

PREPAYMENT MONITORING REPORT

First Quarter 2019

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Introduction

FHFA's *2014 Strategic Plan for the Conservatorships of Fannie Mae and Freddie Mac* includes the goal of improving the overall liquidity of Fannie Mae's and Freddie Mac's (the Enterprises) securities through the development of a common mortgage-backed security. That security is the Uniform Mortgage-Backed Security or UMBS, which began trading in the "To-Be-Announced" (TBA) market¹ on March 12, 2019. UMBS issued by Fannie Mae and Freddie Mac trade in the TBA market without regard to which Enterprise is the issuer. This fungibility, or interchangeability, is central to broadening and enhancing the liquidity of the secondary mortgage market on an ongoing basis.

This report provides insight into how FHFA monitors the consistency of prepayment rates across cohorts of the Enterprises' TBA-eligible MBS.² This report defines a cohort as those Enterprise TBA-eligible securities with the

same coupon, maturity, and loan-origination year.³ 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. If a borrower defaults on the mortgage loan, the Enterprise will pay investors the remaining principal balance and remove the loan from the MBS. That action has the same effect on investors as a full prepayment. Partial prepayment occurs when a borrower pays principal in addition to the regularly scheduled payment of principal and interest.

Consistency of prepayment rates is important to the success of UMBS and to the efficiency and liquidity of the secondary mortgage market. Some industry stakeholders have expressed concern that the rates of prepayment of the Enterprises' securities might materially diverge and undermine their fungibility. FHFA has taken a number of steps to promote the continued consistency of prepayment rates of Fannie Mae- and Freddie Mac-issued mortgage-

¹ The TBA market is a forward market for certain mortgage-backed securities, including those issued by Fannie Mae and Freddie Mac.

² To avoid double counting, only first-level securitizations are included in the analysis. Second-level securitizations (Megs and Giants) are excluded.

³ FHFA has previously stated that cohorts would be determined by issuance year. Basing the analysis on loan-origination years is more consistent with industry practice.



backed securities (MBS).⁴ This quarterly report is part of that commitment and provides market participants additional transparency into the data FHFA receives and reviews on a monthly basis and into FHFA's uses of that data.

⁴ See, for example, the UMBS Final Rule at <https://www.federalregister.gov/documents/2019/03/05/2019-03934/uniform-mortgage-backed-security>.



Alignment Activity

FHFA has established Enterprise guidelines for alignment on prepayment rates – also referred to as prepayment speeds – that require the Enterprises to identify and align those Enterprise programs, policies, and practices that could materially affect prepayments, and to develop strategies to address any actual or anticipated divergences in prepayment rates.

FHFA guidelines call for general alignment on the observed prepayments associated with Enterprise MBS at the cohort level but not complete alignment of the Enterprises' programs, policies, and practices. Alignment efforts are required only on those innovations or other changes that are likely to cause a divergence of prepayment rates for two reasons: because the Enterprises remain separate entities and competitors and because complete alignment could hamper innovation by the Enterprises. Past innovations have delivered significant benefits to the secondary mortgage market and to mortgage borrowers.

To comply with FHFA guidelines, each Enterprise has a formal internal Enterprise-wide governance process to ensure that any significant changes proposed to its programs, policies, and practices are identified, reviewed, escalated, and submitted to FHFA for review in a timely

manner. Such reviews have helped align Enterprise prepayment rates in recent years and continue to help ensure that Enterprise business decisions consider investor interests.

For example, in 2017, the Enterprises and FHFA announced new streamlined refinance programs to replace the crisis-era Home Affordable Refinance Program (HARP). The new programs aim to assist borrowers who are current on their payments and who cannot refinance because their loan-to-value (LTV) ratios exceed the maximum otherwise allowed. Because these programs could significantly affect prepayment rates on TBA-eligible securities, FHFA required the Enterprises to align on all major program aspects prior to implementation.

The Enterprises are also required to monitor *ex post* all programs, policies, and practices for unanticipated effects on prepayment rates and security performance, and are required to report to FHFA any unexpected effects.

When circumstances arise that cause divergences in prepayment rates for some cohorts, notwithstanding these efforts, each Enterprise has strategies it can employ, with FHFA oversight, to address misalignment of prepayment rates.



FHFA will continue to require the Enterprises to submit non-public reports to FHFA with all proposed or pending changes as described in the *Update on the Single Security Initiative and Common Securitization Platform, December 2017*.

Ex post monitoring of the actual 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. FHFA monitors and evaluates prepayment rates of the TBA-eligible securities issued by the Enterprises. As noted above, FHFA is seeking general alignment on the observed prepayment rates associated with Enterprise MBS at the cohort level. By “general alignment,” FHFA means that those cash flows should be similar rather than identical.

FHFA has set a minimum standard to trigger a review of the differences in prepayment rates of any given cohort. In general, FHFA investigates differences between actual Fannie Mae and Freddie Mac prepayment rates when the divergence for a cohort exceeds a conditional prepayment rate (CPR) of two percentage points. For a divergence in CPR in excess of three percentage points, FHFA will require that the cause of the divergence be reported to

FHFA’s internal Single Security Governance Committee.⁵ This committee monitors issuance and prepayment performance of Fannie Mae’s and Freddie Mac’s mortgage-backed securities and takes remedial actions to address prepayment differences between the two Enterprises’ mortgage-backed securities when they arise.

Future Reporting

On March 5, 2019, FHFA published the Uniform Mortgage-Backed Security Final Rule, which codifies the current alignment requirements that FHFA implemented under the Fannie Mae and Freddie Mac conservatorships and becomes effective on May 6, 2019. To monitor alignment, as defined in the new rule, FHFA will create new reports, such as an alignment report comparing the fastest quartiles of 3-month CPR on the Enterprises’ cohorts, and will provide examples of those reports in future Prepayment Monitoring Reports, targeting release in Q3 2019.

⁵ The percentage triggers are based on the current interest rate environment and are subject to change over time.



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.

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

when a borrower pays principal in addition to the regularly scheduled payment of principal and interest.

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. Similarly, investors in discounted securities prefer MBS with faster prepayment rates.

Market participants measure prepayments using the CPR, which is the percentage of the existing mortgage pool principal that is prepaid in a given period expressed as a compounded annual rate.

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



Charts

Chart 1 compares prepayment rates for all Fannie Mae and Freddie Mac TBA-eligible 30-year securities for the current year and the prior six years.

