

GLOBAL MARKETS ANALYSIS REPORT

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



October 2022

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

This month's *Highlights* section includes an analysis of the role of nonbank origination in the Agency MBS market and the credit profile of the borrowers served by these non-depository issuers. Given the recent amended eligibility requirements that nonbank mortgage companies must comply with, the distinct credit characteristics and the size of the nonbank book of business was of particular interest.

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

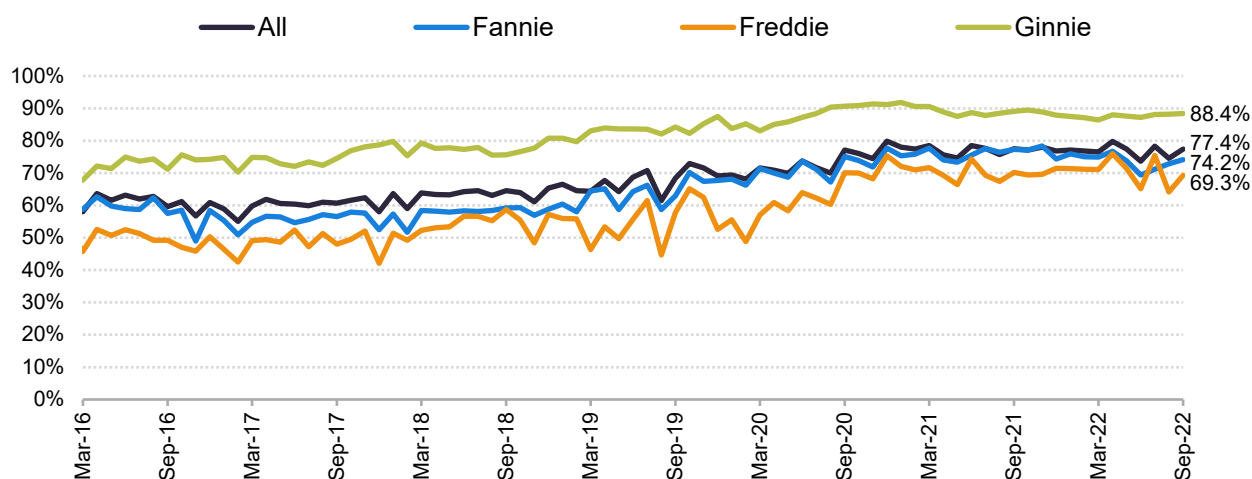
- The [Prepayments](#) section illustrates the convergence of Ginnie Mae aggregate prepayment rates to those of Fannie Mae and Freddie Mac (GSE) securities.
- The [Agency REMIC issuance](#) section continues to capture the current upward trend in coupon rates for REMIC deals.
- The [Agency Credit Breakdown](#) 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, details a decline in the housing market due to factors that include increasing home rates and rising inflation that is outpacing wage growth. The section shows signs of decelerating inflation this month, particularly in the rental housing market, as well as home prices beginning to decline nationally.

Highlights

According to Freddie Mac's Primary Mortgage Market Survey, the U.S. 30-Year Fixed Rate Mortgage sits at 6.66% as of October 6, 2022.¹ This represents an increase from 3.67% from one year ago and is the highest rate since July of 2007. In this rising rate environment, nonbank issuers remain the dominant providers of credit for borrowers utilizing FHA, USDA, and PIH programs. Ginnie Mae nonbank originators produced 88.4% of government MBS in September 2022.

Higher interest rates have subdued refinance activity. In September 2022, refinance mortgage loans were 27% of Ginnie Mae nonbank origination share. The Mortgage Bankers Association's most recent mortgage finance forecast projects lower refinance activity in 2022 and 2023 as compared to 2020 (64%) and 2021 (62%),² declining to 33% of mortgage originations in 2022 and 27% of mortgage originations in 2023. Despite the expectation of a reduction in refinance activity, the Ginnie Mae nonbank origination share may remain elevated due to the volume of nonbank purchase loan originations. Importantly, monthly Ginnie Mae nonbank origination share of purchase loans has also remained elevated, holding above 85% since July 2020.

Figure 1. Agency Nonbank Originator Share (All, Purchase, Refi)



Figures 2 and 3 of the October 2022 Global Market Analysis Report provides data on the characteristics of Ginnie Mae loans by originator type (bank versus nonbank). The FICO data demonstrates that nonbanks are also important lenders to those borrowers with less financial resources than that of conventional residential lending. FICO scores for nonbank originated loans have declined since February 2021 when the nonbank median FICO score was 696.

¹ <https://www.freddiemac.com/pmms>

² https://www.mba.org/docs/default-source/research-and-forecasts/forecasts/mortgage-finance-forecast-sep-2022.pdf?sfvrsn=e48612bf_1

As of September 2022, the spread between Ginnie Mae nonbank median FICO score (669) and Ginnie Mae bank median FICO score (689) was 20 FICO score points, the largest spread since December 2019 (24 FICO score point spread). With nonbank originations driving Ginnie Mae loan production, the

Figure 2. Ginnie Mae FICO: Bank vs. Nonbank

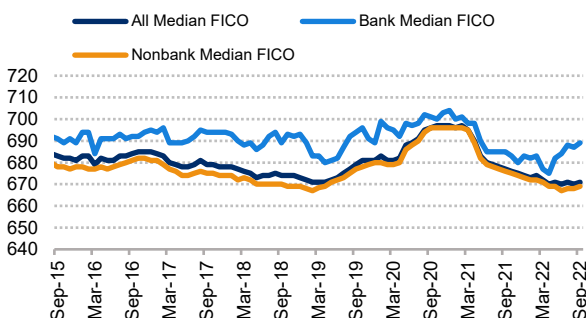
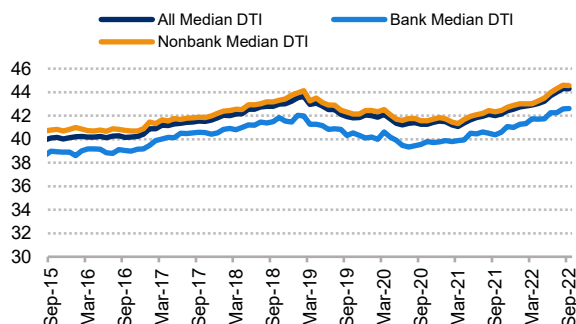


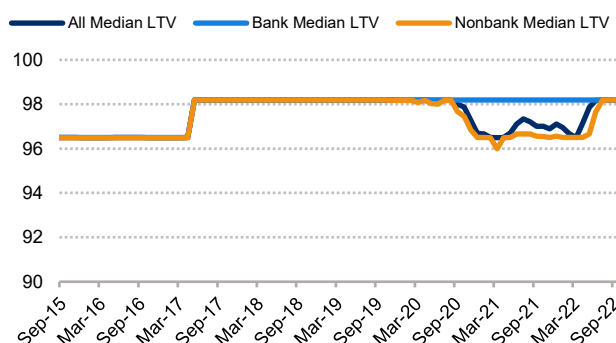
Figure 3. Ginnie Mae DTI: Bank vs Nonbank



Ginnie Mae median FICO score, including both bank and nonbank originations, was 671 in September 2022,³ showing that FICO scores are beginning to trend upwards after a decline. Additional data in **Figure 3** displays the debt-to-income (DTI) percentage for bank and nonbank originated Ginnie Mae loans. Ginnie Mae nonbank median DTI has steadily increased since March 2021 and it reached its highest level since February 2019 (44.14%) in July 2022, at 44.30%. In September 2022, Ginnie Mae nonbank median DTI reached 44.55%. The current spread between Ginnie Mae nonbank median DTI (44.55%) and Ginnie Mae bank median DTI (42.61%) is 1.94%. Similarly, GSE nonbank median DTI has also seen increases with GSE nonbank median DTI at 39.00% in September.

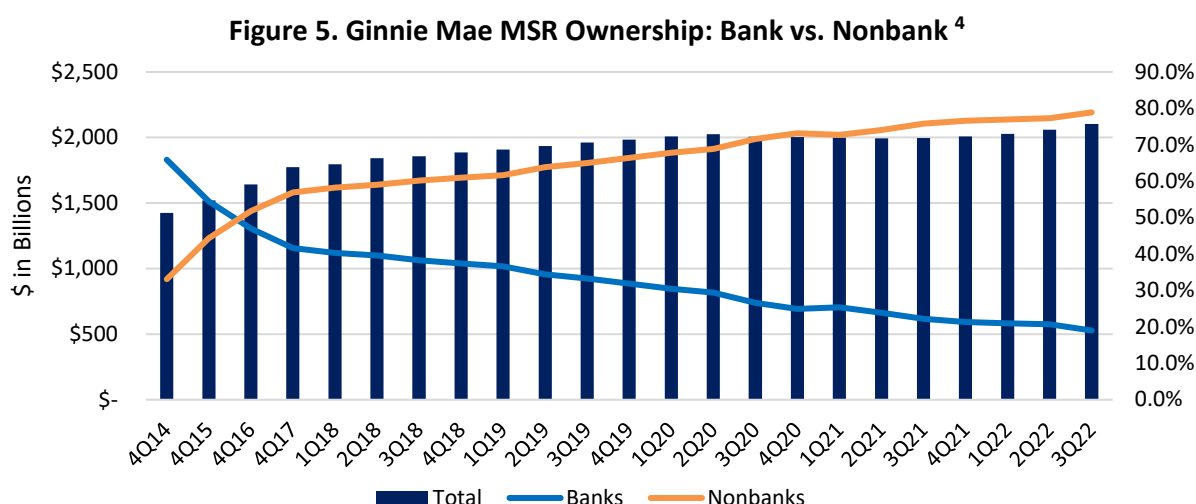
Figure 4 shows the Ginnie Mae bank originator loan-to-value (LTV) and Ginnie Mae nonbank originator LTV remained close in value until 2020 during the rise in forbearance due to the COVID-19 pandemic as shown in Figure 4. Ginnie Mae nonbank LTV dropped to 95.99% in March 2021 but has since risen to 98.19% in recent months. Similarly, GSE nonbank LTV has also risen to 80.00% as of September. Ginnie Mae nonbank origination share is a major driver for the overall characteristics of Ginnie Mae-eligible loans.

Figure 4. Ginnie Mae LTV: Bank vs. Nonbank



³ Data is sourced from Recursion

Ginnie Mae nonbank mortgage servicing rights (MSR) ownership continues to increase, reaching nearly 80% in Q3 2022 while bank MSR ownership declined to less than 20% as of Q3 2022. **Figure 5** illustrates the decline in bank MSR ownership since Q4 2014 and the increase in nonbank MSR ownership over the same period. As of September 2022, the total amount of Ginnie Mae MSR outstanding is \$2.3 trillion.⁴



Nonbank issuers are a dominate and important supplier of mortgage credit in our country.

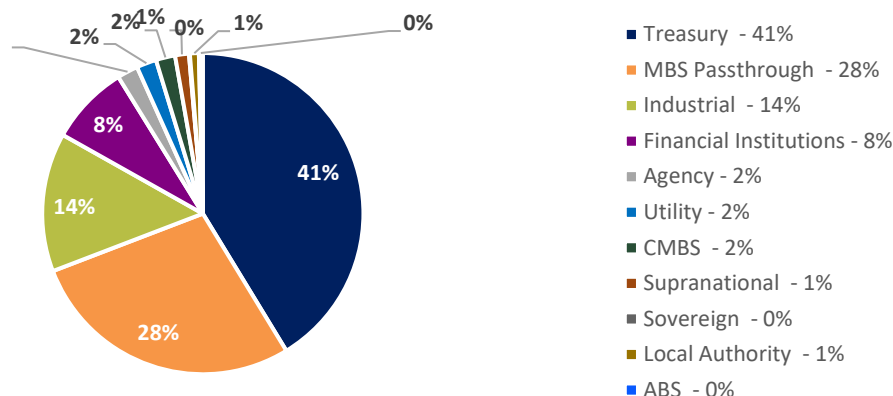
In September 2022, Ginnie Mae [released](#) amended eligibility requirements that nonbank mortgage companies must comply with to limit exposure for all issuers. Ginnie Mae’s risk-based capital rule requirement reduced the minimum risk-based capital ratio to 6%. For excess MSRs, there will be a 250% risk weight on the dollar-for-dollar deduction from the risk-based capital ratio. In October 2022, the effective date was extended to year-end 2023.

⁴ Inside Mortgage Finance Analysis of Fannie Mae, Freddie Mac, and Ginnie Mae MBS disclosures

1 US AGGREGATE AND GLOBAL INDICES

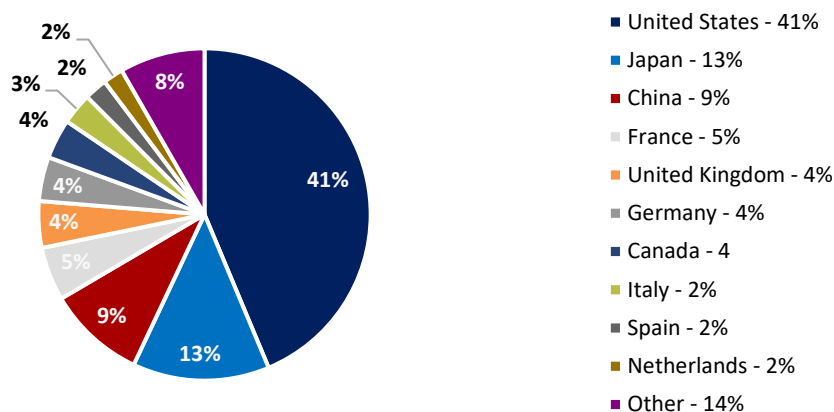
1.1 Bloomberg US Aggregate and Global Indices

Figure 6. Bloomberg US Aggregate Index.



As of month's end September, US Treasuries contributed approximately 41% to the Bloomberg US Aggregate Index, up from 40% in 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 7. 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 13%. For the Global Aggregate Index, all countries remained stable when compared to the prior month.

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

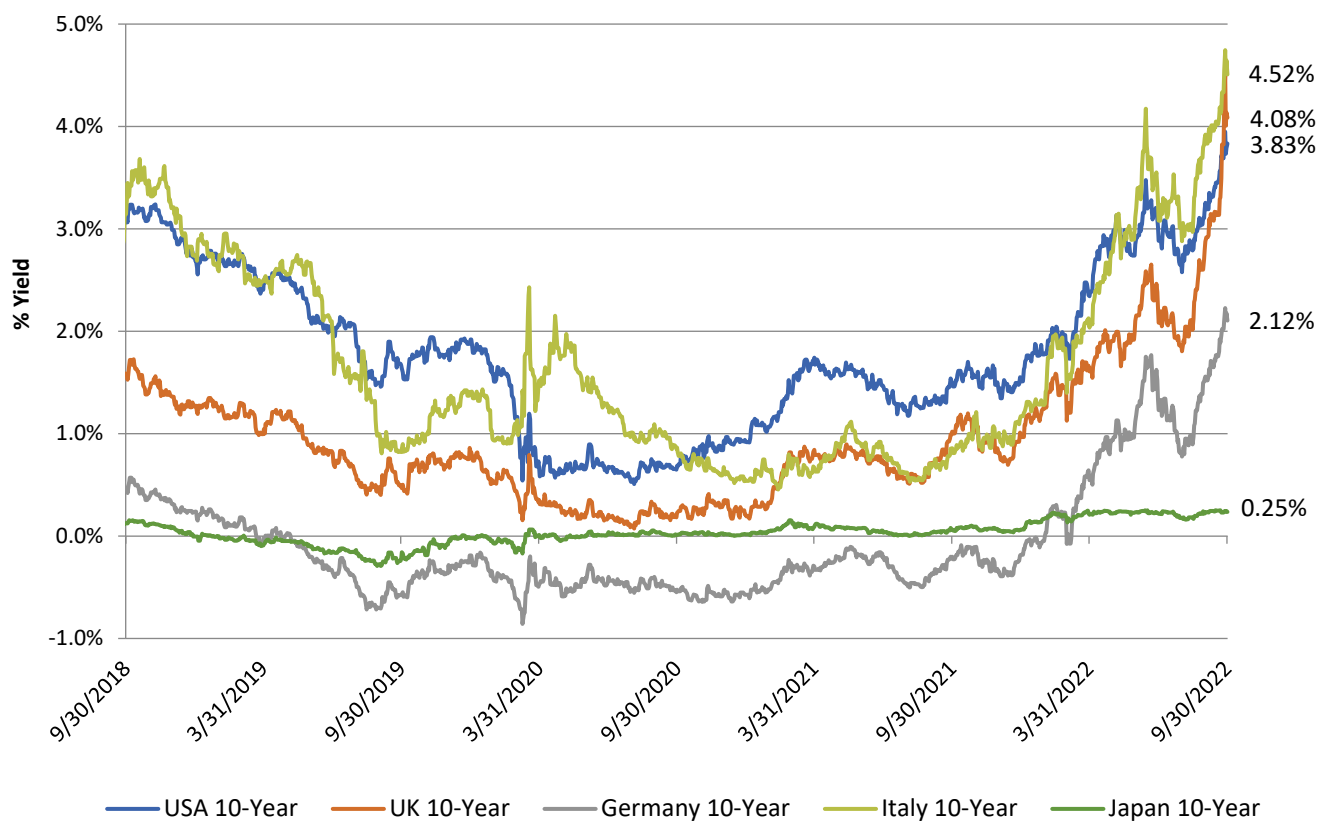
2 SOVEREIGN DEBT PRODUCT PERFORMANCE COMPARISONS

2.1 Global 10-Year Treasury Yields (Unhedged)

The US 10-year Treasury yield moved to 3.83% at month-end September 2022, a MoM increase of 73 bps. US Treasury yields continue to remain 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 4.08% at month-end September, a MoM increase of 138 bps.
- The yield on the German 10-year notes increased to 2.12% at month-end September, a MoM increase of 62 bps.
- The yield on the Italian 10-year note increased to 4.52% at month-end September, a MoM increase of 64 bps.
- The yield on the Japanese 10-year notes increased to 0.25% at month-end September, a MoM increase of 3 bps.

Figure 8. Global 10-Year Treasury Yields.



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

2.2 US Treasury Hedged Yields

The hedged yield for the 10-year Treasury JPY decreased MoM 11 bps to 2.16% at month-end September.

The hedged yield for the 10-year Treasury EUR decreased MoM 6 bps to 1.24% at month-end September.

Figure 9. 7–10yr Total Return Hedged Index, JPY.



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



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

SECONDARY MORTGAGE MARKET

3 FIXED INCOME PRODUCT PERFORMANCE COMPARISONS

3.1 Ginnie Mae Yields – USD

Ginnie Mae fixed rate MBS yields continued to increase MoM in September 2022. Ginnie Mae II yields were at 3.63% at month-end July, increased to 4.48% at month-end August, and have now increased 108 bps to 5.56% at month-end September. Ginnie Mae I yields were at 3.61% at month-end July, increased to 4.49% at month-end August, and have now increased 102 bps to 5.51% at month-end September. Over the past year, Ginnie Mae spreads over US 10-year Treasury yields have widened. Ginnie Mae II spreads over the US 10-year Treasury yield, just 30 bps at month-end September 2021, had increased 143 bps to 173 bps over the US 10-year Treasury yield at month-end September 2022. The yields on the Ginnie Mae I SF were 167 bps higher than the US 10-year Treasury yield at month-end September, an increase in spread of 37 bps MoM and an increase of 117 bps YoY.

Figure 11. Ginnie Mae II SF Yield, USD



Figure 12. Ginnie Mae I SF Yield, USD



Sources Bloomberg. Note: Data as of October 2022

3.2 Ginnie Mae Yield Spreads – Intermediate Credit

The yield differential between US Intermediate Credit and GNMA II 30-year OAS decreased by 16 bps to 0.57% at month-end September. The Ginnie Mae II 30-year OAS increased 32 bps MoM. The US Intermediate credit OAS has increased 15 bps MoM.

Figure 13. US GNMA II 30yr MBS OAS versus US Intermediate Credit OAS.

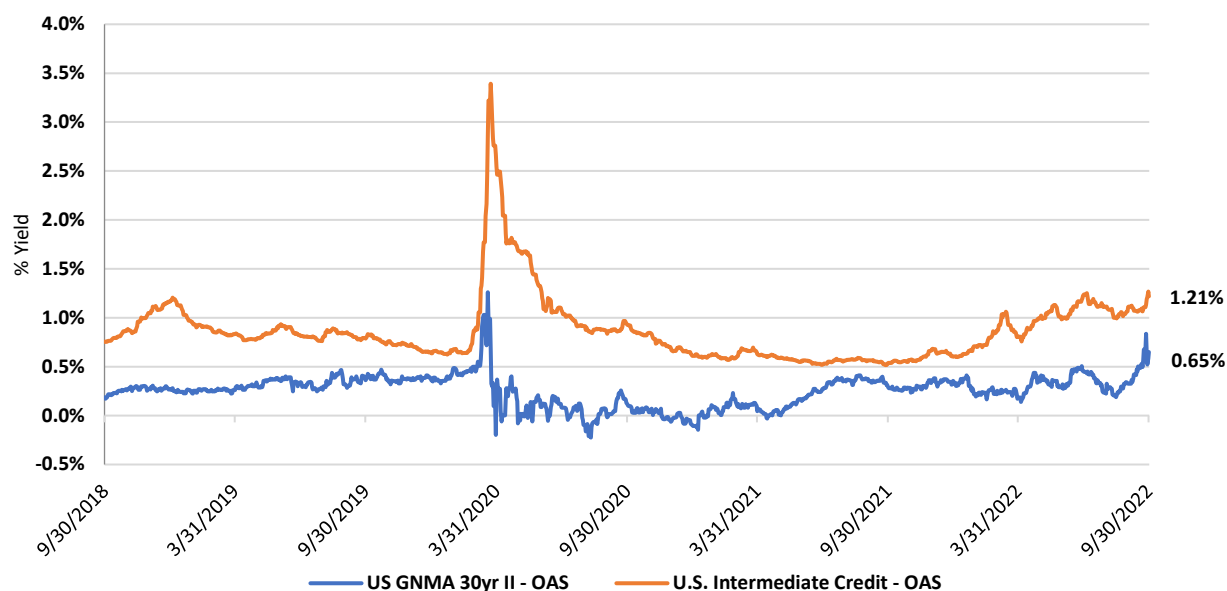
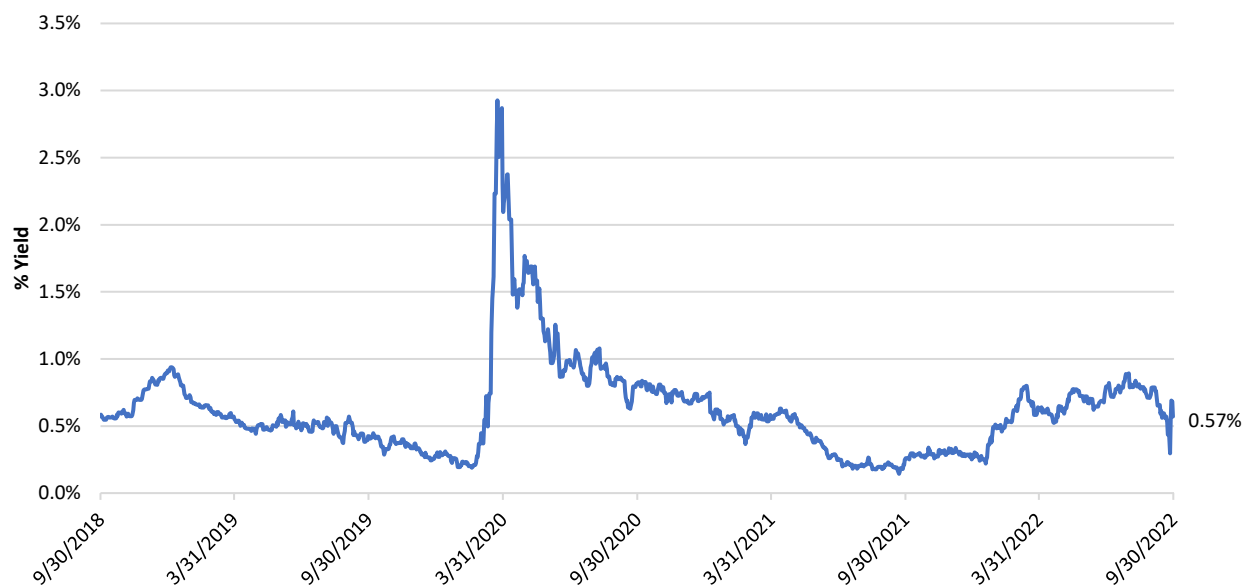


Figure 14. Spread between US Intermediate Credit and US GNMA II 30yr MBS OAS.

