

GLOBAL MARKETS ANALYSIS REPORT

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



January 2023

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

This month's *Highlights* section sought the opinions of market participants from the Mortgage Bankers Association (MBA), Brean Capital, and Amherst Pierpont Securities to provide a forecast for the Ginnie Mae MBS market in 2023.

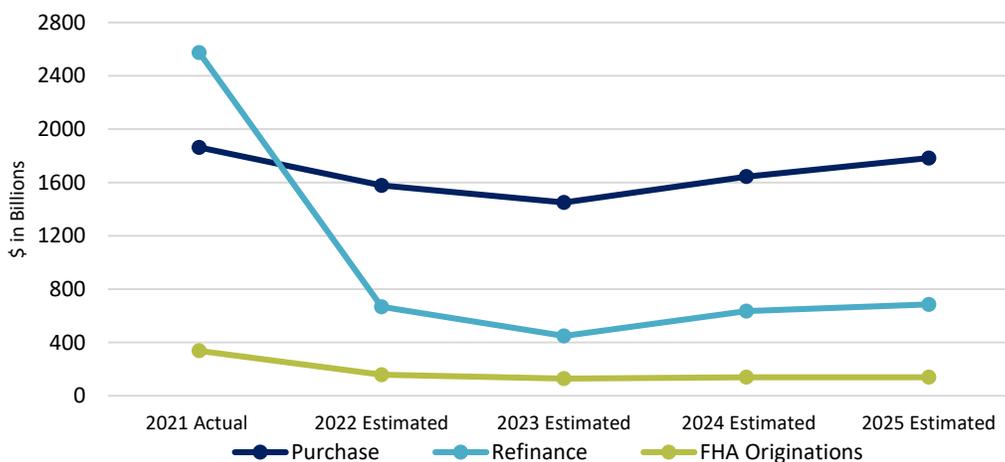
Notable insights in this month's Global Market Analysis Report include the following:

- The [Prepayments](#) section illustrates the convergence of Ginnie Mae aggregate prepayment rates to those of Fannie Mae and Freddie Mac (GSE) securities.
- 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 now includes home price indexes for each of the U.S. census regions by quarter. The market shows signs of decelerating inflation and mortgage rates this month, particularly in the rental housing market, as well as home prices beginning to decline nationally. However, inflation and mortgage rates continue to outpace wage growth. This section also now includes an analysis of the average price of homes sold to median income. Overall, housing affordability remains historically low as the average price of homes sold to median income ratio remains high.

Highlights

In December 2022, total issuance for Ginnie Mae mortgage-backed securities (MBS) was \$31.14 billion. Ginnie Mae’s MBS portfolio outstanding increased to \$2.280 trillion in December 2022. This represents \$19 billion of net growth as well as the new record end-of-year balance. However, many market participants expect a continued decrease in agency MBS gross issuance in 2023 and anticipate that most mortgage loan origination volume will also continue to shift from refinance to purchase as we move through 2023. **Figure 1** provides a breakdown of the 2021 mortgage loan origination market as well the Mortgage Bankers Association’s (MBA) estimates of the origination market for the end of 2022 through 2025.¹ The 2023 estimated purchase mortgage origination volume is \$1.439 trillion.

Figure 1. MBA Mortgage Finance Forecast



The Global Market Analysis Report sought the opinions of market participants, including Mortgage Bankers Association’s (MBA’s) Michael Fratantoni; Brean Capital’s Scott Buchta, and Amherst Pierpont Securities’ Brian Landy to provide their outlook for the Ginnie Mae MBS market in 2023. Michael Fratantoni is MBA’s Chief Economist and Senior Vice President of Research and Industry Technology. Scott Buchta is Brean Capital’s Head of Fixed Income Strategy. Brian Landy is a Managing Director at Amherst Pierpont Securities.

Mr. Fratantoni: “We are expecting a recession in the first half of 2023, which will result in the unemployment rate increasing from 3.5% as of December 2022 to over 5% by the end of 2023. The Federal Reserve will continue to increase short-term rates to fight inflation, and will ultimately be successful, but it will be early 2024 before inflation reaches their 2% target. Although short-term rates will continue to increase as the Fed pushes them up, we are forecasting that long-term rates have already peaked. We expect that 30-year mortgage rates will end 2023 at 5.2%.

¹ https://www.mba.org/docs/default-source/research-and-forecasts/forecasts/2023/mortgage-finance-forecast-jan-2023.pdf?sfvrsn=11688583_1

We characterize the path for national home prices as “flat,” but we are forecasting several quarters of year over year declines in the level of national home prices in 2023, while we expect to see some pretty significant declines in the West and Mountain regions of the country. Mortgage origination volume is likely to drop about 15% in 2023 compared to 2022 to about \$1.9 trillion. Incoming application activity remains quite low even though mortgage rates have dropped more than a percentage point recently after peaking above 7% in late 2022. Refinance volume will be less than \$500 billion in 2023, indicating that voluntary prepayment rates will remain quite low.

Delinquencies and foreclosures were at or near record lows at the end of 2022, but we do expect them to increase next year as the unemployment rate rises, so involuntary prepayment speeds are likely to increase this year. Mortgage industry employment has declined, but we expect it will decrease further in 2023 for a cumulative 30% or more drop from its peak in 2021 to a trough in 2023.”

Mr. Buchta: “In our outlook for 2023 we remain fairly constructive on the mortgage basis. Spreads should continue to tighten as the Fed begins to moderate, and potentially end, the pace of interest rate increases. This should allow volatility to decline, which should prove to be beneficial to mortgages as a whole. Bank demand is expected to increase moderately in 2023, with the bid for GNMA’s potentially coming back first in terms of both CMOs and Pools as these investors look to add bonds with 0% risk weightings. Prepayment fears have shifted from call risk to extension risk in the blink of an eye, as the vast majority of borrowers (85%+) have been moved at least 100bps out of the money.

In the discount coupons, we expect to see prepayment speeds fall back to their mid-1990s lows as both “lock in” and “lock out” have a significant impact on housing turnover rates. While the recent rally has brought some borrowers back into the refinancing window, they represent less than 2% of all GNMA loans and we believe that we will need to see an additional 100bp drop in rates before we begin to see a significant increase in refinancing activity.”

Mr. Landy: “Ginnie Mae MBS should outperform conventional MBS in 2023 due to continuing steady bank demand. Good bank demand last year lifted returns on Ginnie Mae MBS above conventional MBS across most 30-year pass-through coupons. And the factors driving that demand are still in place.

Banks started leaning into Ginnie Mae MBS last year to offset mark-to-market losses in their available-for-sale securities portfolios and to offset the capital impact of strong loan demand. The losses on securities cut into tangible capital, and loans carry a 100% risk weight. However, banks can improve capital ratios by holding Ginnie Mae securities that carry a 0% risk-weight.

Loan growth, other than for residential mortgages, should continue in 2023 and banks should continue to lean towards Ginnie Mae securities. This should continue to support Ginnie Mae returns in 2023, especially in production coupons. Despite the demand, higher coupon Ginnie

MBS starts the year offering better relative value than conventional MBS in 4.5% and higher coupons, with higher yields, OASs, and 1-year total returns across a wide range of interest rate scenarios.

Ginnie Mae MBS should also benefit from extension protection compared to conventional MBS, as FHA and VA borrowers tend to move more often and may be more likely to do a cash-out refinance despite higher mortgage rates. And MBS trading below par should not be very sensitive to a reduction in FHA insurance premiums, which seems likely to happen this year.

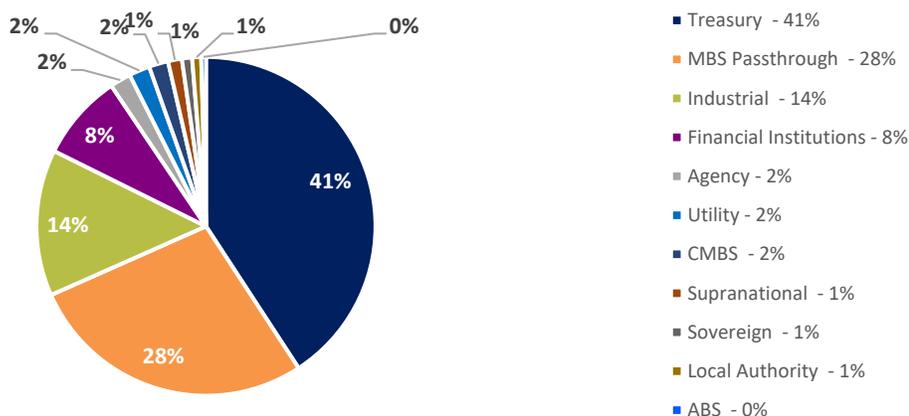
There are some headwinds facing production coupons, although bank demand is likely to remain strong despite the risks. The FHA seems likely to lower FHA insurance premiums, which raises the refinance risk on recently originated loans. But any reduction is likely to be smaller than the last cut in 2015, moderating the effect on valuations. And recently issued pools may offer less extension protection than more seasoned pools if borrowers start to use FHA loan assumptions, which are more attractive when home prices are flat or even drop slightly.”

The featured commentators provided responses to our request for comment on the outlook for Ginnie Mae MBS in 2023 during the week of January 17th, 2023. Ginnie Mae would like to thank Mr. Fratantoni, Mr. Buchta, and Mr. Landy for their perspectives on the outlook for the 2023 Ginnie Mae MBS market.

1 US AGGREGATE AND GLOBAL INDICES

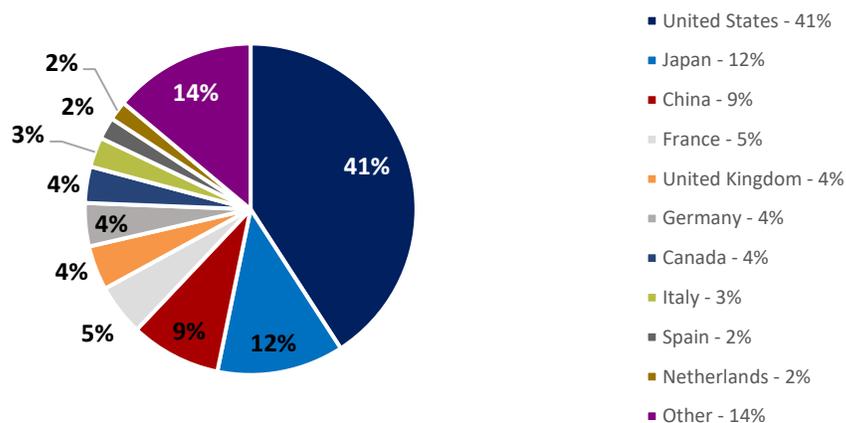
1.1 Bloomberg US Aggregate and Global Indices

Figure 2. Bloomberg US Aggregate Index.



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

Figure 3. Bloomberg Global Aggregate Index by Country.



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

Source: Bloomberg [both charts]. Note: Data as of December 2022. Figures in charts may not add to 100% due to rounding.

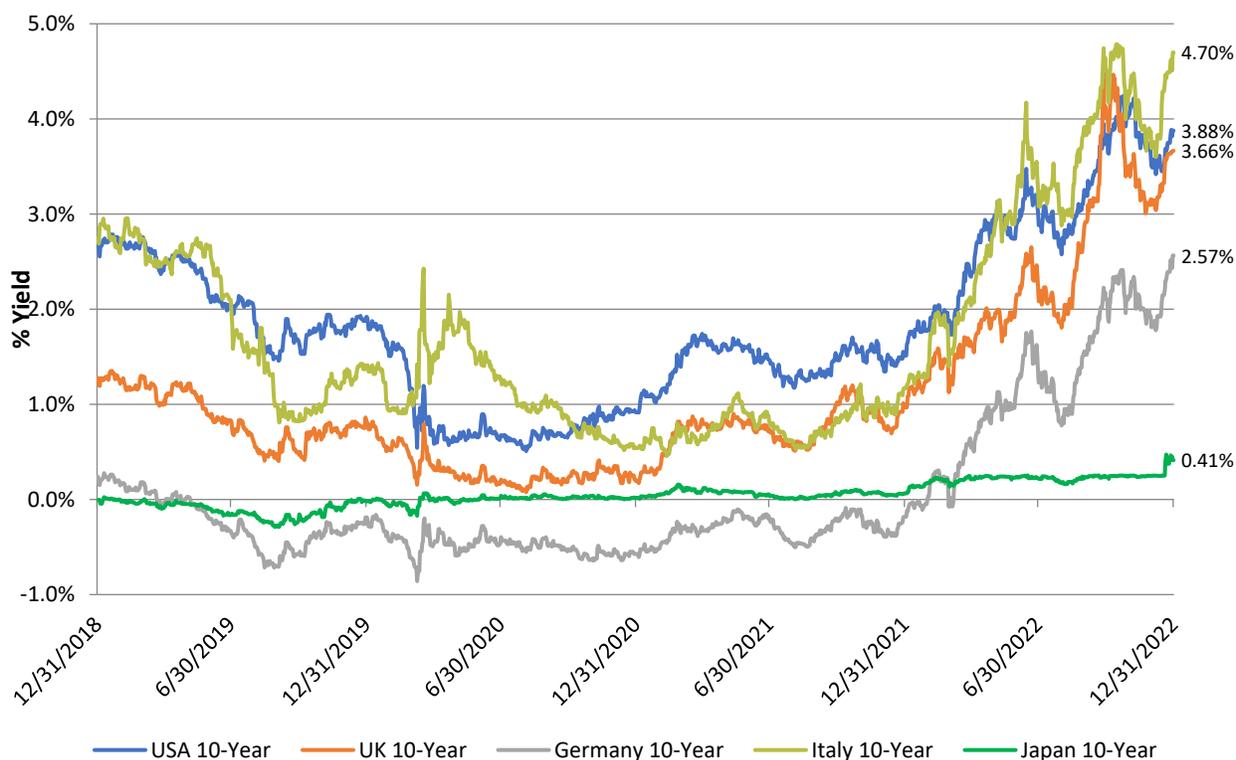
2 SOVEREIGN DEBT PRODUCT PERFORMANCE COMPARISONS

2.1 Global 10-Year Treasury Yields (Unhedged)

The US 10-year Treasury yield moved to 3.88% at month-end December 2022, a MoM increase of 27 bps. US Treasury yields remain the second highest of all the government treasury yields depicted in the figure below behind Italian Treasury yields.

- The yield on the UK 10-year notes increased to 3.66% at month-end December, a MoM increase of 50 bps.
- The yield on the German 10-year notes increased to 2.57% at month-end December, a MoM increase of 64 bps.
- The yield on the Italian 10-year note increased to 4.70% at month-end December, a MoM increase of 83 bps.
- The yield on the Japanese 10-year notes increased to 0.41% at month-end December, a MoM increase of 16 bps.

Figure 4. Global 10-Year Treasury Yields.



Source: Bloomberg. Note: Data as of December 2022.

2.2 US Treasury Hedged Yields

- The hedged yield for the 10-year Treasury JPY decreased MoM 2 bps to 2.15% at month-end December.
- The hedged yield for the 10-year Treasury EUR decreased MoM 1 bp to 1.24% at month-end December.

Figure 5. 7–10yr Total Return Hedged Index, JPY.



Figure 6. 7–10yr Total Return Hedged, EUR.



Source: Bloomberg. Note: Data as of November 2022.

SECONDARY MORTGAGE MARKET

3 FIXED INCOME PRODUCT PERFORMANCE COMPARISONS

3.1 Ginnie Mae Yields – USD

Ginnie Mae fixed rate MBS yields increased MoM in December 2022. Ginnie Mae II yields were at 5.72% at month-end October, decreased 69 bps to 5.03% in November, and have now increased 28 bps to 5.31%. Ginnie Mae I yields were at 5.64% at month-end October, decreased 65 bps to 4.99% in November, and have now increased 23 bps to 5.22%. Ginnie Mae II spreads over the US 10-year Treasury yield, just 36 bps at month-end December 2021, increased 107 bps to 143 bps over the US 10-year Treasury yield at month-end December 2022. The yields on the Ginnie Mae I were 135 bps higher than the US 10-year Treasury yield at month-end December, a decrease in spread of 4 bps MoM but an increase of 77 bps YoY.

Figure 7. Ginnie Mae II SF Yield, USD



Figure 8. Ginnie Mae I SF Yield, USD



Sources Bloomberg. Note: Data as of December 2022

3.2 Ginnie Mae Hedged Yields

The yield for the Ginnie Mae II, hedged in the Japanese Yen stood at 3.59% at month-end December, a 2 bps decrease MoM. The yield for the Ginnie Mae II, hedged in the Euro, stood at 2.67% at month-end December, a 1 bps decrease MoM.

The yield for the Ginnie Mae I, hedged in the Japanese Yen, stood at 3.50% at month-end December, a 7 bps decrease MoM. The yield for the Ginnie Mae I, hedged in the Euro, stood at 2.58% at month-end December, a 6 bps decrease MoM.

Figure 9. Ginnie Mae I and II Hedged, JPY.



Figure 10. Ginnie Mae I and II Hedged, EUR.



Source: Bloomberg. Note: Data as of December 2022

3.3 Ginnie Mae Yield Spreads – Intermediate Credit

The yield differential between US Intermediate Credit and GNMA II 30-year OAS decreased 7 bps to 0.51% at month-end December. The Ginnie Mae II 30-year OAS increased 4 bps MoM. The US Intermediate credit OAS decreased 2 bps MoM.

Figure 11. US GNMA II 30yr MBS OAS versus US Intermediate Credit OAS.

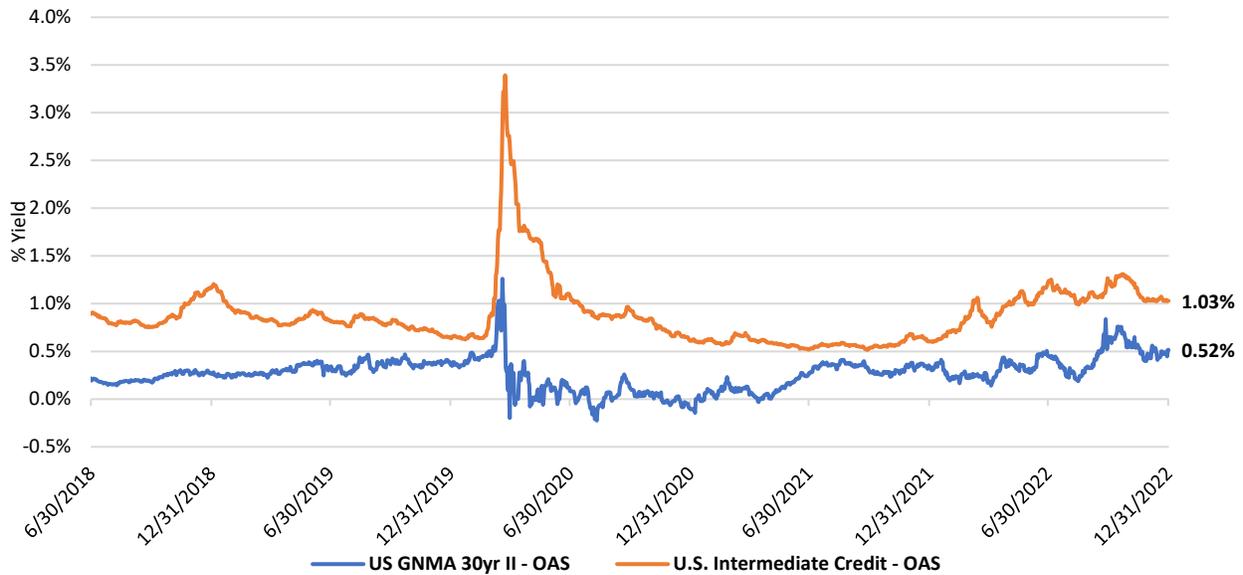
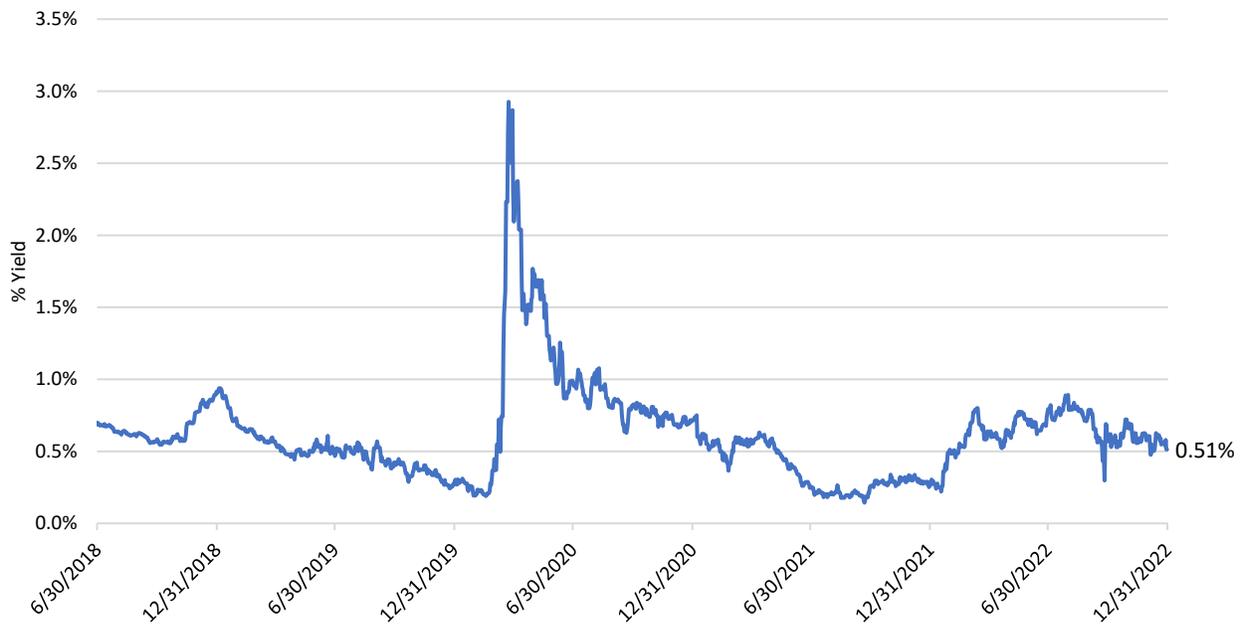


Figure 12. Spread between US Intermediate Credit and US GNMA II 30yr MBS OAS.

