



# PREPAYMENT MONITORING REPORT

Fourth Quarter 2018

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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 single, common mortgage-backed security. The new security will be called the Uniform Mortgage-Backed Security or UMBS and is designed to trade in the "To-Be-Announced" (TBA) market<sup>1</sup> without regard to which Enterprise is the issuer. UMBS issued by Fannie Mae and Freddie Mac are designed to be fungible – that is, mutually interchangeable – in the TBA market. This fungibility 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.<sup>2</sup> 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, refinances the mortgages, or sells the home. 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-backed securities (MBS). 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.

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

<sup>2</sup> To avoid double counting, only first-level securitizations are included in the analysis. Second-level securitizations (Megas and Giants) are excluded.



## 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. For this purpose, FHFA defines a cohort as those Enterprise TBA-eligible securities with the same coupon, maturity, and loan-origination year.<sup>3</sup>

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.<sup>4</sup> 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.

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<sup>3</sup> 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. The definition of the cohorts used in this report can be found in the Glossary.

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<sup>4</sup> 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. In addition, Charts 2 and 3b through 3e and tables 1 and 2 omit data for coupon/origination-year cohorts 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.<sup>5</sup>

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, refinances the mortgage, sells the home, or defaults on the mortgage loan. 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\*](#).

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<sup>5</sup> Previous Prepayment Monitoring Reports included cohorts with outstanding volumes of more than \$500 million at either Enterprises.



## Charts

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

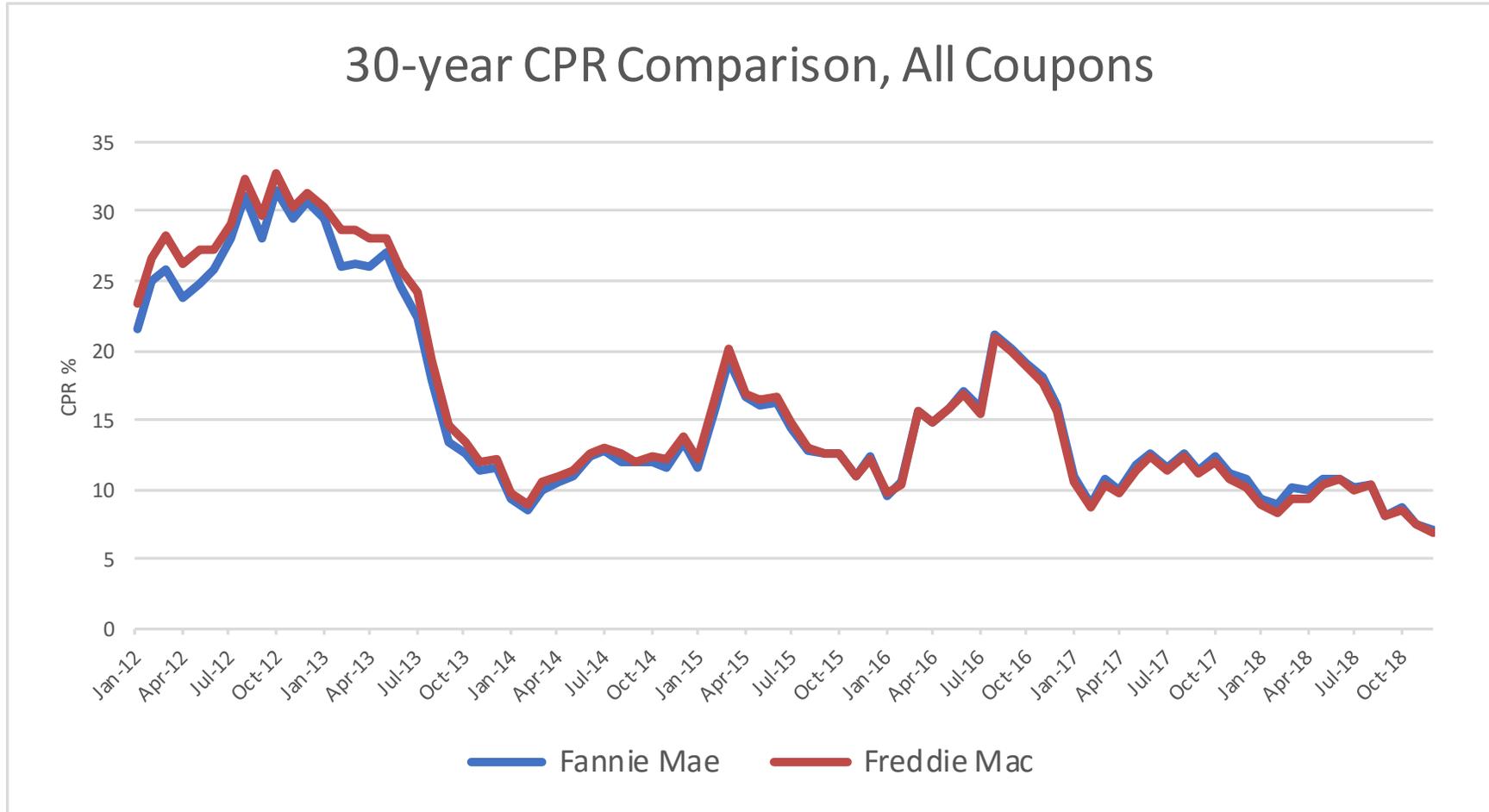
Chart 2 illustrates the comparison of pool loan-origination years for a given TBA-eligible MBS coupon. Chart 2 shows December 2018 prepayment rates for each Enterprise's 30-year MBS for coupons with combined issuance volume outstanding in excess of \$10 billion (3%, 3.5%, 4%, and 4.5%) and the six loan-origination 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 3e 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 3e illustrate the degree of prepayment alignment for each coupon-year cohort.