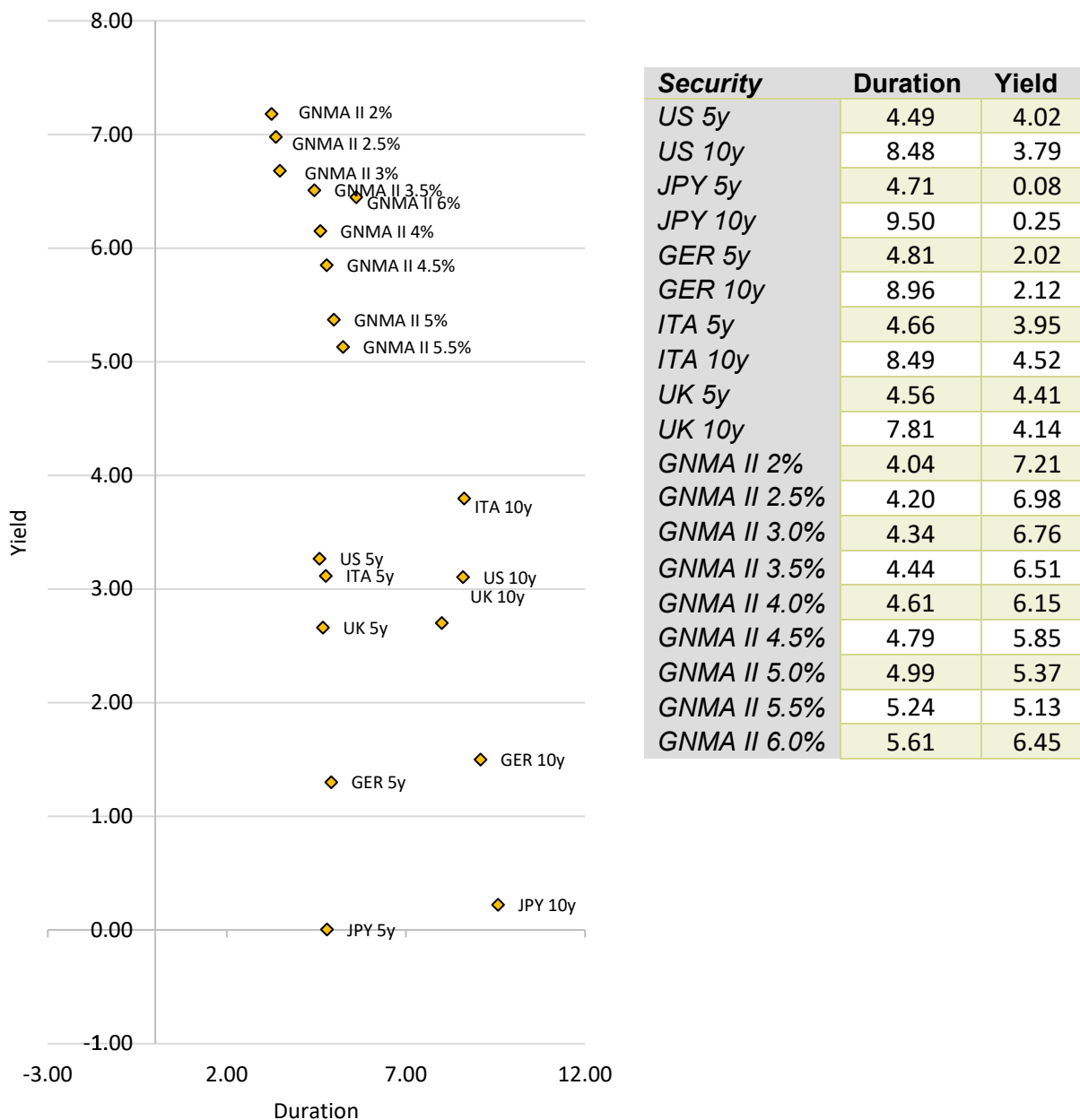


Source: Bloomberg. Note: Data as of October 2022.

3.3 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 lower coupon GNMA II securities, increases in duration have been observed relative to the month prior.

Figure 15. 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 September 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 September by 12.5% MoM, while Fannie Mae and Freddie Mac CPRs decreased by 12.9% and 11.8%, respectively. ARM prepayments have dropped for Fannie Mae and Ginnie Mae and remained flat for Freddie Mac, due to decreased refinance activity in the current higher interest rate environment.

Figure 16. Fixed Rate Aggregate 1-Month CPR.

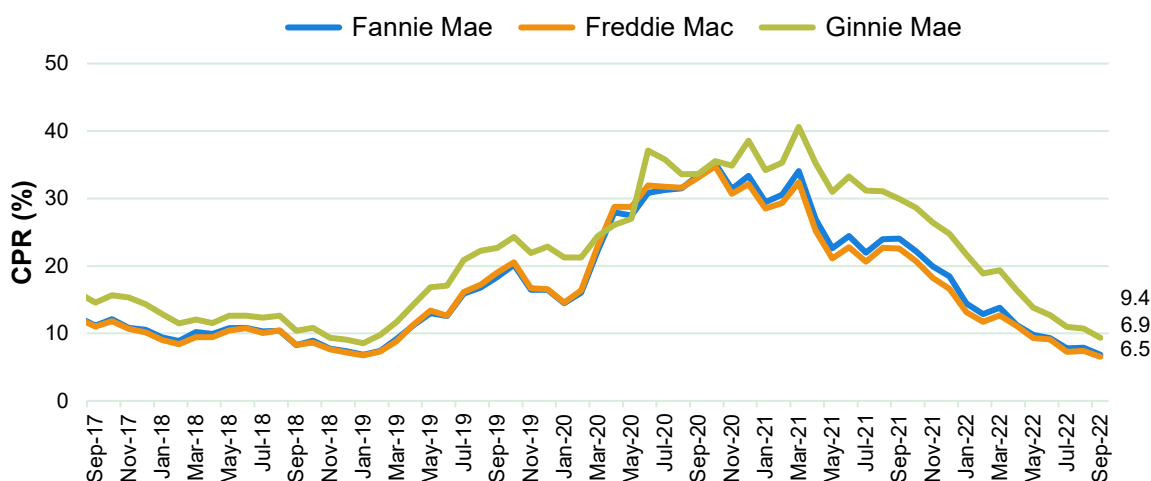
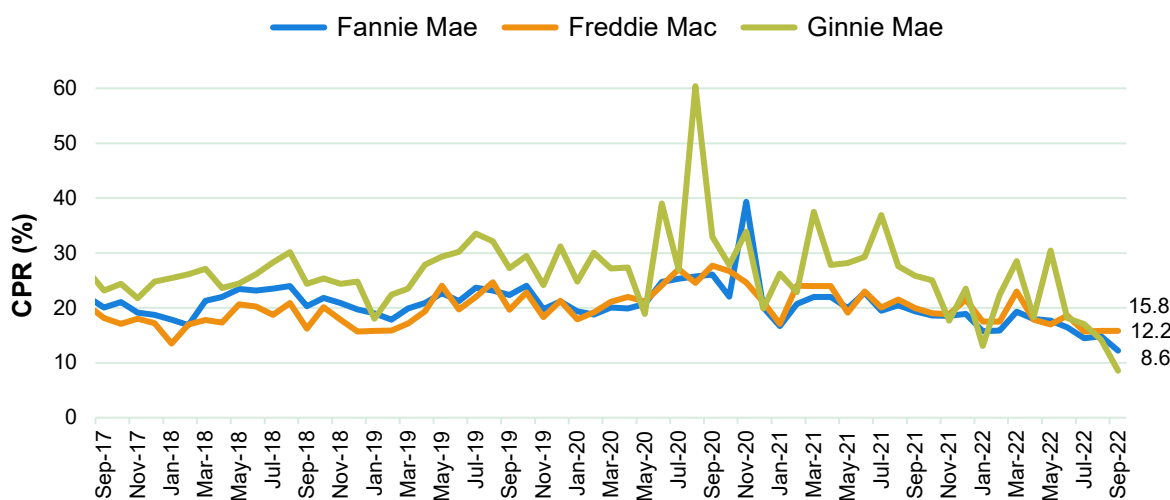


Figure 17. ARM Aggregate 1-Month CPR.



Source: Recursion. Note: Data as of September 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's and GSE prepayments has converged significantly since Ginnie Mae's CDR peak of 12.4 CDR in June 2020. ARM CDRs for Freddie Mac surpassed Ginnie Mae in September for the first time since June 2022.

Figure 18. Fixed Rate Aggregate CDR.

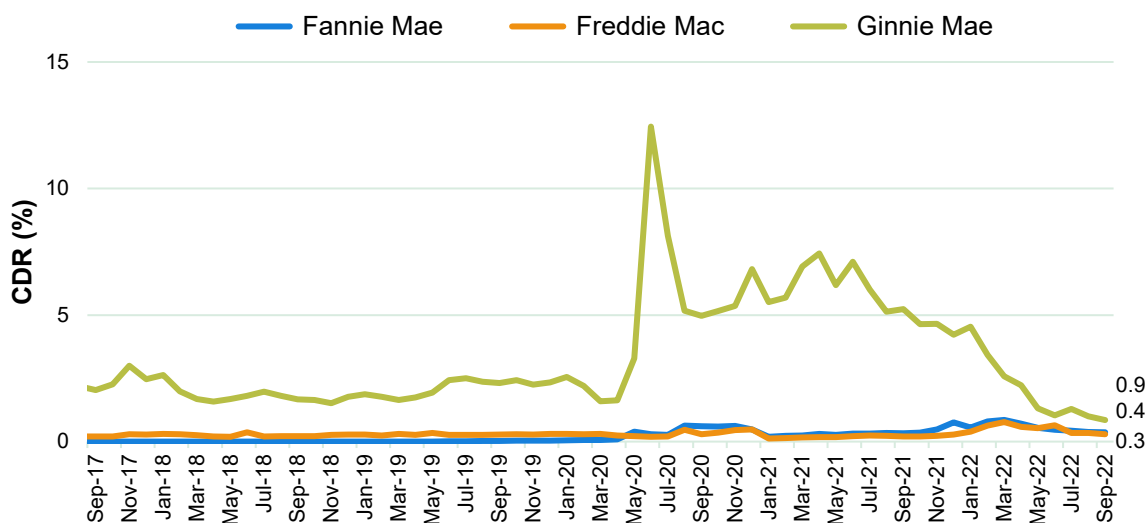
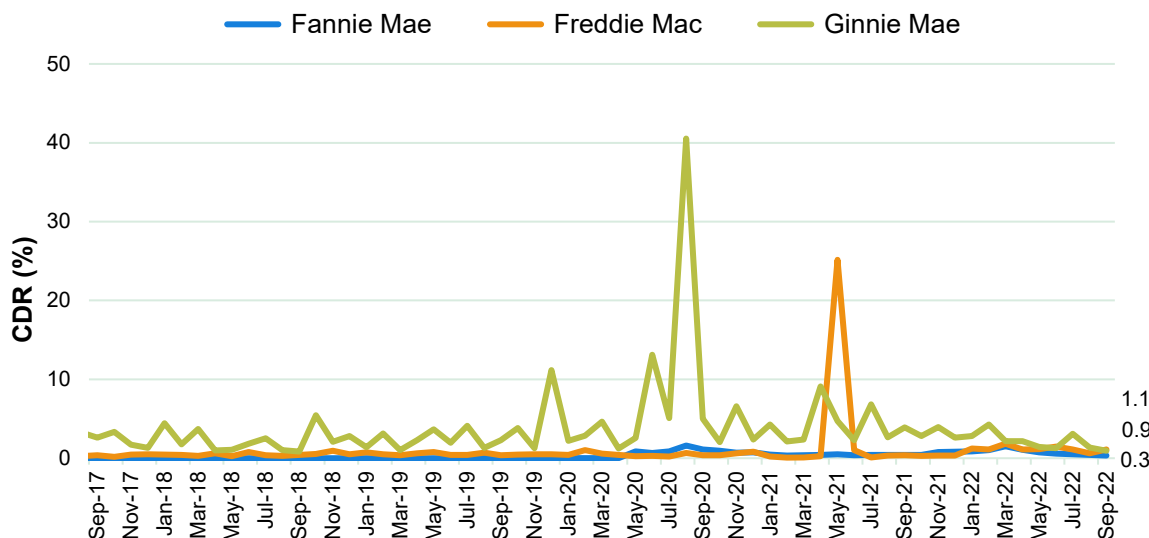


Figure 19. ARM Aggregate CDR.



Source: Recursion. Note: Data as of September 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 on Housing Affordability – Mortgage Rate Trends](#)), voluntary prepayments are facing downward trends for both Ginnie Mae and the GSEs. Fannie Mae and Freddie Mac saw decreases of 13.4% and 11.7% MoM in fixed rate aggregate CRR, respectively. Freddie Mac saw a 2.7% MoM decrease and Fannie Mae saw a 17.4% MoM decrease in ARM aggregate CRR. Ginnie Mae decreased 12.4% MoM in fixed rate aggregate CRR and saw a 40.6% MoM decrease in ARM aggregate CRR. This was the largest MoM decrease since June 2022.

Figure 20. Fixed Rate Aggregate CRR.

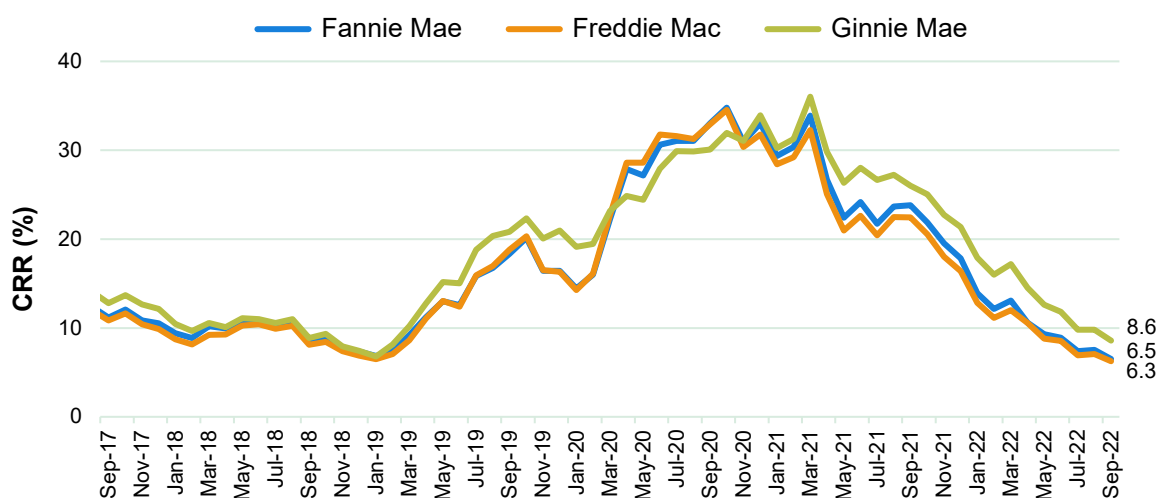
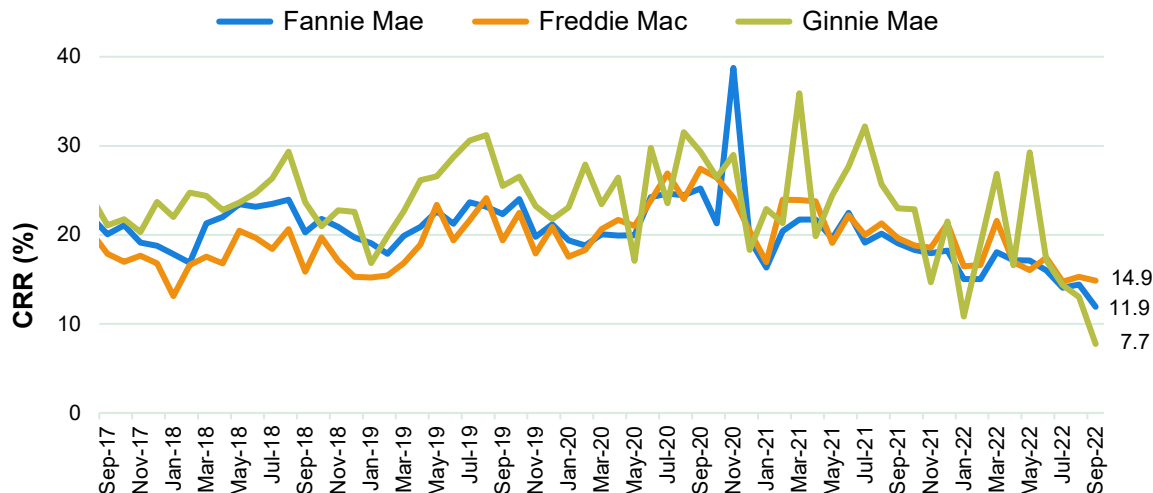


Figure 21. ARM Aggregate CRR.



Source: Recursion. Note: Data as of September 2022

5 SINGLE-FAMILY MBS PASS-THROUGH ISSUANCE

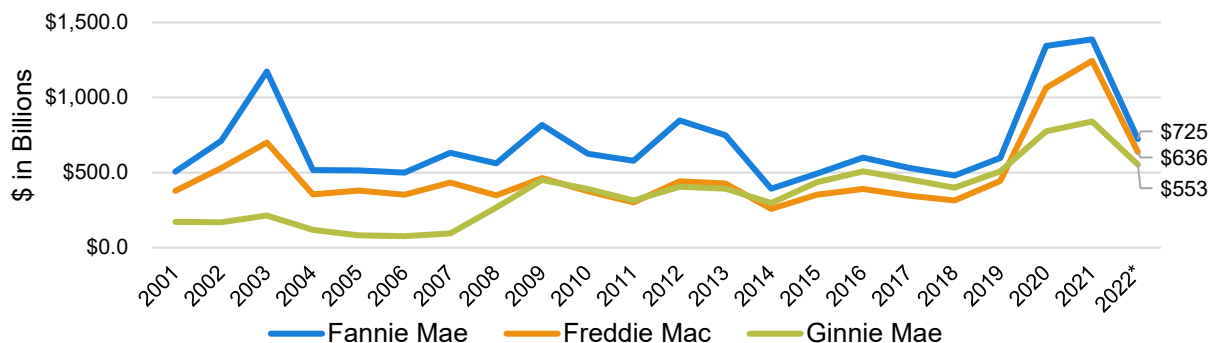
5.1 Gross Issuance of Agency MBS

Agency gross MBS issuance decreased MoM by 7.1% (from August to September). All three agencies saw decreases in gross issuance as compared to August.

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	\$543.6	\$477.3	\$1,020.9	\$414.4	\$1,435.3
2022 Annualized	\$724.8	\$636.4	\$1,361.2	\$552.5	\$1,913.7

Figure 22. Agency Gross Issuance



*2022 values have been annualized – the annualization methodology is not seasonally adjusted.

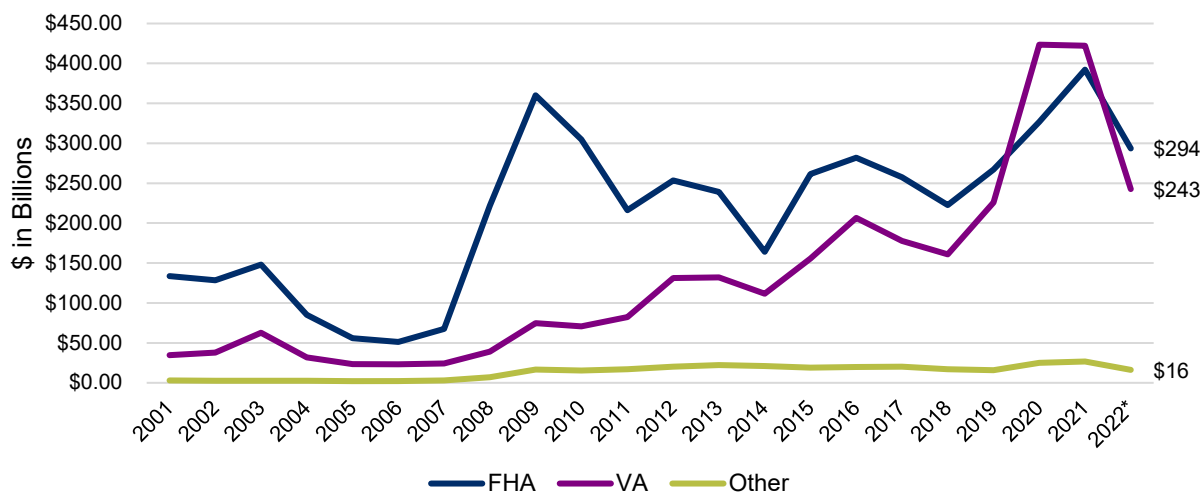
Note: Numbers are rounded to the nearest hundred million. For sums, like “GSE Total”, the values are rounded after the exact underlying values are summed. As a result, some sums may not appear to match the sum of their rounded component values.

Ginnie Mae's \$39.9 billion in gross issuance in September was approximately 43% below the average monthly issuance for 2021. Thus far in 2022, Ginnie Mae is on pace to have lower gross issuance than 2021 by approximately \$288.4 billion.

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	\$220.2	\$181.9	\$12.3	\$414.4
2022 Annualized	\$293.6	\$242.5	\$16.4	\$552.5

Figure 23. Ginnie Mae Gross Issuance



*2022 values have been annualized – the annualization methodology is not seasonally adjusted.

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.

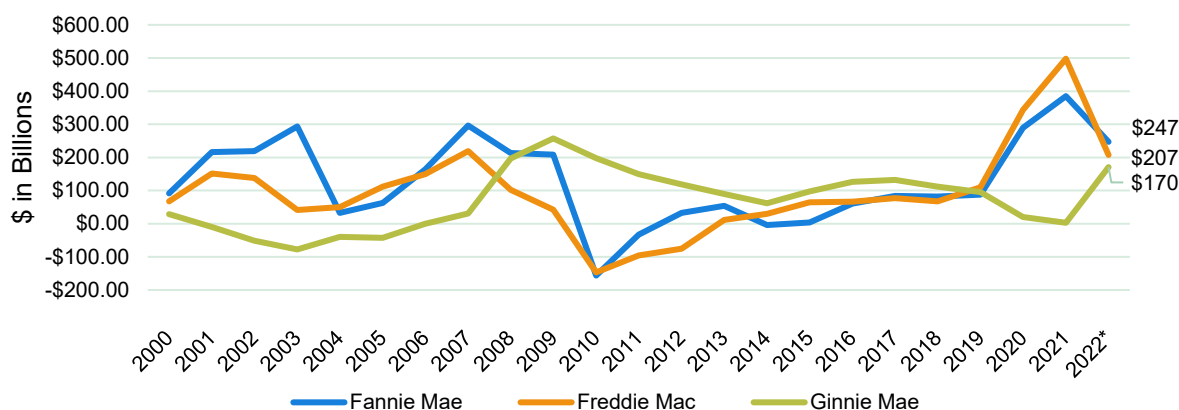
5.2 Net Issuance of Agency MBS

Agency net issuance in September was approximately \$39.8 billion, which represents an 2.5% MoM decrease in net issuance. Ginnie Mae net issuance was \$18.3 billion in September, an increase from August 2022. FHA net issuance now slightly outpaces VA, as shown in Table 4 and Figure 25.

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	\$185.5	\$155.3	\$340.8	\$127.8	\$468.6
2022 Annualized	\$247.4	\$207.0	\$454.4	\$170.4	\$624.8

Figure 24. Agency Net Issuance



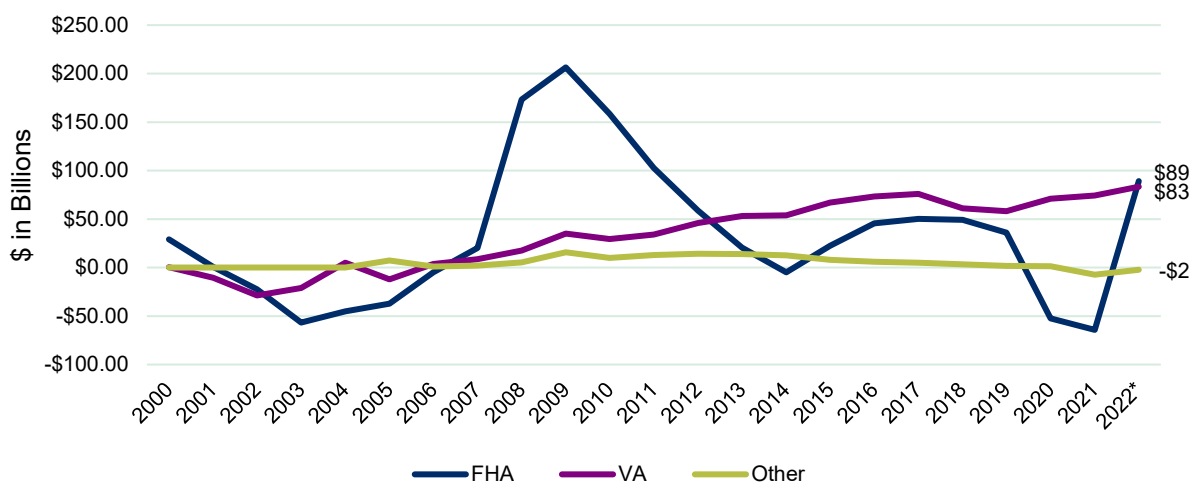
*2022 values have been annualized – the annualization methodology is not seasonally adjusted.

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	\$67.0	\$62.5	-\$1.7	\$127.8
2022 Annualized	\$89.3	\$83.4	-\$2.3	\$170.4

Figure 25. Ginnie Mae Net Issuance



*2022 values have been annualized – the annualization methodology is not seasonally adjusted.