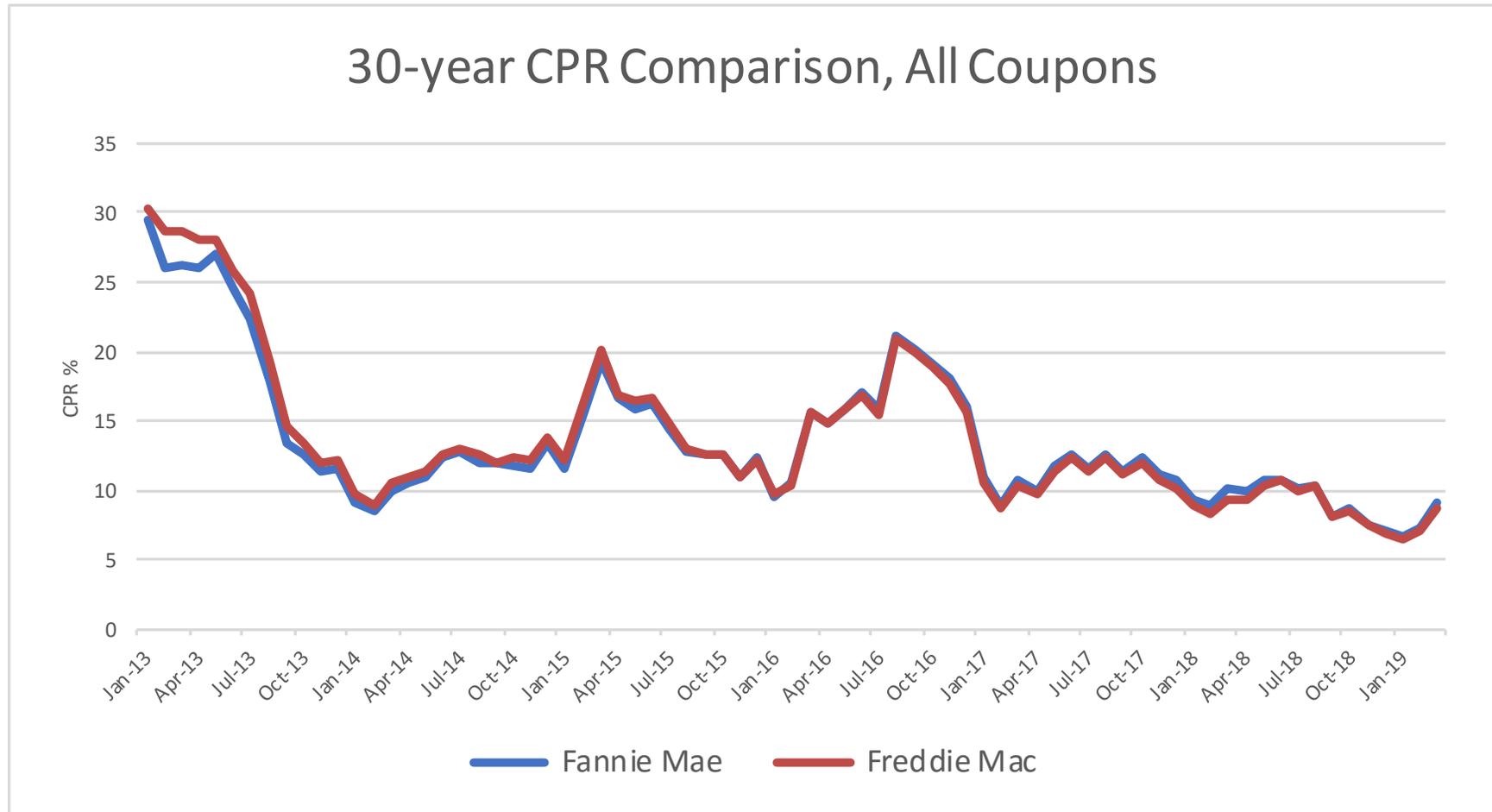
Chart 2 illustrates the comparison of pool loan-origination years for a given TBA-eligible MBS coupon. Chart 2 shows March 2019 prepayment rates for each Enterprise's 30-year MBS for coupons with combined issuance volume outstanding in excess of \$10 billion (3%, 3.5%, 4%, 4.5%, and 5%) and the six loan-origination years prior to the current calendar year.

FHFA uses these charts to assess the current alignment of CPRs for past origination cycles and the general trend of alignment across loan-origination years.

FHFA also uses Charts 3a through 3f to compare Fannie Mae's TBA-eligible MBS and Freddie Mac's TBA-eligible MBS prepayment rates and to evaluate the degree of alignment on an historical basis. Chart 3a illustrates alignment in prepayment rates across the Enterprises for recent coupons with substantial issuance. For each coupon in Chart 3a, the prepayment rates illustrated are calculated across all outstanding TBA-eligible MBS at a given point in time. Charts 3b through 3f illustrate the degree of prepayment alignment for each coupon-year cohort.



Chart 1: Prepayment Comparison for 30-Year, TBA-Eligible MBS, All Coupons



Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Chart 2: March 2019 Prepayment Rates on 30-year, TBA-eligible MBS by Coupon and Loan-Originiation Year*

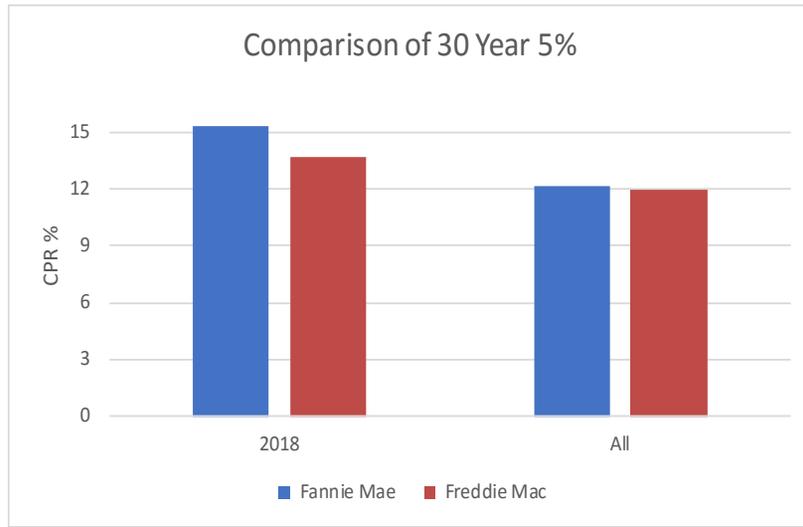


* The 3 percent coupon cohorts for 2014 and 2018, and the 4.5 percent coupon cohorts for 2013, 2015, and 2016 are omitted because each has a combined UPB below the \$10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Chart 2: March 2019 Prepayment Rates on 30-year, TBA-eligible MBS by Coupon and Loan-Originator Year*