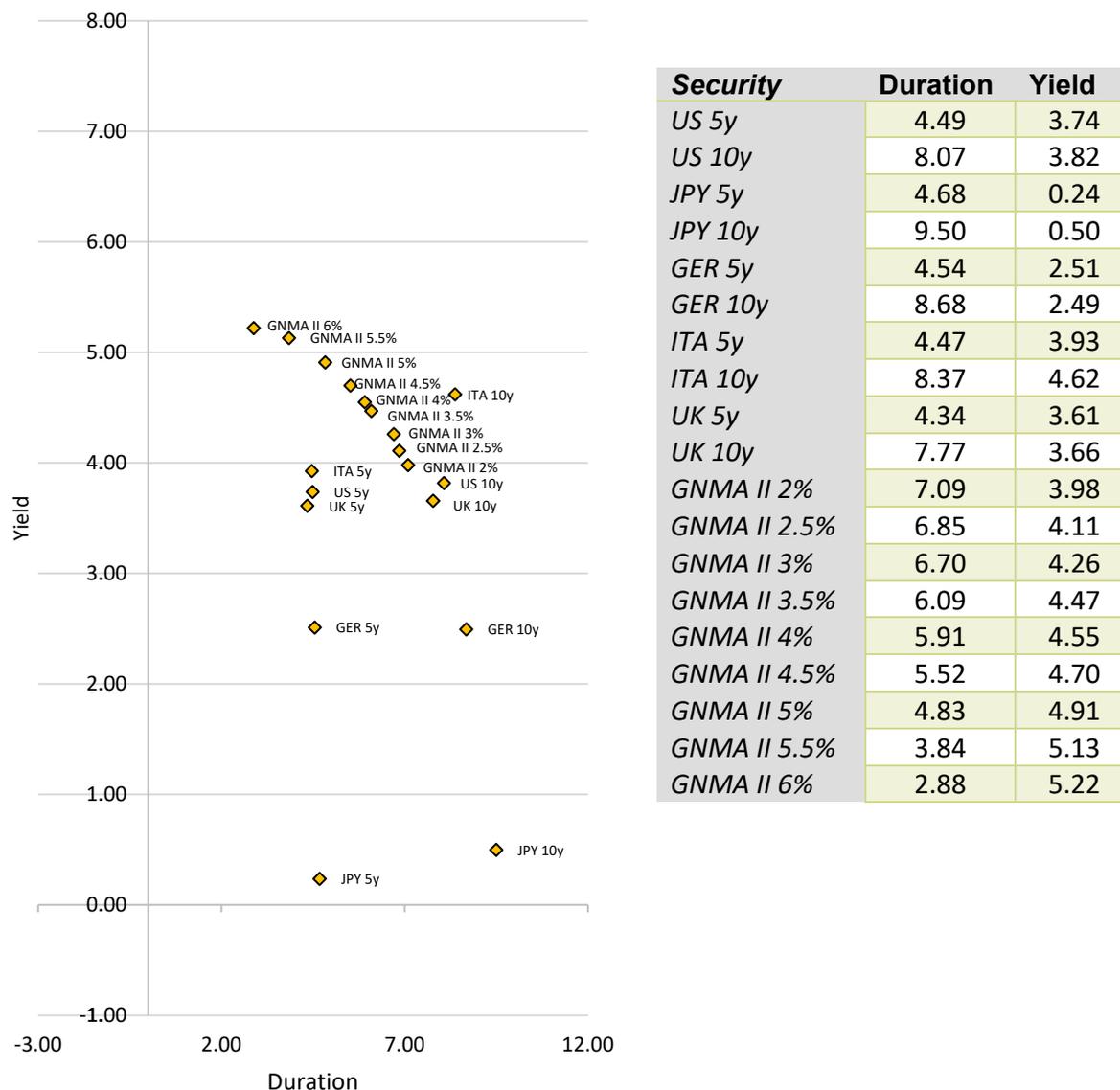


Source: Bloomberg. Note: Data as of December 2022.

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. Particularly for GNMA II securities, increases in duration have been observed relative to the month prior.

Figure 13. 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 December 2022. 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 December by 5.6% MoM, while Fannie Mae and Freddie Mac CPRs decreased 4.6% and 3.0%, respectively. ARM prepayments have increased for GSEs for the first time since August 2022 and dropped for Ginnie Mae for the second straight month, due to decreased refinance activity in the current higher interest rate environment.

Figure 14. Fixed Rate Aggregate 1-Month CPR.

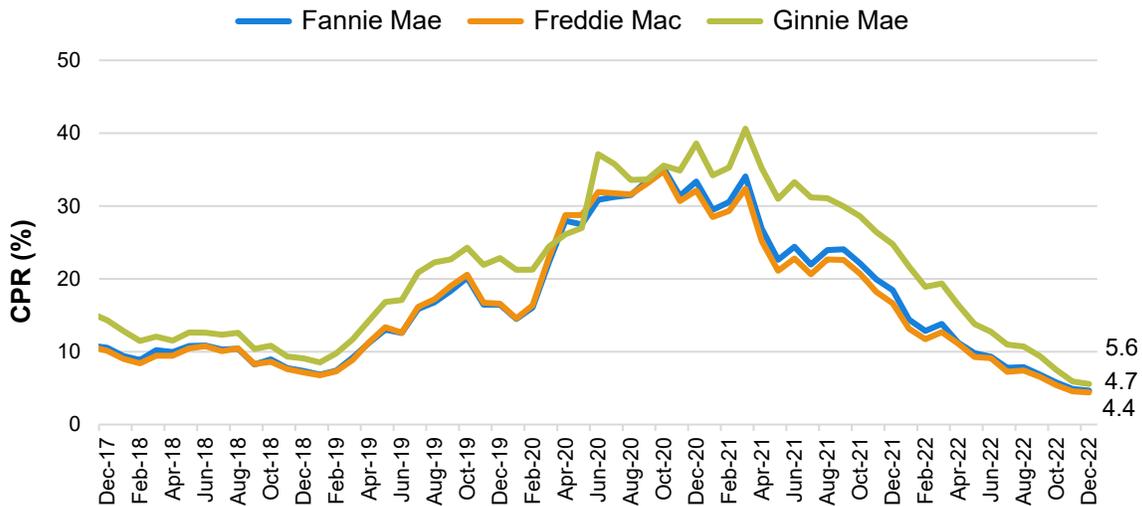
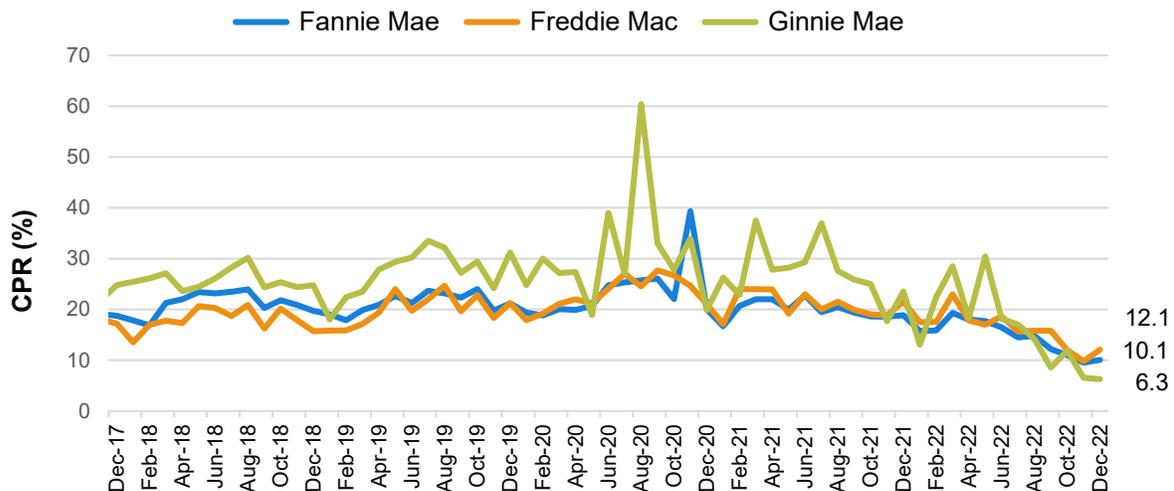


Figure 15. ARM Aggregate 1-Month CPR.



Source: Recursion. Note: Data as of December 2022.

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 December 2022 after slightly overtaking Ginnie Mae in September 2022.

Figure 16. Fixed Rate Aggregate CDR.

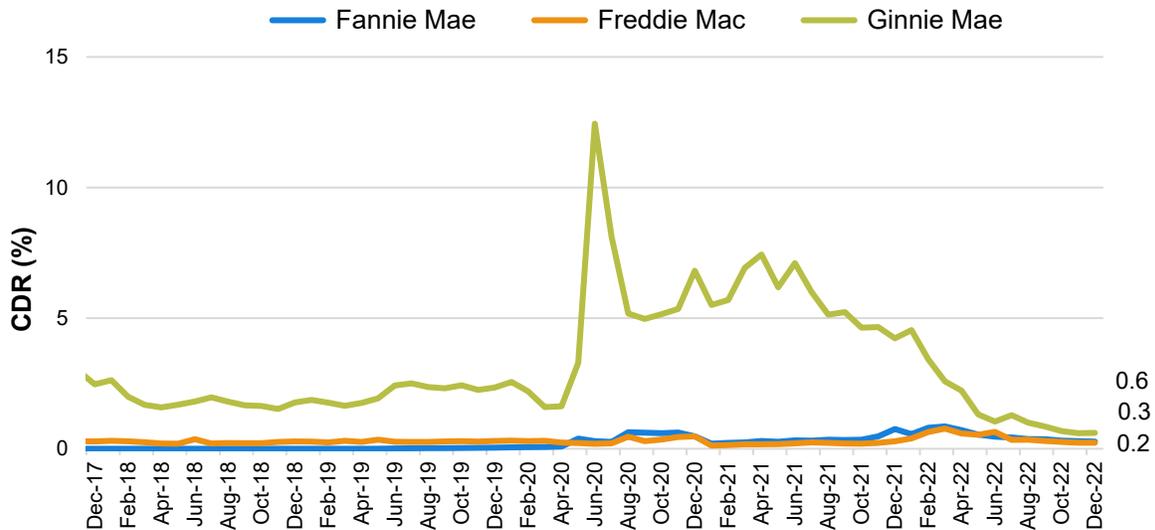
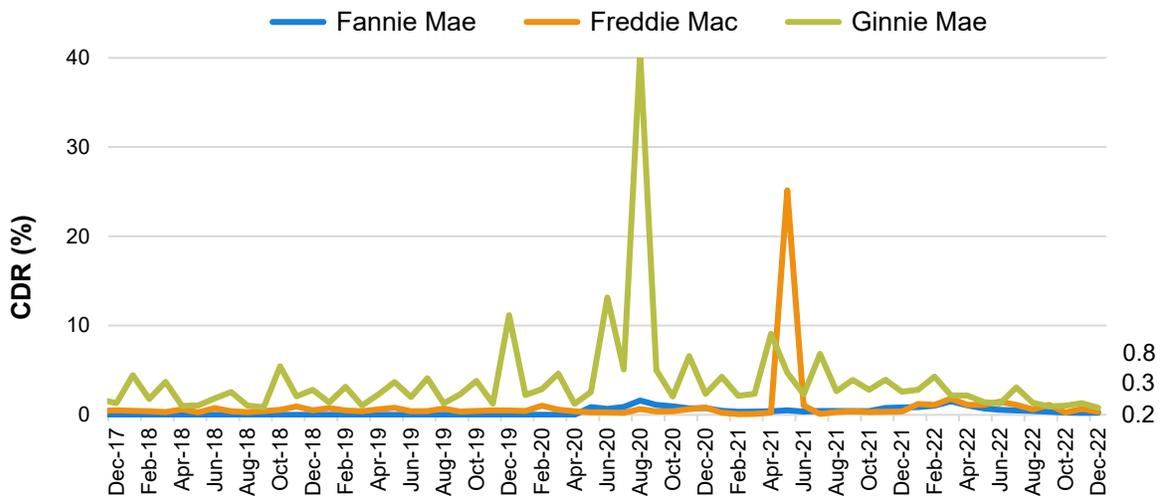


Figure 17. ARM Aggregate CDR.



Source: Recursion. Note: Data as of December 2022.

4.3 Voluntary Prepayment Rates (CRR)

Fixed rate voluntary prepayments (CRR) continue to remain higher for Ginnie Mae relative to the GSEs. In the environment of increasing interest rates and higher prices (See [Section 14.2.1](#)), voluntary prepayments are facing downward trends for both Ginnie Mae and the GSEs. Fannie Mae and Freddie Mac saw decreases of 4.5% MoM and 3.2% MoM in fixed rate aggregate CRR, respectively. Freddie Mac saw a 28.3% MoM increase and Fannie Mae saw a 5.7% MoM increase in ARM aggregate CRR. Ginnie Mae decreased 6.5% MoM in fixed rate aggregate CRR and saw a 3.9% MoM increase in ARM aggregate CRR.

Figure 18. Fixed Rate Aggregate CRR.

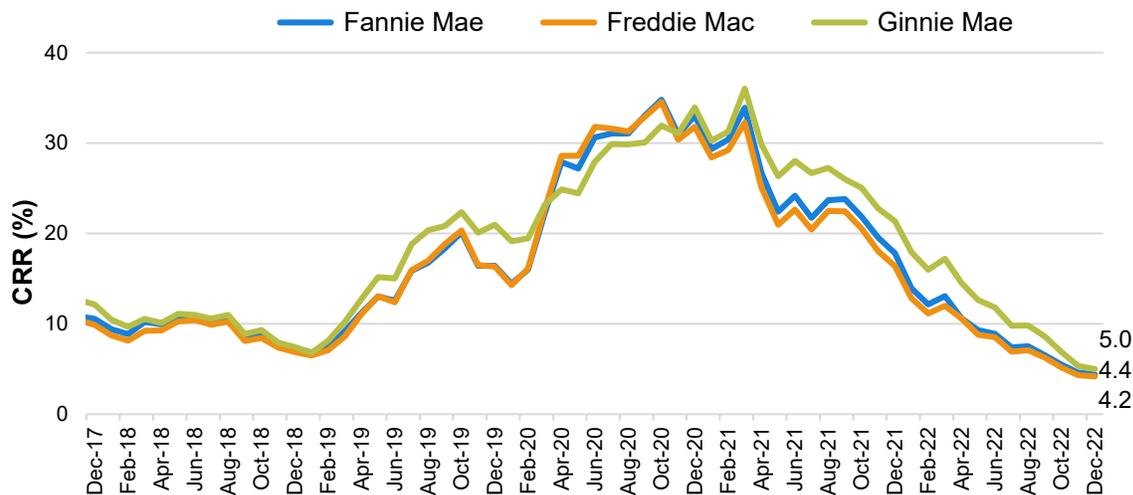
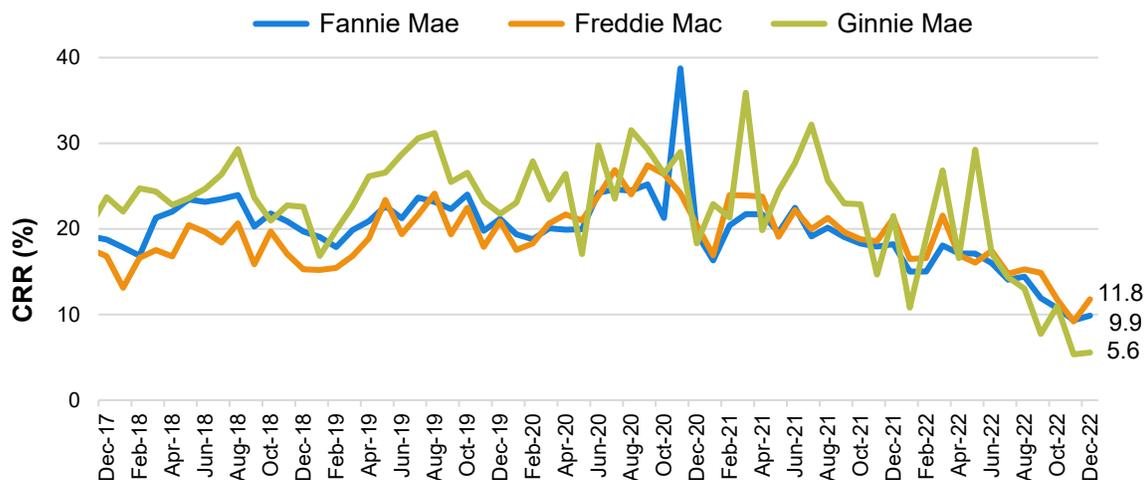


Figure 19. ARM Aggregate CRR.



Source: Recursion. Note: Data as of December 2022.

5 SINGLE-FAMILY MBS PASS-THROUGH ISSUANCE

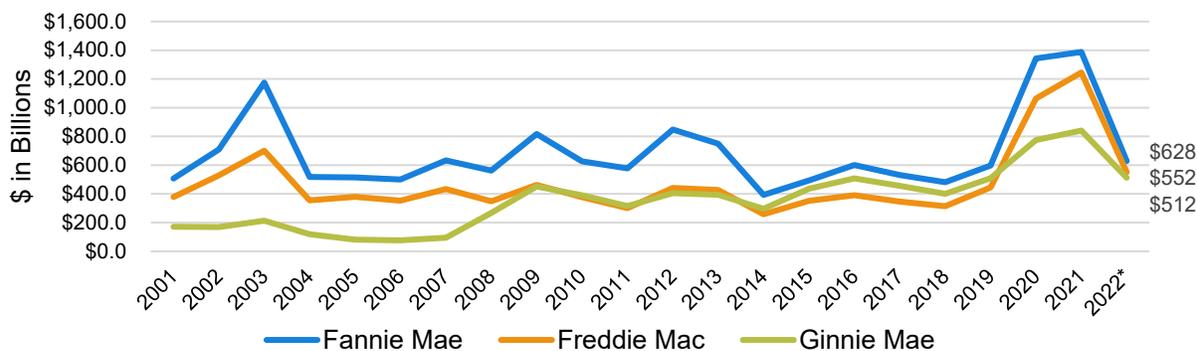
5.1 Gross Issuance of Agency MBS

Agency gross MBS issuance decreased MoM by 3.43%. Fannie Mae and Ginnie Mae saw decreases in gross issuance as compared to November., while Freddie Mac saw an increase.

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 YTD	\$628.3	\$551.6	\$1,179.9	\$512.3	\$1,692.2
2022 Annualized	\$628.3	\$551.6	\$1,179.9	\$512.2	\$1,692.2

Figure 20. Agency Gross Issuance



*2022 values now include month-end data to close out the entire year.

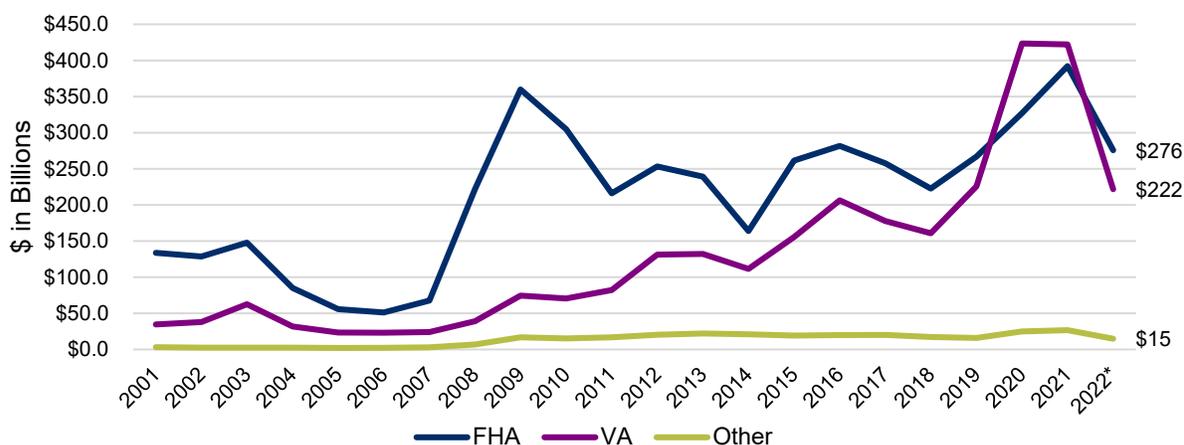
Note: Numbers are rounded to the nearest hundred million. For sums, like "GSE Total", the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

Ginnie Mae’s \$28.8 billion in gross issuance in December was approximately 59% below the average monthly issuance for 2021. In 2022, Ginnie Mae had a lower gross issuance by approximately \$328.6 billion than in 2021.

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

<i>Issuance Year</i>	<i>FHA</i>	<i>VA</i>	<i>Other</i>	<i>Total</i>
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 YTD	\$275.8	\$221.7	\$14.8	\$512.3
2022 Annualized	\$275.8	\$221.7	\$14.8	\$512.3

Figure 21. Ginnie Mae Gross Issuance



*2022 values now include month-end data to close out the entire year.

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.

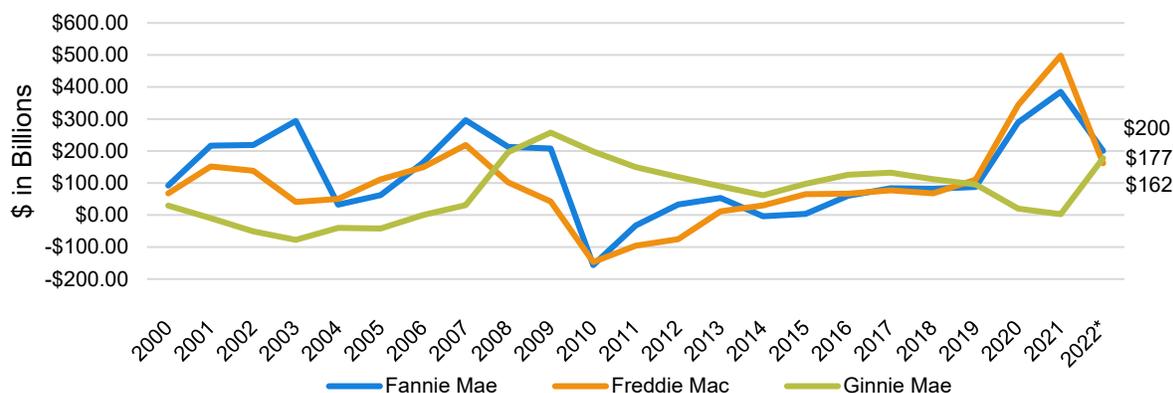
5.2 Net Issuance of Agency MBS

Agency net issuance in December was approximately \$20.8 billion, which represents a 5.9% MoM decrease in net issuance. Ginnie Mae net issuance was \$14.0 billion in December, a 23.5% decrease from November 2022. Since May 2022, FHA net issuance outpaces VA net issuance MoM, as shown in Table 4 and Figure 21.

Table 3. Agency Net Issuance (\$ in billions)

Issuance Year	Fannie Mae	Freddie Mac	GSE	Ginnie Mae	Total
2000	\$92.0	\$67.8	\$159.8	\$29.3	\$189.1
2001	\$216.6	\$151.8	\$368.4	-\$9.9	\$358.5
2002	\$218.9	\$138.3	\$357.2	-\$51.2	\$306.1
2003	\$293.7	\$41.1	\$334.9	-\$77.6	\$257.3
2004	\$32.3	\$50.2	\$82.5	-\$40.1	\$42.4
2005	\$62.5	\$111.7	\$174.2	-\$42.2	\$132.0
2006	\$164.3	\$149.3	\$313.6	\$0.2	\$313.8
2007	\$296.1	\$218.8	\$514.9	\$30.9	\$545.7
2008	\$213.0	\$101.8	\$314.8	\$196.4	\$511.3
2009	\$208.1	\$42.5	\$250.6	\$257.4	\$508.0
2010	-\$156.4	-\$146.8	-\$303.2	\$198.3	-\$105.0
2011	-\$32.6	-\$95.8	-\$128.4	\$149.6	\$21.2
2012	\$32.9	-\$75.3	-\$42.4	\$119.1	\$76.8
2013	\$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 YTD	\$200.4	\$161.5	\$361.9	\$177.4	\$539.4
2022 Annualized	\$200.4	\$161.5	\$361.9	\$177.4	\$539.4

Figure 22. Agency Net Issuance



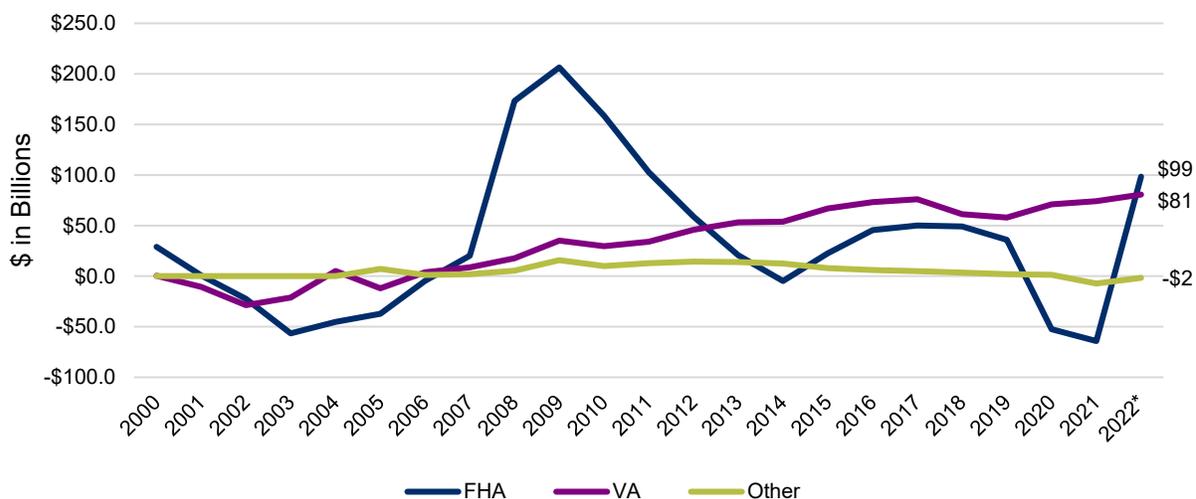
*2022 values now include month-end data to close out the entire year.