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
Sep-18	\$41.8	\$30.1	\$34.8	\$71.8	\$106.6	\$5.9	\$6.2	\$9.0	\$12.1	\$21.1
Oct-18	\$39.8	\$27.4	\$33.2	\$67.1	\$100.3	\$9.7	\$7.1	\$11.4	\$16.8	\$28.2
Nov-18	\$35.1	\$30.1	\$32.4	\$65.2	\$97.6	\$3.6	\$11.0	\$9.8	\$14.6	\$24.4
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

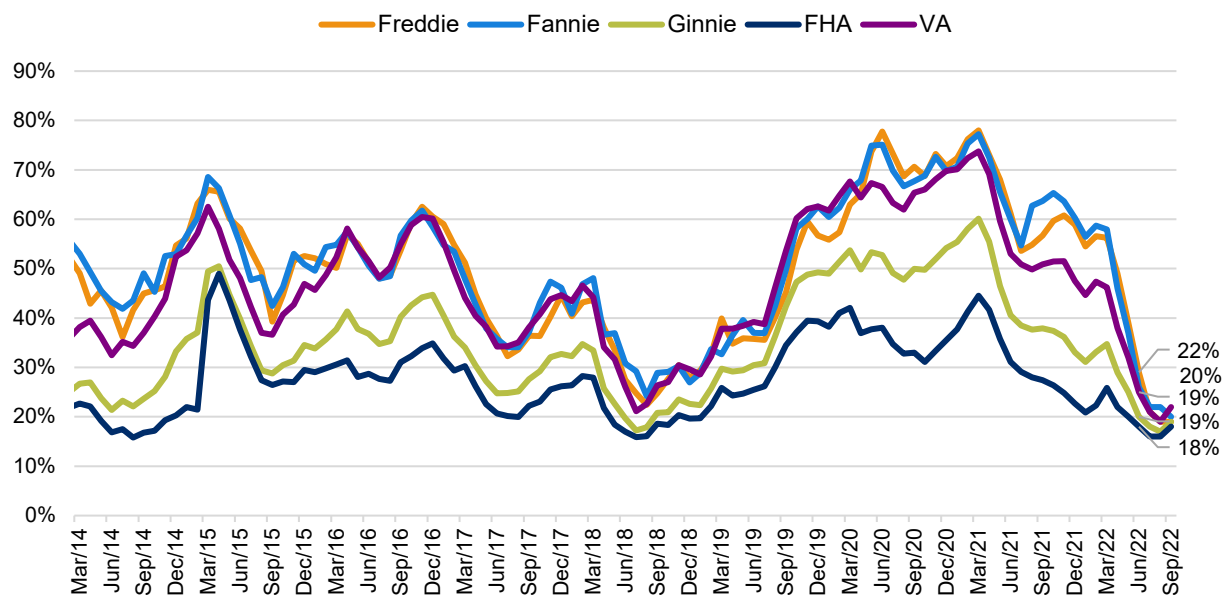
Source: Beginning May 2021, data for Gross and Net Issuance was sourced from Fannie Mae, Freddie Mac, and Ginnie Mae loan level disclosure files. Net issuance is defined here as the difference between prior period UPB and current period UPB. Data as of September 2022. Beginning with the October 2021 GMAR, the Fannie Mae and Freddie Mac net issuance data have been updated to reflect the current UPB of the portfolios. July 2021 through September 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 has increased for Ginnie Mae in September. In the conventional mortgage market space, Fannie Mae saw a decline of approximately 9% MoM while Freddie Mac's refinance share remained stable MoM. Ginnie Mae's MoM increase has been approximately 12%, with the greater rise taking place with VA lending which was up almost 16% in September MoM. FHA's refinance share increased by approximately 13%.

- Freddie Mac's refinance percentage has stayed consistent at 19% in September.
- Fannie Mae's refinance percentage dropped to 20% in September, down from 22% in August.
- Ginnie Mae's refinance percentage increased to 19% in September, up from 17% in August.
- FHA's refinance percentage increased to 18% in September, up from 16% in August.
- VA's refinance percentage increased to 22% in September, up from 19% in August.

Figure 26. Percent Refinance at Issuance – Single-Family.



Sources: Recursion. Note: Data as of September 2022

6 AGENCY SINGLE-FAMILY MBS OUTSTANDING

6.1 Outstanding Single-Family Agency MBS

As of September 2022, outstanding single-family MBS in the Agency market totaled \$8.532 trillion: 41.8% Fannie Mae, 33.8% Freddie Mac, and 24.4% Ginnie Mae MBS. Over the past twelve months, Freddie Mac's, Fannie Mae's, and Ginnie Mae's total outstanding MBS increased by approximately 11.1%, 6.7% and 7.7%, respectively. Fannie Mae outstanding MBS remains larger than Freddie Mac's and Ginnie Mae's by approximately \$687 billion and \$1.5 trillion, respectively.

Ginnie Mae MBS collateral composition has changed dramatically over the past five years. In September 2017, 61.3% of Ginnie Mae outstanding collateral was FHA and 32.5% was VA. In September 2022, FHA collateral comprised 52.6% of Ginnie Mae MBS outstanding and VA collateral comprised 42.3% of Ginnie Mae MBS outstanding.

Figure 27. Outstanding Agency Mortgage-Backed Securities.

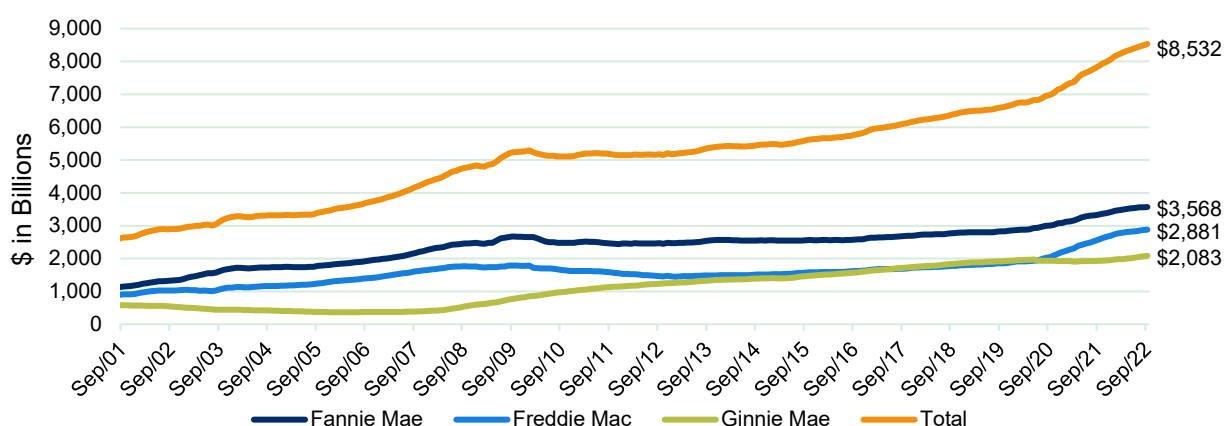
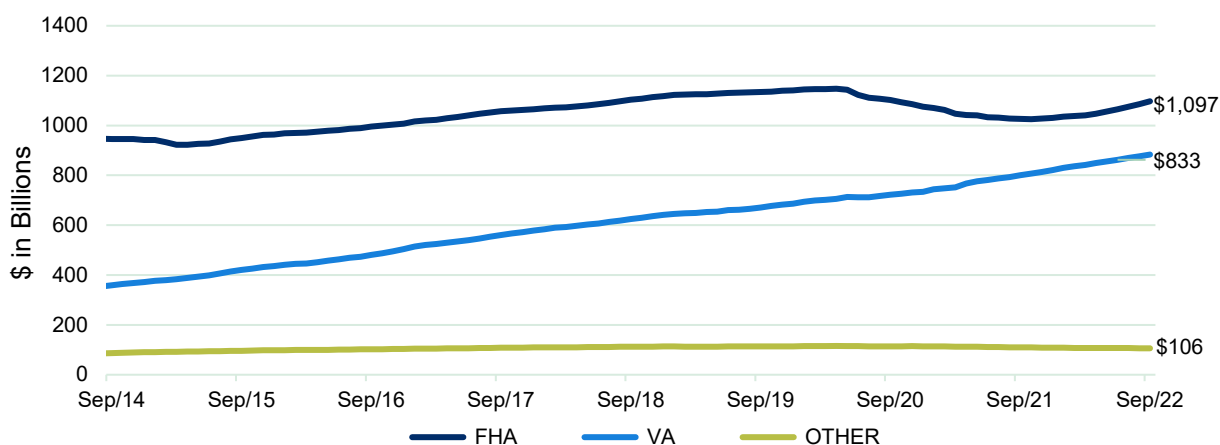


Figure 28. Composition of Outstanding Ginnie Mae Mortgage-Backed Securities.



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

6.2 Origination Volume and Share Over Time

Origination volume continued to decline in Q2 2022, with \$650 billion in originations in Q2, which represents a decline in issuance from Q1 2022 of approximately 10%. Ginnie Mae's share of total origination increased slightly from 17.4% to 17.8% in Q2 2022, while Portfolio origination more than doubled from 14.7% to over 30.8% in Q2 2022.

Figure 29. First Lien Origination Volume

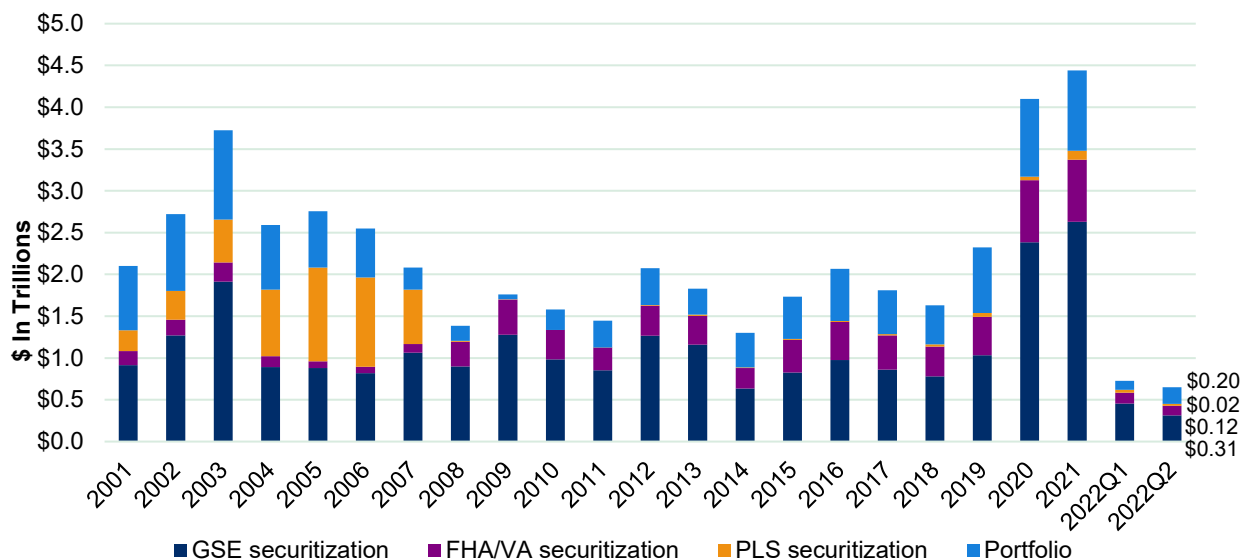
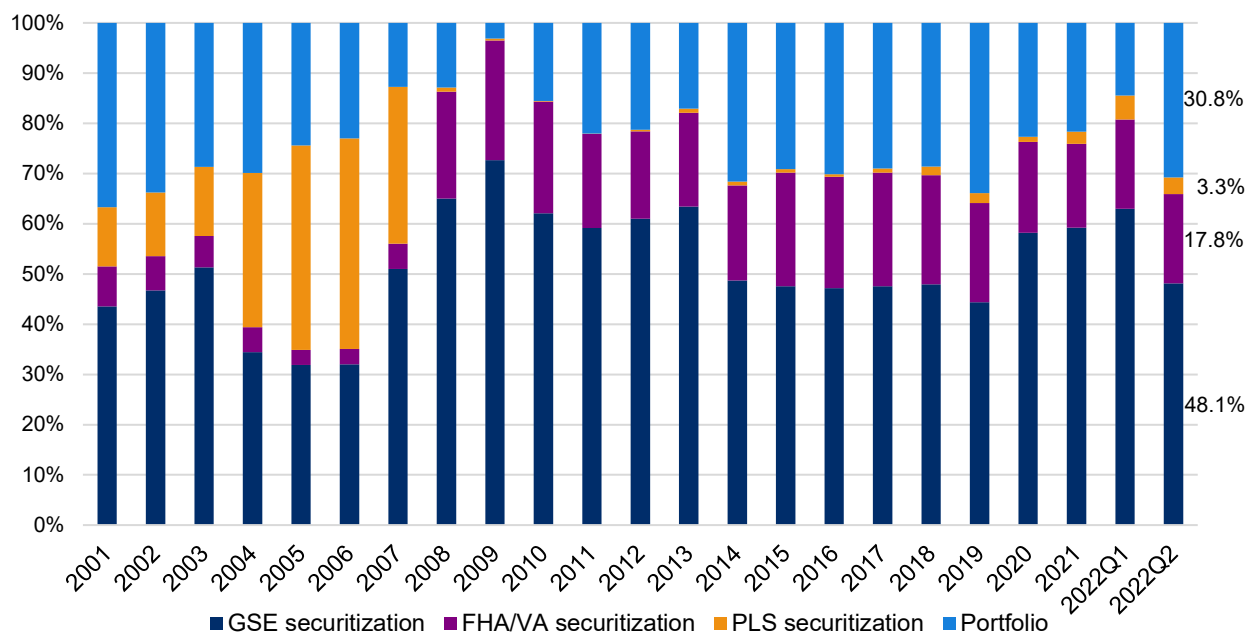


Figure 30. First Lien Origination Share



Source: Inside Mortgage Finance. Note: Data as of Q2 2022.

6.3 Agency Issuance and Agency Outstanding by State

Ginnie Mae MBS represent approximately 27% 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 (50%) and the lowest in the District of Columbia (16%). The highest Ginnie Mae outstanding share is in Alaska and Mississippi (47%) and the lowest still in the District of Columbia (13%). There is currently a 2% 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)
	27%	2,753,407	272.56	280.53	25%	10,524,937	202.54	210.88
AK	50%	9,389	327.41	291.30	47%	37,050	260.60	221.64
AL	40%	58,897	215.26	230.80	40%	232,317	154.88	177.42
AR	37%	31,802	184.01	213.50	38%	135,093	130.61	160.69
AZ	25%	83,566	298.46	305.25	24%	266,735	215.28	225.19
CA	19%	196,403	429.05	422.12	16%	668,934	324.69	321.73
CO	26%	64,445	383.93	366.27	23%	209,814	288.20	277.14
CT	27%	26,365	256.46	273.93	25%	104,068	200.88	209.97
DC	16%	2,202	496.37	433.02	13%	8,779	379.98	352.08
DE	32%	13,576	258.73	280.31	31%	50,800	202.58	211.07
FL	31%	241,028	277.46	281.12	31%	830,024	208.56	210.38
GA	34%	138,361	241.49	275.20	33%	487,772	176.79	205.98
HI	37%	9,197	604.28	480.96	31%	33,069	468.40	359.32
IA	25%	18,819	179.68	195.14	22%	81,225	132.71	149.02
ID	24%	16,461	323.16	309.92	23%	62,541	214.55	222.44
IL	24%	92,557	206.34	240.30	21%	358,773	158.71	179.83
IN	30%	68,879	183.45	202.22	30%	274,031	132.10	150.53
KS	29%	22,301	189.72	219.26	28%	95,029	138.68	164.11
KY	34%	40,357	192.05	208.96	34%	161,976	141.97	155.95
LA	43%	49,746	201.87	232.07	39%	196,813	156.82	178.02
MA	20%	31,101	362.89	359.68	15%	111,260	282.35	270.02
MD	36%	79,110	330.35	321.70	33%	286,605	263.95	250.43
ME	27%	9,444	236.47	260.05	25%	37,199	175.84	191.83
MI	20%	66,352	181.98	210.30	20%	270,271	132.28	157.18
MN	19%	36,931	240.79	266.52	17%	157,450	180.92	198.82
MO	29%	57,926	192.89	214.63	28%	240,456	140.50	162.26
MS	48%	29,106	195.68	210.42	47%	120,201	141.94	161.23
MT	23%	7,742	294.55	300.68	23%	31,943	206.53	216.17
NC	28%	108,234	238.43	271.97	28%	406,544	173.01	201.43
ND	28%	4,420	241.63	239.23	23%	16,784	192.66	185.41
NE	26%	14,117	210.19	214.11	26%	64,020	147.38	161.23
NH	22%	9,344	297.17	293.78	22%	37,674	224.13	215.18
NJ	24%	62,098	305.54	328.30	21%	227,110	238.23	255.24
NM	36%	21,686	231.34	241.47	37%	93,557	164.80	178.14
NV	30%	40,159	324.97	314.36	29%	129,814	244.88	234.71
NY	21%	61,333	299.96	340.70	20%	302,261	207.32	248.69
OH	28%	98,152	177.22	198.96	28%	415,746	128.82	149.28
OK	39%	41,568	195.73	214.82	41%	186,388	139.58	162.01
OR	20%	29,770	339.00	344.73	19%	108,614	251.65	253.60
PA	24%	81,499	197.58	242.47	25%	382,678	147.96	182.34
RI	33%	9,511	307.11	287.02	29%	34,828	231.50	213.60
SC	34%	66,226	240.96	252.65	33%	229,329	180.80	191.82
SD	30%	6,803	235.68	235.40	29%	28,883	171.42	177.95
TN	30%	70,474	246.42	269.46	31%	265,601	172.68	203.65
TX	29%	264,346	249.88	285.64	31%	1,066,900	179.30	211.32
UT	20%	27,355	356.88	357.87	18%	93,376	256.01	263.26
VA	39%	116,443	326.64	316.20	35%	438,779	255.62	251.15
VI	20%	149	389.88	412.99	23%	778	246.89	303.08
VT	19%	2,709	235.50	255.82	18%	11,934	180.57	180.73
WA	24%	63,703	384.08	385.16	21%	228,482	282.02	289.59
WI	18%	30,240	205.01	222.92	17%	121,593	155.44	164.06
WV	44%	14,314	191.37	194.68	43%	58,330	143.00	145.62
WY	35%	6,691	259.91	261.27	34%	24,706	205.21	202.17

Source: Recursion. Note: Outstanding balance is based on loan balance as of September 2022. Ginnie Mae issuance is based on the last 12 months, from August 2021 to September 2022. Values above are based on loan level disclosure data, thus excluding loan balances for the first six months that loans are in a pool. This accounts for the difference in share of outstanding MBS represented above and in [Outstanding Single-Family Agency MBS](#).

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

As of September 2022, the weighted average coupon (WAC) on outstanding Ginnie Mae MBS increased slightly from 2.98% in August 2022 to 3.01% in September. With 30-year fixed mortgage rates for certain credit profiles at over 6.0% in September, this increase in WAC is likely to continue. The bottom chart illustrates that loans originated since 2019 account for 76% of Ginnie Mae MBS collateral outstanding.

Figure 31. Outstanding Ginnie Mae MBS Balance, by Coupon.

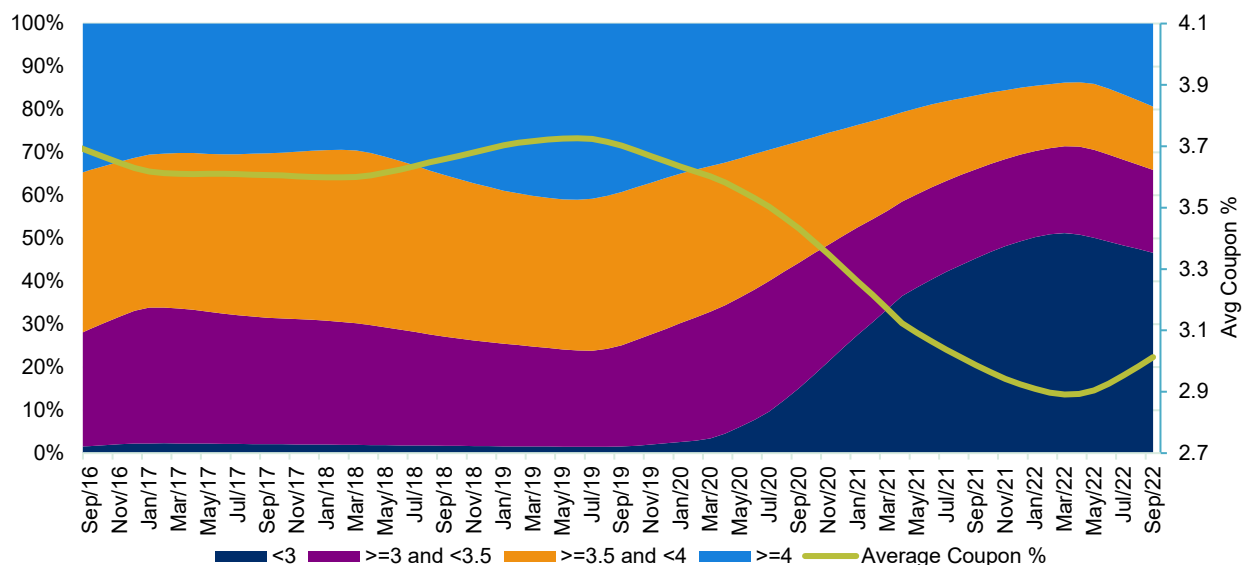
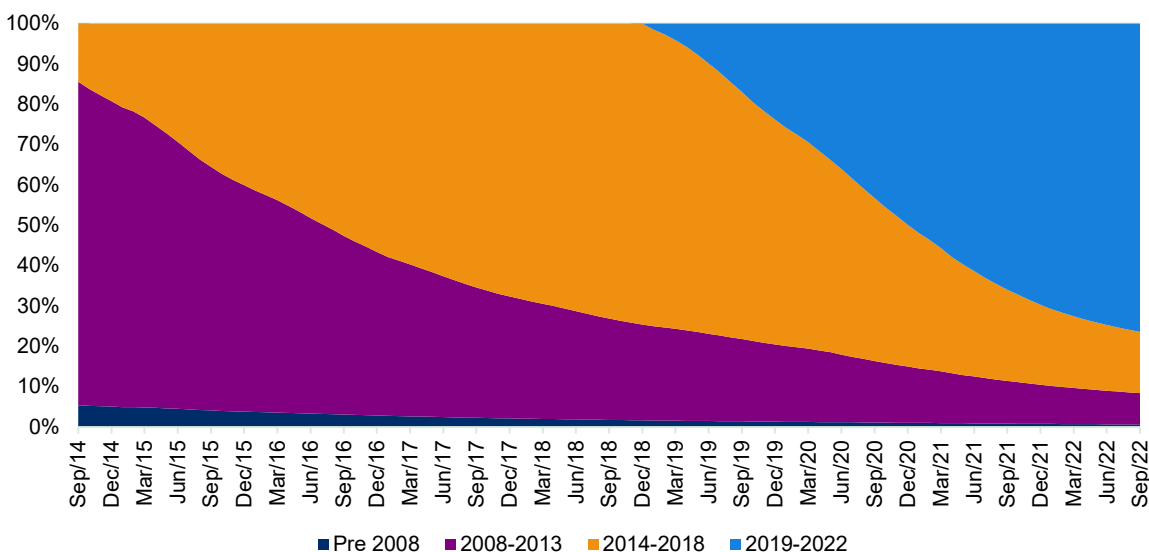


Figure 32. Outstanding Ginnie Mae MBS Balance, by Vintage.



Sources: Recursion. Note: September 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 September 2022, \$8.0 billion of Ginnie Mae MBS were securitized into Real Estate Mortgage Investment Conduits (REMICs) as underlying collateral, a 33% month over month increase. Of that, approximately \$1.9 billion were Multifamily MBS having coupons between 2.5% and 4.0%. Approximately \$6.1 billion were Single Family MBS with 83.9% of the Single-Family MBS having coupons over 4.5%.

As of month-end September 2022, approximately \$88.7 billion of Ginnie Mae Single Family and Multifamily MBS were securitized into Ginnie Mae REMIC transactions. This represents a roughly 40% decrease over the same period in 2021 (\$133.6 billion).

Figure 33. Ginnie Mae Single-Family and Multifamily MBS Securitized into REMICs.

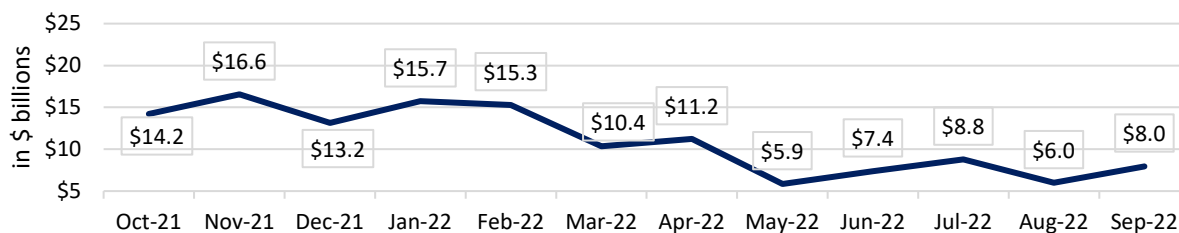


Table 7. September 2022 REMIC Collateral Coupon Distribution.

Net Coupon (%)	Approx. Ginnie Mae MBS amount securitized into REMIC Deals (\$MM) ⁵	% Breakdown of REMIC Collateral by coupon ¹⁷
Multifamily		
2.51-3.00	185.1	9.8%
3.01-3.50	1,502.5	79.5%
3.51-4.00	201.9	10.7%
Subtotal	1,889.5	100%
Single-Family		
2.51-3.00	191.9	3.2%
3.01-3.50	263.1	4.3%
3.51-4.00	130.7	2.2%
4.01-4.50	368.6	6.1%
4.51-5.00	2,849.3	46.9%
5.01-5.50	1,789.7	29.5%
5.51-6.00	475.5	7.5%
Subtotal	6,068.9	100%
Grand Total	7,958.3	

⁵Totals may not sum due to rounding.

Source: Ginnie Mae Disclosure Files

7.2 REMIC Market Snapshot

In September 2022, Ginnie Mae Single-Family REMIC collateral WAC surpassed 5.0%, continuing to increase MoM, while Fannie Mae and Freddie Mac Single-Family REMIC collateral WAC decreased MoM by 13 basis points and 18 basis points, respectively.

