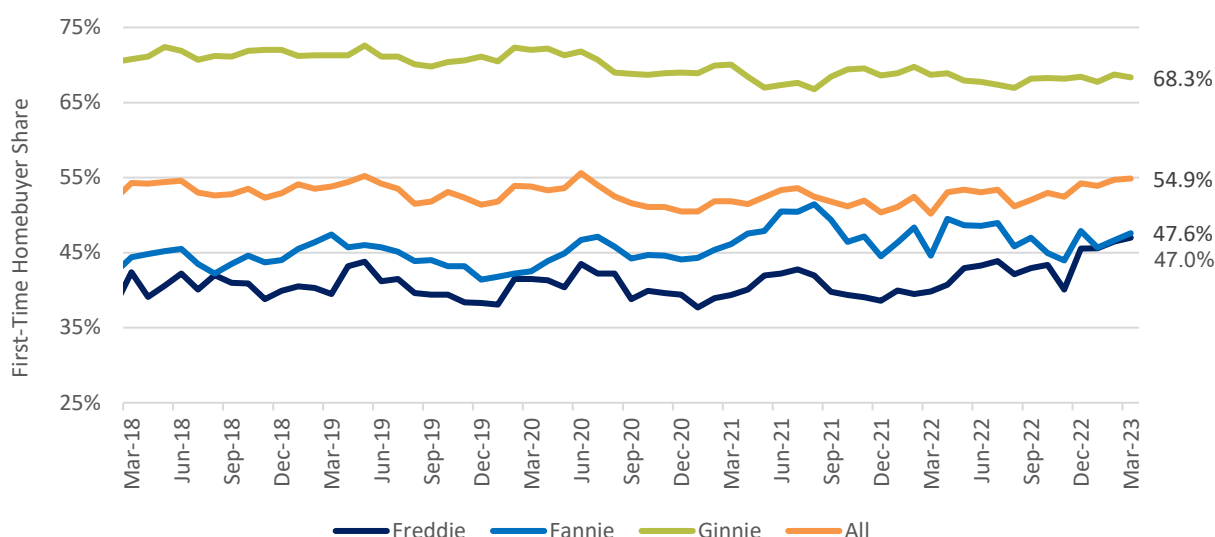


Table 20. Agency First-Time Homebuyer Share Summary

	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, 76.6% of FHA loans, 52.7% of VA loans, and 83.8% of other loans provided financing for first-time home buyers in March 2023. While FHA loans increased MoM, VA and other loans remained relatively stable MoM. Table 21 shows that based on mortgages originated in March 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 5.0% smaller loans, 10 bps higher in interest rate, and 2.5% 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 40. First-time Homebuyer Share: Ginnie Mae Breakdown

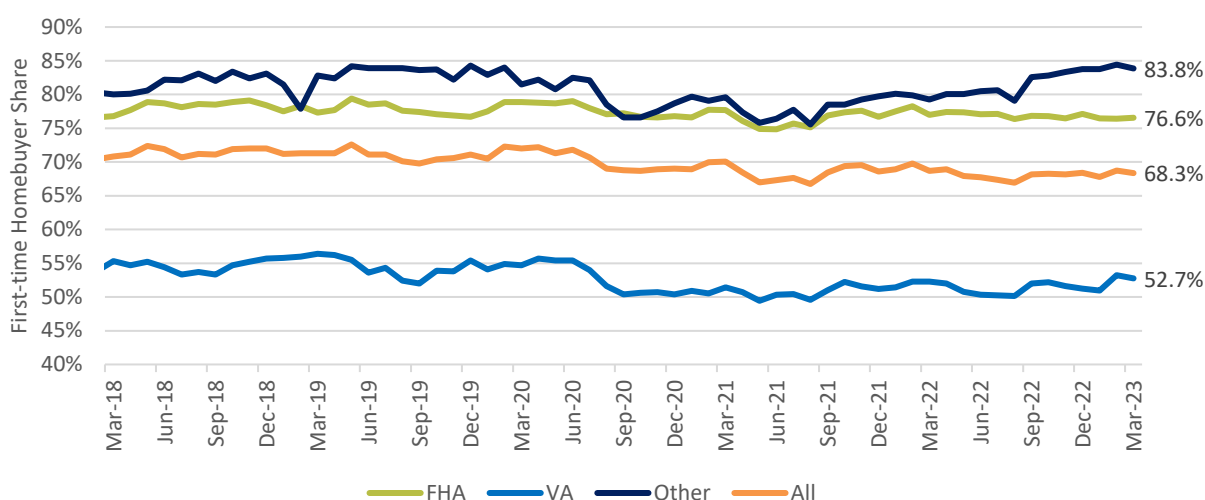


Table 21. Ginnie Mae First-Time Homebuyer Share Breakdown Summary

	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 March 2023 was 729, which represents a 9-point decline YoY from March 2022. The trend in declining median FICO scores has been much more pronounced for refinance loans. Ginnie Mae median FICO scores have decreased 1 point between March 2022 and March 2023 to 671. As of March 2023, average FICO scores for refinances have dropped for Fannie Mae and Freddie Mac borrowers by 10 and 19 points YoY respectively.

Figure 41. FICO Scores for All Loans

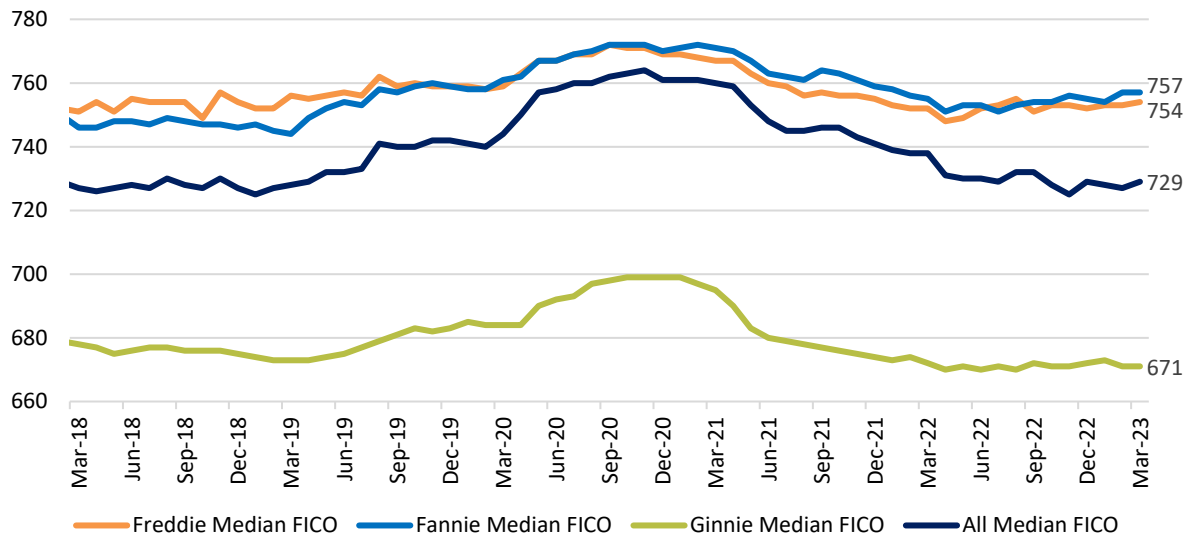


Figure 42. FICO Scores for Purchase Loans

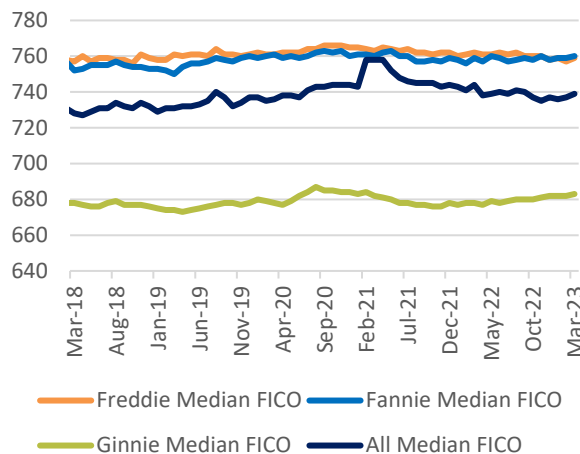
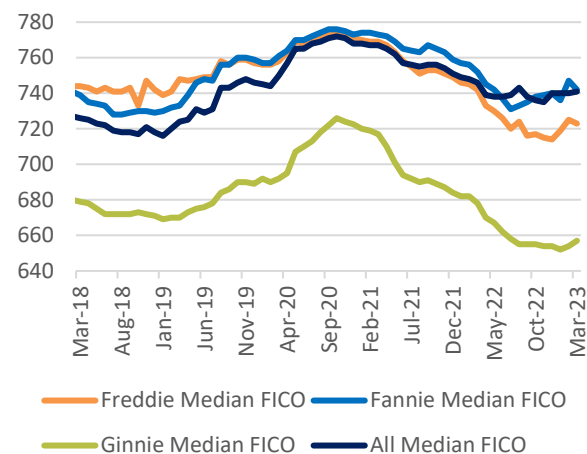


Figure 43. FICO Scores for Refinance Loans



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

In March 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 72% respectively in March 2023 whereas Ginnie Mae LTVs remained relatively flat from 97% over that same period. In March 2023, median DTIs for Ginnie Mae, Freddie Mac, and Fannie Mae were 44.6%, 40.0%, and 39.0% respectively. In March 2022, median DTIs for Ginnie Mae, Fannie Mae, and Freddie Mac was 42.9%, 37.0%, and 37.0%.