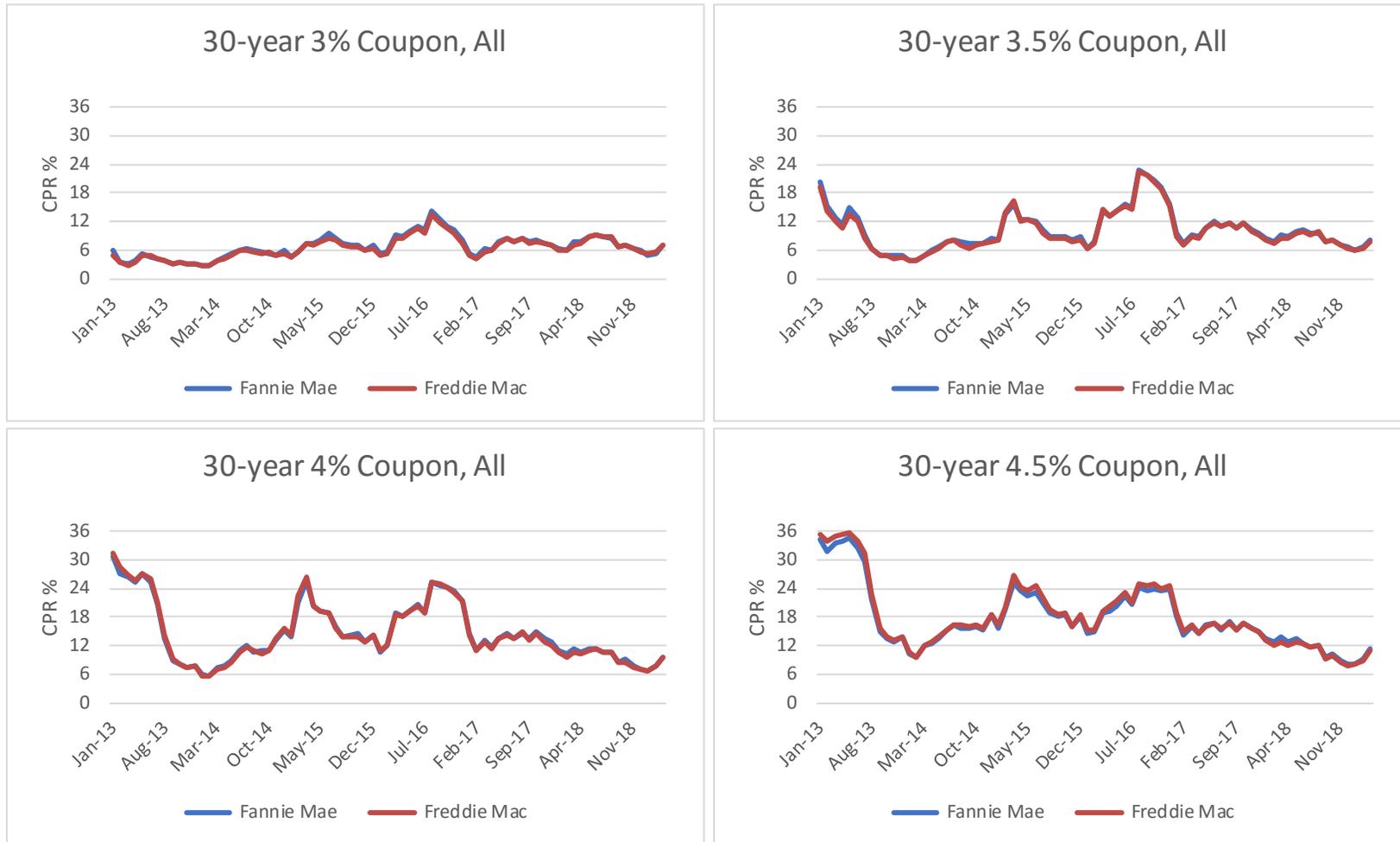


* The 5 percent coupon cohorts for 2013, 2014, 2015, 2016, and 2017 are omitted because each has a combined UPB below the \$10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



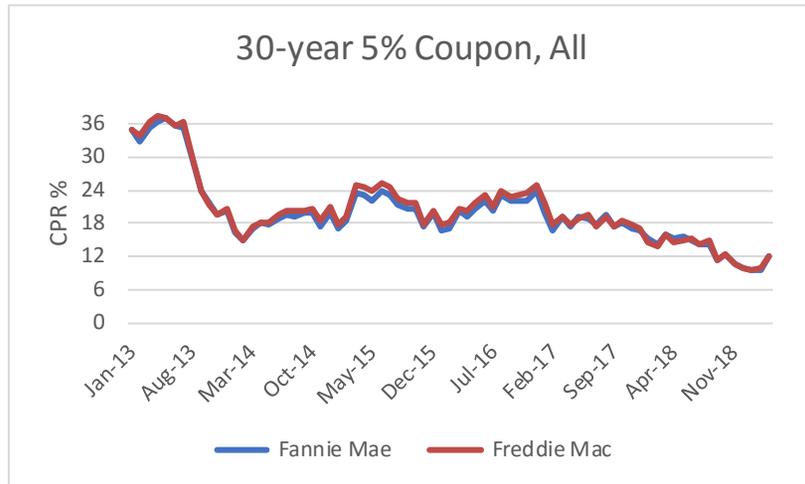
Chart 3a: Prepayment Rates on All 30-year, TBA-eligible MBS by Coupon



Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Chart 3a: Prepayment Rates on All 30-year, TBA-eligible MBS by Coupon



Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Chart 3b: Prepayment Rates on 30-year, 3.00 Percent Coupon TBA-eligible MBS by Loan-Originiation Year*

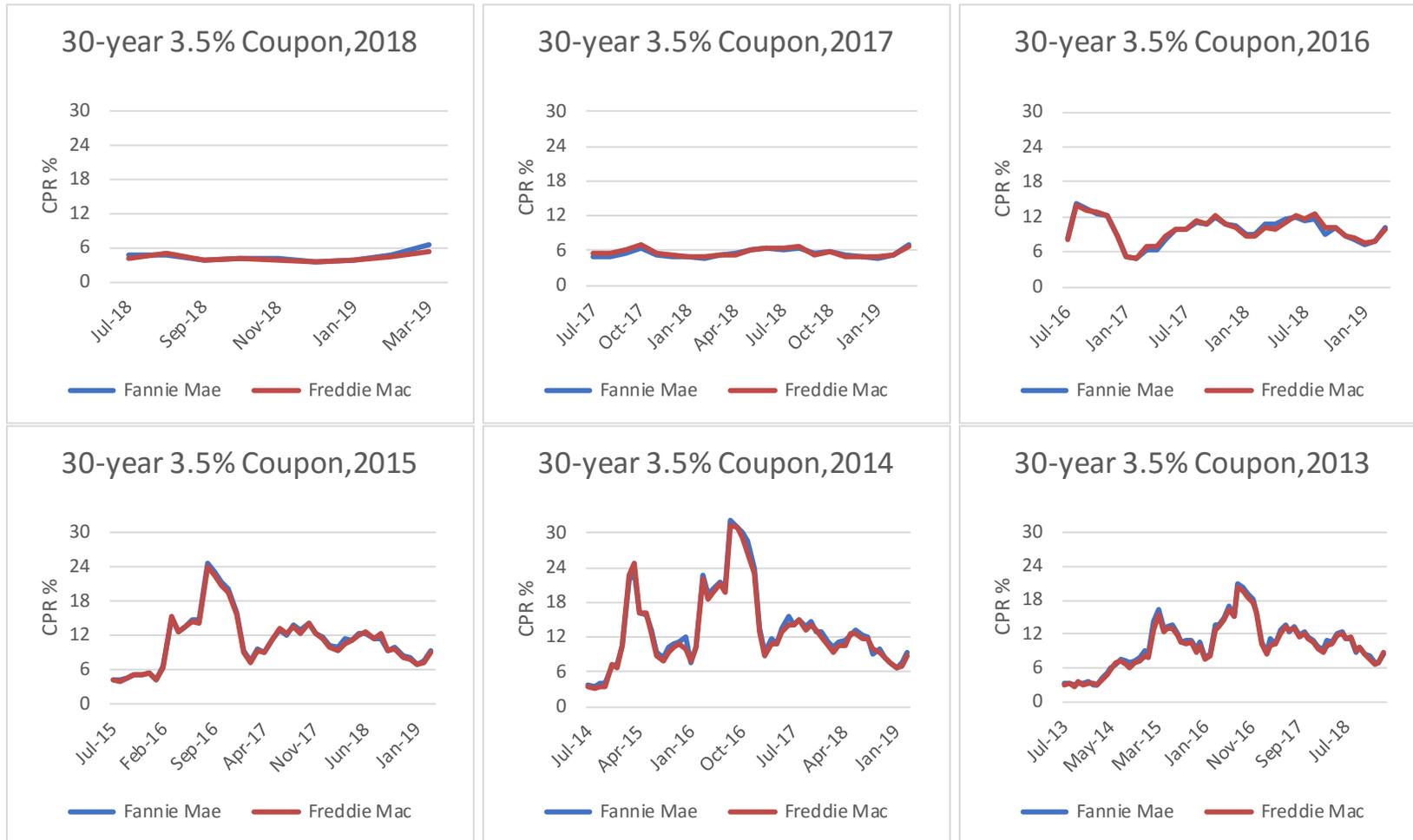


* The 2014 and 2018 cohorts are omitted because each has a combined UPB below the \$10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