- In September 2022, Fannie Mae guaranteed a Multifamily REMIC transaction for the first time since June 2022.
- In September 2022, Ginnie Mae REMIC issuance volume was \$9.7 billion, the fifth consecutive month of REMIC issuance volume below \$10.0 billion.
- Ginnie Mae guaranteed three HREMIC transactions in September 2022. This is the fourth month in 2022 in which Ginnie Mae has guaranteed three HREMIC transactions. In 2021, there were no months where Ginnie Mae guaranteed three or more HREMIC transactions in a single month.

Figure 34. REMIC Issuance by Agency

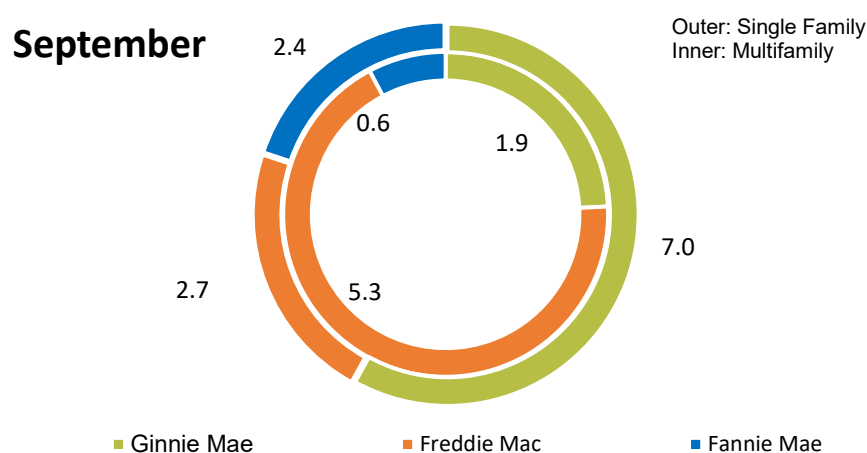


Table 8. Monthly REMIC Issuance by Agency

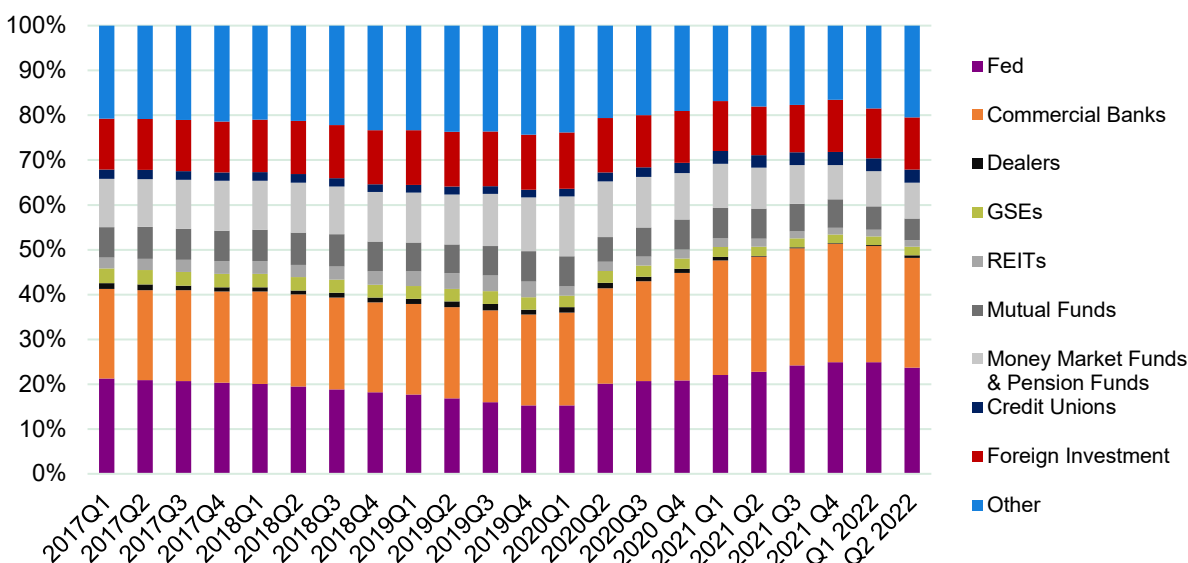
	SF REMIC Issuance Volume (\$B)	% of SF REMIC Issuance Volume	Number of SF REMIC Trans- actions	MF REMIC Issuance Volume (\$B)	% of MF REMIC Issuance Volume	Number of MF REMIC Trans- actions
Ginnie Mae	7.0	58.0	11	1.9	24.2	10
Freddie Mac	2.7	22.1	9	5.3	68.0	8
Fannie Mae	2.4	19.9	8	0.6	7.7	1
Total	\$12.1	100%	28	\$5.9	100%	19

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

8 MBS OWNERSHIP

As of Q2 2022, the largest holders of agency debt (agency MBS +agency notes and bonds) included commercial banks (24%), the Federal Reserve (24%), and foreign investors (12%). The Federal Reserve's share decreased slightly to 24% in the second quarter of 2022 from 25% in the first quarter. Along with Federal Reserves, commercial banks are also the largest holders of agency MBS. Out of their nearly \$2.9 trillion in holdings as of the end of June 2022, \$2.1 trillion was held by the top 25 domestic banks.

Figure 35. 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 Q2 2022.

8.1 Commercial Bank Holdings of Agency MBS

Table 8. Commercial Bank Holdings of Agency MBS

	Commercial Bank Holdings (\$Billions)								Week Ending			
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	7-Sep	14-Sep	21-Sep	28-Sep
Largest 25 Domestic Banks	2,188.8	2,200.4	2,186.8	2,163.9	2,143.9	2,122.4	2,117.0	2,115.5	2,100.9	2,096.5	2,091.4	2,078.1
Small Domestic Banks	742.2	748.6	744.1	736.1	730.8	735.8	731.8	738.3	723.9	726.5	723.0	716.9
Foreign Related Banks	42.2	39.3	36.6	34.2	36.5	36.5	38.0	35.1	36.8	38.6	37.6	36.6
Total, Seasonally Adjusted	2,973.2	2,988.3	2,967.5	2,934.2	2,911.2	2,894.7	2,886.8	2,888.9	2,861.6	2,861.6	2,852.0	2,831.6

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

8.2 Bank and Thrift Residential MBS Holdings

In Q2 2022, MBS holdings at banks and thrifts continued to decrease. Like Q1 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 5.7% from Q2 2021 and 6.3% from Q1 2022. Out of the \$2.6 trillion in MBS holdings at banks and thrifts as of Q2 2022, \$2 trillion were GSE pass-throughs and \$369 billion were Ginnie Mae pass-throughs.

Table 9. 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	380.12	109.53	37.62	236.91	76.18	606.91	203.37
2002	832.50	477.57	101.46	20.08	244.98	89.88	702.44	209.66
2003	899.89	536.83	75.11	19.40	236.81	106.86	775.66	206.45
2004	1,011.01	621.73	49.33	20.55	208.18	160.55	879.75	234.31
2005	1,033.77	602.73	35.92	29.09	190.70	211.25	897.06	242.69
2006	1,124.46	659.65	31.13	42.32	179.21	243.28	983.49	223.42
2007	1,149.10	591.34	31.58	26.26	174.27	357.24	971.42	264.59
2008	1,218.77	739.14	100.36	12.93	207.66	259.04	1,088.00	211.73
2009	1,275.52	784.18	155.00	7.53	271.17	212.64	1,161.67	184.07
2010	1,433.38	763.93	163.13	7.34	397.30	181.61	1,233.28	200.09
2011	1,566.88	842.17	214.81	3.28	478.82	167.70	1,359.24	207.64
2012	1,578.86	950.41	242.54	17.16	469.27	138.67	1,430.63	148.22
2013	1,506.60	937.91	231.93	26.11	432.60	114.15	1,363.65	142.94
2014	1,539.32	964.16	230.45	20.33	449.90	104.94	1,409.84	129.48
2015	1,643.56	1,115.40	292.30	11.14	445.39	71.63	1,512.67	130.89
2016	1,736.93	1,254.13	323.46	7.40	419.80	55.60	1,576.07	160.86
1Q17	1,762.38	1,280.63	329.91	7.03	419.34	55.39	1,589.93	172.45
2Q17	1,798.66	1,320.59	335.47	6.38	417.89	53.79	1,635.11	163.55
3Q17	1,838.93	1,364.75	351.86	5.65	418.08	50.45	1,661.84	177.09
4Q17	1,844.15	1,378.53	367.70	4.63	413.97	47.01	1,672.93	171.22
1Q18	1,809.98	1,352.28	360.71	3.92	412.41	41.37	1,635.52	174.46
2Q18	1,806.58	1,345.80	368.88	7.45	414.41	38.92	1,631.65	174.93
3Q18	1,794.39	1,339.73	373.21	2.42	416.20	36.04	1,618.29	176.10
2018	1,814.97	1,361.00	380.43	2.69	416.59	34.69	1,634.99	179.98
1Q19	1,844.99	1,385.10	383.49	3.06	422.18	34.65	1,673.40	171.59
2Q19	1,907.13	1,445.91	407.97	2.90	421.56	36.76	1,727.65	179.47
3Q19	1,975.78	1,506.92	427.10	4.74	428.69	35.44	1,786.74	189.04
2019	1,985.38	1,516.26	426.85	4.62	428.99	35.52	1,796.29	189.09
1Q20	2,107.66	1,621.70	448.34	4.65	443.73	37.57	1,907.02	200.64
2Q20	2,195.19	1,669.93	441.06	5.00	478.11	42.14	1,946.36	248.83
3Q20	2,310.42	1,764.72	415.24	4.43	499.50	41.78	2,040.61	269.81
4Q20	2,520.90	1,928.21	390.66	3.94	548.65	40.10	2,210.22	310.68
1Q21	2,690.92	2,088.41	374.63	4.88	555.35	42.28	2,350.94	339.98
2Q21	2,781.91	2,178.57	352.77	4.77	555.45	43.12	2,431.76	350.15
3Q21	2,858.59	2,239.90	353.12	4.24	565.51	48.95	2,487.32	371.27
4Q21	2,906.04	2,268.19	352.71	4.45	577.98	55.42	2,529.78	376.26
1Q22	2,799.21	2,186.14	368.43	4.04	548.60	60.43	2,476.11	323.10
2Q22	2,623.79	2,035.14	369.20	3.81	523.01	61.83	2,321.17	302.62
Change:								
1Q22-2Q22	-6.3%	-6.9%	-8.4%	0.2%	-5.6%	-4.7%	-6.3%	-6.3%
2Q21-2Q22	-5.7%	-6.6%	-8.8%	4.7%	-20.0%	-5.8%	-4.5%	-13.6%

Source: Inside Mortgage Finance. Notes: Data as of Q2 2022

Table 10. 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	\$495,136.0	\$415,280.0	\$71,947.0	\$7,758.0	\$151.0	18.9%
2	WELLS FARGO & COMPANY	\$249,055.0	\$177,562.0	\$68,239.0	\$3,125.0	\$129.0	9.5%
3	CHARLES SCHWAB	\$193,778.0	\$109,214.0	\$7,006.0	\$77,558.0	\$0.0	7.4%
4	JPMORGAN CHASE & CO.	\$166,937.0	\$83,341.0	\$67,650.0	\$98.0	\$15,848.0	6.4%
5	Truist Bank	\$119,517.0	\$58,899.0	\$13,721.0	\$43,472.0	\$3,425.0	4.6%
6	U.S. BANCORP	\$111,998.70	\$74,187.8	\$23,448.4	\$14,362.4	\$0.1	4.3%
7	CITIGROUP INC.	\$88,468.0	\$80,696.0	\$4,199.0	\$2,754.0	\$819.0	3.4%
8	Silicon Valley Bank	\$72,216.0	\$52,841.0	\$8,614.0	\$10,761.0	\$0.0	2.8%
9	PNC Bank, National Association	\$69,410.6	\$56,515.3	\$4,870.6	\$6,817.9	\$1,206.7	2.6%
10	CAPITAL ONE FINANCIAL CORPORATION	\$65,099.6	\$32,784.9	\$14,056.7	\$17,864.0	\$394.0	2.5%
11	MORGAN STANLEY	\$52,526.0	\$37,767.0	\$8,449.0	\$6,310.0	\$0.0	2.0%
12	BANK OF NEW YORK MELLON CORP	\$44,587.0	\$33,805.0	\$1,452.0	\$6,984.0	\$2,346.0	1.7%
13	USAA Federal Savings Bank	\$44,229.0	\$37,351.0	\$2,244.0	\$4,634.0	\$0.0	1.7%
14	State Street Bank and Trust Company	\$37,413.3	\$16,068.0	\$3,830.0	\$15,526.3	\$1,989.0	1.4%
15	The Huntington National Bank	\$30,194.1	\$12,956.1	\$9,571.6	\$7,514.8	\$151.6	1.2%
16	KeyBank National Association	\$27,174.5	\$4,278.4	\$237.6	\$22,658.5	\$0.0	1.0%
17	TD Bank USA/TD Bank NA	\$24,125.3	\$1,005.3	\$89.5	\$22,989.6	\$41.0	0.9%
18	Citizens Bank, National Association	\$23,774.7	\$13,187.7	\$5,149.5	\$5,437.5	\$0.0	0.9%
19	Ally Bank	\$22,166.0	\$14,142.0	\$1,756.0	\$1,874.0	\$4,394.0	0.8%
20	HSBC Bank USA, National Association	\$21,949.7	\$6,955.3	\$8,307.3	\$6,686.2	\$1.0	0.8%
Total Top 20		\$1,959,755.5	\$1,318,836.8	\$324,838.2	\$285,185.2	\$30,895.4	74.8%

Source: Inside Mortgage Finance. Notes: Data as of Q2 2022.

8.3 Foreign Ownership of MBS

For the month of August 2022, foreign ownership of MBS represents \$1.17 trillion in agency MBS, down approximately \$2 billion from July 2022. Total foreign ownership includes \$535 billion held by foreign private institutions and \$635 billion held by foreign official institutions. The foreign share of the agency MBS Market continues to decline since the beginning of COVID. The pre-Covid peak of approximately 17.5% has fallen all the way to 13.84% in August of 2022.

Figure 36. Foreign Share of Agency MBS Market

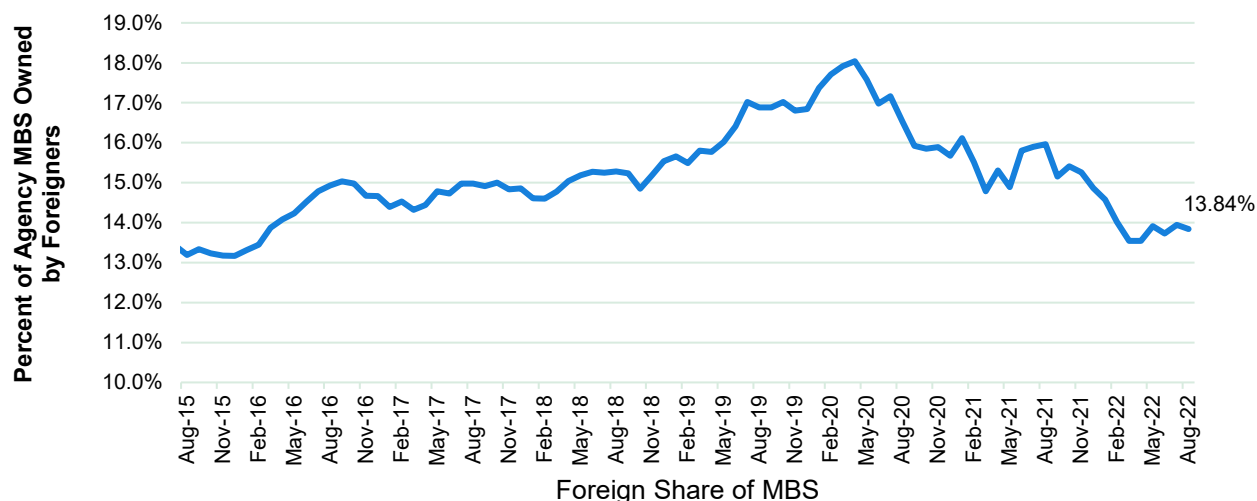
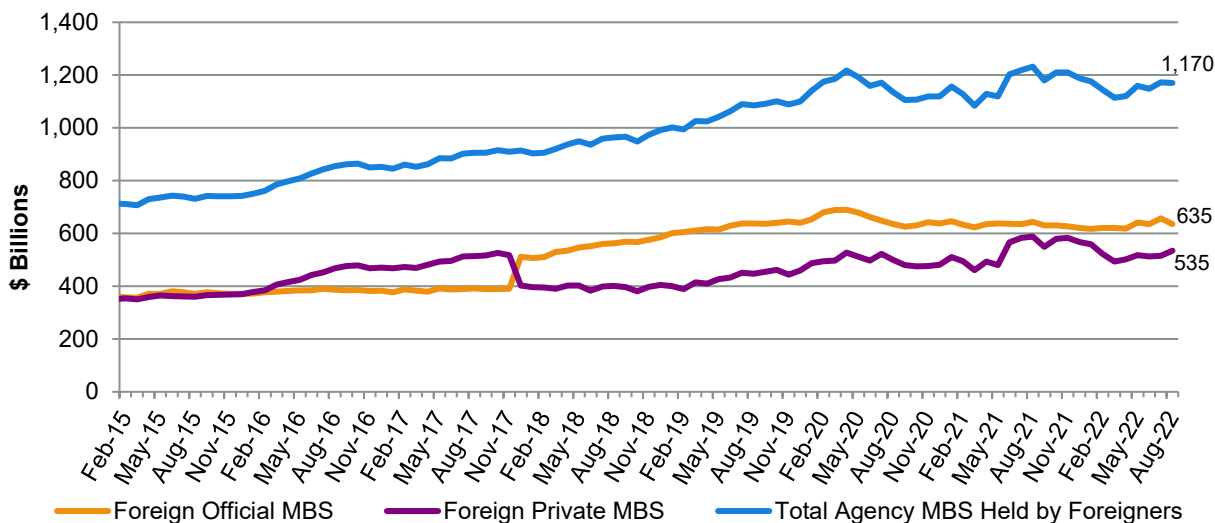


Figure 37. Monthly Foreign MBS Holdings



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 August 2022.

8.4 Foreign Ownership of Agency Debt and Agency MBS

The largest non-US holders of agency MBS are in Japan, China, and Taiwan. As of June 2022, these three own 60% 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 has increased their holdings. Japan has decreased their holdings by \$59.1 billion, Taiwan has decreased their holdings by \$27.3 billion, and China has increased their holdings by \$26.4 billion.

Table 11. All Agency Debt

Country	Level of Holdings (\$ Millions)				Change in Holdings (\$ Millions)			
	9/1/2021	12/1/2021	3/1/2022	6/1/2022	Q3 2021	Q4 2021	Q1 2022	Q2 2022
Japan	310,272	301,979	259,844	252,455	-1,304	-8,293	-42,135	-7,389
China	215,056	202,659	219,553	244,266	-2,802	-12,397	16,894	24,713
Taiwan	246,887	244,375	233,340	222,670	-3,097	-2,512	-11,035	-10,670
Canada	75,674	77,979	73,475	75,998	-5,679	2,305	-4,504	2,523
United Kingdom	43,235	72,486	47,582	65,393	2,378	29,251	-24,904	17,811
Luxembourg	33,115	34,288	33,130	42,207	-4,641	1,173	-1,158	9,077
South Korea	43,021	42,051	40,362	37,934	-412	-970	-1,689	-2,428
Cayman Islands	35,603	35,004	31,795	33,984	-651	-599	-3,209	2,189
Ireland	21,960	21,305	20,589	19,838	121	-655	-716	-751
Switzerland	26,770	19,770	17,261	19,634	2,957	-7,000	-2,509	2,373
Other	183,394	190,886	185,541	192,354	-13,272	7,492	-5,345	6,813
Total	1,234,987	1,242,782	1,162,472	1,206,733	-26,402	7,795	-80,310	44,261

Table 12. Agency MBS

Country	Level of Holdings (\$ Millions)		
	6/1/2021	6/1/2022	YoY Change in Holdings (\$ Millions)
Japan	311,576	252,455	-59,121
China	217,858	244,266	26,408
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
Ireland	21,839	19,838	-2,001
Switzerland	23,813	19,634	-4,179
Other	196,666	192,354	-4,312
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 Q2 2022. Agency MBS as of June 2022. Revised to include top 10 holders of agency debt listed as of June 2022.

9 FIXED INCOME LIQUIDITY INDICATORS

The agency MBS average daily trading volume as of September 2022 was \$247 billion for 2022 YTD, which is down from \$281 billion for calendar year 2021. Compared to August 2022, agency MBS average daily trading volume saw a 9.6% increase MoM. In 2021, average agency MBS was at 2.70%, 25 bps lower than the 2020 average of 2.95%. In 2021, US Treasury turnover finished at 2.96%. Turnover for Corporates remains minimal relative to agency MBS or Treasury turnover.

Figure 38. Average Daily Trading Volume by Sector

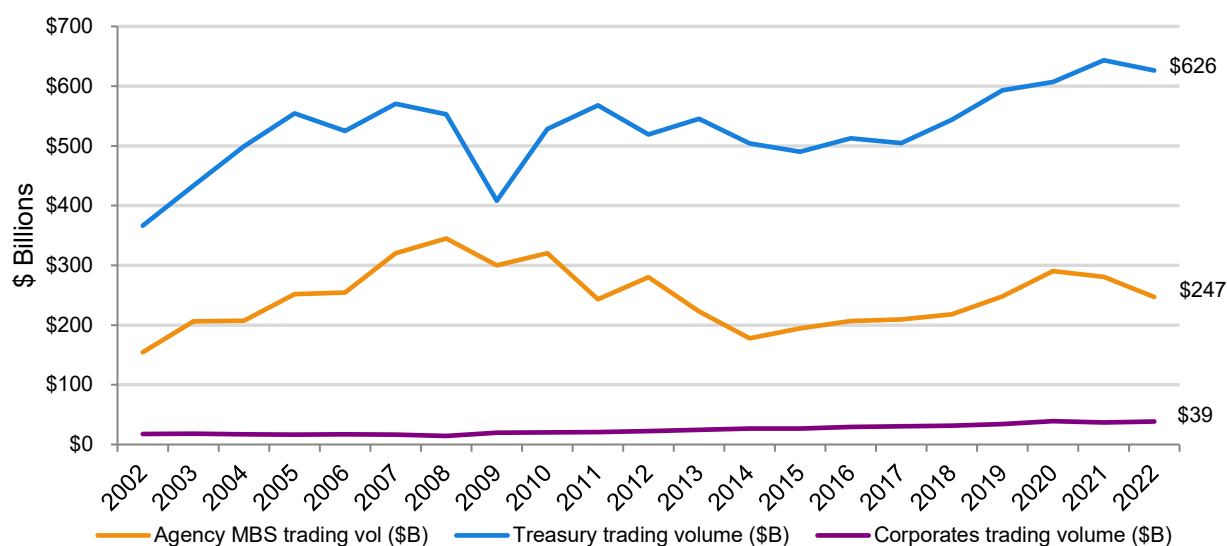
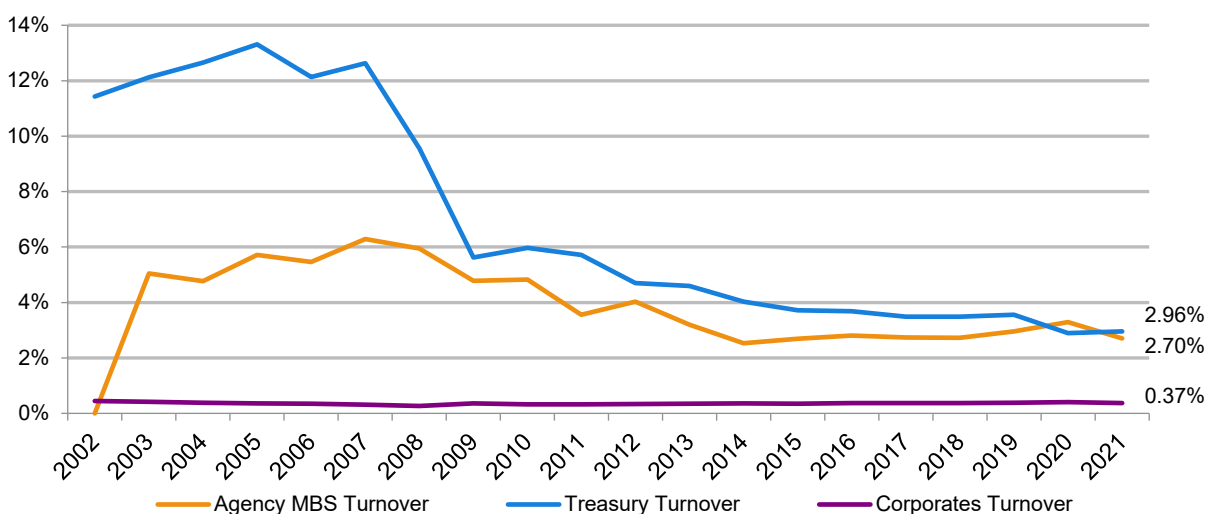


Figure 39. Average Daily Turnover by Sector



Source: SIFMA. Note: Data as of September 2022 for Average Daily Trading Volume by Sector and as of December 2021 for Agency MBS in Average Daily Turnover by Sector