Figure 44. LTV Ratio for All Loans

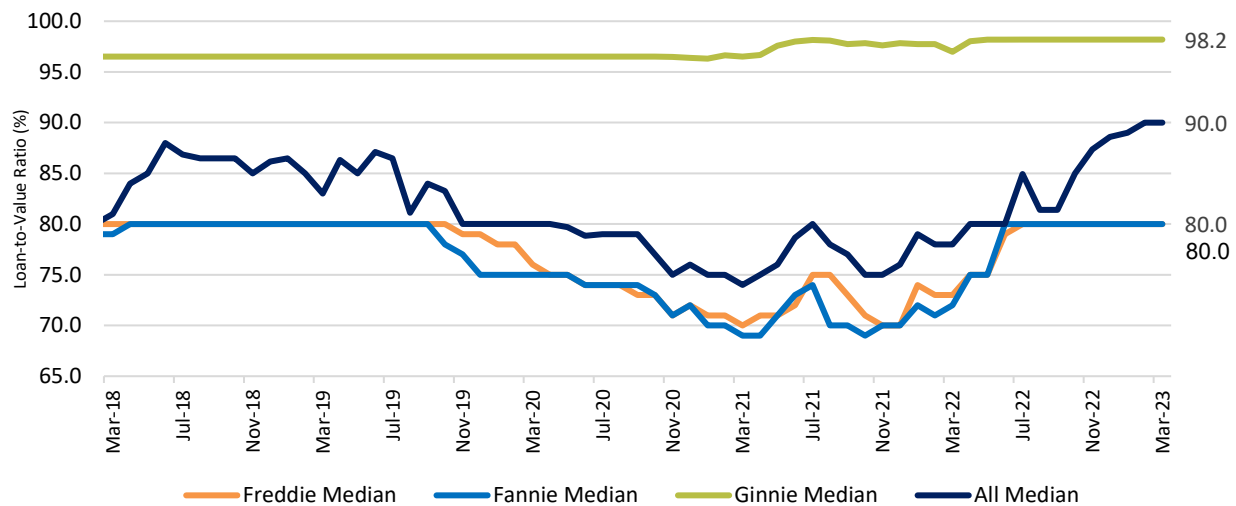
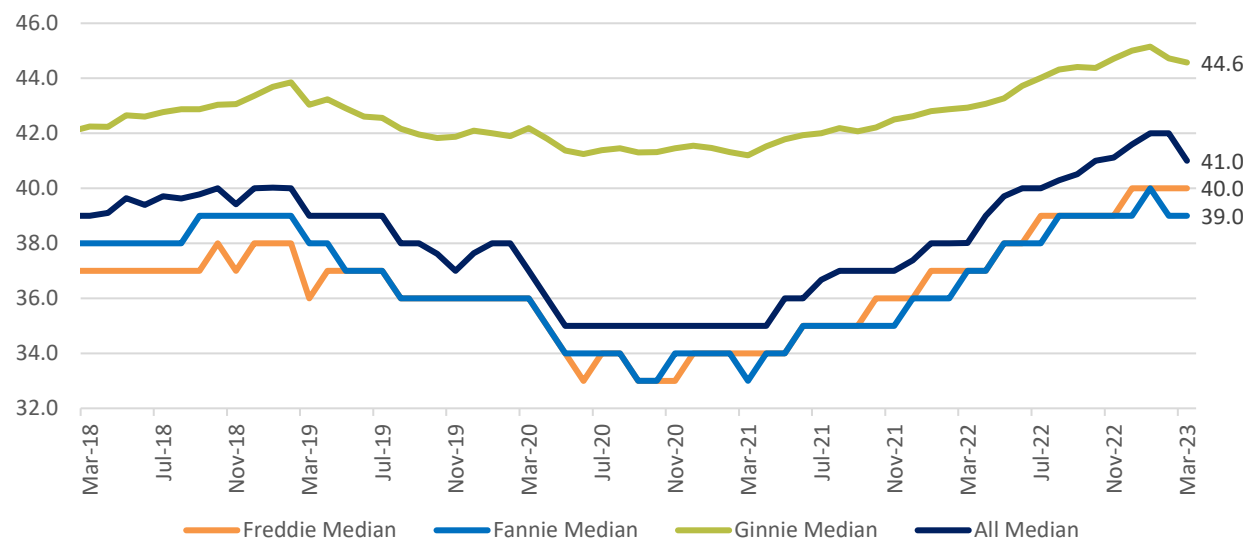


Figure 45. DTI Ratio for All Loans



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

11 FORBEARANCE TRENDS

At the end of March 2023, 106,112 Ginnie Mae loans were in forbearance. The number of loans in forbearance removed from MBS pools in March was 548 while 105,564 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 – March 2023						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	656	3.6	\$207,240	73.8	75.1	106,112
Bank	671	3.8	\$144,535	80.8	85.8	10,977
Nonbank	655	3.6	\$214,735	73.2	74.3	95,123
FHA	652	3.7	\$203,148	77.3	78.4	77,886
Bank	670	3.8	\$142,000	84.0	88.6	8,877
Nonbank	651	3.7	\$210,967	76.7	77.6	69,001
VA	666	3.4	\$261,396	59.3	62.0	20,477
Bank	677	3.5	\$188,167	60.6	70.1	1,430
Nonbank	665	3.4	\$266,825	59.2	61.6	19,044
Loans in Forbearance and Removed from Pools – March 2023						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	667	3.6	\$180,940	65.5	63.6	548
Bank	667	4.4	\$101,307	55.3	82.0	151
Nonbank	667	3.4	\$209,658	68.1	60.2	397
FHA	658	3.9	\$171,180	71.0	66.6	346
Bank	657	4.7	\$91,785	60.6	80.2	111
Nonbank	658	3.6	\$201,499	74.2	63.7	235
VA	679	3.1	\$239,057	52.9	54.2	152
Bank	694	3.4	\$181,496	45.1	79.9	18
Nonbank	678	3.1	\$251,706	54.1	51.7	134
Loans in Forbearance that Remain in Pools – March 2023						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	656	3.6	\$207,387	73.8	75.1	105,564
Bank	671	3.8	\$144,937	81.0	85.8	10,826
Nonbank	655	3.6	\$214,762	73.3	74.4	94,726
FHA	652	3.7	\$203,338	77.3	78.4	77,540
Bank	670	3.8	\$142,429	84.2	88.6	8,766
Nonbank	651	3.7	\$210,996	76.7	77.6	68,766
VA	666	3.4	\$261,508	59.3	62.1	20,325
Bank	677	3.5	\$188,433	60.8	70.0	1,412
Nonbank	665	3.4	\$266,868	59.3	61.7	18,910