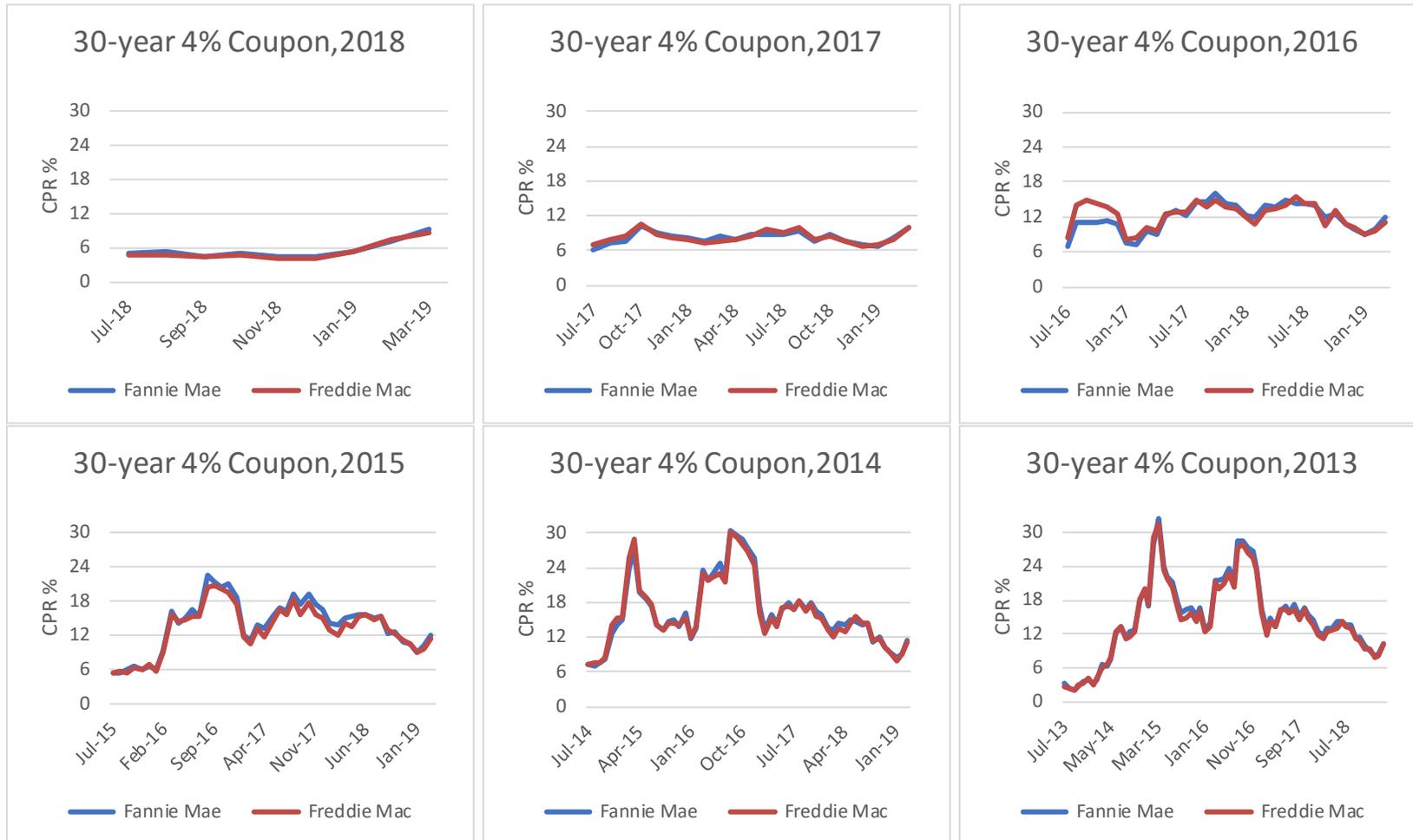
Chart 3c: Prepayment Rates on 30-year, 3.50 Percent Coupon TBA-eligible MBS by Loan-Originiation Year



Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



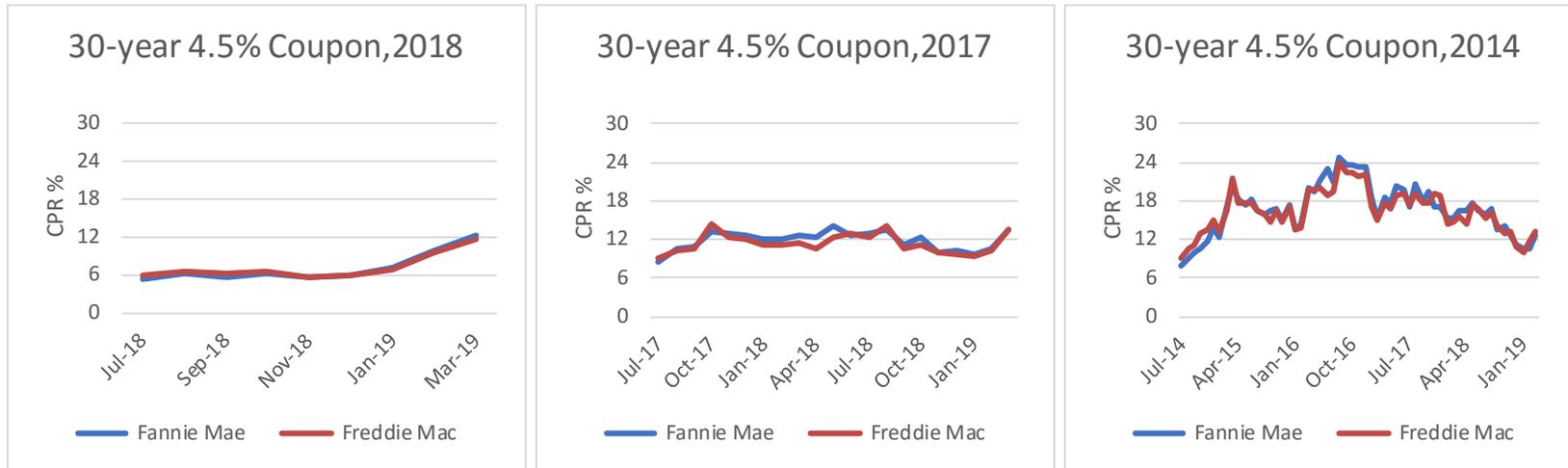
Chart 3d: Prepayment Rates on 30-year, 4.00 Percent Coupon TBA-eligible MBS by Loan-Originiation Year



Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Chart 3e: Prepayment Rates on 30-year, 4.50 Percent Coupon TBA-eligible MBS by Loan-Originator Year

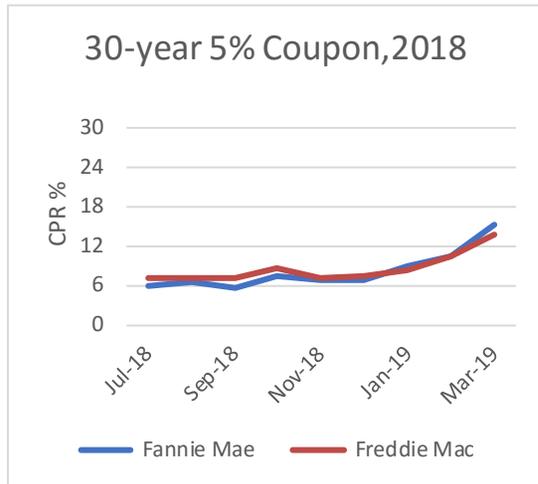


* The 2013, 2015, and 2016 cohorts are omitted because each has a combined UPB below the \$10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Chart 3f: Prepayment Rates on 30-year, 5.00 Percent Coupon TBA-eligible MBS by Loan-Originiation Year



* The 2013, 2014, 2015, 2016, and 2017 cohorts are omitted because each has a combined UPB below the \$10 billion threshold.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Data Tables

FHFA uses Table 1, the Annual Vintage Report, to compare Fannie Mae's and Freddie Mac's prepayment rates with cohort attributes, such as the weighted-average coupon (WAC), the weighted-average 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 Decile 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 and bearing the stated coupon are ranked by their one-month CPRs from fastest to slowest. The pools are then grouped into deciles based on UPB. In addition to the current month's prepayment rates, the Report presents the 3-month and 6-month CPR as well as the WALA, WAC, average loan size (ALS), and credit score (FICO) for each decile. Table 2 presents this information for each month of the quarter.

