Floating- and Fixed-Rate Loan Prepayments

As of December 2023

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Summary

This report presents a summary of Freddie Mac Multifamily floating-rate and fixed-rate loan voluntary prepayment activity over the 12 months ending December 2023 (January 2023 through December 2023).

Floating-Rate Prepayments Key Takeaways

- The 12-month average constant prepayment rate (CPR) among the floating-rate loans is 21% as of December 2023 — a decrease of 8 percentage points from June 2023.[1] Of the current loans, 94% are in the 1% prepayment premium phase.
- The prepayment speed decreased due to interest rate increases and declining property values in the latter half of 2022 and 2023, after extremely low rates and strong property value growth in 2021.
- Prepayment speeds are computed based on loans that are eligible to prepay during the reporting period (January 2023 through December 2023) and exclude any loans still in their lockout period. However, that population changes monthly as loans season and exit their lockout period.
- We summarize prepayment speeds for floating-rate loans in the aggregate and by product type, vintage, prepayment type, prepayment phase and FRE-KF deal.
- During more normal market conditions prepayments are generally higher among more seasoned loans, as well as when prepayment premiums are lowest, but in the high interest rate environment we are currently seeing prepayment speeds are low among all loan segments.

Fixed-Rate Prepayments Key Takeaways

- The December 2023 12-month annual average CPR for fixed-rate loans in their open period loans was 29%, which is a continuation of the downward trend seen since mid-2022 when the CPR was 70%.
- Nearly all the loans that prepaid were in their open period, with less than 1% of prepaid loans outside of their open period.

[1] Historic numbers may be different from the previous published reports due to updated data, which impact the prepayment rate and number of loans that prepaid in a prior time period.

Floating-Rate Prepayment Analysis

The first Freddie Mac floating-rate K-Deal®, K-F01, was priced in October of 2012. The K-Deal program provides borrowers with the ability to obtain financing indexed to short-term rates and provides borrowers with more prepayment flexibility than fixed-rate products. Typical loan terms are 5-, 7- and 10-years. Through December 2023, Freddie Mac has funded and securitized nearly 6,800 floating-rate loans totaling nearly $167 billion of original unpaid principal balance (UPB). This section of the report only pertains to floating-rate loans.

Prepayment Options Background

The floating-rate program offers borrowers prepay flexibility.

Floating-rate loan products vary across 5-, 7- and 10-year terms that generally range between $5 million and $100 million in size and are indexed to 30-day average SOFR[2]. For most floating-rate transactions, we require borrowers obtain a third-party cap to hedge interest rate risk.

Unlike our standard, fixed-rate K-Deal where the majority of the loans have a lockout period followed by defeasance, our floating-rate program provides borrowers with more flexible prepayment options. Most borrowers opt for a lockout period followed by a 1% prepayment premium on the outstanding balance of the loan. Other options include step-down prepayment premiums where each year the prepayment premium decreases (typically starting at 3% for the first year, 2% the second year and 1% starting in the third year through maturity). Exhibit 1 shows the percentage of floating-rate business by term and prepay option going back to 2012 through December 2023.

Exhibit 1: Available Prepayment Options for Floating-Rate Loans

	Prepay Option % by Loan Term			Total % Floating-Rate Business			Total % Floating-Rate Business
Option	**5-year**	**7-year**	**10-year**	**5-year**	**7-year**	**10-year**	
1-year lockout, then 1%	73%	82%	80%	0%	26%	55%	80%
2-year lockout, then 1%	9%	8%	10%	0%	2%	7%	9%
3% - 2% - 1%	0%	2%	2%	0%	1%	2%	2%
All others*	18%	8%	8%	0%	3%	5%	8%
Total % Floating-Rate Business				0%	31%	68%	100%

Note: All others include a combination of lockout and stepdown. Percentages represent original UPB balance for deals K-F01 through K-F159 and may not total 100% due to rounding.
Source: Freddie Mac.

Loans that feature a 1-year lockout period followed by a 1% prepayment premium are by far the most popular structure, representing 80% of our floating-rate originations. Approximately 9% have a 2-year lockout period followed by a 1% premium, while the 3%-2%-1% step-down prepayment premium structure makes up 2% of origination floating-rate business. The remaining 8% of floating-rate business has varying lockout periods followed by prepayment premium, step-down structures or a combination of the two. Nearly all our floating-rate loans are either 7- or 10-year terms, with 5-year terms accounting for less than 1% of business.