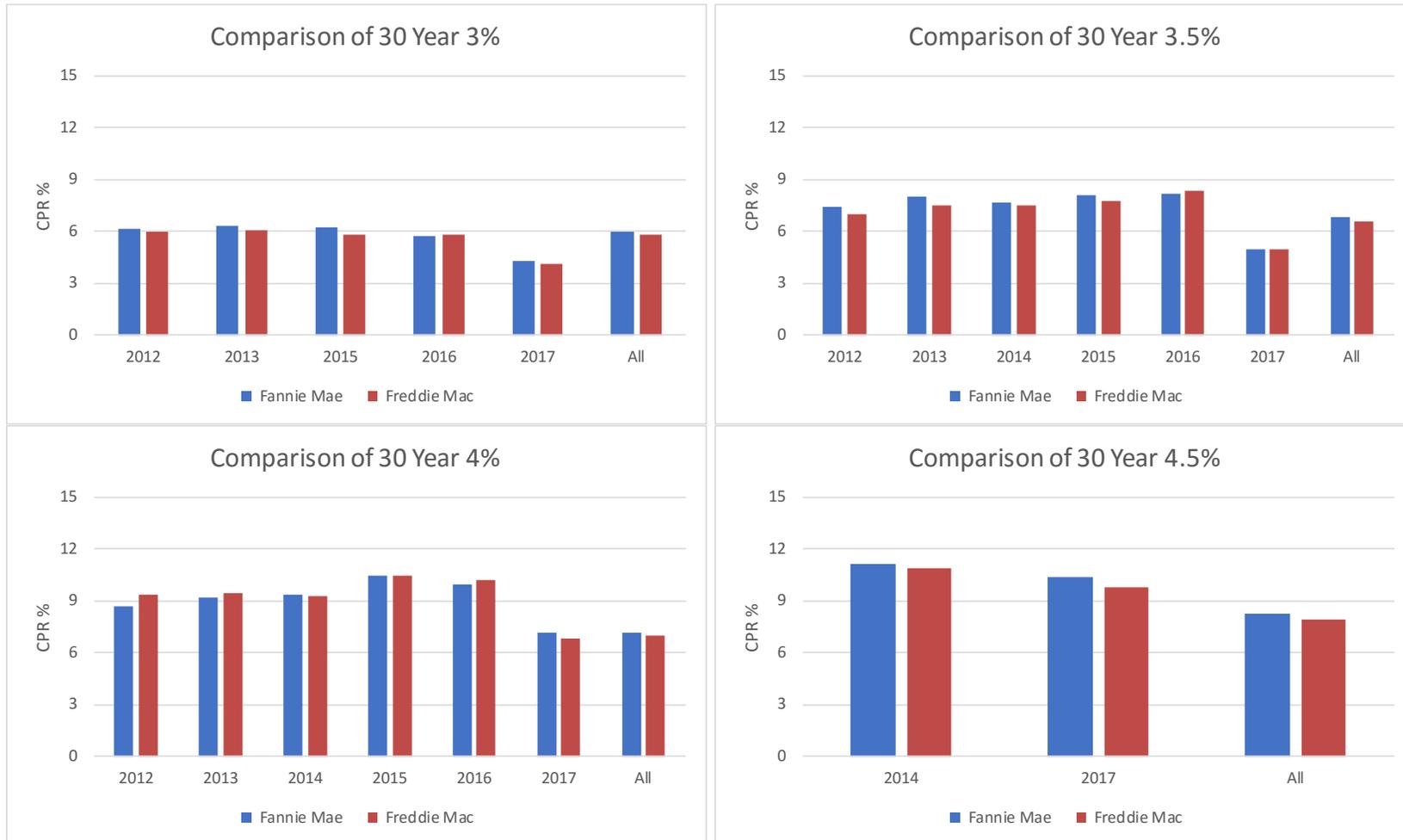
Chart 1: Historical Prepayment Rates for All 30-Year, TBA-Eligible MBS



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



Chart 2: December 2018 Prepayment Rates for 30-year, TBA-eligible MBS by Coupon and Loan-Originiation Year\*