Table 3, the Total Industry Issuance Report, provides a comparison of Fannie Mae's and Freddie Mac's previous three months of issuance, with various key loan attributes that would affect the expectations of prepayments and delinquencies. The attributes that generally create faster prepayments, such as high credit score and low loan-to-value (LTV) ratio, also generally lower defaults. That is, borrowers with, for example, higher credit scores and lower LTV ratios tend to both prepay their mortgages faster than other borrowers and default less frequently. FHFA uses this report to identify any differences in loan attributes that may cause a divergence in prepayment rates. 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, TBA-eligible MBS Annual Vintage Report

Coupon	Year	Weighted Average Coupon (percent)		Weighted Average Maturity (months)		Weighted Average Loan Age (months)		Unpaid Principal Balance (\$ billions)		One-Month Conditional Prepayment Rates (percent)					
		FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	March		February		January	
										FNM	FRE	FNM	FRE	FNM	FRE
3	2013	3.58	3.57	277	277	72	72	114	67.3	7.12	6.97	5.71	5.32	5.45	5.41
	2015	3.77	3.77	305	306	46	46	43	40.5	7.56	7.24	5.55	5.88	5.1	5.2
	2016	3.66	3.71	323	323	31	31	194.2	148.2	7.38	7.37	5.41	5.8	4.9	5.35
	2017	3.67	3.76	332	335	23	20	13.6	14.3	5.23	5.24	4.51	4.28	3.89	3.68
	All	3.64	3.68	300	305	51	47	453.7	317.6	7.15	7.08	5.45	5.59	5.06	5.23
3.5	2013	4.02	4.01	280	280	70	69	54.6	35	8.53	8.76	7.01	6.86	6.95	6.65
	2014	4.23	4.21	296	295	55	55	38.3	32.9	9.48	8.91	7.6	7.06	6.83	6.59
	2015	4.10	4.11	308	308	45	44	126.3	87.9	9.28	9.18	7.54	7.39	6.9	6.86
	2016	4.08	4.11	321	321	33	33	87.8	58.9	10.28	9.94	7.97	7.75	7.27	7.41
	2017	4.06	4.08	335	335	20	20	155.8	119.9	7.06	6.67	5.36	5.26	4.64	4.81
	2018	4.15	4.20	345	345	12	12	56.1	40.9	6.46	5.47	4.85	4.5	3.73	3.73
	2019	4.55	4.48	357	358	1	1	10.4	7.3	2.07	2	2.46	1.91	0.79	0
	All	4.08	4.10	309	312	43	40	643.1	441	8.29	7.93	6.58	6.36	6.03	5.98
4	2013	4.57	4.58	283	284	66	66	35.4	18.4	10.33	10.33	8.39	8.13	8.04	7.72
	2014	4.58	4.58	294	294	57	57	57.2	39.7	11.36	11.06	8.96	9.04	8.49	7.95
	2015	4.57	4.55	309	309	44	44	34.4	19.5	12.12	11.53	10.14	9.54	9.02	8.94
	2016	4.51	4.55	321	320	33	34	29.2	16.6	11.91	11.14	9.96	9.53	9.04	9.09
	2017	4.47	4.47	335	335	21	21	115	73.2	9.94	9.87	8.09	7.8	6.61	6.99
	2018	4.65	4.65	348	349	9	9	181.3	121.4	9.16	8.79	7.26	7.39	5.32	5.26
	2019	4.90	4.84	356	357	2	2	30.4	16.5	5.43	5.23	3.82	4.33	2.58	1.76
	All	4.57	4.58	317	319	37	35	576.6	353.9	9.74	9.51	7.91	7.86	6.87	6.72
4.5	2014	5.01	5.08	293	293	58	58	10.3	4.2	12.58	13.11	10.5	11.75	10.43	9.86
	2017	4.97	4.94	335	335	21	21	27.2	16.8	13.5	13.53	10.69	10.28	9.78	9.47
	2018	5.12	5.06	349	350	8	8	91	65.8	12.24	11.53	9.97	9.52	7.28	6.98
	2019	5.32	5.20	356	356	2	2	14.6	10.9	6.56	6.58	4.53	3.74	2.38	4.92
	All	5.05	5.02	307	309	46	44	230.8	152.6	11.38	11.11	9.33	9.05	8.29	8.09
5	2018	5.7	5.59	350	350	7	7	18.4	12.3	15.36	13.65	10.44	10.55	8.88	8.34
	All	5.56	5.52	261	261	89	90	69.4	46.8	12.19	12	9.72	9.9	9.53	9.6

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Table 2: 30-year, TBA-eligible MBS Decile Report

Fannie Mae 30-year, 3.0 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		19.3		9.9		8.3		7.7		6.9		6.4		5.6		4.1		1.5		0.3	
Feb 19		16.3		7.8		6.4		5.6		5.1		4.6		3.9		2.5		0.8		0.3	
Jan 19		15.5		7.3		5.8		5.0		4.6		4.2		3.5		2.4		0.8		0.3	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	58	3.66	56	3.65	47	3.67	49	3.65	44	3.63	43	3.60	51	3.60	58	3.62	61	3.63	53	3.68
	ALS/ FICO	206	762	210	764	244	764	252	764	249	764	260	766	236	765	231	767	208	766	214	761
	CPR3 / CPR6	10.5	8.8	6.9	7.0	6.3	6.4	6.0	6.40	5.8	6.1	5.3	5.7	5.2	5.7	4.8	5.5	4.2	5.4	3.6	5.0
Feb 19	WALA / WAC	56	3.65	56	3.64	51	3.67	48	3.64	41	3.63	45	3.61	44	3.59	56	3.63	62	3.63	51	3.68
	ALS/ FICO	205	762	218	765	226	764	249	765	255	763	252	765	249	765	230	765	210	767	218	760
	CPR3 / CPR6	9.6	8.4	6.5	6.80	5.8	6.40	5.4	6.10	5.3	6.00	5.0	5.90	4.6	5.40	4.4	5.50	4.3	5.60	3.6	5.10
Jan 19	WALA / WAC	58	3.64	56	3.63	50	3.65	42	3.65	39	3.62	42	3.62	51	3.63	54	3.63	60	3.63	50	3.68
	ALS/ FICO	201	763	210	765	240	764	255	764	256	764	259	765	241	766	234	765	208	767	218	761
	CPR3 / CPR6	9.6	8.8	6.8	7.40	6.1	6.90	5.9	6.70	5.6	6.50	5.2	6.10	5.0	6.10	4.9	6.20	4.4	6.00	4.1	5.70

