



GLOBAL MARKETS ANALYSIS REPORT

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



May 2023

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

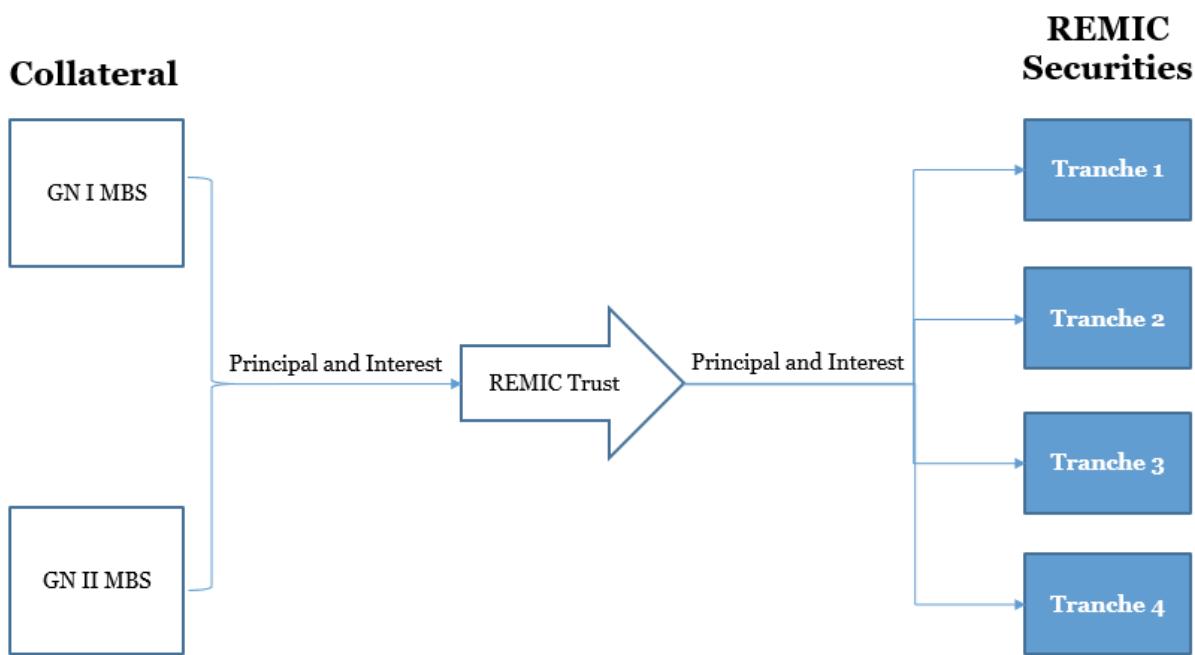
This month's *Highlights* section takes a deeper dive into Ginnie Mae's Real Estate Mortgage Investment Conduit (REMIC) program. The section provides a detailed introduction into REMICs as well as discusses the persistent demand from issuers and investors in the current market environment.

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.
- 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 sticky inflation and increasing mortgage rates. Home prices are increasing at a much slower pace than seen in 2021 and the first half of 2022 but remain high. This section also includes an analysis of the average price of homes sold to median income, which shows housing affordability remains historically low.

Highlights

Real Estate Mortgage Investment Conduits (REMICs) are structured fixed income products offered under the Ginnie Mae Multiclass umbrella. REMICs direct principal and interest payments from underlying mortgage-backed securities to classes with different principal balances, interest rates, average lives, prepayment characteristics and final maturities. Similar to Ginnie Mae mortgage-backed securities (MBS), Ginnie Mae REMICs has an explicit full faith and credit guarantee by the U.S. Government of timely payment of principal and interest.



REMICs allow investors with different investment horizons, risk-reward preferences, and asset-liability management requirements to purchase MBS tailored to their needs. Unlike traditional pass-throughs, the principal and interest payments in REMICs are not passed through to investors pro rata; instead, they are divided into varying payment streams to create classes with different expected maturities, differing levels of seniority or subordination or other characteristics¹.

In April 2023, 82% of total collateralized mortgage obligation (CMO) new issuance was generic collateral versus 12% of loan-balance pooled collateral². [Section 7](#) of this month's Global Market Analysis Report, "Agency REMIC Securities", shows Ginnie Mae's Single-Family and Multi-Family MBS REMIC monthly issuance. As overall MBS issuance has fallen from cycle highs, Ginnie Mae

¹ https://www.ginniemae.gov/about_us/what_we_do/pages/programs_products.aspx

² "Wells Fargo, Agency CMO Issuance Trends / April 2023"

REMIC issuance has stayed persistently high, totaling \$5.6 billion in April 2023. In comparison, Fannie Mae and Freddie Mac had a combined \$3.5 billion of Single-Family and Multi-Family MBS REMIC issuance in April 2023. The customizability of REMICs has allowed investors to structure their MBS holdings in a way to address the higher rate environment and interest rate volatility by targeting a specific risk profile for their investment thesis. This flexibility in structure increases demand and liquidity to the broader primary and secondary mortgage markets.

1 US AGGREGATE AND GLOBAL INDICES

1.1 Bloomberg US Aggregate and Global Indices

At month-end April, 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) contributes approximately 27%. For the US Aggregate Index, all other changes to the index components were no larger than 1%.

Figure 1. Bloomberg US Aggregate Index

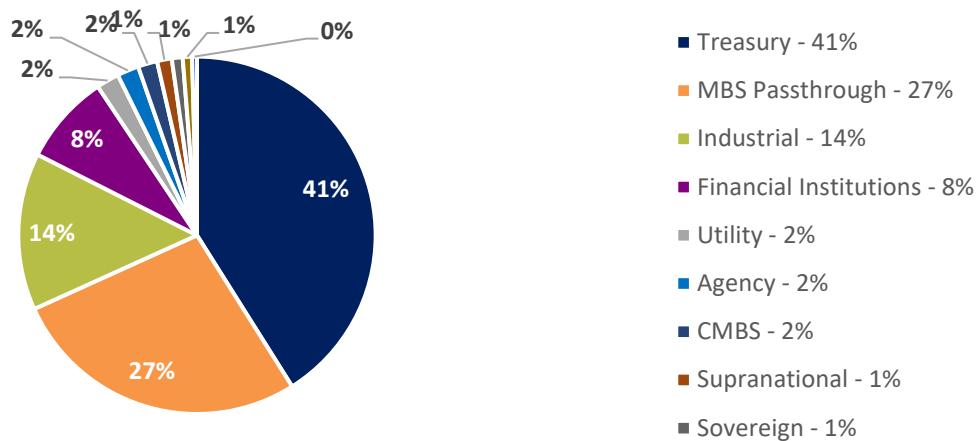
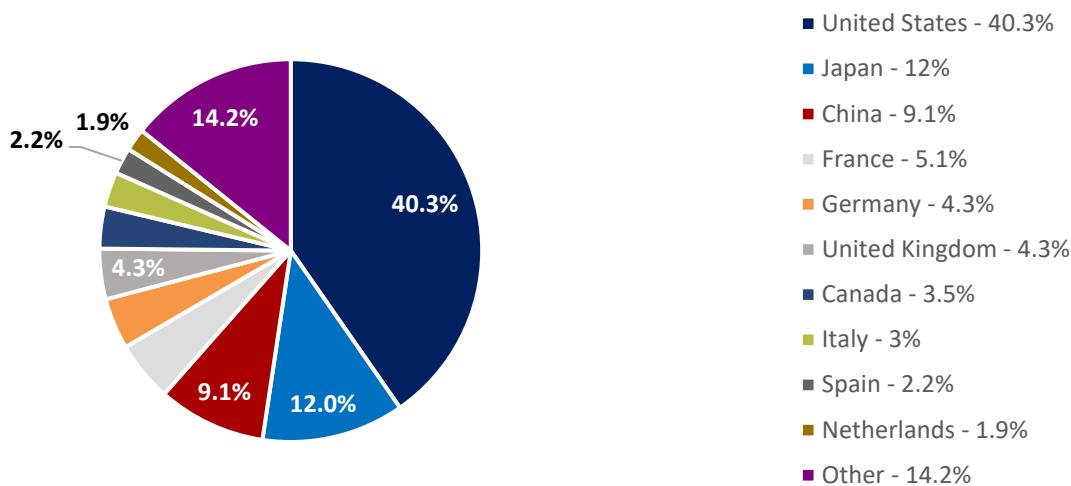


Figure 2. Bloomberg Global Aggregate Index by Country

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 up slightly from the prior month. Japan's share of fixed income is the second highest at 12%, down 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 April 2023. Figures in charts may not add to 100% due to rounding.

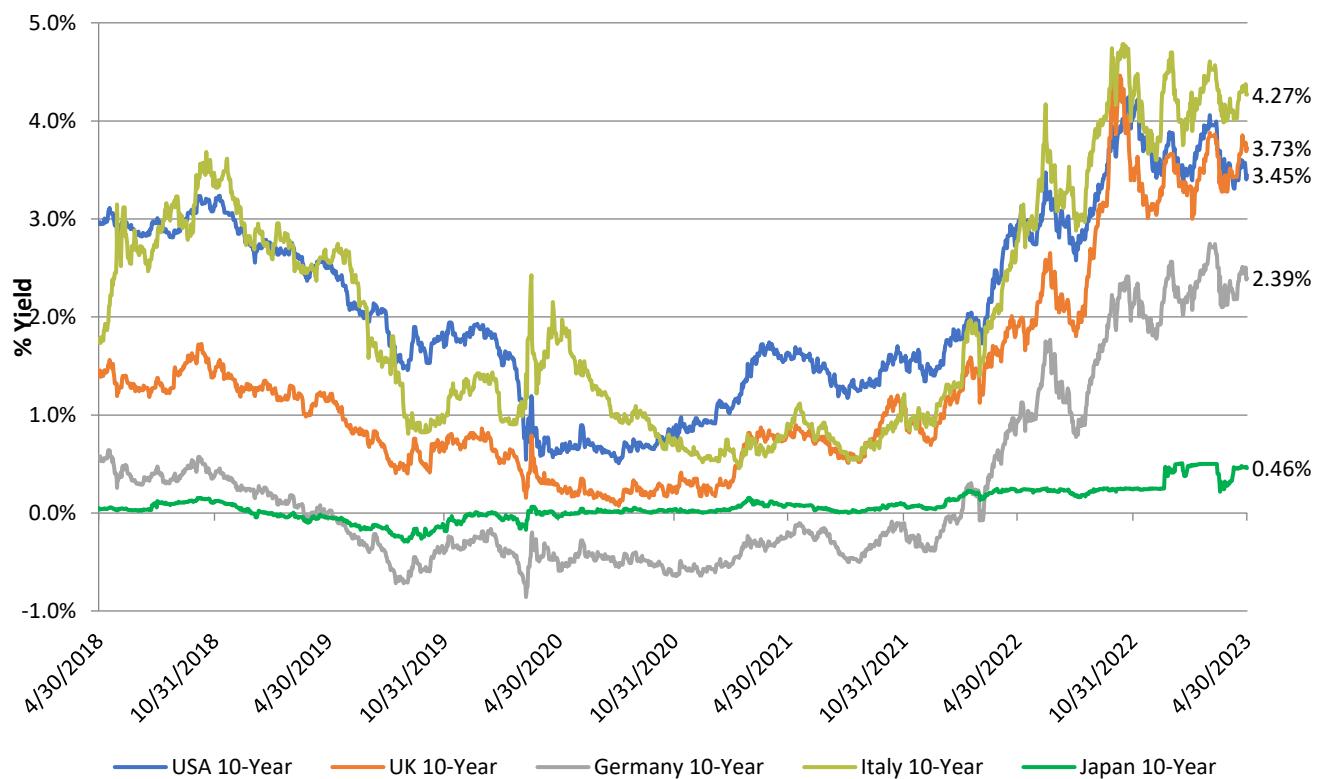
2 SOVEREIGN DEBT PRODUCT PERFORMANCE COMPARISONS

2.1 Global 10-Year Treasury Yields (Unhedged)

The US 10-year Treasury yield moved to 3.45% at month-end April 2023, a MoM decrease of 8 bps. US Treasury yields are now the third highest of all the government treasury yields depicted in the figure below behind Italian and UK government bond yields.

- The yield on the UK 10-year notes increased to 3.73% at month-end April, a MoM increase of 36 bps.
- The yield on the German 10-year increased to 2.39% at month-end April, a MoM increase of 17 bps.
- The yield on the Italian 10-year increased to 4.27% at month-end April, a MoM increase of 21 bps.
- The yield on the Japanese 10-year notes increased to 0.46% at month-end April, a MoM increase of 17 bps.

Figure 3. Global 10-Year Treasury Yields



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

2.2 US Treasury Hedged Yields

- The hedged yield for the 10-year Treasury JPY increased MoM 1 bps to 2.21% at month-end April.
- The hedged yield for the 10-year Treasury EUR increased MoM 1 bps to 1.28% at month-end April.

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



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



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

SECONDARY MORTGAGE MARKET

3 FIXED INCOME PRODUCT PERFORMANCE COMPARISONS

3.1 Ginnie Mae Yields – USD

Ginnie Mae II yields were 5.37% in February, decreased 43 bps to 4.94% by month-end March, then increased 20 bps to 5.14% by month-end April. Ginnie Mae I yields were 5.27% in February, decreased 32 bps to 4.95% by month-end March, then increased 12 bps to 5.07% by month-end April. The yields on the Ginnie Mae I were 162 bps higher than the US 10-year Treasury yield at month-end April 2023, an increase of 21 bps MoM. Ginnie Mae II spreads over the US 10-year Treasury yield increased 63 bps YoY to 169 bps over the US 10-year Treasury yield by month-end April 2023.

Figure 6. Ginnie Mae II SF Yield, USD



Figure 7. Ginnie Mae I SF Yield, USD



Sources Bloomberg. Note: Data as of April 2023.

3.2 Ginnie Mae Hedged Yields

The yield for the Ginnie Mae II, hedged in the Japanese Yen stood at 3.90% at month-end April, a 29 bps increase MoM. The yield for the Ginnie Mae II, hedged in the Euro, stood at 2.97% at month-end April, a 29 bps increase MoM.

The yield for the Ginnie Mae I, hedged in the Japanese Yen, stood at 3.83% at month-end April, a 22 bps increase MoM. The yield for the Ginnie Mae I, hedged in the Euro, stood at 2.90% at month-end April, a 22 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 April 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 0.60% at month-end April. The GNMA II 30-year OAS increased 2 bps MoM as of month-end April. The US Intermediate credit OAS decreased 2 bps MoM as of month-end April.

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

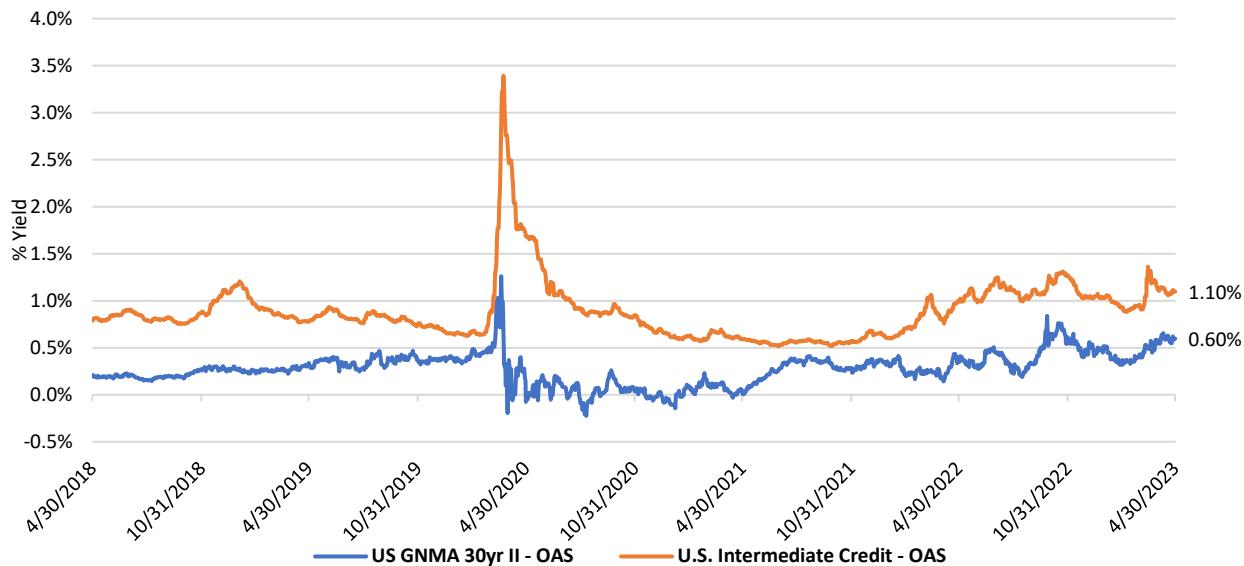
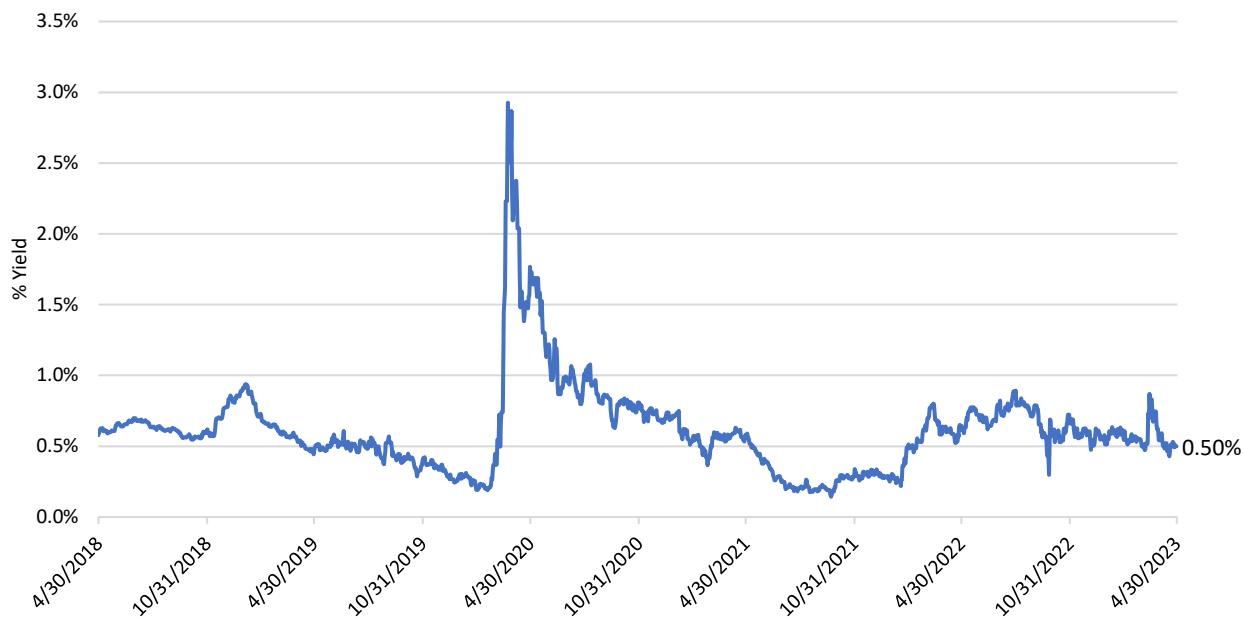


Figure 11. Spread between US Intermediate Credit and US GNMA II 30yr MBS OAS

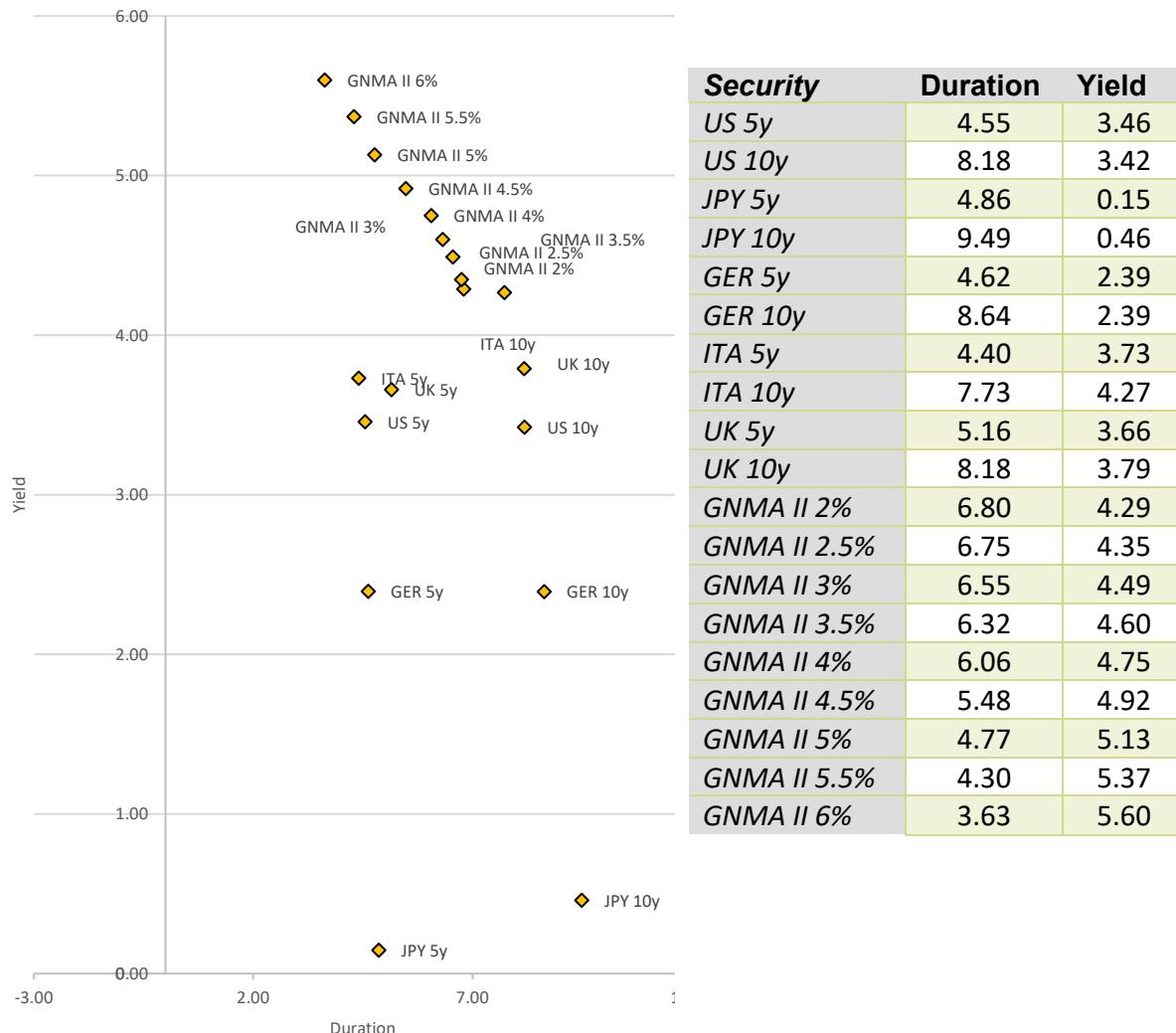


Source: Bloomberg. Note: Data as of April 2023.