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

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

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

Figure 23. Ginnie Mae Net Issuance



*2022 values now include month-end data to close out the entire year.

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
Dec-18	\$36.9	\$23.9	\$28.4	\$60.7	\$89.1	\$8.2	\$6.4	\$8.2	\$14.6	\$22.8
Jan-19	\$33.3	\$19.2	\$29.0	\$52.6	\$81.6	\$5.9	\$2.5	\$9.2	\$8.3	\$17.6
Feb-19	\$27.3	\$19.9	\$23.5	\$47.2	\$70.7	\$1.4	\$3.4	\$4.6	\$4.7	\$9.3
Mar-19	\$29.6	\$27.3	\$26.6	\$56.9	\$83.5	\$1.8	\$10.3	\$5.6	\$12.0	\$17.6
Apr-19	\$33.1	\$30.8	\$32.9	\$63.9	\$96.8	\$1.3	\$10.8	\$8.3	\$12.0	\$20.4
May-19	\$44.5	\$34.3	\$38.8	\$78.8	\$117.6	\$6.7	\$9.8	\$9.4	\$16.6	\$26.0
Jun-19	\$44.6	\$34.0	\$43.3	\$78.6	\$121.9	\$1.9	\$5.9	\$9.0	\$7.8	\$16.8
Jul-19	\$51.7	\$36.9	\$45.9	\$88.6	\$134.5	\$10.9	\$10.1	\$11.0	\$21.0	\$32.0
Aug-19	\$71.1	\$50.4	\$51.2	\$121.4	\$172.6	\$20.8	\$17.1	\$8.7	\$37.9	\$46.6
Sep-19	\$67.1	\$43.0	\$52.0	\$110.1	\$162.1	\$14.1	\$7.5	\$6.5	\$21.5	\$28.0
Oct-19	\$65.0	\$46.2	\$58.4	\$111.2	\$169.6	\$7.4	\$7.1	\$11.9	\$14.6	\$26.5
Nov-19	\$68.1	\$50.7	\$54.3	\$118.7	\$173.1	\$5.2	\$8.6	\$4.1	\$13.8	\$18.0
Dec-19	\$62.1	\$52.5	\$52.7	\$114.6	\$167.3	\$10.1	\$17.3	\$7.4	\$27.3	\$34.7
Jan-20	\$61.7	\$51.4	\$56.0	\$113.1	\$169.0	\$9.1	\$16.5	\$8.6	\$25.6	\$34.2
Feb-20	\$56.5	\$39.5	\$51.2	\$96.0	\$147.2	\$9.4	\$7.9	\$7.1	\$17.4	\$24.4
Mar-20	\$69.5	\$41.4	\$53.0	\$110.8	\$163.9	\$17.9	\$6.3	\$8.8	\$24.2	\$33.0
Apr-20	\$101.6	\$76.3	\$61.4	\$177.9	\$239.3	\$30.5	\$27.5	\$10.2	\$58.0	\$68.2
May-20	\$124.3	\$70.6	\$60.8	\$194.9	\$255.7	\$35.2	\$8.2	\$5.7	\$43.4	\$49.1
Jun-20	\$118.9	\$78.1	\$58.5	\$197.0	\$255.4	\$30.0	\$15.9	\$1.3	\$45.9	\$47.2
Jul-20	\$125.0	\$108.1	\$66.5	\$233.1	\$299.5	\$23.4	\$38.0	-\$15.5	\$61.4	\$45.9
Aug-20	\$137.6	\$113.6	\$73.6	\$251.3	\$324.8	\$34.2	\$43.4	-\$4.1	\$77.6	\$73.5
Sep-20	\$122.9	\$102.1	\$72.4	\$225.0	\$297.5	\$16.5	\$29.9	\$1.0	\$46.5	\$47.5
Oct-20	\$142.3	\$124.8	\$72.6	\$267.1	\$339.7	\$28.9	\$48.3	-\$0.3	\$77.2	\$76.9
Nov-20	\$152.4	\$131.5	\$72.6	\$283.9	\$356.5	\$31.4	\$48.4	-\$4.5	\$79.8	\$75.3
Dec-20	\$130.8	\$126.7	\$76.9	\$257.5	\$334.4	\$22.8	\$53.1	\$1.7	\$75.8	\$77.5
Jan-21	\$141.6	\$117.3	\$78.2	\$258.9	\$337.1	\$25.9	\$37.9	-\$6.5	\$63.8	\$57.3
Feb-21	\$118.8	\$115.5	\$72.3	\$234.3	\$306.6	\$16.8	\$44.3	-\$0.9	\$61.1	\$60.2
Mar-21	\$143.9	\$118.9	\$76.9	\$262.8	\$339.7	\$37.6	\$44.0	\$1.0	\$81.6	\$82.6
Apr-21	\$148.0	\$142.3	\$85.6	\$290.3	\$375.9	\$26.2	\$57.0	-\$4.2	\$83.3	\$79.0
May-21	\$132.3	\$91.4	\$71.7	\$223.7	\$295.4	\$64.9	\$38.8	-\$3.1	\$103.7	\$100.6
Jun-21	\$108.5	\$91.2	\$67.7	\$199.7	\$267.4	\$34.0	\$33.7	\$2.6	\$67.8	\$70.4
Jul-21	\$95.4	\$84.6	\$69.0	\$180.0	\$249.0	\$27.6	\$31.9	-\$1.4	\$59.5	\$58.0
Aug-21	\$104.8	\$109.3	\$66.6	\$214.1	\$280.8	\$27.5	\$48.5	\$1.4	\$76.1	\$77.4
Sep-21	\$102.9	\$105.3	\$68.0	\$208.3	\$276.3	\$26.4	\$45.6	\$3.1	\$72.0	\$75.1
Oct-21	\$105.1	\$102.7	\$62.5	\$207.8	\$270.3	\$34.6	\$46.9	\$1.9	\$81.5	\$83.4
Nov-21	\$93.6	\$81.1	\$60.8	\$174.7	\$235.5	\$29.5	\$34.9	\$3.1	\$64.4	\$67.6
Dec-21	\$93.7	\$85.4	\$58.9	\$179.1	\$238.0	\$33.8	\$34.4	\$5.7	\$68.3	\$73.9
Jan-22	\$93.1	\$85.9	\$59.0	\$179.0	\$238.0	\$45.6	\$37.6	\$14.0	\$83.2	\$97.3
Feb-22	\$73.3	\$64.6	\$49.0	\$137.9	\$186.9	\$27.8	\$22.7	\$9.7	\$50.5	\$60.2
Mar-22	\$76.8	\$62.9	\$47.4	\$139.7	\$187.1	\$22.6	\$23.1	\$6.9	\$45.7	\$52.6
Apr-22	\$65.3	\$53.5	\$47.8	\$118.8	\$166.6	\$19.5	\$17.7	\$13.2	\$37.2	\$50.4
May-22	\$54.7	\$43.7	\$45.0	\$98.4	\$143.4	\$13.6	\$12.5	\$15.5	\$26.1	\$41.6
Jun-22	\$54.5	\$42.0	\$43.6	\$96.5	\$140.1	\$14.8	\$10.7	\$16.0	\$25.5	\$41.5
Jul-22	\$46.8	\$40.3	\$42.4	\$87.1	\$129.5	\$12.1	\$14.4	\$18.0	\$26.5	\$44.5
Aug-22	\$39.8	\$46.3	\$40.3	\$86.1	\$126.4	\$4.8	\$19.8	\$16.2	\$24.6	\$40.8
Sep-22	\$39.3	\$38.2	\$39.9	\$77.5	\$117.4	\$7.6	\$13.9	\$18.3	\$21.5	\$39.8
Oct-22	\$34.1	\$26.1	\$35.5	\$60.2	\$95.7	\$5.8	\$4.7	\$17.3	\$10.5	\$27.8
Nov-22	\$25.7	\$22.7	\$33.6	\$48.4	\$82.0	\$0.3	\$3.5	\$18.3	\$3.8	\$22.1
Dec-22	\$24.9	\$25.5	\$28.8	\$50.4	\$79.2	\$0.2	\$6.6	\$14.0	\$6.8	\$20.8

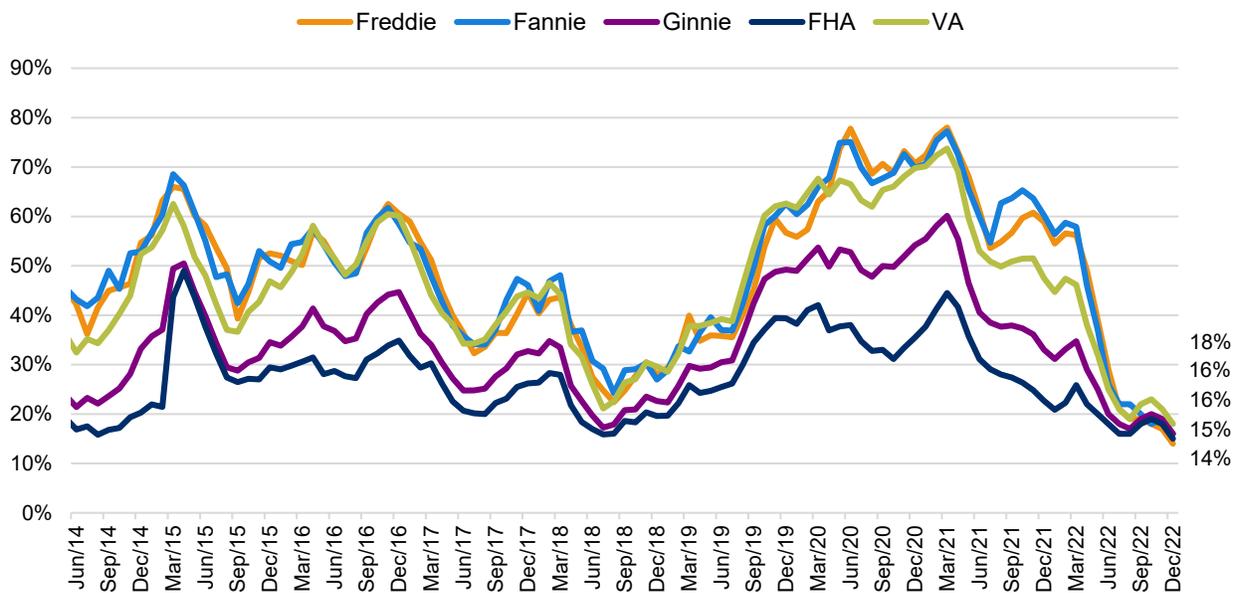
Source: Beginning May 2021, data for Gross and Net Issuance was sourced from Fannie Mae, Freddie Mac, and Ginnie Mae loan level disclosure files. Net issuance is defined here as the difference between prior period UPB and current period UPB. Data as of December 2022. Beginning with the October 2021 GMAR, the Fannie Mae and Freddie Mac net issuance data have been updated to reflect the current UPB of the portfolios. July 2021 through December 2022 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 decreased for Ginnie Mae in December. In the conventional mortgage market space, Fannie Mae saw a decrease of approximately 16% MoM while Freddie Mac’s refinance share decreased 18% MoM. Ginnie Mae’s MoM decrease was approximately 16%, with the greater drop taking place with FHA lending which was down almost 17% in December MoM. VA’s refinance share decreased by approximately 14%.

- Freddie Mac’s refinance percentage dropped to 14% in December, down from 17% in November.
- Fannie Mae’s refinance percentage dropped to 16% in December, down from 19% in November.
- Ginnie Mae’s refinance percentage dropped to 16% in December, down from 19% in November.
- FHA’s refinance percentage dropped to 15% in December, down from 18% in November.
- VA’s refinance percentage dropped to 18% in December, down from 21% in November.

Figure 24. Percent Refinance at Issuance – Single-Family.



Sources: Recursion. Note: Data as of December 2022.

6 AGENCY SINGLE-FAMILY MBS OUTSTANDING

6.1 Outstanding Single-Family Agency MBS

As of December 2022, outstanding single-family MBS in the agency market totaled \$8.603 trillion: 41.5% Fannie Mae, 33.7% Freddie Mac, and 24.8% Ginnie Mae MBS. Over the past twelve months, Fannie Mae’s, Freddie Mac’s, and Ginnie Mae’s total outstanding MBS increased by approximately 4.7%, 7.4%, and 9.1%, respectively. Fannie Mae outstanding MBS remains larger than Freddie Mac’s and Ginnie Mae’s by approximately \$679 billion and \$1.4 trillion, respectively.

Ginnie Mae MBS collateral composition has changed dramatically over the past five years. In December 2017, 60.8% of Ginnie Mae outstanding collateral was FHA and 33.0% was VA. In December 2022, FHA collateral comprised 52.8% of Ginnie Mae MBS outstanding and VA collateral comprised 42.2% of Ginnie Mae MBS outstanding.

Figure 25. Outstanding Agency Mortgage-Backed Securities.

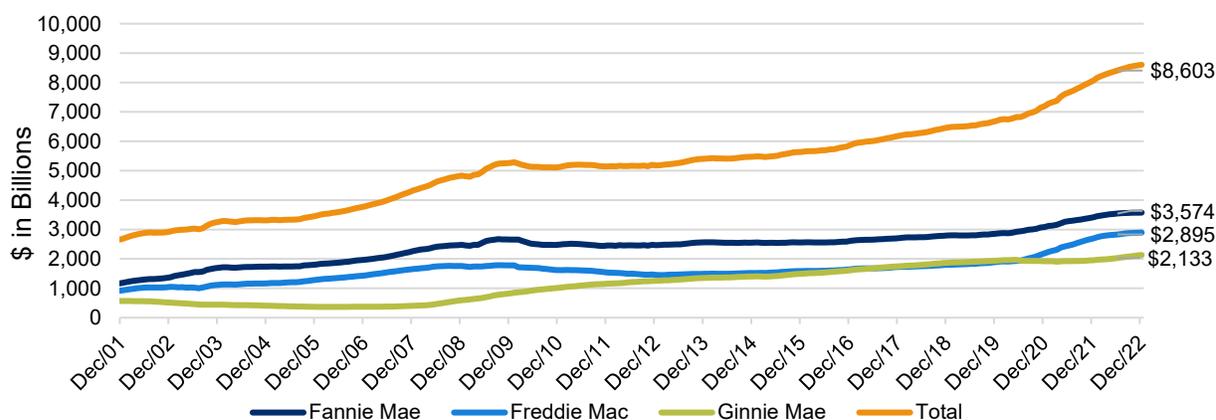
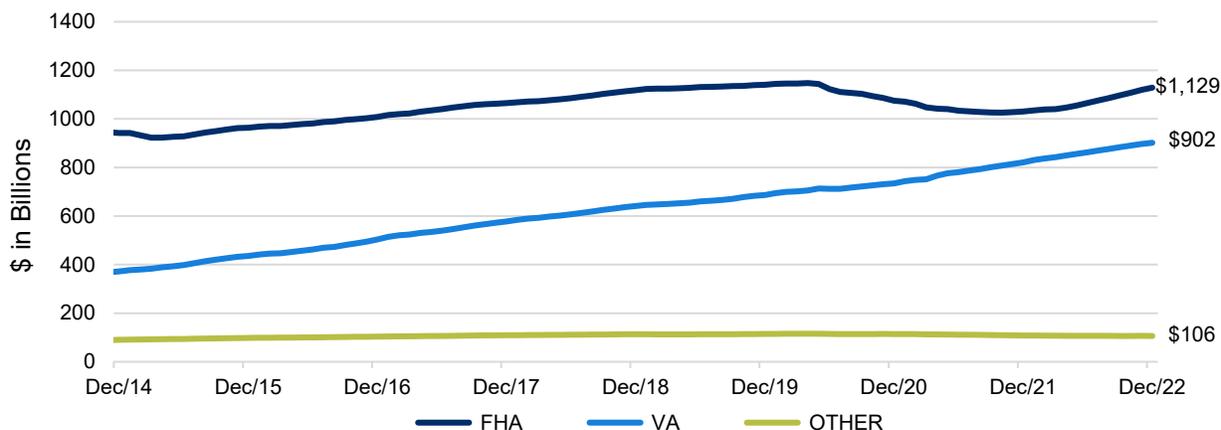


Figure 26. Composition of Outstanding Ginnie Mae Mortgage-Backed Securities.



Sources: Recursion. Note: Data as of December 2022.

6.2 Origination Volume and Share Over Time

Origination volume continued to decline in Q3 2022, with \$505 billion in originations in Q3, which represents a decline in issuance from Q2 2022 of approximately 22%. Ginnie Mae’s share of total origination increased from 17.8% to 21.6% in Q3 2022, while Portfolio origination decreased from 30.8% to 26.4% in Q3 2022.

Figure 27. First Lien Origination Volume

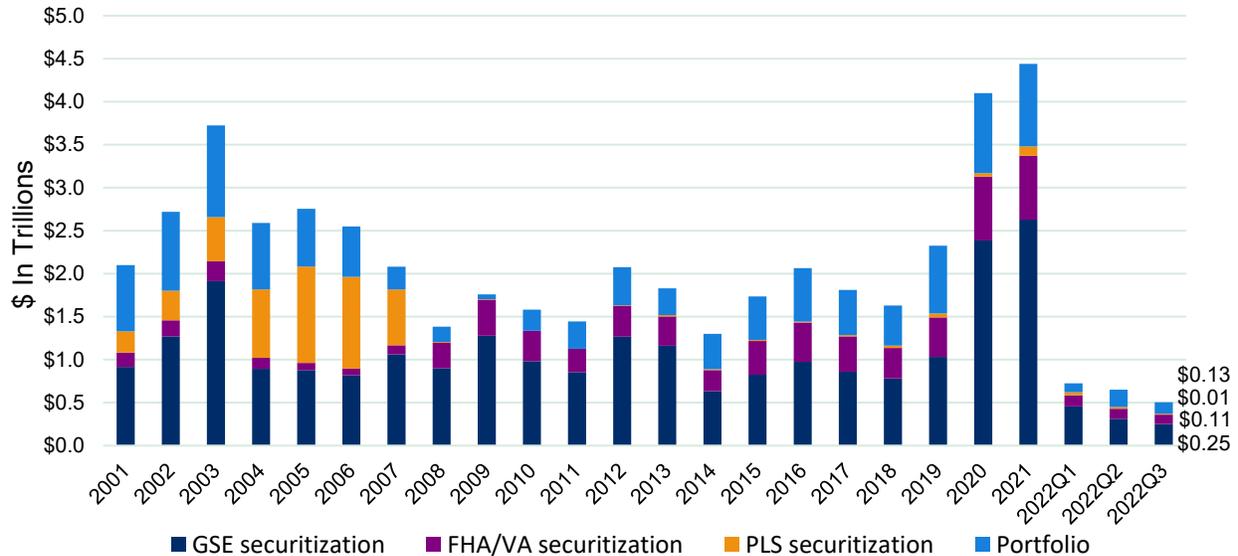
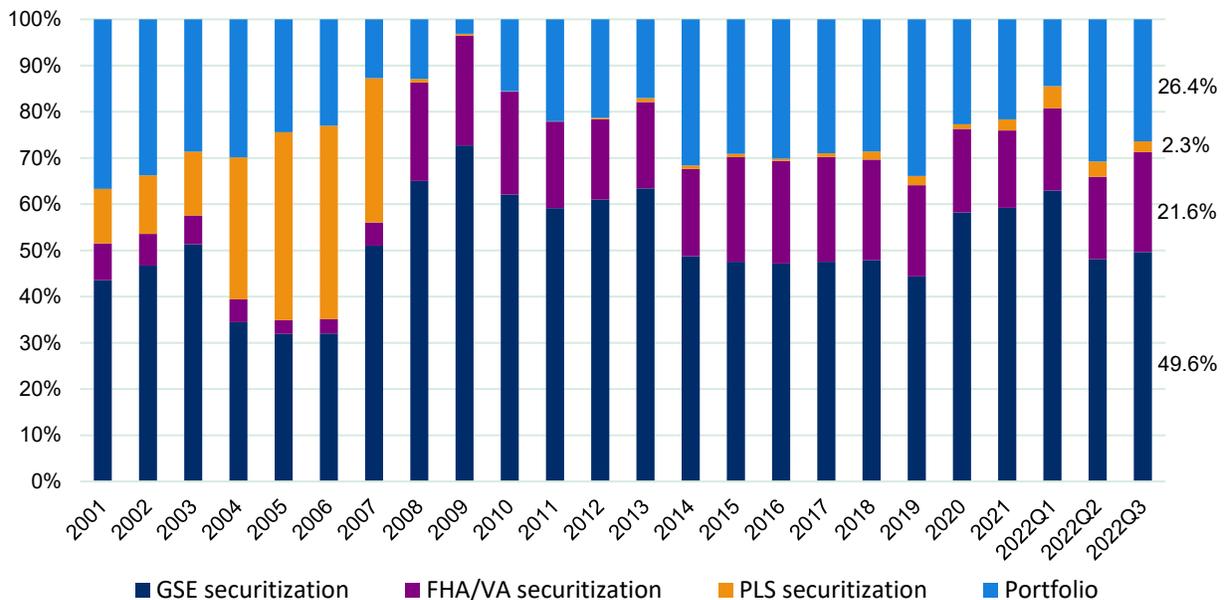


Figure 28. First Lien Origination Share



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

6.3 Agency Issuance and Agency Outstanding by State

Ginnie Mae MBS represent approximately 29% 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 (51%) and the lowest in the District of Columbia (18%). 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 4% difference between Ginnie Mae’s share of new agency issuance and Ginnie Mae’s share of agency outstanding.