PRIMARY MORTGAGE MARKET

10 AGENCY CREDIT BREAKDOWN

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

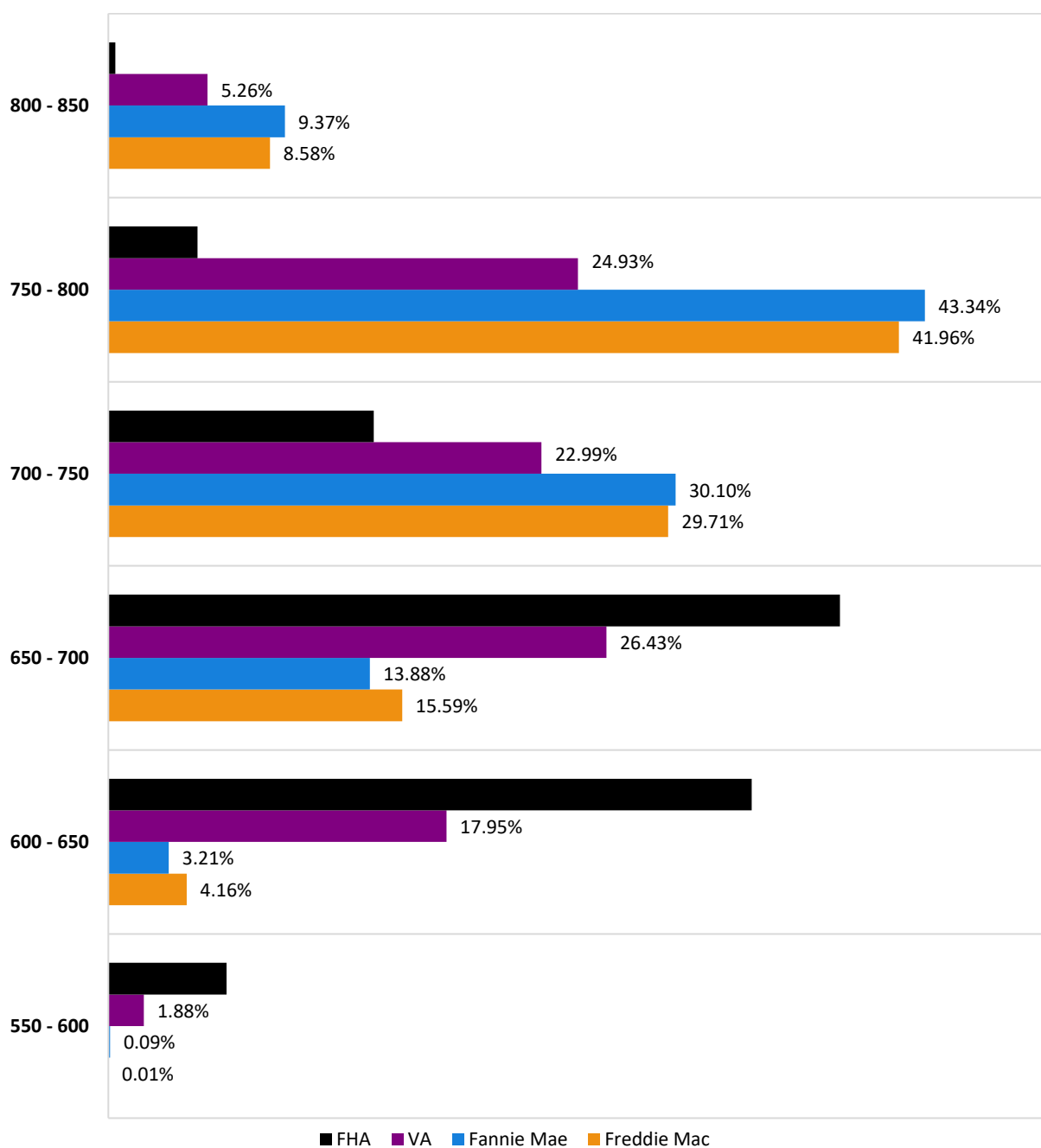
10.1 Credit Scores

Table 13. Share of Loans by FICO Score

Purchase FICO							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	283,920	650	690	741	778	797	731
Fannie	96,643	691	723	759	786	801	751
Freddie	92,806	692	725	760	786	800	752
Ginnie	94,471	625	648	681	730	776	690
Refi FICO							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	89,278	626	657	702	752	785	703
Fannie	30,282	660	693	735	772	795	731
Freddie	30,258	646	677	716	758	787	716
Ginnie	28,738	598	625	655	690	732	660
All FICO							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	373,198	643	681	732	774	796	725
Fannie	126,925	682	716	754	783	800	746
Freddie	123,064	677	711	751	782	798	744
Ginnie	123,209	619	642	674	721	769	683
Purchase FICO: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	94,471	625	648	681	730	776	690
FHA	55,627	620	641	666	698	735	672
VA	34,025	638	671	724	772	795	719
Other	4,819	638	660	694	732	765	697
Refi FICO: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	28,738	598	625	655	690	732	660
FHA	17,069	590	616	643	670	698	644
VA	11,633	617	644	678	721	761	683
Other	36	634	658	694	750	750	698
All FICO: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	123,209	619	642	674	721	769	683
FHA	72,696	610	634	661	692	728	665
VA	45,658	631	661	709	762	791.3	710
Other	4,855	638	660	694	732	765	697

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

Figure 40. FICO Distributions by Agency



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

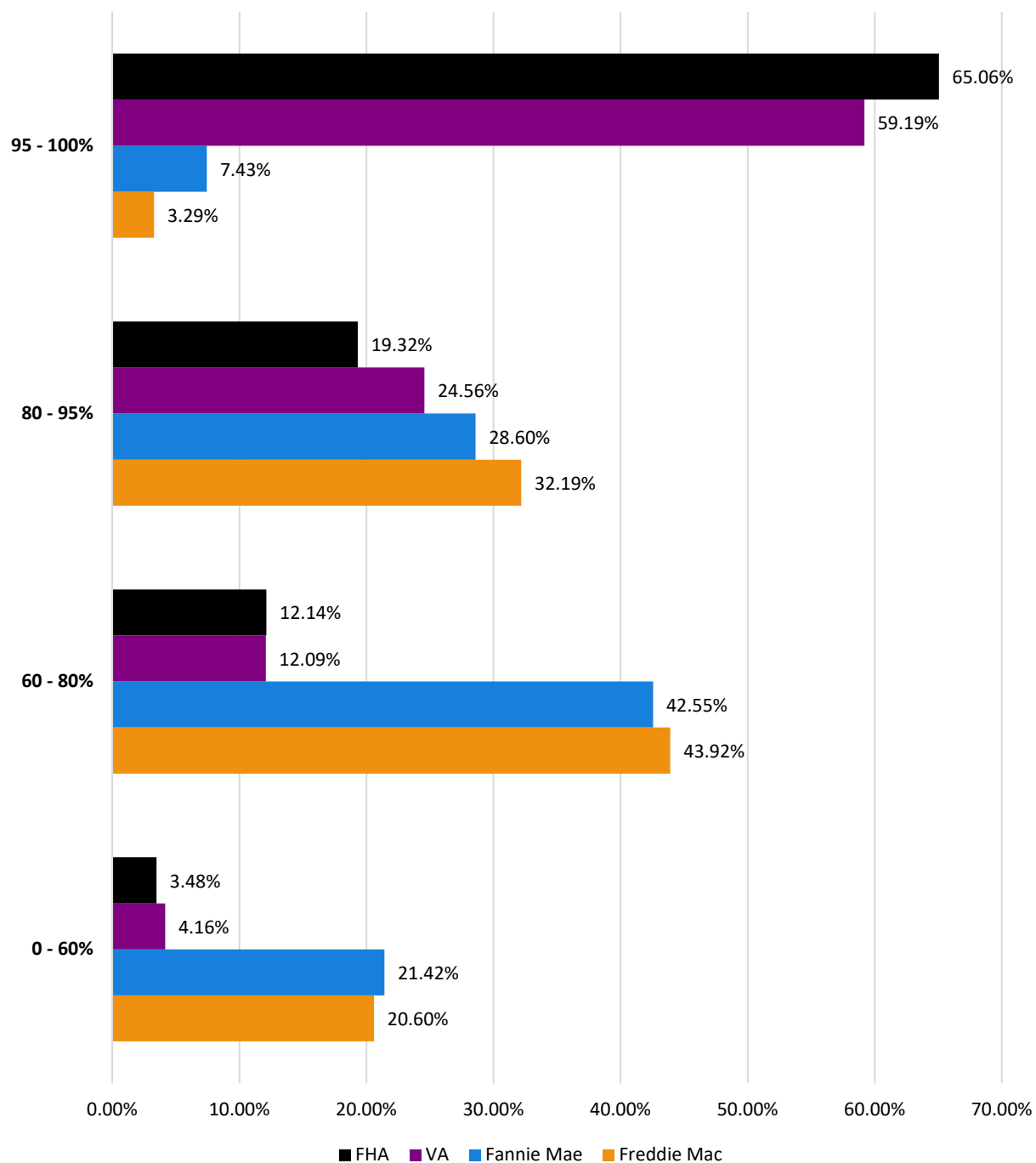
10.2 Loan-to-Value (LTV)

Table 14. Share of Loans by LTV

Purchase LTV							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	284,203	65	80	90.76	98	100	86
<i>Fannie</i>	96,731	58	75	80	95	95	80
<i>Freddie</i>	92,845	58	75	80	95	95	80
<i>Ginnie</i>	94,627	90	98.03	98.19	100	100	96
Refi LTV							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	89,387	40	55	69	80	82	65
<i>Fannie</i>	30,284	34	49	60	72	80	59
<i>Freddie</i>	30,258	36	50	63	74	80	60
<i>Ginnie</i>	28,845	59	71	81	84	90	77
All LTV							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	373,590	54	72	81	96	98	81
<i>Fannie</i>	127,015	48	66	80	90	95	75
<i>Freddie</i>	123,103	49	66	80	90	95	75
<i>Ginnie</i>	123,472	75	88	98	100	100	92
Purchase LTV: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	94,627	90	98	98	100	100	96
<i>FHA</i>	55,742	92	97	98	98	98	96
<i>VA</i>	34,050	85	100	100	100	102	96
<i>Other</i>	4,835	94	99	101	101	101	98
Refi LTV: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	28,845	59	71	81	84	90	77
<i>FHA</i>	17,162	56	68	78	81	81	73
<i>VA</i>	11,647	64	76	88	90	100	83
<i>Other</i>	36	54	71	93	99	100	83
All LTV: Ginnie Mae Breakdown By Source							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
<i>All</i>	123,472	75	88	98	100	100	92
<i>FHA</i>	72,904	73	81	98	98	98	91
<i>VA</i>	45,697	76	90	100	100	102	93
<i>Other</i>	4,871	93	99	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 41. Loan-to Value by Agency



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

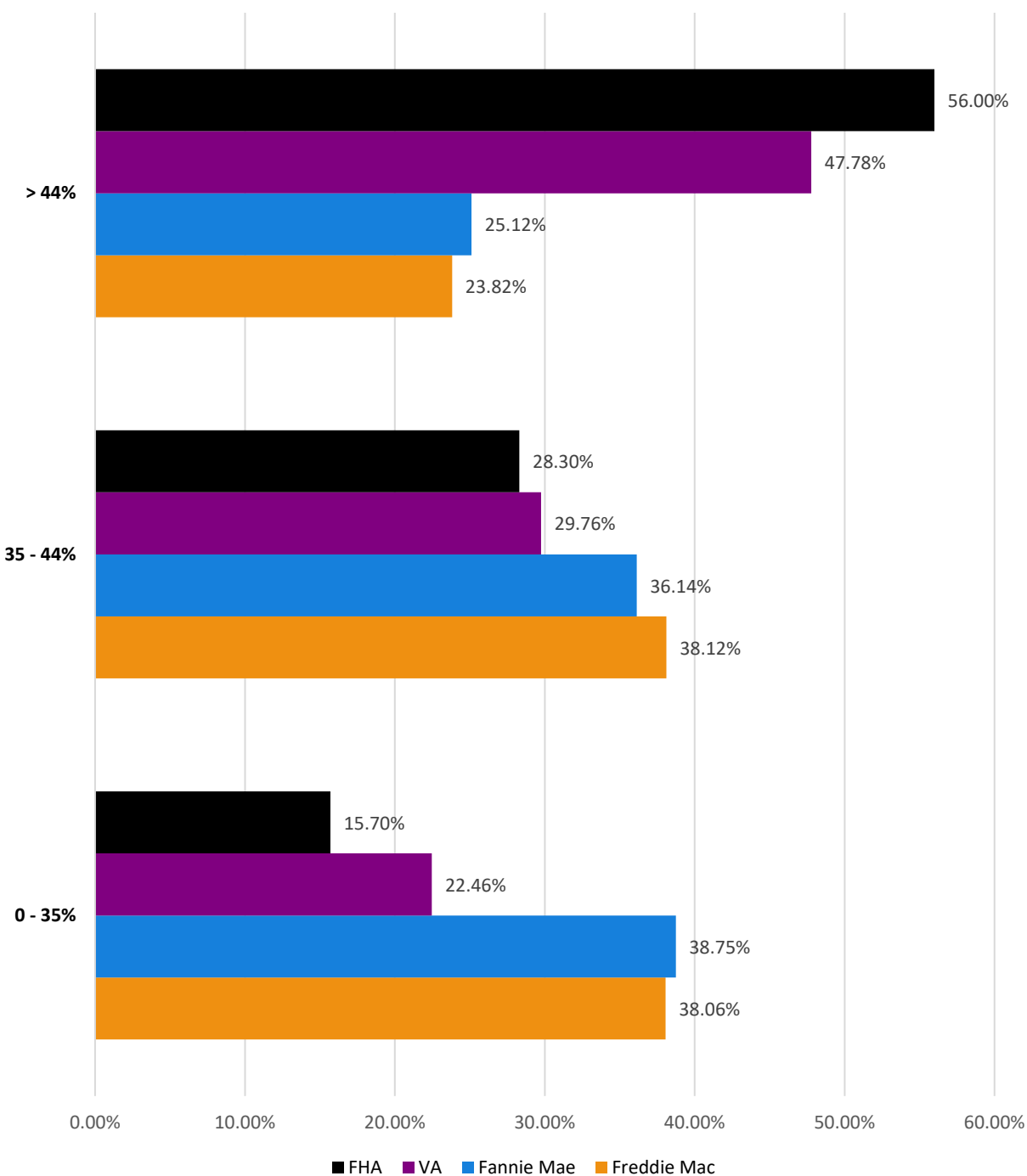
10.3 Debt-to-Income (DTI)

Table 15. Share of Loans by DTI

<i>Purchase DTI</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	283,728	26	33	41	47	50	39
Fannie	96,731	24	31	39	45	48	37
Freddie	92,845	24	31	39	44	48	37
Ginnie	94,152	31	38	45	51	55	44
<i>Refi DTI</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	89,189	25	32	40	45	50	39
Fannie	30,284	23	30	38	43	47	37
Freddie	30,258	25	32	40	44	48	38
Ginnie	28,647	28	35	43	50	54	42
<i>All DTI</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	372,917	26	33	41	46	50	39
Fannie	127,015	24	31	39	45	48	37
Freddie	123,103	24	31	39	44	48	37
Ginnie	122,799	30	37	44	51	55	43
<i>Purchase DTI: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	94,152	31	38	45	51	55	44
FHA	55,727	33	40	46	52	55	45
VA	33,595	29	37	44	51	56	43
Other	4,830	27	31	36	40	42	35
<i>Refi DTI: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	28,647	28	35	43	50	54	42
FHA	17,101	29	36	44	50	55	43
VA	11,516	28	34	42	49	54	41
Other	30	26	29	34	37	40	33
<i>All DTI: Ginnie Mae Breakdown By Source</i>							
Names	Number of Loans	P10	P25	Median	P75	P90	Mean
All	122,799	30	37	44	51	55	43
FHA	72,828	32	39	46	51	55	44
VA	45,111	29	36	44	50	55	43
Other	4,860	27	31	36	40	42	35

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

Figure 42. Debt-to Income by Agency



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

10.4 High LTV Loans: Ginnie Mae vs. GSEs

The share of high-LTV agency loans going to borrowers with FICO scores above 750 has decreased by approximately 10% between periods July 2020 – September 2020 and July 2022 - September 2022. The share of borrowers with DTIs below 35% decreased by approximately 26% over the same period. From the period between July 2020 – September 2020 to the period between July 2022 – September 2022, the share of high-LTV loans increased in the Ginnie Mae guarantee book by approximately 9% and in the GSE portfolios by approximately 122%. 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 68.21% of its issuances between July 2022 and September 2022 having LTVs of 95 or above, compared to 22.44% for the GSEs.

Table 16. Share of Loans with LTV > 95

	Ginnie Mae	GSE	All
Jul 2020 - Sep 2020	62.79%	10.11%	22.12%
Jul 2022 - Sep 2022	68.21%	22.44%	41.97%

Table 17. Agency Market Share by DTI and FICO for Loans with LTV > 95 (Jun 2020-Aug 2020)

FICO						
DTI	<650	650-700	700-750	≥750	NA	All
<35	1.90%	4.53%	6.43%	10.97%	0.24%	24.07%
35-45	3.99%	9.10%	10.46%	11.21%	0.09%	34.84%
≥45	3.59%	7.83%	7.00%	5.83%	0.05%	24.30%
NA	1.70%	2.66%	2.51%	2.82%	7.10%	16.79%
All	11.18%	24.12%	26.40%	30.83%	7.48%	100.00%

Table 18. Agency Market Share by DTI and FICO for Loans with LTV > 95 (Jun 2022-Aug 2022)

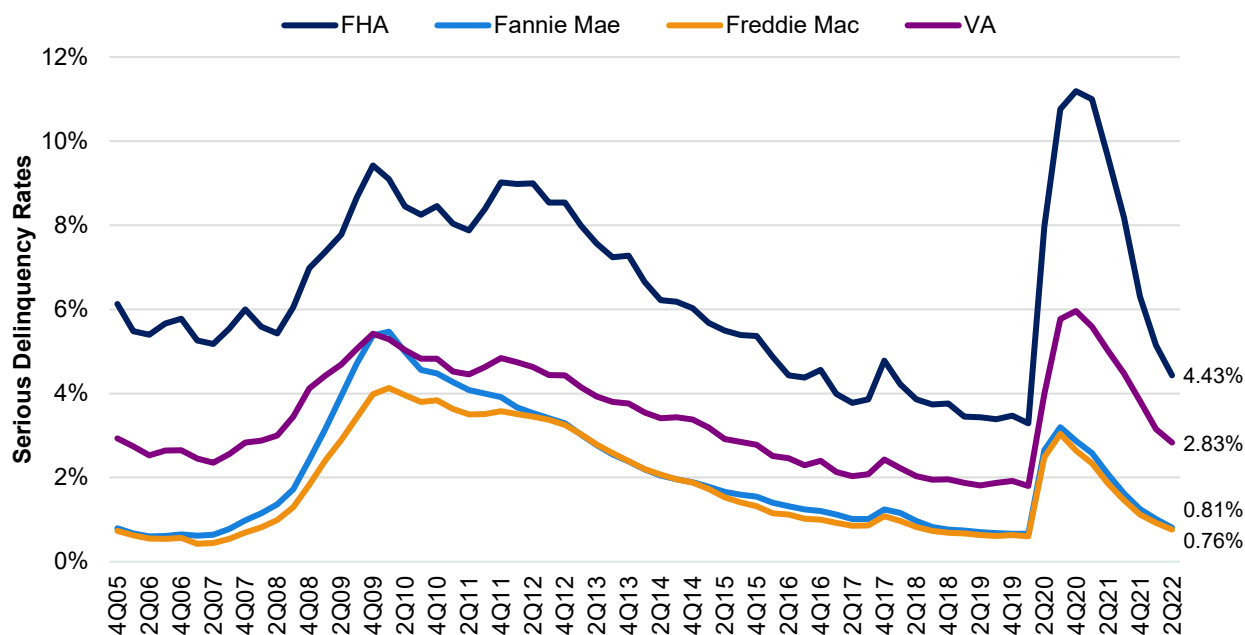
FICO						
DTI	<650	650-700	700-750	≥750	NA	All
<35	2.43%	3.75%	4.51%	7.20%	0.04%	17.93%
35-45	6.53%	9.53%	9.75%	10.49%	0.04%	36.35%
≥45	8.58%	14.07%	11.40%	9.82%	0.06%	43.94%
NA	0.40%	0.31%	0.22%	0.23%	0.63%	1.79%
All	17.94%	27.66%	25.89%	27.74%	0.77%	100.00%

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

10.5 Serious Delinquency Rates

Serious delinquency rates for single-family GSE, FHA, and VA loans all continued to fall sharply in Q2 2022. From Q1 2022 to Q2 2022, Fannie and Freddie serious delinquencies decreased 20 and 16 bps, respectively, or 20% and 17% 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 72 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 43. 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 Q2 2022.

10.6 Credit Box

The first-time homebuyer share for agency purchase loans was 52.0% in September 2022, up slightly from 51.8% in September 2021. Ginnie Mae and Freddie Mac's first-time homebuyer shares, 68.2% and 42.1% respectively in September, have remained relatively flat YoY. Fannie Mae's first-time homebuyer share has declined 4.9% YoY. Table 20 shows that based on mortgages originated in September 2022, the average GSE first-time homebuyer was more likely than an average repeat buyer to have a lower credit score, and higher LTVs. While Ginnie Mae's first-time homebuyers were more likely than their repeat buyers to have lower loan amounts and credit scores, other components of the credit profile were very similar.

Figure 44. First-Time Homebuyer Share: Purchase Only Loans

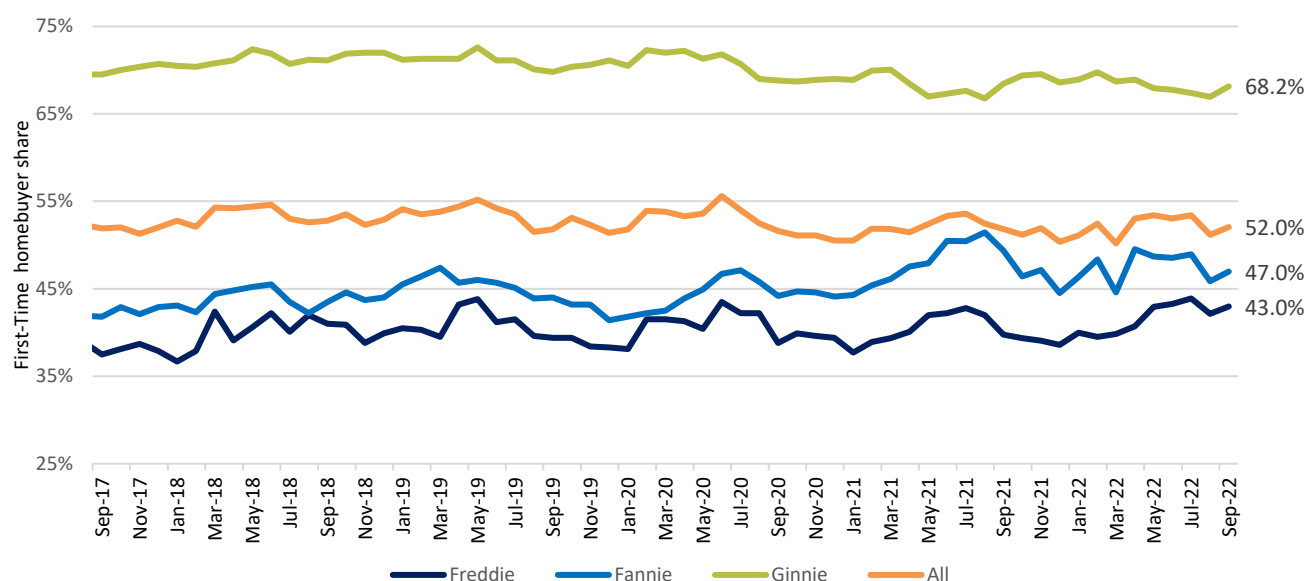


Table 19. Agency First-Time Homebuyer Share Summary

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

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

Within the Ginnie Mae purchase market, 76.8% of FHA loans, 52.0% of VA loans, and 82.6% of other loans represent financing for first-time home buyers in September 2022 which all increased compared to the month prior. Table 21 shows that based on mortgages originated in September 2022, the credit profile of the average VA first-time homebuyer was significantly different than the average VA repeat buyer. The average VA first-time homebuyer took out 15% smaller loans, had a 21-point lower credit score, 4.5% higher LTVs and were 20 basis points higher in interest. FHA's first-time homebuyers are much more like their repeat buyers, with only 4.9% smaller loans, 2.4% higher LTVs, and have very similar interest rates. FHA's repeat buyers tend 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. For FHA, the opposite is true, in part because FHA lending is one of few credit options for borrowers with lower credit scores.