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 April 2023. Yields are in base currency of security and unhedged.

4 PREPAYMENTS

4.1 Aggregate Prepayments (CPR)

Ginnie Mae fixed rate aggregate prepayment speeds decreased in April by 7.5% MoM, while Fannie Mae and Freddie Mac CPRs decreased 8.8% and 9.9%, respectively. ARM prepayments decreased for GSEs and increased for Ginnie Mae MoM.

Figure 13. Fixed Rate Aggregate 1-Month CPR

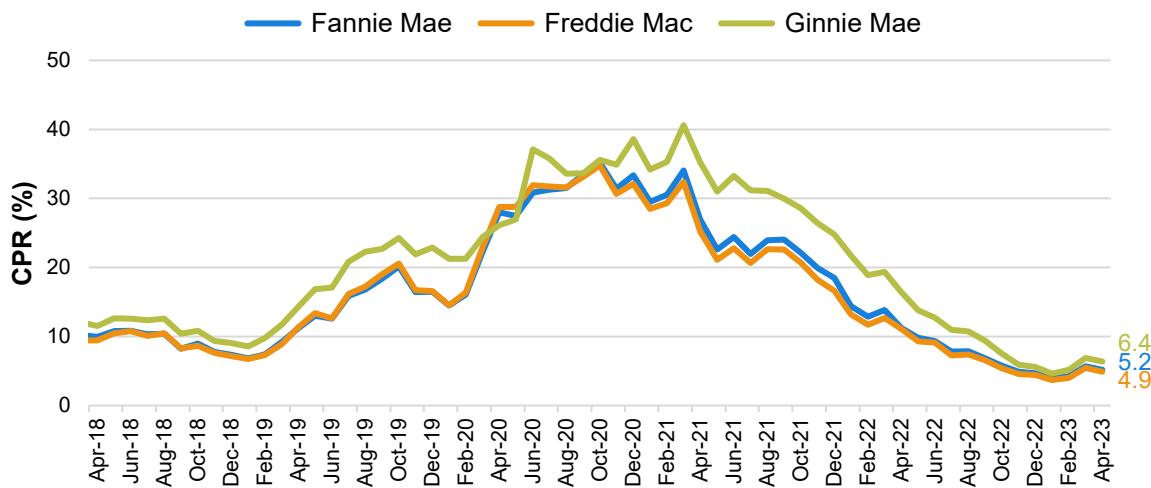
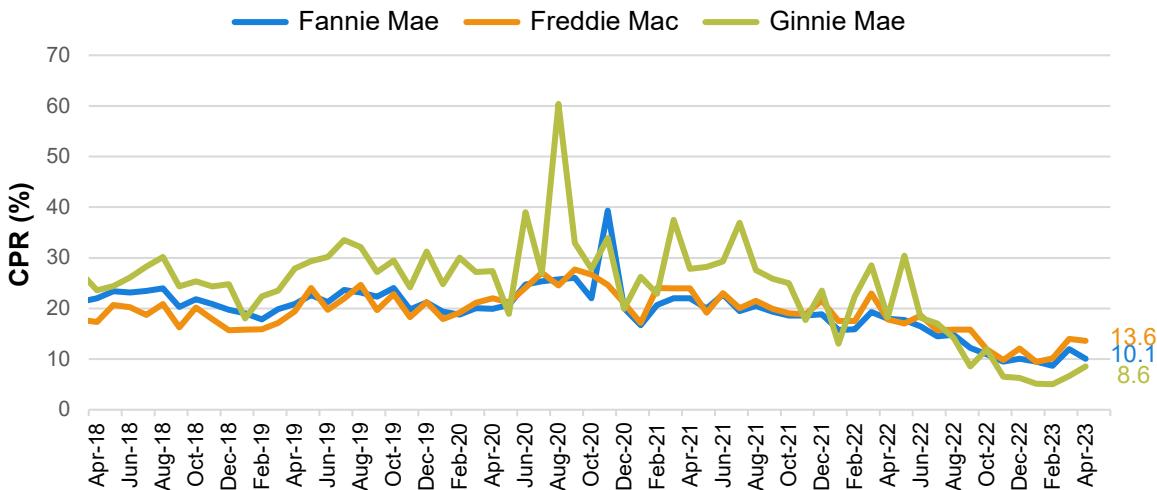


Figure 14. ARM Aggregate 1-Month CPR



Source: Recursion. Note: Data as of April 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 April 2023 after slightly overtaking Ginnie Mae in September 2022.

Figure 15. Fixed Rate Aggregate CDR

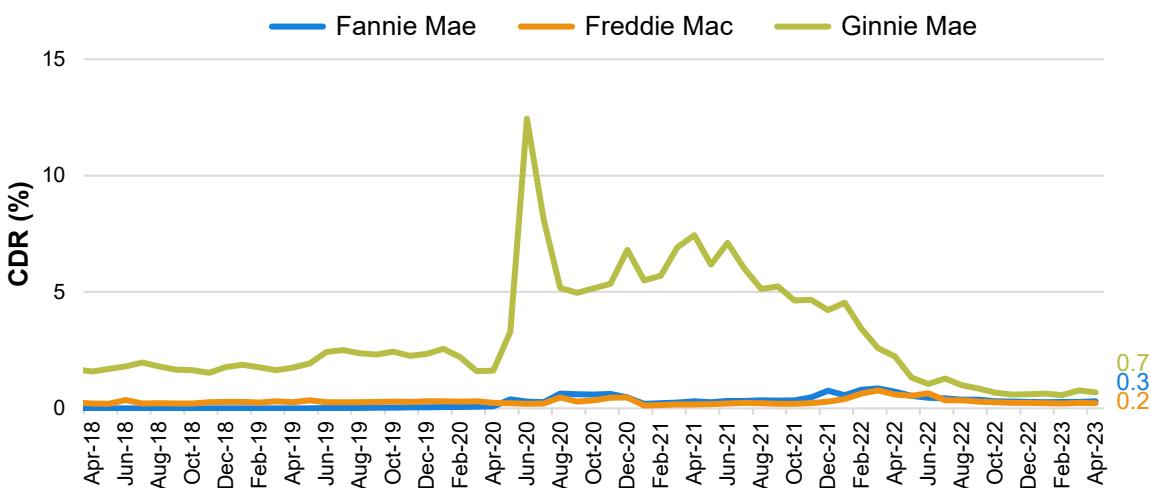
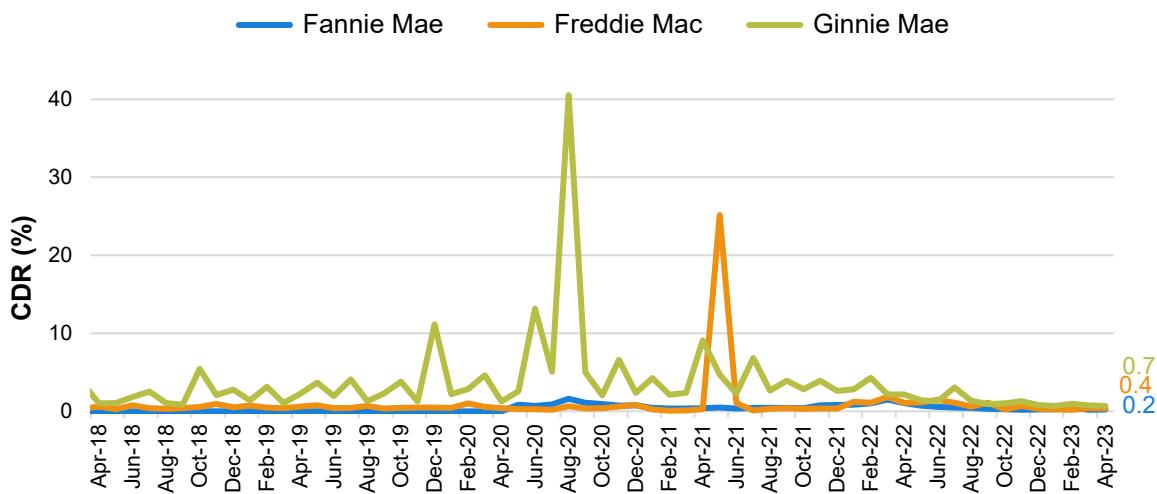


Figure 16. ARM Aggregate CDR



Source: Recursion. Note: Data as of April 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 decreases of 9.6% MoM and 10.1% MoM in fixed rate aggregate CRR, respectively. Freddie Mac saw a 2.7% MoM decrease and Fannie Mae saw a 16.4% MoM decrease in ARM aggregate CRR. Ginnie Mae decreased 7.2% MoM in fixed rate aggregate CRR and saw a 33.3% MoM increase in ARM aggregate CRR.

Figure 17. Fixed Rate Aggregate CRR

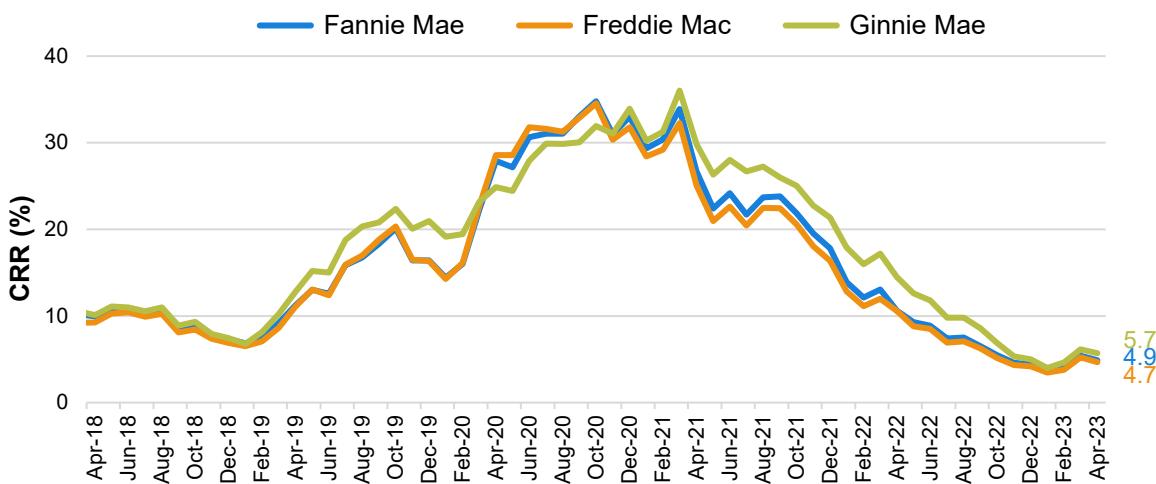
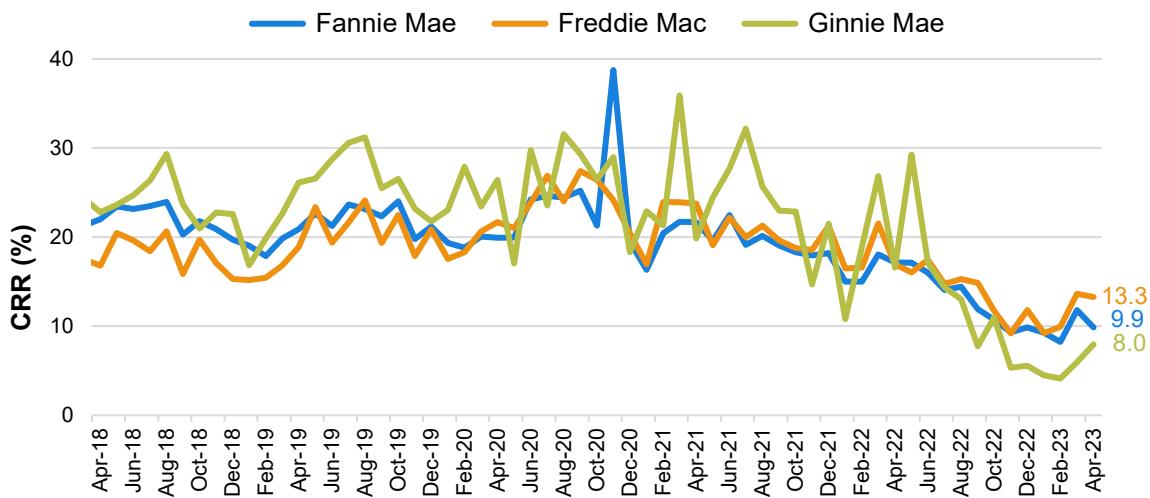


Figure 18. ARM Aggregate CRR



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

5 SINGLE-FAMILY MBS PASS-THROUGH ISSUANCE

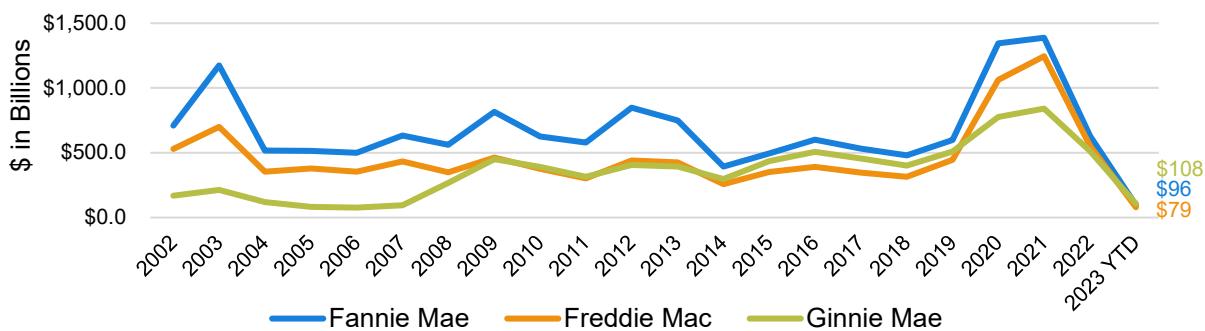
5.1 Gross Issuance of Agency MBS

Agency gross MBS issuance increased by 16% MoM. Freddie Mac, Ginnie Mae and Fannie Mae all saw increases in gross issuance as compared to March as seen in [Section 5.3](#).

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 | \$96.0 | \$79.1 | \$175.1 | \$107.6 | \$282.7 |

Figure 19. Agency Gross Issuance



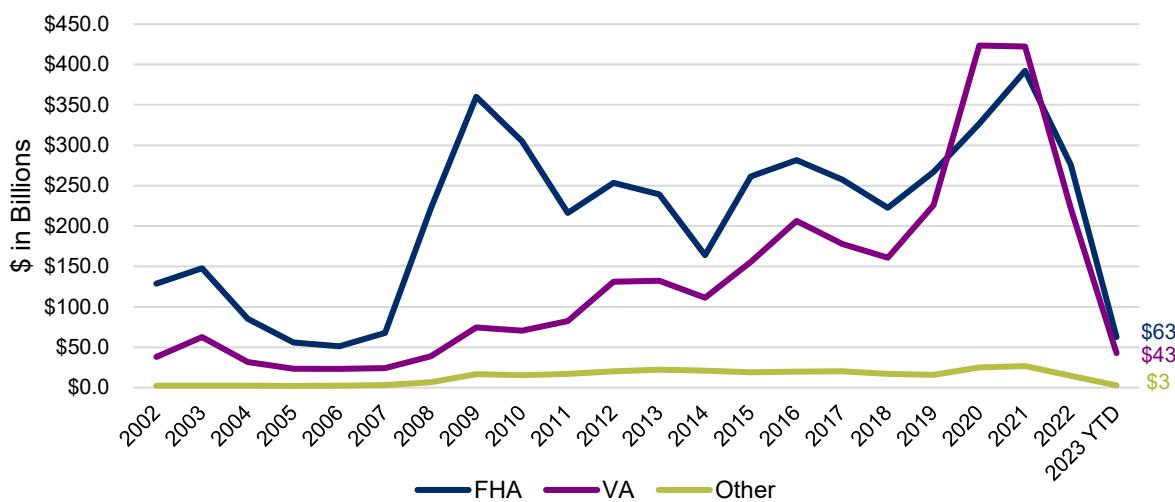
Note: Numbers are rounded to the nearest hundred million. For sums, like "GSE Total", the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

Ginnie Mae's \$31.6 billion in gross issuance in April was approximately 26% 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 | \$62.5 | \$42.6 | \$2.6 | \$107.7 |

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.

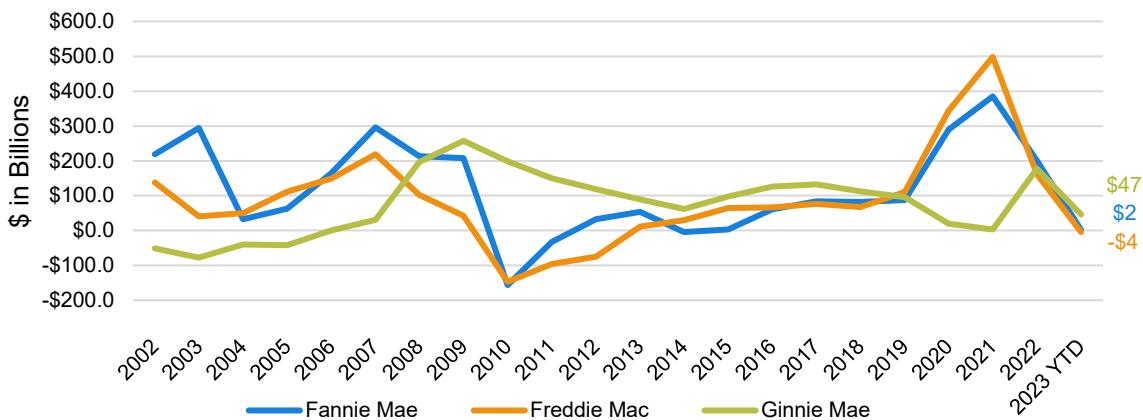
5.2 Net Issuance of Agency MBS

Agency net issuance in April was approximately \$17.0 billion, which represents a 794.7% MoM increase in net issuance. Ginnie Mae net issuance was \$15.0 billion in April, a 72.4% increase from March 2023. Since May 2022, FHA net issuance continues to outpace VA net issuance MoM, as shown in **Table 4** and **Figure 22**.

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 | \$2.2 | -\$4.0 | -\$1.8 | \$46.5 | \$44.7 |

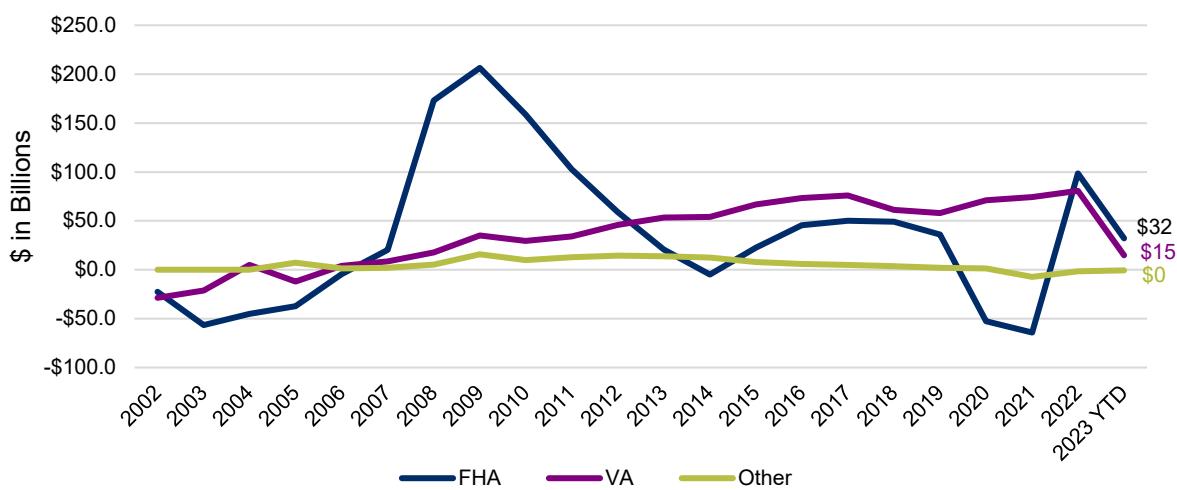
Figure 21. Agency Net Issuance



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)

| Issuance Year | FHA | VA | Other | Total |
|----------------------|------------|-----------|--------------|--------------|
| 2000 | \$29.0 | \$0.3 | \$0.0 | \$29.3 |
| 2001 | \$0.7 | -\$10.6 | \$0.0 | -\$9.9 |
| 2002 | -\$22.5 | -\$28.7 | \$0.0 | -\$51.2 |
| 2003 | -\$56.5 | -\$21.1 | \$0.0 | -\$77.6 |
| 2004 | -\$45.2 | \$5.1 | \$0.0 | -\$40.1 |
| 2005 | -\$37.3 | -\$12.1 | \$7.2 | -\$42.2 |
| 2006 | -\$4.7 | \$3.8 | \$1.2 | \$0.2 |
| 2007 | \$20.2 | \$8.7 | \$2.0 | \$30.9 |
| 2008 | \$173.3 | \$17.7 | \$5.4 | \$196.4 |
| 2009 | \$206.4 | \$35.1 | \$15.8 | \$257.4 |
| 2010 | \$158.6 | \$29.6 | \$10.0 | \$198.3 |
| 2011 | \$102.8 | \$34.0 | \$12.8 | \$149.6 |
| 2012 | \$58.9 | \$45.9 | \$14.3 | \$119.1 |
| 2013 | \$20.7 | \$53.3 | \$13.9 | \$87.9 |
| 2014 | -\$4.8 | \$53.9 | \$12.5 | \$61.6 |
| 2015 | \$22.5 | \$66.9 | \$7.9 | \$97.3 |
| 2016 | \$45.6 | \$73.2 | \$6.0 | \$124.9 |
| 2017 | \$50.1 | \$76.1 | \$5.0 | \$131.2 |
| 2018 | \$49.2 | \$61.2 | \$3.5 | \$113.9 |
| 2019 | \$35.9 | \$58.0 | \$1.9 | \$95.7 |
| 2020 | -\$52.5 | \$71.0 | \$1.3 | \$19.9 |
| 2021 | -\$64.2 | \$74.2 | -\$7.3 | \$2.7 |
| 2022 | \$98.5 | \$80.7 | -\$1.7 | \$177.4 |
| 2023 YTD | \$32.1 | \$14.9 | -\$0.5 | \$46.5 |

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 |
| 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 |
| Apr-23 | \$27.7 | \$21.0 | \$31.6 | \$48.7 | \$80.3 | \$1.4 | \$0.6 | \$15.0 | \$2.0 | \$17.0 |

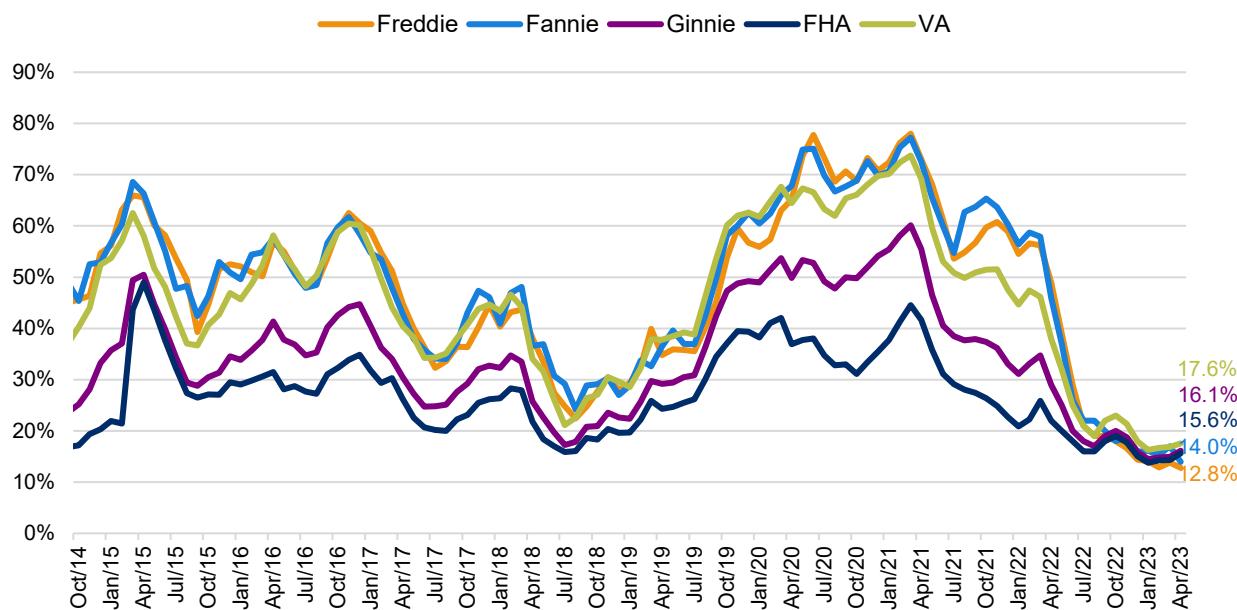
Source: Beginning May 2021, data for Gross and Net Issuance was sourced from Fannie Mae, Freddie Mac, and Ginnie Mae loan level disclosure files. Net issuance is defined here as the difference between prior period UPB and current period UPB. Data as of April 2023. Beginning with the October 2021 GMAR, the Fannie Mae and Freddie Mac net issuance data have been updated to reflect the current UPB of the portfolios. July 2021 through April 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 April 2023. Ginnie Mae's MoM increase was approximately 7.7%, with the greater increase taking place with FHA lending which was up approximately 9.2% in April MoM. VA's refinance share increased by approximately 4.1%. In the conventional conforming mortgage market space, Fannie Mae saw a decrease of 18.0% MoM and Freddie Mac saw a decrease of 7.4% MoM.