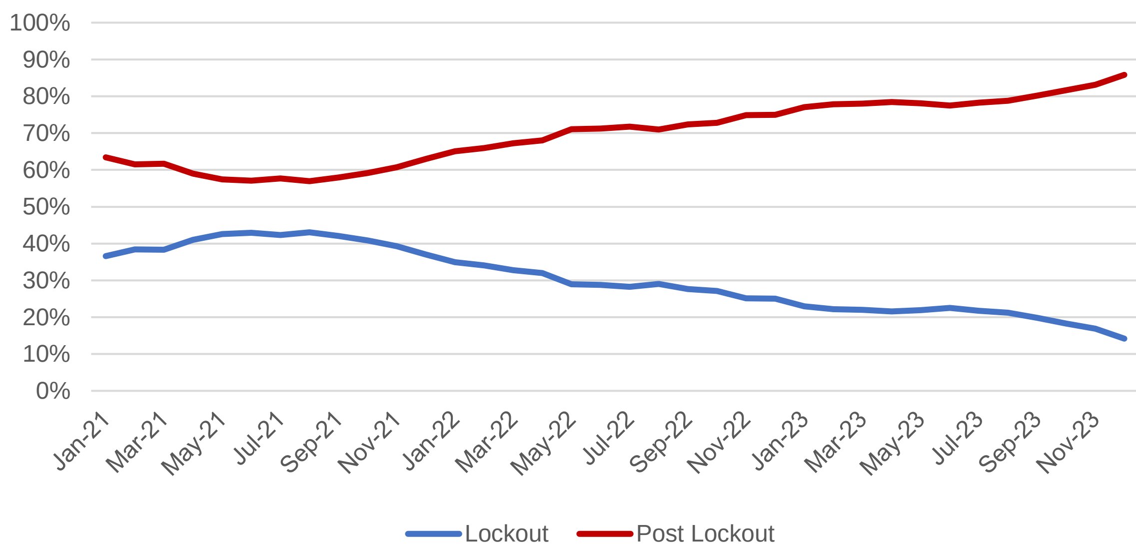
[2] We stopped accepting new loans indexed to LIBOR during the fourth quarter of 2020. Legacy floating-rate, LIBOR-indexed bonds have been transitioned to 30-day average SOFR in connection with the cessation of LIBOR at the end of June 2023.

Borrowers continue to favor 10-year loan terms, representing 68% (by UPB) of floating-rate business, while 31% are 7-year. The breakout of 10-year versus 7-year has moved very little since the last report and has held steady since the end of 2021.

The rate of loans (by UPB) entering their post-lockout period (when loans can prepay with a premium) as of December 2023 is 86%, higher than any point over the prior three years (calculated monthly as a percentage of UPB). This implies more loans are entering their post-lockout period than originated with a lockout period. In late 2021, the percentage of UPB post lockout bottomed out, implying more loans were originated than seasoning into their post-lockout period.

Over the past year, the percentage of loans post lockout increased.

Exhibit 2: Percentage of Currently Active Loan UPB in Lockout and Post Lockout



Source: Freddie Mac

Prepayment Speeds by Loan Characteristics

In our prepayment speed analysis, we isolate the loan population that is contractually permitted to prepay by removing any loans still in the lockout period from the analysis. Due to the seasoning of loans, the population changes monthly as loans move out of their lockout period into the ability to prepay with premiums. Therefore, we are calculating the prepayment rate based on a 12-month simple average unless otherwise stated.

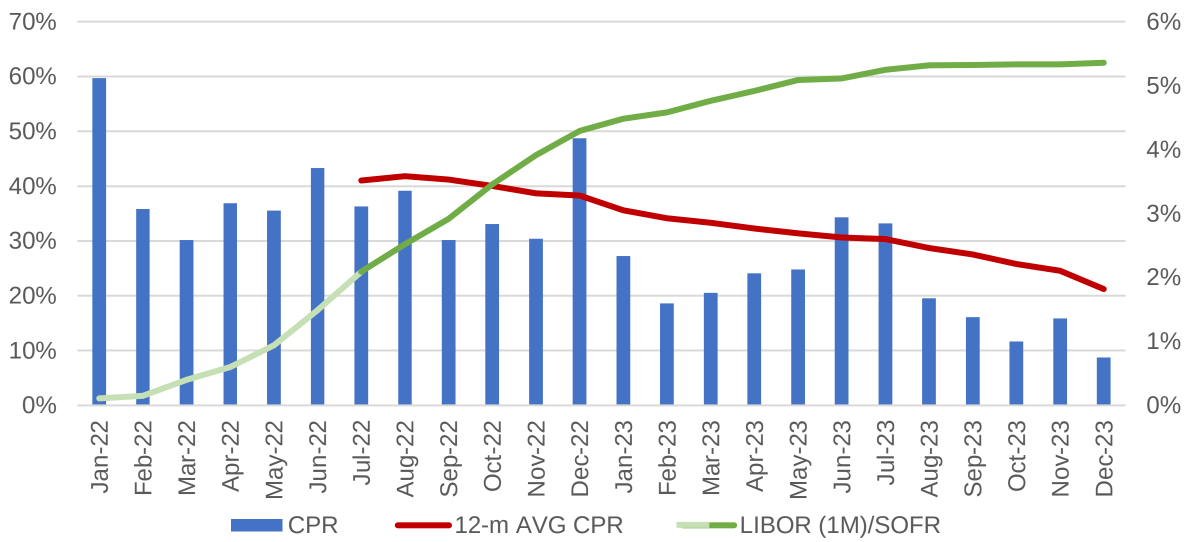
As of December 2023, 2,158 floating-rate loans remain active, representing $60 billion in outstanding loan balance. The 12-month average CPR is 21% as of December 2023, compared with 31% in June 2023, and 38% in December 2022[3]. Exhibit 3 shows that in 2022, monthly CPRs averaged 38% before falling during 2023 as interest rates increased.