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 March 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 86.49% 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 March 2023, over half (53.40%) 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 (\$ millions)	Share	Cumulative Share	CPR	CDR
	Current	Year prior	Change					
LAKEVIEW LOAN SERVIC	1	1	↔	\$280,635,186,261	12.95%	12.95%	7.64%	1.17%
DBA FREEDOM HOME MOR	2	2	↔	\$265,035,879,978	12.23%	25.17%	8.17%	1.14%
PENNYMAC LOAN SERVIC	3	3	↔	\$251,392,566,436	11.60%	36.77%	7.54%	0.78%
NATIONSTAR MORTGAGE,	4	4	↔	\$127,844,925,064	5.90%	42.67%	7.81%	0.77%
NEWREZ LLC	5	5	↔	\$122,131,150,804	5.63%	48.30%	6.33%	0.49%
WELLS FARGO BANK, NA	6	6	↔	\$110,463,859,051	5.10%	53.40%	7.71%	0.46%
ROCKET MORTGAGE, LLC	7	7	↔	\$105,582,720,524	4.87%	58.27%	8.91%	0.51%
CARRINGTON MORTGAGE	8	8	↔	\$92,081,170,658	4.25%	62.52%	7.80%	1.10%
U. S. BANK, NA	9	9	↔	\$52,507,043,626	2.42%	64.94%	5.82%	0.55%
UNITED WHOLESALE MOR	10	10	↔	\$49,296,531,921	2.27%	67.21%	4.10%	0.35%
PLANET HOME LENDING,	11	11	↔	\$46,131,563,730	2.13%	69.34%	6.03%	0.28%
LOANDEPOT.COM,LLC	12	12	↔	\$37,059,416,498	1.71%	71.05%	7.27%	0.50%
MORTGAGE RESEARCH CE	13	13	↔	\$34,160,632,716	1.58%	72.63%	6.36%	0.38%
AMERIHOM MORTGAGE C	14	14	↔	\$34,032,465,696	1.57%	74.20%	4.47%	0.40%
NAVY FEDERAL CREDIT	15	15	↔	\$29,186,600,187	1.35%	75.54%	6.98%	0.29%
GUILD MORTGAGE COMPA	16	16	↔	\$22,555,802,567	1.04%	76.58%	6.66%	0.63%
THE MONEY SOURCE INC	17	17	↔	\$20,810,857,125	0.96%	77.54%	7.62%	0.92%
TRUIST BANK	18	18	↔	\$20,204,451,332	0.93%	78.48%	7.59%	0.77%
CROSSCOUNTRY	19	19	↔	\$18,499,168,530	0.85%	79.33%	5.88%	0.57%
NEW AMERICAN FUNDING	20	20	↔	\$18,078,310,724	0.83%	80.16%	6.77%	0.43%
VILLAGE CAPITAL & IN	21	21	↔	\$17,268,309,234	0.80%	80.96%	8.76%	0.62%
MOVEMENT MORTGAGE,LL	22	22	↔	\$17,057,010,998	0.79%	81.75%	5.46%	0.51%
CMG MORTGAGE, INC.	23	23	↔	\$15,993,057,046	0.74%	82.49%	5.53%	0.81%
IDAHO HOUSING AND FI	24	24	↔	\$14,923,342,519	0.69%	83.17%	5.24%	0.64%
CITIZENS BANK N.A.	25	25	↔	\$13,853,101,998	0.64%	83.81%	5.99%	0.55%
PHH MORTGAGE CORPORA	26	26	↔	\$13,661,773,350	0.63%	84.44%	6.91%	0.82%
FLAGSTAR BANK, N.A.	27	27	↔	\$12,090,141,788	0.56%	85.00%	5.17%	0.16%
MIDFIRST BANK	28	28	↔	\$11,928,970,853	0.55%	85.55%	8.42%	1.73%
JP MORGAN CHASE BANK	29	29	↔	\$10,234,079,001	0.47%	86.02%	8.02%	1.28%
SUN WEST MORTGAGE CO	30	30	↔	\$10,113,638,813	0.47%	86.49%	7.40%	0.22%

Source: Deloitte. Data as of February 2023

13 AGENCY NONBANK ORIGINATORS

Total agency non-bank origination share experienced an increase in March 2023, by approximately 5.2% MoM. This increase in non-bank origination share was driven primarily by Freddie Mac (non-bank origination share up 12.4% MoM). The Ginnie Mae non-bank share fell to 87.4% as of March 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)

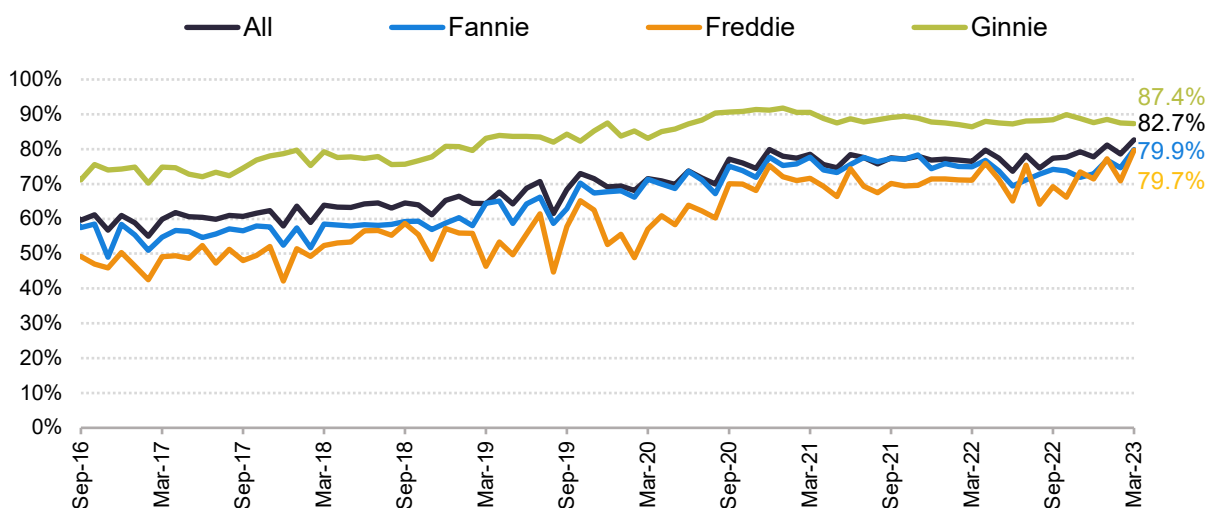


Figure 55. Nonbank Origination Share: Purchase Loans

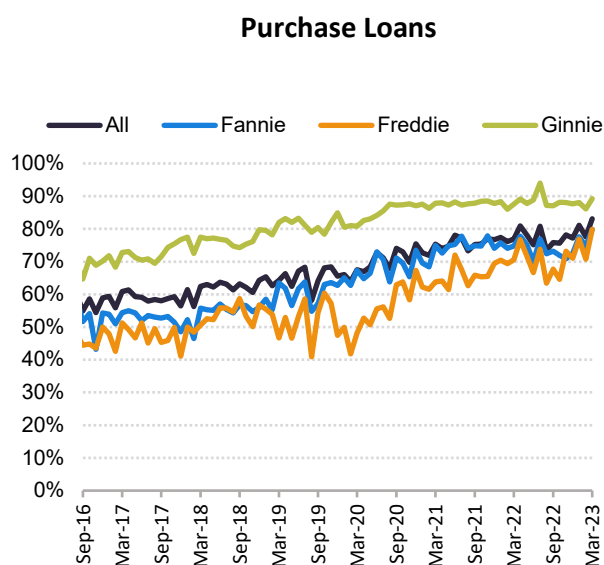
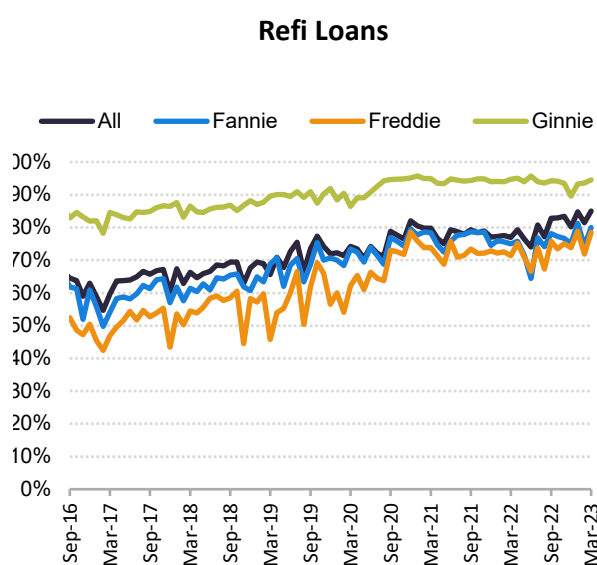


Figure 56. Nonbank Origination Share: Refi Loans



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

Ginnie Mae's total non-bank originator share remained relatively stable in March 2023. Ginnie Mae continues to have a very high proportion of nonbank originations, with a rate of 87.4% in March 2023. The percent of Ginnie Mae's Other non-bank refinanced loans increased slightly to 89.2% in March 2023.