- Freddie Mac's refinance percentage dropped to 12.8% in April, down from 13.8% in March.
- Fannie Mae's refinance percentage dropped to 14.0% in April, down from 17.0% in March.
- Ginnie Mae's refinance percentage rose to 16.1% in April, up from 15.0% in March.
- FHA's refinance percentage rose to 15.6% in April, up from 14.3% in March.
- VA's refinance percentage rose to 17.6% in April, up from 16.9% in March.

Figure 23. Percent Refinance at Issuance – Single-Family



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

6 AGENCY SINGLE-FAMILY MBS OUTSTANDING

6.1 Outstanding Single-Family Agency MBS

As of April 2023, outstanding single-family MBS in the agency market totaled \$8.647 trillion: 41.3% Fannie Mae, 33.5% Freddie Mac, and 25.2% Ginnie Mae MBS. Over the past twelve months, Fannie Mae's, Freddie Mac's, and Ginnie Mae's total outstanding MBS increased by approximately 1.6%, 3.1%, and 9.0%, respectively. Fannie Mae outstanding MBS remains larger than Freddie Mac's and Ginnie Mae's by approximately \$673 billion and \$1.4 trillion, respectively.

Ginnie Mae MBS collateral composition has changed dramatically over the past five years. In April 2018, 60.4% of Ginnie Mae outstanding collateral was FHA and 33.4% was VA. In April 2023, FHA collateral comprised 53.2% of Ginnie Mae MBS outstanding and VA collateral comprised 42.0% of Ginnie Mae MBS outstanding.

Figure 24. Outstanding Agency Mortgage-Backed Securities

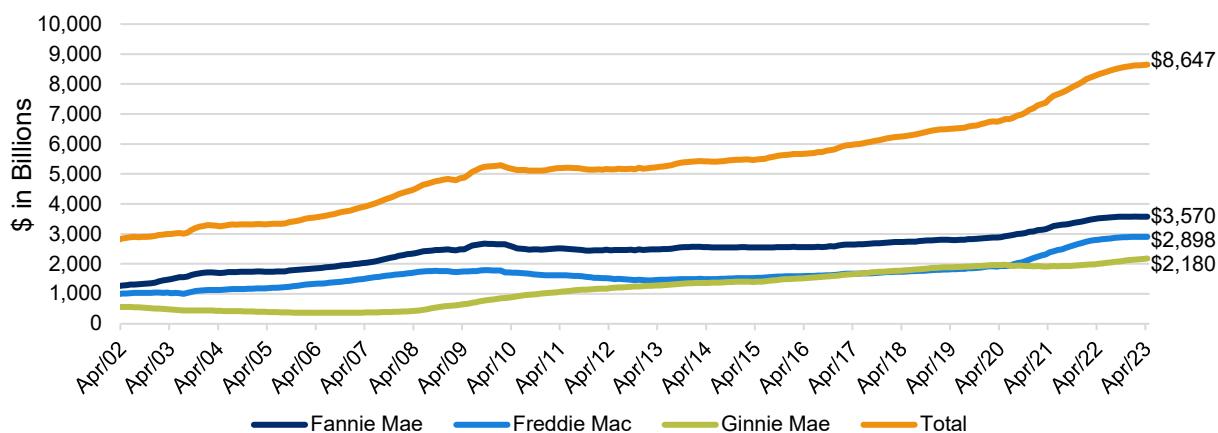
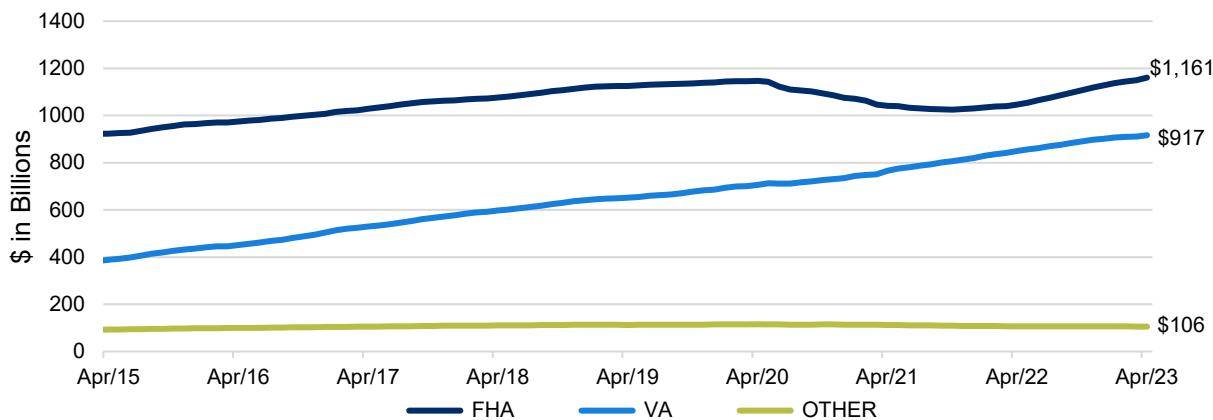


Figure 25. Composition of Outstanding Ginnie Mae Mortgage-Backed Securities



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

6.2 Origination Volume and Share Over Time

First lien origination volume continued to decline in Q1 2023, with \$290 billion in originations in Q1, which represents a decline in issuance from Q4 2022 of approximately 13%. Ginnie Mae's share of total origination decreased from 25.6% to 22.3% in Q1 2023, while Portfolio origination increased from 25.3% to 31.1% in Q1 2023.

Figure 26. First Lien Origination Volume

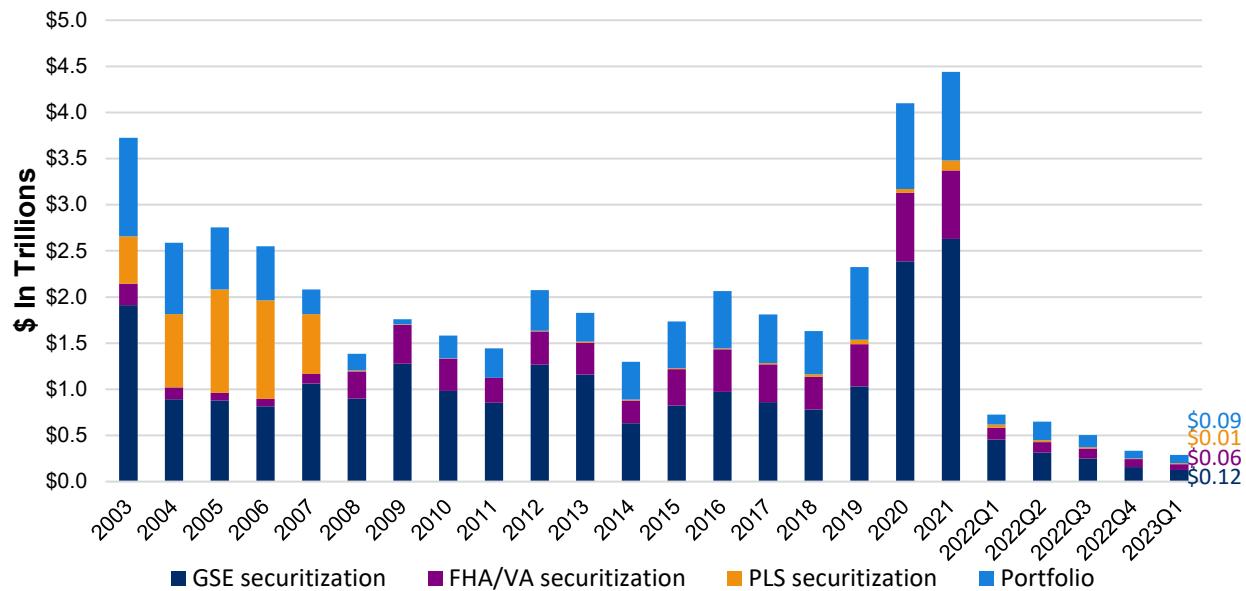
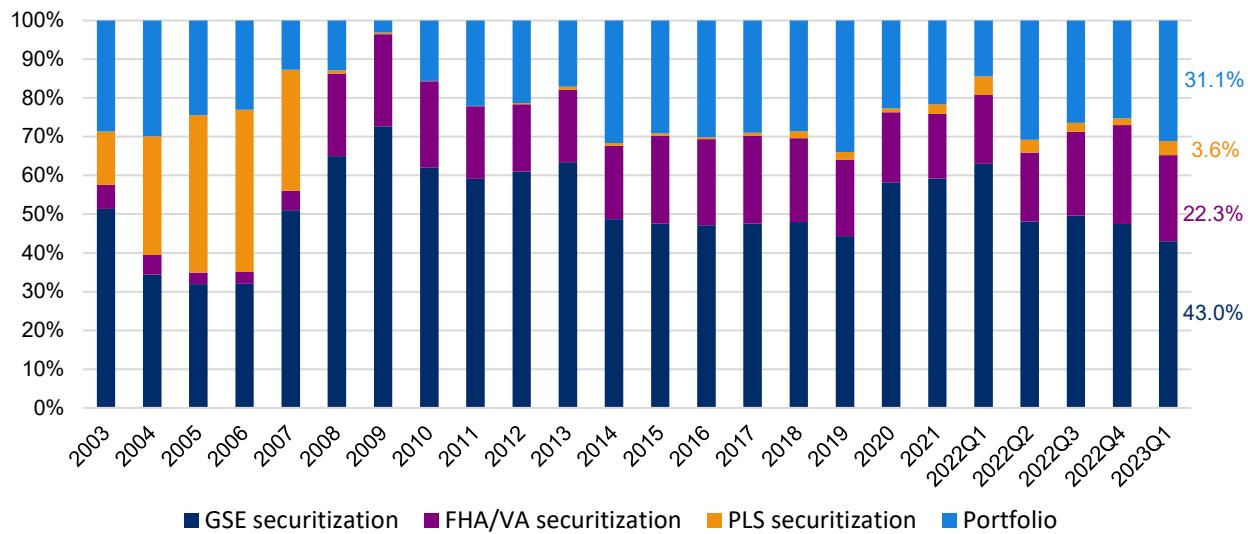


Figure 27. First Lien Origination Share



Source: Inside Mortgage Finance. Note: Data as of Q1 2023.

6.3 Agency Issuance and Agency Outstanding by State

Ginnie Mae MBS represent approximately 33% 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 (55%) 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 7% difference between Ginnie Mae's share of new agency issuance (33%) 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) |
| | 33% | 1,834,246 | 282.91 | 292.25 | 26% | 10,809,279 | 204.94 | 210.84 |
| AK | 55% | 5781 | 336.78 | 302.06 | 48% | 37542 | 261.72 | 221.01 |
| AL | 47% | 42551 | 225.60 | 239.89 | 41% | 238408 | 157.34 | 177.68 |
| AR | 43% | 22096 | 193.41 | 223.37 | 39% | 137417 | 132.63 | 160.89 |
| AZ | 31% | 54309 | 321.22 | 328.79 | 25% | 276453 | 219.86 | 226.17 |
| CA | 28% | 117129 | 447.31 | 443.55 | 17% | 690059 | 328.03 | 320.55 |
| CO | 31% | 39725 | 404.04 | 394.53 | 23% | 214881 | 292.45 | 277.73 |
| CT | 32% | 16831 | 265.06 | 277.69 | 26% | 106933 | 202.67 | 209.42 |
| DC | 21% | 1465 | 483.86 | 424.16 | 13% | 9003 | 382.25 | 349.93 |
| DE | 35% | 8555 | 272.25 | 299.34 | 31% | 52294 | 204.37 | 211.58 |
| FL | 36% | 167261 | 301.67 | 301.68 | 32% | 858983 | 212.68 | 211.79 |
| GA | 40% | 98172 | 260.17 | 293.45 | 34% | 50283 | 180.63 | 207.00 |
| HI | 42% | 5081 | 614.46 | 503.34 | 32% | 33679 | 469.18 | 358.10 |
| IA | 31% | 12945 | 182.41 | 196.44 | 22% | 82950 | 134.12 | 148.36 |
| ID | 30% | 10686 | 335.94 | 326.58 | 23% | 63944 | 218.63 | 223.07 |
| IL | 29% | 60639 | 210.07 | 244.14 | 22% | 369744 | 160.21 | 179.28 |
| IN | 35% | 48067 | 193.21 | 213.98 | 30% | 280967 | 134.54 | 151.09 |
| KS | 34% | 15081 | 194.31 | 225.19 | 29% | 96589 | 140.27 | 163.91 |
| KY | 41% | 28772 | 199.58 | 216.51 | 35% | 165953 | 143.92 | 155.99 |
| LA | 48% | 35045 | 206.25 | 237.91 | 40% | 202437 | 157.97 | 177.56 |
| MA | 27% | 18434 | 376.00 | 369.44 | 16% | 114519 | 285.22 | 268.73 |
| MD | 42% | 47556 | 338.92 | 329.07 | 34% | 294133 | 265.59 | 249.69 |
| ME | 33% | 6140 | 247.42 | 271.69 | 26% | 38148 | 178.19 | 191.84 |
| MI | 26% | 45138 | 187.09 | 215.28 | 20% | 277354 | 134.14 | 156.92 |
| MN | 22% | 22238 | 248.87 | 278.62 | 18% | 160159 | 182.50 | 198.58 |
| MO | 35% | 40054 | 199.81 | 221.76 | 29% | 245655 | 142.43 | 162.15 |
| MS | 54% | 21110 | 203.36 | 219.49 | 48% | 123173 | 143.87 | 161.30 |
| MT | 28% | 4726 | 311.64 | 316.63 | 24% | 32370 | 209.43 | 216.46 |
| NC | 34% | 75988 | 256.25 | 289.82 | 29% | 416731 | 176.39 | 202.36 |
| ND | 34% | 2718 | 244.99 | 240.58 | 24% | 17091 | 193.27 | 184.33 |
| NE | 32% | 9469 | 220.93 | 225.14 | 26% | 65106 | 149.60 | 161.11 |
| NH | 28% | 5728 | 314.93 | 308.45 | 22% | 38435 | 226.91 | 215.18 |
| NJ | 30% | 39664 | 319.97 | 335.47 | 22% | 233646 | 241.04 | 254.60 |
| NM | 42% | 15101 | 245.12 | 255.00 | 38% | 95620 | 167.26 | 178.51 |
| NV | 36% | 24897 | 347.71 | 336.90 | 30% | 134113 | 248.54 | 235.74 |
| NY | 25% | 42571 | 298.79 | 340.11 | 20% | 308921 | 209.73 | 248.57 |
| OH | 34% | 67122 | 185.69 | 202.94 | 29% | 425871 | 130.68 | 149.29 |
| OK | 43% | 29423 | 204.34 | 225.81 | 42% | 189642 | 141.49 | 162.63 |
| OR | 25% | 17926 | 353.72 | 364.33 | 19% | 111018 | 254.43 | 253.63 |
| PA | 29% | 55336 | 202.64 | 247.43 | 26% | 390580 | 149.21 | 182.14 |
| RI | 41% | 5971 | 328.80 | 300.67 | 30% | 35911 | 235.11 | 213.23 |
| SC | 40% | 47123 | 255.76 | 264.64 | 34% | 237310 | 183.91 | 192.33 |
| SD | 35% | 4562 | 245.61 | 247.48 | 29% | 29405 | 173.55 | 177.79 |
| TN | 35% | 49532 | 260.73 | 284.48 | 31% | 271109 | 176.19 | 204.65 |
| TX | 32% | 183022 | 270.63 | 306.19 | 32% | 1102469 | 183.11 | 212.92 |
| UT | 24% | 17072 | 380.17 | 389.26 | 19% | 96025 | 260.87 | 264.20 |
| VA | 45% | 72892 | 332.52 | 322.83 | 36% | 448647 | 257.25 | 250.28 |
| VI | 24% | 125 | 363.88 | 429.04 | 24% | 802 | 248.46 | 302.04 |
| VT | 24% | 1772 | 241.03 | 263.26 | 19% | 12211 | 181.51 | 180.92 |
| WA | 28% | 37175 | 400.99 | 407.55 | 21% | 233031 | 285.33 | 289.58 |
| WI | 25% | 19243 | 211.81 | 229.07 | 17% | 124376 | 157.01 | 163.39 |
| WV | 50% | 10100 | 195.23 | 197.30 | 44% | 60127 | 144.51 | 145.55 |
| WY | 40% | 4127 | 268.39 | 268.74 | 35% | 25052 | 206.46 | 201.84 |

Source: Recursion. Note: Outstanding balance is based on loan balance as of April 2023. Ginnie Mae issuance is based on the last 12 months, from March 2022 to April 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 April 2023, the weighted average coupon (WAC) on outstanding Ginnie Mae MBS increased slightly from 3.18% in March 2023 to 3.21% as seen in **Figure 28**. **Figure 29** illustrates that loans originated since 2019 account for 74% of Ginnie Mae MBS collateral outstanding.

Figure 28. Outstanding Ginnie Mae MBS Balance, by Coupon

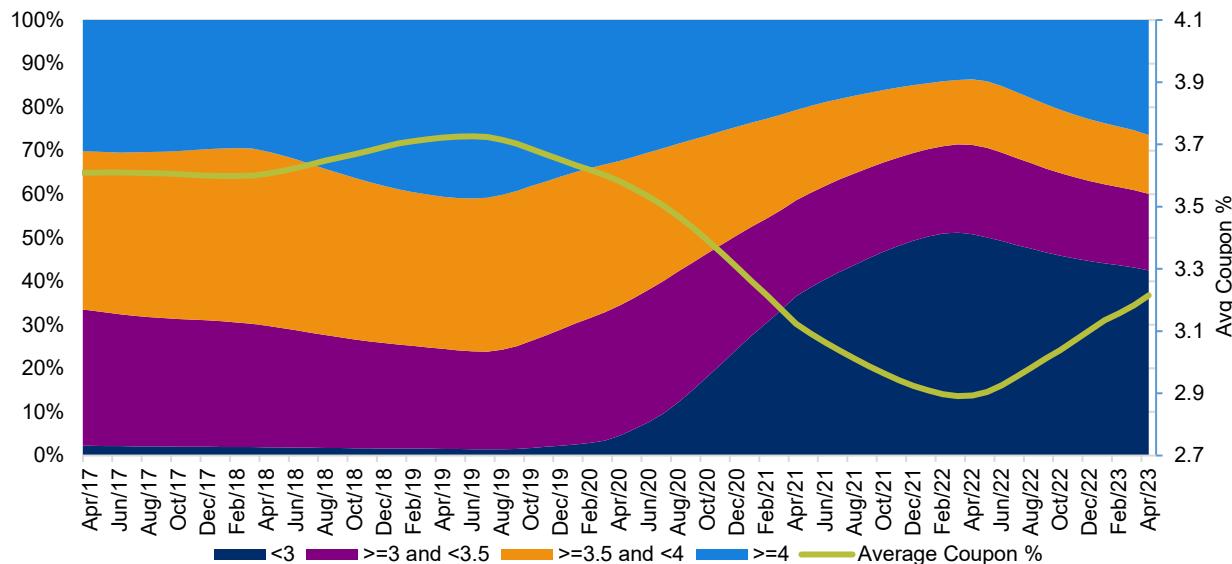
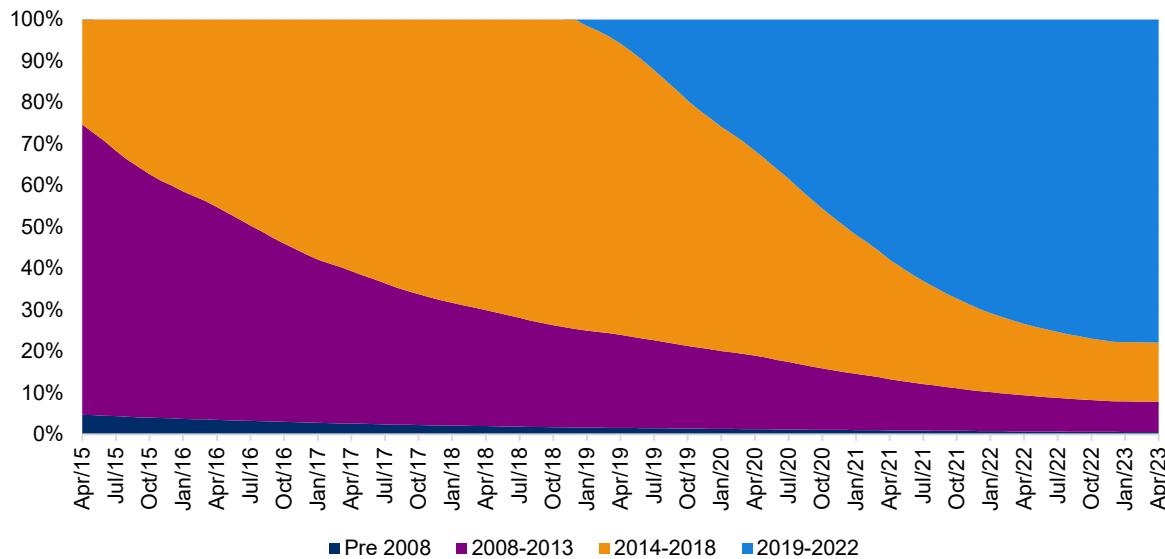


Figure 29. Outstanding Ginnie Mae MBS Balance, by Vintage



Sources: Recursion. Note: April 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 April 2023, \$5.6 billion of Ginnie Mae MBS were securitized into Real Estate Mortgage Investment Conduits (REMICs) as underlying collateral. This represents a roughly 50.5% decrease YoY from \$11.2 billion in April 2022, and a 25.6% MoM decrease from \$7.5 billion in March 2023. Of that, approximately \$166.9 million were multifamily MBS having coupons over 4.01%. \$5.1 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)³ | % Breakdown of REMIC Collateral by coupon¹⁷ |
|-----------------------|--|---|
| Multifamily | | |
| 2.51-3.00 | 134.5 | 44.6% |
| 4.01-4.50 | 166.9 | 55.4% |
| Subtotal | 301.4 | 100.0% |
| Single-Family | | |
| 4.01-4.50 | 51.5 | 1.0% |
| 4.51-5.00 | 89.2 | 1.7% |
| 5.01-5.50 | 987.0 | 18.8% |
| 5.51-6.00 | 2,186.8 | 41.6% |
| 6.01-6.50 | 1,508.3 | 28.7% |
| 6.51-7.00 | 379.8 | 7.2% |
| >7.01 | 50.0 | 1.0% |
| Subtotal | 5,252.6 | 100.0% |
| Grand Total | 5,554.0 | 100.0% |

Source: Ginnie Mae Disclosure Files

³Totals may not sum due to rounding.