Part of the reason for the higher CPR in 2022 is the low interest rate, especially during the first half of the year. During early 2022, 1-month LIBOR was less than 0.5% but increased rapidly and was just above 2% in July 2022, the last data point shown for LIBOR. During the rest of 2022, SOFR rates continued to rise and were at 4.3% at the end of 2022. During 2023, rates continued to increase and

[3] Historic numbers may be different from the previous published reports due to updated data which impact the prepayment rate and number of loans that prepaid in a prior time period.

were around 5.3% during the second half of the year. As interest rates have increased during 2022 and into 2023, prepayment speed has declined meaningfully.

Exhibit 3: Annualized and 12-Month Average CPR and 1-Month Libor and SOFR



Sources: Moody's Analytics, Freddie Mac

Due to the variety of prepayment premium options, we classify each loan into one of three prepayment premium phases: less than 1% (which includes the open phase), equal to 1% and greater than 1%. Exhibit 4 below uses these classifications to show the percentage of outstanding loan balance over the 12-month period used in this report (January 2023 to December 2023). Consistent with the breakout of prepayment options in Exhibit 1, an overwhelming percentage of loans are in the 1% prepayment premium phase, with a small share in the <1% and >1% phases.

A vast majority of outstanding loans post-lockout are in the 1% prepayment premium phase.

Exhibit 4: Percentage of Outstanding Balance by Prepayment Premium Phase

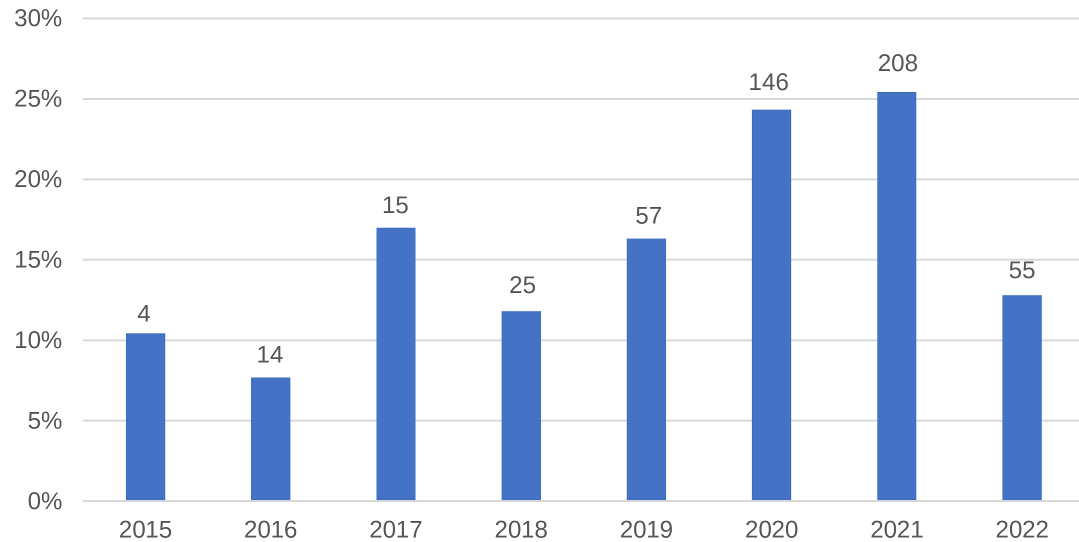
Prepayment Premium Phase	As of December 2022	As of December 2023
<1% Prepayment Premium Phase	1.54	1.7%
=1% Prepayment Premium Phase	95.1%	94.3%
>1% Prepayment Premium Phase	3.4%	4.0%

Source: Freddie Mac

The highest number of prepayments are from the 2020 and 2021 vintages, similar to the previous two reports. CPR rates are also now highest for the 2020 and 2021 vintages, while in prior iteration of this report earlier vintages had higher prepayment speeds. Prepayment speeds across 2015 to 2022 vintages range from 8% to 25%.

Prepayment speeds are highest in vintages from 2020 to 2021, with a greater reduction in CPRs among the earlier vintages.