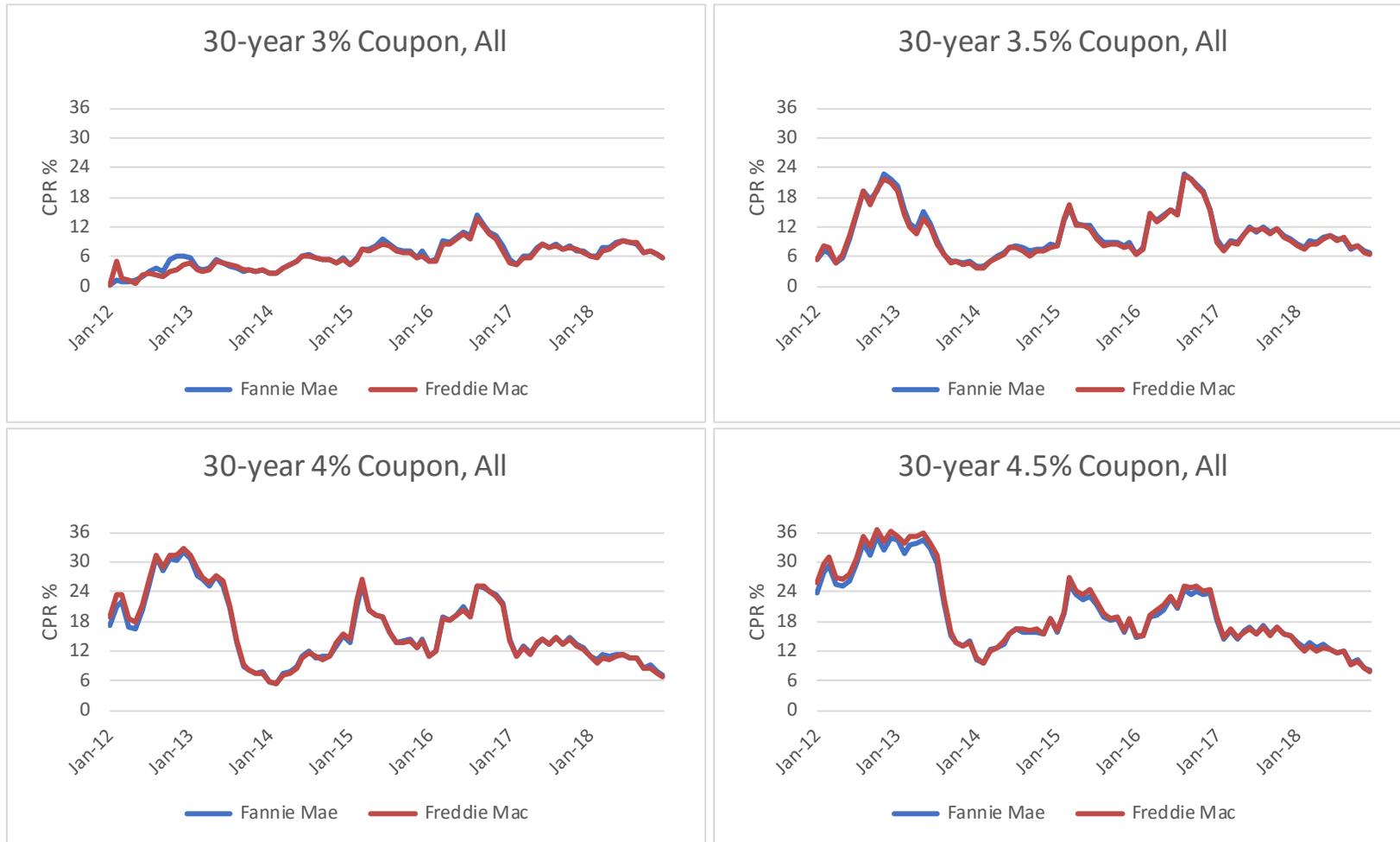


\* The 3 percent coupon cohort for 2014 and the 4.5 percent coupon cohorts for 2012, 2013, 2015, and 2016 are omitted because each has a combined UPB below \$10 billion.

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



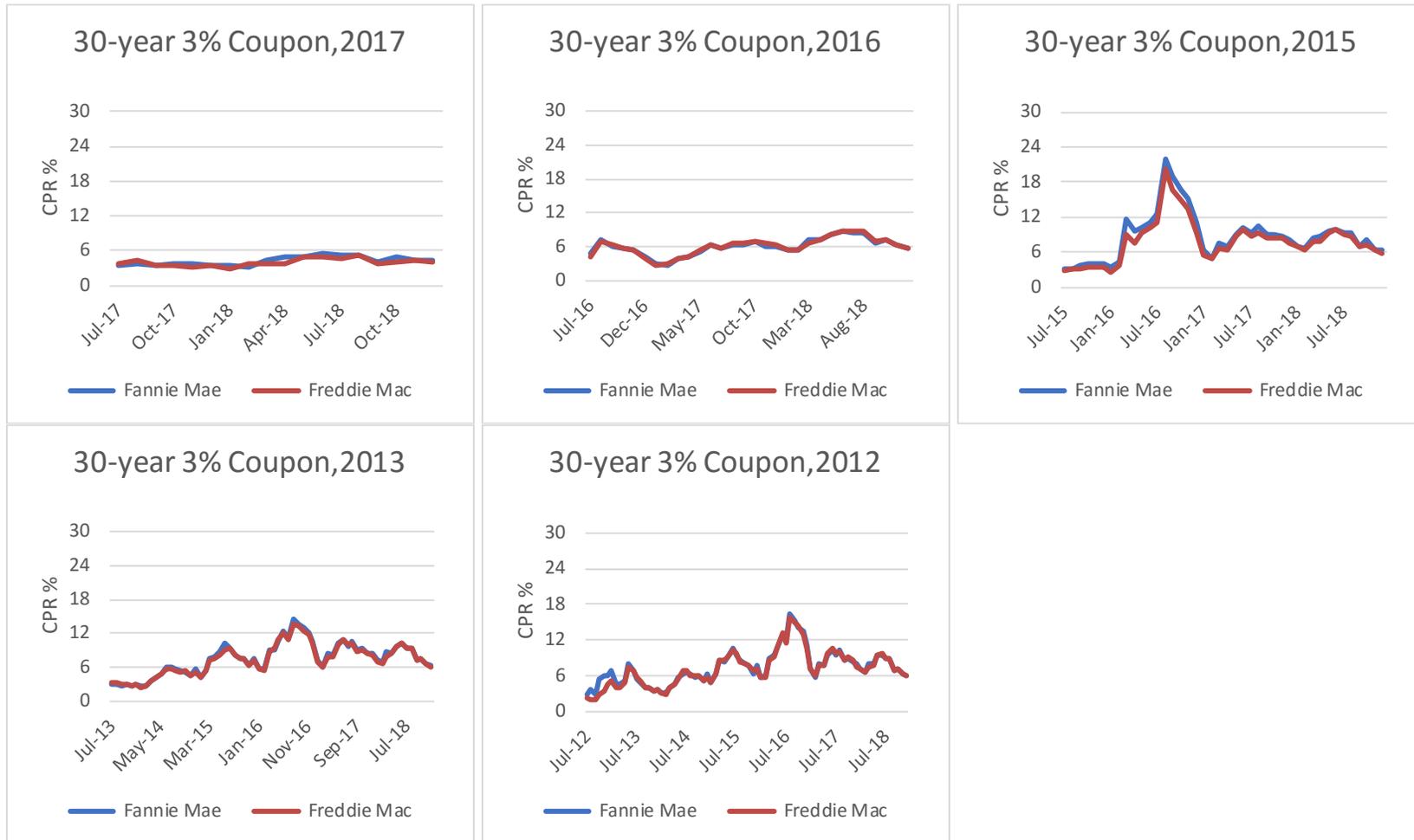
Chart 3a: Historical Prepayment Rates for All 30-year, TBA-eligible MBS by Coupon