7.2 REMIC Market Snapshot

In April 2023, total REMIC issuance amongst Ginnie Mae, Freddie Mac, and Fannie Mae fell 28.4% MoM to its lowest level since November 2022.

- In April 2023, Fannie Mae's total issuance was under \$1 billion for the third time in five months.
- In April 2023, Ginnie Mae and Freddie Mac's Multifamily REMIC collateral WAC decreased by 64bps and 31bps, respectively as collateral WAC fell below 4% for the first time since January 2023. Fannie Mae's Multifamily REMIC collateral WAC increased 33bps from February 2023 to 5.39% as Fannie did not issue a Multifamily deal in March 2023.
- In April 2023, Ginnie Mae, Freddie Mac, and Fannie Mae's Single Family REMIC collateral WAC increased by 11bps, 59bps, and 75bps, respectively as Ginnie Mae and Fannie Mae's collateral WAC surpassed 6%. Freddie Mac's collateral WAC was 5.87% for the month.

Figure 31. REMIC Issuance by Agency

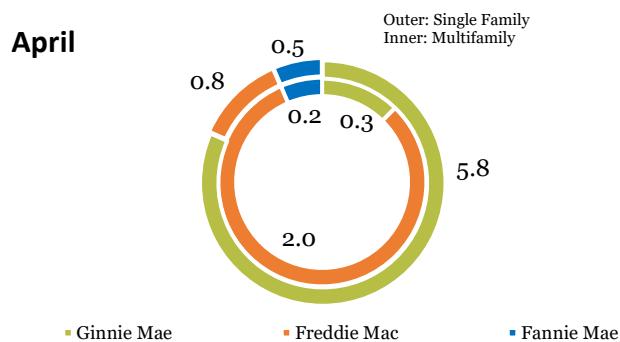


Table 8. Monthly REMIC Issuance by Agency

| | 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 | 5.8 | 81.6 | 8 | 0.3 | 12.4 | 2 |
| Freddie Mac | 0.8 | 11.9 | 6 | 2.0 | 81.2 | 2 |
| Fannie Mae | 0.5 | 6.5 | 4 | 0.2 | 6.4 | 1 |
| Total⁴ | 7.1 | 100.0 | 18 | 2.4 | 100.0 | 5 |

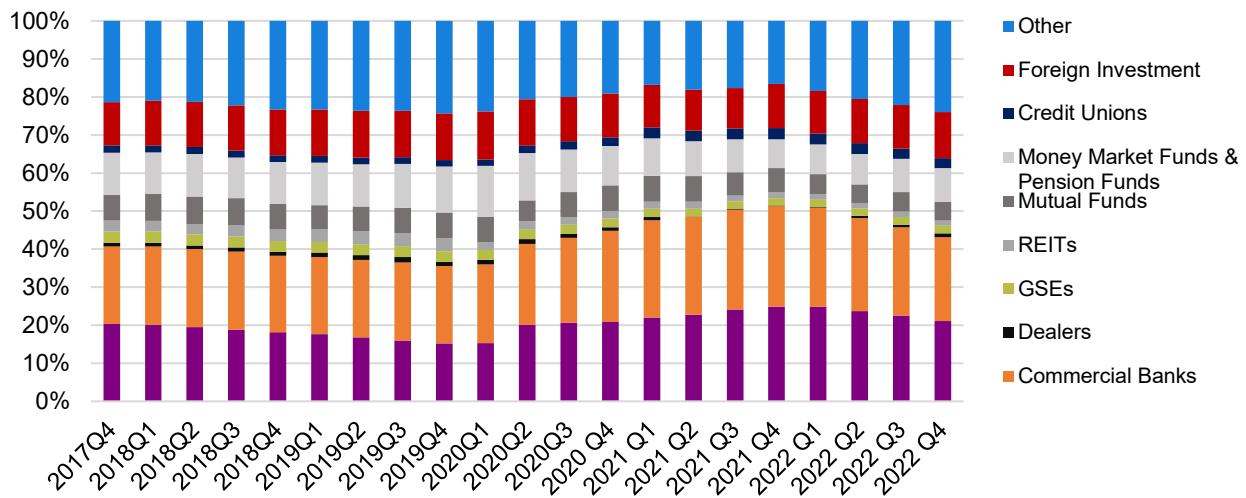
Source: Ginnie Mae Disclosure Files

⁴ 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 | | | |
|----------------------------|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|-------------|---------|---------|--|
| | Aug-22 | Sep-22 | Oct-22 | Nov-22 | Dec-22 | Jan-23 | Feb-23 | Mar-23 | 12-Apr | 19-Apr | 26-Apr | 3-May | |
| Largest 25 Domestic Banks | 2,115.5 | 2,096.8 | 2,067.6 | 2,052.0 | 2,056.5 | 2,054.5 | 1,961.4 | 1,952.3 | 1,948.2 | 1,954.1 | 1,957.6 | 1,946.7 | |
| Small Domestic Banks | 738.3 | 712.4 | 692.2 | 690.9 | 677.3 | 663.5 | 764.0 | 700.9 | 627.3 | 625.4 | 630.8 | 629.5 | |
| Foreign Related Banks | 35.1 | 37.4 | 35.9 | 39.3 | 36.6 | 30.0 | 27.0 | 28.4 | 27.5 | 27.6 | 26.5 | 24.5 | |
| Total, Seasonally Adjusted | 2,888.9 | 2,846.6 | 2,795.7 | 2,782.2 | 2,770.4 | 2,748.0 | 2,752.4 | 2,681.6 | 2,603.0 | 2,607.1 | 2,614.9 | 2,600.7 | |

Source: Federal Reserve Bank. Note: Small domestic banks include all domestically chartered commercial banks not included in the top 25. Data as of April 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 \$1.202 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 13.97% as of January 2023.

Figure 33. Foreign Share of Agency MBS Market

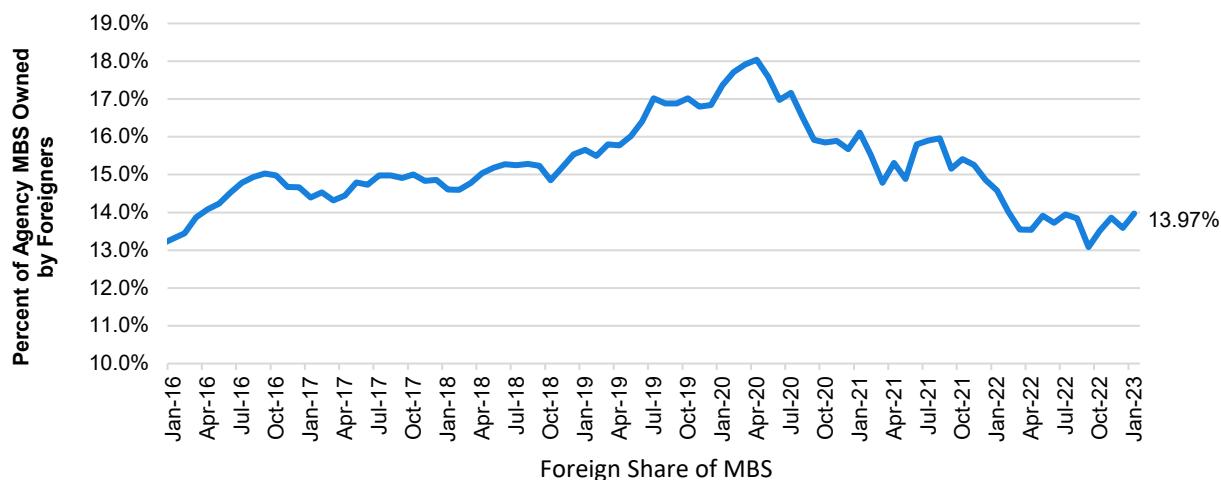
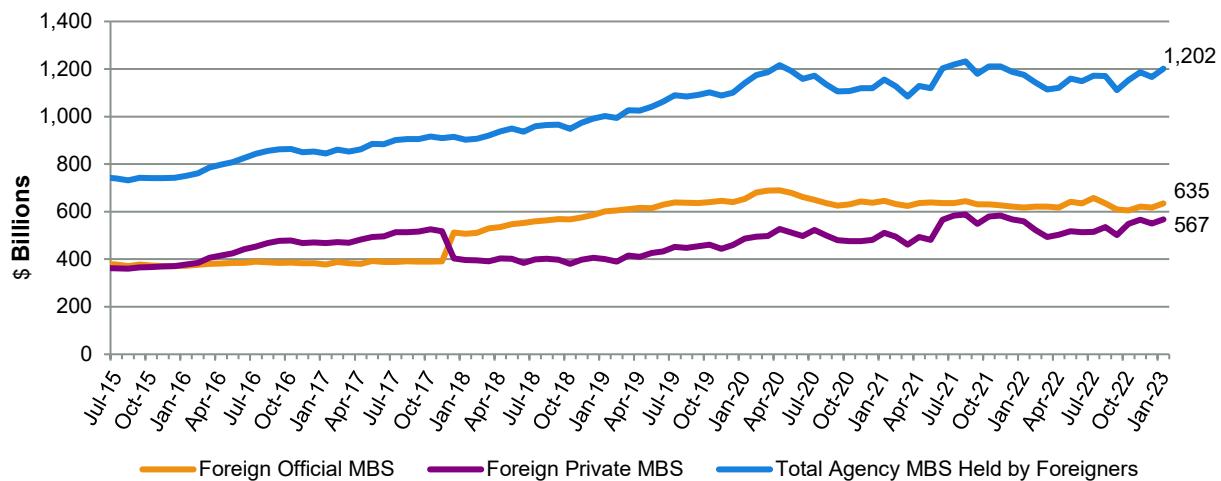


Figure 34. Monthly Foreign MBS Holdings



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 owned 58% of all foreign owned US MBS. Between December 2021 and December 2022, Japan and Taiwan decreased their agency MBS holdings while China's holdings increased. Japan's holdings decreased by \$23.4 billion, Taiwan's holdings decreased by \$33.7 billion, and China's holdings 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 | 12/1/2021 | Level of Holdings (\$ Millions) | | YoY Change in Holdings (\$ Millions) |
|----------------|------------------|---------------------------------|--------------------------------------|--------------------------------------|
| | | 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 April 2023 was \$247 billion, which is up from a monthly average of \$241 billion for calendar year 2022. In April 2023, agency MBS average daily trading volume decreased 4.9% MoM. See footnote below for update on “Average Daily Turnover by Sector” data.

Figure 35. Average Daily Trading Volume by Sector

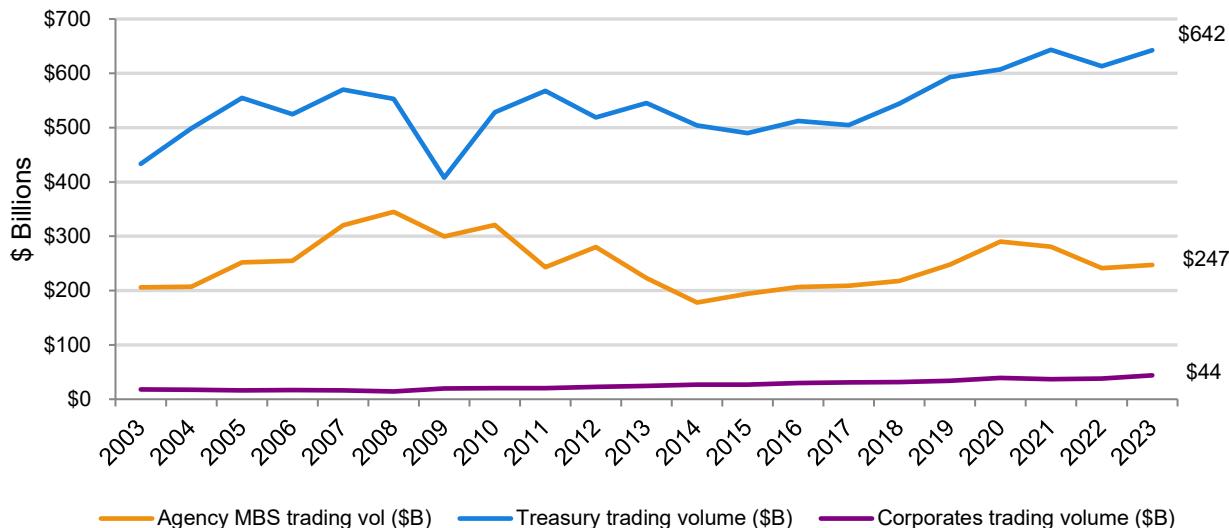
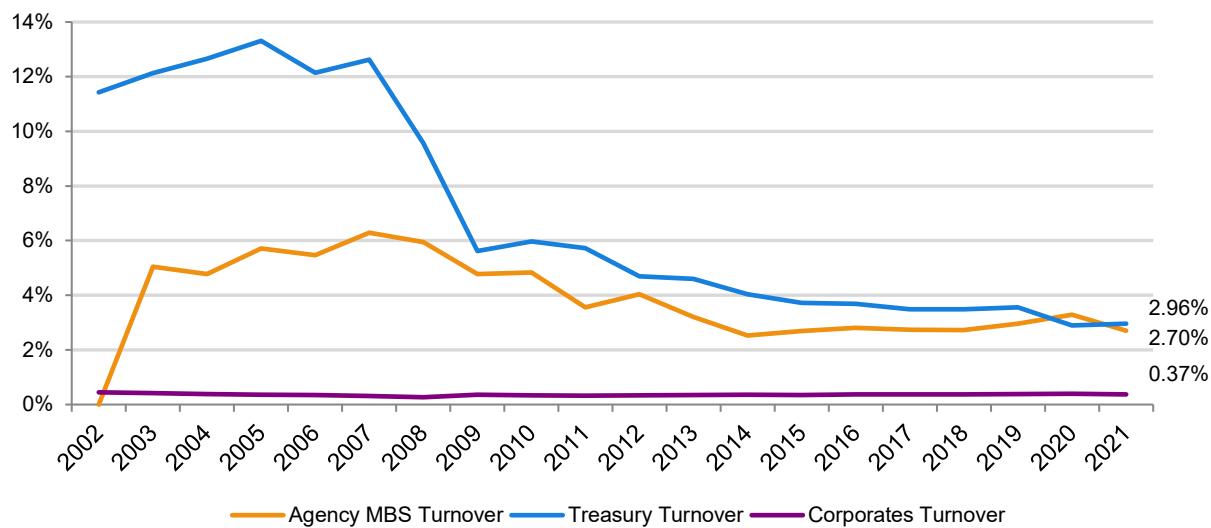


Figure 36. Average Daily Turnover by Sector



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

PRIMARY MORTGAGE MARKET

10 AGENCY CREDIT BREAKDOWN

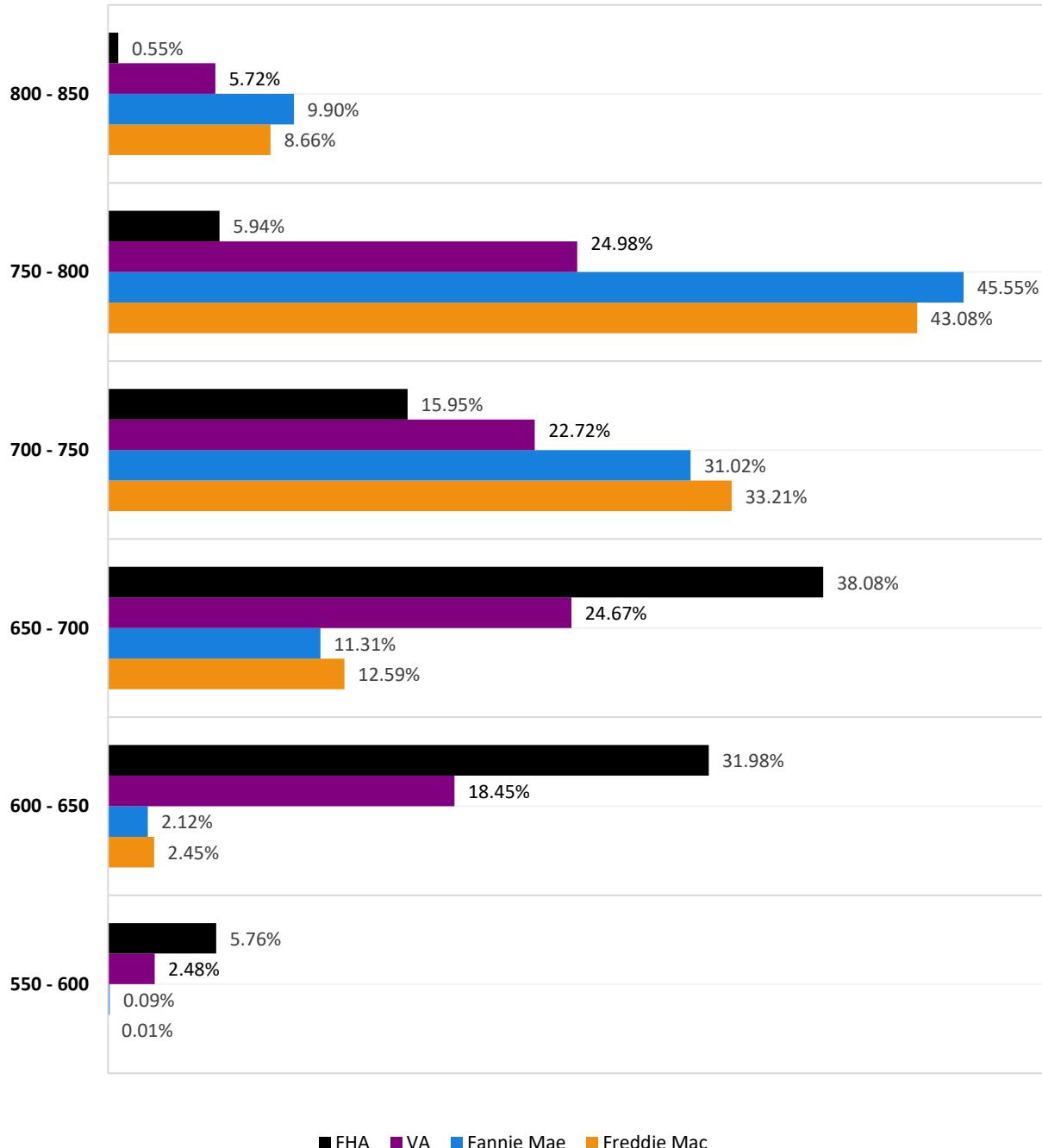
The tables below outline the population distributions of FICOs, DTIs, and LTVs between the agencies and between FHA, VA, and other Ginnie Mae loan sources as of the end of April 2023. The distribution statistics capture some key differences in the populations served by the agencies.