Freddie Mac 30-year, 3.0 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		14.6		8.5		7.9		7.6		7.3		6.8		6.4		5.9		4.2		0.7	
Feb 19		12.0		7.2		6.2		5.8		5.6		5.3		5.0		4.4		3.1		0.5	
Jan 19		11.6		6.3		5.9		5.5		5.3		5.1		4.7		4.0		2.8		0.5	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	56	3.66	45	3.70	40	3.71	45	3.68	36	3.72	51	3.66	45	3.67	59	3.60	53	3.69	52	3.69
	ALS/ FICO	185	763	239	763	263	761	259	761	269	761	252	765	262	762	222	766	217	766	191	762
	CPR3 / CPR6	8.7	7.9	6.6	6.5	6.5	6.6	6.1	6.20	6.1	6.2	5.8	6.1	5.7	5.9	5.4	5.9	4.8	5.3	3.8	5.1
Feb 19	WALA / WAC	53	3.70	46	3.73	48	3.69	44	3.70	35	3.67	45	3.67	44	3.62	55	3.65	51	3.64	55	3.66
	ALS/ FICO	190	761	240	762	234	763	256	764	270	761	258	764	259	762	236	767	219	765	192	761
	CPR3 / CPR6	21.6	20.0	6.2	6.70	5.8	6.30	5.5	6.10	5.4	6.00	12.2	12.00	5.4	5.90	5.0	5.70	4.5	5.30	4.0	5.50
Jan 19	WALA / WAC	56	3.65	38	3.71	46	3.67	41	3.69	52	3.63	42	3.66	48	3.69	49	3.67	39	3.69	54	3.66
	ALS/ FICO	177	763	257	761	248	764	256	761	252	763	272	762	240	766	244	765	235	764	188	761
	CPR3 / CPR6	8.4	8.2	6.2	6.90	6.1	6.80	6.1	7.00	5.7	6.80	5.5	6.50	5.3	6.40	5.2	6.20	4.7	5.60	4.4	6.00

ALS = average loan size; CPR3/CPR6 = 3 or 6 months conditional prepayment rate, respectively; WALA = weighted average loan age; WAC = weighted average coupon.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Table 2: 30-year, TBA-eligible MBS Decile Report

Fannie Mae 30-year, 3.5 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		25.3		12.2		9.9		8.4		7.4		6.6		5.5		3.4		0.7		0.2	
Feb 19		21.9		9.8		7.7		6.6		5.6		4.9		4.1		2.3		0.5		0.2	
Jan 19		20.8		9.2		7.2		5.9		5.0		4.4		3.4		1.7		0.5		0.1	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	52	4.11	49	4.08	47	4.07	44	4.07	39	4.07	33	4.04	36	4.04	44	4.09	53	4.12	45	4.13
	ALS/ FICO	187	747	197	750	215	753	222	756	235	757	247	759	228	759	205	757	181	755	196	744
	CPR3 / CPR6	13.9	11.4	8.8	8.5	7.8	7.9	7.0	7.10	6.3	6.5	5.6	5.8	5.5	5.8	5.0	6.1	4.7	6.3	4.2	5.9
Feb 19	WALA / WAC	51	4.11	48	4.07	48	4.07	46	4.05	36	4.05	29	4.04	35	4.08	44	4.10	56	4.08	45	4.13
	ALS/ FICO	188	747	196	750	213	754	213	756	244	758	253	759	237	757	196	758	178	754	198	743
	CPR3 / CPR6	12.7	10.9	8.0	8.50	7.2	7.70	6.6	7.30	5.7	6.30	5.0	5.50	4.8	5.70	4.8	5.90	4.7	6.30	4.4	6.10
Jan 19	WALA / WAC	52	4.10	49	4.08	47	4.05	47	4.04	32	4.04	29	4.07	35	4.06	41	4.10	54	4.08	43	4.13
	ALS/ FICO	186	746	196	751	207	753	211	757	242	758	251	759	229	757	207	758	183	753	203	742
	CPR3 / CPR6	12.6	11.4	8.3	9.10	7.3	8.30	6.7	7.70	5.7	6.50	5.2	6.10	5.1	6.30	4.9	6.30	5.1	7.10	4.8	6.80

Freddie Mac 30-year, 3.5 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		19.8		11.0		9.7		8.8		8.0		7.1		6.2		4.8		1.8		0.3	
Feb 19		17.4		8.8		7.7		6.8		6.2		5.5		4.6		3.6		1.3		0.3	
Jan 19		16.7		8.3		7.2		6.4		5.8		4.9		4.3		3.3		1.2		0.2	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	51	4.09	46	4.13	46	4.12	45	4.10	45	4.10	32	4.13	32	4.08	29	4.11	42	4.11	46	4.09
	ALS/ FICO	173	747	220	750	218	754	233	754	226	758	248	759	239	758	237	760	182	758	185	747
	CPR3 / CPR6	11.6	10.0	8.4	8.7	7.9	8.0	7.4	7.70	6.8	6.9	5.9	5.8	5.7	5.7	4.6	4.9	4.5	5.8	4.2	5.7
Feb 19	WALA / WAC	52	4.08	44	4.13	43	4.13	44	4.10	41	4.11	36	4.11	31	4.08	28	4.10	46	4.08	46	4.08
	ALS/ FICO	162	748	208	752	239	755	227	754	244	756	248	759	240	757	248	761	173	758	184	745
	CPR3 / CPR6	10.7	9.9	7.8	8.30	7.4	7.90	6.7	7.50	6.2	6.80	5.6	6.10	5.0	5.50	4.3	4.90	4.5	6.00	4.2	6.00
Jan 19	WALA / WAC	50	4.08	44	4.14	42	4.10	42	4.12	44	4.10	36	4.08	26	4.11	30	4.09	45	4.07	44	4.08
	ALS/ FICO	172	747	202	753	230	751	244	754	225	758	234	759	264	758	236	760	175	759	185	746
	CPR3 / CPR6	11.0	10.5	7.9	9.10	7.7	9.00	7.3	8.50	6.5	7.50	5.7	6.40	4.7	5.50	4.6	5.50	4.6	6.30	4.6	6.70

ALS = average loan size; CPR3/CPR6 = 3 or 6 months conditional prepayment rate, respectively; WALA = weighted average loan age; WAC = weighted average coupon.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Table 2: 30-year, TBA-eligible MBS Decile Report

Fannie Mae 30-year, 4.0 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		28.7		14.0		12.0		10.5		9.2		7.9		6.4		3.7		0.7		0.1	
Feb 19		25.3		11.6		9.9		8.4		7.3		6.0		4.7		2.1		0.5		0.1	
Jan 19		24.3		10.4		7.7		6.7		5.8		4.6		3.7		1.9		0.4		0.1	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	50	4.56	39	4.56	28	4.59	30	4.55	33	4.55	26	4.61	35	4.58	36	4.58	59	4.56	41	4.61
	ALS/ FICO	177	731	198	740	224	744	229	745	219	747	223	749	201	749	177	747	152	745	182	728
	CPR3 / CPR6	16.1	13.0	10.4	9.4	8.9	8.0	8.7	7.90	7.7	7.7	6.8	6.3	6.1	6.6	5.3	6.1	5.1	7.0	4.8	6.4
Feb 19	WALA / WAC	50	4.56	32	4.60	32	4.53	31	4.53	37	4.52	22	4.64	30	4.57	42	4.59	57	4.55	39	4.60
	ALS/ FICO	173	732	217	743	215	741	221	744	198	745	242	750	201	749	166	751	159	742	187	728
	CPR3 / CPR6	14.8	12.7	8.6	8.20	8.1	8.10	7.3	7.50	7.0	7.60	5.4	5.80	5.4	5.90	4.8	6.40	5.3	7.30	4.6	6.50
Jan 19	WALA / WAC	54	4.55	47	4.51	35	4.57	30	4.50	24	4.57	22	4.59	22	4.64	44	4.55	55	4.55	37	4.61
	ALS/ FICO	166	733	172	736	207	747	227	744	233	747	229	749	231	750	169	748	160	741	190	727
	CPR3 / CPR6	14.7	13.2	9.3	10.00	7.3	7.90	7.0	8.00	5.9	6.40	5.3	6.10	4.7	6.10	5.5	7.30	5.6	7.90	5.0	7.30