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



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

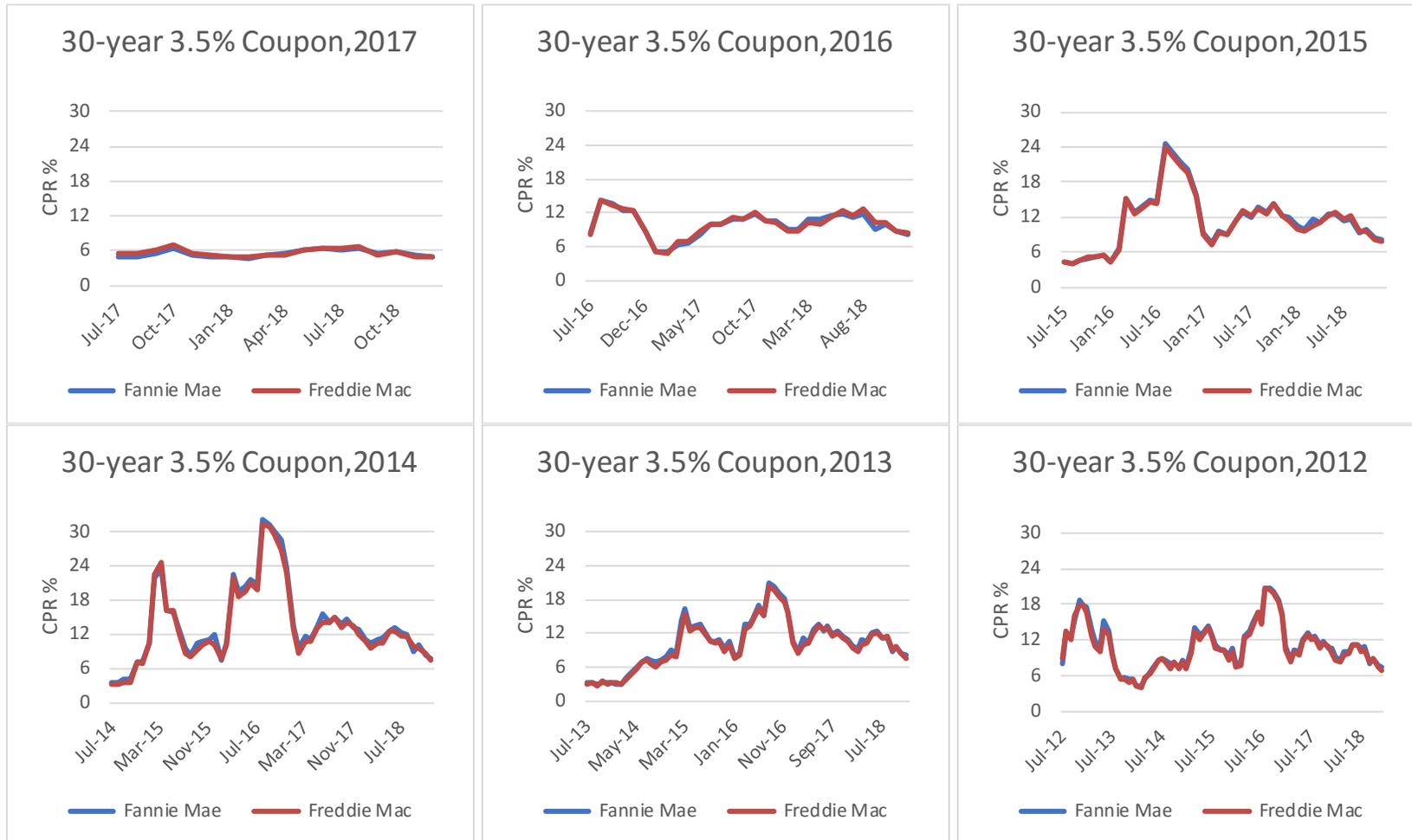


\* The 2014 cohort is omitted because its combined UPB is below \$10 billion.

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



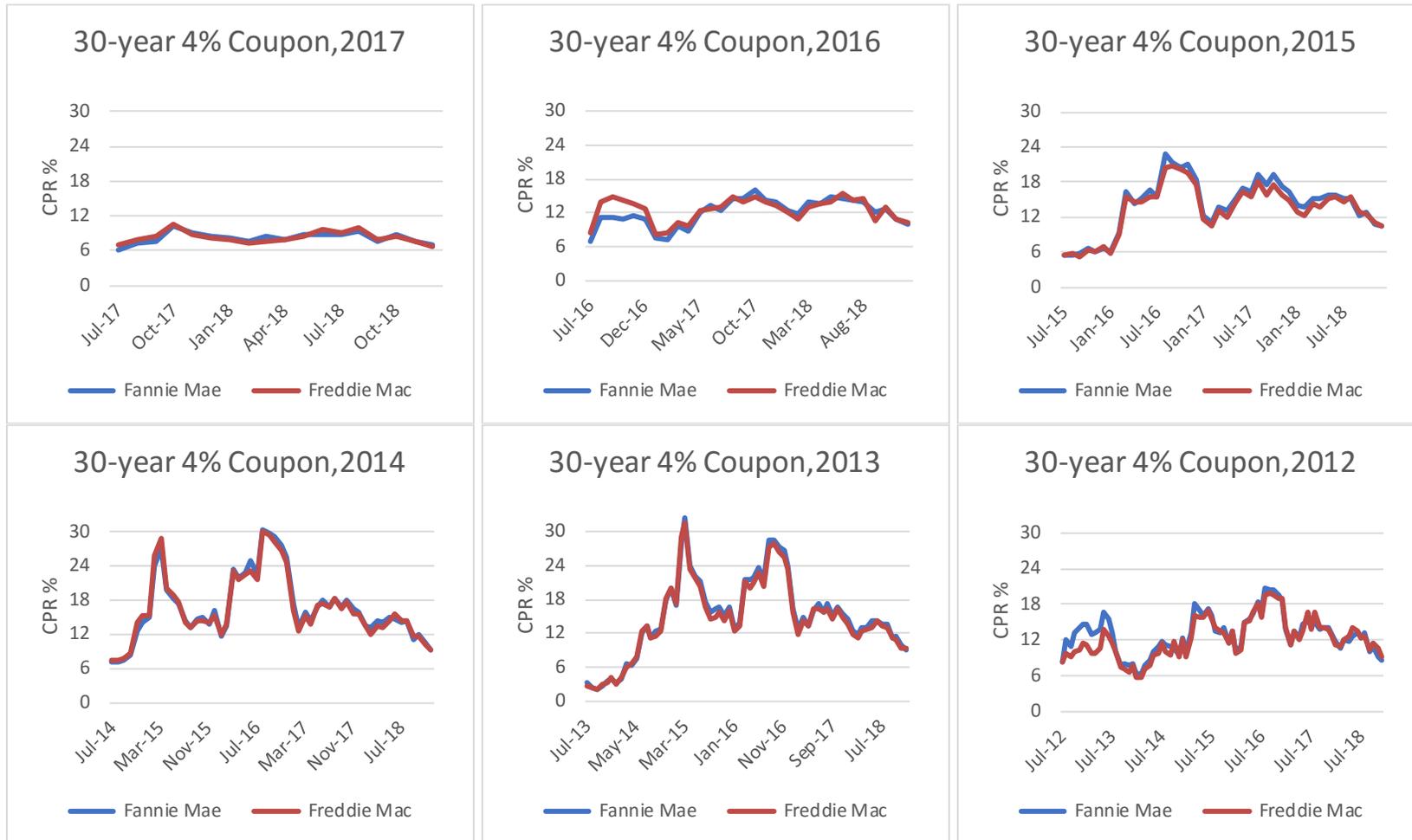
Chart 3c: Historical Prepayment Rates for 30-year, 3.50 Percent Coupon TBA-eligible MBS by Loan-Originiation Year