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 | 196,020 | 648 | 690 | 739 | 775 | 797 | 730 |
| Fannie | 68,432 | 699 | 728 | 759 | 785 | 801 | 754 |
| Freddie | 53,357 | 698 | 726 | 757 | 783 | 800 | 752 |
| Ginnie | 74,231 | 624 | 648 | 683 | 733 | 777 | 691 |
| Refi FICO | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 46,798 | 623 | 655 | 702 | 752 | 786 | 702 |
| Fannie | 16,670 | 666 | 700 | 742 | 776 | 798 | 736 |
| Freddie | 10,813 | 656 | 686 | 725 | 762 | 791 | 723 |
| Ginnie | 19,315 | 597 | 626 | 657 | 693 | 734 | 661 |
| All FICO | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 242,818 | 642 | 682 | 733 | 772 | 795 | 724 |
| Fannie | 85,102 | 691 | 723 | 757 | 784 | 800 | 750 |
| Freddie | 64,170 | 688 | 719 | 753 | 780 | 799 | 747 |
| Ginnie | 93,546 | 620 | 644 | 677 | 725 | 771 | 685 |
| Purchase FICO: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 74,231 | 624 | 648 | 683 | 733 | 777 | 691 |
| FHA | 45,196 | 620 | 642 | 669 | 704 | 743 | 675 |
| VA | 26,091 | 635 | 670 | 725 | 772 | 796 | 719 |
| Other | 2,944 | 633 | 657 | 693 | 732 | 765 | 696 |
| Refi FICO: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 19,315 | 597 | 626 | 657 | 693 | 734 | 661 |
| FHA | 12,309 | 592 | 622 | 649 | 680 | 713 | 651 |
| VA | 6,983 | 608 | 638 | 675 | 718 | 760 | 678 |
| Other | 23 | 624 | 660 | 720 | 750 | 765 | 704 |
| All FICO: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 93,546 | 620 | 644 | 677 | 725 | 771 | 685 |
| FHA | 57,505 | 613 | 638 | 665 | 699 | 738 | 670 |
| VA | 33,074 | 628 | 661 | 711 | 764 | 793 | 710 |
| Other | 2,967 | 633 | 657 | 693 | 732 | 765 | 696 |

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

Figure 37. FICO Distributions by Agency


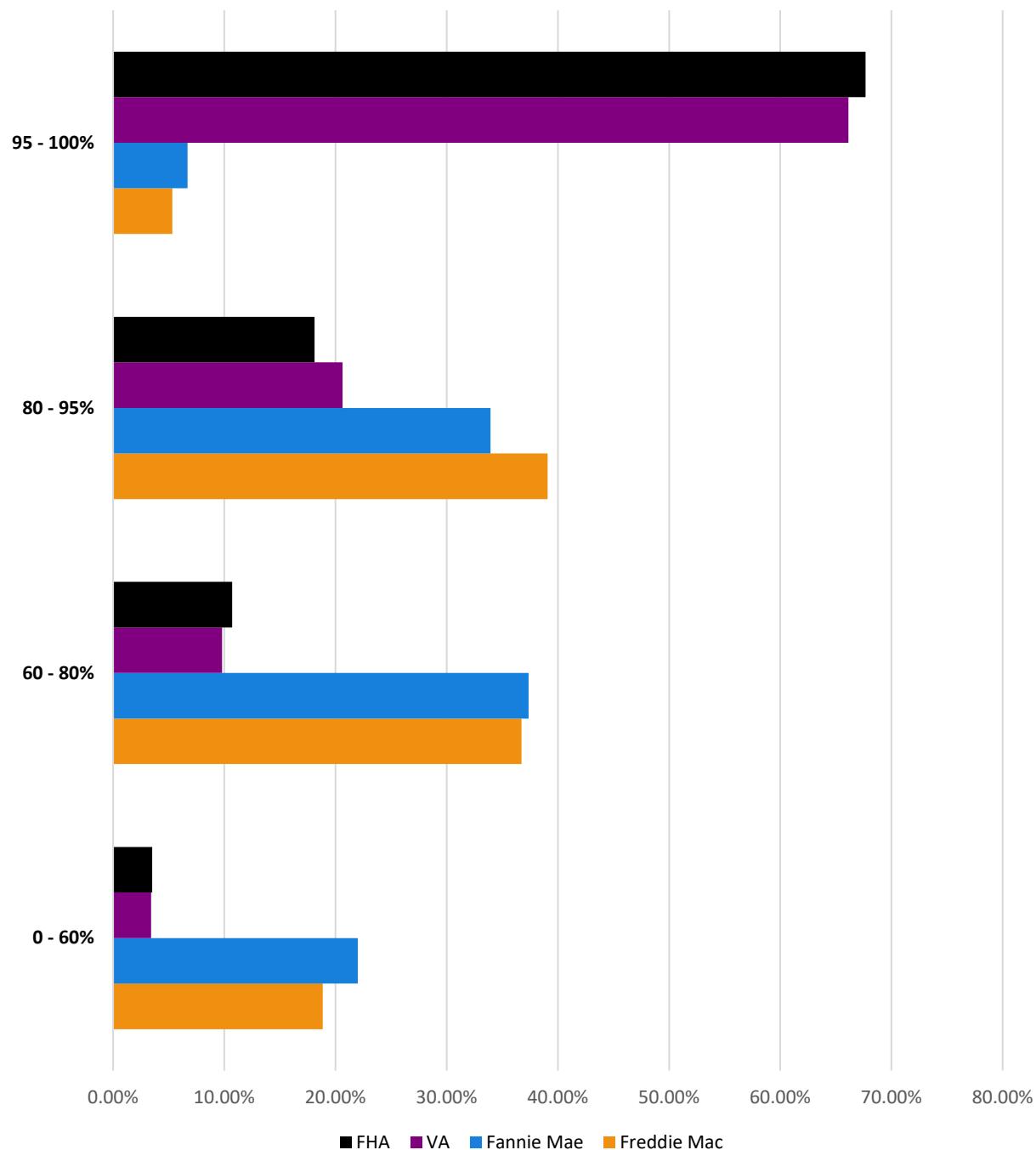
Sources: Fannie Mae, Freddie Mac, and Ginnie Mae disclosure files.

10.2 Loan-to-Value (LTV)

Table 15. Share of Loans by LTV

| Purchase LTV | | | | | | | |
|---|------------------------|------------|------------|---------------|------------|------------|-------------|
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 196,268 | 67 | 80 | 95 | 98 | 100 | 87 |
| Fannie | 68,487 | 56 | 75 | 80 | 95 | 95 | 81 |
| Freddie | 53,371 | 58 | 75 | 85 | 95 | 95 | 81 |
| Ginnie | 74,410 | 91 | 98 | 98 | 100 | 100 | 97 |
| Refi LTV | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 46,435 | 36 | 52 | 69 | 80 | 86 | 65 |
| Fannie | 16,672 | 30 | 43 | 59 | 70 | 79 | 56 |
| Freddie | 10,813 | 32 | 46 | 60 | 72 | 80 | 58 |
| Ginnie | 18,950 | 57 | 70 | 80 | 82 | 92 | 76 |
| All LTV | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 242,703 | 54 | 75 | 90 | 97 | 99 | 83 |
| Fannie | 85,159 | 45 | 66 | 80 | 93 | 95 | 76 |
| Freddie | 64,184 | 49 | 70 | 80 | 93 | 95 | 77 |
| Ginnie | 93,360 | 76 | 90 | 98 | 100 | 100 | 92 |
| Purchase LTV: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 74,410 | 91 | 98 | 98 | 100 | 100 | 97 |
| FHA | 45,344 | 92 | 97 | 98 | 98 | 98 | 96 |
| VA | 26,108 | 88 | 100 | 100 | 100 | 102 | 97 |
| Other | 2,958 | 92 | 98 | 101 | 101 | 101 | 98 |
| Refi LTV: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 18,950 | 57 | 70 | 80 | 82 | 92 | 76 |
| FHA | 12,347 | 54 | 67 | 78 | 81 | 81 | 72 |
| VA | 6,580 | 64 | 77 | 88 | 93 | 100 | 84 |
| Other | 23 | 73 | 78 | 86 | 93 | 99 | 83 |
| All LTV: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 93,360 | 76 | 90 | 98 | 100 | 100 | 92 |
| FHA | 57,691 | 75 | 86 | 98 | 98 | 98 | 91 |
| VA | 32,688 | 79 | 91 | 100 | 100 | 102 | 94 |
| Other | 2,981 | 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 38. Loan-to Value by Agency


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

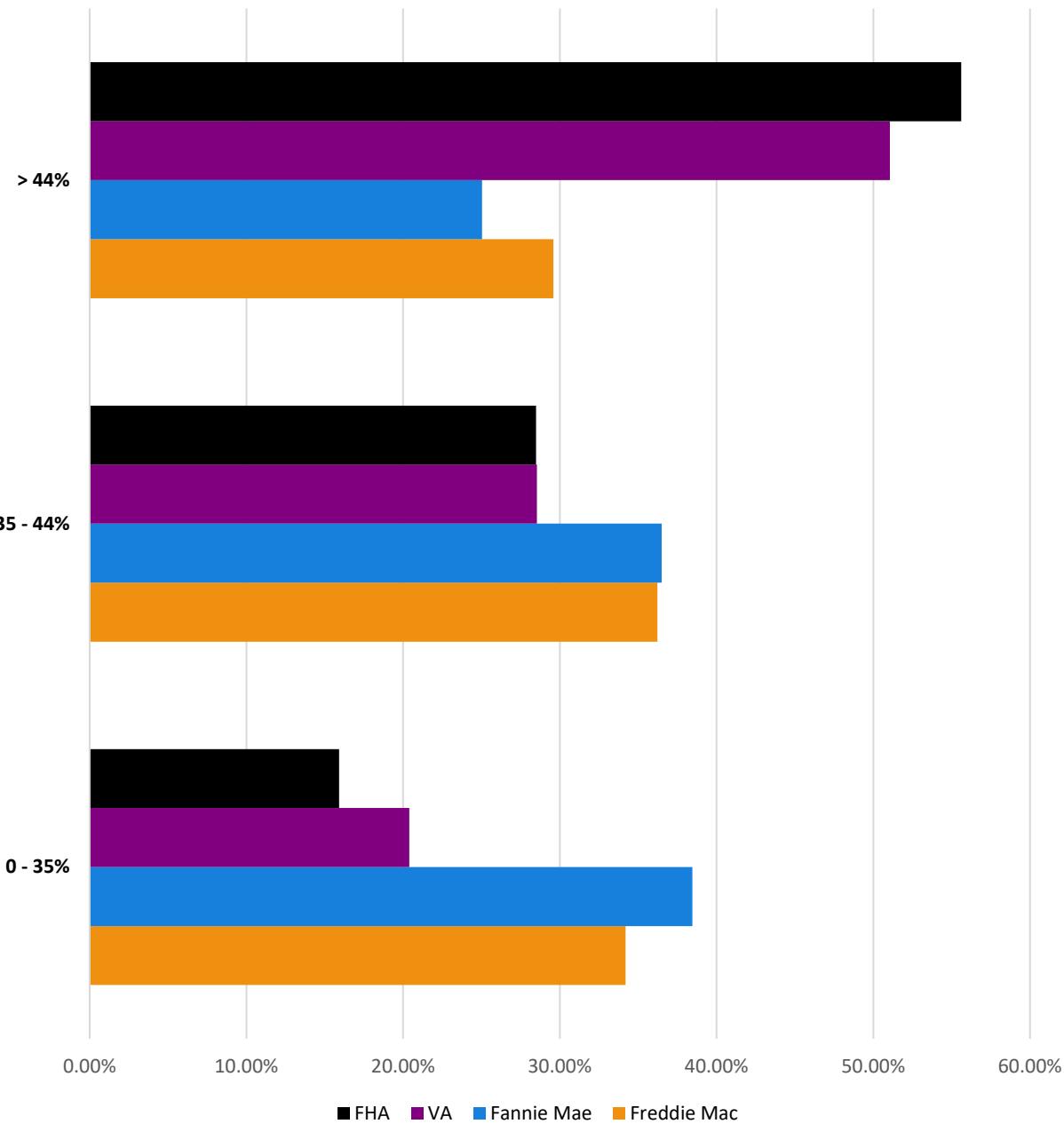
10.3 Debt-to-Income (DTI)

Table 16. Share of Loans by DTI

| Purchase DTI | | | | | | | |
|---|------------------------|------------|------------|---------------|------------|------------|-------------|
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 195,977 | 27 | 34 | 42 | 47 | 51 | 40 |
| Fannie | 68,487 | 24 | 31 | 39 | 45 | 48 | 38 |
| Freddie | 53,371 | 25 | 32 | 40 | 45 | 49 | 38 |
| Ginnie | 74,119 | 32 | 38 | 45 | 51 | 55 | 44 |
| Refi DTI | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 46,270 | 25 | 33 | 40 | 46 | 50 | 39 |
| Fannie | 16,672 | 23 | 30 | 38 | 43 | 47 | 37 |
| Freddie | 10,813 | 25 | 32 | 40 | 45 | 49 | 38 |
| Ginnie | 18,785 | 29 | 36 | 43 | 50 | 54 | 42 |
| All DTI | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 242,247 | 26 | 34 | 41 | 47 | 50 | 40 |
| Fannie | 85,159 | 24 | 31 | 39 | 45 | 48 | 37 |
| Freddie | 64,184 | 25 | 32 | 40 | 45 | 49 | 38 |
| Ginnie | 92,904 | 31 | 38 | 45 | 51 | 55 | 44 |
| Purchase DTI: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 74,119 | 32 | 38 | 45 | 51 | 55 | 44 |
| FHA | 45,343 | 33 | 40 | 46 | 51 | 55 | 45 |
| VA | 25,819 | 30 | 38 | 45 | 51 | 56 | 44 |
| Other | 2,957 | 27 | 32 | 36 | 40 | 42 | 35 |
| Refi DTI: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 18,785 | 29 | 36 | 43 | 50 | 54 | 42 |
| FHA | 12,302 | 29 | 36 | 44 | 50 | 55 | 43 |
| VA | 6,460 | 27 | 35 | 42 | 49 | 54 | 42 |
| Other | 23 | 26 | 31 | 35 | 39 | 42 | 35 |
| All DTI: Ginnie Mae Breakdown By Source | | | | | | | |
| Names | Number of Loans | P10 | P25 | Median | P75 | P90 | Mean |
| All | 92,904 | 31 | 38 | 45 | 51 | 55 | 44 |
| FHA | 57,645 | 32 | 39 | 46 | 51 | 55 | 44 |
| VA | 32,279 | 30 | 37 | 44 | 51 | 56 | 43 |
| Other | 2,980 | 27 | 32 | 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 39. 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 February 2021 – April 2021 to February 2023 – April 2023, the share of high-LTV agency loans going to borrowers with:

- FICO scores above 750 has increased by approximately 2.7%
- DTIs below 35% decreased by approximately 28.6%

In that period, the share of high-LTV loans increased in the Ginnie Mae guarantee book by approximately 32% and in the GSE portfolios by approximately 228%. 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 71.04% of its issuances between February 2023 and April 2023 having LTVs of 95 or above, compared to 24.85% for the GSEs.

Table 17. Share of Loans with LTV > 95

| | <i>Ginnie Mae</i> | <i>GSE</i> | <i>All</i> |
|---------------------|-------------------|------------|------------|
| Feb 2021 - Apr 2021 | 53.81% | 7.57% | 18.14% |
| Feb 2023 – Apr 2023 | 71.04% | 24.85% | 42.78% |

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

| FICO | | | | | | |
|---------------|---------------|---------------|---------------|---------------|--------------|----------------|
| <i>DTI</i> | <650 | 650-700 | 700-750 | ≥750 | NA | All |
| <35 | 1.99% | 4.31% | 5.93% | 9.71% | 0.14% | 22.08% |
| 35-45 | 4.25% | 8.67% | 9.27% | 9.91% | 0.04% | 32.15% |
| ≥45 | 3.98% | 7.61% | 6.39% | 5.32% | 0.03% | 23.32% |
| NA | 1.97% | 3.80% | 3.40% | 3.74% | 9.53% | 22.45% |
| 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 (Feb 2023-Apr 2023)

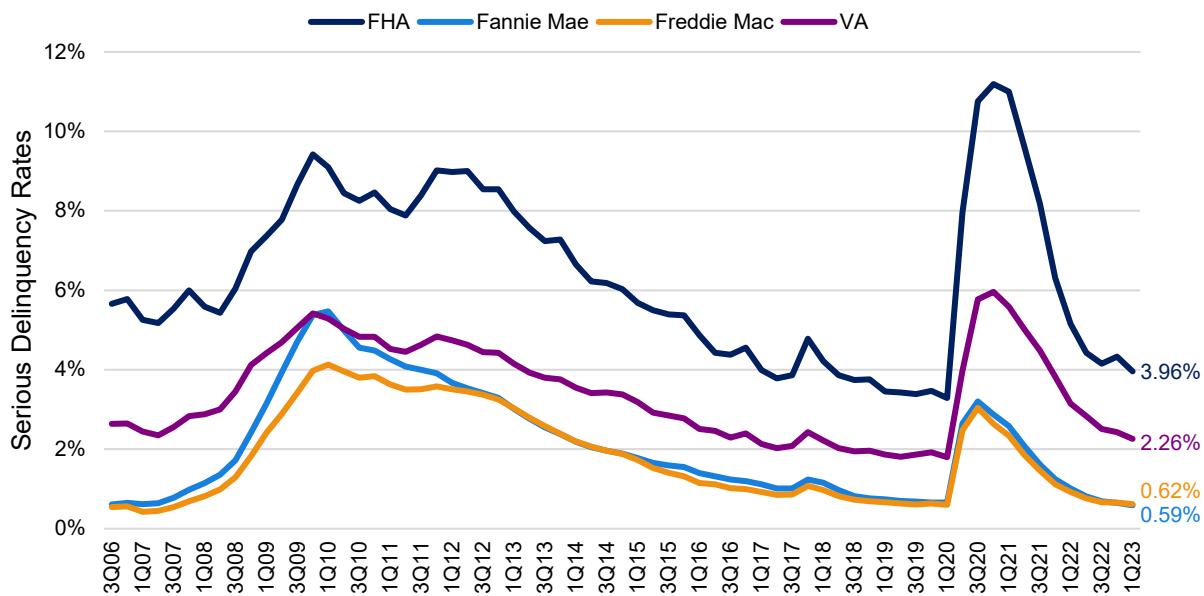
| FICO | | | | | | |
|---------------|---------------|---------------|---------------|---------------|--------------|----------------|
| <i>DTI</i> | <650 | 650-700 | 700-750 | ≥750 | NA | All |
| <35 | 2.11% | 3.03% | 4.19% | 6.38% | 0.06% | 15.77% |
| 35-45 | 5.84% | 8.69% | 10.31% | 11.36% | 0.06% | 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 April 2023.

10.5 Serious Delinquency Rates

Serious delinquency rates for single-family GSE, VA, and FHA loans all fell in Q1 2023. From Q4 2022 to Q1 2023, Fannie and Freddie serious delinquencies decreased by 6 and 4 bps, respectively. Ginnie Mae collateral's serious delinquency rates decreased more than the GSE rate, with VA decreasing 17 bps and FHA decreasing 37 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 40. 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 Q1 2023.

10.6 Credit Box

The first-time homebuyer share for agency purchase loans was 56.2% in April 2023, an increase from 54.9% in March 2023 and up from 53.0% in April 2022. Ginnie Mae and Fannie Mae's first-time homebuyer shares, 68.2% and 49.1% respectively in April 2023, have remained relatively flat YoY. Freddie Mac's first-time homebuyer share increased 19.5% YoY. **Table 20** shows that based on mortgages originated in April 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, credit scores, and DTI while loan rate was very similar.

Figure 41. First-Time Homebuyer Share: Purchase Only Loans

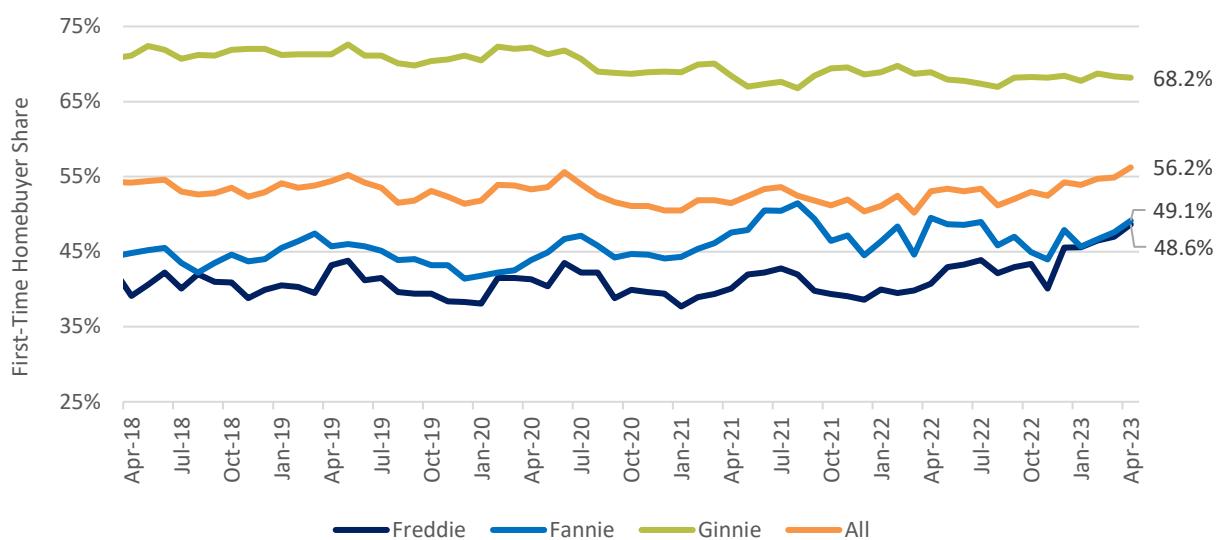


Table 20. Agency First-Time Homebuyer Share Summary

| | Fannie Mae | | Freddie Mac | | Ginnie Mae | | All | |
|----------------|------------|---------|-------------|---------|------------|---------|------------|---------|
| | First-Time | Repeat | First-Time | Repeat | First-Time | Repeat | First-Time | Repeat |
| Loan Amount \$ | 321,489 | 328,358 | 325,930 | 339,916 | 303,651 | 361,600 | 314,331 | 341,210 |
| Credit Score | 748.1 | 759.6 | 746.1 | 757.3 | 685.6 | 703.6 | 719.0 | 743.4 |
| LTV (%) | 86.1 | 75.9 | 86.1 | 76.8 | 97.4 | 94.8 | 91.3 | 81.4 |
| DTI (%) | 37.3 | 37.7 | 38.2 | 38.2 | 43.8 | 45.1 | 40.5 | 39.9 |
| Loan Rate (%) | 6.2 | 6.3 | 6.3 | 6.3 | 6.1 | 6.0 | 6.2 | 6.2 |

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

Within the Ginnie Mae purchase market, 76.5% of FHA loans, 52.0% of VA loans, and 84.0% of other loans provided financing for first-time home buyers in April 2023. While VA loans decreased MoM, FHA and other loans remained relatively stable. **Table 21** shows that based on mortgages originated in April 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 16.1% smaller loans, had a 22-point lower credit score, 4.1% higher LTVs and had a 10 bps higher interest rate. FHA's first-time homebuyers are much more like their repeat buyers, with only 5.1% smaller loans, 10 bps higher in interest rate, and 2.2% 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 42. First-time Homebuyer Share: Ginnie Mae Breakdown

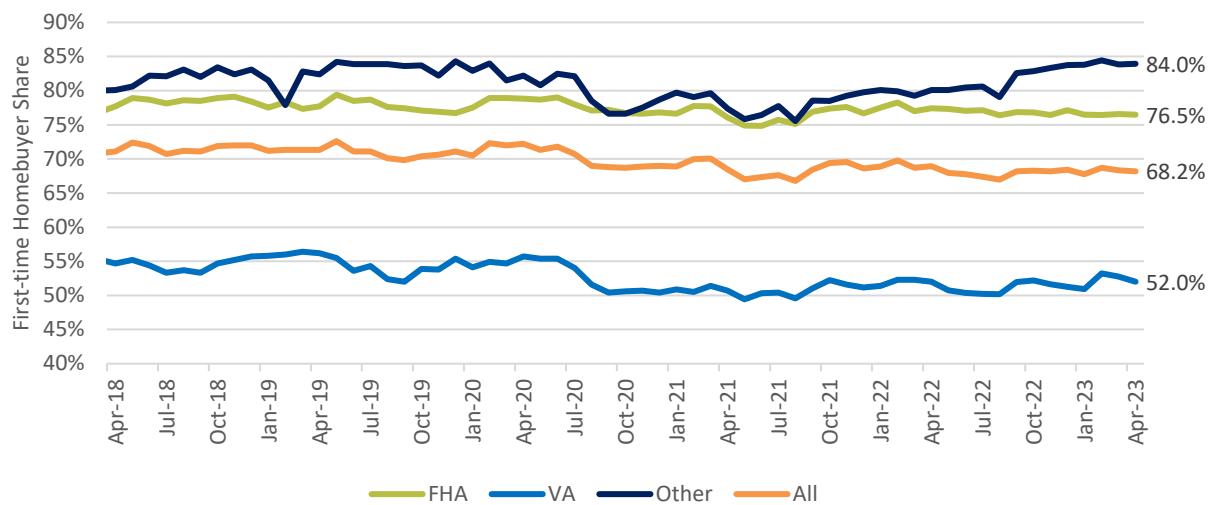


Table 21. Ginnie Mae First-Time Homebuyer Share Breakdown Summary

| | FHA | | VA | | Other | | Total | |
|----------------|------------|---------|------------|---------|------------|---------|------------|---------|
| | First-Time | Repeat | First-Time | Repeat | First-Time | Repeat | First-Time | Repeat |
| Loan Amount \$ | 296,704 | 312,723 | 343,757 | 409,701 | 181,481 | 190,701 | 303,651 | 361,600 |
| Credit Score | 675.9 | 672.4 | 708.6 | 730.3 | 695.6 | 698.0 | 685.6 | 703.6 |
| LTV (%) | 96.8 | 94.6 | 98.9 | 94.8 | 98.0 | 98.5 | 97.4 | 94.8 |
| DTI (%) | 44.6 | 45.9 | 43.3 | 44.7 | 35.2 | 36.1 | 43.8 | 45.1 |
| Loan Rate (%) | 6.2 | 6.1 | 6.0 | 5.9 | 6.2 | 6.0 | 6.1 | 6.0 |

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 April 2023 was 729, which represents a 2-point decline YoY from April 2022. Ginnie Mae median FICO scores increased 3 points between April 2022 and April 2023 to 673. As of April 2023, average FICO scores for refinances dropped for Fannie Mae and Freddie Mac borrowers by 3 and 8 points YoY respectively.