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

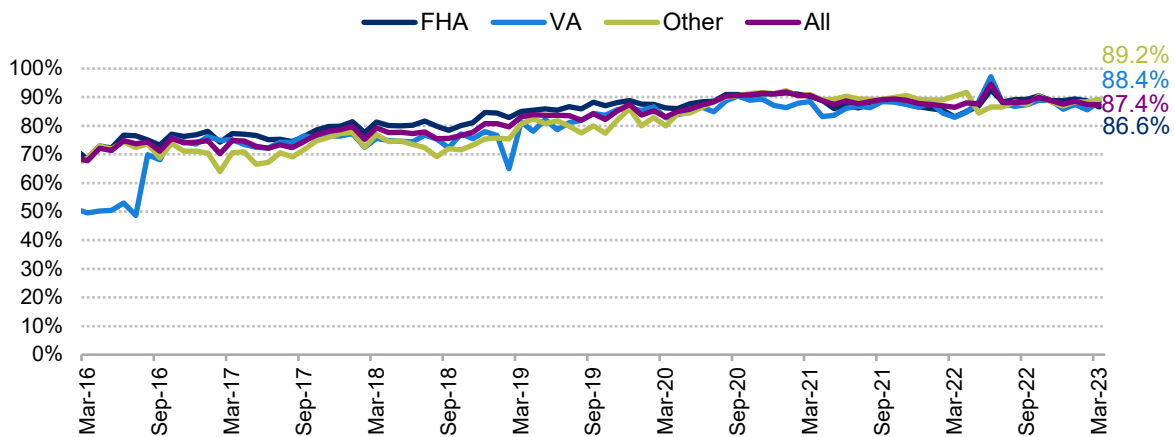


Figure 58. Ginnie Mae Nonbank Share:
Purchase Loans

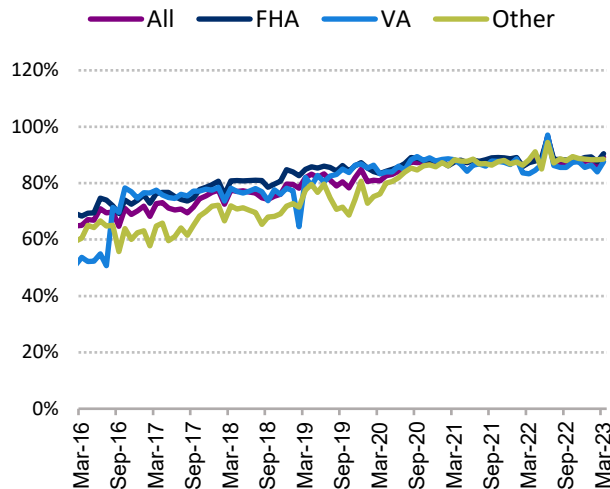
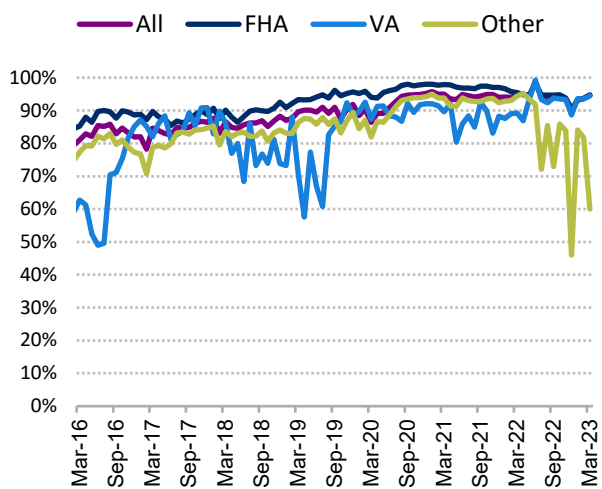


Figure 59. Ginnie Mae Nonbank Share:
Refi Loans



Sources: Recursion. Notes: Data as of March 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 decreased by 6 points from February 2023 to March 2023. The agency median FICO increased by 2 points to 729 MoM.

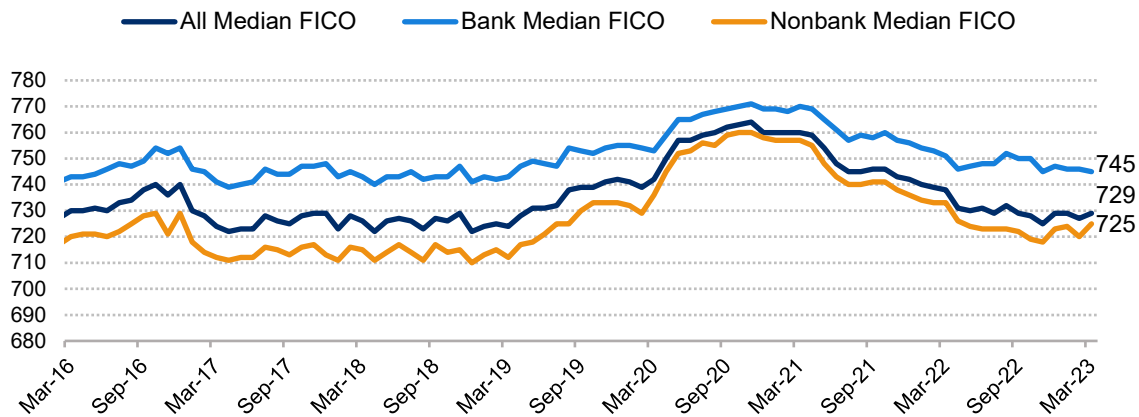


Figure 61. GSE FICO: Bank vs. Nonbank

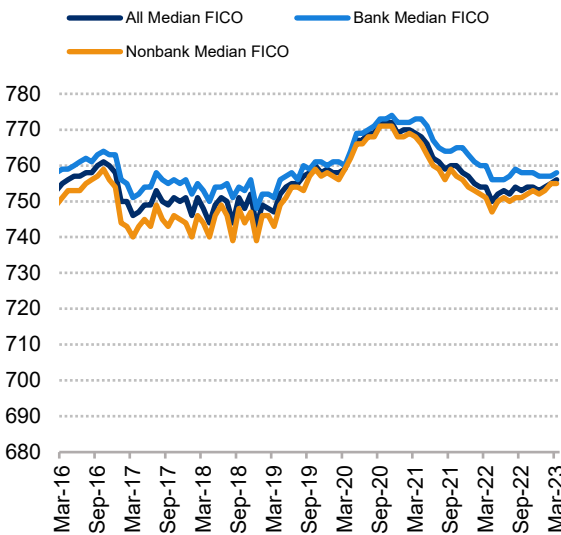


Figure 62. Ginnie Mae FICO: Bank vs. Nonbank

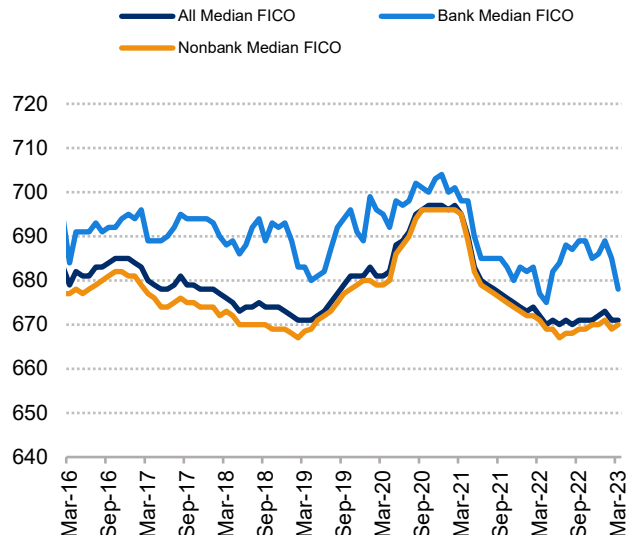


Figure 60. Agency FICO: Bank vs. Nonbank

Sources: Recursion; Notes: Data as of March 2023.

The median LTV for all GSE originators remained the same in March 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 44.8% in March 2023 in non-bank originations.