Table 6. Agency Issuance Breakdown by State

National	Agency Issuance (past 1 year)				Agency Outstanding			
	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)	GNMA Share by UPB	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)
	29%	2,337,475	277.55	285.13	25%	10,667,392	204.37	211.00
AK	51%	7,862	331.27	296.59	48%	37,403	261.87	221.64
AL	43%	51,282	220.20	234.55	40%	235,385	156.67	177.78
AR	39%	27,331	188.88	217.65	39%	136,358	132.09	160.95
AZ	27%	69,991	309.85	315.96	24%	271,362	218.48	225.84
CA	23%	159,314	436.08	428.56	16%	679,643	326.99	320.97
CO	28%	52,568	393.41	377.39	23%	212,509	291.22	277.54
CT	29%	22,192	261.11	276.10	25%	105,407	202.27	209.83
DC	18%	1,859	492.31	428.28	13%	8,864	381.66	350.85
DE	33%	11,432	265.41	288.50	31%	51,524	204.03	211.57
FL	33%	206,197	288.63	290.10	31%	843,193	211.29	211.30
GA	36%	119,808	250.23	283.18	33%	494,713	179.45	206.82
HI	39%	7,216	610.14	487.60	32%	33,345	469.28	358.62
IA	27%	16,301	180.62	195.22	22%	82,158	133.84	148.75
ID	26%	13,791	329.26	317.55	23%	63,323	217.56	222.90
IL	26%	78,959	208.61	241.62	22%	364,513	159.92	179.68
IN	32%	59,447	188.41	206.76	30%	277,404	133.89	151.03
KS	31%	18,896	191.96	219.96	29%	95,870	139.91	164.03
KY	37%	35,489	196.01	212.25	34%	164,241	143.51	156.10
LA	45%	43,654	204.41	234.61	40%	199,716	157.71	177.80
MA	23%	25,731	370.33	364.01	16%	112,938	284.59	269.38
MD	39%	64,854	334.76	324.39	33%	290,588	265.28	250.10
ME	29%	8,083	242.06	264.08	26%	37,709	177.70	191.97
MI	23%	57,600	184.85	212.15	20%	273,904	133.72	157.21
MN	20%	30,328	245.51	271.54	18%	158,983	182.32	198.91
MO	32%	49,943	195.97	217.21	29%	243,309	141.96	162.28
MS	50%	25,536	199.43	214.75	47%	121,755	143.33	161.44
MT	25%	6,351	303.05	307.63	23%	32,239	208.82	216.57
NC	31%	93,391	246.27	279.77	29%	411,378	175.34	202.19
ND	31%	3,735	242.48	239.97	24%	17,023	193.33	184.96
NE	29%	12,050	215.26	218.84	26%	64,643	149.09	161.30
NH	25%	7,811	305.69	299.99	22%	38,088	226.40	215.34
NJ	26%	53,021	313.04	330.98	21%	230,359	240.30	255.05
NM	39%	18,641	237.28	247.67	38%	94,680	166.54	178.48
NV	32%	33,196	336.30	325.30	30%	131,918	247.58	235.46
NY	23%	54,857	299.87	339.30	20%	305,418	208.99	248.82
OH	31%	84,688	181.40	200.49	29%	420,922	130.22	149.45
OK	41%	36,421	199.84	219.95	42%	188,197	140.99	162.57
OR	22%	24,096	346.80	353.38	19%	109,926	253.87	253.81
PA	26%	70,526	200.07	244.41	25%	386,427	148.98	182.43
RI	36%	8,050	316.45	294.30	30%	35,379	234.16	213.58
SC	37%	57,498	248.09	257.76	34%	233,107	182.97	192.30
SD	32%	5,768	240.95	241.02	29%	29,182	173.11	178.07
TN	31%	60,499	253.87	275.51	31%	268,352	175.16	204.41
TX	30%	225,673	259.53	293.72	31%	1,083,416	181.88	212.54
UT	21%	22,431	368.71	371.42	18%	94,796	259.58	263.86
VA	41%	96,053	327.78	317.05	36%	444,388	256.90	250.72
VI	22%	136	374.22	407.25	23%	792	248.81	302.32
VT	21%	2,264	237.92	260.84	18%	12,042	181.48	181.02
WA	26%	51,143	391.67	392.84	21%	231,200	284.65	289.70
WI	21%	25,281	208.83	225.57	17%	123,145	156.75	163.82
WV	46%	12,608	193.35	195.29	43%	59,278	144.19	145.76
WY	37%	5,623	263.95	266.11	34%	24,980	206.37	202.22

Source: Recursion. Note: Outstanding balance is based on loan balance as of December 2022. Ginnie Mae issuance is based on the last 12 months, from November 2021 to December 2022. 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 December 2022, the weighted average coupon (WAC) on outstanding Ginnie Mae MBS increased slightly from 3.07% in November 2022 to 3.10% in December. With 30-year fixed mortgage rates for certain credit profiles over 6.0% in December, this increase in WAC is likely to continue. **Figure 30** illustrates that loans originated since 2019 account for 78% of Ginnie Mae MBS collateral outstanding.

Figure 29. Outstanding Ginnie Mae MBS Balance, by Coupon.

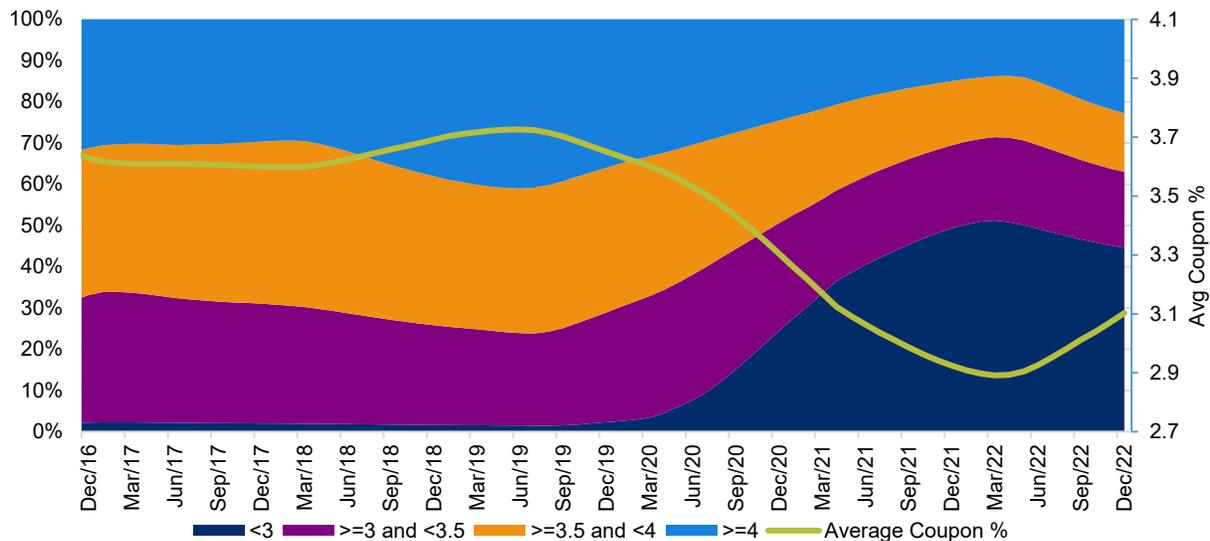
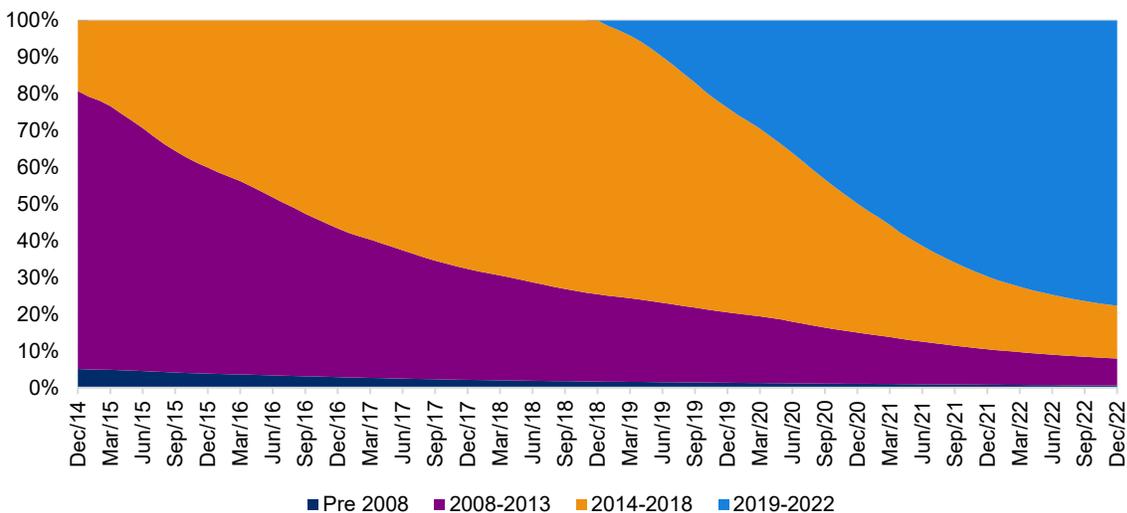


Figure 30. Outstanding Ginnie Mae MBS Balance, by Vintage.



Sources: Recursion. Note: December 2022 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 December 2022, \$7.5 billion of Ginnie Mae MBS were securitized into Real Estate Mortgage Investment Conduits (REMICs) as underlying collateral. Of that, approximately \$495.0 million were multifamily MBS having coupons between 3.51% and 4.0%. \$6.4 billion were single family MBS with 99% of the single family MBS having coupons over 4.0%.

As of December, in 2022, approximately \$105.3 billion of Ginnie Mae single family and multifamily MBS were securitized into Ginnie Mae REMIC transactions. This represents a roughly 46.2% decrease over the same period in 2021 (\$195.8 billion).

Figure 31. Ginnie Mae Single Family and Multifamily MBS Securitized into REMICs

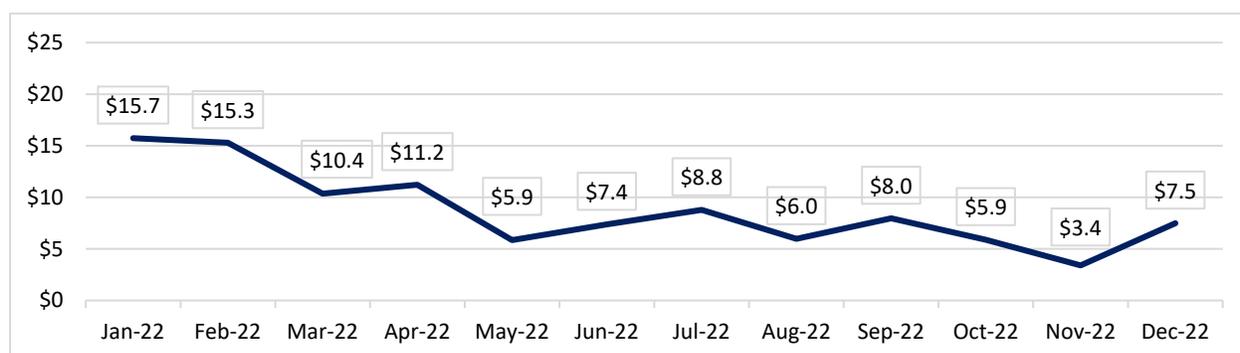


Table 7. December 2022 REMIC Collateral Coupon Distribution

Net Coupon (%)	Approx. Ginnie Mae MBS amount securitized into REMIC Deals (\$MM) ²	% Breakdown of REMIC Collateral by coupon ¹⁷
Multifamily		
<2.01	15.7	3.1%
3.51-4.00	495.0	96.9%
Subtotal	510.7	100%
Single-Family		
<2.01	78.7	1.0%
3.51-4.00	6.8	0.0%
4.01-4.50	623.4	10.0%
4.51-5.00	82.2	1.0%
5.01-5.50	778.8	12.0%
5.51-6.00	2,475.0	38.0%
6.01-6.50	2,428.7	38.0%
Subtotal	6,473.5	100.0%
Grand Total	6,984.2	100.0%

Source: Ginnie Mae Disclosure Files

²Totals may not sum due to rounding.

7.2 REMIC Market Snapshot

In December 2022, Ginnie Mae's Single-Family REMIC collateral WAC increased MoM by 31 bps which is the second consecutive month of an increase in rates. Additionally, Freddie Mac's Single-Family REMIC collateral WAC increased by 9 bps MoM while Fannie Mae's Single-Family REMIC collateral WAC decreased by 84 bps MoM.

- In December 2022, Ginnie Mae REMIC issuance volume was \$8.9 billion, the eighth consecutive month of REMIC issuance volume below \$10.0 billion.
- Ginnie Mae guaranteed one HREMIC transaction in December 2022. This is the third month in 2022 in which Ginnie Mae guaranteed one HREMIC transaction. In 2021, there were five months where Ginnie Mae guaranteed one HREMIC transaction.

Figure 32. REMIC Issuance by Agency

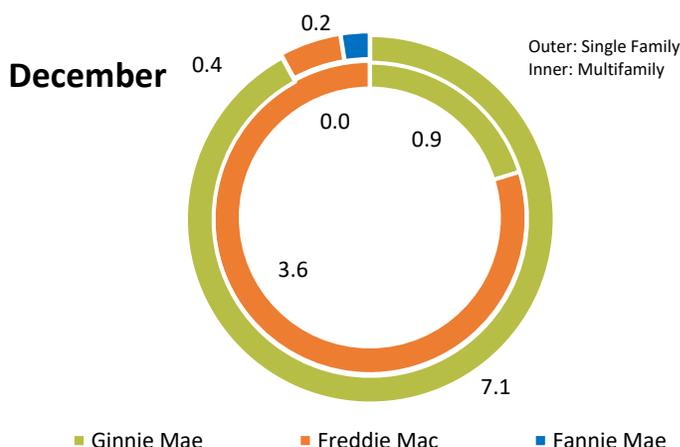


Table 8. Monthly REMIC Issuance by Agency

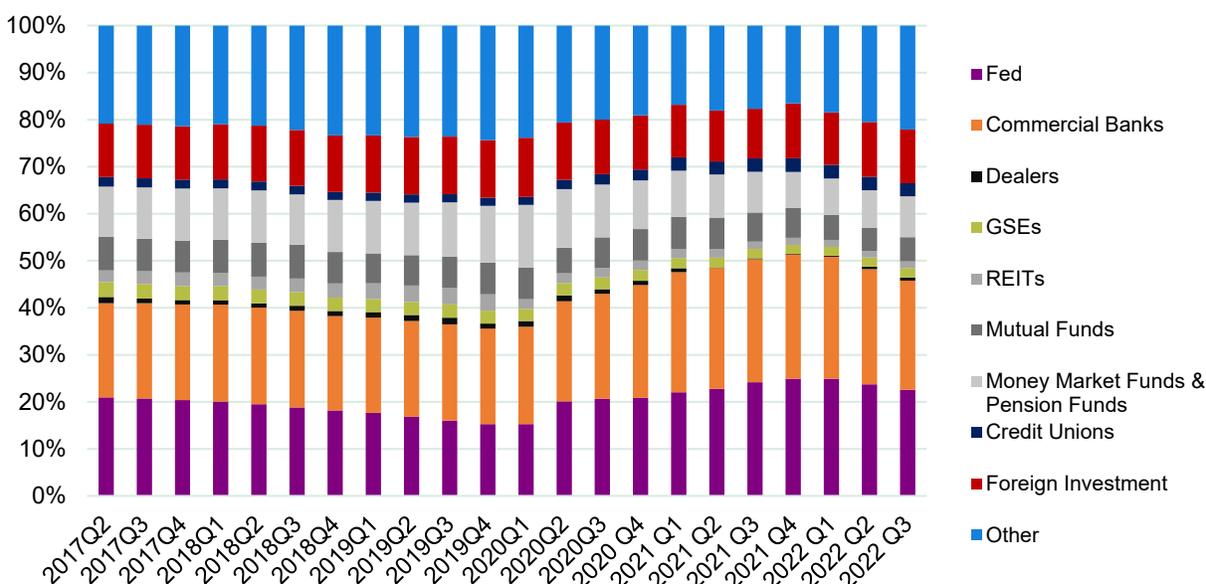
	SF REMIC Issuance Volume (\$B)	% of SF REMIC Issuance Volume	Number of SF REMIC Trans- actions	MF REMIC Issuance Volume (\$B)	% of MF REMIC Issuance Volume	Number of MF REMIC Trans- actions
Ginnie Mae	7.1	92.0	10	0.9	20.3	7
Freddie Mac	0.4	5.4	6	3.6	79.7	6
Fannie Mae	0.2	2.5	2	0.0	0.0	0
Total	\$7.8	100%	18	\$4.1	100%	13

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

8 MBS OWNERSHIP

As of Q3 2022, the largest holders of agency debt (agency MBS + agency notes and bonds) included commercial banks (23%), the Federal Reserve (23%), and foreign investors (11%). The Federal Reserve’s share decreased slightly to 23% in the third quarter of 2022 from 24% in the second 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 September 2022, \$2.1 trillion was held by the top 25 domestic banks.

Figure 33. 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 Q3 2022.

8.1 Commercial Bank Holdings of Agency MBS

Table 9. Commercial Bank Holdings of Agency MBS

	Commercial Bank Holdings (\$Billions)								Week Ending			
	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	14-Dec	21-Dec	28-Dec	4-Jan
Largest 25 Domestic Banks	2,163.9	2,143.9	2,122.4	2,117.0	2,115.5	2,096.8	2,067.6	2,052.0	2,062.5	2,059.3	2,050.8	2,029.7
Small Domestic Banks	736.1	730.8	735.8	731.8	738.3	712.4	692.2	690.9	692.9	690.9	693.1	676.9
Foreign Related Banks	34.2	36.5	36.5	38.0	35.1	37.4	35.9	39.3	37.0	36.2	36.3	35.2
Total, Seasonally Adjusted	2,934.2	2,911.2	2,894.7	2,886.8	2,888.9	2,846.6	2,795.7	2,782.2	2,792.4	2,786.4	2,780.2	2,741.8

Source: Federal Reserve Bank. Note: Small domestic banks include all domestically chartered commercial banks not included in the top 25. Data as of December 2022.

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 November 2022, foreign ownership of MBS represents \$1.19 trillion in agency MBS, up approximately \$33 billion from October 2022. Total foreign ownership includes \$565 billion held by foreign private institutions and \$621 billion held by foreign official institutions. The pre-Covid peak of approximately 17.5% has now fallen to 13.86% in November of 2022.

Figure 34. Foreign Share of Agency MBS Market

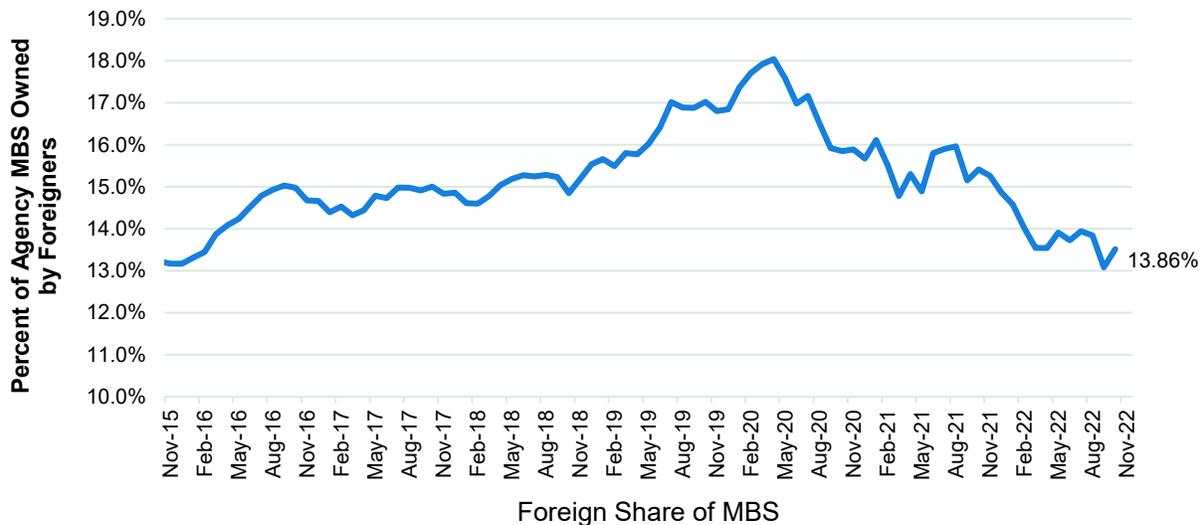
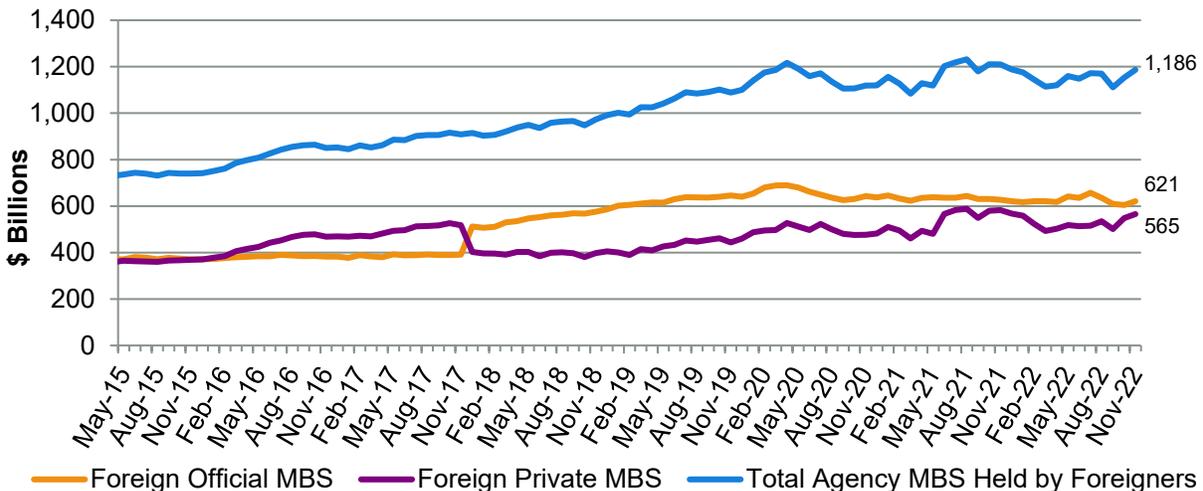


Figure 35. Monthly Foreign MBS Holdings



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 November 2022.

8.4 Foreign Ownership of Agency Debt and Agency MBS

Outside of the US, China, Japan, and Taiwan were the nations with the largest holdings agency MBS. As of September 2022, these three own 59% of all US MBS held by investors outside of the United States. Between June 2021 and June 2022, Japan and Taiwan have decreased their agency MBS holdings while China's holdings have increased. Japan's holdings have decreased by \$59.1 billion, Taiwan's holdings have decreased by \$27.3 billion, and China's holdings have increased by \$26.4 billion.

Table 12. All Agency Debt

Country	Level of Holdings (\$ Millions)				Change in Holdings (\$ Millions)			
	12/1/2021	3/1/2022	6/1/2022	9/1/2022	Q4 2021	Q1 2022	Q2 2022	Q3 2022
China	202,659	219,553	244,266	241,462	-12,397	16,894	24,713	-2,804
Japan	301,979	259,844	252,455	232,764	-8,293	-42,135	-7,389	-19,691
Taiwan	244,375	233,340	222,670	209,453	-2,512	-11,035	-10,670	-13,217
Canada	77,979	73,475	75,998	89,083	2,305	-4,504	2,523	13,085
United Kingdom	72,486	47,582	65,393	55,677	29,251	-24,904	17,811	-9,716
Luxembourg	34,288	33,130	42,207	38,341	1,173	-1,158	9,077	-3,866
South Korea	42,051	40,362	37,934	35,643	-970	-1,689	-2,428	-2,291
Cayman Islands	35,004	31,795	33,984	34,996	-599	-3,209	2,189	1,012
Switzerland	19,770	17,261	19,634	20,126	-7,000	-2,509	2,373	492
Bermuda	23,209	21,159	19,464	18,681	-1,070	-2,050	-1,695	-783
Other	188,982	184,971	192,728	185,849	7,907	-4,011	7,757	-6,879
Total	1,242,782	1,162,472	1,206,733	1,162,075	7,795	-80,310	44,261	-44,658

Table 13. Agency MBS

Country	Level of Holdings (\$ Millions)		
	6/1/2021	6/1/2022	YoY Change in Holdings (\$ Millions)
China	217,858	244,266	26,408
Japan	311,576	252,455	-59,121
Taiwan	249,984	222,670	-27,314
Canada	81,353	75,998	-5,355
United Kingdom	40,857	65,393	24,536
Luxembourg	37,756	42,207	4,451
South Korea	43,433	37,934	-5,499
Cayman Islands	36,254	33,984	-2,270
Switzerland	23,813	19,634	-4,179
Bermuda	24,178	19,464	-4,714
Other	194,327	192,728	-1,599
Total	1,261,389	1,206,733	-54,656

Source: Treasury International Capital (TIC). Note: Level of agency debt Holdings by month data as of Q3 2022. Agency MBS as of June 2022. Revised to include top 10 holders of agency debt listed as of September 2022.