Figure 43. FICO Scores for All Loans

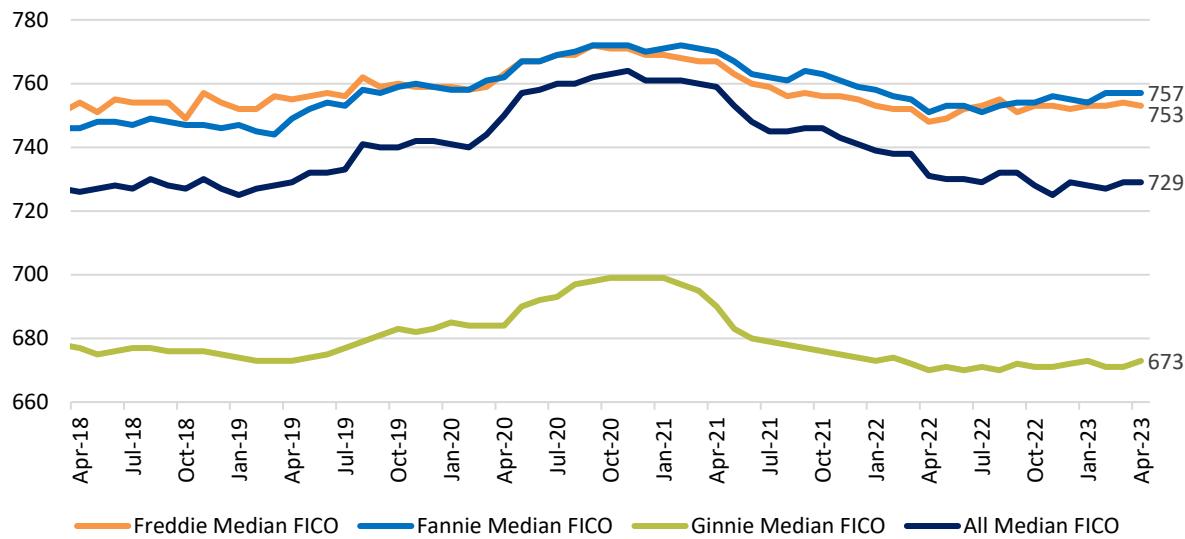


Figure 44. FICO Scores for Purchase Loans

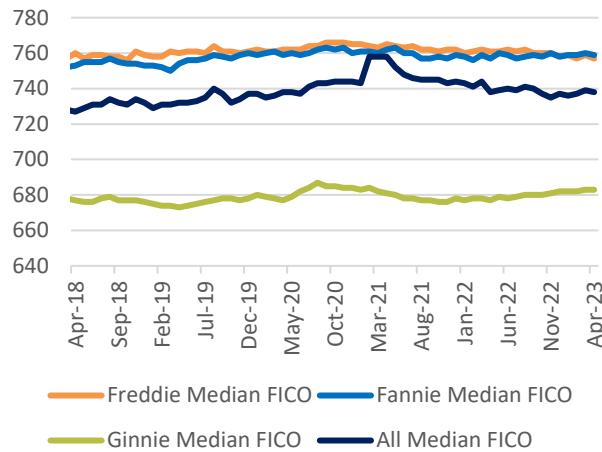
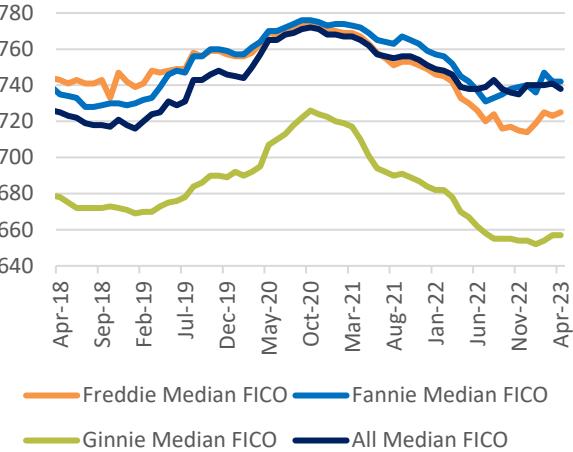
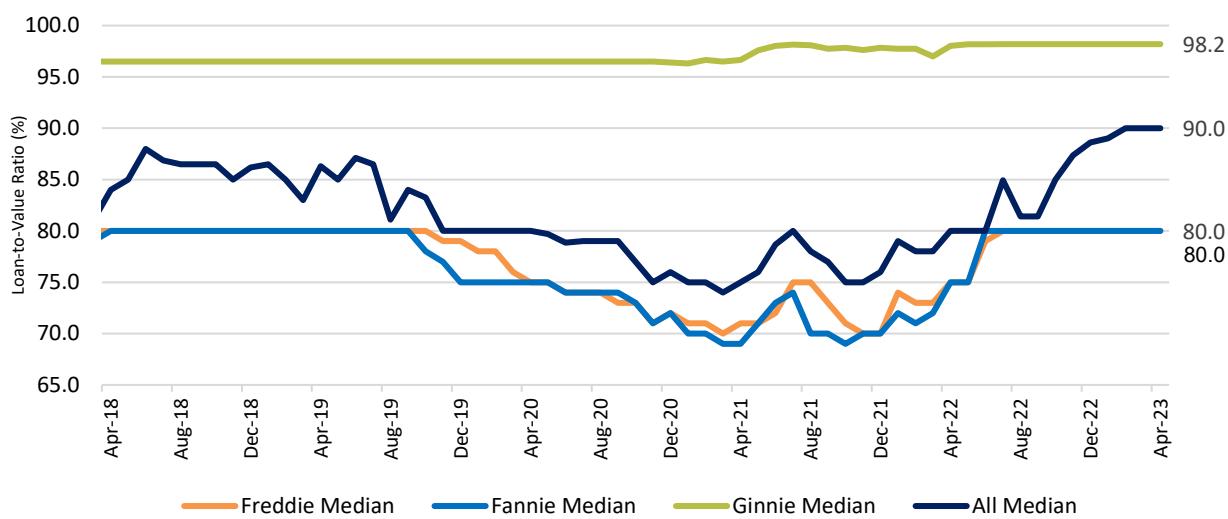
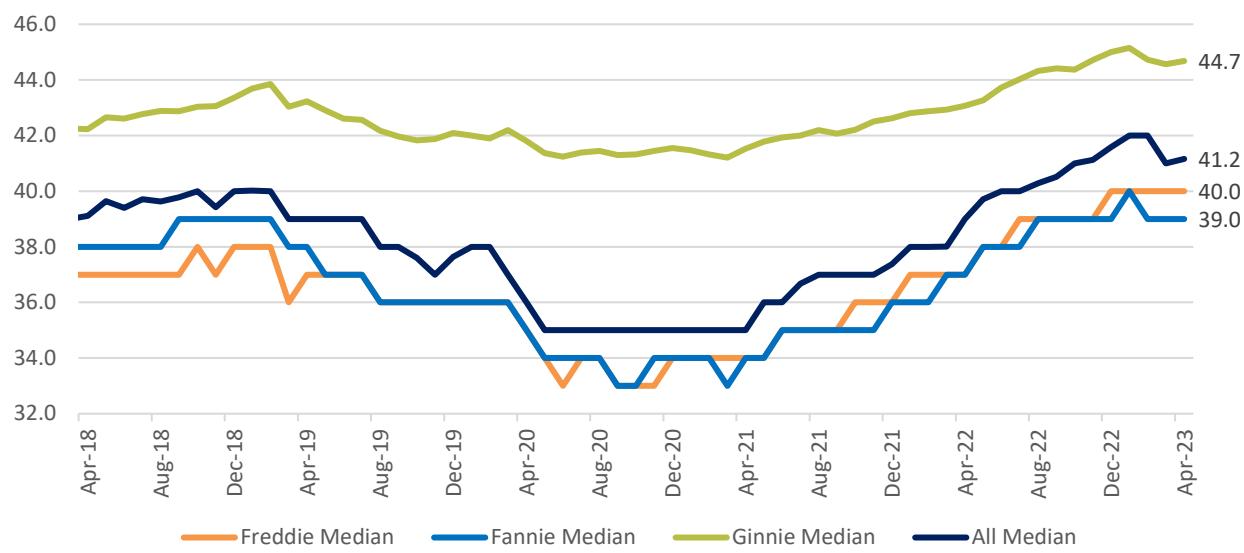


Figure 45. FICO Scores for Refinance Loans



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

In April 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 75% in April 2022 whereas Ginnie Mae LTVs remained relatively flat from 98% over the same period. In April 2023, median DTIs for Ginnie Mae, Freddie Mac, and Fannie Mae were 44.7%, 40.0%, and 39.0% respectively. In April 2022, median DTIs for Ginnie Mae, Fannie Mae, and Freddie Mac were 43.1%, 37.0%, and 37.0%.

Figure 46. LTV Ratio for All Loans

Figure 47. DTI Ratio for All Loans


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

11 FORBEARANCE TRENDS

At the end of April 2023, 96,056 Ginnie Mae loans were in forbearance. The number of loans in forbearance removed from MBS pools in April was 519 while 95,537 loans in forbearance remain in pools. The number of loans in forbearance, removed from pools, and loans that remained in pools has decreased MoM. 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 Bank | 657 | 3.7 | \$211,235 | 73.5 | 76.6 | 96,056 |
| Nonbank | 671 | 3.9 | \$148,179 | 81.4 | 86.5 | 10,748 |
| FHA Bank | 655 | 3.7 | \$219,107 | 72.7 | 75.8 | 85,297 |
| Nonbank | 653 | 3.7 | \$207,693 | 77.1 | 79.9 | 70,182 |
| VA Bank | 670 | 4.0 | \$146,232 | 84.2 | 89.3 | 8,806 |
| Nonbank | 651 | 3.7 | \$216,154 | 76.3 | 79.1 | 61,369 |
| VA Bank | 666 | 3.5 | \$266,390 | 58.6 | 63.8 | 18,685 |
| Nonbank | 676 | 3.6 | \$188,673 | 61.4 | 69.1 | 1,310 |
| Nonbank | 665 | 3.5 | \$270,894 | 58.4 | 63.5 | 17,372 |
| 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 Bank | 659 | 3.6 | \$160,458 | 70.0 | 62.9 | 519 |
| Nonbank | 654 | 4.6 | \$89,437 | 69.4 | 79.7 | 142 |
| FHA Bank | 660 | 3.4 | \$195,420 | 70.1 | 60.4 | 377 |
| Nonbank | 651 | 3.8 | \$158,565 | 76.0 | 68.0 | 338 |
| VA Bank | 653 | 4.7 | \$89,533 | 71.9 | 76.3 | 109 |
| Nonbank | 650 | 3.6 | \$190,162 | 77.1 | 66.2 | 229 |
| VA Bank | 673 | 3.1 | \$200,498 | 51.3 | 48.3 | 132 |
| Nonbank | 669 | 4.0 | \$66,540 | 38.7 | 89.3 | 16 |
| Nonbank | 673 | 3.1 | \$228,164 | 52.1 | 46.5 | 116 |
| 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 Bank | 657 | 3.7 | \$211,529 | 73.5 | 76.7 | 95,537 |
| Nonbank | 671 | 3.9 | \$149,063 | 81.5 | 86.6 | 10,606 |
| FHA Bank | 655 | 3.7 | \$219,190 | 72.7 | 75.9 | 84,920 |
| Nonbank | 653 | 3.7 | \$207,864 | 77.1 | 80.0 | 69,844 |
| VA Bank | 670 | 3.9 | \$146,981 | 84.3 | 89.4 | 8,697 |
| Nonbank | 651 | 3.7 | \$216,235 | 76.3 | 79.1 | 61,140 |
| VA Bank | 666 | 3.5 | \$266,724 | 58.6 | 63.9 | 18,553 |
| Nonbank | 676 | 3.6 | \$190,062 | 61.5 | 68.9 | 1,294 |
| Nonbank | 665 | 3.5 | \$271,148 | 58.4 | 63.6 | 17,256 |

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 April 2023; *Averages weighted by remaining principal balance of the loans.

12 HOLDERS OF GINNIE MAE MORTGAGE SERVICING RIGHTS

The 30 largest owners of mortgage servicing rights (MSR) by UPB for loans collateralizing Ginnie Mae MBS is shown in **Table 23**. The top 30 firms collectively own 86.65% of Ginnie Mae MSRs (see Cumulative Share). Twenty-two of these top 30 are non-depository institutions, the remaining 8 are depository institutions. As of April 2023, over half (53.90%) 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) | Cumulative Share | | CPR | CDR |
|----------------------|----------------|-------------------|---------------|------------------------------|-----------------------------|--------------|------------|------------|
| | Current | Year prior | Change | | Share | Share | | |
| LAKEVIEW LOAN SERVIC | 1 | 3 | ↑ | \$292,738,396,612 | 13.41% | 13.41% | 6.38% | 0.86% |
| DBA FREEDOM HOME MOR | 2 | 1 | ↓ | \$269,679,002,408 | 12.35% | 25.76% | 6.96% | 0.92% |
| PENNYMAC LOAN SERVIC | 3 | 2 | ↓ | \$254,052,180,168 | 11.64% | 37.40% | 6.94% | 0.82% |
| NATIONSTAR MORTGAGE, | 4 | 6 | ↑ | \$127,690,263,946 | 5.85% | 43.25% | 6.81% | 0.75% |
| NEWREZ LLC | 5 | 8 | ↑ | \$122,688,300,395 | 5.62% | 48.87% | 5.30% | 0.35% |
| WELLS FARGO BANK, NA | 6 | 4 | ↓ | \$109,797,072,936 | 5.03% | 53.90% | 5.95% | 0.38% |
| ROCKET MORTGAGE, LLC | 7 | 5 | ↓ | \$106,842,744,685 | 4.89% | 58.79% | 7.88% | 0.53% |
| CARRINGTON MORTGAGE | 8 | 7 | ↓ | \$91,684,961,935 | 4.20% | 62.99% | 6.97% | 1.18% |
| U. S. BANK, NA | 9 | 10 | ↑ | \$52,787,220,292 | 2.42% | 65.41% | 5.08% | 0.62% |
| PLANET HOME LENDING, | 10 | 14 | ↑ | \$47,457,892,477 | 2.17% | 67.58% | 5.24% | 0.29% |
| UNITED WHOLESALE MOR | 11 | 11 | ↔ | \$39,859,993,164 | 1.83% | 69.41% | 3.44% | 0.31% |
| LOANDEPOT.COM,LLC | 12 | 12 | ↔ | \$37,543,817,962 | 1.72% | 71.13% | 6.50% | 0.61% |
| AMERIHOME MORTGAGE C | 13 | 20 | ↑ | \$34,760,643,346 | 1.59% | 72.72% | 4.36% | 0.38% |
| MORTGAGE RESEARCH CE | 14 | 13 | ↓ | \$34,459,600,778 | 1.58% | 74.30% | 5.77% | 0.51% |
| NAVY FEDERAL CREDIT | 15 | 16 | ↑ | \$29,254,831,549 | 1.34% | 75.64% | 5.87% | 0.21% |
| GUILD MORTGAGE COMPA | 16 | 19 | ↑ | \$22,736,658,635 | 1.04% | 76.68% | 6.10% | 0.92% |
| THE MONEY SOURCE INC | 17 | 17 | ↔ | \$20,786,351,010 | 0.95% | 77.63% | 6.00% | 0.57% |
| TRUIST BANK | 18 | 18 | ↔ | \$20,191,164,477 | 0.92% | 78.56% | 6.18% | 0.52% |
| CROSSCOUNTRY MORTGAG | 19 | 21 | ↑ | \$18,857,683,291 | 0.86% | 79.42% | 5.55% | 0.51% |
| NEW AMERICAN FUNDING | 20 | 22 | ↑ | \$18,347,245,370 | 0.84% | 80.26% | 5.94% | 0.49% |
| VILLAGE CAPITAL & IN | 21 | 23 | ↑ | \$17,740,109,134 | 0.81% | 81.07% | 7.57% | 0.83% |
| MOVEMENT MORTGAGE,LL | 22 | 27 | ↑ | \$17,496,841,448 | 0.80% | 81.88% | 5.14% | 0.44% |
| CMG MORTGAGE, INC. | 23 | 28 | ↑ | \$16,240,472,551 | 0.74% | 82.62% | 5.16% | 0.20% |
| IDAHO HOUSING AND FI | 24 | 25 | ↑ | \$15,056,228,904 | 0.69% | 83.31% | 4.20% | 0.59% |
| PHH MORTGAGE CORPORA | 25 | 30 | ↑ | \$13,916,756,062 | 0.64% | 83.95% | 5.74% | 0.89% |
| CITIZENS BANK N.A. | 26 | 24 | ↓ | \$13,865,005,920 | 0.64% | 84.58% | 4.81% | 0.28% |
| MIDFIRST BANK | 27 | 29 | ↑ | \$12,464,332,841 | 0.57% | 85.15% | 7.15% | 1.60% |
| FLAGSTAR BANK, N.A. | 28 | NR | ↑ | \$12,328,842,027 | 0.56% | 85.72% | 5.05% | 0.19% |
| JP MORGAN CHASE BANK | 29 | NR | ↑ | \$10,192,754,555 | 0.47% | 86.18% | 6.17% | 1.25% |
| CARDINAL FINANCIAL C | 30 | NR | ↑ | \$10,171,645,636 | 0.47% | 86.65% | 6.28% | 0.62% |

Sources: Deloitte, Recursion. Notes: Data as of April 2023.

13 AGENCY NONBANK ORIGINATORS

Total agency nonbank origination share decreased in April 2023 by approximately 1.7% MoM. The decrease in nonbank origination share was driven primarily by Fannie Mae (nonbank origination share down 5.7% MoM). The Ginnie Mae nonbank share rose to 88.7% as of April 2023 and 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 nonbank origination share.

Figure 48. Agency Nonbank Originator Share (All, Purchase, Refi)

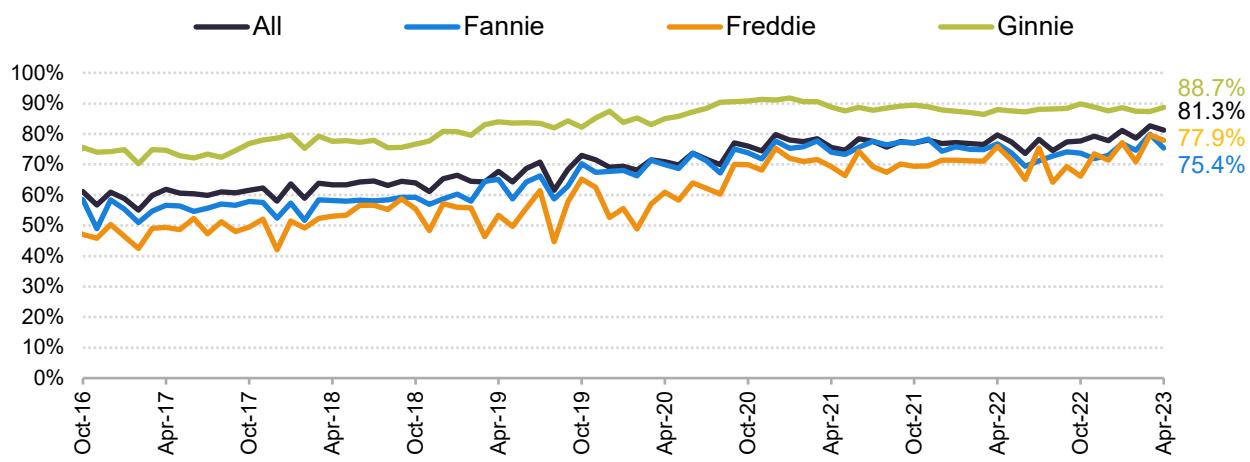


Figure 49. Nonbank Origination Share:

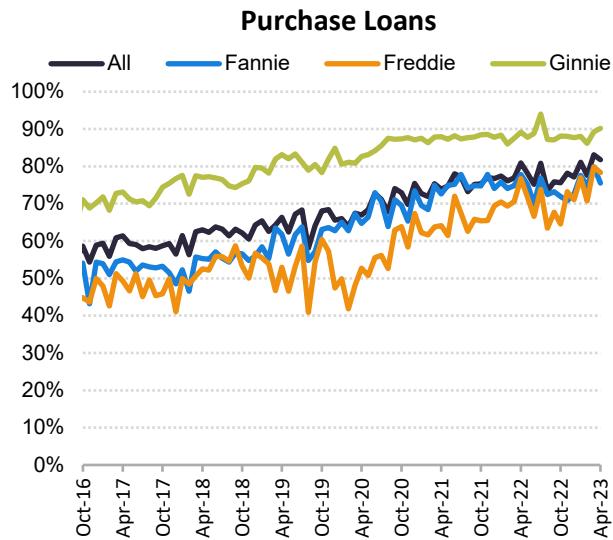
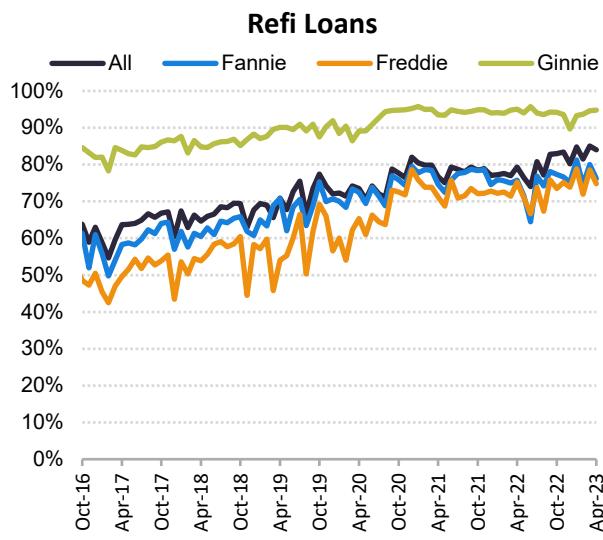


Figure 50. Nonbank Origination Share:



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

Ginnie Mae's total nonbank originator share remained relatively stable in April 2023. Ginnie Mae continues to have a very high proportion of nonbank originations, with a rate of 88.7% in April 2023. The percent of Ginnie Mae's Other nonbank refinanced loans decreased slightly to 88.6% in April 2023.