Freddie Mac 30-year, 4.0 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		25.3		13.2		11.7		10.7		9.6		8.6		7.2		4.6		0.9		0.2	
Feb 19		22.0		11.2		9.6		8.5		7.7		6.8		5.7		3.4		0.7		0.2	
Jan 19		21.0		9.5		8.0		7.2		6.4		5.3		4.4		2.6		0.6		0.1	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	49	4.56	37	4.60	25	4.61	31	4.57	30	4.57	31	4.59	34	4.58	28	4.59	52	4.56	39	4.57
	ALS/ FICO	163	735	216	744	248	747	236	747	226	748	234	745	203	749	192	751	150	749	178	733
	CPR3 / CPR6	14.4	12.1	9.8	8.9	9.0	7.7	8.8	7.90	8.0	7.4	7.5	7.5	6.7	6.8	5.3	5.7	4.8	6.6	4.6	6.4
Feb 19	WALA / WAC	46	4.57	32	4.60	31	4.61	31	4.56	23	4.62	29	4.55	31	4.58	34	4.56	55	4.53	39	4.56
	ALS/ FICO	170	739	215	742	237	749	234	742	242	750	228	746	217	750	179	750	144	747	179	732
	CPR3 / CPR6	12.9	11.2	8.6	8.40	7.8	7.60	7.5	7.70	6.5	6.40	6.4	7.20	5.8	6.40	5.0	6.10	5.1	7.10	4.8	6.70
Jan 19	WALA / WAC	53	4.55	42	4.54	29	4.58	31	4.57	27	4.55	29	4.55	18	4.65	29	4.61	55	4.53	38	4.56
	ALS/ FICO	153	736	190	739	234	742	240	745	244	748	231	750	230	754	193	752	148	748	180	732
	CPR3 / CPR6	13.4	12.4	8.8	9.80	7.5	8.00	7.1	7.80	6.5	7.40	6.0	7.10	4.8	4.90	4.6	6.10	5.6	7.70	5.1	7.40

ALS = average loan size; CPR3/CPR6 = 3 or 6 months conditional prepayment rate, respectively; WALA = weighted average loan age; WAC = weighted average coupon.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Table 2: 30-year, TBA-eligible MBS Decile Report

Fannie Mae 30-year, 4.5 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		33.7		18.8		15.3		12.2		10.1		7.8		5.3		1.7		0.4		0.1	
Feb 19		31.5		16.1		12.3		9.9		8.0		5.5		3.1		0.9		0.3		0.1	
Jan 19		30.1		14.0		10.8		8.3		6.1		4.7		2.8		0.8		0.3		0.0	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	43	5.10	30	5.04	33	5.07	41	5.06	48	5.00	47	5.04	35	5.02	72	5.00	74	5.00	47	5.10
	ALS/ FICO	181	720	217	722	204	722	186	727	162	731	151	736	139	736	129	742	145	734	172	718
	CPR3 / CPR6	20.2	14.9	14.2	12.1	11.5	9.7	9.7	9.20	9.0	8.8	6.8	7.4	5.7	6.1	5.6	7.4	5.6	7.6	5.0	6.9
Feb 19	WALA / WAC	45	5.10	29	5.07	42	5.00	26	5.14	56	4.98	38	5.00	36	5.04	82	4.98	67	5.01	44	5.10
	ALS/ FICO	179	719	222	720	181	726	215	727	164	733	140	735	145	735	126	744	148	731	175	717
	CPR3 / CPR6	18.0	13.9	12.2	11.00	10.0	9.90	7.5	7.20	7.9	8.50	6.1	6.70	4.8	5.90	6.1	8.40	5.4	7.60	5.2	7.30
Jan 19	WALA / WAC	60	5.01	30	5.07	48	5.01	52	4.97	35	5.04	22	5.13	37	5.02	79	4.98	61	5.01	42	5.11
	ALS/ FICO	158	722	208	722	176	725	166	732	172	731	192	731	140	735	128	743	151	729	179	717
	CPR3 / CPR6	17.6	15.2	11.0	10.30	9.5	10.00	8.4	9.30	6.5	7.30	4.9	6.40	5.0	6.50	6.3	8.90	5.7	8.30	5.5	8.10

Freddie Mac 30-year, 4.5 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		34.1		18.7		14.9		12.1		9.5		7.5		5.2		1.8		0.4		0.1	
Feb 19		29.7		15.9		12.1		9.4		7.6		5.7		3.5		1.0		0.4		0.1	
Jan 19		28.7		13.2		10.2		8.3		6.5		5.0		3.0		1.0		0.3		0.1	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	46	5.03	26	5.09	37	5.02	45	4.99	54	5.02	45	4.98	35	4.99	61	4.98	63	4.99	43	5.05
	ALS/ FICO	176	730	231	724	207	735	183	739	157	743	160	742	141	744	129	746	144	738	174	722
	CPR3 / CPR6	19.2	14.4	14.0	11.2	11.5	9.9	9.9	9.10	7.9	8.1	7.2	7.3	5.9	6.1	5.3	6.9	5.2	7.1	5.2	7.0
Feb 19	WALA / WAC	43	5.04	32	5.06	38	5.03	51	5.00	52	4.97	31	5.02	41	4.96	70	4.99	57	4.99	40	5.04
	ALS/ FICO	179	728	221	731	185	734	180	738	162	742	159	742	140	746	132	746	153	735	177	722
	CPR3 / CPR6	16.8	13.2	11.7	9.90	9.6	9.20	8.2	8.40	7.3	7.90	5.6	6.40	5.4	6.40	5.9	7.80	5.1	7.30	4.9	7.10
Jan 19	WALA / WAC	57	5.01	40	5.00	56	4.99	41	5.03	46	5.01	26	5.03	32	4.97	69	4.97	57	4.99	38	5.05
	ALS/ FICO	160	733	203	732	174	737	179	737	183	740	171	739	145	744	131	743	149	736	179	721
	CPR3 / CPR6	16.2	13.6	10.3	9.90	9.1	10.20	7.6	8.20	7.0	8.20	5.3	6.60	5.1	6.70	5.9	8.30	6.0	8.20	5.5	8.00

ALS = average loan size; CPR3/CPR6 = 3 or 6 months conditional prepayment rate, respectively; WALA = weighted average loan age; WAC = weighted average coupon.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Table 2: 30-year, TBA-eligible MBS Decile Report

