PREPAYMENT MONITORING REPORT

First Quarter 2023

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Introduction

Fannie Mae and Freddie Mac began issuing the Uniform Mortgage-Backed Securities (UMBS) on June 3, 2019.

This quarterly report provides market participants additional transparency into a sample of the data FHFA receives and reviews on a monthly basis. The report focuses on alignment of prepayment rates, which continues to be important to the success of UMBS and to the efficiency and liquidity of the secondary mortgage market.

Ex post monitoring of prepayment rates is part of a broader effort to assure investors that cash flows from UMBS will be similar regardless of which Enterprise is the issuer. This report provides insight into how FHFA monitors the consistency of prepayment rates across cohorts of the Enterprises' TBA-eligible MBS,[1] where a cohort consists of those Enterprise TBA-eligible securities with the same coupon, maturity, and loan-origination year and total combined issuance across the Enterprises exceeds $10

billion. A prepayment on a mortgage loan is the amount of principal paid in advance of the loan's scheduled payments. Full prepayment occurs when a borrower pays off the loan ahead of the scheduled maturity.

Background on UMBS:

Issuance of UMBS through the Enterprises' jointly developed Common Securitization Platform (CSS), fulfilled important elements of FHFA's *2014 Strategic Plan for the Conservatorships of Fannie Mae and Freddie Mac*. Forward trading of UMBS began in the "To-Be-Announced" (TBA) market[2], on March 12, 2019 with first settlements of the UMBS trades on June 3, 2019. UMBS is issued without regard to which Enterprise is the issuer and has effectively merged the formerly separate MBS markets. UMBS has broadened and enhanced-liquidity in the secondary market for residential mortgages and reduced costs to taxpayers.[3]

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[1] To avoid double counting, only first-level securitizations are included in the analysis. Second-level securitizations (Megas, Giants, and Supers) are excluded, with the exception of fastest quartile analyses and Table 2 (Quartile Report). For those exceptions, Freddie Mac multi-lender second-level securitizations traded as a single security are included and the related first-level securitizations are excluded to avoid double counting.

[2] The TBA market is a forward market for certain mortgage-backed securities, including those issued by the Enterprises.

[3] See *An Update on the Structure of the Single Security*, May 2015, p.4

Alignment Requirements

On March 5, 2019, FHFA published the *Uniform Mortgage-Backed Security Final Rule* (Final Rule). The Final Rule codified FHFA thresholds with respect to differences between the prepayment rates of corresponding cohorts of each Enterprises' TBA-eligible securities. The Final Rule uses three-month CPRs rather than one-month CPRs, and measures alignment both with respect to entire cohorts and the fastest paying quartile of each cohort. Generally, the Enterprises must report to FHFA differences between Fannie Mae and Freddie Mac prepayment rates when the divergence between three-month CPRs exceeds two percentage points for an entire cohort or five percentage points for the fastest paying quartile of a cohort. For a divergence in three-month CPRs in excess of three percentage points for an entire cohort or eight percentage points in the fastest paying quartile of a cohort, the Enterprises must provide a written report to FHFA on the causes of the divergence and submit a written remediation plan. In most instances, FHFA's UMBS Governance Committee reviews the reports and may recommend remedial actions.

Prepayment Performance Charts and Tables

FHFA uses the charts and data tables in this report to evaluate the alignment of loan attributes for newly issued Enterprise MBS and the prepayment performance of outstanding Enterprise MBS. These charts and tables have been abridged to improve readability by omitting coupons and years with lower volumes of outstanding securities. FHFA monitors similar information for both Enterprises, focusing primarily on coupons, maturities, and loan-origination years that have minimum combined outstanding principal balances in excess of $10 billion and whose origination-years are not more than six calendar years prior to the current calendar year. Footnotes to the relevant charts and tables indicate cohorts that are below the $10 billion threshold.

As mentioned previously, a prepayment on a mortgage loan is the amount of principal paid in advance of the loan's payment schedule. When a loan is prepaid, an MBS investor receives the payment as principal. If the investor paid a premium for the security, the prepayment reduces the investor's yield. Therefore, investors in premium securities look for MBS that are likely to prepay slower than other MBS.

For further descriptions of how FHFA uses this information, see *Update on the Single Security Initiative and Common Securitization Platform*, **December 2017**.

Prepayments between the Enterprises remain reasonably aligned quarter over quarter. Despite record low rates and refinance activity post UMBS implementation, the consistency in prepayment performance has contributed to continued efficiency and liquidity in the UMBS market. FHFA continues to monitor any cohort level pooling divergences between the Enterprises and its potential impact on prepay speeds.

Charts

Charts 1 and 2 illustrate alignment of entire cohorts, using one-month CPR. FHFA uses the one-month CPR in these charts to assess the alignment at the cohort level for past origination cycles and the general trend of alignment across loan-origination years on a more granular basis than the three-month CPR would afford.

Chart 1 compares one-month CPR for both Enterprises TBA-eligible 30-year securities for the current year and the prior six years.

Chart 2 illustrates the comparison of pool loan-origination years for a given TBA-eligible MBS coupon. Chart 2 shows March 2023 one-month prepayment rates for entire cohorts each Enterprise's 30-year MBS for coupons with combined issuance volume outstanding in excess of $10 billion (1.5%, 2%, 2.5%, 3%, 3.5%, 4%, 4.5%, 5%, 5.5%, 6%, and 6.5%) and the six loan-origination years prior to the current calendar year.

Charts 3a through 3l illustrate alignment with respect to the fastest paying quartiles of each cohort. FHFA uses these charts to assess alignment with respect to the fastest paying quartiles of cohorts of the Enterprises' TBA-eligible MBS on a historical basis. Chart 3a illustrates alignment in one-month prepayment rates across the Enterprises for recent coupons with issuance greater than $10 billion. For each coupon in Chart 3a, the illustrated one-month prepayment rates are calculated across the fastest paying quartile at a given point in time. Charts 3b through 3l illustrate the degree of three-month prepayment rate alignment of the fastest paying quartile for each coupon-year cohort.

Chart 4 illustrates the spread between the weighted average loan rates (WACs) in mortgage pools to the coupon on the MBS backed by that pool for 30-year MBS issued by the Enterprises during the quarter. FHFA monitors this spread because differences in the spread between the Enterprises can lead to differences in prepayment rates as interest rates change. Securities with higher spreads are likely to experience faster prepayment rates as borrowers take advantage of opportunities to refinance due to their higher loan rates.

Chart 1: One-month CPR Comparison for 30-Year, for All TBA-Eligible MBS, All Coupons
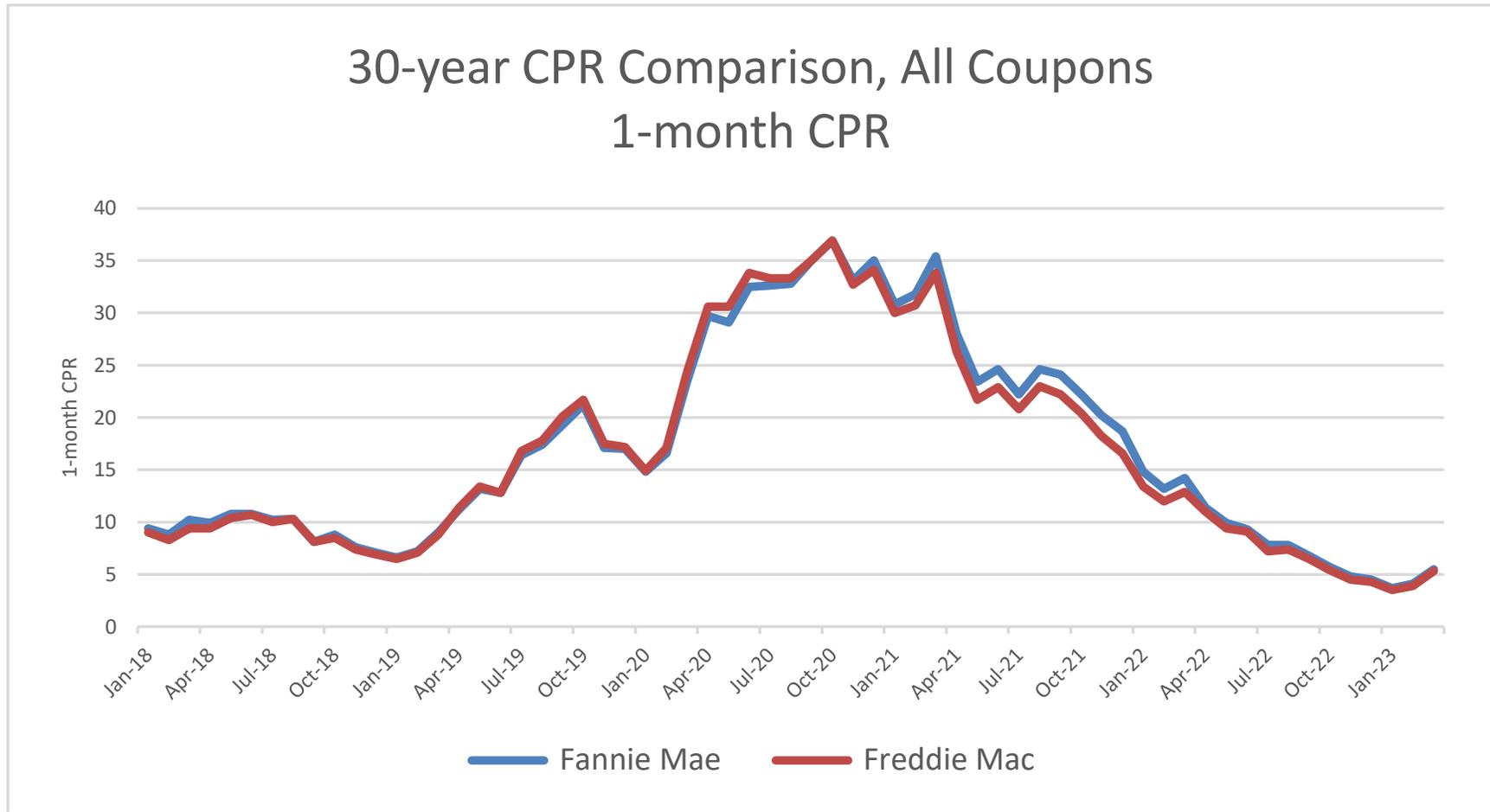
Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no one-month CPR information.