Figure 63. GSE LTV: Bank vs. Nonbank

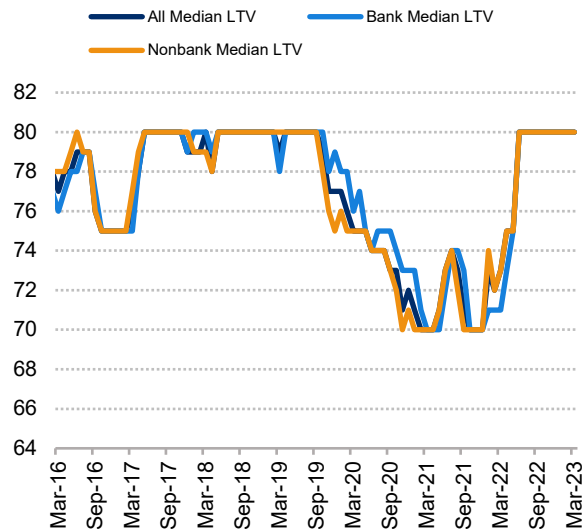


Figure 64. Ginnie Mae LTV: Bank vs. Nonbank

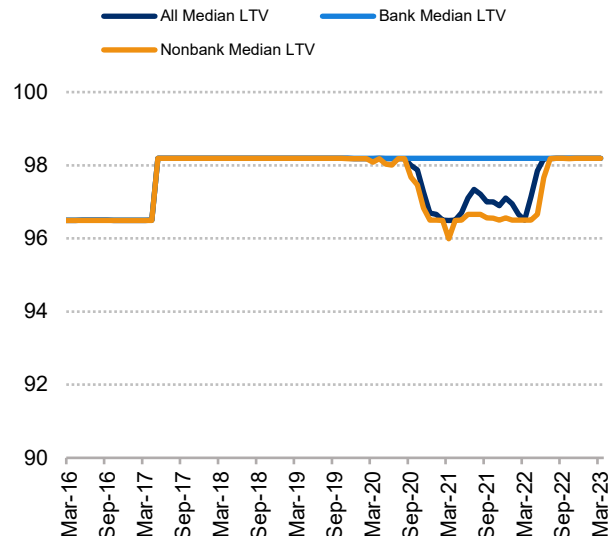


Figure 65. GSE DTI: Bank vs. Nonbank

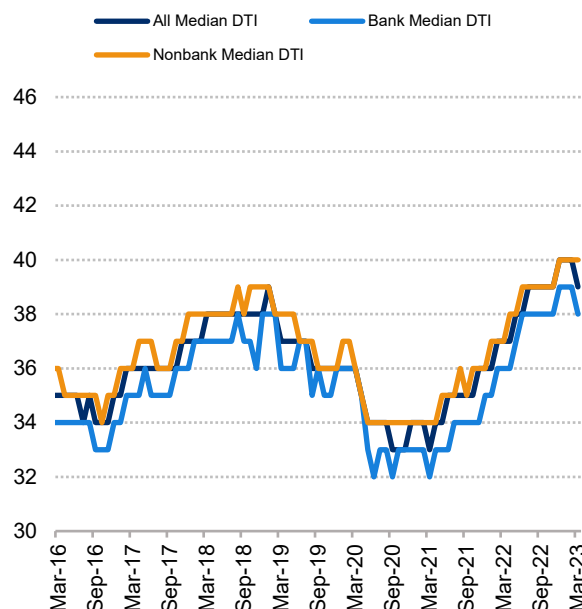
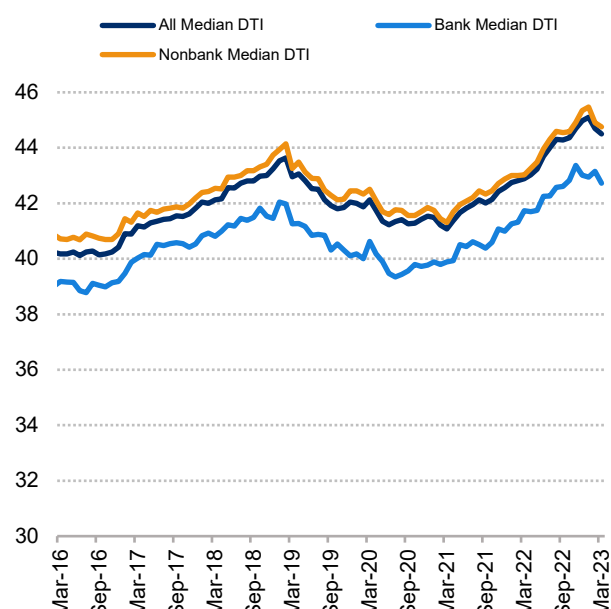


Figure 66. Ginnie Mae DTI: Bank vs. Nonbank



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

In March 2023, the median FICO score for Ginnie Mae bank decreased 7 points to 678 and non-bank increased 1 point to 670 MoM. The median FICO for all Ginnie origins remained at 671 MoM. The gap between banks and non-banks is most apparent in Other lending (28-point spread).

Figure 67. Ginnie Mae FICO Score:

Bank vs. Nonbank

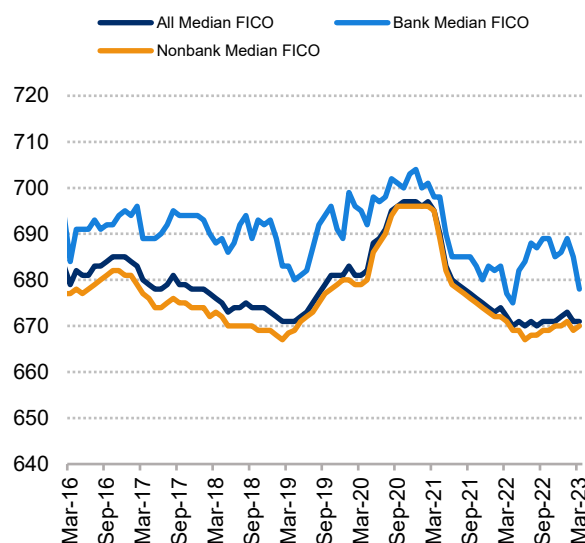


Figure 68. Ginnie Mae FHA FICO Score:

Bank vs. Nonbank

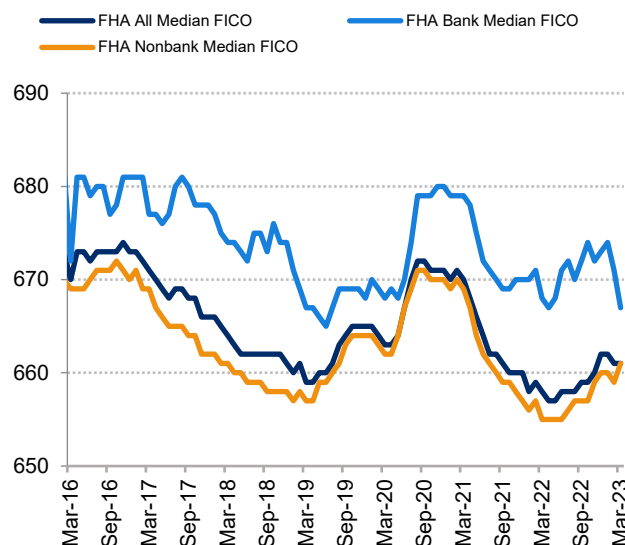


Figure 69. Ginnie Mae VA FICO Score:

Bank vs. Nonbank

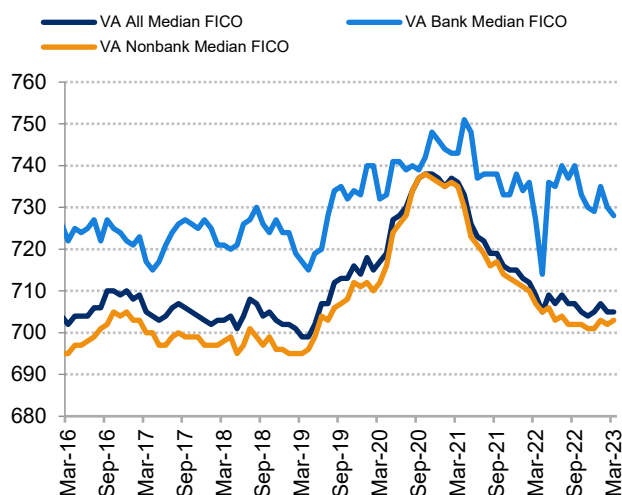
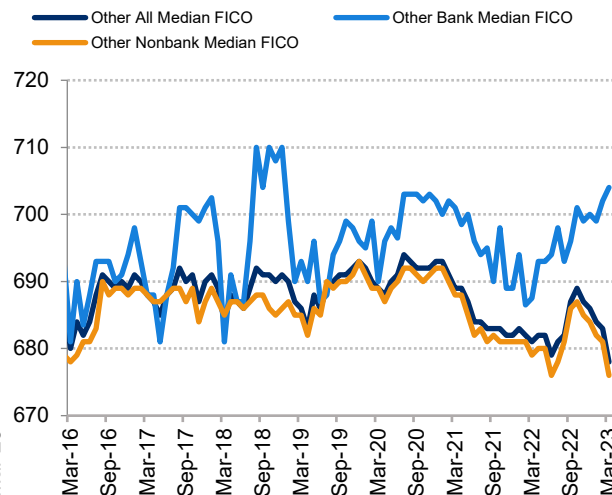


Figure 70. Ginnie Mae Other FICO Score:

Bank vs. Nonbank



Sources: Recursion. Notes: Data as of March 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