9 FIXED INCOME LIQUIDITY INDICATORS

The agency MBS average daily trading volume as of December 2022 was \$241 billion for 2022 YTD, which is down from \$281 billion for calendar year 2021. Compared to November 2022, agency MBS average daily trading volume saw a 14.1% decrease MoM. In 2022, average agency MBS was at 1.28%, 88 bps lower than the 2021 average of 2.70%. In 2022, US Treasury turnover finished at 2.61%, 79 bps higher than the agency MBS turnover. Corporates turnover remains minimal relative to agency MBS or Treasury turnover.

Figure 36. Average Daily Trading Volume by Sector

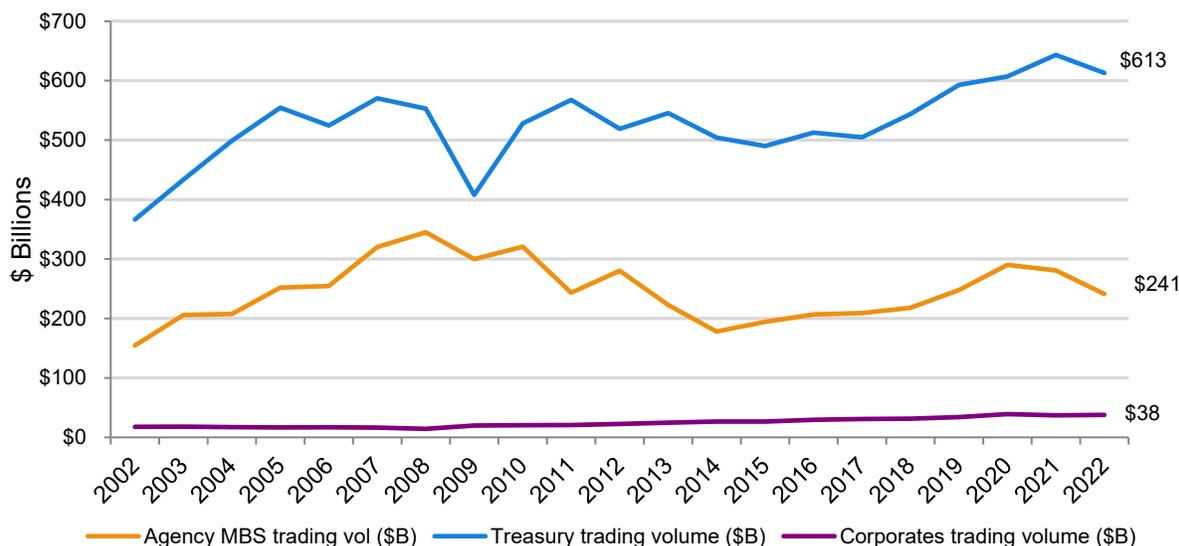
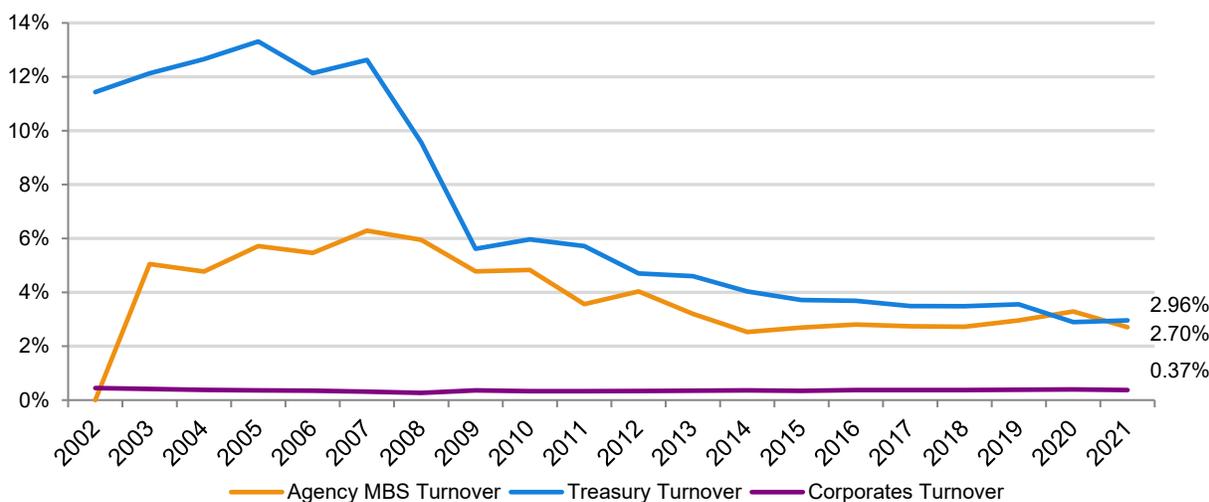


Figure 37. Average Daily Turnover by Sector



Source: SIFMA. Note: Data as of December 2022 for Average Daily Trading Volume by Sector and as of December 2021 for agency MBS in Average Daily Turnover by Sector. The MBS outstanding database for Turnover by Sector is under maintenance and is not updated in this report.

PRIMARY MORTGAGE MARKET

10 AGENCY CREDIT BREAKDOWN

The tables below outline the population distributions of FICO, DTIs, and LTVs between the agencies and between FHA, VA, and other Ginnie Mae loan sources as of the end of December 2022. The distribution statistics capture some key differences in the populations served by the agencies.

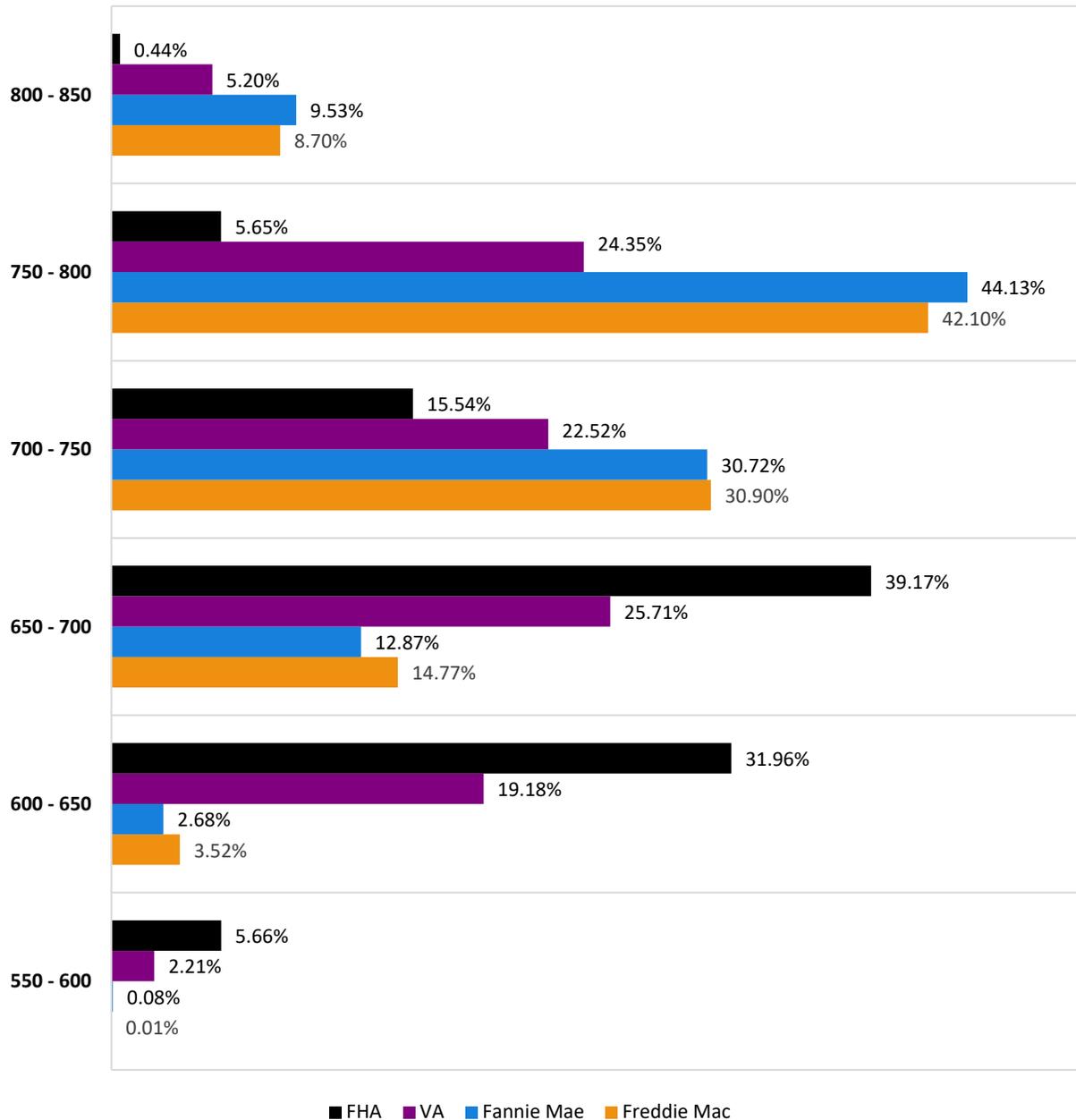
10.1 Credit Scores

Table 14. Share of Loans by FICO Score

<i>Purchase FICO</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	207,973	650	690	739	777	797	730
Fannie	66,729	692	724	758	785	800	751
Freddie	69,040	693	724	758	785	800	752
Ginnie	72,204	626	649	682	731	774	691
<i>Refi FICO</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	51,005	624	655	700	750	784	701
Fannie	16,018	665	699	740	775	796	734
Freddie	16,890	647	676	714	757	787	716
Ginnie	18,097	595	624	654	688	732	658
<i>All FICO</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	258,978	643	682	732	773	796	725
Fannie	82,747	686	719	755	784	800	748
Freddie	85,930	680	714	752	782	799	745
Ginnie	90,301	620	644	676	723	769	684
<i>Purchase FICO: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	72,204	626	649	682	731	774	691
FHA	44,128	621	643	669	703	741	675
VA	25,075	635	668	721	770	794	717
Other	3,001	639	660	695	733	765	698
<i>Refi FICO: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	18,097	595	624	654	688	732	658
FHA	11,390	589	618	646	674	702	646
VA	6,671	609	637	674	719	759	678
Other	36	660	720	850	850	850	781
<i>All FICO: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	90,301	620	644	676	723	769	684
FHA	55,518	613	638	665	697	735	669
VA	31,746	629	659	709	762	791	709
Other	3,037	639	661	696	734	766	699

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

Figure 38. FICO Distributions by Agency



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

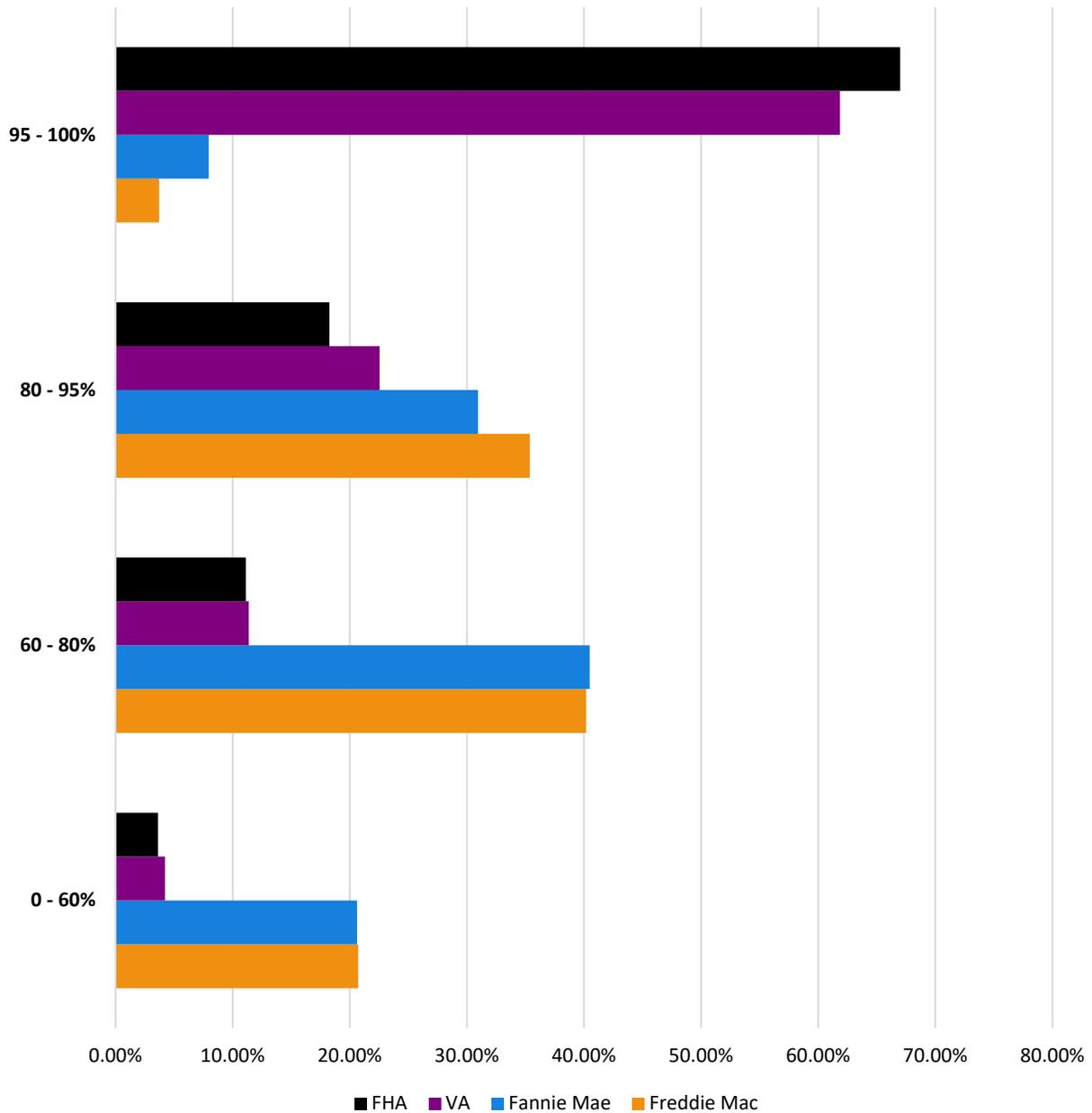
10.2 Loan-to-Value (LTV)

Table 15. Share of Loans by LTV

Purchase LTV							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	208,185	64	80	92	98	100	86
Fannie	66,792	57	75	80	95	95	81
Freddie	69,066	55	75	80	95	95	80
Ginnie	72,327	90	97	98	100	100	96
Refi LTV							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	51,300	37	53	69	80	84	65
Fannie	16,021	32	46	60	71	80	58
Freddie	16,892	33	47	60	73	80	59
Ginnie	18,387	56	69	80	84	91	76
All LTV							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	259,485	54	75	86	97	98	82
Fannie	82,813	48	67	80	93	95	77
Freddie	85,958	47	67	80	90	95	76
Ginnie	90,714	75	90	98	99	100	92
Purchase LTV: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	72,327	90	97	98	100	100	96
FHA	44,206	92	97	98	98	98	96
VA	25,101	85	100	100	100	102	96
Other	3,020	91	98	101	101	101	98
Refi LTV: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	18,387	56	69	80	84	91	76
FHA	11,473	52	66	77	81	81	72
VA	6,878	62	75	88	90	100	83
Other	36	47	49	53	85	96	63
All LTV: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	90,714	75	90	98	99	100	92
FHA	55,679	74	86	98	98	98	91
VA	31,979	76	90	100	100	102	93
Other	3,056	90	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 39. Loan-to-Value by Agency



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

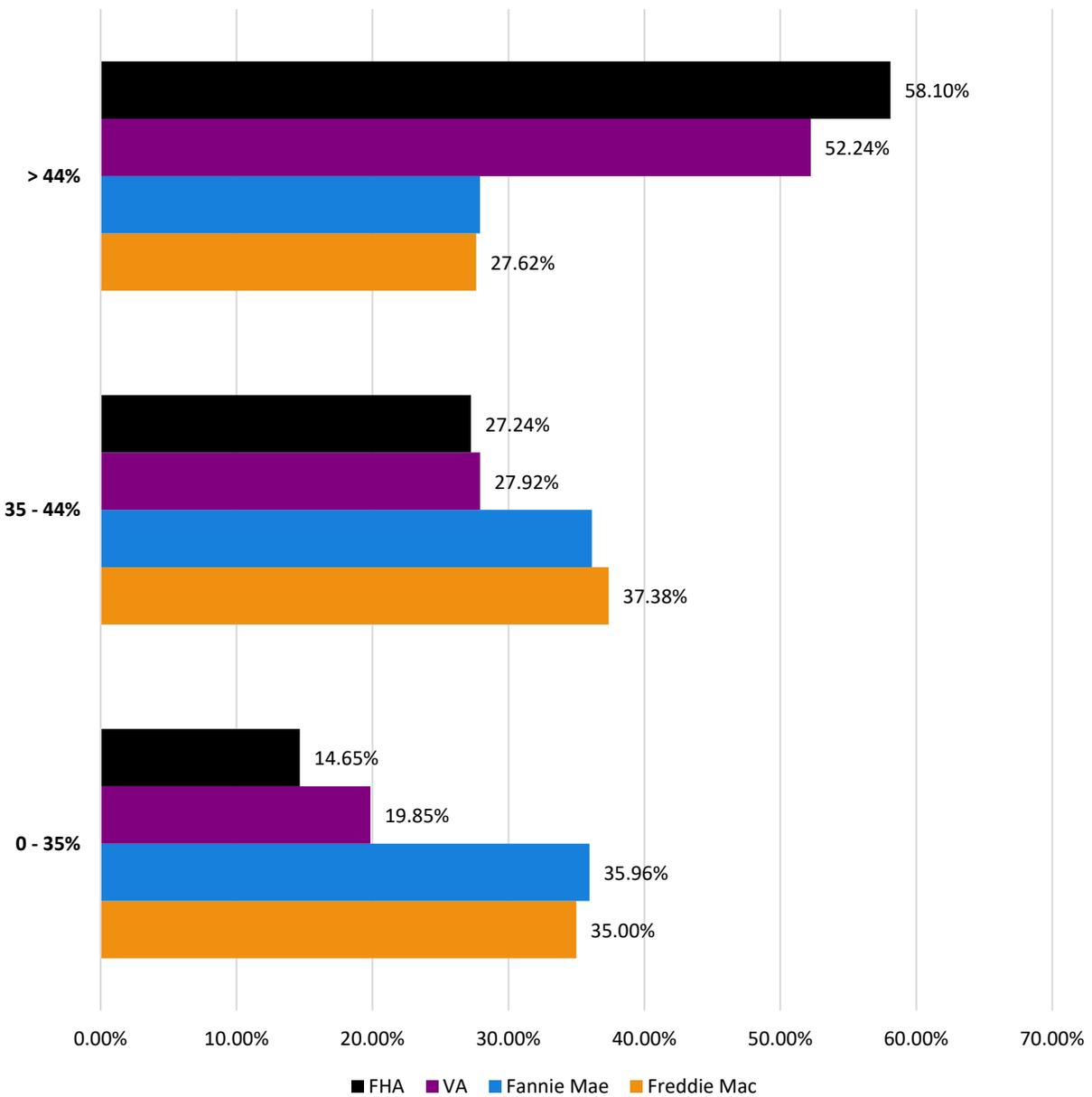
10.3 Debt-to-Income (DTI)

Table 16. Share of Loans by DTI

<i>Purchase DTI</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	207,885	27	34	42	47	51	40
Fannie	66,792	25	32	40	45	49	38
Freddie	69,066	25	32	40	45	49	38
Ginnie	72,027	32	39	46	52	56	45
<i>Refi DTI</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	51,182	26	33	41	45	50	39
Fannie	16,021	23	31	38	44	48	37
Freddie	16,892	25	33	40	45	48	38
Ginnie	18,269	28	36	43	50	54	42
<i>All DTI</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	259,067	27	34	42	47	50	40
Fannie	82,813	25	32	39	45	49	38
Freddie	85,958	25	32	40	45	49	38
Ginnie	90,296	31	38	45	51	55	44
<i>Purchase DTI: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	72,027	32	39	46	52	56	45
FHA	44,196	34	41	47	52	55	46
VA	24,812	31	38	45	52	56	44
Other	3,019	27	32	36	40	43	35
<i>Refi DTI: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	18,269	28	36	43	50	54	42
FHA	11,442	29	37	44	50	55	43
VA	6,793	27	35	42	49	54	41
Other	34	35	37	37	37	39	37
<i>All DTI: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	90,296	31	38	45	51	55	44
FHA	55,638	33	40	46	52	55	45
VA	31,605	30	37	45	51	56	44
Other	3,053	27	32	36	40	43	35

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

Figure 40. 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 October 2020 – December 2020 to October 2022 – December 2022, the share of high-LTV agency loans going to borrowers with:

- FICO scores above 750 has decreased by approximately 12%
- DTIs below 35% decreased by approximately 26%

The share of high-LTV loans increased in the Ginnie Mae guarantee book by approximately 16% and in the GSE portfolios by approximately 157%. 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 68.45% of its issuances between October 2022 and December 2022 having LTVs of 95 or above, compared to 22.84% for the GSEs.

Table 17. Share of Loans with LTV > 95

	Ginnie Mae	GSE	All
Oct 2020 - Dec 2020	58.78%	8.88%	19.54%
Oct 2022 - Dec 2022	68.45%	22.84%	40.22%

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

DTI	FICO					
	<650	650-700	700-750	≥750	NA	All
<35	1.83%	4.41%	6.17%	10.47%	0.11%	22.98%
35-45	3.92%	8.82%	9.99%	10.76%	0.03%	33.52%
≥45	3.65%	7.74%	6.82%	8.63%	0.02%	26.85%
NA	1.43%	2.76%	2.69%	3.07%	6.70%	16.65%
All	10.83%	23.73%	25.66%	32.92%	6.85%	100.00%

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

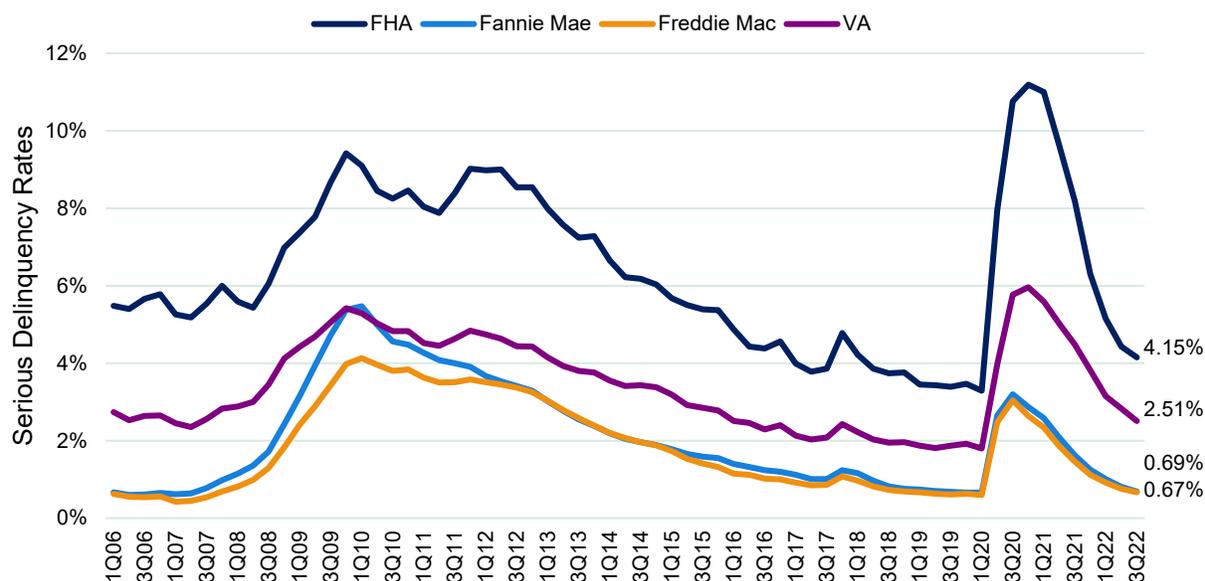
DTI	FICO					
	<650	650-700	700-750	≥750	NA	All
<35	2.14%	3.35%	4.57%	6.96%	0.04%	17.05%
35-45	5.90%	8.94%	10.33%	11.04%	0.03%	36.24%
≥45	8.46%	13.89%	12.45%	10.74%	0.07%	45.61%
NA	0.25%	0.20%	0.13%	0.16%	0.36%	1.10%
All	16.74%	26.39%	27.49%	28.90%	0.49%	100.00%

Sources: Recursion and Ginnie Mae. Data as of December 2022.