Figure 45. First-time Homebuyer Share: Ginnie Mae Breakdown

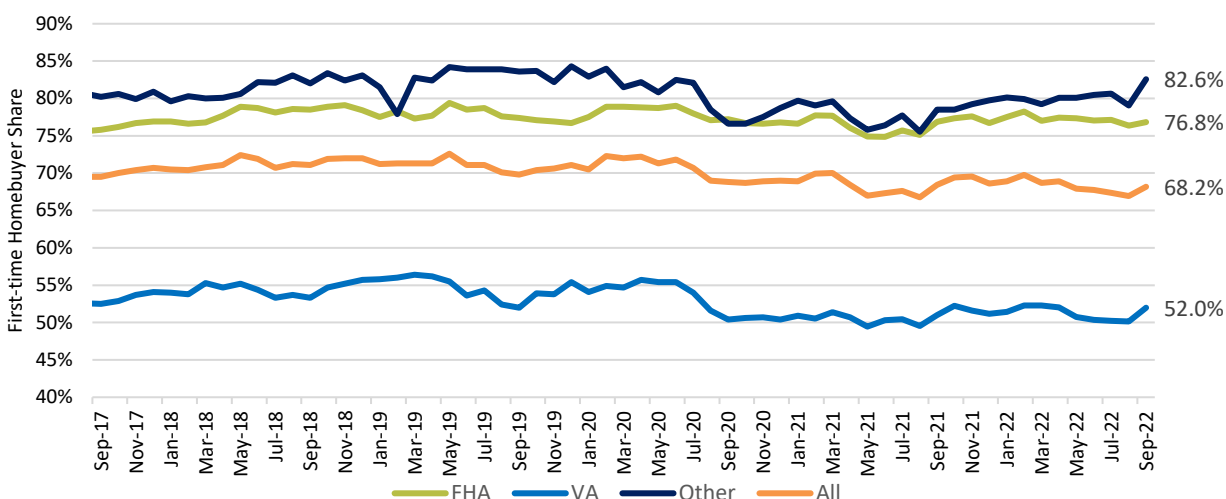


Table 21. Ginnie Mae First-Time Homebuyer Share Breakdown Summary

	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	671.4	668.0	708.6	729.9	696.1	691.2	683.1	702.9
LTV (%)	96.7	94.3	98.8	94.3	98.2	98.6	97.4	94.4
DTI (%)	44.7	45.5	42.8	44.1	35.2	35.5	43.6	44.4
Loan Rate (%)	5.3	5.3	5.2	5.0	5.3	5.2	5.3	5.1

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 September 2022 was 732, which represents a 7 point decrease since the start of 2022 and a decline of 14 points YoY. The trend in declining median FICO scores has been much more pronounced for refinance loans. Ginnie median FICO scores have declined from 691 in September 2021 to 655 in September 2022, a 36 point drop. As of September 2022, average FICOs for refinances have dropped for Fannie Mae and Freddie Mac borrowers YoY 32 and 37 points respectively.

Figure 46. FICO Scores for All Loans

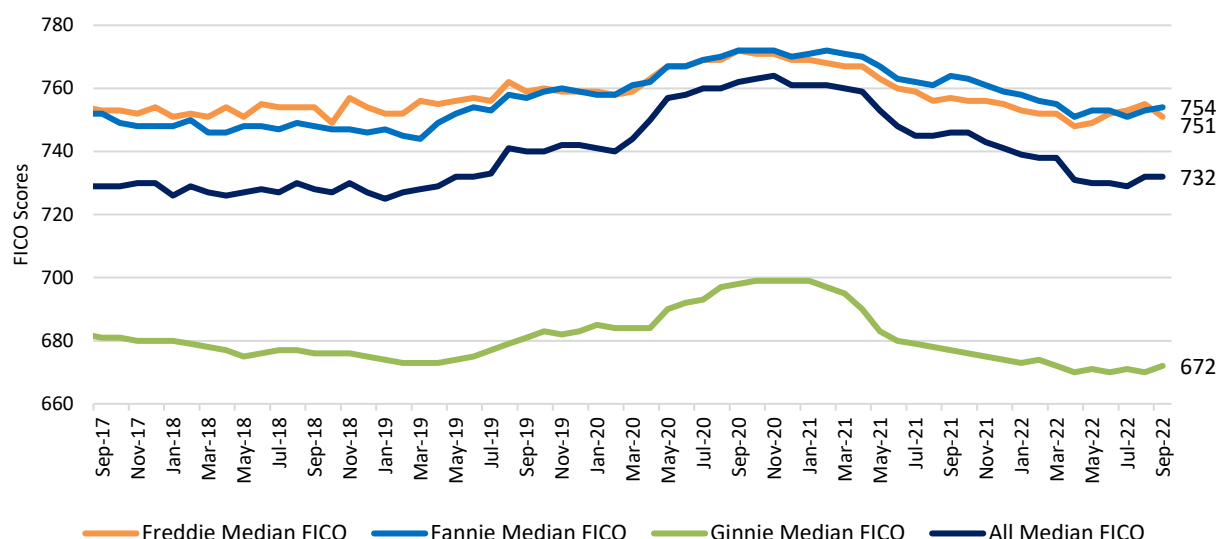


Figure 47. FICO Scores for Purchase Loans

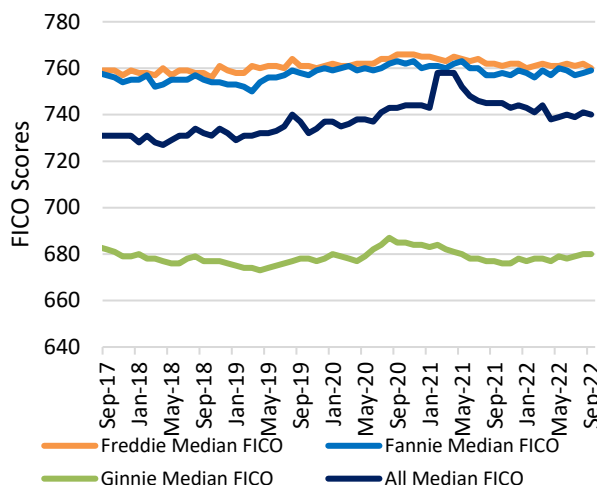
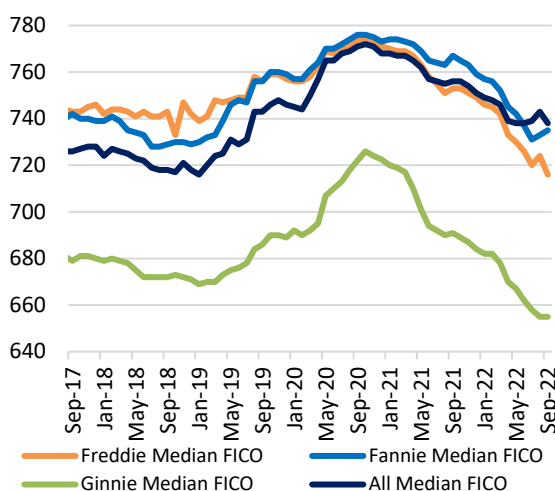


Figure 48. FICO Scores for Refinance Loans



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

In September 2022, the median LTV for Ginnie Mae loans was 98.2% compared to 80% for the GSEs. Freddie Mac and Fannie Mae each saw increases in median LTV YoY, whereas Ginnie Mae LTVs remained relatively flat over that same period. Median LTV for Freddie Mac increased 9.6% YoY and increased 14.3% YoY for Fannie Mae. Since early 2022, DTIs have been increasing for Ginnie Mae, Freddie Mac, and Fannie Mae and are all higher relative to September 2021.

Figure 49. LTV Ratio for All Loans

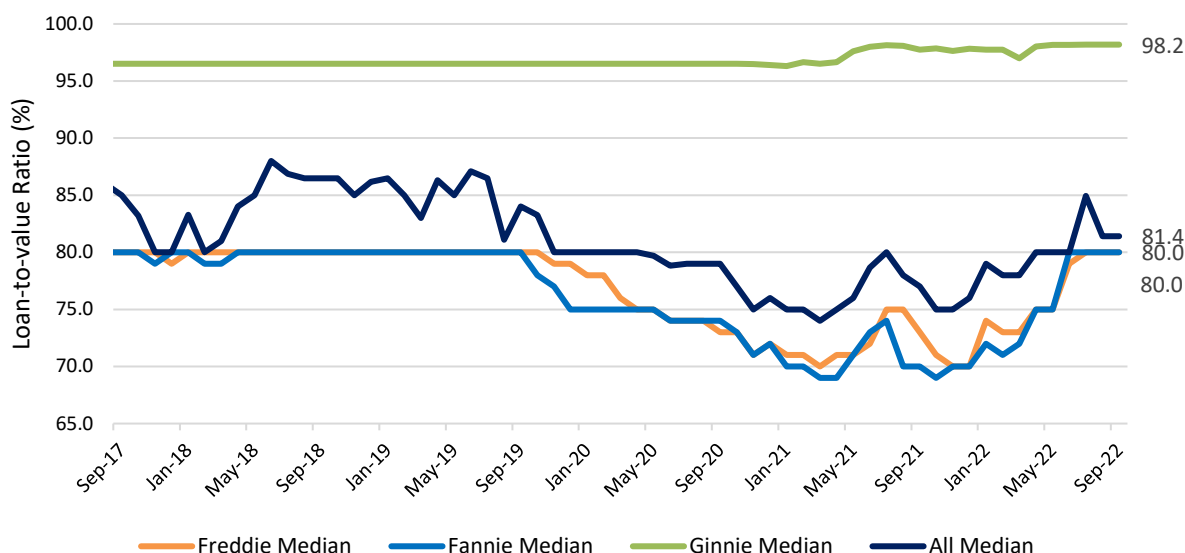
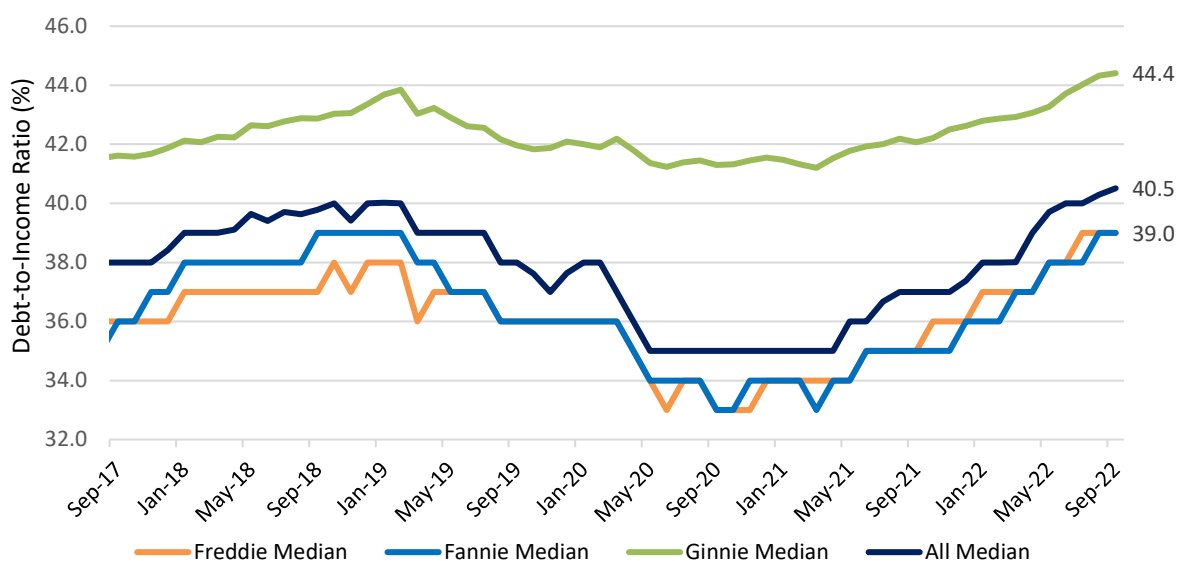


Figure 50. DTI Ratio for All Loans



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

11 FORBEARANCE TRENDS

As of the end of June 2022, 129,734 Ginnie Mae loans were in forbearance. This represents a 5.6% decrease MoM. 3,074 of loans in forbearance were removed from MBS pools and 126,660 loans in forbearance still actively remain in pools. Most liquidated loans (2,209) were FHA and within that subset, 1,402 of those loans were originated by non-banks.

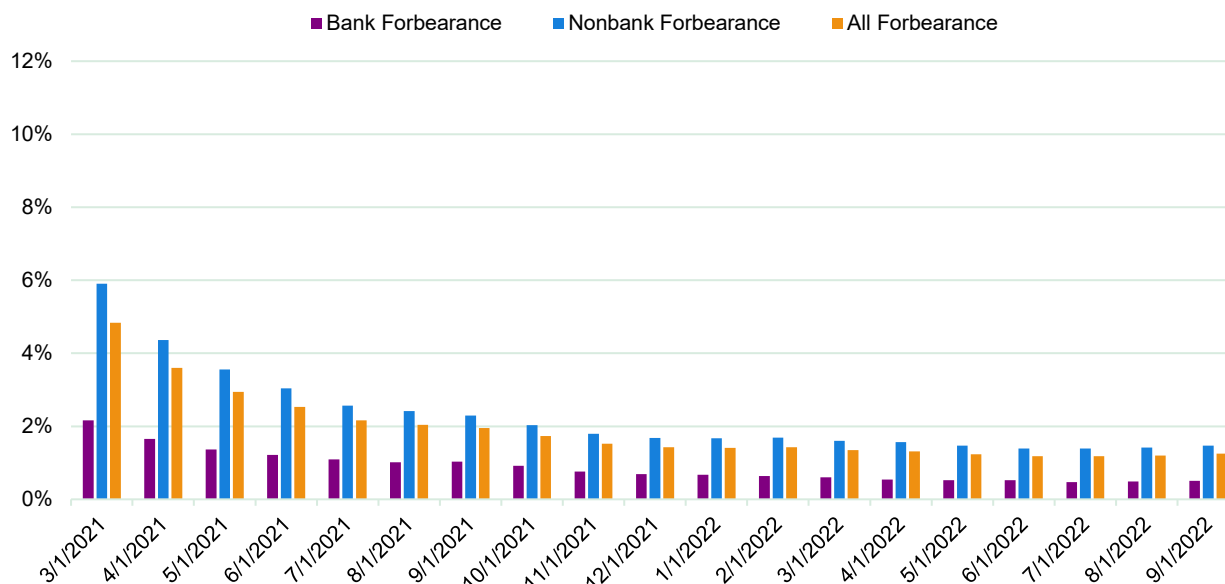
Table 22. Forbearance Snapshot

<i>All Loans in Forbearance – June 2022</i>						
	FICO	Note	Current Principal	First Time	Purchase	Loan Count
Ginnie Bank	657	3.3	\$187,386.55	77.2	71.4	129,734
Nonbank	673	3.6	\$139,477.52	79.5	81.5	13,510
FHA	656	3.3	\$193,254.76	76.9	70.6	116,224
Bank	654	3.4	\$184,105.90	80.0	76.2	94,080
Nonbank	668	3.7	\$133,454.30	83.1	85.2	10,264
VA	652	3.4	\$190,572.75	79.7	75.5	83,816
Bank	667	3.1	\$234,876.20	63.6	52.4	24,998
Nonbank	684	3.4	\$183,424.45	64.3	67.6	2,412
Nonbank	665	3.0	\$239,897.11	63.5	51.2	22,586
<i>Loans in Forbearance and Removed from Pools – June 2022</i>						
	FICO	Note	Current Principal	First Time	Purchase	Loan Count
Ginnie Bank	659	3.7	\$147,022.21	73.3	68.5	3,074
Nonbank	667	4.3	\$99,293.00	72.6	73.6	1,003
FHA	657	3.6	\$175,468.10	73.5	67.2	2,071
Bank	653	3.9	\$137,821.70	76.8	73.6	2,209
Nonbank	662	4.4	\$96,581.25	75.1	72.6	807
VA	651	3.7	\$170,186.06	77.4	73.9	1,402
Bank	670	3.3	\$206,214.36	58.0	51.0	607
Nonbank	682	3.8	\$137,212.56	57.9	70.2	125
Nonbank	668	3.2	\$220,728.30	58.0	47.8	482
<i>Loans in Forbearance that Remain in Pools – June 2022</i>						
	FICO	Note	Current Principal	First Time	Purchase	Loan Count
Ginnie Bank	657	3.3	\$188,310.06	77.2	71.5	126,660
Nonbank	673	3.6	\$142,924.55	79.9	81.9	12,507
FHA	656	3.3	\$193,508.91	77.0	70.7	114,153
Bank	654	3.4	\$185,141.26	80.1	76.3	91,871
Nonbank	669	3.7	\$137,414.16	83.5	85.9	9,457
VA	652	3.4	\$190,957.22	79.7	75.5	82,414
Bank	666	3.1	\$235,564.16	63.7	52.4	24,391
Nonbank	684	3.4	\$186,851.06	64.6	67.5	2,287
Nonbank	665	3.0	\$240,316.50	63.6	51.2	22,104

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

The current share of Ginnie Mae loans in forbearance stands at 1.25% as of the end of September 2022, approximately 4.1% lower than observed as of the end of August 2022. With the forbearance rate for Ginnie Mae collateral having been just 0.25% in March of 2020, prior to lockdown and the introduction of borrowers' right to forbearance under the CARES Act, the current rates remain approximately five times higher than the forbearance rate just prior to the pandemic. The rate of convergence to pre-pandemic rates has continued to slow down in September 2022.

Figure 51. Share of Ginnie Mae Loans in Forbearance.



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

Figure 52. Number of Loans Removed from Pools: Non-bank

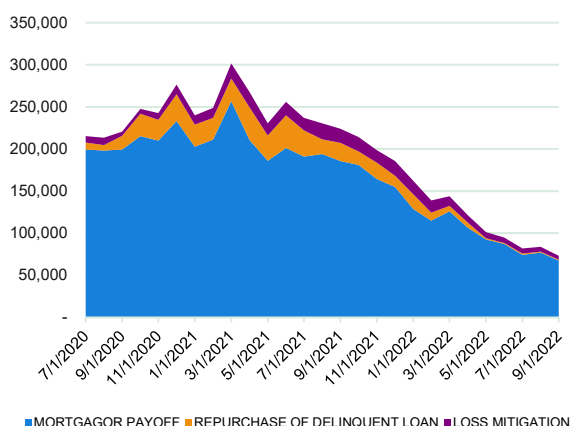
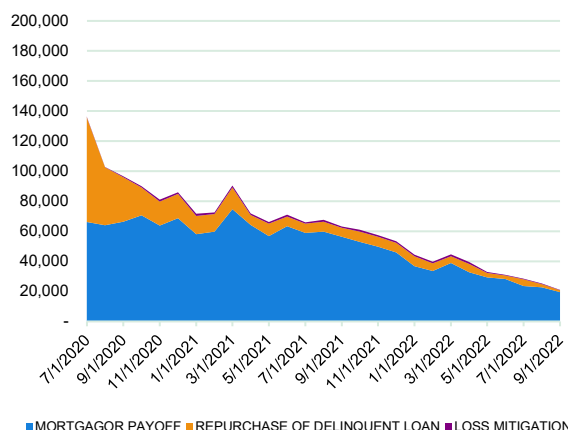


Figure 53. Number of Loans Removed from Pools: Bank



Source: Recursion. Note: Data as of September 2022. Beginning with the May 2022 GMAR Report, Credit Unions will be classified as Banks based on the updated Recursion data source.

Of the Ginnie Mae loans that were liquidated from pools due to mortgage delinquency (these counts include all delinquent buyouts, regardless of forbearance status), a higher share of the loans were FHA versus VA loans (top charts, orange areas). Liquidated loans across FHA and VA are now more likely to have coupons less than 3.5% (bottom charts: “Number of Loans Removed from Pools by Coupon”). In September 2022, the number of loans repurchased due to delinquency decreased 39% to 1,586 for FHA and decreased 33% to 344 for VA loans.

Figure 54. Number of Loans Removed from

Pools: FHA

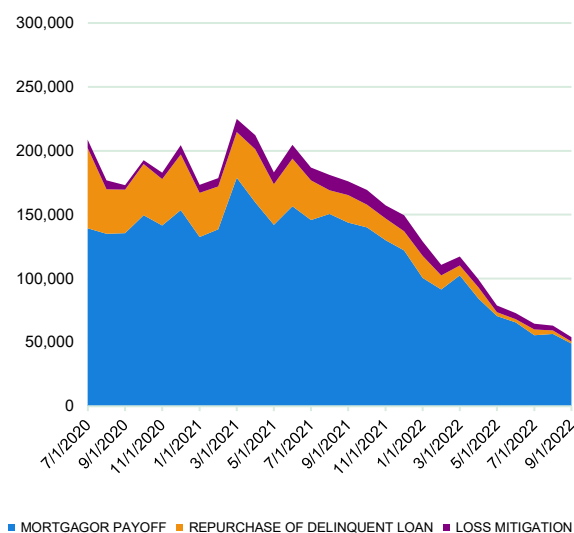


Figure 55. Number of Loans Removed

from Pools: VA

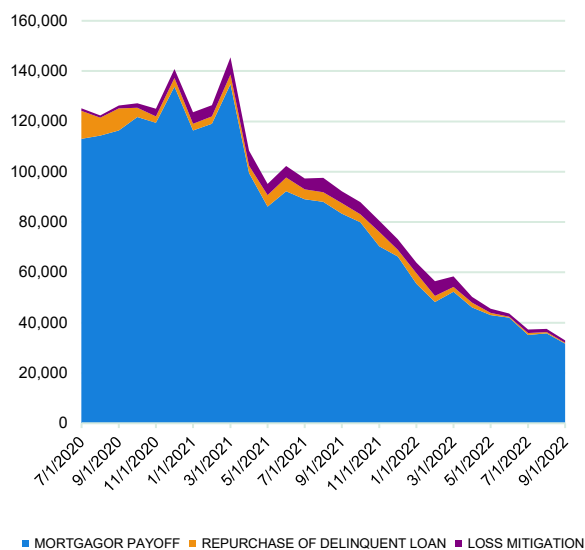
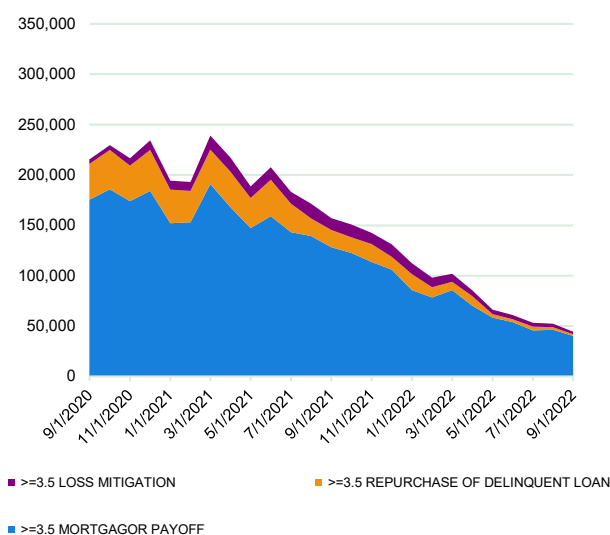
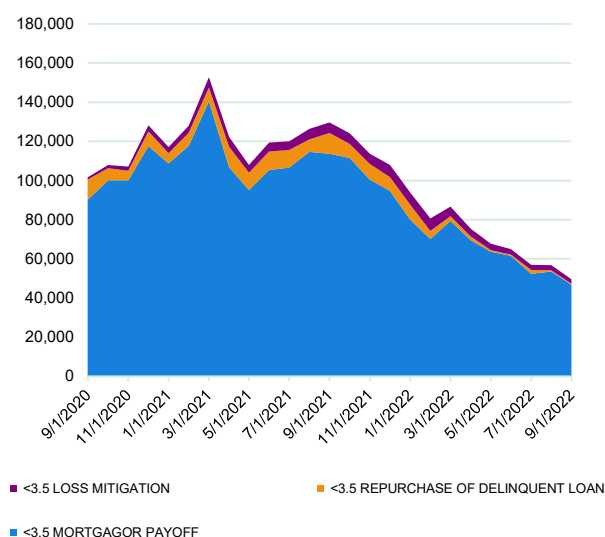


Figure 56. Number of Loans Removed from Pools by Coupon:



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

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 83.5% 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 September 2022, over half (50.93%) 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

Rank	MSR Holder	UPB (\$ millions)	Share	Cumulative Share
1	DBA FREEDOM HOME MOR	\$251,551,717,948	12.1%	12.06%
2	PENNYMAC LOAN SERVIC	\$238,674,967,937	11.4%	23.50%
3	LAKEVIEW LOAN SERVIC	\$238,349,564,718	11.4%	34.92%
4	NATIONSTAR MORTGAGE,	\$116,615,820,831	5.6%	40.51%
5	WELLS FARGO BANK, NA	\$114,702,748,205	5.5%	46.01%
6	ROCKET MORTGAGE, LLC	\$102,758,249,037	4.9%	50.93%
7	CARRINGTON MORTGAGE	\$79,157,855,544	3.8%	54.72%
8	NEWREZ LLC	\$66,123,821,468	3.2%	57.89%
9	CALIBER HOME LOANS,	\$52,700,507,102	2.5%	60.42%
10	UNITED WHOLESALE MOR	\$49,899,300,441	2.4%	62.81%
11	U. S. BANK, NA	\$49,412,543,240	2.4%	65.18%
12	PLANET HOME LENDING,	\$38,191,975,385	1.8%	67.01%
13	MORTGAGE RESEARCH CE	\$36,678,148,758	1.8%	68.77%
14	LOANDEPOT.COM,LLC	\$35,129,161,275	1.7%	70.45%
15	NAVY FEDERAL CREDIT	\$28,984,108,455	1.4%	71.84%
16	AMERIHOME MORTGAGE C	\$27,664,901,906	1.3%	73.17%
17	GUILD MORTGAGE COMPA	\$21,726,773,911	1.0%	74.21%
18	THE MONEY SOURCE INC	\$21,020,744,606	1.0%	75.22%
19	TRUIST BANK	\$20,353,731,431	1.0%	76.19%
20	CROSSCOUNTRY MORTGAG	\$17,612,967,545	0.8%	77.04%
21	NEW AMERICAN FUNDING	\$16,793,957,616	0.8%	77.84%
22	VILLAGE CAPITAL & IN	\$15,346,240,115	0.7%	78.58%
23	MOVEMENT MORTGAGE,LL	\$15,062,713,488	0.7%	79.30%
24	CMG MORTGAGE, INC.	\$14,567,852,394	0.7%	80.00%
25	RUSHMORE LOAN MANAGE	\$14,084,334,437	0.7%	80.67%
26	IDAHO HOUSING AND FI	\$13,849,249,240	0.7%	81.33%
27	CITIZENS BANK N.A.	\$13,742,480,653	0.7%	81.99%
28	MIDFIRST BANK	\$11,897,955,243	0.6%	82.56%
29	PHH MORTGAGE CORPORA	\$11,808,730,972	0.6%	83.13%
30	CARDINAL FINANCIAL C	\$11,169,670,987	0.5%	83.67%

Source: Deloitte. Data as of October 2022.