Chart 2: March 2023 One-month CPR on All 30-year, TBA-eligible MBS by Coupon and Loan-Origination Year*
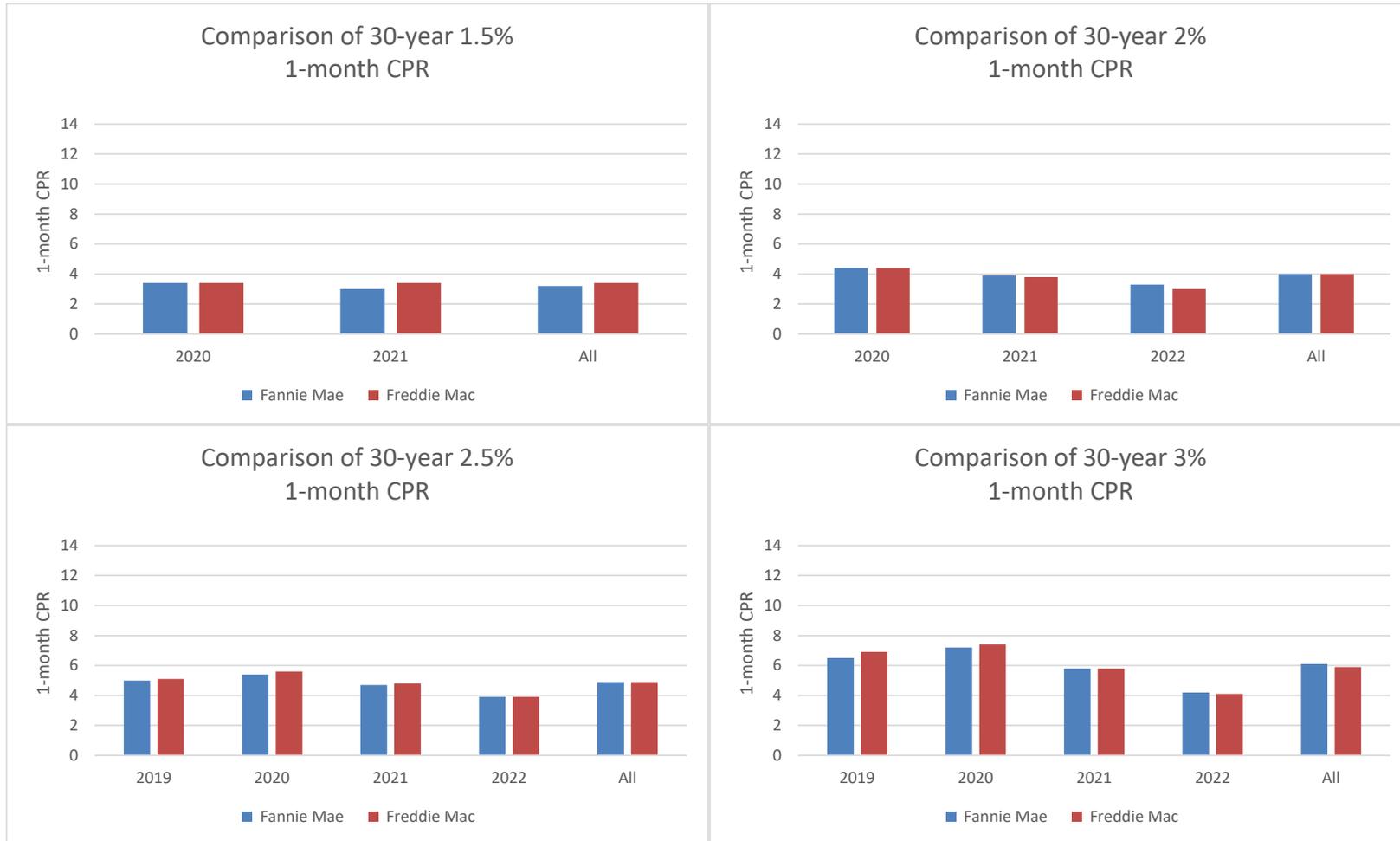
* The 1.5 percent coupon cohorts for 2017, 2018, 2019, and 2022; the 2 percent coupon cohorts for 2017, 2018, and 2019; the 2.5 percent coupon cohorts for 2017 and 2018; and the 3 percent coupon cohorts for 2017 and 2018, are omitted because each has a combined UPB below the $10 billion threshold.

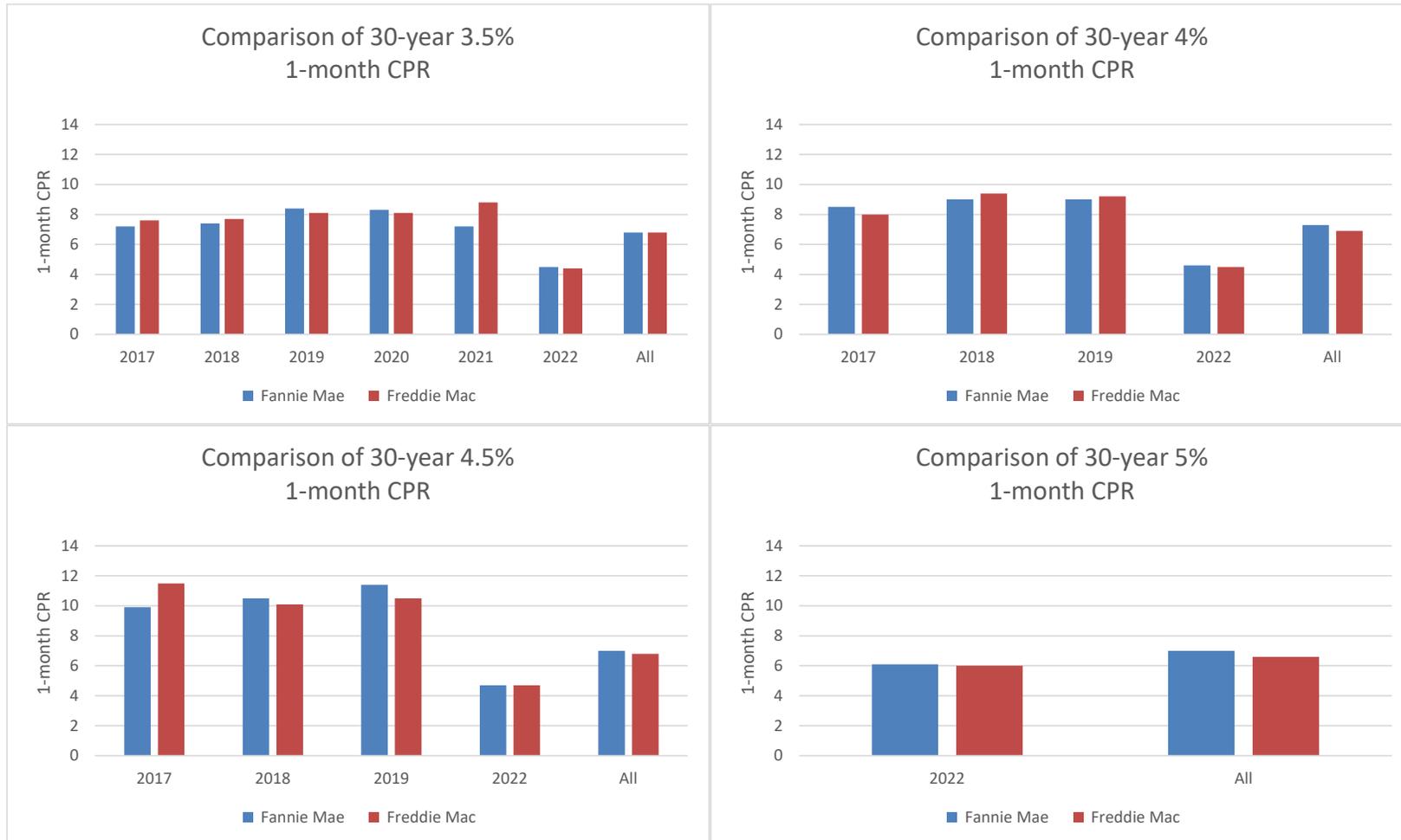Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no one-month CPR information.

Chart 2: March 2023 One-month CPR on All 30-year, TBA-eligible MBS by Coupon and Loan-Origination Year*

* The 4 percent coupon cohorts for 2020 and 2021, the 4.5 percent coupon cohorts for 2020 and 2021; and the 5 percent coupon cohorts for 2017, 2018, 2019, 2020, and 2021, are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no one-month CPR information.

Chart 2: March 2023 One-month CPR on All 30-year, TBA-eligible MBS by Coupon and Loan-Origination Year*

Comparison of 30-year 5.5%
1-month CPR

Comparison of 30-year 6%
1-month CPR

Comparison of 30-year 6.5%
1-month CPR
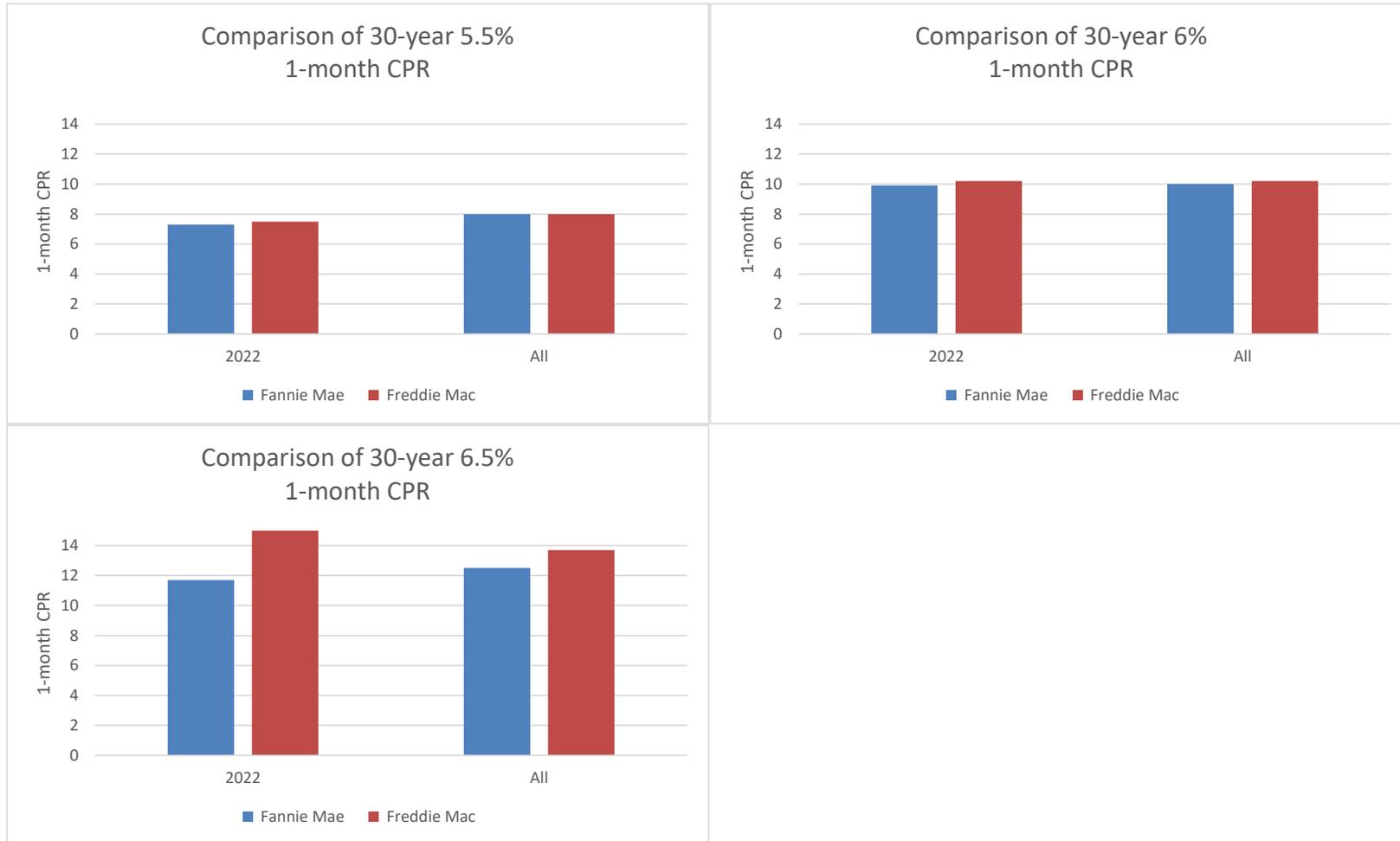
* The 5.5 percent coupon cohorts for 2017, 2018, 2019, 2020, and 2021; the 6 percent coupon cohorts for 2017, 2018, 2019, 2020, and 2021; and the 6.5 percent coupon cohorts for 2017, 2018, 2019, 2020, and 2021, are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no one-month CPR information.