10.5 Serious Delinquency Rates

Serious delinquency rates for single-family GSE, FHA, and VA loans all continued to fall sharply in Q3 2022. From Q2 2022 to Q3 2022, Fannie and Freddie serious delinquencies decreased 12 and 9 bps, respectively, or 15% and 12% respectively, as a percentage change. Ginnie Mae collateral's serious delinquency rates decreased more than the GSE rates in absolute terms, with FHA and VA dropping 28 and 32 bps respectively. This decline in serious delinquency rates is consistent with the decrease in the number of loans in forbearance captured in [Section 11 below](#).

Figure 41. Serious Delinquency Rates: Single-Family Loans.



Sources:

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

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

10.6 Credit Box

The first-time homebuyer share for agency purchase loans was 54.2% in December 2022, up from 50.4% in December 2021. Ginnie Mae and Fannie Mae’s first-time homebuyer shares, 68.4% and 47.9% respectively in December 2022, have remained relatively flat YoY. Freddie Mac’s first-time homebuyer share has increased 18.1% YoY. Table 20 shows that based on mortgages originated in December 2022, the average GSE first-time homebuyer was more likely to have a lower credit score, and higher LTVs. Ginnie Mae’s first-time homebuyers were more likely to have lower loan amounts and credit scores while DTI and loan rate were very similar.

Figure 42. First-Time Homebuyer Share: Purchase Only Loans

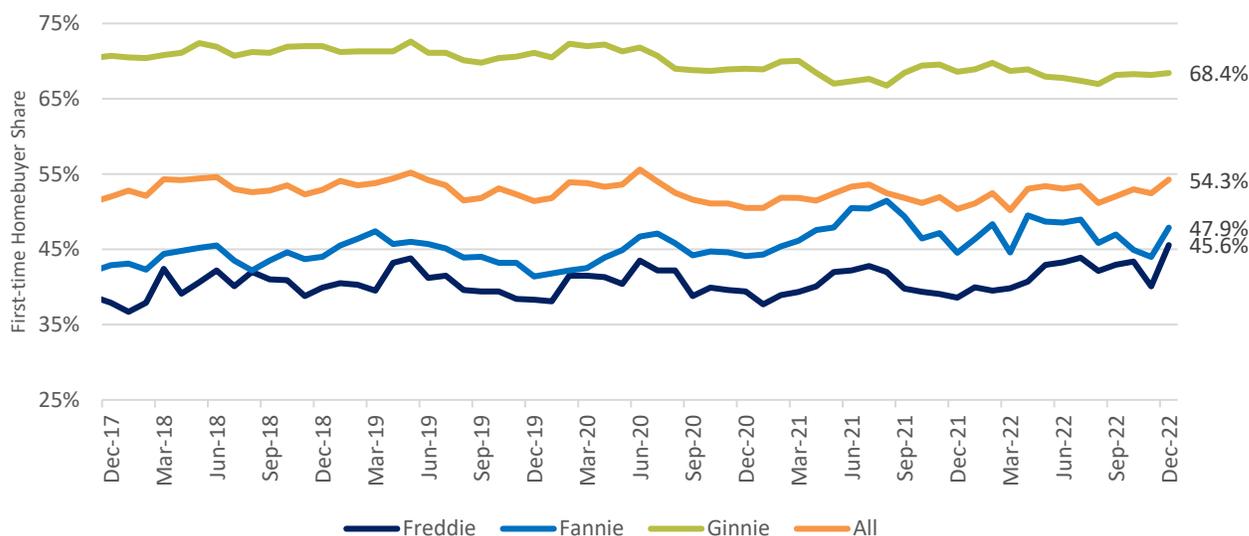


Table 20. Agency First-Time Homebuyer Share Summary

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

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

Within the Ginnie Mae purchase market, 77.1% of FHA loans, 51.2% of VA loans, and 83.7% of other loans provided financing for first-time home buyers in December 2022. While FHA loans increased MoM, VA and other remained relatively stable MoM. Table 21 shows that based on mortgages originated in December the credit profile of the average VA first-time homebuyer differed from the average VA repeat buyer. The average VA first-time homebuyer took out 15% smaller loans, had a 22-point lower credit score, 4.5% higher LTVs and were 10 bps higher in interest. FHA’s first-time homebuyers are much more similar to their repeat buyers, with only 4.9% smaller loans and 2.4% higher LTVs. Because FHA provides one of few credit options for borrowers with lower credit scores, repeat borrowers with weaker credit profiles are often limited to FHA financing; FHA’s repeat buyers continue to have lower credit scores than their first-time home buyers. For VA and conventional borrowers alike, repeat buyers tend to have higher credit scores than first-time homebuyers.

Figure 43. First-time Homebuyer Share: Ginnie Mae Breakdown

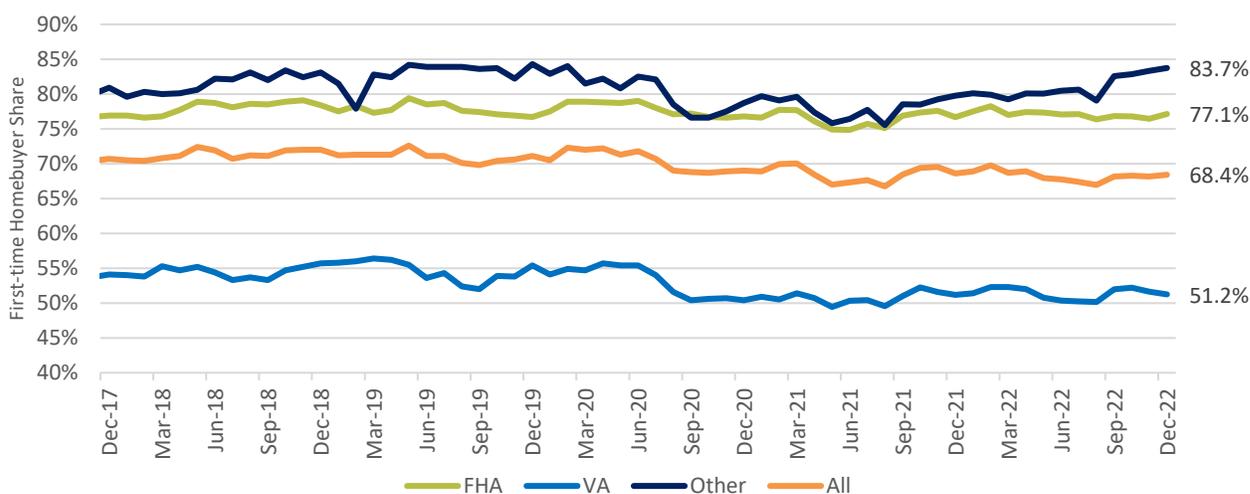


Table 21. Ginnie Mae First-Time Homebuyer Share Breakdown Summary

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

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

10.7 Credit Box: Historical

For each of the agencies, the median borrower FICO scores have been slowly declining since the beginning of 2022. The median FICO score for all agency loans originated in December was 729 which represents a 4-point MoM increase but a 10-point decrease since the start of 2022 and a decline of 12 points YoY. The trend in declining median FICO scores has been much more pronounced for refinance loans. Ginnie Mae median FICO scores have declined from 684 in December 2021 to 654 in December 2022, a decrease of 30 points. As of December 2022, average FICOs for refinances have dropped for Fannie Mae and Freddie Mac borrowers 19 and 35 points YoY respectively.

Figure 44. FICO Scores for All Loans

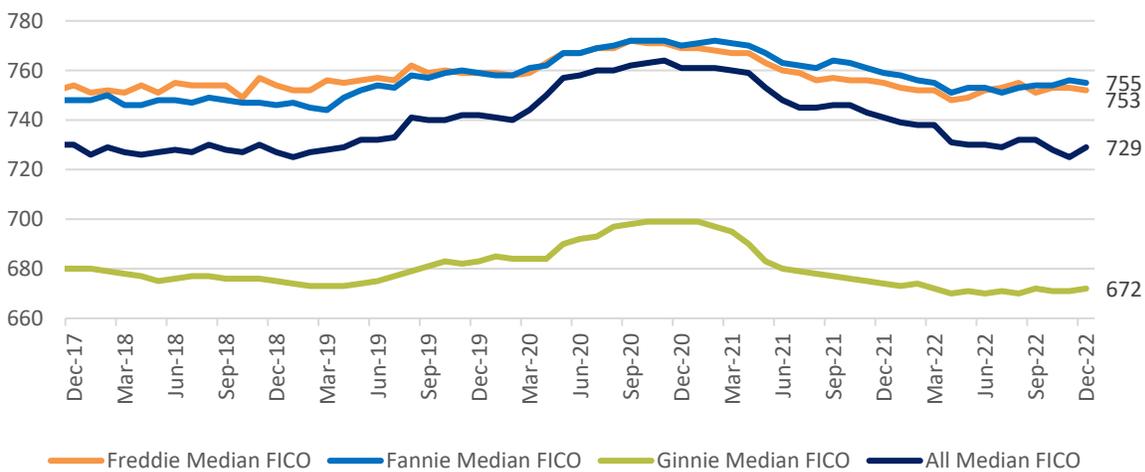


Figure 45. FICO Scores for Purchase Loans

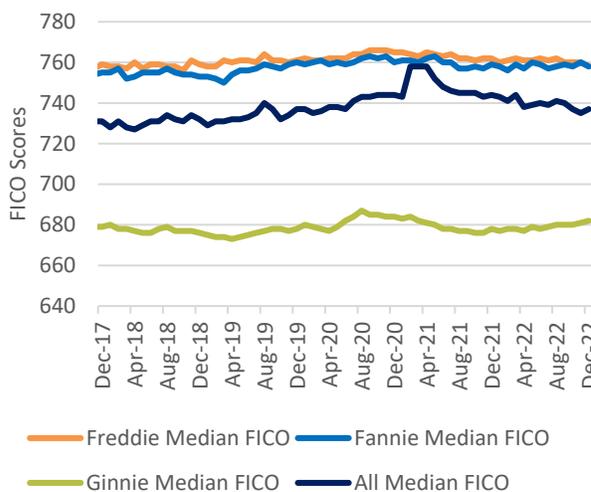
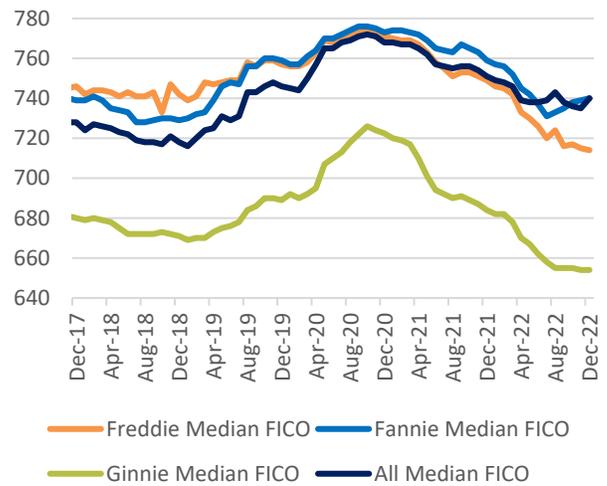


Figure 46. FICO Scores for Refinance Loans



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

In December 2022, the median LTV for Ginnie Mae loans was 98.2% compared to 80% for the GSEs, 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 70% in December 2021, whereas Ginnie Mae LTVs remained relatively flat from 97.63% over that same period. Since early 2022, DTIs have been increasing for Ginnie Mae, Freddie Mac, and Fannie Mae and are all higher compared to December 2021. In December 2021, median DTI for Ginnie Mae, Fannie Mae, and Freddie Mac was 37.38% compared to 41.59% in December 2022.

Figure 47. LTV Ratio for All Loans

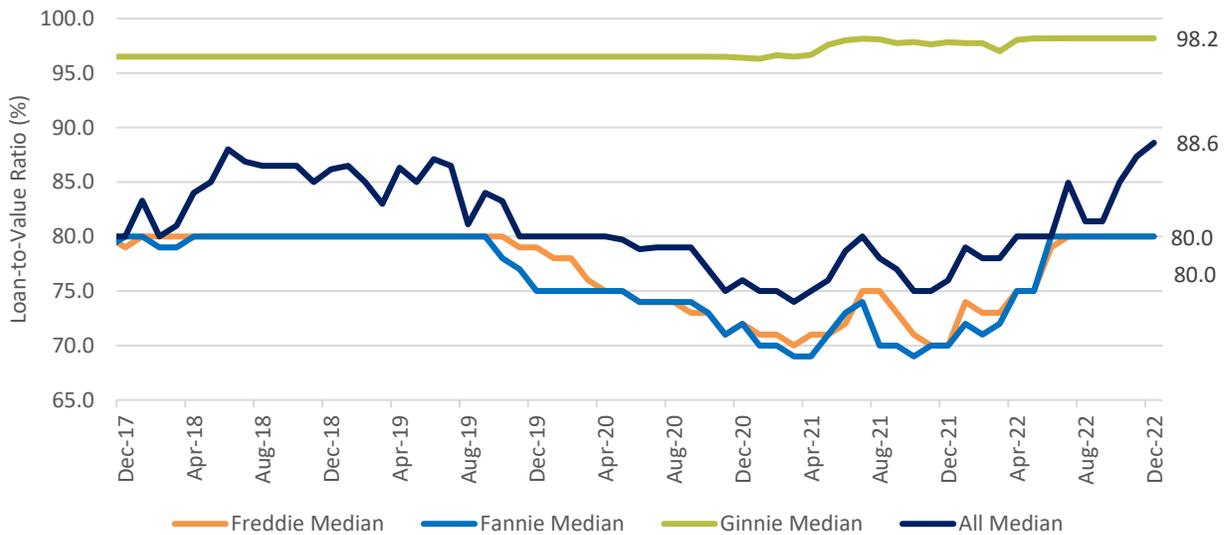
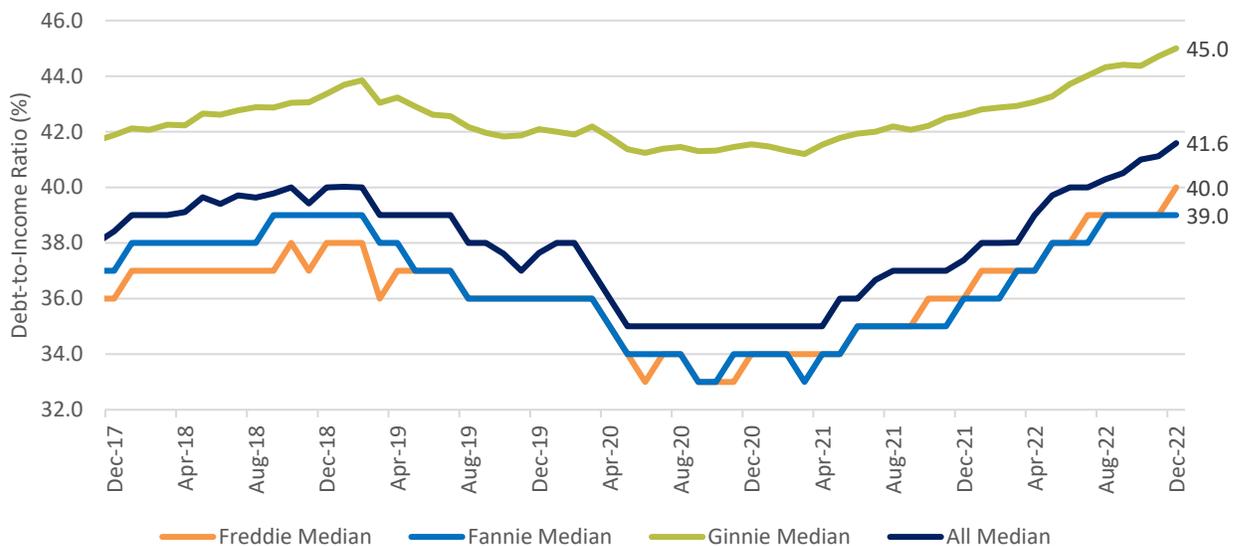


Figure 48. DTI Ratio for All Loans



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

11 FORBEARANCE TRENDS

At the end of December 2022, 134,616 Ginnie Mae loans were in forbearance. The number of loans in forbearance removed from MBS pools was 618 while 133,998 loans in forbearance still actively remain in pools. The number of loans in forbearance for Ginnie Mae, FHA, and VA was higher for loans originated by nonbanks than banks in all subsets. For banks, the loans removed from pools tended to have much lower FICO scores and higher note rates than those that remained in pools. This trend did not apply to nonbank loans.

Table 22. Forbearance Snapshot

<i>All Loans in Forbearance – December 2022</i>						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	656	3.5	\$198,949.70	74.7	74.3	134,616
Bank	671	3.7	\$148,381.48	81.7	86.0	13,548
Nonbank	655	3.5	\$205,190.12	74.1	73.4	121,048
FHA	652	3.6	\$195,271.37	78.0	78.0	98,526
Bank	669	3.8	\$146,130.39	85.0	88.0	11,006
Nonbank	651	3.5	\$201,841.65	77.3	77.1	87,507
VA	666	3.2	\$252,378.20	60.5	59.5	25,665
Bank	677	3.5	\$188,994.84	61.0	73.1	1,725
Nonbank	665	3.2	\$256,837.67	60.5	58.9	23,935
<i>Loans in Forbearance and Removed from Pools – November 2022</i>						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	665	3.6	\$150,471.18	68.2	63.3	618
Bank	668	4.4	\$82,890.57	55.4	62.5	204
Nonbank	664	3.4	\$187,617.01	70.6	63.5	414
FHA	657	3.7	\$140,665.74	70.9	66.6	423
Bank	659	4.5	\$82,801.28	65.2	58.8	165
Nonbank	656	3.5	\$183,359.74	72.2	68.7	258
VA	678	3.2	\$217,688.26	60.6	51.7	140
Bank	716	3.5	\$93,843.26	0.0	64.6	20
Nonbank	675	3.1	\$238,221.54	65.5	50.8	120
<i>Loans in Forbearance that Remain in Pools – December 2022</i>						
	FICO Score*	Note Rate*	Current Principal Balance Median	First Time Homebuyer Share (%)	Purchase Share (%)	Loan Count
Ginnie	656	3.5	\$199,138.18	74.8	74.3	133,998
Bank	671	3.7	\$149,578.72	81.8	86.2	13,344
Nonbank	655	3.5	\$205,239.52	74.2	73.4	120,634
FHA	652	3.6	\$195,536.90	78.0	78.0	98,103
Bank	670	3.8	\$147,349.38	85.1	88.3	10,841
Nonbank	651	3.5	\$201,884.33	77.3	77.1	87,249
VA	666	3.2	\$252,500.56	60.5	59.6	25,525
Bank	677	3.5	\$190,410.22	61.3	73.1	1,705
Nonbank	665	3.2	\$257,014.84	60.5	58.9	23,815

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 December 2022; *Averages weighted by remaining principal balance of the loans.

12 HOLDERS OF GINNIE MAE MORTGAGE SERVICING RIGHTS

This table shows the 30 largest owners of mortgage servicing rights (MSR) by UPB for loans collateralizing Ginnie Mae MBS. The top 30 firms collectively own 85.64% of Ginnie Mae MSRs (see Cumulative Share). Twenty-three of these top 30 are non-depository institutions, the remaining 7 are depository institutions. As of December 2022, over half (53.28%) of the Ginnie Mae MSRs are owned by the top six firms.

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

MSR Holder	Rank			UPB (\$ millions)	Share	Cumulative Share	CPR	CDR
	Current	Year prior	Change					
LAKEVIEW LOAN SERVIC	1	3	↑	\$251,551,717,948	12.1%	12.06%	5.75%	0.43%
DBA FREEDOM HOME MOR	2	1	↓	\$262,126,696,642	12.3%	24.99%	6.85%	1.09%
PENNYMAC LOAN SERVIC	3	2	↓	\$246,734,696,684	11.5%	36.54%	5.50%	0.61%
NATIONSTAR MORTGAGE,	4	6	↑	\$126,950,659,246	5.9%	42.49%	6.50%	0.63%
NEWREZ LLC	5	7	↑	\$118,398,526,061	5.5%	48.03%	5.18%	0.61%
WELLS FARGO BANK, NA	6	4	↓	\$112,266,606,812	5.3%	53.28%	7.06%	0.31%
ROCKET MORTGAGE, LLC	7	5	↓	\$103,285,181,932	4.8%	58.12%	7.43%	0.39%
CARRINGTON MORTGAGE	8	10	↑	\$88,507,127,566	4.1%	62.26%	6.17%	0.45%
U. S. BANK, NA	9	9	↔	\$51,225,346,725	2.4%	64.66%	4.59%	0.36%
UNITED WHOLESALE MOR	10	11	↑	\$43,618,803,761	2.0%	66.70%	2.77%	0.04%
PLANET HOME LENDING,	11	15	↑	\$42,738,991,089	2.0%	68.70%	4.19%	0.32%
LOANDEPOT.COM,LLC	12	12	↔	\$36,432,371,014	1.7%	70.41%	5.11%	0.51%
MORTGAGE RESEARCH CE	13	14	↑	\$33,505,635,837	1.6%	71.98%	5.01%	0.26%
AMERIHOM MORTGAGE C	14	22	↑	\$31,021,899,180	1.5%	73.43%	3.03%	0.19%
NAVY FEDERAL CREDIT	15	16	↑	\$29,203,677,908	1.4%	74.79%	6.61%	0.40%
GUILD MORTGAGE COMPA	16	19	↑	\$22,240,335,713	1.0%	75.84%	4.98%	0.38%
THE MONEY SOURCE INC	17	18	↑	\$20,963,670,710	1.0%	76.82%	6.58%	0.79%
TRUIST BANK	18	17	↓	\$20,307,103,795	1.0%	77.77%	6.49%	0.54%
CROSSCOUNTRY	19	20	↓	\$18,163,790,445	0.9%	78.62%	3.91%	0.41%
NEW AMERICAN FUNDING	20	21	↑	\$17,639,545,044	0.8%	79.44%	5.14%	0.28%
VILLAGE CAPITAL & IN	21	23	↑	\$16,293,100,635	0.8%	80.21%	8.26%	0.82%
MOVEMENT MORTGAGE,LL	22	N/A	↑	\$16,165,330,712	0.8%	80.96%	3.67%	0.44%
CMG MORTGAGE, INC.	23	27	↑	\$15,410,156,640	0.7%	81.68%	4.05%	0.41%
IDAHO HOUSING AND FI	24	26	↑	\$14,472,688,852	0.7%	82.36%	3.76%	0.48%
CITIZENS BANK N.A.	25	25	↔	\$13,885,081,672	0.6%	83.01%	5.12%	0.31%
PHH MORTGAGE CORPORA	26	29	↑	\$12,721,094,311	0.6%	83.61%	6.05%	1.02%
MIDFIRST BANK	27	24	↓	\$11,542,571,222	0.5%	84.15%	7.33%	1.39%
FLAGSTAR BANK, FSB	28	N/A	↑	\$11,455,734,531	0.5%	84.68%	4.94%	0.25%
JP MORGAN CHASE BANK	29	30	↑	\$10,247,645,943	0.5%	85.16%	7.54%	1.60%
SUN WEST MORTGAGE CO	30	N/A	↑	\$10,088,546,738	0.5%	85.64%	6.28%	1.37%

Source: Deloitte. Data as of December 2022

13 AGENCY NONBANK ORIGINATORS

Total agency non-bank origination experienced a decrease in December, down approximately 1.9% MoM. This decrease in non-bank origination share was driven primarily by Freddie Mac (non-bank origination share down 2.8% MoM). The Ginnie Mae non-bank share dropped to 87.6% as of December 2022 but has remained consistently higher than the GSEs, largely driven by origination share of refinance mortgage loans. GSE origination volume of purchase mortgage loans has been the primary driver in the MoM decline of agency non-bank origination share.