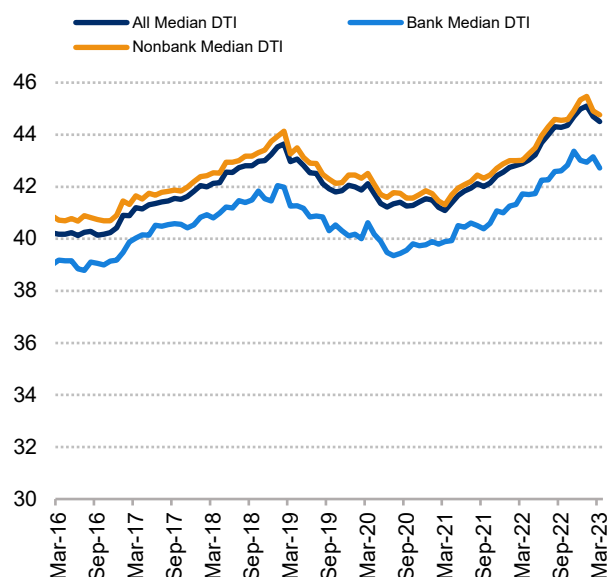


Figure 72. Ginnie Mae FHA DTI:

Bank vs. Nonbank

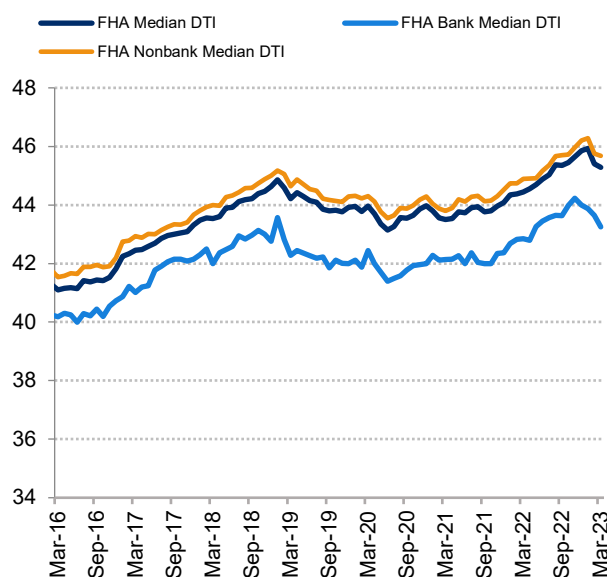


Figure 73. Ginnie Mae VA DTI:

Bank vs. Nonbank

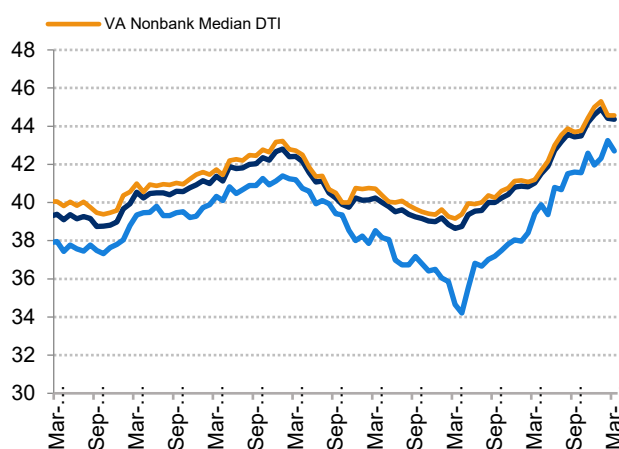
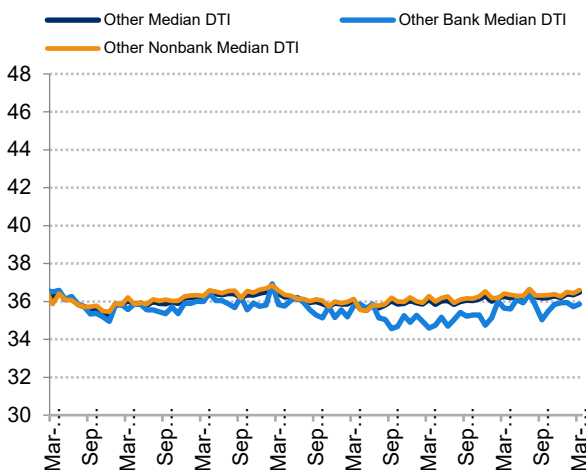


Figure 74. Ginnie Mae Other DTI:

Bank vs. Nonbank



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

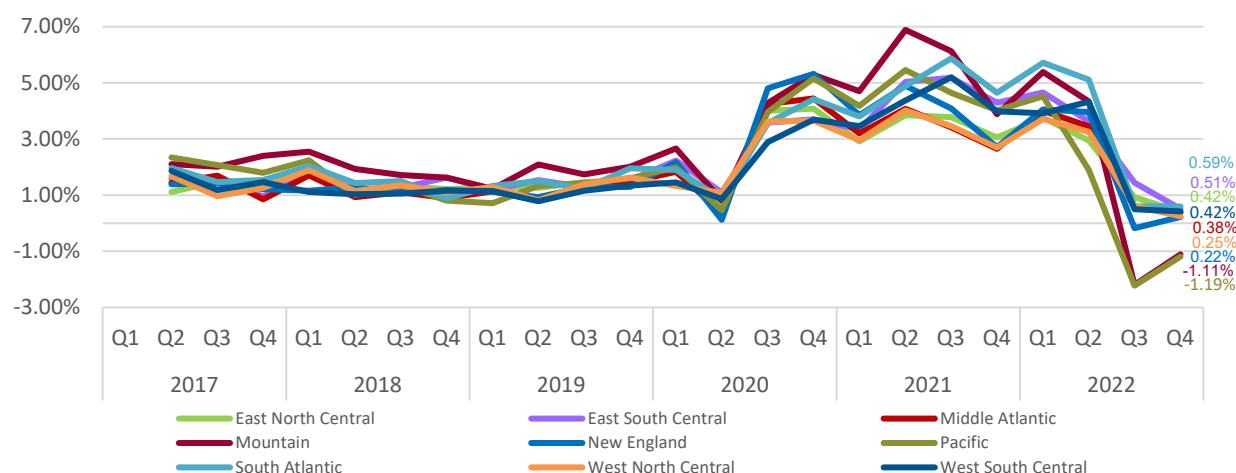
U.S. HOUSING MARKET

14 HOUSING AFFORDABILITY

14.1 Housing Affordability – Home Price Appreciation

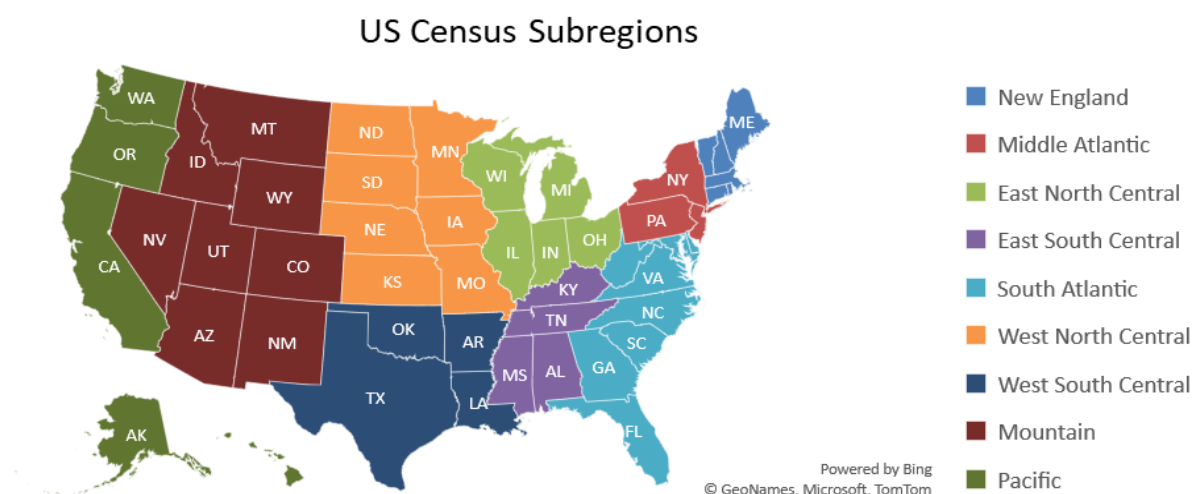
Home prices are beginning to decelerate, with HPI's dropping in all regions but the Mountain, Pacific, and New England regions between October 2022 and December 2022. Notably, the Pacific region experienced a -1.11% Q/Q change in HPI between 2022 Q3 and 2022 Q4 compared to -2.20% Q/Q change in HPI from 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 March 2023, inflation was 5.0%, down from 6.0% the month prior. Nationally, rents are down 0.40% YoY as of month-end March 2023. However, the MoM change from February 2023 to March 2023 was stagnant at -0.01%. Wage growth saw an increase from 6.1% in February 2023 to 6.5% in March 2023. February 2023 reporting data shows YoY home price appreciation has now slowed to 2.0%, down from 3.7% in January 2023.