Chart 3a: One-month CPR on All 30-year, TBA-eligible MBS by Coupon*
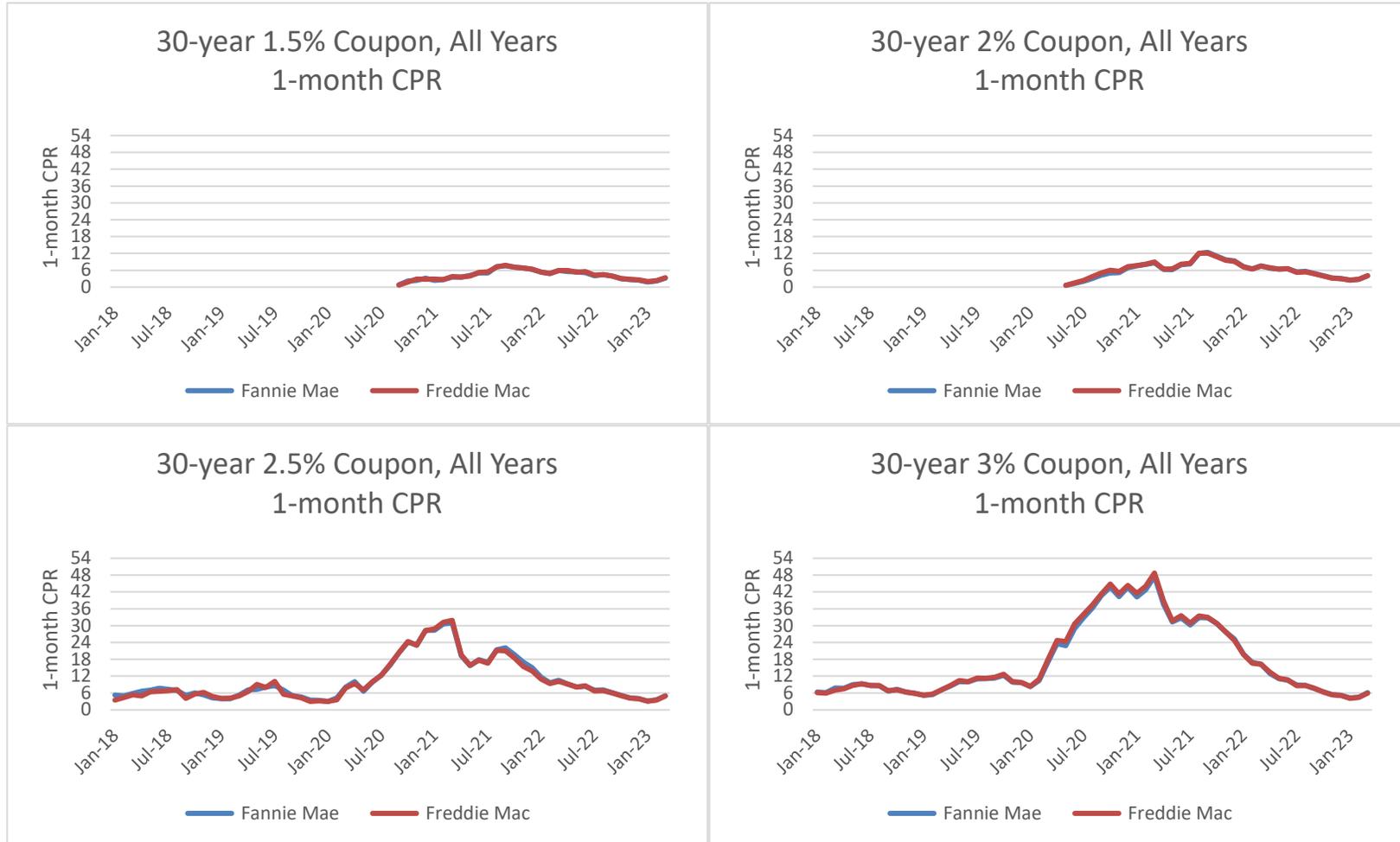
* CPR data was omitted for dates where the combined UPB of the coupon cohort was below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no one-month CPR information.

Chart 3a: One-month CPR on All 30-year, TBA-eligible MBS by Coupon

Chart 3a: One-month CPR on All 30-year, TBA-eligible MBS by Coupon

30-year 5.5% Coupon, All Years
1-month CPR

30-year 6% Coupon, All Years
1-month CPR

30-year 6.5% Coupon, All Years
1-month CPR

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no one-month CPR information.

Chart 3b: Three-month CPR on 30-year Fastest Paying Quartiles, 1.50 Percent Coupon TBA-eligible MBS by Loan-Origination Year*

* The 2017, 2018, 2019, and 2022 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.

Chart 3c: Three-month CPR on 30-year Fastest Paying Quartiles, 2.00 Percent Coupon TBA-eligible MBS by Loan-Origination Year*

30-year 2% Coupon, 2022
Fastest Quartile based on 3-month CPR

30-year 2% Coupon, 2021
Fastest Quartile based on 3-month CPR

30-year 2% Coupon, 2020
Fastest Quartile based on 3-month CPR

* The 2017, 2018, and 2019 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.

Chart 3d: Three-month CPR on 30-year Fastest Paying Quartiles, 2.50 Percent Coupon TBA-eligible MBS by Loan-Origination Year*

* The 2017 and 2018 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.
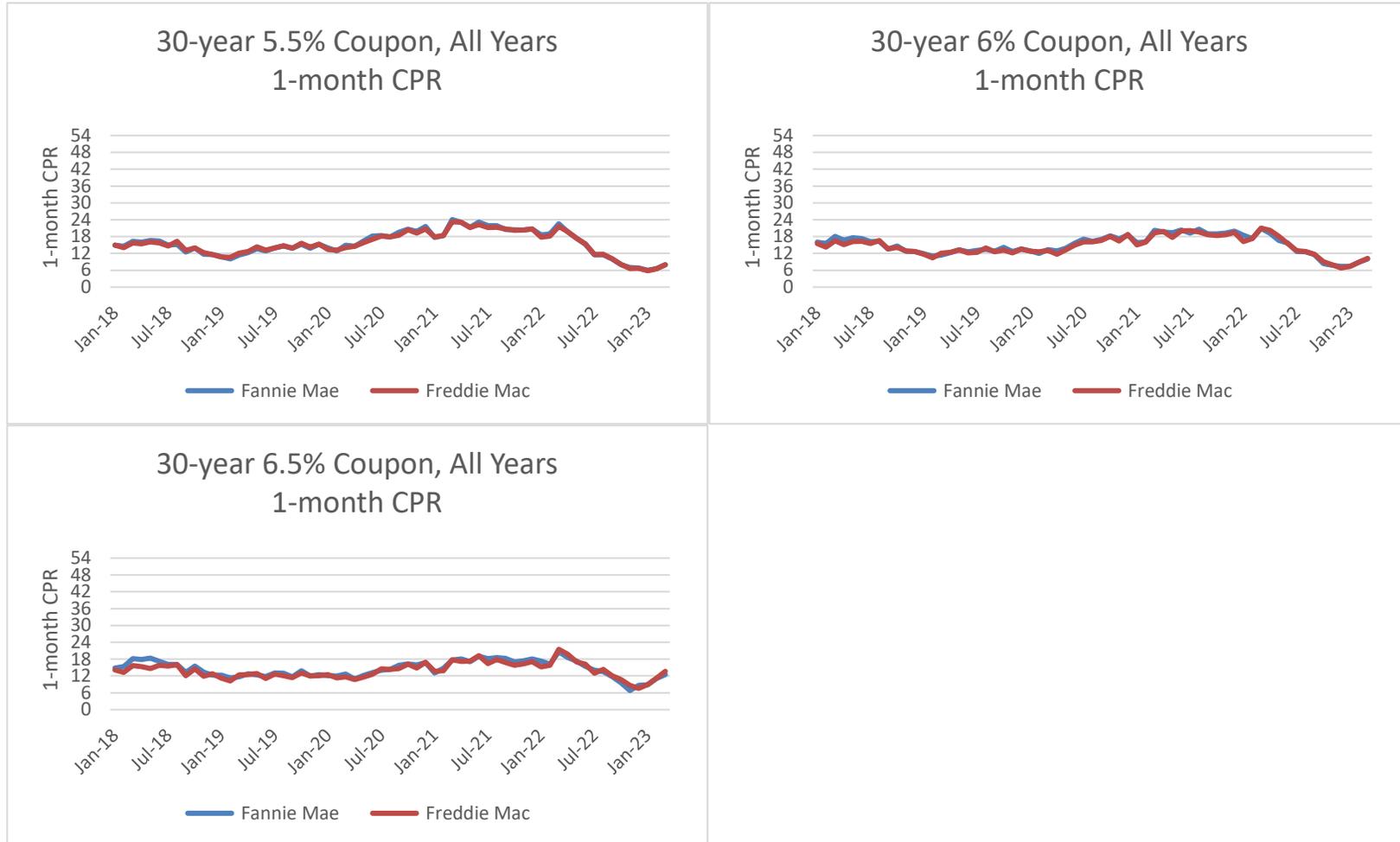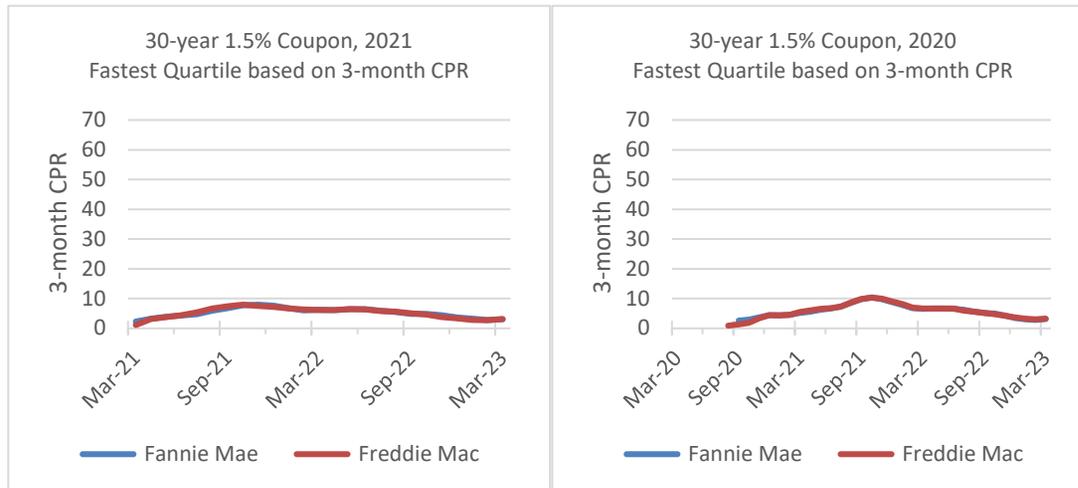
Chart 3e: Three-month CPR on 30-year Fastest Paying Quartiles, 3.00 Percent Coupon TBA-eligible MBS by Loan-Origination Year*