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



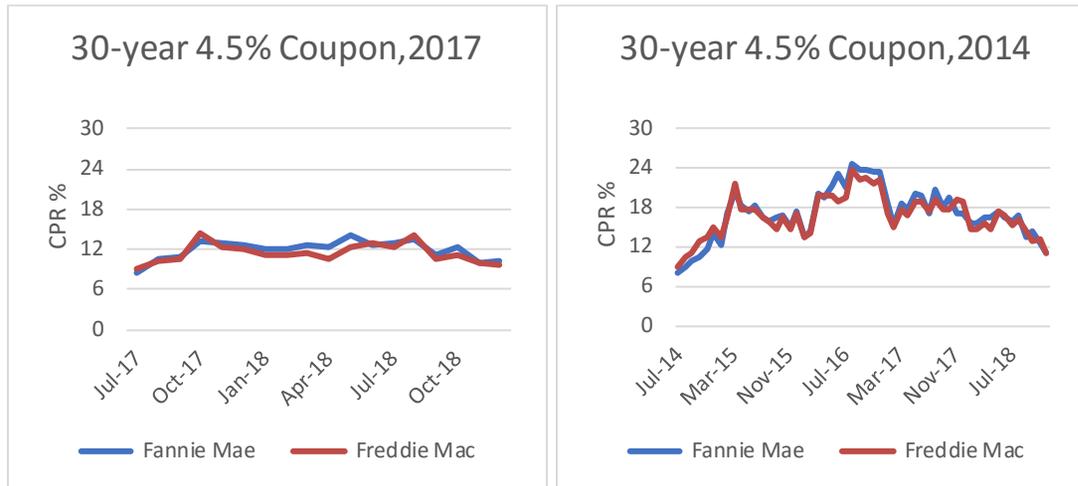
Chart 3d: Historical Prepayment Rates for 30-year, 4.00 Percent Coupon TBA-eligible MBS by Loan-Origination Year



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



Chart 3e: Historical Prepayment Rates for 30-year, 4.50 Percent Coupon TBA-eligible MBS by Loan-Originiation Year



\* The 2012, 2013, 2015, and 2016 cohorts are omitted because each has a combined UPB below \$10 billion.

Source: RiskSpan calculations from data available publicly as of January 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	December		November		October	
										FNM	FRE	FNM	FRE	FNM	FRE
3	2012	3.58	3.61	273	273	75	74	84.9	44	6.12	6.01	6.39	6.4	7.26	7.2
	2013	3.58	3.57	280	280	69	69	116.2	68.7	6.34	6.06	6.54	6.59	7.54	7.49
	2015	3.77	3.75	308	309	43	43	43.9	39.1	6.24	5.81	6.41	6.26	8.07	7.23
	2016	3.66	3.71	326	326	28	28	197.3	151.1	5.72	5.82	6.35	6.4	7.13	7.11
	2017	3.67	3.74	336	338	20	17	13.6	13.9	4.29	4.09	4.37	4.28	5.04	3.99
	All	3.64	3.67	304	308	48	44	460.8	320.7	5.95	5.79	6.33	6.3	7.26	7.06
3.5	2012	3.99	3.99	269	269	78	79	93.6	49.8	7.38	6.95	7.62	7.54	9.02	8.78
	2013	4.02	4.01	283	283	67	66	55.9	36	8.01	7.53	8.6	8.32	9.58	9.53
	2014	4.23	4.21	300	299	52	52	39.2	33.5	7.65	7.52	8.43	8.57	10.03	9.51
	2015	4.10	4.11	312	311	42	41	129.1	90.2	8.12	7.79	8.34	8.15	9.86	9.64
	2016	4.08	4.11	324	324	30	30	90.2	60.5	8.14	8.32	8.7	8.84	10.08	10.34
	2017	4.06	4.08	339	339	17	17	158.7	122	4.99	4.96	5.17	5.07	5.94	5.78
	2018	4.13	4.19	348	348	9	9	54	39.9	3.62	3.4	4.07	3.69	4.27	4.05
	All	4.07	4.10	312	315	41	38	643.6	441.6	6.78	6.54	7.14	6.99	8.3	8.07
4	2012	4.46	4.49	268	267	80	80	26.7	9.9	8.67	9.32	9.19	10.52	10.87	11.36
	2013	4.57	4.58	287	287	63	63	36.4	18.9	9.19	9.46	10.03	9.4	11.53	10.77
	2014	4.58	4.58	298	297	54	54	58.7	40.9	9.32	9.3	10.33	10.18	12.06	11.74
	2015	4.57	4.56	312	313	41	41	35.6	20.1	10.47	10.43	10.89	11.11	12.79	12.43
	2016	4.51	4.55	324	324	30	31	30.1	17.2	9.95	10.21	10.78	10.85	12.64	13
	2017	4.47	4.47	338	339	18	18	117.9	75.1	7.14	6.84	7.54	7.55	8.83	8.45
	2018	4.64	4.65	352	352	6	6	180.9	119.4	4.33	4.07	4.44	4.24	5.01	4.61
	All	4.55	4.56	318	320	36	34	555.7	341.5	7.16	6.99	7.7	7.57	9.07	8.67
4.5	2014	5.01	5.08	296	296	55	55	10.7	4.4	11.13	10.93	12.56	13.29	14.26	12.86
	2017	4.97	4.94	339	339	18	18	28.2	17.4	10.4	9.78	9.99	9.9	12.31	11.08
	2018	5.12	5.05	353	353	5	5	91.5	62.7	5.84	5.8	5.53	5.6	6.22	6.58
	All	5.02	4.99	307	307	46	46	220.5	141.1	8.24	7.96	8.72	8.49	10.28	9.84
5	2018	5.69	5.59	354	353	4	4	18	11	6.81	7.49	6.82	7.12	7.39	8.76
	All	5.53	5.5	256	253	94	97	65.9	43.5	9.95	10.02	10.49	10.57	12.51	12.61