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

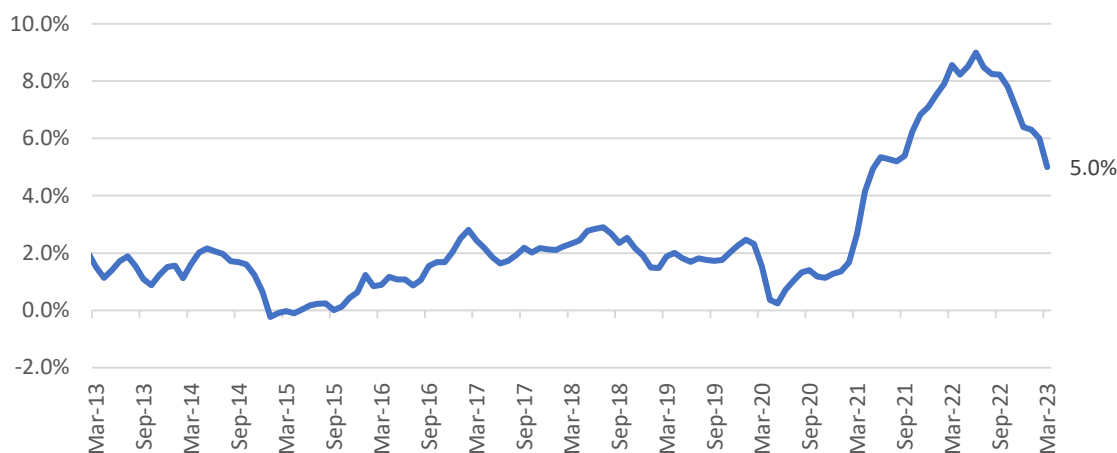
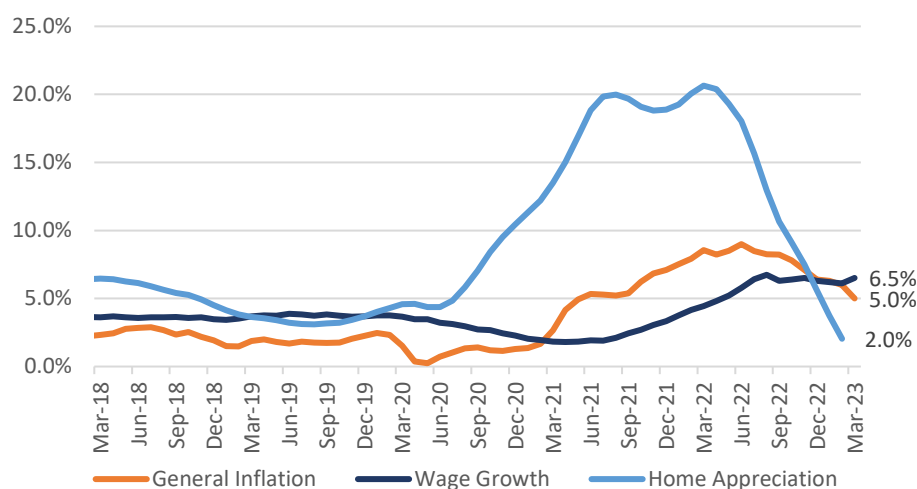


Figure 78. Asset Price Appreciation vs. Wage Increases

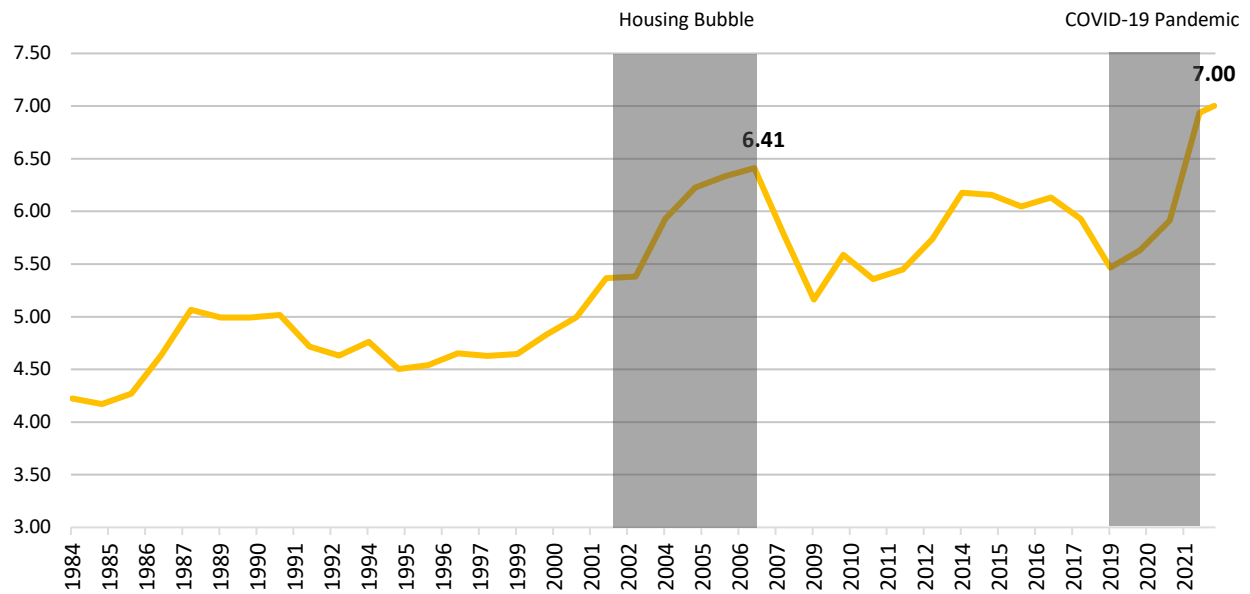


Metric	Statistic
General Inflation	5.0%
Home Price Appreciation (YoY)	2.0%
Rental Price Appreciation (Median Rent Change YoY)	-0.40%
Wage Growth	6.5%

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

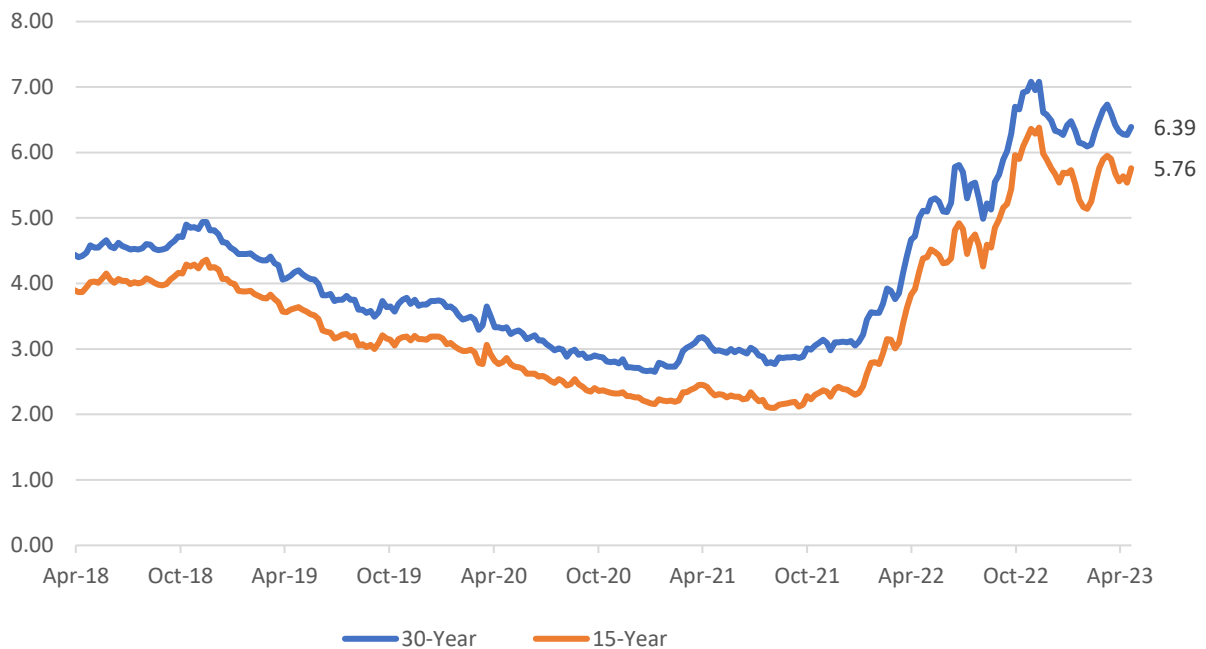


Source: FRED Average Home Sales Data, FRED Median Income Data

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.⁶ As of April 20, 2023, the average 30-year and 15-year fixed rate mortgage rates were 6.39% and 5.76% respectively. The average 30-year fixed rate mortgage rate decreased 21 bps and the average 15-year fixed rate mortgage rate decreased 14 bps MoM from March 16, 2023.