30-year 3% Coupon, 2022
Fastest Quartile based on 3-month CPR

30-year 3% Coupon, 2021
Fastest Quartile based on 3-month CPR

30-year 3% Coupon, 2020
Fastest Quartile based on 3-month CPR

30-year 3% Coupon, 2019
Fastest Quartile based on 3-month CPR

* The 2017 and 2018 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.

Chart 3f: Three-month CPR on 30-year Fastest Paying Quartiles, 3.50 Percent Coupon TBA-eligible MBS by Loan-Origination Year
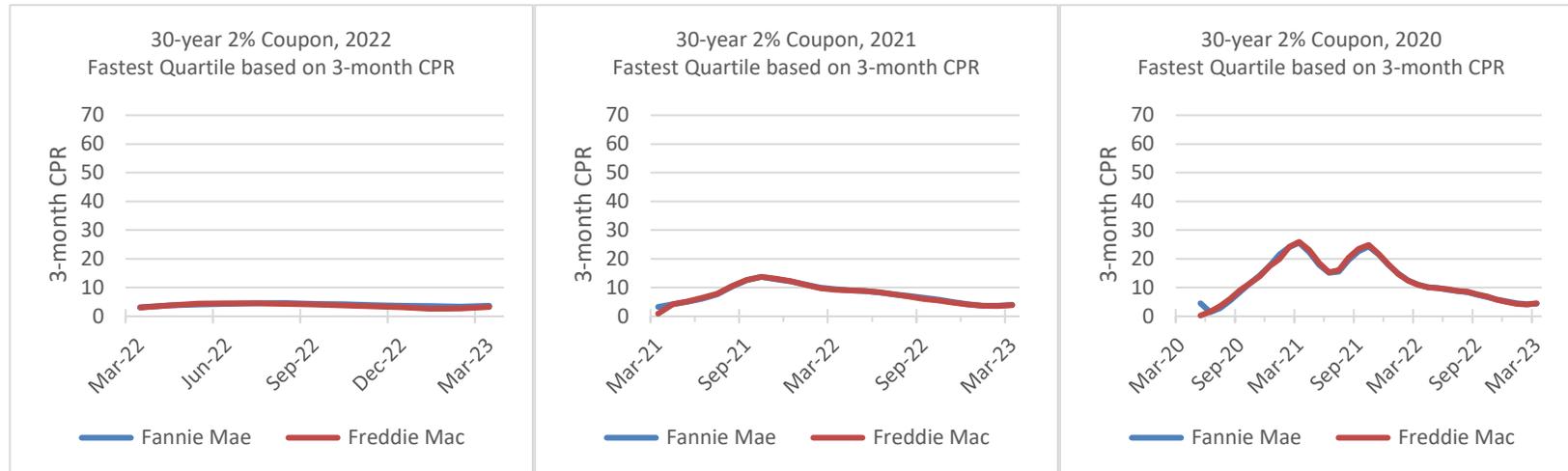

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.

Chart 3g: Three-month CPR on 30-year Fastest Paying Quartiles, 4.00 Percent Coupon TBA-eligible MBS by Loan-Origination Year

* The 2020 and 2021 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.
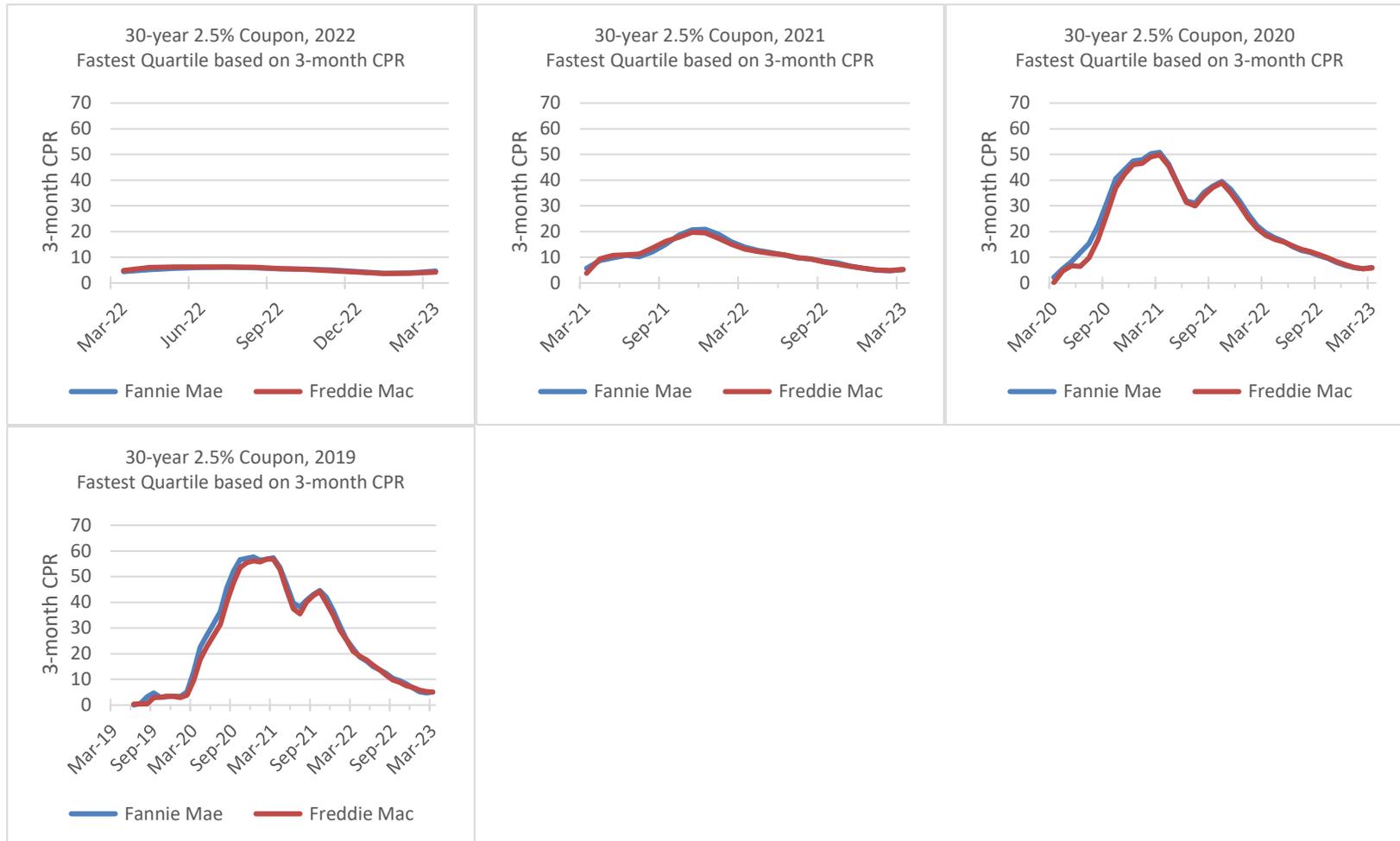
Chart 3h: Three-month CPR on 30-year Fastest Paying Quartiles, 4.50 Percent Coupon TBA-eligible MBS by Loan-Origination Year

* The 2020 and 2021 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.