Figure 49. Agency Nonbank Originator Share (All, Purchase, Refi)

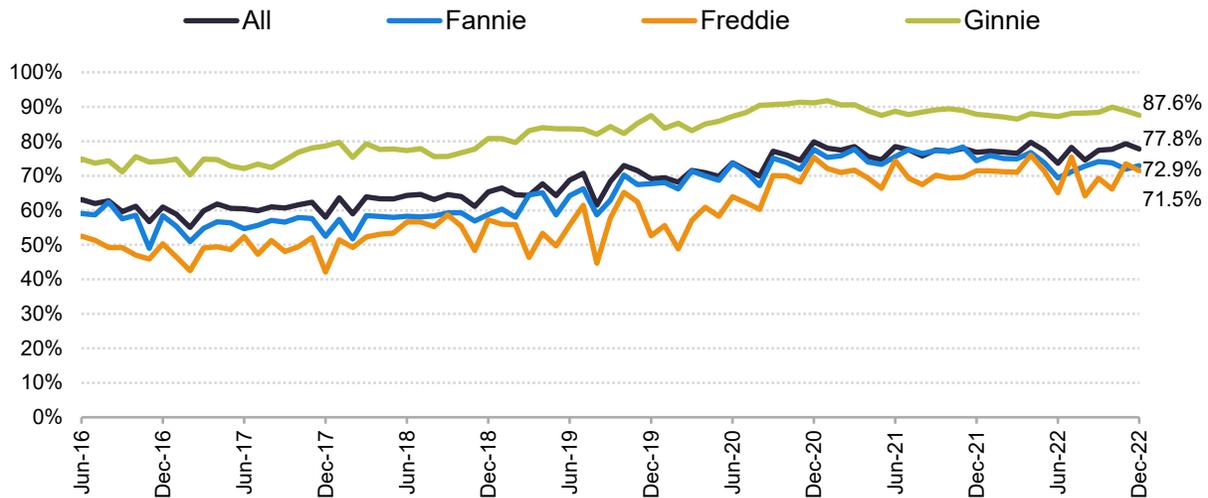


Figure 50. Nonbank Origination Share: Purchase Loans

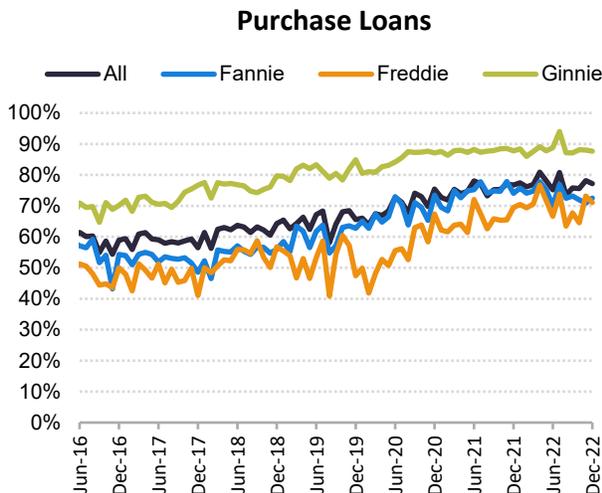
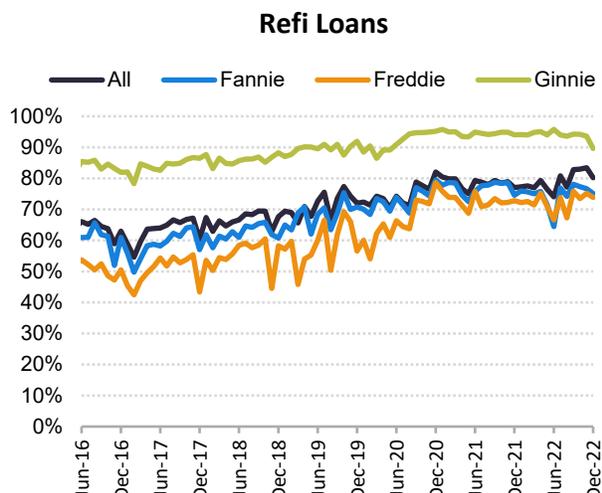


Figure 51. Nonbank Origination Share: Refi Loans



Sources: Recursion. Notes: Data as of December 2022.

Ginnie Mae’s total non-bank originator share remained relatively stable in December 2022. Ginnie Mae continues to have a very high proportion of nonbank originations, with a rate of 87.6% in December 2022. The percent of Ginnie Mae’s Other non-bank refinanced loans dropped to approximately 46% in December 2022, a decrease of over 45% from November 2022.

Figure 52. Ginnie Mae Nonbank Originator Share (All, Purchase, Refi)

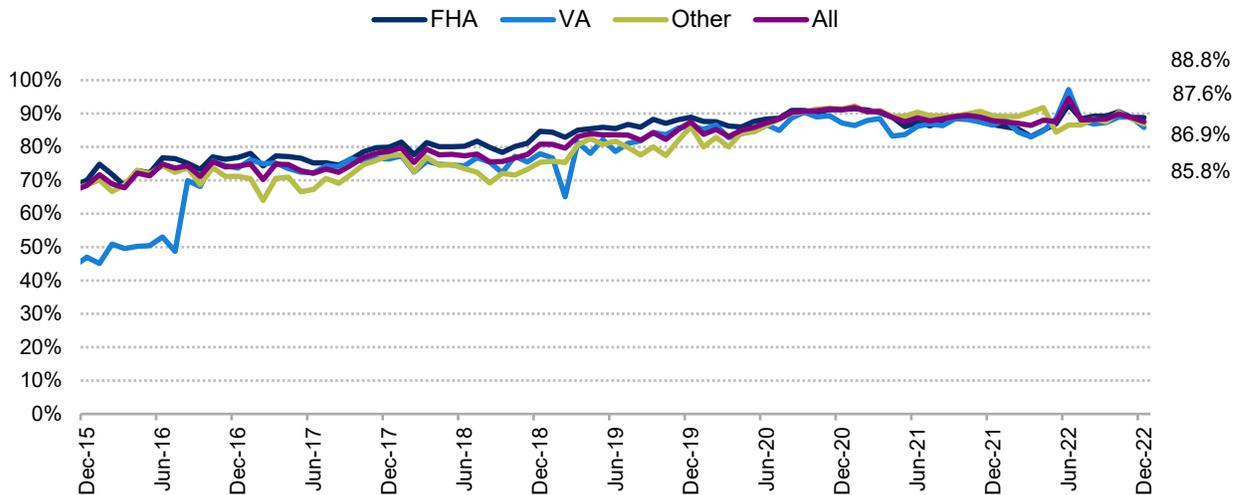


Figure 53. Ginnie Mae Nonbank Share: Purchase Loans

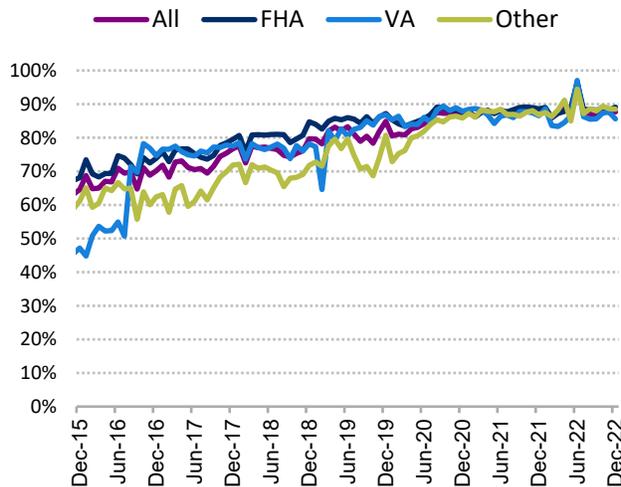
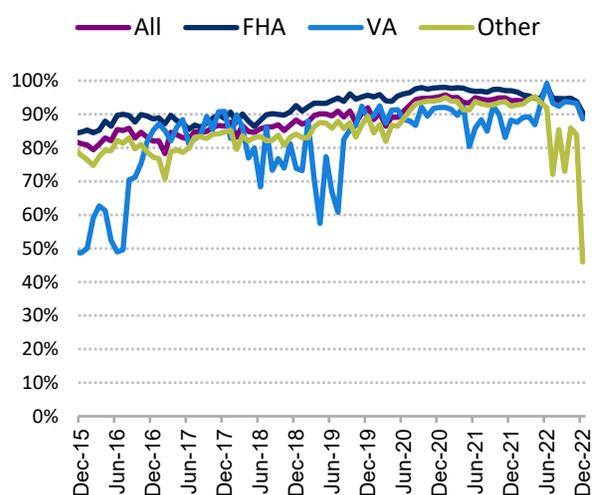


Figure 54. Ginnie Mae Nonbank Share: Refi Loans



Sources: Recursion. Notes: Data as of December 2022.

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

13.1.1 (FICO, LTV, DTI)

The mortgage loan originations of non-banks continue to have a consistently lower median FICO score than their bank counterparts across all agencies. The spread between non-bank and bank FICO scores decreased by 3 points from November 2022 to December 2022. The agency median FICO increased by 4 to 729 MoM.

Figure 55. Agency FICO: Bank vs. Nonbank

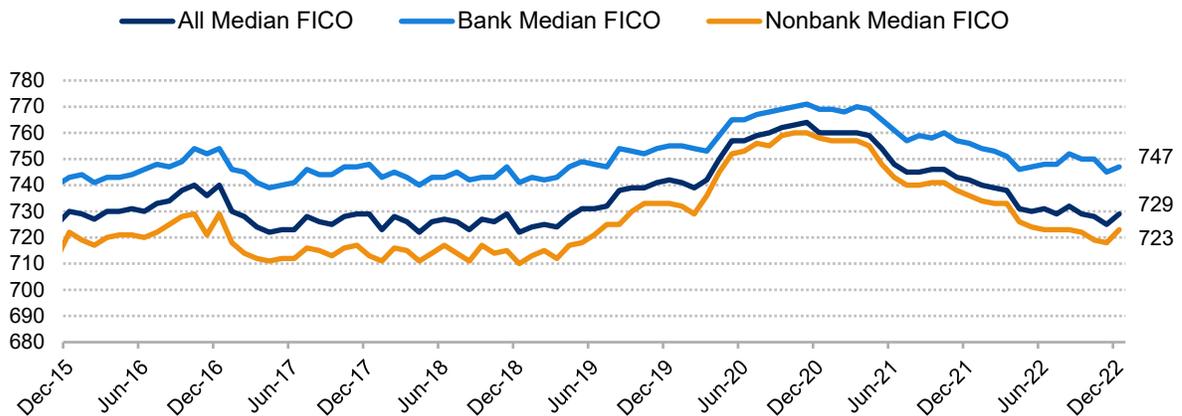


Figure 56. GSE FICO: Bank vs. Nonbank

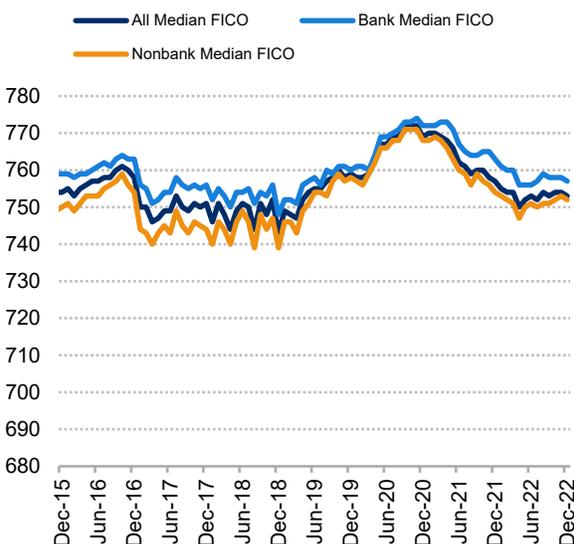
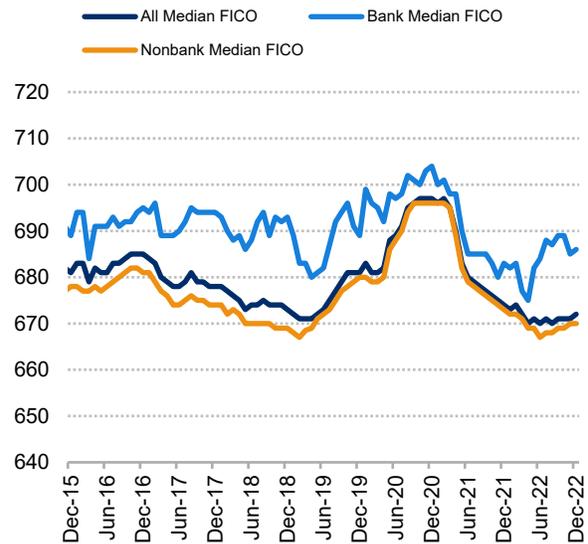


Figure 57. Ginnie Mae FICO: Bank vs. Nonbank



Sources: Recursion; Notes: Data as of December 2022.

The median LTV for all GSE originators remained the same in December 2022 MoM at 80%. Ginnie Mae median bank and non-bank LTV remained flat at 98.19% MoM. Ginnie Mae median DTI remained consistent MoM at approximately 45% in December 2022 in non-bank originations.

Figure 58. GSE LTV: Bank vs. Nonbank

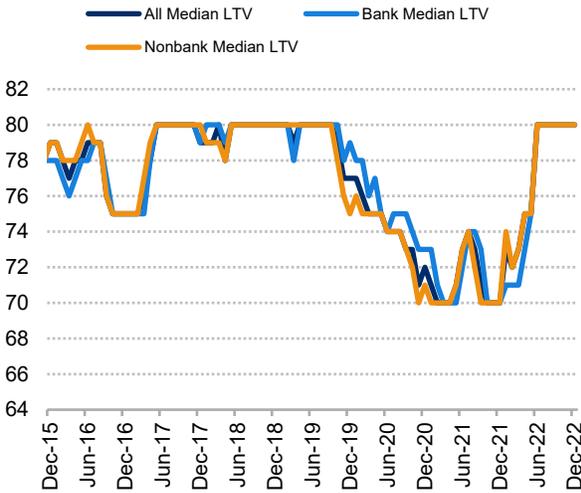


Figure 59. Ginnie Mae LTV: Bank vs. Nonbank

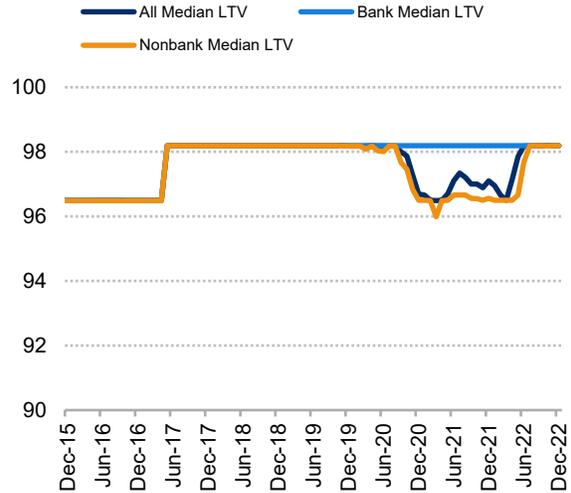


Figure 60. GSE DTI: Bank vs. Nonbank

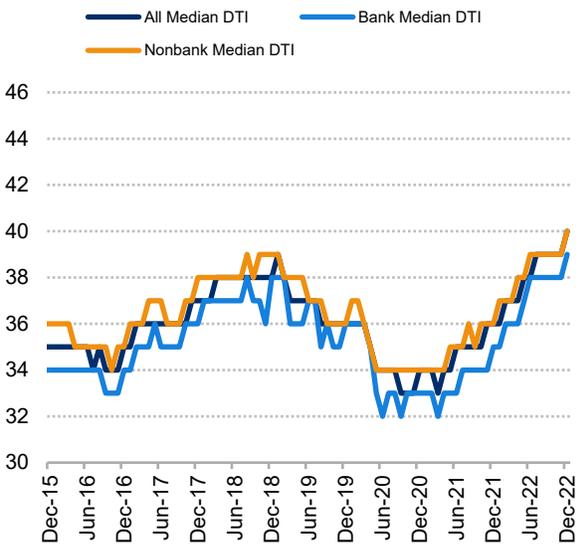
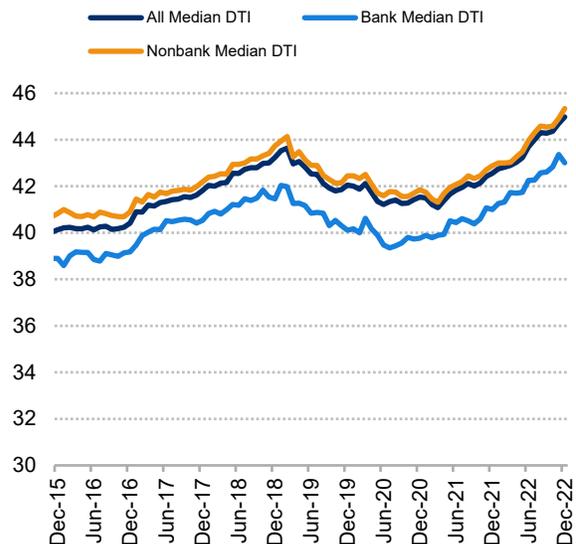


Figure 61. Ginnie Mae DTI: Bank vs. Nonbank



Sources: Recursion. Notes: Data as of December 2022.

In December 2022, the median FICO score for Ginnie Mae bank increased 1 point to 686 and non-bank remained consistent at 670 MoM. The median FICO for all Ginnie originations stayed consistent at 672 MoM. The gap between banks and non-banks is most apparent in VA lending (28-point spread).

Figure 62. Ginnie Mae FICO Score:

Bank vs. Nonbank

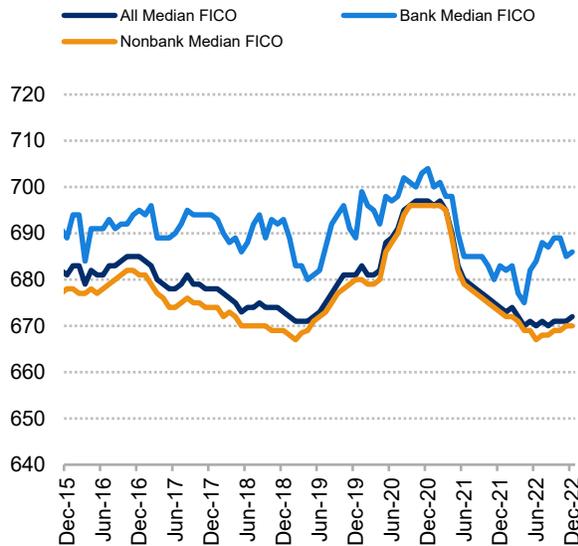


Figure 63. Ginnie Mae FHA FICO Score:

Bank vs. Nonbank

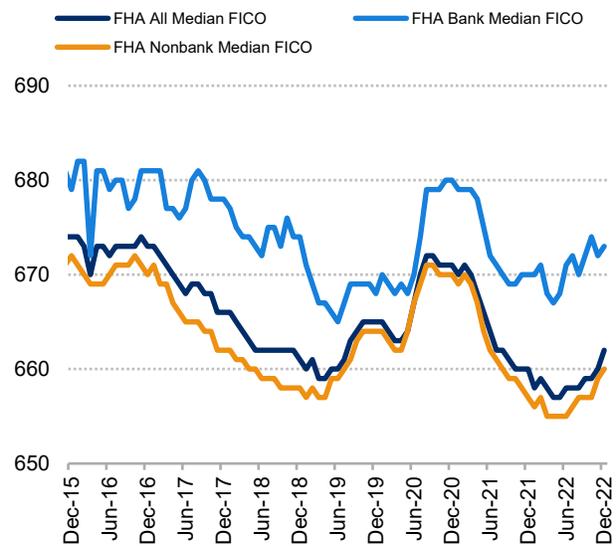


Figure 64. Ginnie Mae VA FICO Score:

Bank vs. Nonbank

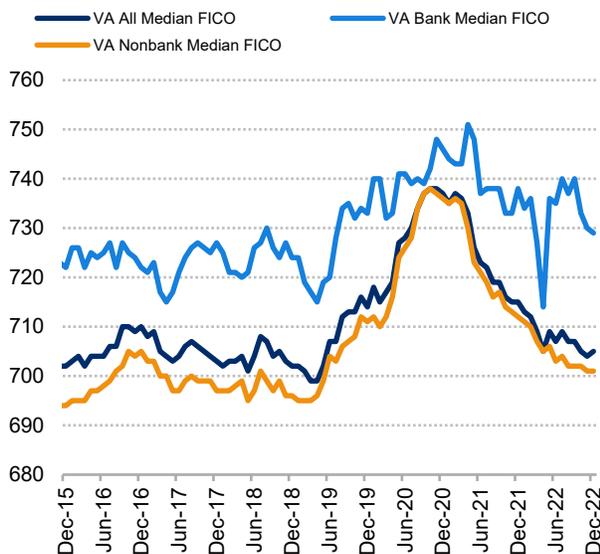
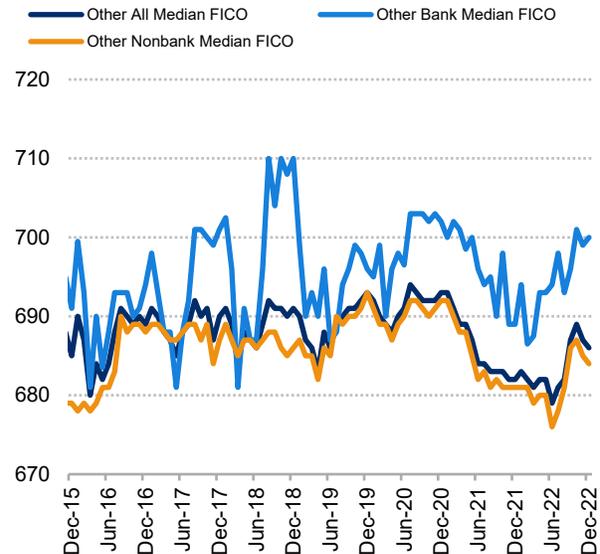


Figure 65. Ginnie Mae Other FICO Score:

Bank vs. Nonbank



Sources: Recursion. Notes: Data as of December 2022.