Source: RiskSpan calculations from data available publicly as of January 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	
Dec 18		17.2		8.6		6.9		6.1		5.6		5.1		4.3		3.1		1.0		0.3	
Nov 18		17.7		8.8		7.4		6.7		6.2		5.6		4.8		3.5		1.1		0.3	
Oct 18		19.4		10.2		8.5		7.6		6.9		6.4		5.6		4.4		1.6		0.3	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Dec 18	WALA / WAC	57	3.65	58	3.63	51	3.65	43	3.66	37	3.61	39	3.64	44	3.60	54	3.63	60	3.62	49	3.68
	ALS/ FICO	204	763	218	765	225	765	254	765	258	763	255	764	251	765	233	765	210	767	218	761
	CPR3 / CPR6	10.6	9.6	7.7	8.2	6.9	7.6	6.6	7.40	6.3	6.9	6.1	7.0	5.6	6.4	5.5	6.6	5.0	6.6	4.6	6.2
Nov 18	WALA / WAC	55	3.65	56	3.64	45	3.63	40	3.67	42	3.64	44	3.60	44	3.63	51	3.61	58	3.63	48	3.68
	ALS/ FICO	197	763	212	764	244	764	252	764	261	763	250	764	255	765	235	767	207	767	220	761
	CPR3 / CPR6	11.1	10.5	7.9	8.70	7.1	7.90	7.0	8.00	6.7	7.60	6.3	7.40	6.0	7.20	5.7	7.10	5.2	7.10	4.6	6.70
Oct 18	WALA / WAC	53	3.65	52	3.64	50	3.65	43	3.63	42	3.65	38	3.63	41	3.61	49	3.61	56	3.62	49	3.67
	ALS/ FICO	198	762	215	764	237	765	250	765	256	765	258	763	250	765	241	766	213	766	217	762
	CPR3 / CPR6	12.2	10.9	8.9	9.30	8.1	8.80	7.5	8.00	7.5	8.30	7.3	7.90	6.6	7.30	6.2	7.40	5.6	7.30	5.1	7.10

**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	
Dec 18		13.0		6.9		6.2		5.9		5.7		5.4		5.1		4.8		3.6		0.6	
Nov 18		14.1		7.6		6.8		6.4		6.1		5.9		5.7		5.2		3.6		0.6	
Oct 18		14.9		8.7		7.7		7.3		6.9		6.7		6.3		5.7		4.3		0.8	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Dec 18	WALA / WAC	57	3.65	48	3.66	37	3.73	36	3.71	48	3.69	44	3.64	44	3.66	44	3.63	45	3.69	53	3.67
	ALS/ FICO	175	762	228	762	261	761	259	762	263	766	260	763	253	764	250	763	239	766	188	762
	CPR3 / CPR6	9.4	9.1	7.2	7.9	6.6	7.6	6.4	7.30	6.2	7.2	6.2	6.9	6.0	7.0	5.9	6.7	4.9	6.2	4.8	6.4
Nov 18	WALA / WAC	55	3.65	42	3.70	44	3.71	38	3.71	45	3.65	34	3.69	48	3.61	45	3.62	44	3.70	50	3.67
	ALS/ FICO	172	761	233	761	249	763	262	761	262	764	278	762	253	764	246	765	244	766	190	762
	CPR3 / CPR6	9.8	9.7	7.5	8.70	7.0	8.20	6.8	7.80	6.4	7.70	6.5	7.50	6.4	7.50	6.1	7.20	5.2	6.40	4.9	7.00
Oct 18	WALA / WAC	53	3.66	52	3.64	42	3.66	45	3.74	31	3.69	34	3.71	40	3.64	50	3.63	43	3.68	47	3.68
	ALS/ FICO	177	762	227	763	242	763	252	765	286	759	264	763	264	763	237	765	241	765	195	762
	CPR3 / CPR6	10.8	10.2	8.5	9.20	7.8	8.50	7.9	8.70	7.5	8.00	7.3	7.90	7.0	7.70	6.8	7.70	5.9	6.80	5.3	7.00

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 January 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	
Dec 18		22.8		10.4		8.2		6.7		5.6		4.7		3.9		2.2		0.6		0.2	
Nov 18		23.3		11.0		8.8		7.3		5.9		5.0		4.2		2.6		0.6		0.2	
Oct 18		25.7		12.8		10.2		8.6		7.2		5.8		5.0		3.4		0.7		0.2	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Dec 18	WALA / WAC	52	4.09	48	4.06	47	4.06	46	4.05	35	4.07	33	4.06	27	4.04	37	4.09	54	4.08	42	4.13
	ALS / FICO	183	746	189	750	204	753	216	756	242	755	242	758	252	759	216	759	179	755	199	742
	CPR3 / CPR6	14.0	12.5	9.5	10.0	8.5	9.3	7.7	8.60	6.4	7.3	6.0	6.7	5.3	5.9	5.1	6.3	5.6	7.5	5.5	7.4
Nov 18	WALA / WAC	51	4.09	48	4.08	47	4.05	45	4.05	39	4.06	26	4.04	28	4.04	33	4.10	54	4.08	41	4.13
	ALS / FICO	181	747	198	752	203	752	208	753	232	757	251	758	253	759	220	758	180	754	198	743
	CPR3 / CPR6	14.2	13.0	10.1	10.80	8.9	9.90	8.0	9.20	7.1	8.30	5.9	6.70	5.5	6.60	5.3	6.50	5.8	8.10	5.5	7.80
Oct 18	WALA / WAC	50	4.10	48	4.07	47	4.06	45	4.06	42	4.04	24	4.06	24	4.03	29	4.09	52	4.08	41	4.13
	ALS / FICO	186	746	193	751	209	754	211	755	216	755	253	758	259	759	224	758	177	755	198	744
	CPR3 / CPR6	15.9	13.9	11.0	11.40	9.9	10.60	9.2	9.90	8.2	9.20	6.5	6.90	5.9	6.50	5.5	6.60	6.5	8.40	6.0	8.10