Chart 3i: Three-month CPR on 30-year Fastest Paying Quartiles, 5.00 Percent Coupon TBA-eligible MBS by Loan-Origination Year
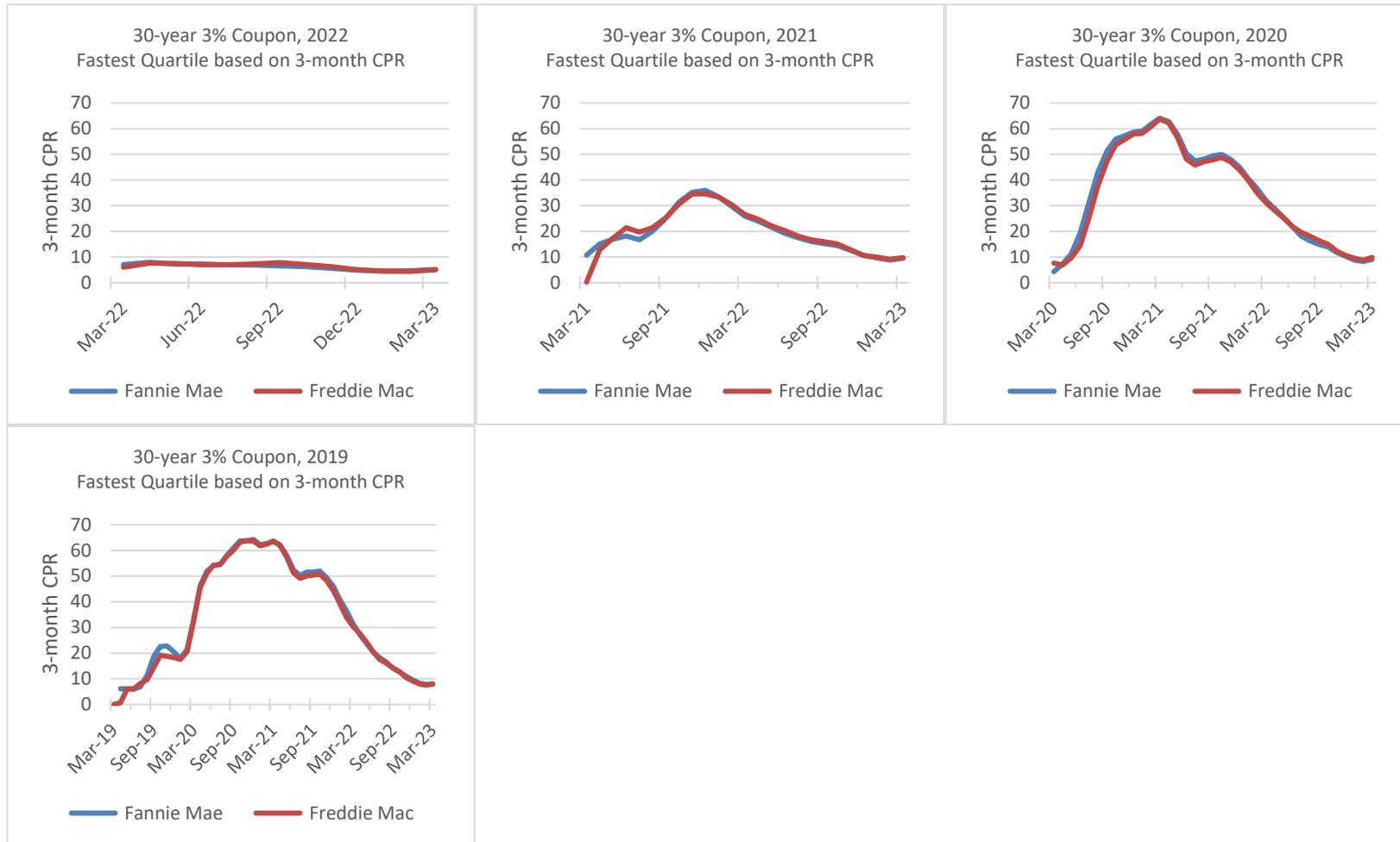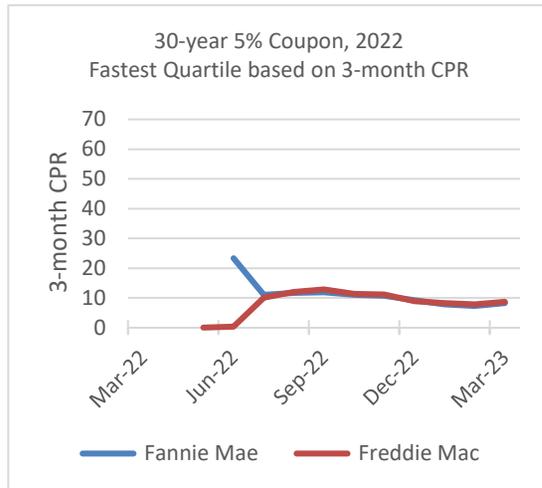

* The 2017, 2018, 2019, 2020, and 2021 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.

Chart 3j: Three-month CPR on 30-year Fastest Paying Quartiles, 5.50 Percent Coupon TBA-eligible MBS by Loan-Origination Year
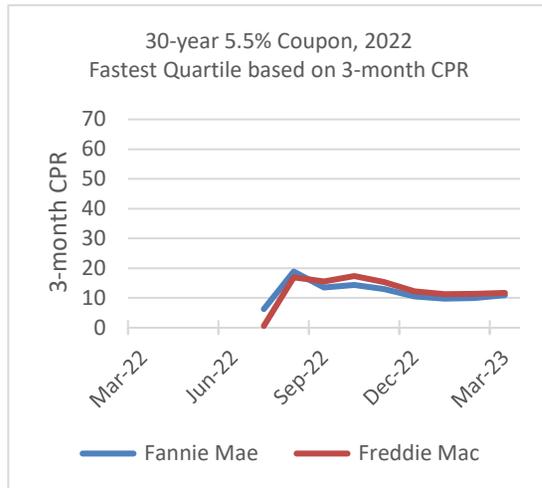
30-year 5.5% Coupon, 2022
Fastest Quartile based on 3-month CPR

* The 2017, 2018, 2019, 2020, and 2021 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.

Chart 3k: Three-month CPR on 30-year Fastest Paying Quartiles, 6.00 Percent Coupon TBA-eligible MBS by Loan-Origination Year
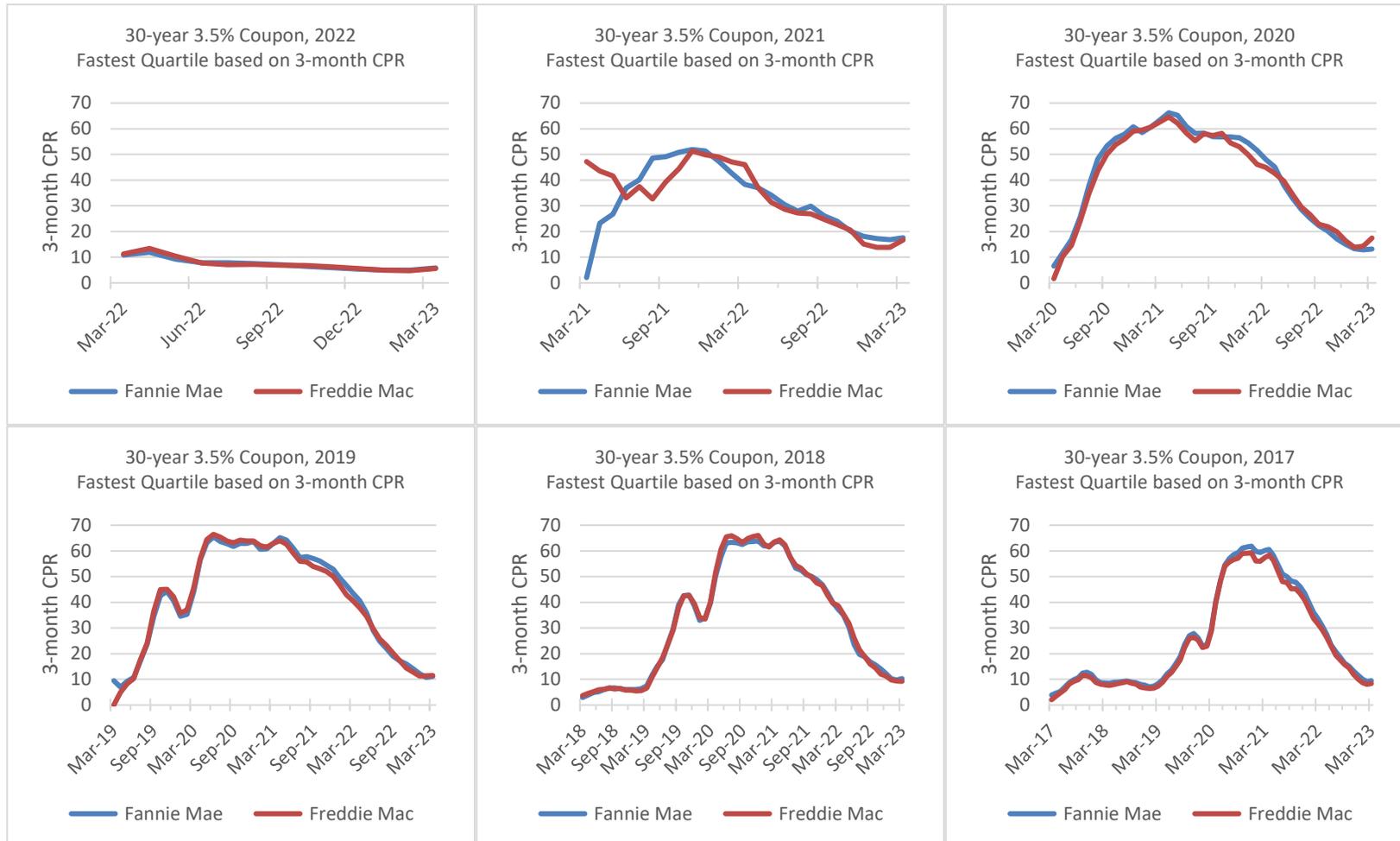