13 AGENCY NONBANK ORIGINATORS

Total agency non-bank origination experienced an increase in September, up approximately 4% since last month. This increase in non-bank origination share was driven primarily by Freddie Mac (non-bank origination share up 8% MoM). The Ginnie Mae non-bank share rose to 88.4% as of September 2022 and has remained consistently higher than the GSEs since September 2021 (89.1%). Ginnie Mae non-bank origination share of refinance mortgage loans has continued to drive Ginnie Mae's relatively higher non-bank origination share. GSE origination volume of purchase mortgage loans has been the primary driver in the MoM decline of agency non-bank origination share.

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

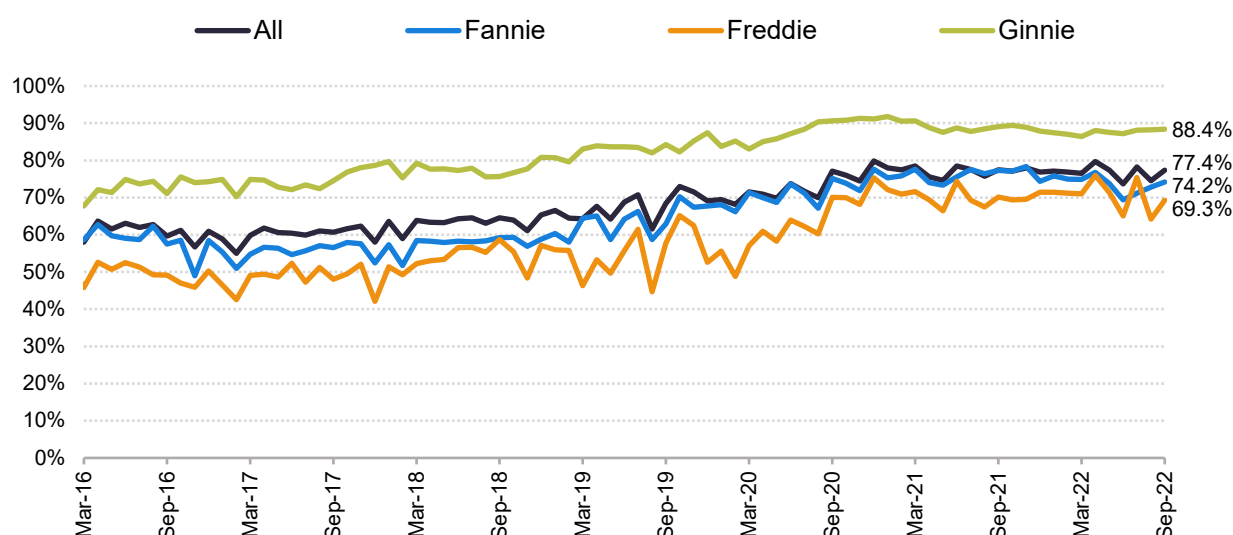


Figure 58. Nonbank Origination Share: Purchase Loans

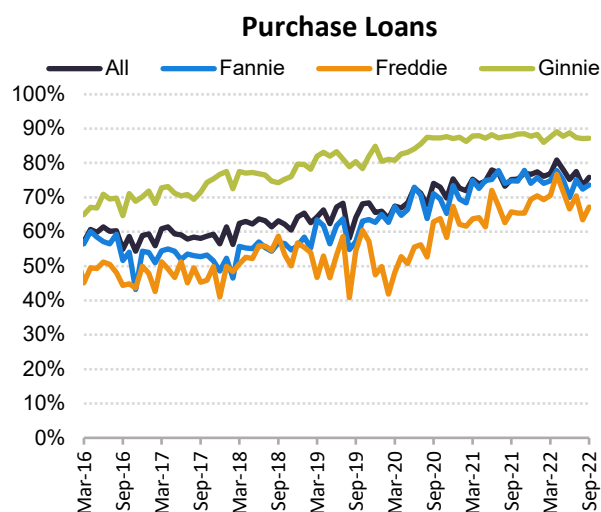
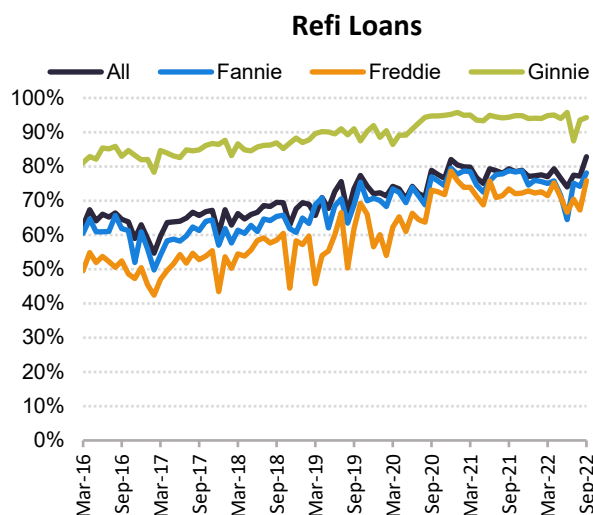


Figure 59. Nonbank Origination Share: Refi Loans



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

Ginnie Mae's total non-bank originator share remained relatively stable in September 2022. As discussed in the [Highlights](#) section, Ginnie Mae continues to have a very high proportion of nonbank originations, with a rate of 88.3% in September 2022.

Figure 60. Ginnie Mae Nonbank Originator Share (All, Purchase, Refi)

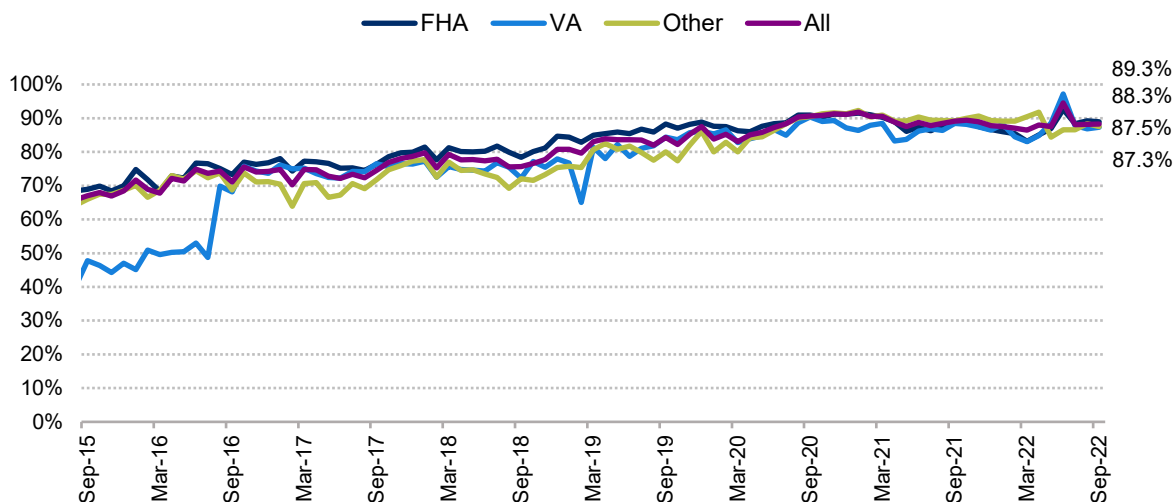


Figure 61. Ginnie Mae Nonbank Share:

Purchase Loans

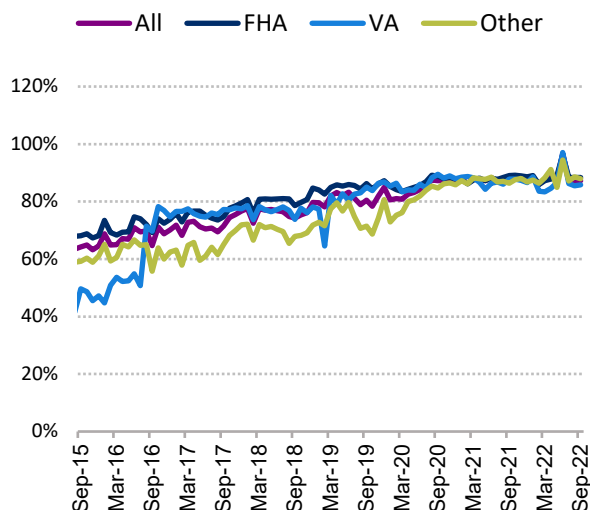
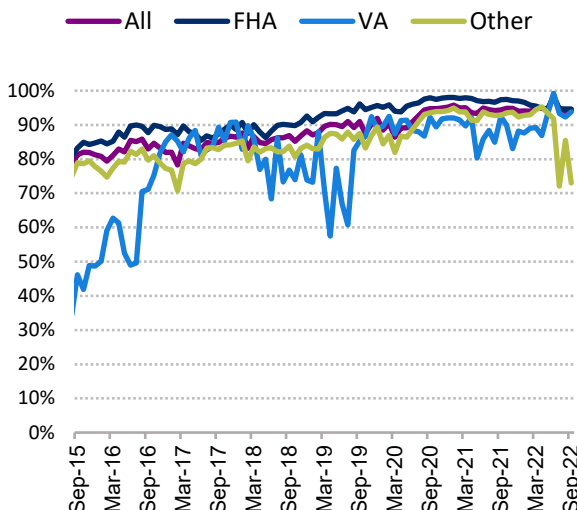


Figure 62. Ginnie Mae Nonbank Share:

Refi Loans



Sources: Recursion. Notes: Data as of September 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 1 FICO score point from August 2022 to September 2022. The agency median FICO decreased by 3 FICO score points to 729 MoM.

Figure 63. Agency FICO: Bank vs. Nonbank

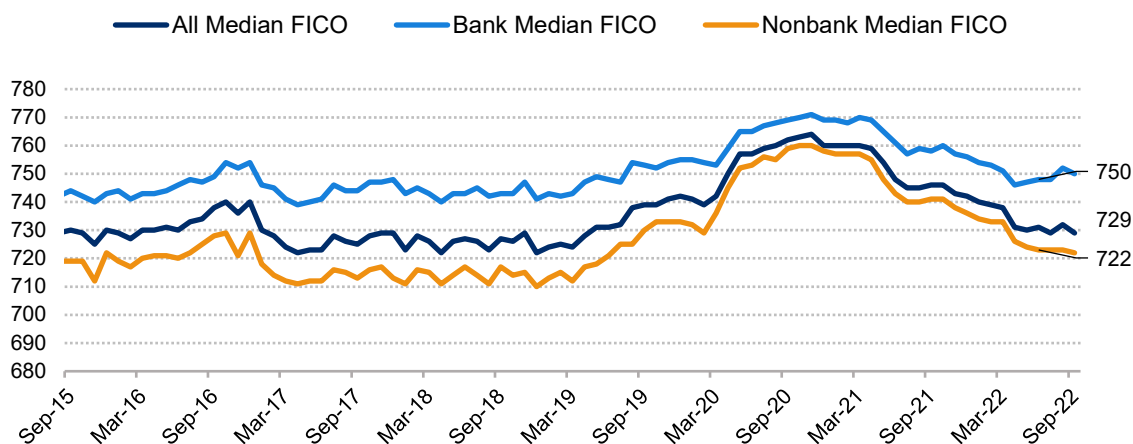


Figure 64. GSE FICO: Bank vs. Nonbank

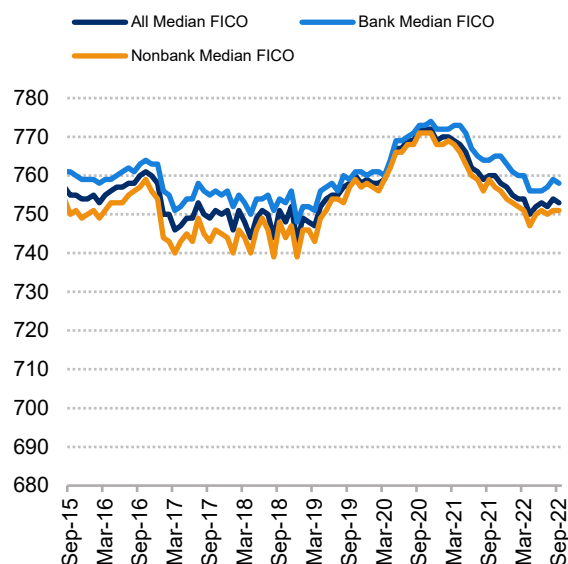
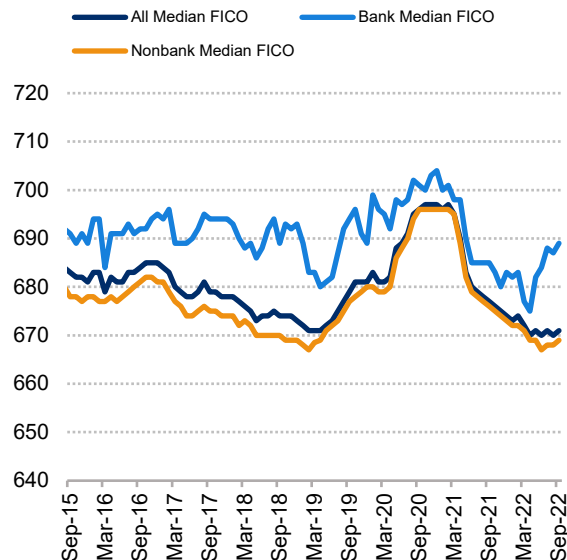


Figure 65. Ginnie Mae FICO: Bank vs. Nonbank



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

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

Figure 66. GSE LTV: Bank vs. Nonbank

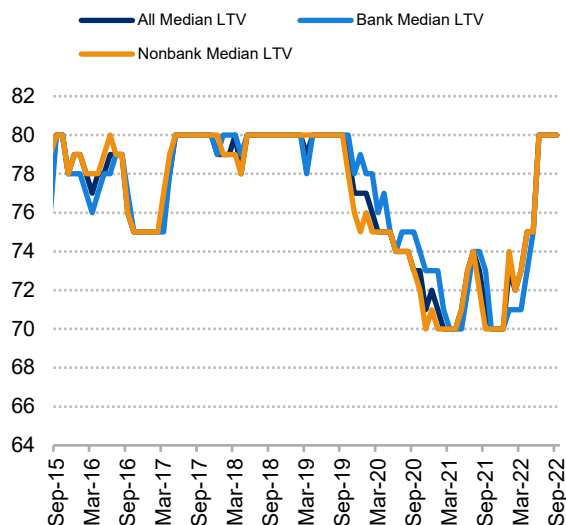


Figure 67. Ginnie Mae LTV: Bank vs. Nonbank

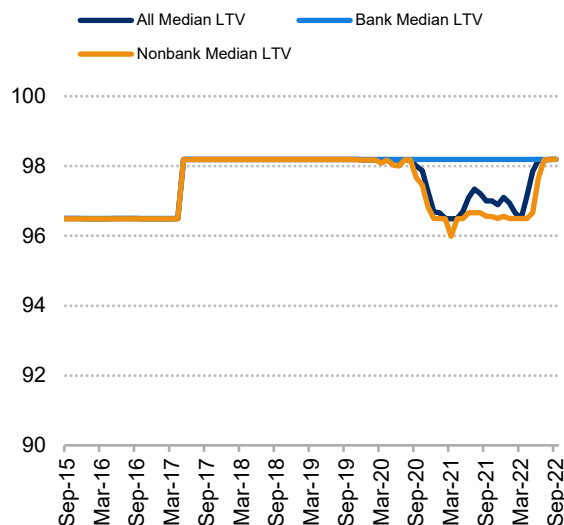


Figure 68. GSE DTI: Bank vs. Nonbank

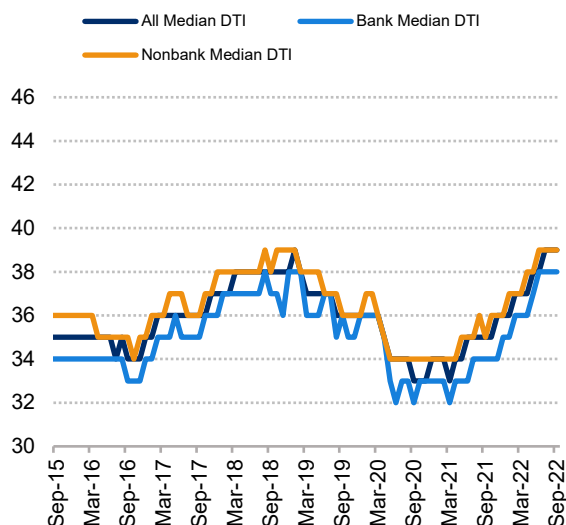
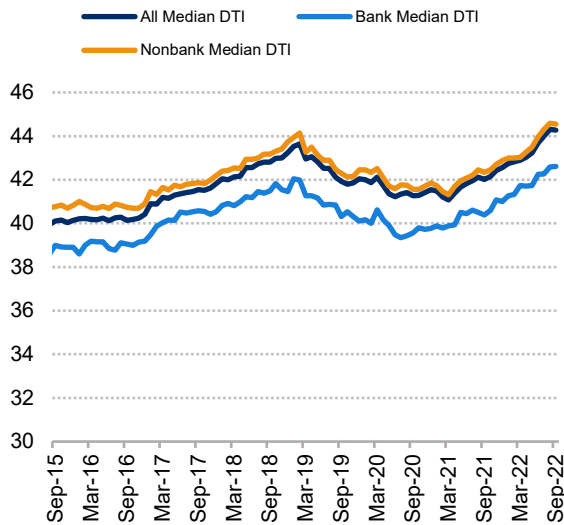


Figure 69. Ginnie Mae DTI: Bank vs. Nonbank



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

In September 2022, the median FICO score for Ginnie Mae bank originators increased by 2 points and non-bank originators increased by 1 point MoM. The median FICO for all Ginnie originations increased to 671 MoM. The gap between banks and non-banks is most apparent in VA lending (38-point spread).

Figure 70. Ginnie Mae FICO Score:

Bank vs. Nonbank

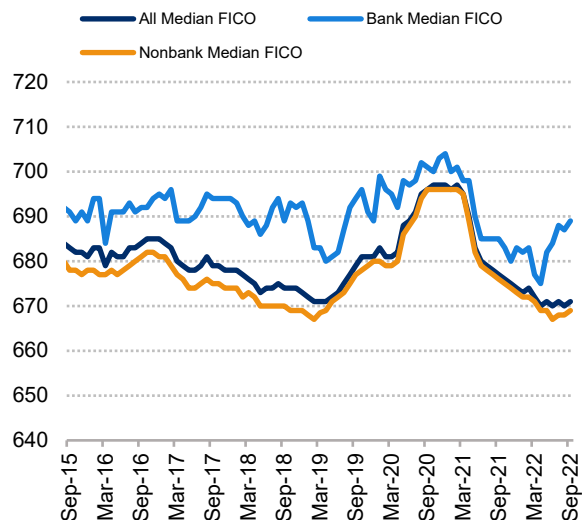


Figure 71. Ginnie Mae FHA FICO Score:

Bank vs. Nonbank

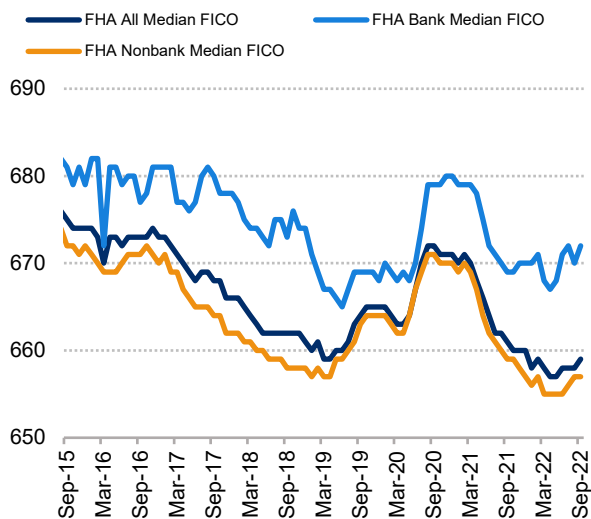


Figure 72. Ginnie Mae VA FICO Score:

Bank vs. Nonbank

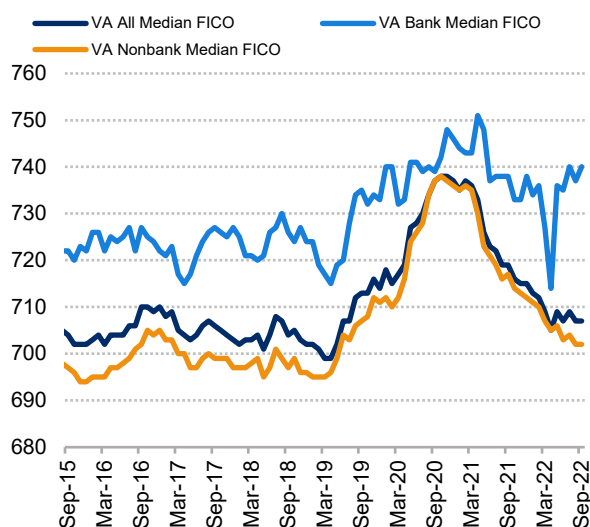
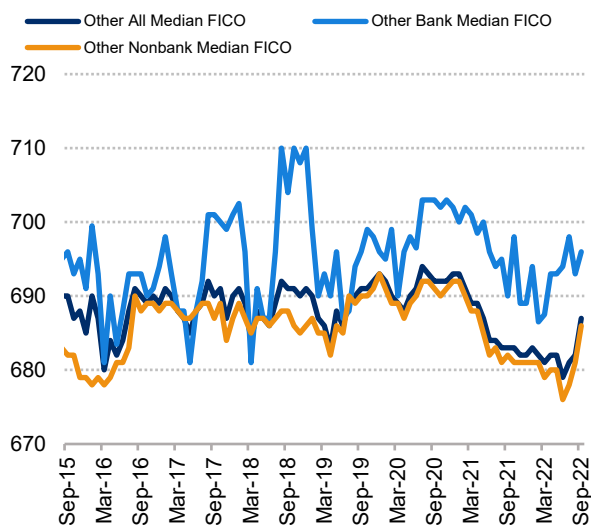


Figure 73. Ginnie Mae Other FICO Score:

Bank vs. Nonbank



Sources: Recursion. Notes: Data as of September 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 74. Ginnie Mae DTI:

Bank vs. Nonbank

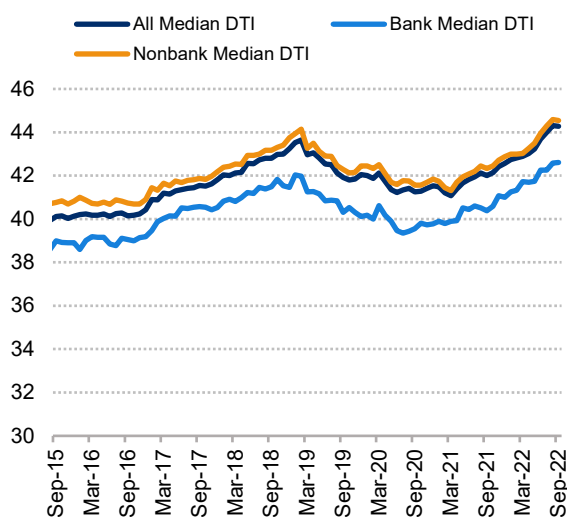


Figure 75. Ginnie Mae FHA DTI:

Bank vs. Nonbank

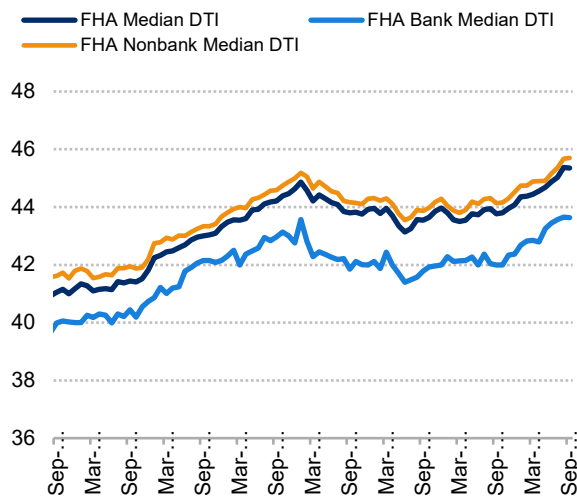


Figure 76. Ginnie Mae VA DTI:

Bank vs. Nonbank

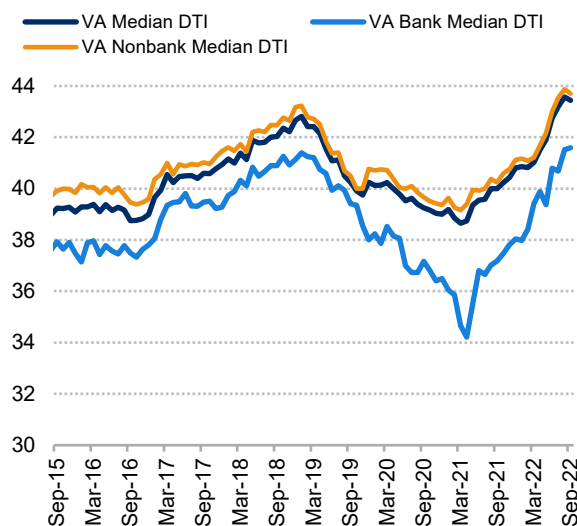
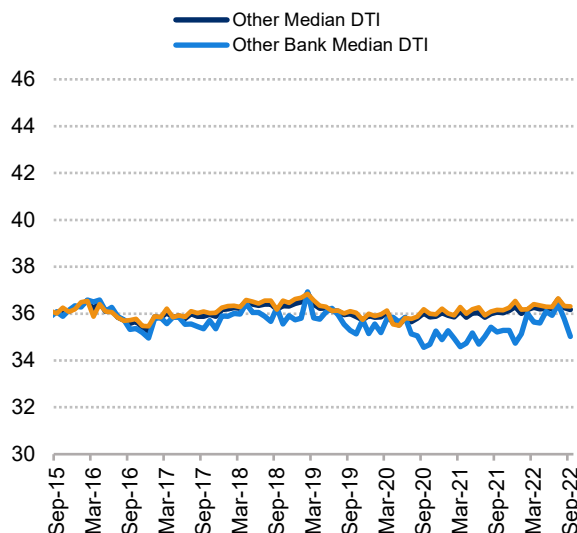


Figure 77. Ginnie Mae Other DTI:

Bank vs. Nonbank



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

U.S. HOUSING MARKET

14 HOUSING AFFORDABILITY

14.1 Housing Affordability – Home Price Appreciation

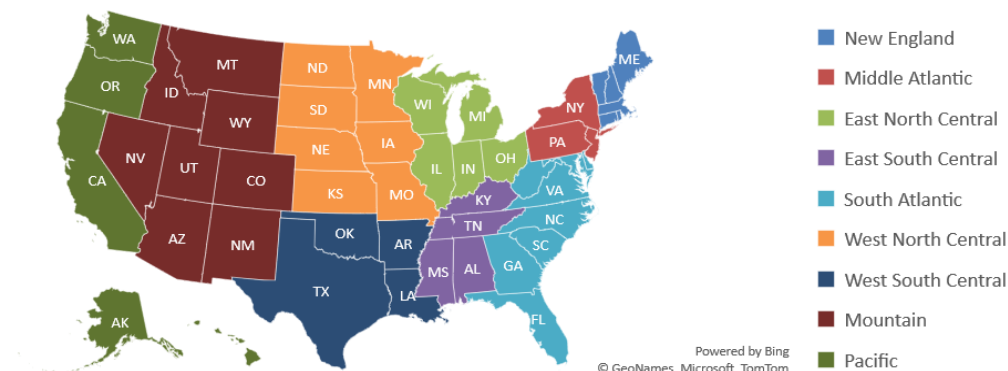
Home prices are beginning to decelerate, with Compound Annual Growth Rate (CAGR) for HPI at 18.8% between March 2020 and July 2022. Over that same period, the Mountain region has experienced the greatest home price appreciation (22.7% CAGR), while in the West North Central region, increases in home values have remained the slowest (15.7% CAGR).