Figure 51. Ginnie Mae Nonbank Originator Share (All, Purchase, Refi)

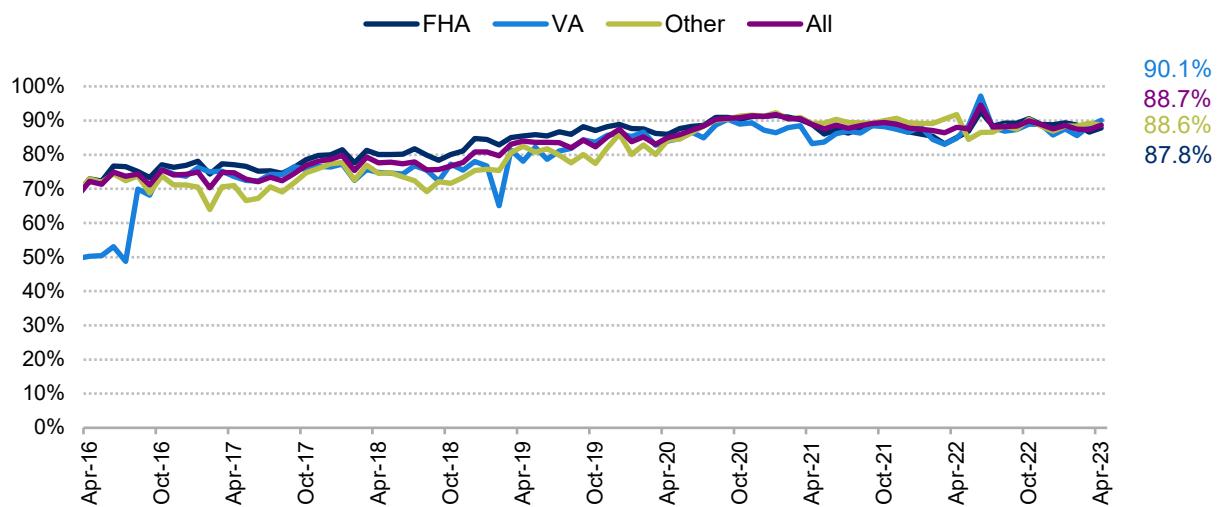


Figure 52. Ginnie Mae Nonbank Share:

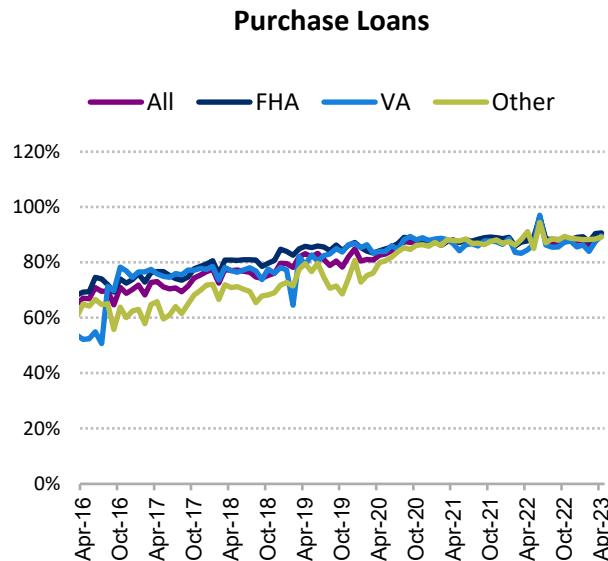
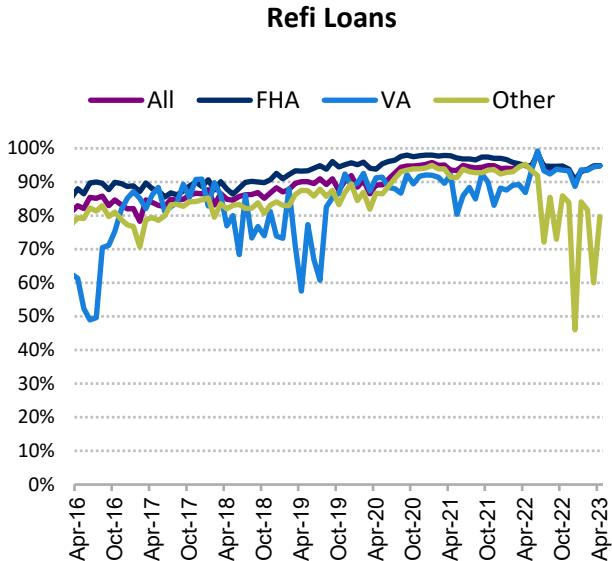


Figure 53. Ginnie Mae Nonbank Share:



Sources: Recursion. Notes: Data as of April 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 nonbanks continue to have a consistently lower median FICO score than their bank counterparts across all agencies. The spread between nonbank and bank FICO scores decreased by 1 point from March 2023 to April 2023. The agency median FICO increased by 1 point MoM to 730.

Figure 54. Agency FICO: Bank vs. Nonbank

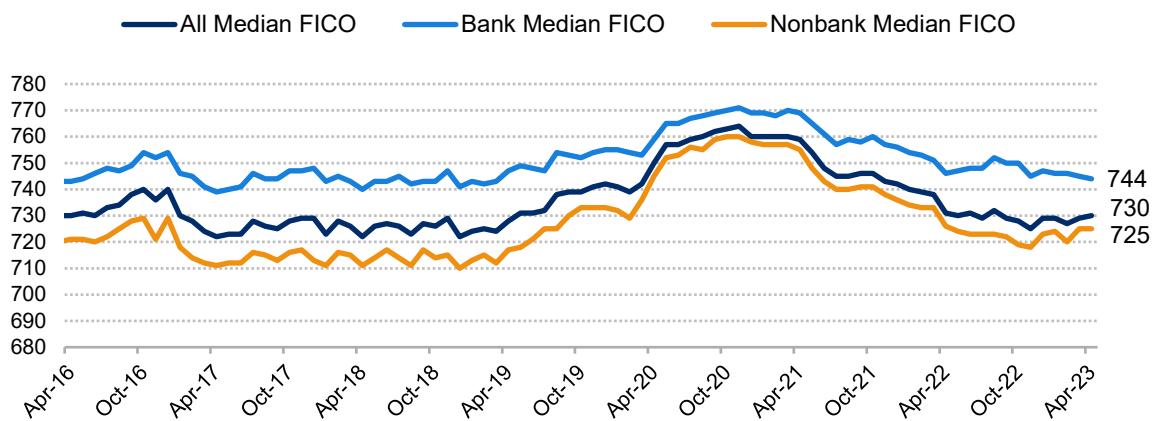


Figure 55. GSE FICO: Bank vs. Nonbank

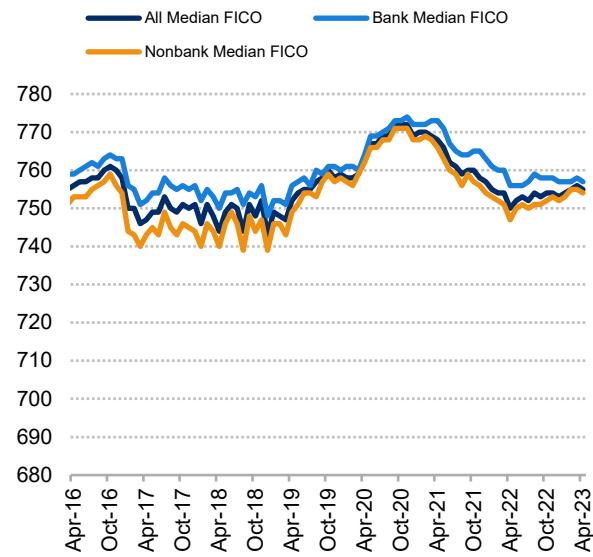
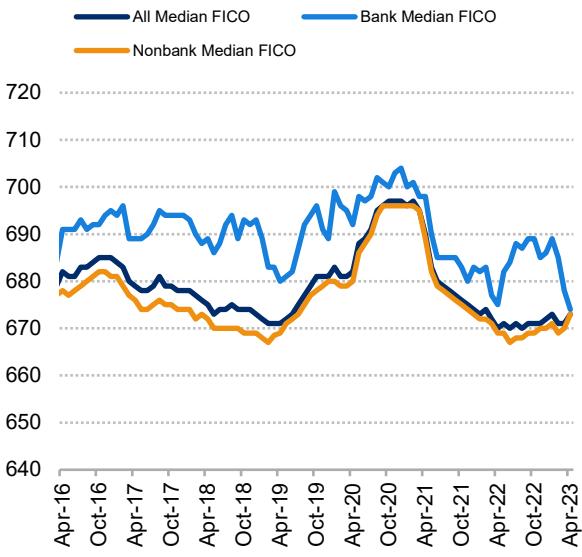
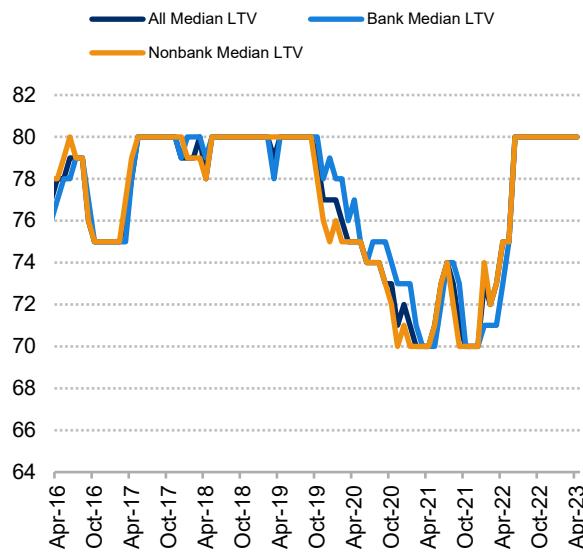
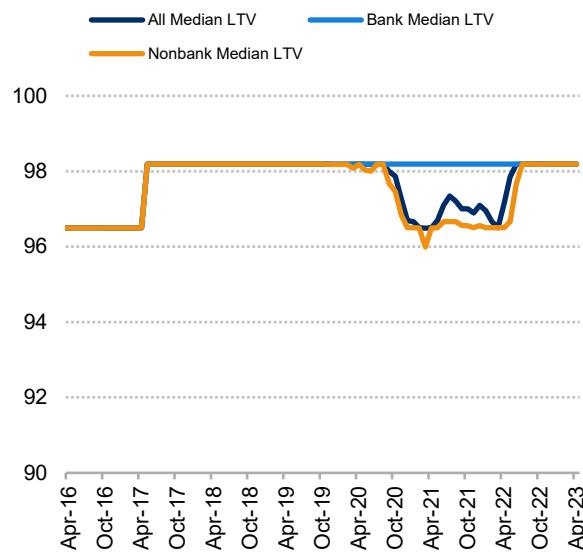
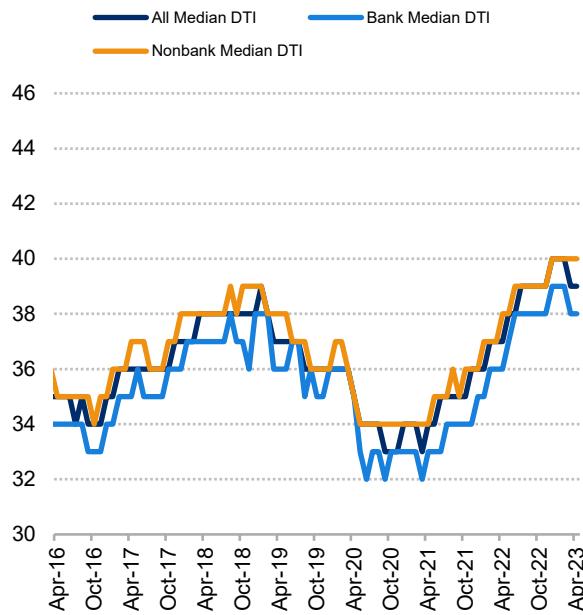
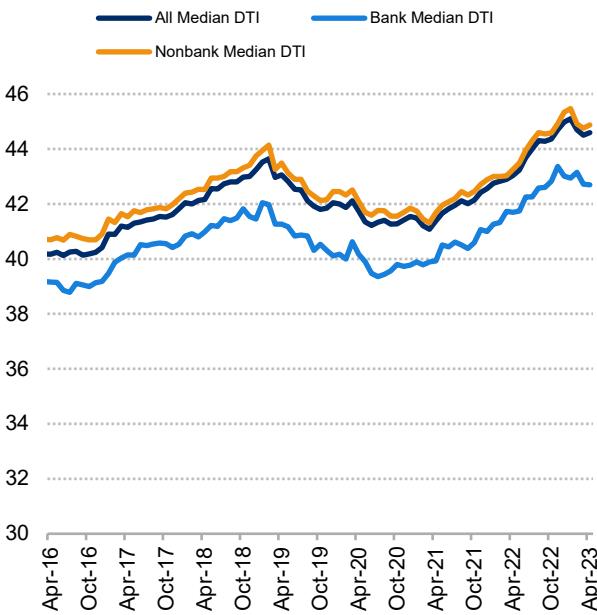


Figure 56. Ginnie Mae FICO: Bank vs. Nonbank



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

The median LTV for all GSE originators remained the same in April 2023 MoM at 80%. Ginnie Mae median bank and nonbank LTV remained flat at 98.19% MoM. Ginnie Mae median DTI decreased MoM to approximately 44.9% in April 2023 in nonbank originations.

Figure 57. GSE LTV: Bank vs. Nonbank

Figure 58. Ginnie Mae LTV: Bank vs. Nonbank

Figure 59. GSE DTI: Bank vs. Nonbank

Figure 60. Ginnie Mae DTI: Bank vs. Nonbank


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

In April 2023, the median FICO score for Ginnie Mae bank decreased 4 points to 674 and nonbank increased 3 points to 673 MoM. The median FICO for all Ginnie originations increased 2 points to 673 MoM. The gap between banks and nonbanks is most apparent in VA lending (21-point spread).

Figure 61. Ginnie Mae FICO Score:

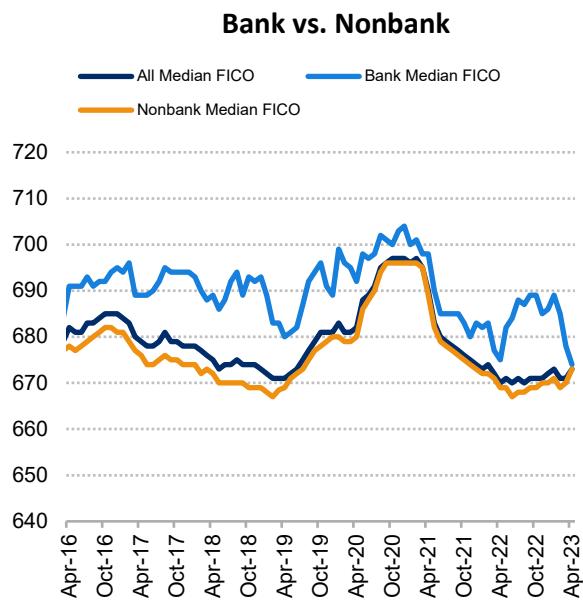


Figure 62. Ginnie Mae FHA FICO Score:

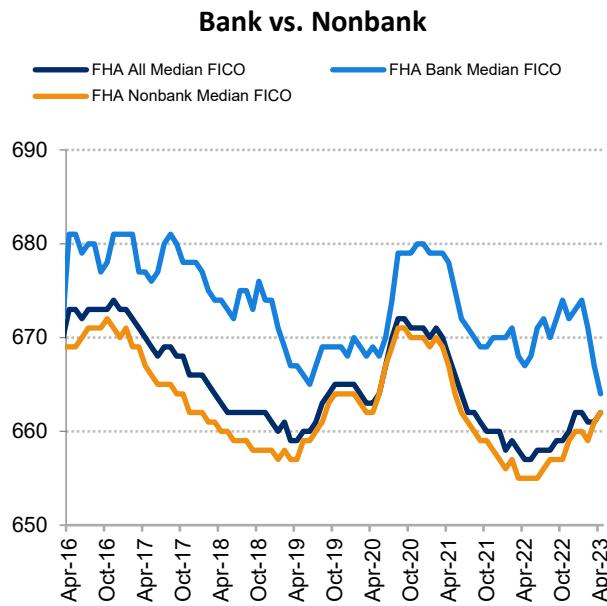


Figure 63. Ginnie Mae VA FICO Score:

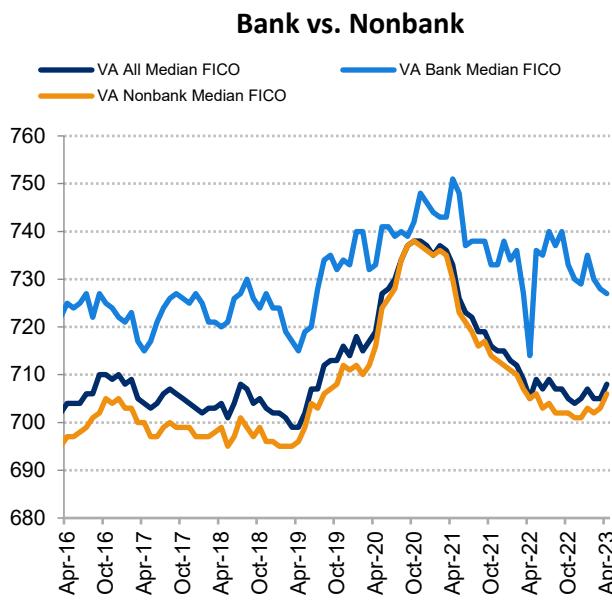
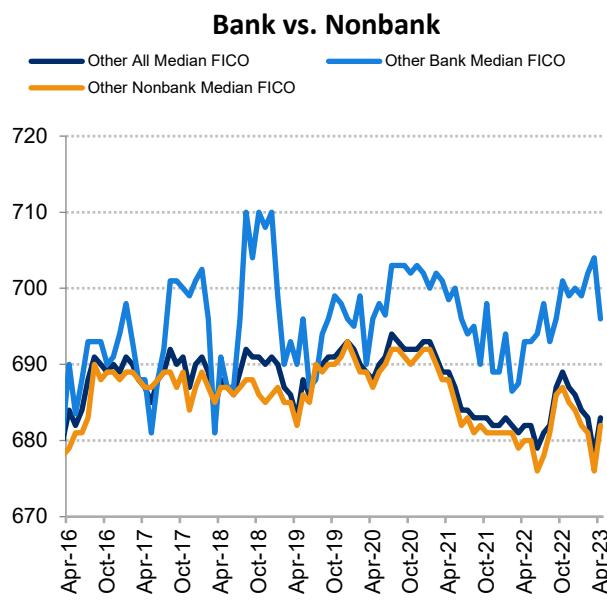


Figure 64. Ginnie Mae Other FICO Score:



Sources: Recursion. Notes: Data as of April 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 65. Ginnie Mae DTI:

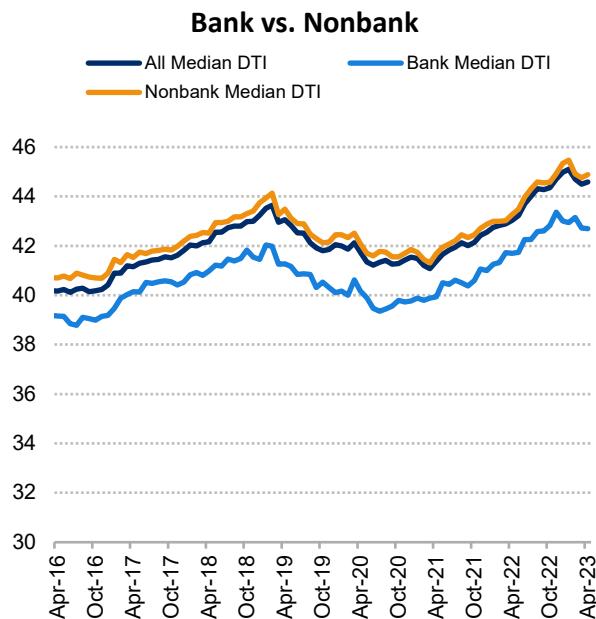


Figure 66. Ginnie Mae FHA DTI:

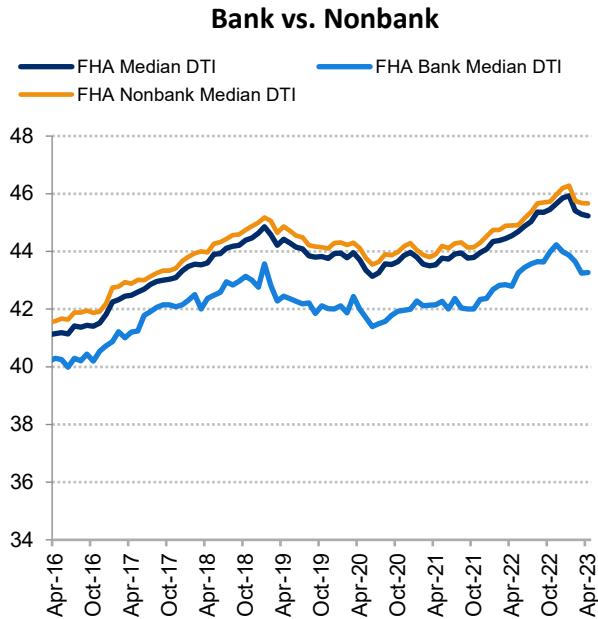


Figure 67. Ginnie Mae VA DTI:

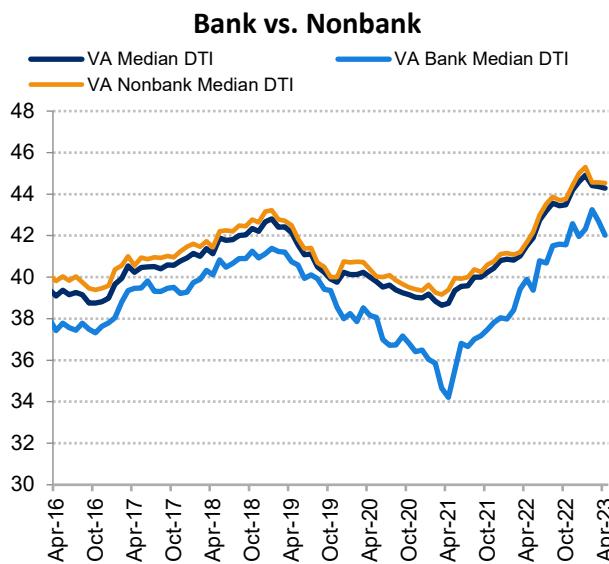
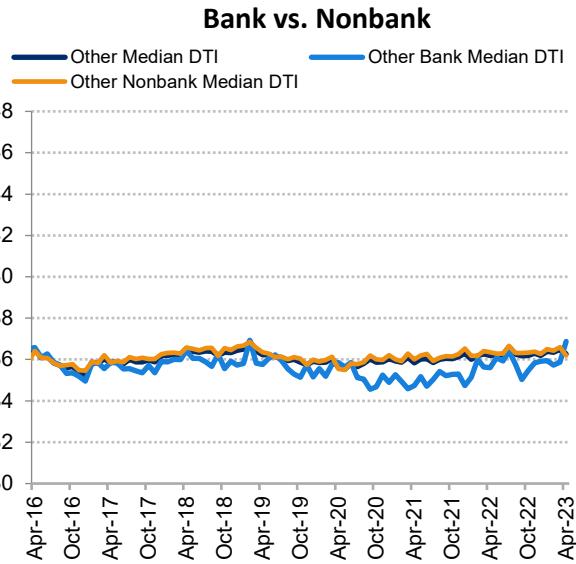


Figure 68. Ginnie Mae Other DTI:



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

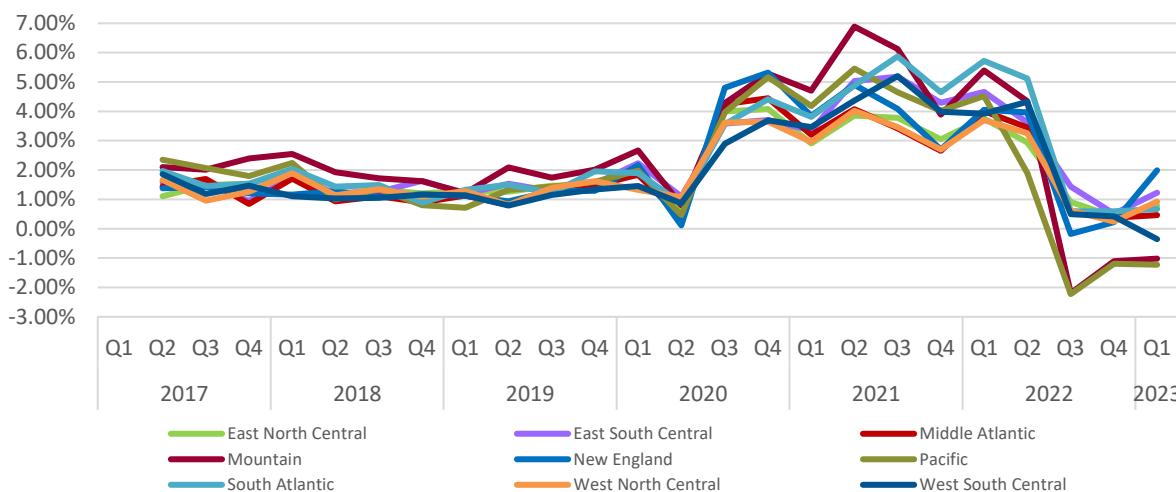
U.S. HOUSING MARKET

14 HOUSING AFFORDABILITY

14.1 Housing Affordability – Home Price Appreciation

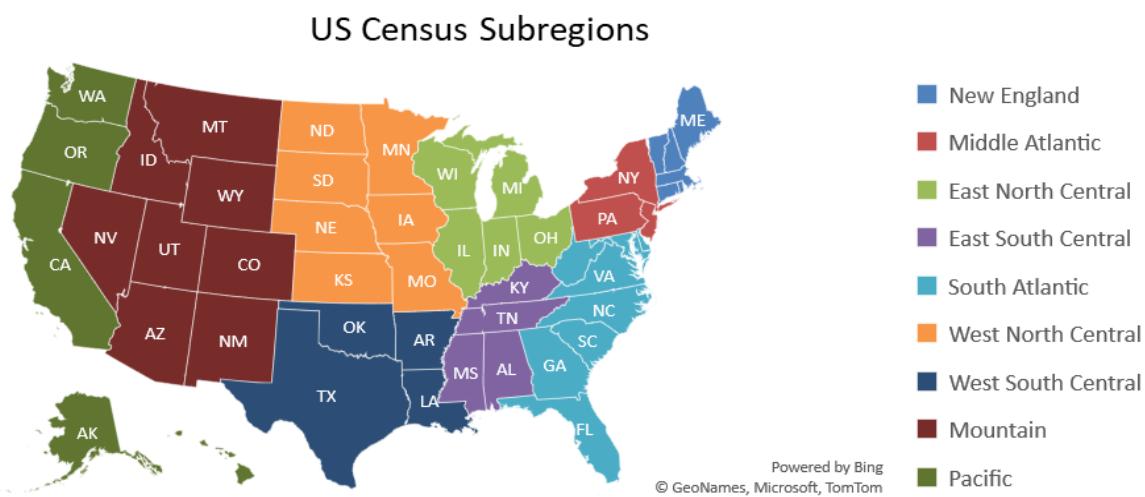
Home prices increased in all regions but the Pacific, Mountain, and West South Central in Q1 2023. Notably, the New England region experienced a 1.77% QoQ increase in HPI between 2022 Q4 to 2023 Q1. The East South Central and West North Central regions saw a 72 and 68 basis point increase in the QoQ change in HPI, respectively.

Figure 69. Regional HPI Trend Analysis Q/Q



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

Figure 70. 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 April 2023, inflation was 5.0%, in line with the month prior. Nationally, rents are up 0.29% YoY as of month-end April 2023. However, the MoM change from March 2023 to April 2023 decreased by -0.23%. Wage growth saw a decrease from 6.4% in March 2023 to 6.1% in April 2023. March 2023 reporting data shows YoY home price appreciation has now slowed to 0.8%, down from 2.0% in February 2023.

Figure 71. Inflation | 12-Month Percent Change in CPI

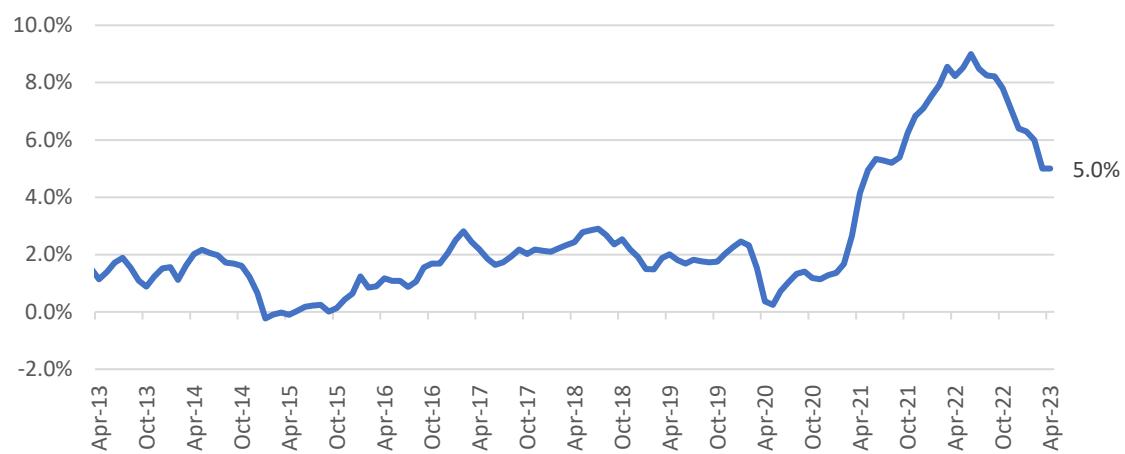
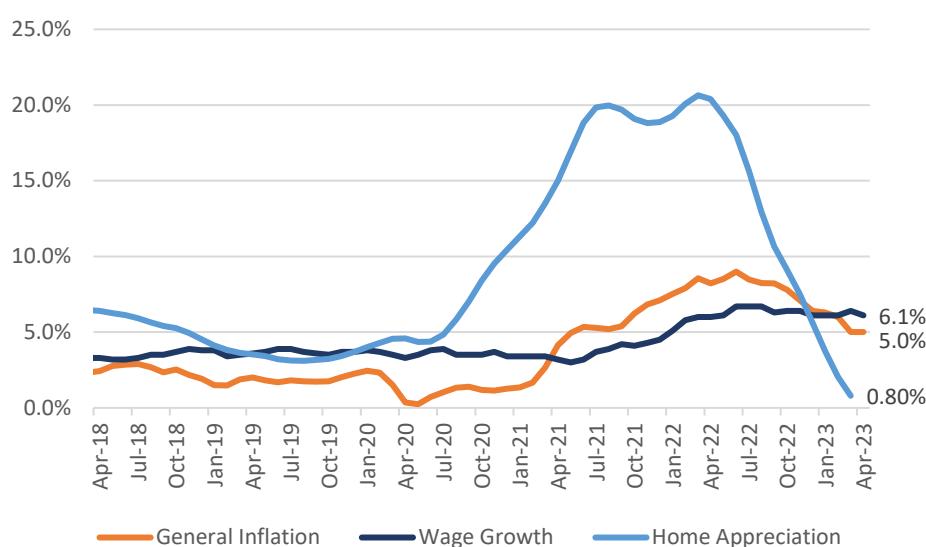


Figure 72. Asset Price Appreciation vs. Wage Increases

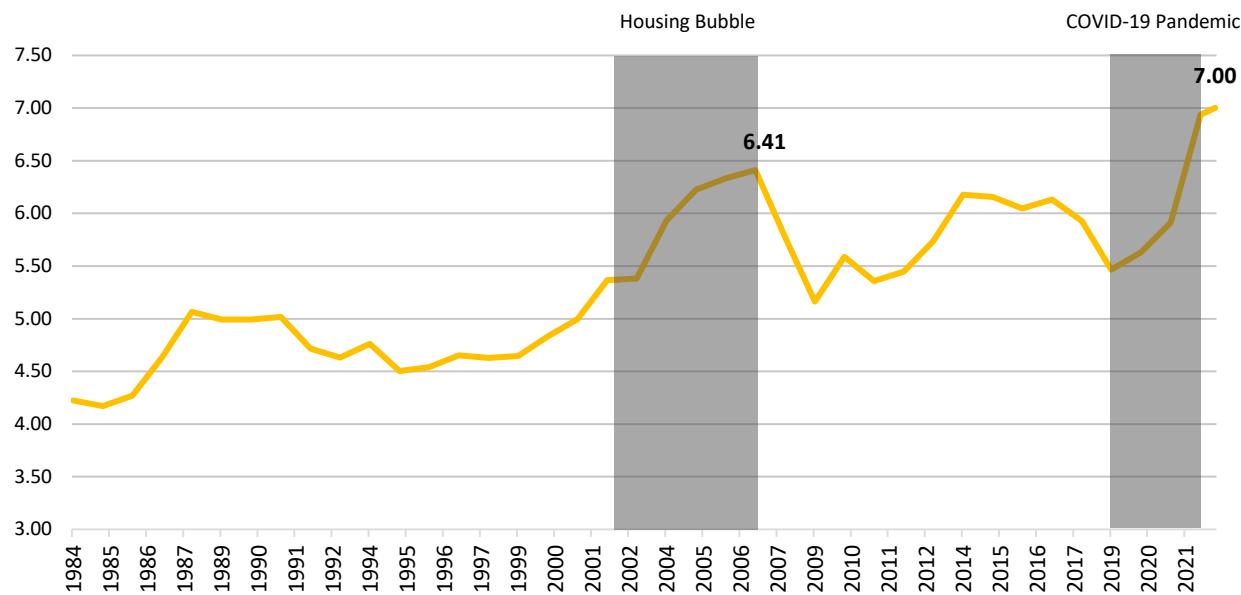


| Metric | Statistic |
|--|-----------|
| General Inflation | 5.0% |
| Home Price Appreciation (YoY) | 0.8% |
| Rental Price Appreciation (Median Rent Change YoY) | 0.29% |
| Wage Growth | 6.1% |

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

Home affordability remains low, as the ratio of the average price of sold homes to median incomes is at a historically high level. Typically, this ratio has been around 5:1; the current 7:1 sales price to median income ratio exceeds the ratio observed during the housing bubble (6.4:1). With 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 73. Average Price of Homes Sold to Median Income Ratio

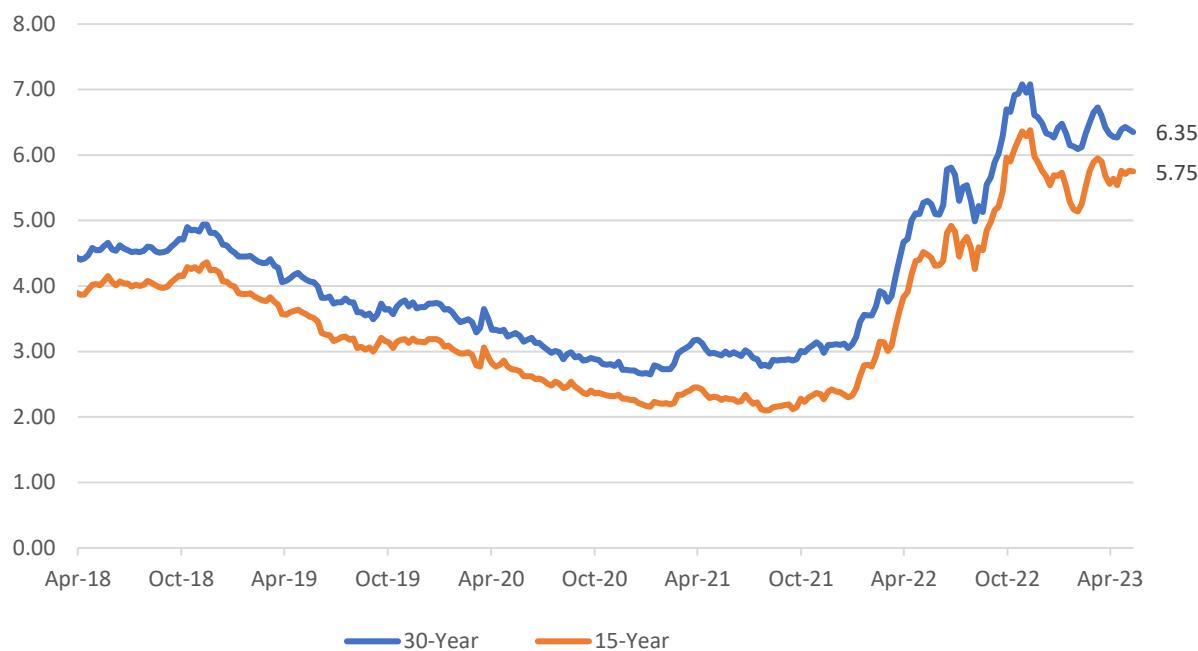


Source: FRED Average Home Sales Data, FRED Median Income Data

14.2.1 HOUSING AFFORDABILITY – MORTGAGE RATE TRENDS

The Federal Funds Target Rate increased by 25 bps on May 3, 2023 to a range of 5.00% and 5.25% per the FOMC.⁵ As of May 11, 2023, the average 30-year and 15-year fixed rate mortgage rates were 6.35% and 5.75%, respectively. The average 30-year fixed rate mortgage rate increased 7 bps and the average 15-year fixed rate mortgage rate increased 11 bps MoM from April 6, 2023.

Figure 74. Average Fixed Rate Mortgage Rates



Sources: FRED data as of May 2023

⁵<https://www.federalreserve.gov/news-events/pressreleases/monetary20230503a.htm>

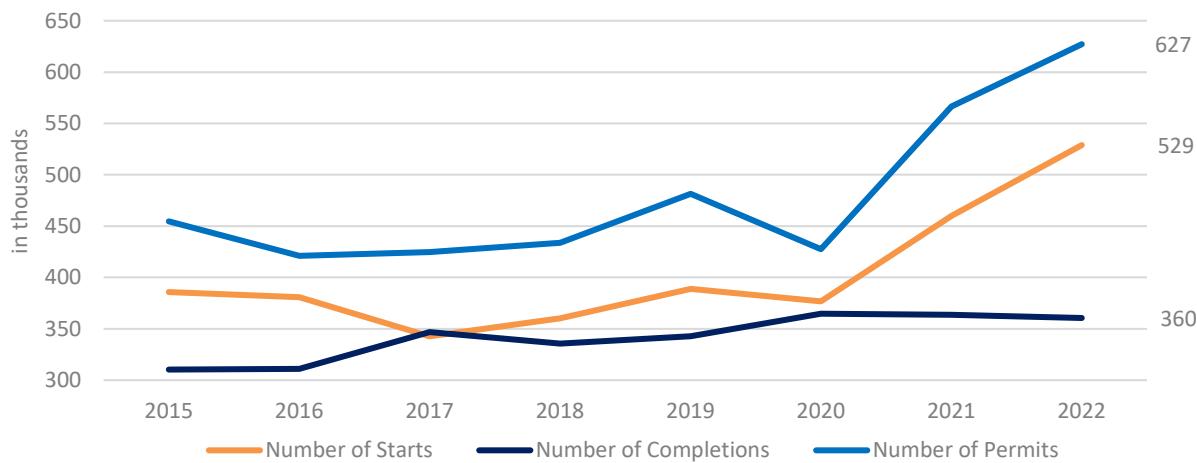
14.3 Housing Inventory

As of April, 2023, there was 7.6 months of housing inventory on the market, a decrease from 7.9 in March 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 74](#) 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 75. Single-Family Housing Inventory



Figure 76. Multifamily Construction Metrics: Permits, Starts, Completions



Source: FRED. Figure 73: data as of April 2023. New Residential Construction, US Census Bureau. Figure 74: data as of December 2022.

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 77. Value of the US Housing Market

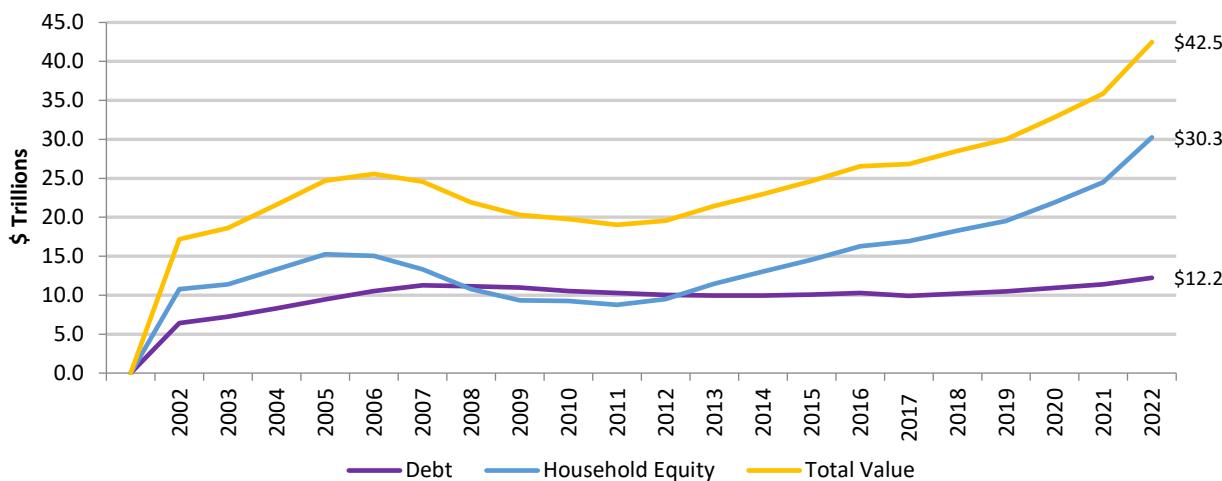
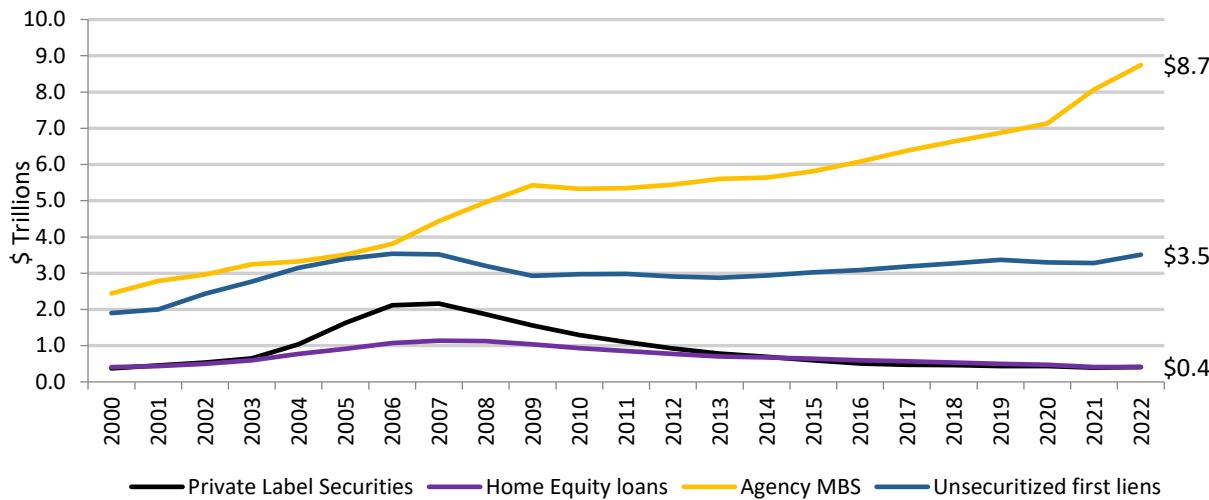


Figure 78. Size of the US Residential Mortgage Market.



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

15 DISCLOSURE

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

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

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

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