30-year 6% Coupon, 2022
Fastest Quartile based on 3-month CPR

* The 2017, 2018, 2019, 2020, and 2021 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.
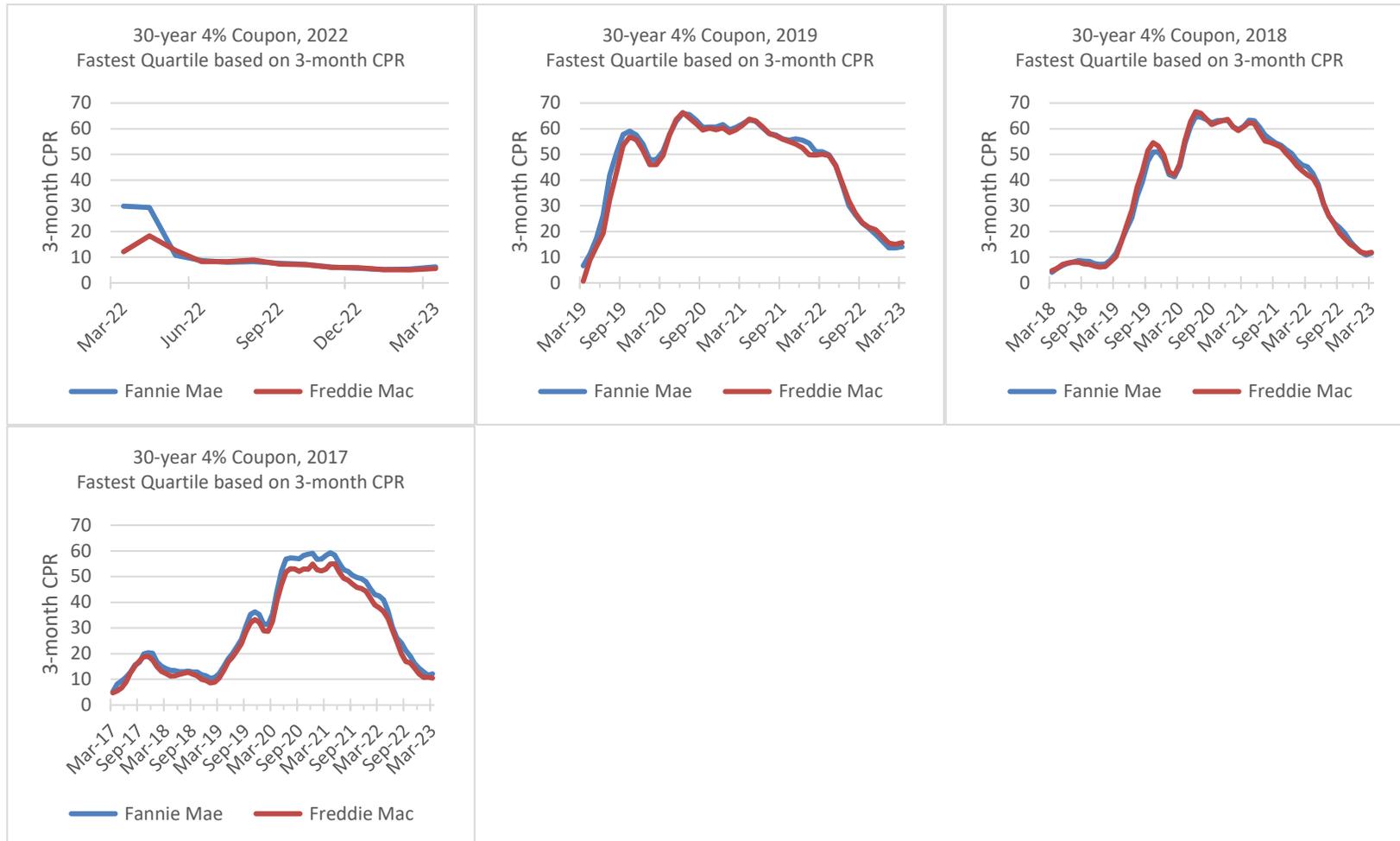
Chart 3l: Three-month CPR on 30-year Fastest Paying Quartiles, 6.50 Percent Coupon TBA-eligible MBS by Loan-Origination Year
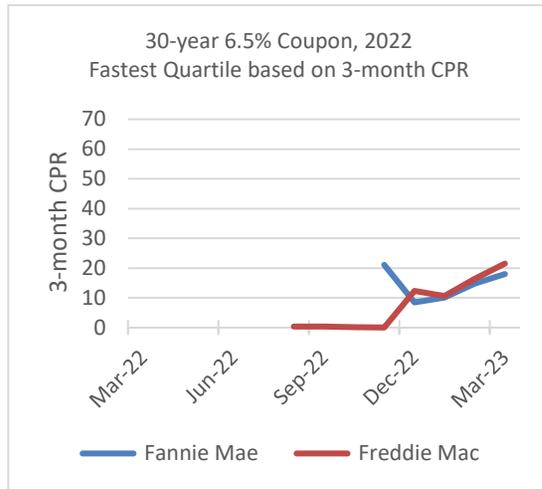
30-year 6.5% Coupon, 2022
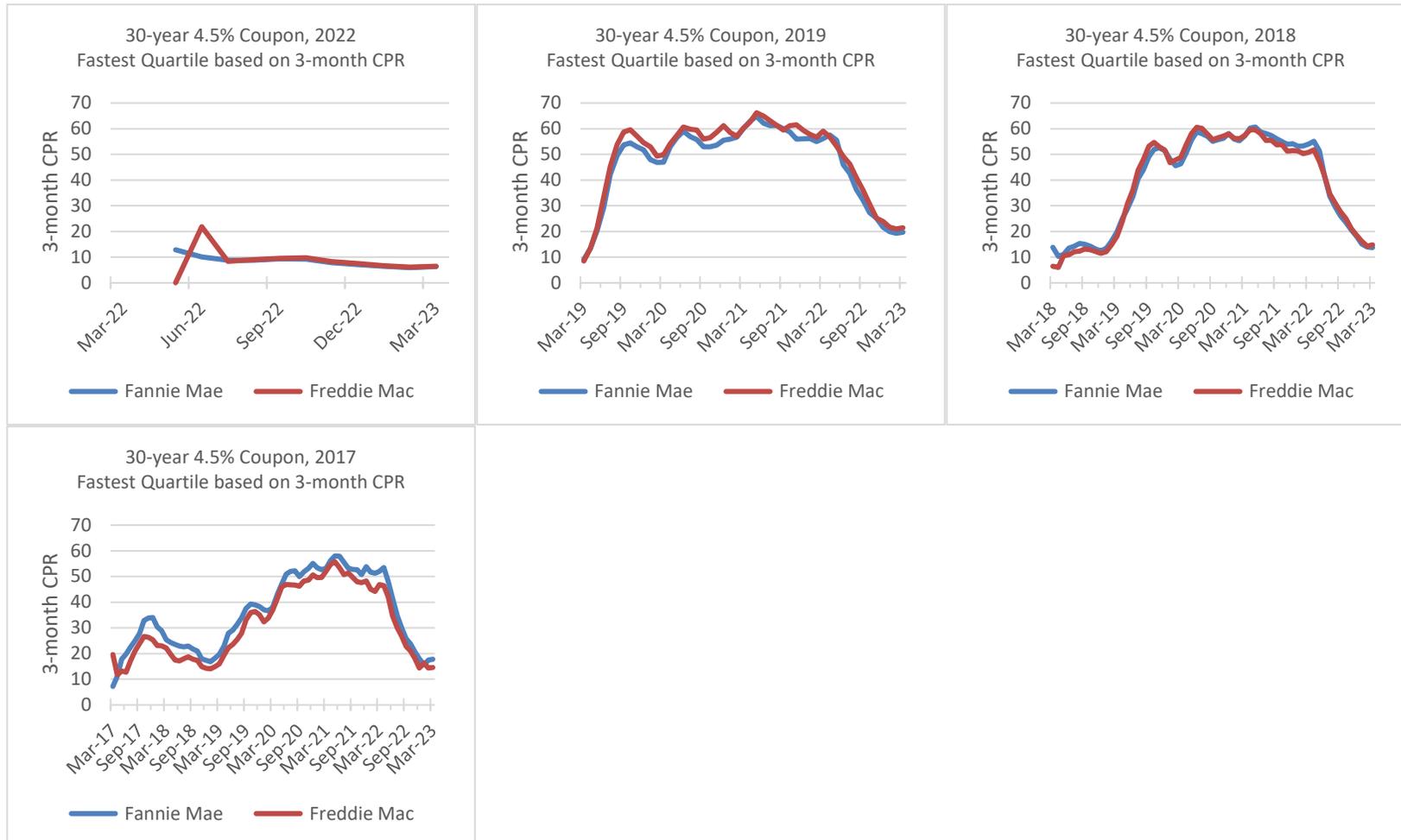Fastest Quartile based on 3-month CPR

* The 2017, 2018, 2019, 2020, and 2021 cohorts are omitted because each has a combined UPB below the $10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information.

Chart 4: Comparison of Weighted Average Loan Rate to Coupon Spread on New 30-year MBS Issuance

Source: RiskSpan calculations from data available publicly as of April 2023. Gaps in data may occur in some months due to a lack of MBS issuance. Latest month's WAC-Coupon Spread value is labeled, where available.

Chart 4: Comparison of Weighted Average Loan Rate to Coupon Spread on New 30-year MBS Issuance

Source: RiskSpan calculations from data available publicly as of April 2023. Gaps in data may occur in some months due to a lack of MBS issuance. Latest month's WAC-Coupon Spread value is labeled, where available.

Chart 4: Comparison of Weighted Average Loan Rate to Coupon Spread on New 30-year MBS Issuance

Source: RiskSpan calculations from data available publicly as of April 2023. Gaps in data may occur in some months due to a lack of MBS issuance. Latest month's WAC-Coupon Spread value is labeled, where available.

Data Tables

FHFA uses Table 1, the Annual Vintage Report, to compare, at the cohort level, the Enterprises' three-month prepayment rates with cohort attributes, such as the weighted-average loan rate (WAC), the weighted-average loan maturity (WAM), the weighted-average loan age (WALA), and the unpaid principal balance (UPB). These comparisons provide context to understand better any significant differences in CPRs across the Enterprises.

Table 2, the Quartile Report, is used to compare the range of prepayment rates across all of the TBA-eligible MBS that have the same coupon issued by a given Enterprise. To do so, all of an Enterprise's TBA-eligible MBS pools outstanding in the month, excluding specified pools as defined in the glossary, and bearing the stated coupon are ranked by their three-month CPRs from fastest to slowest. The pools are then grouped into quartiles based on UPB. The Report presents the WALA, WAC, average loan size (ALS), and credit score (FICO) for each quartile. Quartile 1 in this table corresponds to the fastest paying quartile. Table 2 presents this information as of the end of the quarter.

Table 3, the Total Industry Issuance Report, provides a comparison, at the coupon cohort level, of the Enterprises' previous three months of issuance, with various key loan attributes that would affect the expectations of prepayments and delinquencies. FHFA uses this report to identify any differences in loan attributes that may cause a divergence in prepayment rates. The attributes that generally create faster prepayments, such as high credit score and low loan-to-value (LTV) ratio, also generally lower defaults. Analyzing new issuance data allows FHFA and the Enterprises to make timely adjustments to business practices to reduce potential misalignments in future prepayment rates.