**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	
Dec 18		17.8		9.3		8.1		7.3		6.4		5.4		4.4		3.5		1.3		0.2	
Nov 18		19.2		9.8		8.7		7.7		6.8		5.7		4.7		3.9		1.6		0.2	
Oct 18		21.5		11.4		10.0		9.0		7.9		6.6		5.7		4.3		1.8		0.3	
Month		Decile 1		Decile 2		Decile 3		Decile 4		Decile 5		Decile 6		Decile 7		Decile 8		Decile 9		Decile 10	
Dec 18	WALA / WAC	49	4.08	42	4.12	45	4.11	43	4.12	49	4.07	32	4.08	26	4.10	21	4.10	41	4.11	43	4.08
	ALS / FICO	166	747	212	752	225	752	231	755	217	757	243	758	249	759	256	759	183	759	187	746
	CPR3 / CPR6	12.1	11.3	8.9	9.9	8.6	9.8	8.3	9.40	7.2	8.3	6.1	6.7	5.5	6.0	4.7	5.3	5.0	6.7	5.3	7.1
Nov 18	WALA / WAC	48	4.08	47	4.11	44	4.13	43	4.09	46	4.07	32	4.10	23	4.06	23	4.14	37	4.10	42	4.08
	ALS / FICO	164	747	205	754	224	752	230	753	215	757	239	757	265	758	267	759	184	759	186	746
	CPR3 / CPR6	12.9	12.2	9.7	10.70	9.2	10.60	8.7	10.20	7.8	9.10	6.5	7.50	5.3	6.00	4.8	5.60	5.1	6.70	5.6	7.70
Oct 18	WALA / WAC	49	4.08	43	4.10	43	4.12	43	4.11	47	4.08	31	4.09	24	4.08	20	4.11	34	4.09	41	4.08
	ALS / FICO	165	748	208	751	235	752	223	754	222	756	236	757	249	758	255	758	190	760	182	748
	CPR3 / CPR6	14.3	12.9	11.0	11.40	10.6	11.20	9.6	10.50	9.2	10.00	7.1	7.70	6.2	6.50	5.5	5.90	5.6	6.70	6.0	7.70

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 January 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	
Dec 18		25.7		11.2		8.3		6.8		5.6		4.4		3.7		2.0		0.5		0.1	
Nov 18		27.3		12.2		9.0		7.3		6.0		4.8		3.8		2.1		0.5		0.1	
Oct 18		30.3		14.4		10.9		9.0		7.5		5.8		4.7		2.9		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	
Dec 18	WALA / WAC	54	4.54	52	4.51	46	4.49	30	4.48	29	4.51	16	4.65	16	4.61	37	4.58	53	4.55	38	4.60
	ALS / FICO	156	732	169	736	179	743	224	742	221	744	260	750	245	751	184	750	163	743	185	727
	CPR3 / CPR6	16.1	14.3	10.6	11.2	9.0	9.8	7.6	8.40	6.9	7.5	4.9	5.3	4.8	5.4	5.5	7.2	6.4	8.6	6.0	8.3
Nov 18	WALA / WAC	53	4.55	51	4.51	46	4.48	31	4.47	30	4.52	19	4.59	13	4.65	31	4.58	55	4.54	37	4.59
	ALS / FICO	161	731	165	737	182	744	216	742	210	744	241	750	259	749	191	749	159	742	186	727
	CPR3 / CPR6	17.0	15.3	11.1	12.00	9.5	10.50	8.3	9.10	7.5	8.40	5.7	6.10	4.6	5.50	5.3	7.00	6.6	9.30	6.3	8.80
Oct 18	WALA / WAC	52	4.54	53	4.51	47	4.50	33	4.47	33	4.47	22	4.55	14	4.66	23	4.59	55	4.54	37	4.59
	ALS / FICO	163	731	163	736	177	741	214	742	205	744	234	748	256	751	203	749	155	743	184	727
	CPR3 / CPR6	18.8	16.3	12.6	13.00	10.7	11.40	9.4	9.60	8.5	9.10	6.7	7.00	4.8	5.60	5.1	6.60	7.2	9.50	7.1	9.30

**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	
Dec 18		23.4		10.8		8.6		7.0		5.6		4.6		3.9		2.5		0.6		0.1	
Nov 18		24.6		11.8		9.3		7.9		6.4		4.9		4.1		2.8		0.6		0.1	
Oct 18		27.3		13.3		11.0		9.2		7.8		5.9		4.5		3.0		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	
Dec 18	WALA / WAC	54	4.54	48	4.54	47	4.52	39	4.51	27	4.52	11	4.64	10	4.66	25	4.60	49	4.55	36	4.56
	ALS / FICO	149	737	184	740	190	742	207	743	227	739	266	752	287	755	206	753	155	748	181	732
	CPR3 / CPR6	14.9	13.5	10.4	11.2	8.9	9.9	8.2	9.40	7.3	8.4	4.8	4.6	4.5	4.4	4.9	5.9	6.1	8.2	5.7	7.9
Nov 18	WALA / WAC	53	4.55	51	4.54	45	4.52	35	4.51	31	4.52	14	4.62	12	4.65	22	4.58	49	4.55	36	4.55
	ALS / FICO	156	737	171	739	202	740	222	745	210	741	257	751	260	753	206	752	154	748	183	731
	CPR3 / CPR6	15.8	14.5	11.3	12.50	9.5	10.80	8.2	9.40	7.9	9.10	4.9	5.60	4.9	4.90	5.3	6.00	6.3	8.80	6.0	8.40
Oct 18	WALA / WAC	53	4.54	48	4.55	47	4.54	37	4.52	28	4.48	25	4.55	9	4.64	15	4.62	47	4.54	36	4.55
	ALS / FICO	150	735	180	736	195	743	207	742	226	744	215	747	268	753	228	751	155	747	183	731
	CPR3 / CPR6	17.5	15.3	12.5	12.90	11.2	12.10	9.8	10.40	8.4	8.70	7.0	7.60	4.4	4.40	4.7	5.40	6.7	9.00	6.4	8.60