Figure 80. Average Fixed Rate Mortgage Rates



Sources: FRED data as of April 2023

⁶<https://www.federalreserve.gov/newsevents/pressreleases/monetary20230322a.htm>

14.3 Housing Inventory

As of March 2023, there was 7.6 months of housing inventory on the market, a decrease from 8.4 in February 2023. 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

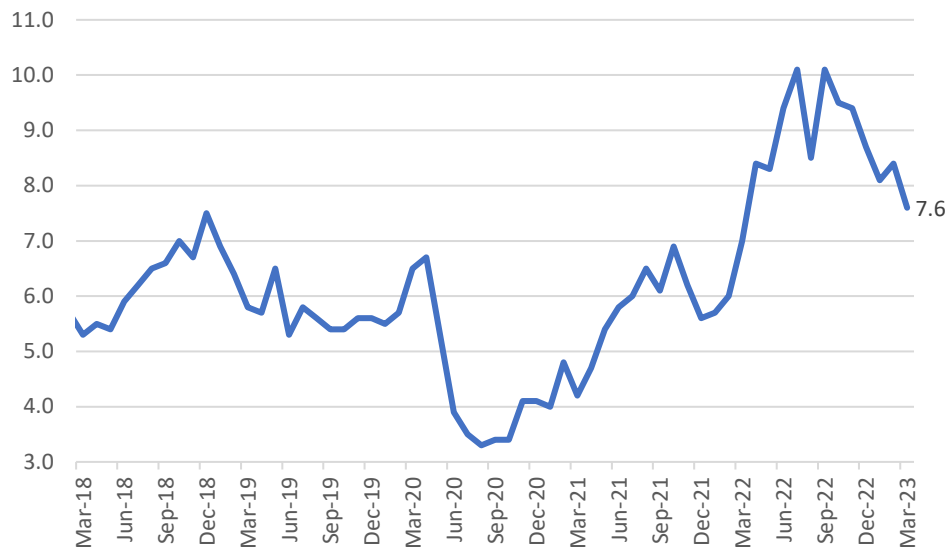
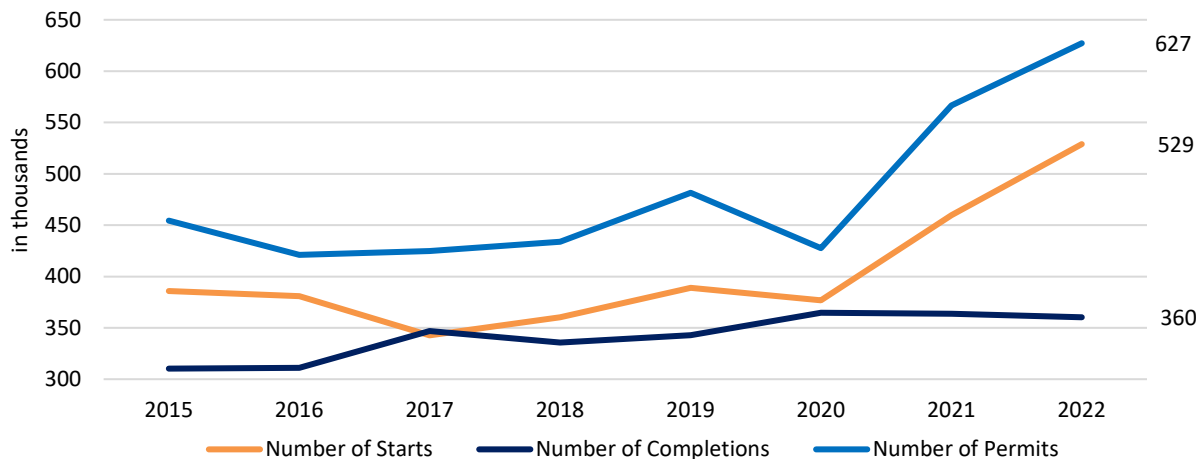


Figure 82. Multifamily Construction Metrics: Permits, Starts, Completions



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

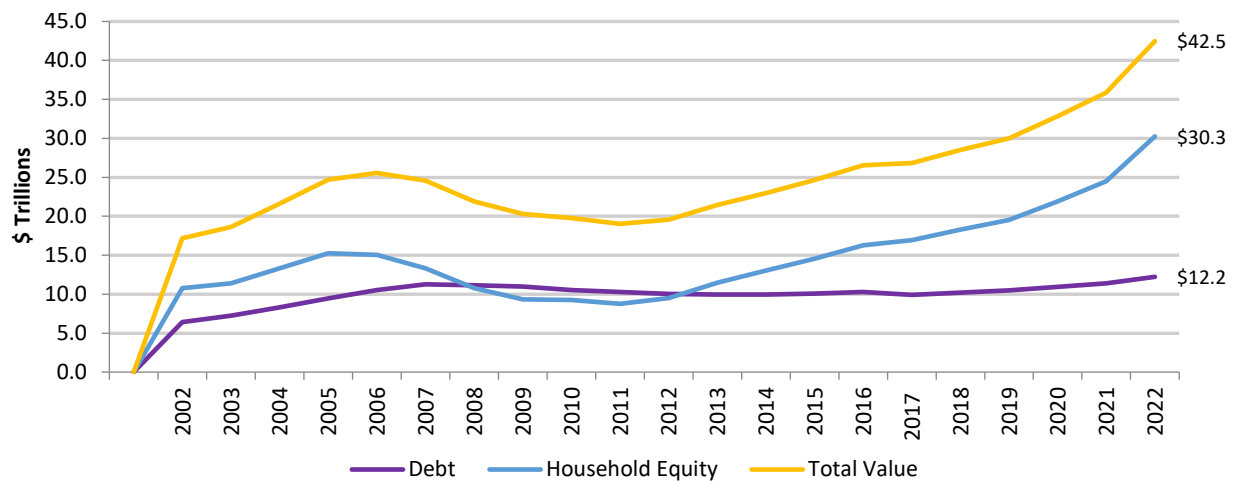
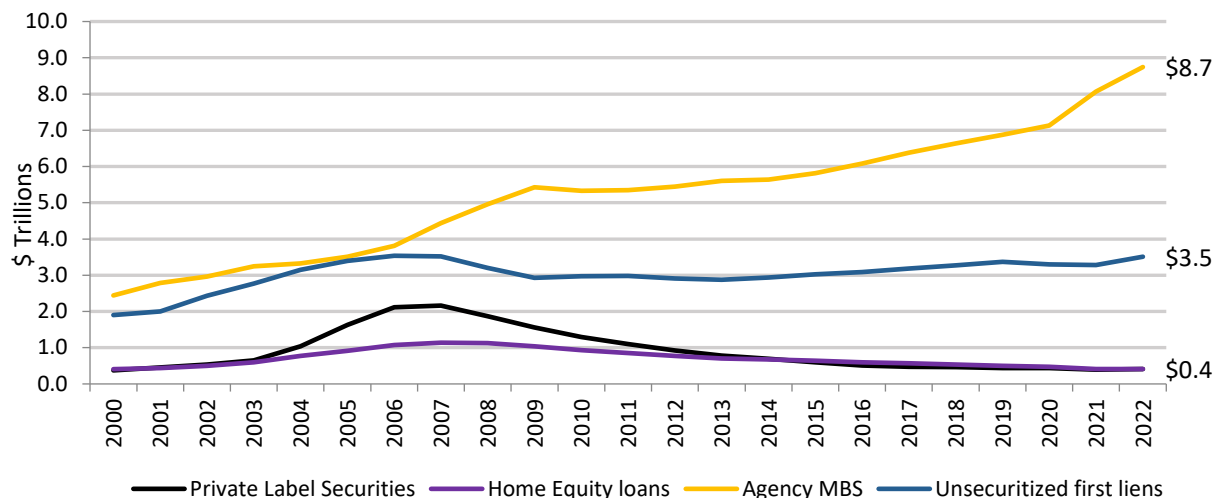


Figure 84. Size of the US Residential Mortgage Market.



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.

The forward-looking statements, and underlying assumptions, speak only as of the date of March 31, 2023. Ginnie Mae expressly disclaims any obligation or undertaking to update or revise any forward-looking statement or underlying assumption contained in the report to reflect any change in its expectations or any change in circumstances upon which such statement is based.

Past performance is not a guarantee of future results. Accordingly, there are no assurances given, nor representations or warranties made, that all estimated returns or projections will be realized, or that actual returns or performance results will not materially differ from those estimated herein.”