Table 1: 30-year, Fastest Quartile of TBA-eligible MBS Vintage Report

Coupon	Year	Weighted Average Coupon (percent)		Weighted Average Maturity (months)		Weighted Average Loan Age (months)		Unpaid Principal Balance ($ billions)		Three Month Conditional Prepayment Rates (percent)					
										March		February		January	
		FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
1.5	2020	2.53	2.55	323	323	29	30	9.1	11.5	3.10	3.20	2.80	3.00	3.00	3.20
	2021	2.50	2.52	328	329	26	25	9.9	16.5	3.00	3.10	2.80	2.70	3.20	2.80
2	2020	2.93	2.92	321	322	30	29	57.4	48.7	4.40	4.50	4.20	4.10	4.50	4.30
	2021	2.85	2.87	329	329	25	25	99.7	95.5	4.00	3.90	3.60	3.50	3.70	3.60
	2022	2.94	2.97	342	343	14	14	10.2	10.8	3.70	3.20	3.30	2.70	3.50	2.60
2.5	2019	3.49	3.50	310	309	42	42	3.8	3.2	5.00	5.00	4.70	5.30	5.10	5.80
	2020	3.39	3.41	317	317	33	34	37.1	24.9	6.00	5.80	5.60	5.50	5.90	6.00
	2021	3.28	3.27	335	334	21	21	50.6	46.7	5.20	5.30	4.70	4.80	4.90	5.00
	2022	3.33	3.33	343	343	13	14	17	15.5	4.60	4.20	3.90	3.80	3.80	3.70
3	2019	3.87	3.92	309	308	42	43	7.8	7.2	8.00	7.90	7.80	7.50	8.30	7.90
	2020	3.86	3.86	316	317	36	35	8.2	4.8	9.00	9.90	8.30	8.70	8.80	9.50
	2021	3.81	3.76	334	336	21	19	3	2.7	9.50	9.70	8.80	9.10	9.60	10.00
	2022	3.74	3.73	344	344	13	13	13.1	11.6	5.20	5.00	4.60	4.40	4.50	4.50
3.5	2017	4.03	4.07	279	281	69	67	5.8	4.6	9.40	8.40	9.10	8.00	10.10	8.70
	2018	4.16	4.19	290	289	59	61	2.1	1.4	10.30	9.20	9.70	9.30	10.20	9.70
	2019	4.43	4.40	307	307	45	44	3.3	2.5	11.10	11.50	10.70	11.30	12.20	11.20
	2020	4.37	4.37	316	317	36	35	0.9	0.5	13.20	17.50	12.90	14.20	13.30	13.80
	2021	4.32	4.33	338	336	18	19	0.4	0.4	17.60	16.70	16.80	13.80	17.20	13.80
	2022	4.20	4.18	346	345	11	12	11.8	9.6	5.80	5.60	4.90	4.70	4.90	4.90
4	2017	4.48	4.47	282	283	69	68	2.8	2	12.10	10.50	11.60	10.80	12.90	10.70
	2018	4.60	4.67	293	293	57	57	4.2	2.8	11.60	11.90	10.80	11.50	12.00	12.00
	2019	4.90	4.86	306	307	46	45	1.5	1	14.00	15.60	13.60	15.00	13.60	15.40
	2022	4.76	4.78	347	347	10	9	13	12.2	6.20	5.60	5.40	5.00	5.20	5.10
4.5	2017	4.98	4.94	282	282	69	69	0.4	0.3	17.80	14.60	17.40	14.40	15.60	16.30
	2018	5.17	5.15	296	295	56	56	1.2	1	13.70	14.80	13.90	14.20	15.10	16.20
	2019	5.35	5.34	307	304	45	47	0.5	0.3	19.70	21.40	19.30	21.00	19.90	21.60
	2022	5.35	5.40	348	349	8	7	13.1	12	6.30	6.40	5.90	6.20	6.40	6.60

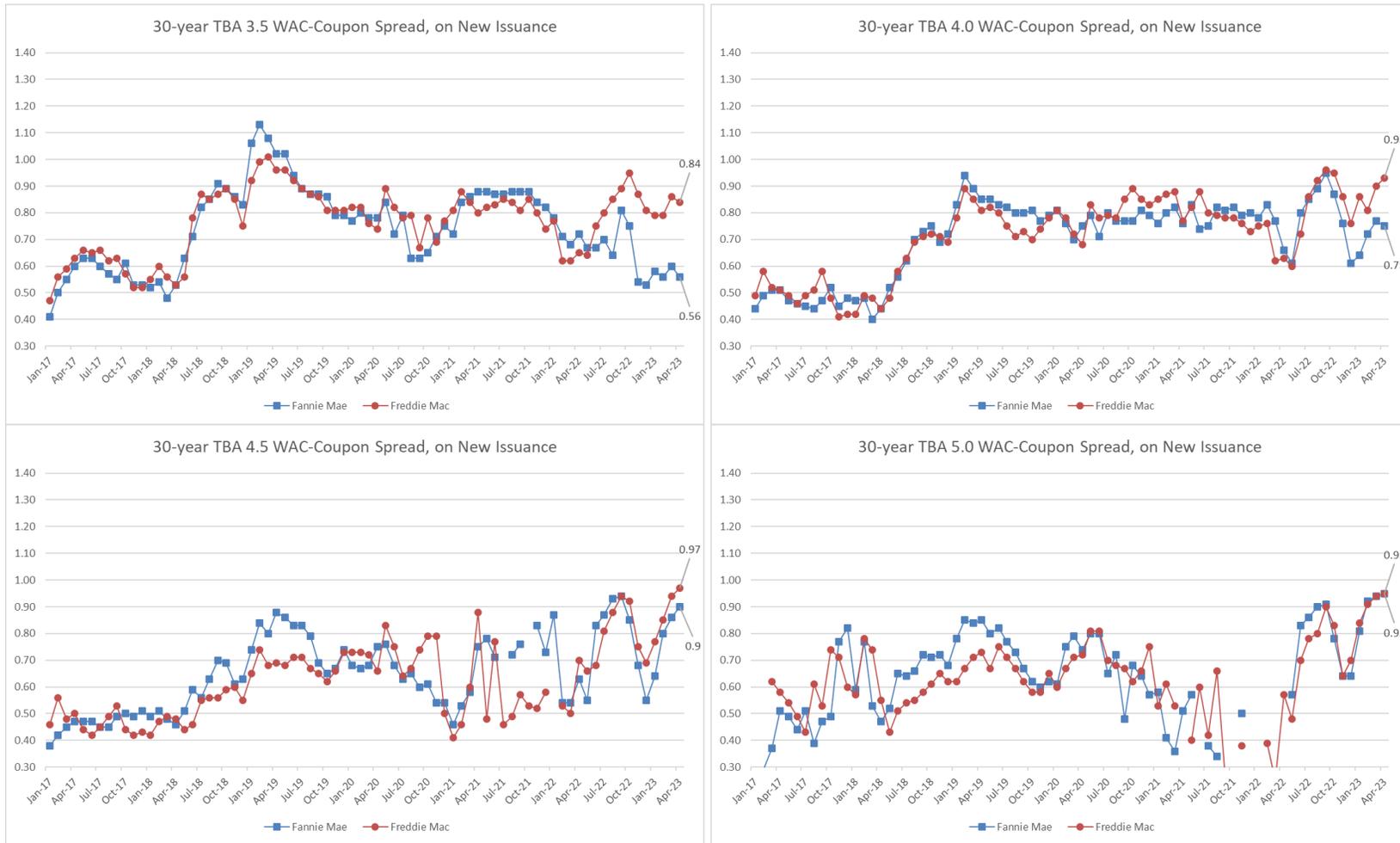Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information, and exclude specified pools (see appendix for definition). The balances displayed on the table are beginning-of-quarter balances for the population included in the fastest quartile for each cohort.

Table 1: 30-year, Fastest Quartile of TBA-eligible MBS Vintage Report

| Coupon | Year | Weighted Average Coupon (percent) | | Weighted Average Maturity (months) | | Weighted Average Loan Age (months) | | Unpaid Principal Balance ($ billions) | | Three Month Conditional Prepayment Rates (percent) | | | | | |
| | | | | | | | | | | March | | February | | January | |
		FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
5	2022	5.83	5.83	349	349	8	7	8.5	8	8.20	8.70	7.30	7.80	7.80	8.30
5.5	2022	6.38	6.27	352	350	5	7	4.9	3.9	10.90	11.70	10.00	11.40	9.70	11.20
6	2022	6.90	6.78	351	351	5	5	2.2	2	16.20	15.30	14.60	12.90	14.00	12.20
6.5	2022	7.42	7.41	352	352	4	4	1.1	0.8	18.00	21.50	14.80	16.40	10.10	10.60

Source: RiskSpan calculations from data available publicly as of April 2023. Calculations exclude new issuance with no three-month CPR information, and exclude specified pools (see appendix for definition). The balances displayed on the table are beginning-of-quarter balances for the population included in the fastest quartile for each cohort.

Table 2: 30-year TBA-eligible, less Specified Pools, Cohort Quartile Report for Qualifying Cohorts*

30-year, 1.5	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	3.1		2.4		2.3		1.6	
Freddie Mac	3.1		2.6		2.4		1.8	
Difference	0.0		-0.2		-0.1		-0.2	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	29	27	28	28	28	27	24	26
WAC	2.52	2.53	2.52	2.53	2.52	2.54	2.45	2.52
ALS	355	372	382	376	380	370	382	369
FICO	774	772	775	774	775	773	773	772

30-year, 2.5	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	5.6		3.9		3.4		2.1	
Freddie Mac	5.5		3.8		3.2		2.0	
Difference	0.1		0.1		0.2		0.1	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	30	31	28	24	21	20	19	19
WAC	3.36	3.36	3.34	3.30	3.27	3.28	3.32	3.32
ALS	313	310	333	339	352	358	341	348
FICO	756	758	753	748	748	744	749	750

30-year, 2.0	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	4.2		3.0		2.7		1.9	
Freddie Mac	4.1		3.1		2.6		2.0	
Difference	0.1		-0.1		0.1		-0.1	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	28	27	29	28	21	22	21	20
WAC	2.90	2.89	2.89	2.90	2.84	2.91	2.89	2.89
ALS	322	333	353	361	368	369	361	364
FICO	766	764	769	767	765	764	765	762

30-year, 3.0	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	7.9		5.1		3.6		1.6	
Freddie Mac	7.9		5.2		3.1		1.4	
Difference	0.0		-0.1		0.5		0.2	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	35	38	38	37	19	16	20	18
WAC	3.84	3.85	3.86	3.85	3.80	3.78	3.76	3.80
ALS	303	294	305	315	354	362	327	335
FICO	744	747	747	745	741	744	748	746

* FHFA omits the average prepayment speeds of pools with age less than 3 months and coupon cohorts with a combined UPB less than $10 billion.
* Qualifying Cohorts are defined as cohorts of TBA-eligible pools, excluding Specified Pools, issued during the most recent six origination years, including the current origination year if pools with age at least 3 months are available.
* The weighted-average statistics that are published in this table use beginning-of-quarter balances and end-of-quarter WAC, WALA, and FICO. ALS statistics represent a simple average of all loans in the cohorts.