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 66. Ginnie Mae DTI:

Bank vs. Nonbank

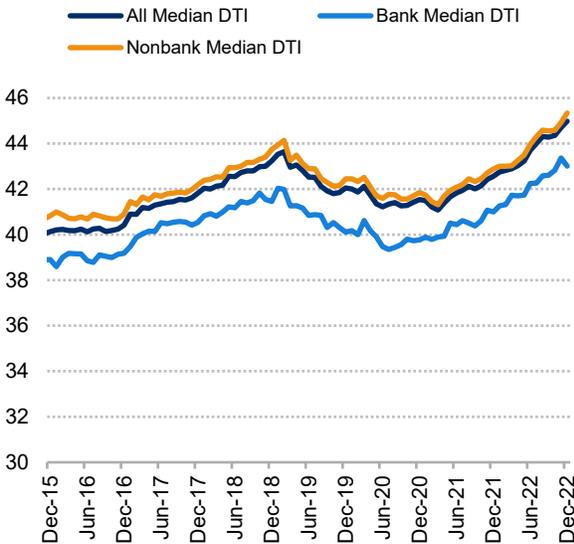


Figure 67. Ginnie Mae FHA DTI:

Bank vs. Nonbank

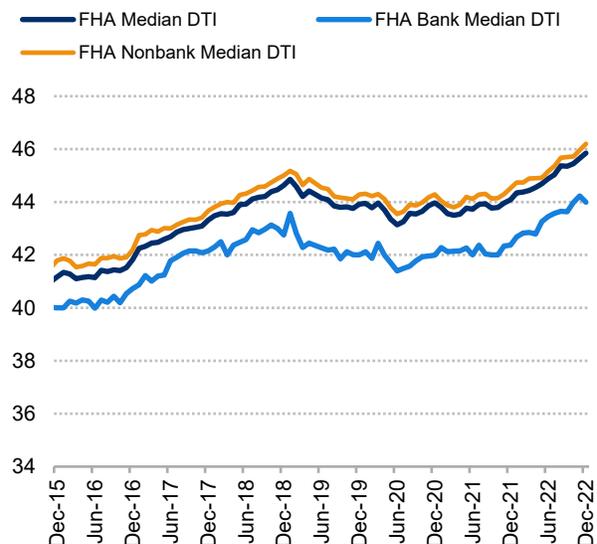


Figure 68. Ginnie Mae VA DTI:

Bank vs. Nonbank

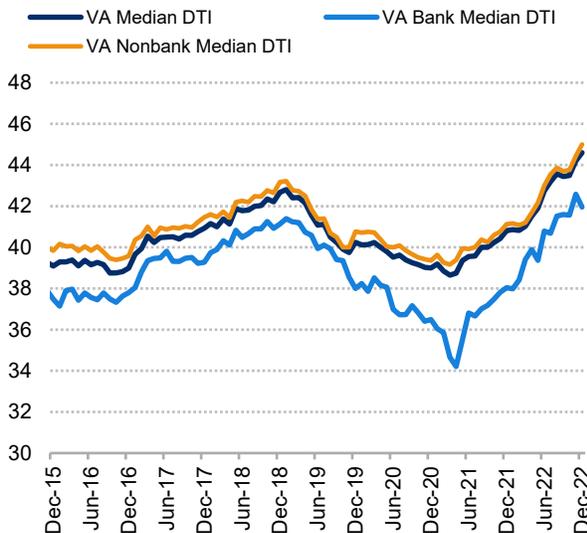
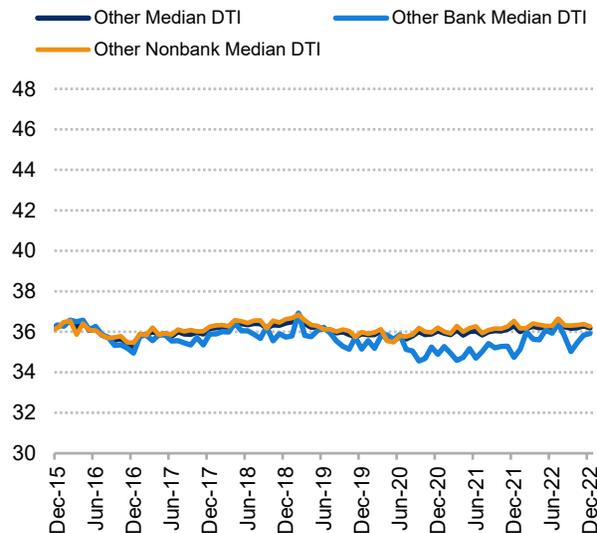


Figure 69. Ginnie Mae Other DTI:

Bank vs. Nonbank



Sources: Recursion. Notes: Data as of December 2022.

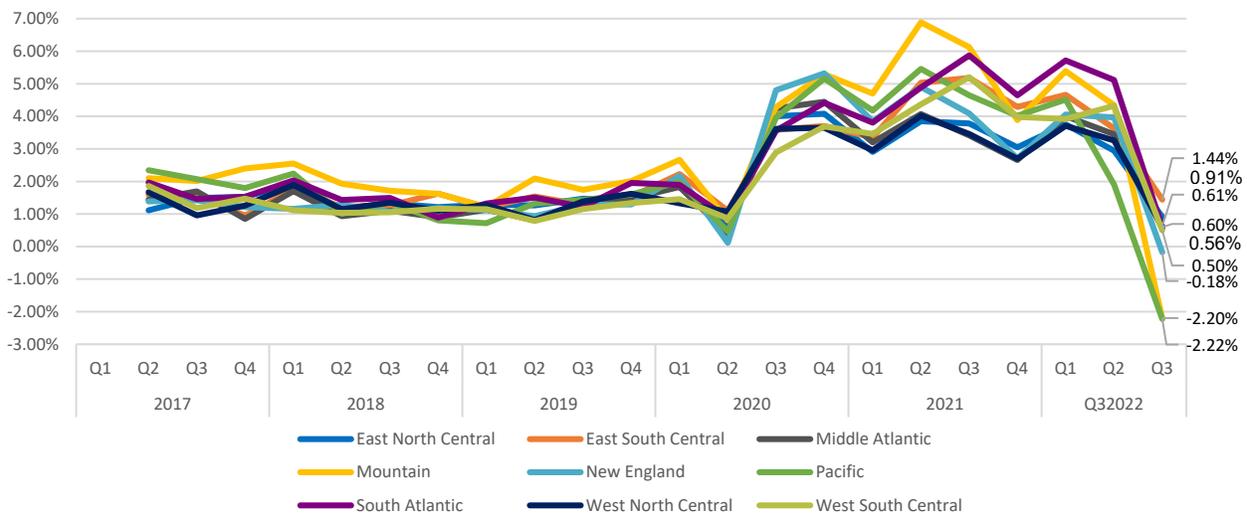
U.S. HOUSING MARKET

14 HOUSING AFFORDABILITY

14.1 Housing Affordability – Home Price Appreciation

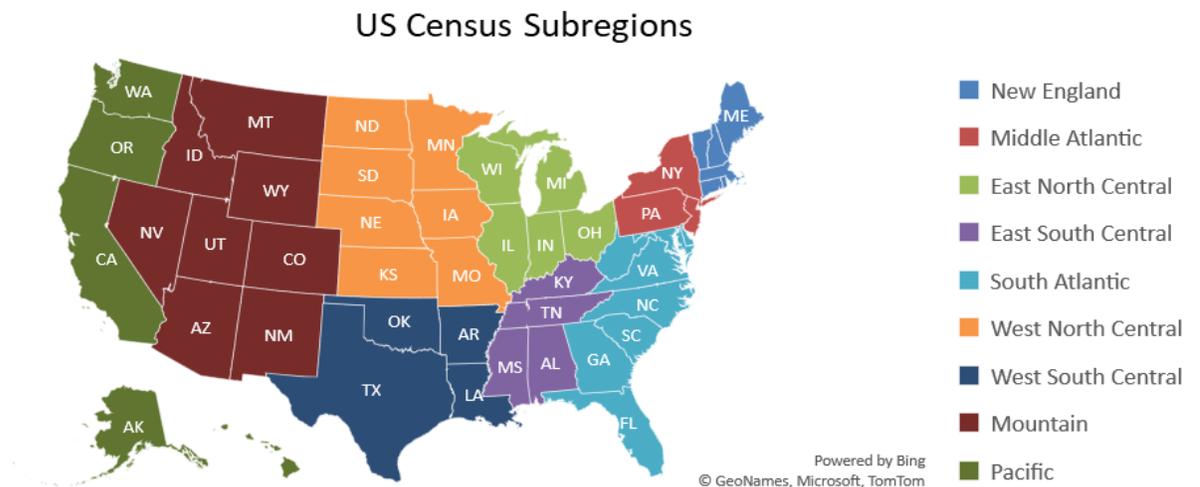
Home prices are beginning to decelerate, with HPI’s actually dropping in both the Pacific and Mountain regions between July 2022 and September 2022. Notably, the Mountain region experienced the greatest home price appreciation (22.7% CAGR) during the pandemic months, and the Pacific region also experience very strong home price appreciation (18.0% CAGR).

Figure 70. Regional HPI Trend Analysis Q/Q



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

Figure 71. 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

While housing affordability is directly affected by real estate price fluctuation, affordability is also impacted by general asset price changes. As of December 2022, inflation has dropped to 6.4%, down from 7.1% the month prior. Nationally, rents are up 4.7% YoY, the third time in 2022 that yearly increases have dropped into the single digits. Wage growth decreased slightly from 6.4% in November 2022 to 6.3% in December 2022. October 2022 reporting data shows YoY home price appreciation has now decreased to 9.20% down from 10.6% of September 2022.

Figure 72. Inflation | 12-Month Percent Change in CPI

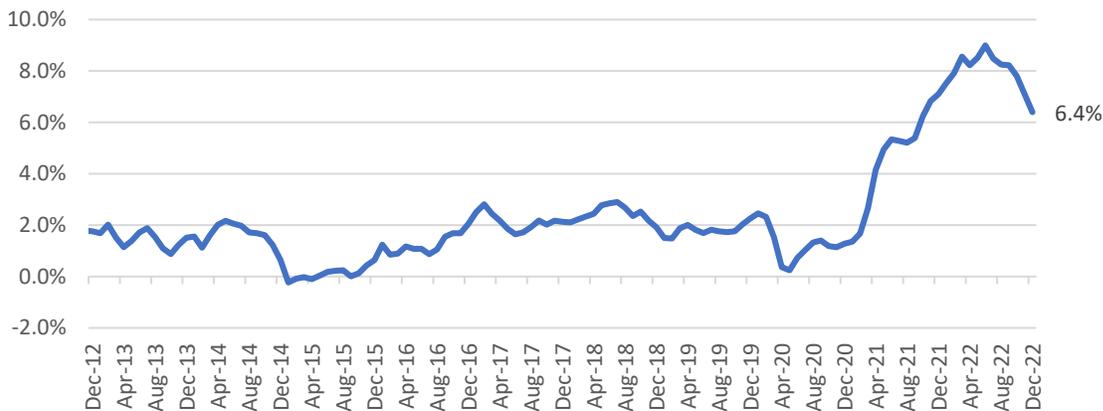
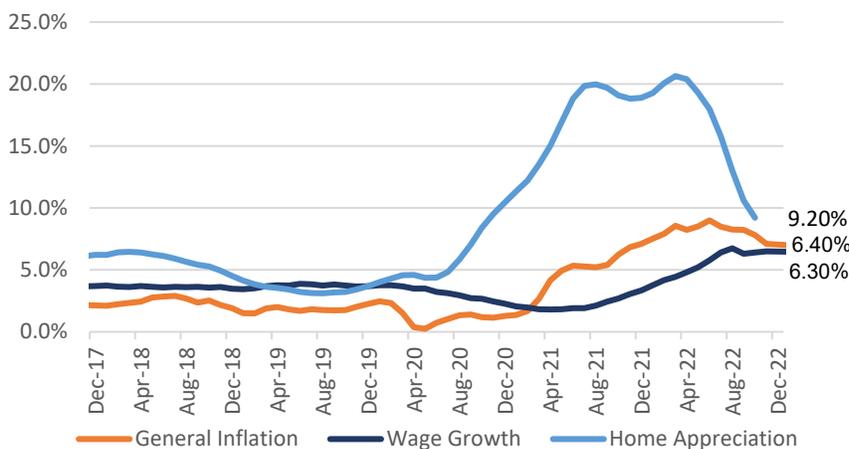


Figure 73. Asset Price Appreciation vs. Wage Increases

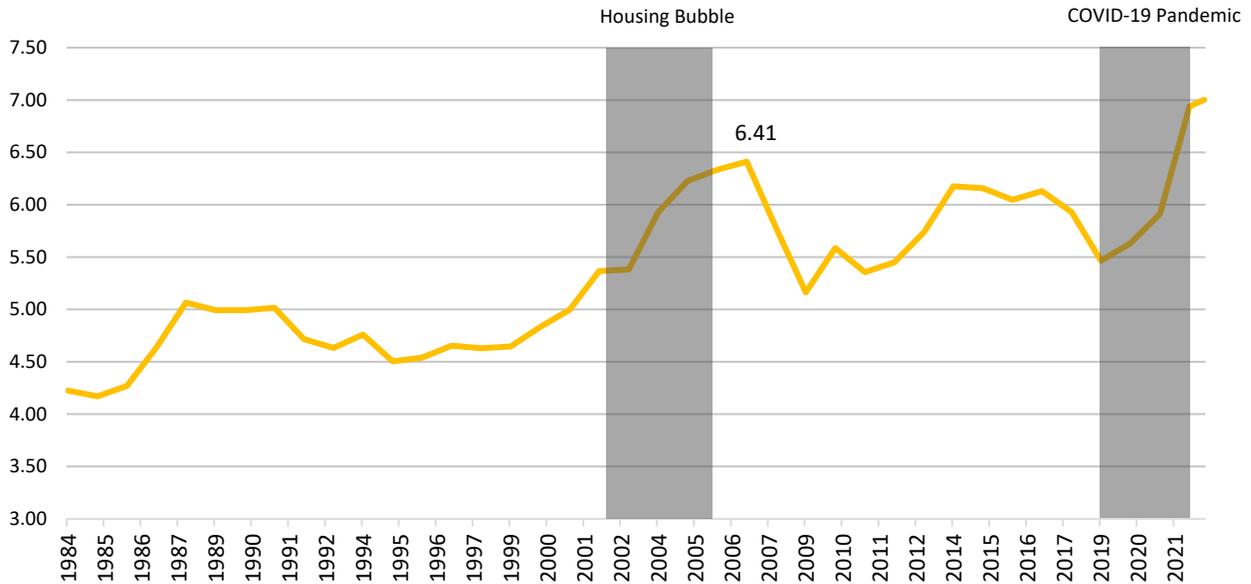


Metric	Statistic
General Inflation	6.4%
Home Price Appreciation (YoY)	9.2%
Rental Price Appreciation (Median Rent Change YoY)	4.7%
Wage Growth	6.3%

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

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

Figure 74. Average Price of Homes Sold to Median Income Ratio

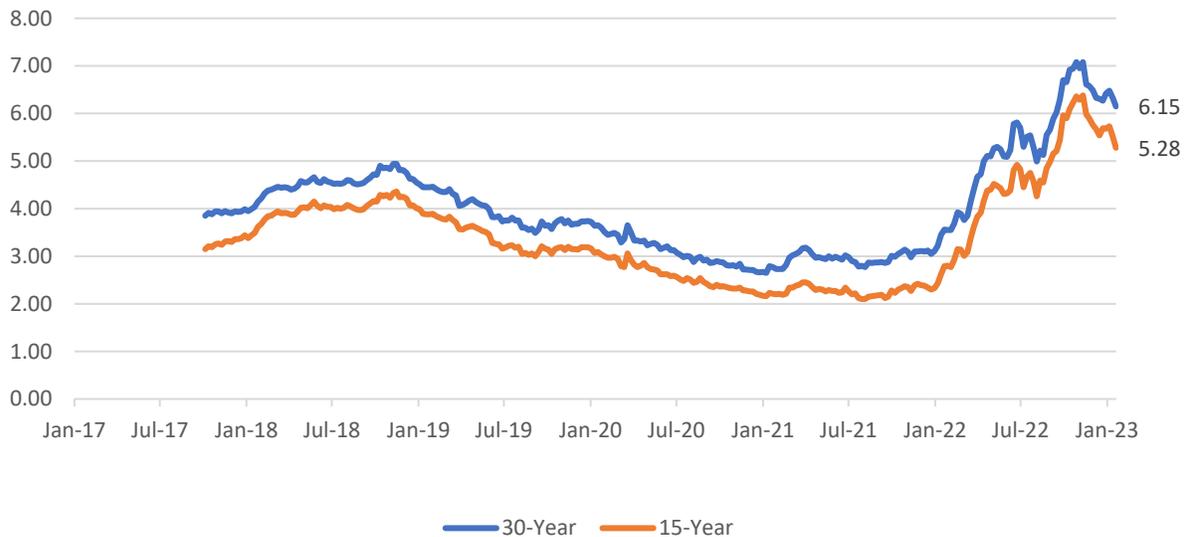


Source: FRED Average Home Sales Data, FRED Median Income Data

14.2.1 HOUSING AFFORDABILITY – MORTGAGE RATE TRENDS

The Federal Funds Target Rate was increased by half a percentage point in December to a range of 4.25% and 4.50%. This was the seventh consecutive increase in 2022.³ As of January 19, 2023, the average 30-year and 15-year fixed rate mortgage rates were 6.15% and 5.28% respectively. The average 30-year fixed rate mortgage rate decreased 27 bps and the average 15-year fixed rate mortgage rate decreased 40 bps MoM.

Figure 75. Average Fixed Rate Mortgage Rates



Sources: FRED data as of January 2023

³<https://www.federalreserve.gov/newsevents/pressreleases/monetary20221214a1.htm#:~:text=The%20Board%20of%20Governors%20of,%2C%20effective%20December%2015%2C%202022.>

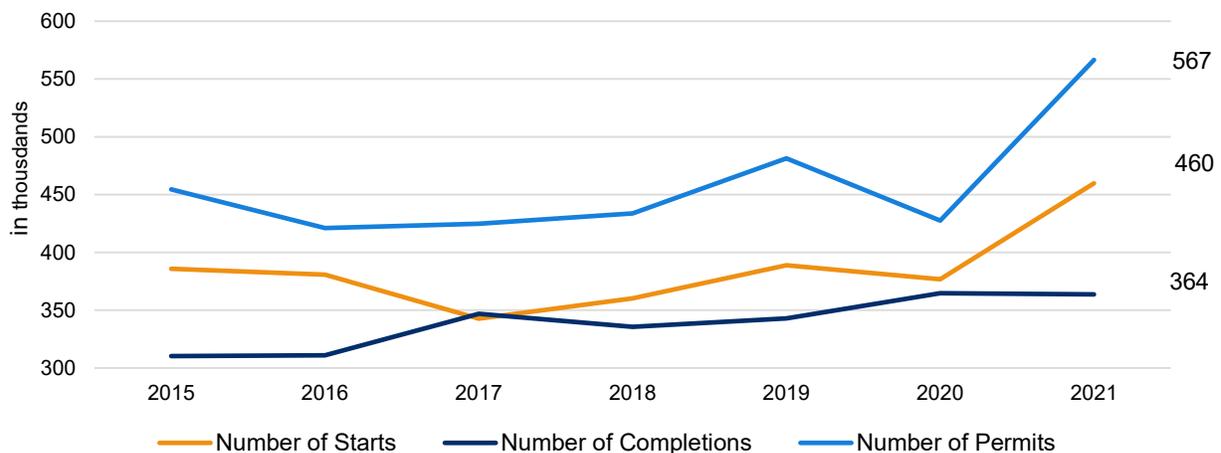
14.3 Housing Inventory

As of November 2022, there was 8.6 months of housing inventory on the market, a decrease from 8.9 in October 2022. November 2022 housing inventory values were down by 3.4% MoM. As housing affordability continues to remain high (See above [section 14.2](#)) single-family home sales are unlikely to play a large role in the resolution of the housing shortfall. Multifamily construction volume metrics, shown in **Figure 82**, have been increasing.

Figure 76. Single-Family Housing Inventory



Figure 77. Multifamily Construction Metrics: Permits, Starts, Completions



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

14.4 Size and Value of the US Housing Market

The total value of the single-family housing market reached \$41.8 trillion in Q3 2022. The total value of the US housing market is up 120% from its trough in 2011. From Q4 2021 to Q3 2022 mortgage debt outstanding increased from \$11.7 trillion to \$12.3 trillion and household equity increased from \$25.3 trillion to \$29.5 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 \$8.81 trillion in Q3 2022, agency SF 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 78. Value of the US Housing Market

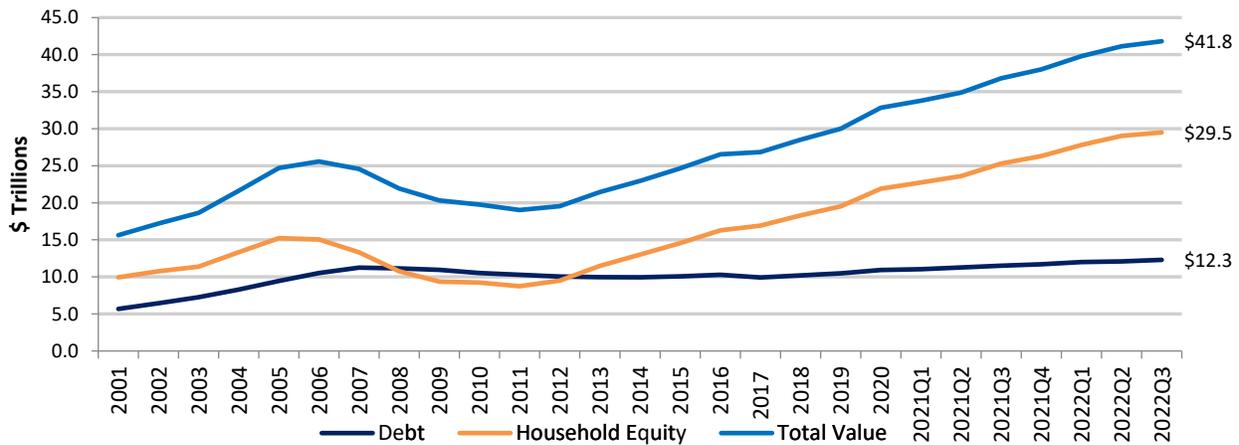
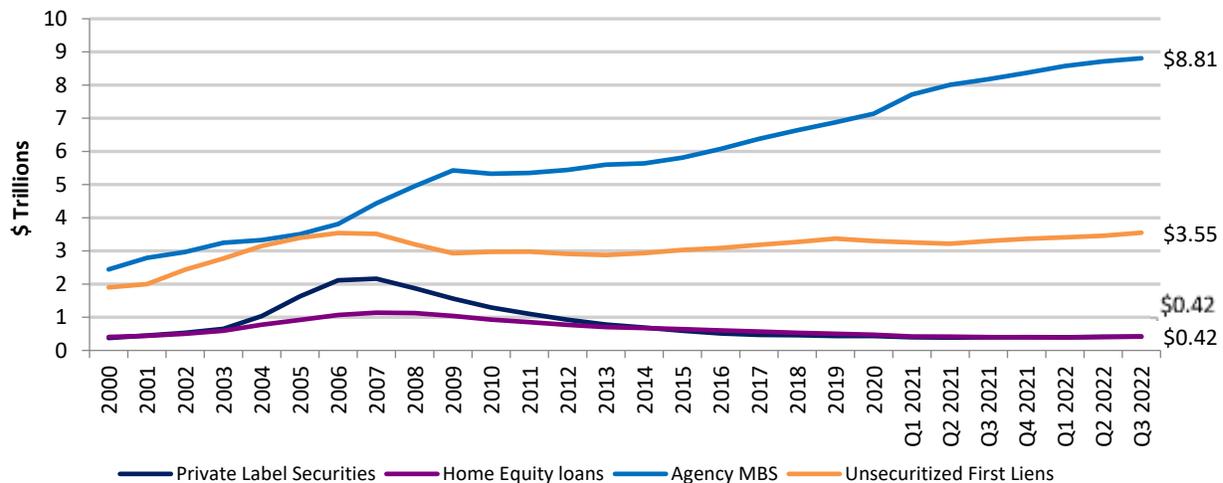


Figure 79. Size of the US Residential Mortgage Market.



Source: Federal Reserve Flow of Funds Data as of Q3 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.

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