Fannie Mae 30-year, 5.0 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		47.9		21.4		14.6		10.6		6.8		2.5		0.9		0.4		0.2		0.0	
Feb 19		42.6		17.0		11.2		7.6		4.2		1.4		0.7		0.4		0.2		0.0	
Jan 19		43.1		16.6		10.8		6.9		3.4		1.2		0.6		0.3		0.2		0.0	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	71	5.61	82	5.55	76	5.59	80	5.54	63	5.58	113	5.56	130	5.51	114	5.53	95	5.53	81	5.60
	ALS/ FICO	157	708	138	718	140	711	121	720	114	720	99	725	106	727	125	722	142	717	153	714
	CPR3 / CPR6	27.3	19.8	15.0	13.3	10.7	10.0	9.1	9.20	7.4	7.8	7.3	9.7	6.8	9.1	6.3	8.7	5.3	7.7	5.0	7.4
Feb 19	WALA / WAC	84	5.55	80	5.54	83	5.56	64	5.60	65	5.60	130	5.53	120	5.52	114	5.51	91	5.55	81	5.59
	ALS/ FICO	144	711	137	717	124	718	135	712	106	719	100	727	114	726	126	724	148	717	157	713
	CPR3 / CPR6	24.1	18.1	12.8	11.90	10.0	9.80	7.6	8.80	6.2	7.70	7.2	10.00	7.0	9.60	6.8	9.10	5.6	8.30	5.4	7.90
Jan 19	WALA / WAC	96	5.55	90	5.52	82	5.55	73	5.55	57	5.63	127	5.53	121	5.50	109	5.52	86	5.55	79	5.58
	ALS/ FICO	134	715	131	719	129	720	119	716	124	713	100	727	113	726	130	722	145	716	157	713
	CPR3 / CPR6	24.0	18.6	12.7	12.50	10.2	10.80	7.6	9.10	6.1	8.80	7.5	10.30	7.5	10.30	6.4	9.80	6.4	9.00	6.0	8.90

Freddie Mac 30-year, 5.0 Coupon

Month		One-Month Conditional Prepayment Rate (%)																			
		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19		46.5		20.3		14.2		10.3		7.3		4.1		1.3		0.5		0.2		0.0	
Feb 19		41.4		16.8		10.9		8.2		6.0		2.8		1.0		0.5		0.2		0.0	
Jan 19		41.0		15.9		11.1		8.4		5.2		2.2		0.9		0.5		0.2		0.0	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Mar 19	WALA / WAC	82	5.55	77	5.55	90	5.47	80	5.49	76	5.47	69	5.52	125	5.51	118	5.53	100	5.53	91	5.57
	ALS/ FICO	149	717	139	720	139	725	117	727	113	730	113	727	96	730	115	725	138	722	148	715
	CPR3 / CPR6	25.9	18.7	13.8	12.1	11.2	11.5	9.4	9.30	7.7	8.4	6.9	7.9	7.1	9.4	6.3	9.0	5.7	8.0	6.1	8.5
Feb 19	WALA / WAC	91	5.53	79	5.52	100	5.47	80	5.49	54	5.51	79	5.52	124	5.51	120	5.51	103	5.52	87	5.57
	ALS/ FICO	133	720	154	722	114	728	132	726	126	728	102	727	99	728	120	726	138	722	151	715
	CPR3 / CPR6	22.4	17.1	12.4	11.20	10.0	10.70	8.2	9.40	7.1	8.50	6.3	8.50	7.2	10.00	6.6	9.30	6.4	8.60	6.8	8.80
Jan 19	WALA / WAC	108	5.50	76	5.53	98	5.44	78	5.50	68	5.50	93	5.50	124	5.51	112	5.52	98	5.52	86	5.57
	ALS/ FICO	128	723	142	719	126	727	137	727	113	726	100	729	102	728	124	725	140	721	149	716
	CPR3 / CPR6	22.3	17.9	12.1	11.90	10.7	11.60	8.6	10.00	7.4	9.60	6.9	7.60	7.3	9.80	6.8	9.80	6.4	9.40	6.6	9.70

ALS = average loan size; CPR3/CPR6 = 3 or 6 months conditional prepayment rate, respectively; WALA = weighted average loan age; WAC = weighted average coupon.

Source: RiskSpan calculations from data available publicly as of April 2019. Calculations exclude pools with WALAs equal to zero.



Table 3: Q1 2019 30-year, TBA-eligible MBS Total Industry Quarterly Issuance Report*

	2.50%		3.00%		3.50%		4.00%		4.50%		5.00%		5.50%		6.00%		All Loans	
	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE	FNM	FRE
Loan Count	9	1	2,917	13,388	45,210	31,966	132,169	80,184	78,119	76,690	32,280	31,286	3,777	2,476	512	65	297,448	236,056
UPB (billions)	0.00	0.00	0.91	3.71	13.20	9.38	34.92	21.20	16.83	15.75	5.71	4.80	0.65	0.39	0.10	0.01	72.69	55.24
% of Production Volume	0.00	0.00	1.30	6.70	18.20	17.00	48.00	38.40	23.20	28.50	7.80	8.70	0.90	0.70	0.10	0.00	100.00	100.00
WA Note Rate (%)	3.63	3.63	4.24	4.10	4.56	4.48	4.90	4.85	5.33	5.20	5.85	5.70	6.27	6.28	6.58	6.50	5.02	4.92
WA Loan Age (mos.)	5	5	2	33	2	5	3	3	3	3	3	3	4	3	3	3	3	5
WA FICO	760	744	756	763	756	760	749	753	725	739	704	720	701	705	706	714	740	747
WA LTV	0.82	0.97	0.77	0.71	0.79	0.77	0.8	0.79	0.8	0.79	0.8	0.76	0.88	0.8	0.96	0.96	0.8	0.78
%FICO<680	0.00	0.00	3.00	11.00	4.00	3.00	6.00	4.00	19.00	11.00	38.00	26.00	38.00	37.00	30.00	17.00	11.00	8.00
%FICO>740	68.00	100.00	69.00	65.00	69.00	72.00	61.00	65.00	39.00	51.00	27.00	38.00	22.00	27.00	21.00	18.00	54.00	59.00
%LTV>80	32.00	100.00	38.00	6.00	43.00	32.00	45.00	41.00	41.00	39.00	32.00	24.00	61.00	30.00	98.00	100.00	43.00	35.00
%FICO<680 & LTV>80	0.00	0.00	1.00	0.00	1.00	0.00	2.00	1.00	7.00	3.00	13.00	8.00	17.00	9.00	28.00	17.00	4.00	2.00
%DTI>40	25.00	0.00	39.00	25.00	42.00	36.00	46.00	42.00	53.00	45.00	54.00	43.00	58.00	48.00	76.00	46.00	48.00	41.00
%Purchase	100.00	100.00	59.00	57.00	74.00	68.00	75.00	74.00	67.00	71.00	57.00	58.00	75.00	58.00	99.00	100.00	71.00	69.00
%Rate/Term	0.00	0.00	41.00	28.00	26.00	17.00	25.00	11.00	33.00	8.00	43.00	7.00	25.00	5.00	1.00	0.00	29.00	12.00
%Cash out**	0.00	0.00	0.00	16.00	0.00	15.00	0.00	14.00	0.00	22.00	0.00	35.00	0.00	37.00	0.00	0.00	0.00	19.00
%Owner Occupied	100.00	100.00	95.00	97.00	95.00	94.00	93.00	93.00	86.00	88.00	68.00	63.00	76.00	53.00	100.00	100.00	90.00	89.00
%Second Home	0.00	0.00	3.00	2.00	4.00	4.00	5.00	4.00	4.00	4.00	2.00	3.00	1.00	1.00	0.00	0.00	4.00	4.00
%Investor	0.00	0.00	3.00	1.00	1.00	1.00	2.00	2.00	10.00	8.00	29.00	34.00	23.00	46.00	0.00	0.00	6.00	7.00

*Numbers in the table represent end of quarter, not at-securitization, values. **Fannie Mae does not report rate/term and cash-out refinancings separately. For this table, all refinanced loans underlying Fannie Mae MBS are included in the rate/term field. 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 2019.



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. 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.

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.

To-be-announced (TBA) market is a forward market for certain mortgage-backed securities, including those issued by Fannie Mae and Freddie Mac.

Uniform Mortgage-Backed Security (UMBS) is the new single, common mortgage-backed security that Fannie Mae and Freddie Mac will be issuing to replace their current 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.