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 January 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	
Dec 18		31.1		12.7		10.0		8.2		6.3		4.5		2.7		0.9		0.3		0.1	
Nov 18		33.1		13.6		10.8		8.7		6.4		4.4		2.7		0.9		0.3		0.0	
Oct 18		37.1		16.5		12.7		10.3		7.9		5.6		3.4		1.1		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	
Dec 18	WALA / WAC	68	4.98	52	4.99	40	5.02	41	5.02	35	5.02	22	5.05	33	5.04	77	5.00	62	5.01	42	5.10
	ALS/ FICO	143	726	162	725	190	730	173	728	189	725	167	730	157	737	138	743	151	727	176	717
	CPR3 / CPR6	18.7	16.1	11.8	11.6	10.3	10.3	8.7	9.20	7.4	8.5	5.3	6.2	5.0	6.5	7.2	9.7	6.7	9.0	6.5	9.0
Nov 18	WALA / WAC	73	4.98	61	4.95	39	5.00	49	5.01	38	4.99	20	5.06	25	5.06	77	4.99	64	5.01	40	5.08
	ALS/ FICO	141	729	151	729	198	726	172	728	165	728	185	726	160	730	134	742	149	728	175	718
	CPR3 / CPR6	19.6	17.0	12.6	13.00	11.1	11.40	9.3	10.00	7.9	8.60	5.4	6.00	5.0	6.90	7.3	9.90	6.8	9.70	6.5	9.30
Oct 18	WALA / WAC	70	4.97	64	4.95	52	4.97	43	4.97	39	5.06	30	5.04	19	5.05	72	4.99	67	5.00	42	5.08
	ALS/ FICO	141	727	150	729	174	728	187	726	173	729	171	728	166	730	131	740	148	731	176	716
	CPR3 / CPR6	22.2	18.6	13.9	13.70	12.4	12.40	10.2	10.50	8.7	9.10	6.3	7.10	5.0	5.70	7.8	10.60	7.5	10.20	7.5	10.30

**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	
Dec 18		29.1		12.7		10.0		8.2		6.3		4.6		2.7		0.9		0.3		0.1	
Nov 18		32.3		13.7		10.3		8.0		6.2		4.4		2.8		0.9		0.4		0.1	
Oct 18		34.5		15.4		12.2		10.0		8.2		6.1		3.7		1.1		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	
Dec 18	WALA / WAC	68	4.97	61	4.97	47	4.98	47	4.99	38	5.05	24	4.97	27	5.01	72	4.98	55	4.98	36	5.05
	ALS/ FICO	142	735	169	737	189	735	176	734	187	736	165	739	161	744	137	745	150	734	178	721
	CPR3 / CPR6	17.4	14.9	11.0	11.5	9.3	9.6	9.0	9.50	7.3	8.1	5.6	6.3	4.8	6.6	6.7	9.5	6.5	8.6	5.9	8.4
Nov 18	WALA / WAC	70	4.98	62	4.95	62	4.97	57	4.95	29	5.01	22	5.03	22	4.96	68	4.98	60	4.98	40	5.02
	ALS/ FICO	145	735	162	733	168	741	160	740	204	731	184	736	154	742	138	744	149	734	171	721
	CPR3 / CPR6	18.6	16.1	12.1	12.80	9.8	10.70	9.0	10.40	7.6	8.10	5.7	6.40	5.0	6.20	6.8	9.90	6.5	9.40	6.3	9.40
Oct 18	WALA / WAC	70	4.98	65	4.94	70	4.94	57	4.97	40	4.97	20	5.03	23	5.01	72	4.96	59	4.98	40	5.02
	ALS/ FICO	143	734	153	738	167	739	172	736	191	734	178	732	158	739	129	746	147	734	173	720
	CPR3 / CPR6	20.8	17.2	13.0	12.90	11.7	11.90	10.9	11.10	9.0	9.30	6.5	7.10	5.2	7.00	7.3	10.30	7.1	9.70	7.0	9.80

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 January 2019. Calculations exclude pools with WALAs equal to zero.



Table 3: Q4 2018 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	30	6	1,356	1,354	11,272	20,602	170,076	117,619	142,130	116,428	46,075	31,489	6,617	2,467	433	52	380,827	290,029
UPB (billions)	0.01	0.00	0.31	0.42	3.40	5.80	46.70	32.20	29.92	24.24	8.32	5.06	0.92	0.37	0.09	0.01	90.09	68.11
% of Production Volume	0.00	0.00	0.30	0.60	3.80	8.50	51.80	47.30	33.30	35.60	9.20	7.40	1.00	0.50	0.10	0.00	100.00	100.00
WA Note Rate (%)	3.63	3.50	3.93	3.99	4.43	4.30	4.74	4.72	5.16	5.10	5.73	5.63	6.14	6.12	6.44	6.53	4.97	4.89
WA Loan Age (mos.)	4	25	7	17	4	20	3	4	2	3	3	3	3	4	3	25	3	5
WA FICO	726	786	761	770	760	766	754	758	730	739	704	717	700	710	701	689	741	748
WA LTV	0.86	0.61	0.76	0.72	0.79	0.75	0.79	0.79	0.81	0.8	0.8	0.77	0.84	0.82	0.95	0.89	0.8	0.79
%FICO<680	16	0	4	8	2	6	4	3	16	11	38	29	42	33	34	46	12	8
%FICO>740	45	100	73	73	73	73	67	70	43	51	26	36	24	30	19	20	55	61
%LTV>80	53	21	35	19	42	22	42	41	45	43	32	26	45	38	97	58	42	39
%FICO<680 & LTV>80	3	0	2	1	1	0	1	1	6	4	13	9	16	11	32	8	4	2
%DTI>40	41	0	35	28	42	29	44	41	52	45	53	44	53	48	64	52	47	42
%Purchase	100	51	78	69	84	74	78	80	72	74	58	58	68	68	98	72	74	75
%Rate/Term	0	33	22	23	16	16	22	9	28	7	42	7	32	6	2	2	26	9
%Cash out**	0	15	0	9	0	10	0	11	0	20	0	35	0	26	0	26	0	16
%Owner Occupied	100	100	96	97	95	97	93	94	88	89	70	64	66	52	98	90	89	90
%Second Home	0	0	4	2	5	3	5	5	4	4	2	2	1	1	0	0	5	4
%Investor	0	0	1	1	0	0	1	1	8	8	28	34	33	47	1	10	6	6

\*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 January 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.