Table 2: 30-year TBA-eligible, less Specified Pools, Cohort Quartile Report for Qualifying Cohorts*

30-year, 3.5	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	9.4		5.4		3.3		1.6	
Freddie Mac	9.1		5.8		3.0		1.6	
Difference	0.3		-0.4		0.3		0.0	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	48	51	50	54	19	14	22	18
WAC	4.28	4.24	4.12	4.16	4.18	4.22	4.20	4.28
ALS	289	290	302	292	366	375	338	347
FICO	741	743	749	750	746	744	750	749

30-year, 4.5	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	9.5		3.9		3.4		1.7	
Freddie Mac	8.8		3.9		3.6		1.7	
Difference	0.7		0.0		-0.2		0.0	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	32	28	10	8	8	8	11	12
WAC	5.27	5.28	5.40	5.42	5.38	5.31	5.27	5.30
ALS	314	332	380	412	406	410	332	325
FICO	729	737	751	755	753	754	750	746

30-year, 4.0	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	10.3		5.3		3.2		1.5	
Freddie Mac	9.8		4.3		3.0		1.5	
Difference	0.5		1.0		0.2		0.0	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	51	54	37	23	10	9	19	15
WAC	4.68	4.66	4.67	4.76	4.87	4.89	4.80	4.85
ALS	289	290	331	347	391	411	333	341
FICO	735	737	736	744	755	756	749	752

30-year, 5.0	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	9.3		5.3		4.5		1.9	
Freddie Mac	9.3		5.2		4.4		1.7	
Difference	0.0		0.1		0.1		0.2	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	13	11	8	8	7	6	9	8
WAC	5.83	5.83	5.89	5.78	5.73	5.80	5.80	5.84
ALS	341	343	376	396	375	405	314	320
FICO	736	742	739	744	747	750	742	745

* FHFA omits the average prepayment speeds of pools with age less than 3 months and coupon cohorts with a combined UPB less than $10 billion.
* Qualifying Cohorts are defined as cohorts of TBA-eligible pools, excluding Specified Pools, issued during the most recent six origination years, including the current origination year if pools with age at least 3 months are available.
* The weighted-average statistics that are published in this table use beginning-of-quarter balances and end-of-quarter WAC, WALA, and FICO. ALS statistics represent a simple average of all loans in the cohorts.

Table 2: 30-year TBA-eligible, less Specified Pools, Cohort Quartile Report for Qualifying Cohorts*

30-year, 5.5	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	11.0		7.5		6.7		2.4	
Freddie Mac	11.8		7.0		5.9		2.6	
Difference	-0.8		0.5		0.8		-0.2	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	6	7	5	4	6	5	7	6
WAC	6.39	6.28	6.37	6.35	6.19	6.24	6.29	6.29
ALS	372	359	393	420	379	375	281	325
FICO	744	737	744	755	749	749	738	740

30-year, 6.5	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	18.7		14.8		10.7		6.2	
Freddie Mac	20.9		15.4		11.9		4.2	
Difference	-2.2		-0.6		-1.2		2.0	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	3	4	4	4	5	5	4	4
WAC	7.44	7.41	7.42	7.41	7.18	7.03	7.29	7.25
ALS	359	360	353	386	342	362	322	323
FICO	739	741	737	740	735	740	736	734

30-year, 6.0	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
Fannie Mae	16.0		11.4		8.9		3.3	
Freddie Mac	15.9		10.3		9.2		3.8	
Difference	0.1		1.1		-0.3		-0.5	
Attributes	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
WALA	4	5	4	4	5	4	5	5
WAC	6.91	6.87	6.94	6.82	6.78	6.86	6.87	6.79
ALS	373	395	388	394	372	397	301	299
FICO	739	739	750	744	743	752	743	741

* FHFA omits the average prepayment speeds of pools with age less than 3 months and coupon cohorts with a combined UPB less than $10 billion.
* Qualifying Cohorts are defined as cohorts of TBA-eligible pools, excluding Specified Pools, issued during the most recent six origination years, including the current origination year if pools with age at least 3 months are available.
* The weighted-average statistics that are published in this table use beginning-of-quarter balances and end-of-quarter WAC, WALA, and FICO. ALS statistics represent a simple average of all loans in the cohorts.

Table 3: Q1 2023 30-year, TBA-eligible MBS Total Industry Quarterly Issuance Report*

	2.00%	2.50%		3.00%		3.50%		4.00%		4.50%		5.00%		5.50%		6.00%		6.50%		7.00%		7.50%		All Loans	
	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
Loan Count	17	47	159	318	525	900	748	4,109	3,579	14,211	11,325	50,177	44,916	61,353	57,302	39,066	34,922	18,954	16,923	2,753	2,199	31	6	191,919	172,621
UPB (billions)	0.01	0.02	0.06	0.12	0.18	0.35	0.25	1.68	1.35	5.06	4.21	17.02	15.28	19.54	18.29	11.88	9.87	5.39	4.27	0.70	0.47	0.01	0.00	61.77	54.23
% of Production Volume	0.00	0.00	0.10	0.20	0.30	0.60	0.50	2.70	2.50	8.20	7.80	27.60	28.10	31.60	33.60	19.20	18.10	8.70	7.80	1.10	0.90	0.00	0.00	100.00	100.00
WA Note Rate (%)	2.84	3.08	3.37	3.65	3.83	4.07	4.33	4.74	4.88	5.36	5.43	5.94	5.94	6.45	6.44	6.95	6.91	7.46	7.42	7.89	7.91	8.01	8.08	6.35	6.33
WA Loan Age (mos.)	11	3	6	2	5	2	4	2	2	2	2	1	1	1	1	1	1	1	2	2	2	2	2	1	2
WA FICO	763	767	761	756	755	755	755	755	758	757	757	756	756	751	751	743	742	733	734	726	727	753	718	750	750
WA LTV	0.73	0.71	0.75	0.74	0.78	0.78	0.77	0.82	0.79	0.79	0.8	0.79	0.8	0.79	0.81	0.8	0.8	0.79	0.79	0.78	0.76	0.94	0.94	0.79	0.8
%FICO<680	5.00	1.00	5.00	4.00	5.00	2.00	4.00	3.00	3.00	3.00	3.00	4.00	4.00	5.00	5.00	9.00	9.00	15.00	14.00	20.00	19.00	5.00	30.00	6.00	6.00
%FICO>740	77.00	78.00	72.00	71.00	68.00	69.00	70.00	69.00	72.00	71.00	70.00	70.00	69.00	64.00	64.00	56.00	55.00	48.00	48.00	42.00	42.00	68.00	28.00	63.00	63.00
%LTV>80	6.00	21.00	37.00	34.00	45.00	43.00	42.00	52.00	44.00	45.00	50.00	44.00	50.00	44.00	51.00	43.00	45.00	38.00	37.00	36.00	25.00	93.00	100.00	44.00	48.00
%FICO<680 & LTV>80	0.00	0.00	2.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	2.00	5.00	4.00	6.00	5.00	5.00	30.00	2.00	2.00
%DTI>40	66.00	25.00	33.00	34.00	51.00	41.00	48.00	47.00	50.00	49.00	53.00	49.00	52.00	50.00	51.00	52.00	52.00	53.00	51.00	50.00	46.00	48.00	32.00	50.00	52.00
%Purchase	89.00	65.00	68.00	39.00	83.00	78.00	85.00	93.00	93.00	89.00	91.00	85.00	89.00	85.00	89.00	83.00	84.00	80.00	79.00	73.00	68.00	97.00	100.00	85.00	87.00
%Rate/Term	11.00	35.00	32.00	58.00	16.00	21.00	9.00	5.00	4.00	5.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	3.00	4.00	3.00	0.00	0.00	5.00	4.00
%Cash out	0.00	0.00	1.00	2.00	1.00	1.00	7.00	1.00	3.00	6.00	4.00	10.00	6.00	10.00	7.00	13.00	12.00	16.00	18.00	23.00	29.00	0.00	0.00	11.00	9.00
%Owner Occupied	100.00	88.00	96.00	91.00	96.00	97.00	96.00	99.00	99.00	98.00	98.00	97.00	98.00	94.00	95.00	86.00	87.00	71.00	71.00	60.00	50.00	95.00	100.00	91.00	92.00
%Second Home	0.00	12.00	3.00	6.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	4.00	3.00	7.00	7.00	10.00	10.00	3.00	0.00	2.00	2.00
%Investor	0.00	0.00	1.00	2.00	2.00	1.00	2.00	1.00	1.00	2.00	1.00	2.00	2.00	5.00	4.00	11.00	10.00	21.00	23.00	30.00	40.00	2.00	0.00	7.00	6.00

* Numbers in the table represent end of quarter, not at-securitization, values. UPB = unpaid principal balance; WA = weighted average; WAC = weighted average coupon; WALA = weighted average loan age; LTV = loan-to-value ratio; DTI = debt-to-income ratio.

Source: RiskSpan calculations from data available publicly as of April 2023.

Glossary

Average loan size (ALS) refers to the average dollar amount of the loans as stated on the notes at the time the loans were originated or modified.

Cohort refers to those Enterprise TBA-eligible securities with the same coupon, maturity, and loan-origination year where the combined unpaid principal balance of such securities exceeds $10 billion. The loan-origination year is calculated as the value-weighted average of the origination years of the mortgages collateralizing a security.

Conditional prepayment rate (CPR), also known as the constant prepayment rate, measures prepayments as a percentage of the current outstanding principal balance of the pool of loans backing a mortgage-backed security or cohort of those securities. The CPR is expressed as a compound annual rate.

Debt-to-income (DTI) ratio is the ratio obtained by dividing the total monthly debt expense by the total monthly income of the borrower at the time the loan was originated or modified.

Fastest paying quartile of a cohort means the quartile of a cohort that has the fastest prepayment speeds as measured by the three-month CPR. The quartiles shall be determined by ranking outstanding TBA-eligible securities with the same coupon, maturity, and loan-origination year by the three-month CPR, excluding specified pools, and dividing each cohort into four parts such that the total unpaid principal balance of the pools included in each part is equal.

FICO refers to a credit score produced by FICO and used in the mortgage underwriting process.

Loan-to-value (LTV) ratio is the ratio, expressed as a percentage, obtained by dividing the amount of the loan at origination by the value of the property.

Specified pools for the purpose of this report, are those pools with one or more of the following characteristics at issuance: a maximum loan size of $200,000, a loan-to-value ratio at the time of loan origination of greater than 80 percent, a FICO score

of less than 700, where all loans finance investor-owned properties, or where all loans finance properties in the states of New York or Texas or the Commonwealth of Puerto Rico.

To-be-announced (TBA) market is a forward market for certain mortgage-backed securities, including those issued by the Enterprises.

Uniform Mortgage-Backed Security (UMBS) is the new single, common mortgage-backed security that the Enterprises issue, which replaced their previous offerings of TBA-eligible single class, fixed-rate mortgage-backed securities.

Unpaid principal balance (UPB) is the portion of a loan that the borrower has not yet paid back to the lender.

Weighted average coupon (WAC) refers to the average gross interest rates owed on the mortgages underlying the security weighted by the percentage of the security's unpaid principal balance that each mortgage represents.

Weighted average loan age (WALA) refers to the average number of months since the date of origination of mortgages underlying the security weighted by the percentage of the security's unpaid principal balance that each mortgage represents.

Weighted average maturity (WAM) refers to the average number of months remaining until the final payment is due on mortgages underlying the security weighted by the percentage of the security's unpaid principal balance that each mortgage represents.