Table 24. Regional HPI Trend Analysis

U.S. Census Subregion	New England	Middle Atlantic	East North Central	East South Central	South Atlantic	West North Central	West South Central	Mountain	Pacific	National
2000 to Peak CAGR	10.5%	8.7%	4.0%	4.5%	8.7%	5.0%	4.3%	8.3%	13.9%	7.1%
Peak to Trough CAGR	-8.4%	-5.3%	-9.8%	-5.5%	-14.2%	-5.7%	-2.1%	-15.6%	-17.9%	-10.4%
Trough to Pandemic CAGR	3.7%	3.5%	4.7%	4.4%	5.9%	4.6%	5.1%	8.3%	8.1%	5.4%
Pandemic CAGR	18.6%	17.0%	16.2%	19.8%	22.3%	15.7%	18.4%	22.7%	18.0%	18.8%
12-Month Period of Max HPI Growth During Pandemic	7-2020 to 6-2021	7-2020 to 6-2021	7-2020 to 6-2021	4-2021 to 3-2022	6-2021 to 5-2022	7-2020 to 6-2021	6-2021 to 5-2022	9-2020 to 8-2021	8-2020 to 7-2021	8-2020 to 7-2021
Max 12-Month Period Change, During Pandemic	21.9%	18.1%	17.2%	21.3%	23.9%	16.2%	19.7%	25.6%	21.9%	19.3%
12-Month Period of Max HPI Growth, Pre-Pandemic	7-2020 to 6-2021	7-2020 to 6-2021	7-2020 to 6-2021	4-2021 to 3-2022	6-2021 to 5-2022	7-2020 to 6-2021	6-2021 to 5-2022	9-2020 to 8-2021	1-2004 to 12-2004	8-2020 to 7-2021
Max 12-Month HPI Growth, Pre-Pandemic	21.9%	18.1%	17.2%	21.3%	23.9%	16.2%	19.7%	25.6%	22.3%	19.3%

Figure 78. FHFA.US Census Subregions as defined by the US Census Bureau.

US Census Subregions



Source: HPI data from FHFA.US Census Subregions as defined by the US Census Bureau. Notes: HPI data as of May 2022. Peak refers to the month when HPI reached the highest level for each state/US during the housing boom period, ranging from 2005 to 2008. Trough represents the month when HPI fell to the lowest level for each region/US after the housing bust, ranging from 2009 to 2012. Pandemic Period refers to March 2020 to the current period, 3/2022. $CAGR = (End\ Value/Starting\ Value)^{(1/n)} - 1$

S&P's CoreLogic Case-Shiller US National Housing Price Index's September 27, 2022, reporting July data indicated that home price gains slowed across the country. In fact, a 15.8% annual gain in July was reported, down from 18.1% compared to the month prior. This latest reported MoM HPI appreciation value suggests continued increases at a slower rate as home prices start to show signs of deceleration.

Table 25. Home Price Trends by State

State	2000 to Peak	Peak to Trough	Trough to Current	YOY	Current HPI % Above Peak
National	59.5%	-21.2%	117.3%	11.7%	71.3%
AK	66.9%	-5.4%	53.2%	7.5%	45.0%
AL	41.6%	-15.1%	90.5%	13.3%	61.7%
AR	39.8%	-11.1%	81.1%	12.8%	60.9%
AZ	110.2%	-49.5%	239.4%	18.5%	71.4%
CA	144.8%	-47.1%	172.5%	12.6%	44.3%
CO	32.2%	-10.3%	179.5%	14.5%	150.7%
CT	72.8%	-19.7%	53.3%	10.8%	23.1%
DC	163.1%	-11.7%	123.6%	5.2%	97.4%
DE	88.3%	-23.5%	71.5%	11.7%	31.1%
FL	130.0%	-46.5%	205.8%	21.2%	63.6%
GA	35.9%	-27.1%	154.9%	16.8%	85.8%
HI	139.0%	-27.1%	129.1%	14.0%	67.1%
IA	27.8%	-5.4%	71.5%	9.7%	62.2%
ID	73.3%	-32.2%	252.6%	15.0%	138.9%
IL	49.9%	-23.8%	62.2%	9.6%	23.6%
IN	19.0%	-8.6%	100.4%	11.7%	83.1%
KS	31.0%	-7.7%	86.9%	11.2%	72.5%
KY	28.9%	-5.4%	85.6%	11.4%	75.5%
LA	51.6%	-6.7%	58.5%	8.2%	47.9%
MA	69.9%	-18.3%	98.2%	10.8%	61.9%
MD	126.4%	-26.4%	68.0%	9.9%	23.6%
ME	72.0%	-12.4%	107.5%	15.3%	81.8%
MI	18.4%	-31.6%	137.2%	11.0%	62.2%
MN	52.6%	-23.0%	101.9%	8.9%	55.4%
MO	39.2%	-15.0%	97.6%	12.1%	68.0%
MS	38.9%	-12.8%	64.4%	11.7%	43.4%
MT	79.4%	-13.5%	139.3%	17.9%	107.1%
NC	39.6%	-14.1%	121.9%	17.8%	90.5%
ND	51.6%	-0.8%	84.3%	7.5%	82.8%
NE	24.3%	-5.9%	99.0%	10.8%	87.2%
NH	72.9%	-21.9%	110.4%	14.4%	64.2%
NJ	102.2%	-22.8%	69.2%	11.2%	30.7%
NM	66.5%	-17.9%	77.7%	12.5%	46.0%
NV	117.4%	-59.4%	264.0%	16.8%	48.0%
NY	75.6%	-10.6%	75.8%	11.2%	57.2%
OH	19.5%	-16.6%	99.7%	11.2%	66.6%
OK	36.7%	-4.5%	82.7%	12.3%	74.5%
OR	85.6%	-28.6%	160.2%	11.6%	85.7%
PA	68.8%	-10.9%	75.1%	10.1%	55.9%
RI	108.2%	-28.2%	104.9%	12.5%	47.0%
SC	40.6%	-16.0%	119.1%	15.7%	84.0%
SD	40.2%	-2.3%	100.3%	13.7%	95.6%
TN	38.2%	-12.6%	142.6%	17.9%	112.1%
TX	35.8%	-3.0%	130.8%	14.8%	123.9%
UT	65.1%	-26.0%	202.0%	16.6%	123.3%
VA	95.0%	-18.8%	80.0%	11.4%	46.1%
VT	78.4%	-10.5%	76.7%	11.5%	58.2%
WA	83.3%	-27.3%	184.2%	14.1%	106.6%
WI	38.6%	-14.3%	90.5%	10.8%	63.3%
WV	39.3%	-5.9%	57.6%	11.3%	48.3%
WY	84.6%	-9.7%	75.1%	12.3%	58.1%

Source: FHFA/S&P Corelogic Case-Shiller US National Housing Price Index Data; Notes: HPI State-level data is provided quarterly by FHFA and presented here as of March 2022. Peak refers to the month when HPI reached the highest level for each state/US during the housing boom period, ranging from 2005 to 2008. Trough represents the month when HPI fell to the lowest level for each state/US after the housing bust, ranging from 2009 to 2012; S&P Corelogic Case-Shiller US National Housing Price Index reported for January 2022 in its Report dated March 29, 2022

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 September, inflation has dropped slightly to 8.2%. Year-over-year rents appear to be moderating. Nationally, rents are up 8.8 percent compared to last year, the first time in 2022 that yearly increases have dropped into the single digits. Wage growth is now at 7.2%, a 21.8% MoM increase.

Figure 79. Inflation | 12-Month Percent Change in CPI

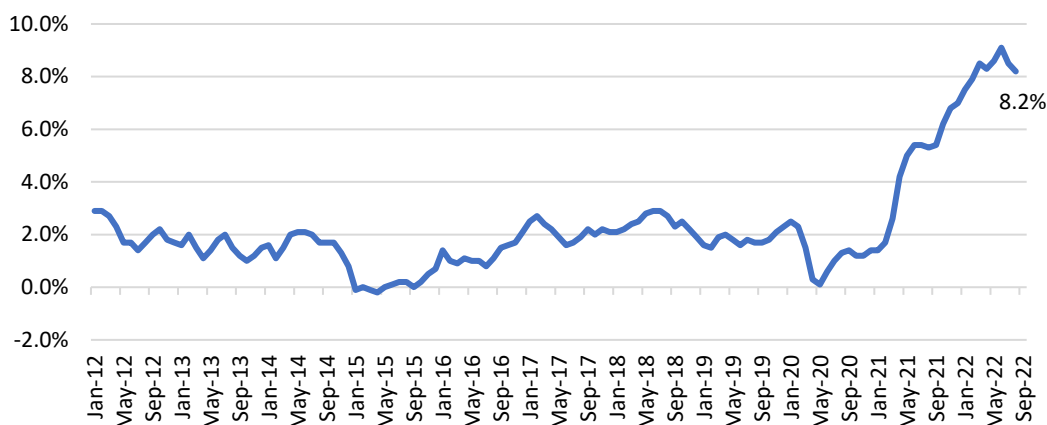
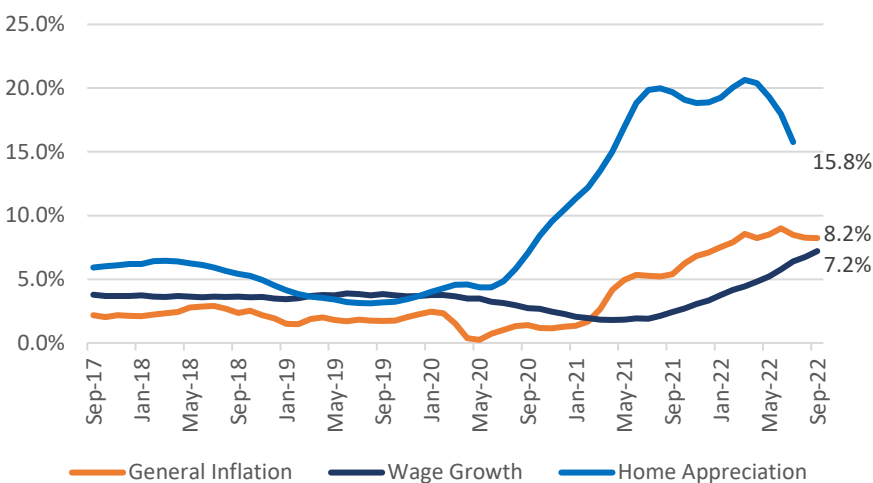


Figure 80. Asset Price Appreciation vs. Wage Increases



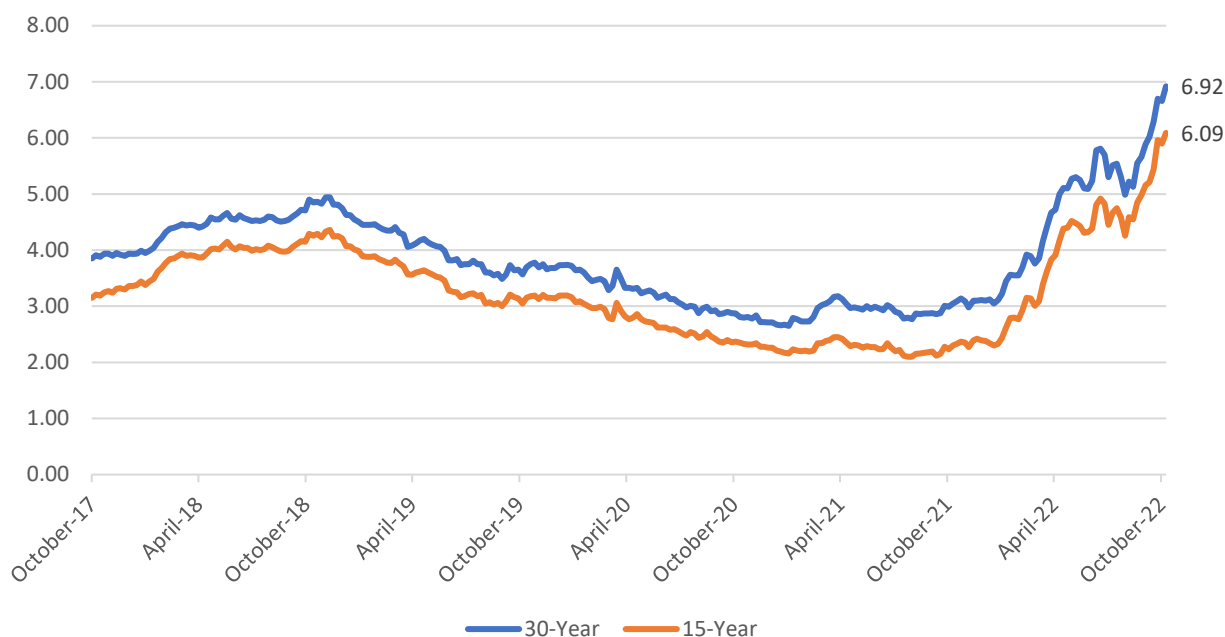
Metric	Statistic
General Inflation	8.2%
Home Price Appreciation	15.8%
Rental Price Appreciation (Median Rent Change YoY)	8.8%
Wage Growth	7.2%

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.

14.2.1 HOUSING AFFORDABILITY – MORTGAGE RATE TRENDS

Although the Federal Funds Target Rate was raised in September 2022 by 75 bps to a range of 3.00%-3.25%—the fifth consecutive hike since March 2022. The Fed is expected to raise interest rates again. On October 10, 2022, the Fed Vice Chair, Lael Brainard, indicated that additional increases were likely through the end of this year.⁶ As of October 13, 2022, the average 30-year and 15-year fixed rate mortgage rates were 6.92% and 6.09% respectively. The average 30-year fixed rate mortgage increased 90 bps and the average 15-year fixed rate mortgage increased 88 bps compared to the prior month, showing upward pressure on mortgage rates as a potential result of the interest rate increases.

Figure 81. Average Fixed Rate Mortgage Rates



Sources: FRED data as of October 2022

⁶ <https://www.federalreserve.gov/newsevents/speech/brainard20221010a.htm>

14.3 Housing Inventory

As of September 27, 2022, there was 8.1 months of housing inventory on the market. August housing inventory values fell 22.0% MoM with a decrease of approximately 20,000 homes “active” on the market. As housing affordability continues to remain high (see above section [14.2 – Inflation, Wages, and the Price of Real Estate and Rent](#)) 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 81**, have been increasing.

Figure 82. Single-Family Housing Inventory

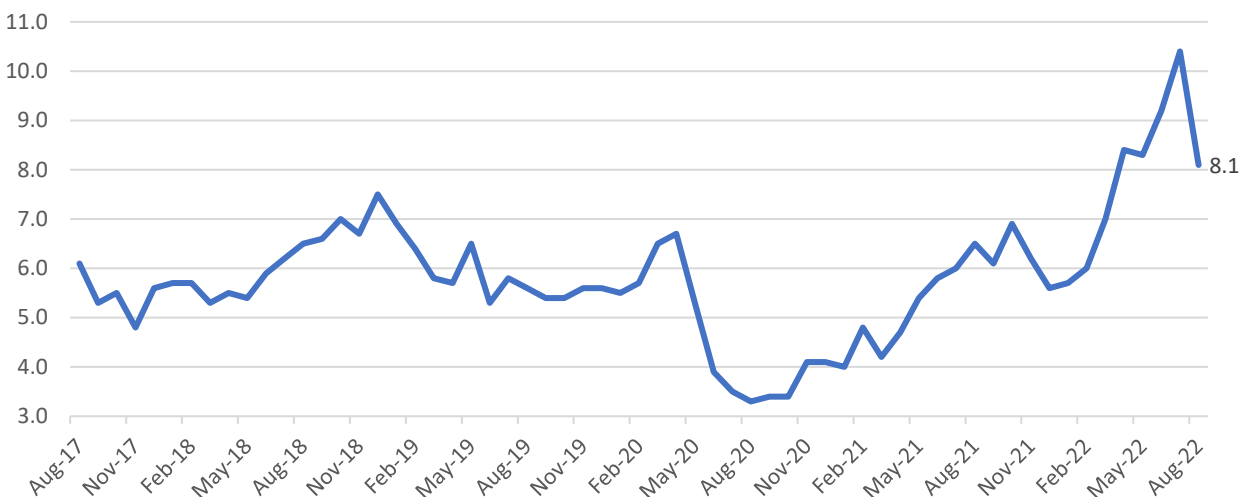
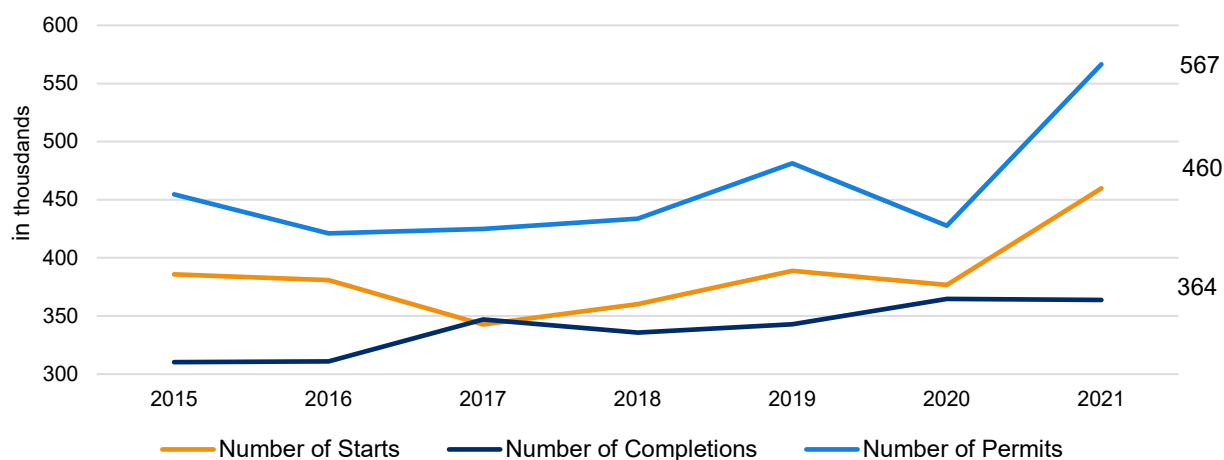


Figure 83. Multifamily Construction Metrics: Permits, Starts, Completions



Source: FRED data as of September 30, 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 \$41.1 trillion in Q2 2022. The total value of the US housing market is up 102% from its trough in 2011. Over that same period, mortgage debt outstanding has increased by just 10%. From Q4 2021 to Q2 2022 mortgage debt outstanding increased from \$11.7 trillion to \$12.1 trillion and household equity increased from \$26.3 trillion to \$29.0 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 \$8.71 trillion in Q2 2022, agency SF MBS account for a growing percentage of the total mortgage debt outstanding, up to 67% of total mortgage debt from just 52% in 2011.

Figure 84. Value of the US Housing Market.

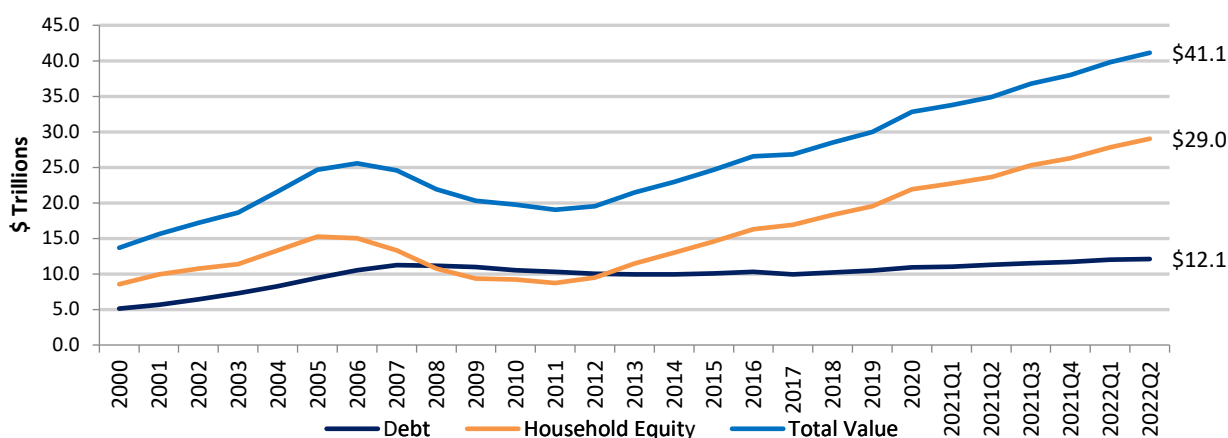
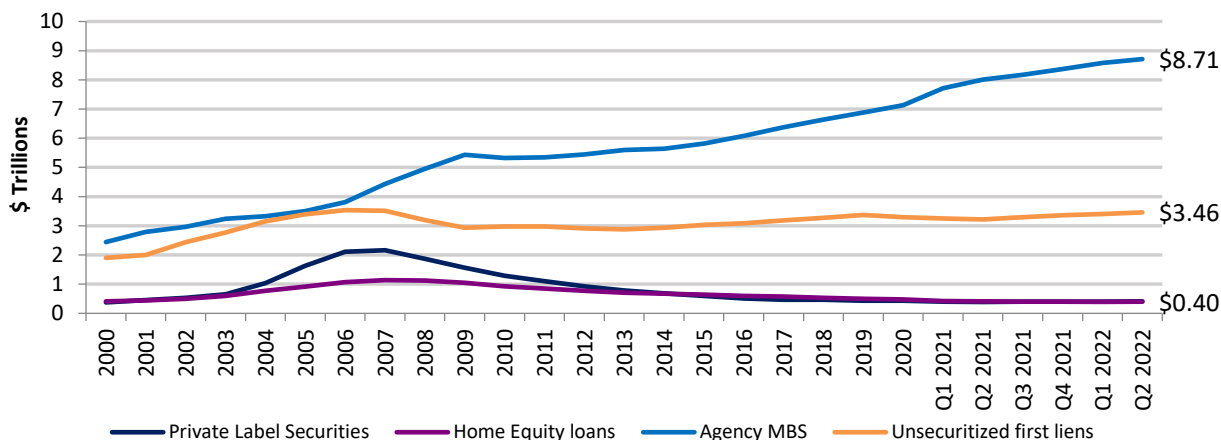


Figure 85. Size of the US Residential Mortgage Market.



Sources:

1. Federal Reserve Flow of Funds Data. Notes: Data as of Q2 2022.
2. Idzelis, Christine. "Fed May Need to Be Even More Aggressive Fighting Inflation as U.S. Household Cash Exceeds Debt for First Time in Three Decades, Warns Deutsche Bank." MarketWatch, MarketWatch, 20 Apr. 2022, <https://www.marketwatch.com/story/fed-may-need-to-be-even-more-aggressive-fighting-inflation-as-u-s-household-cash-exceeds-debt-for-first-time-in-three-decades-warns-deutsche-bank-11650474606>.

15 DISCLOSURE

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