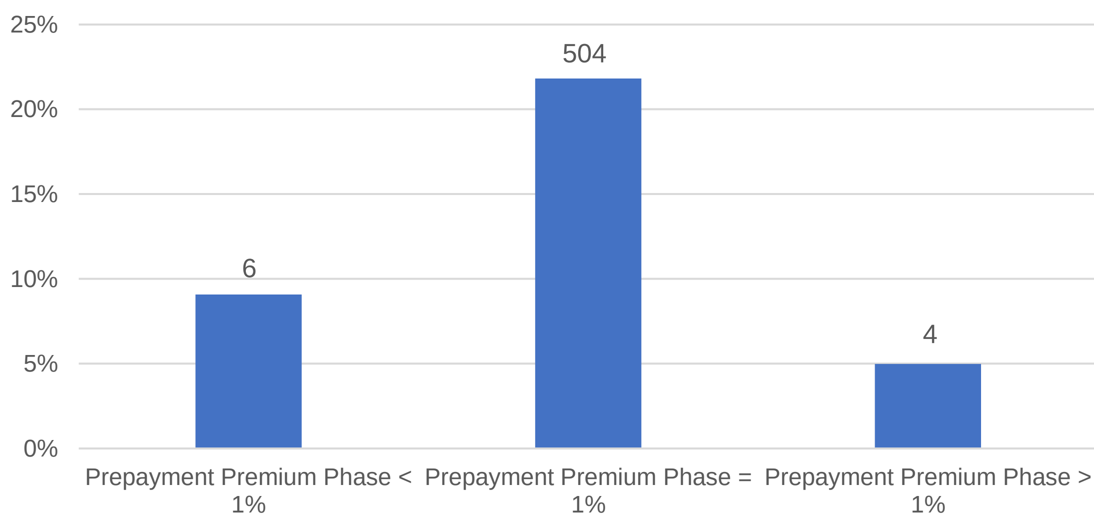
Exhibit 5: CPR and Loans Prepaid by Origination Vintage in the Past 12 Months



Source: Freddie Mac

Prepayment rates are the highest among loans that have a 1% prepayment premium, at 22%. Loans with a prepayment premium of less than 1%, and those with a prepayment premium of greater than 1% have CPRs of 9% and 5%, respectively.

Exhibit 6: CPR and Loans Prepaid by Prepayment Premium Phase in the Past 12 Months

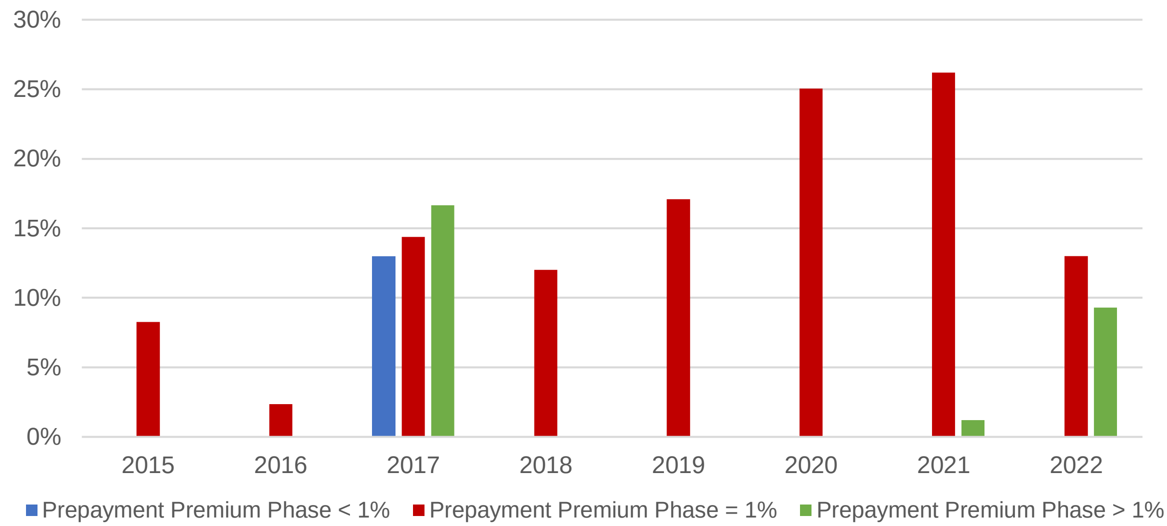


Source: Freddie Mac

Across vintage and prepayment premium phase, there is significant variation in prepayments, as shown in Exhibit 7. Loans with prepayment premiums of 1% generally have the highest prepayment rates. Meanwhile, loans with prepayment premiums of more or less than 1% generally have comparatively little prepayment activity. Compared with our last report in June 2023 all prepayment premiums and vintages except for 2022 are seeing lower prepayment rates.

CPRs are typically highest among loans in the 1% prepayment premium phase.

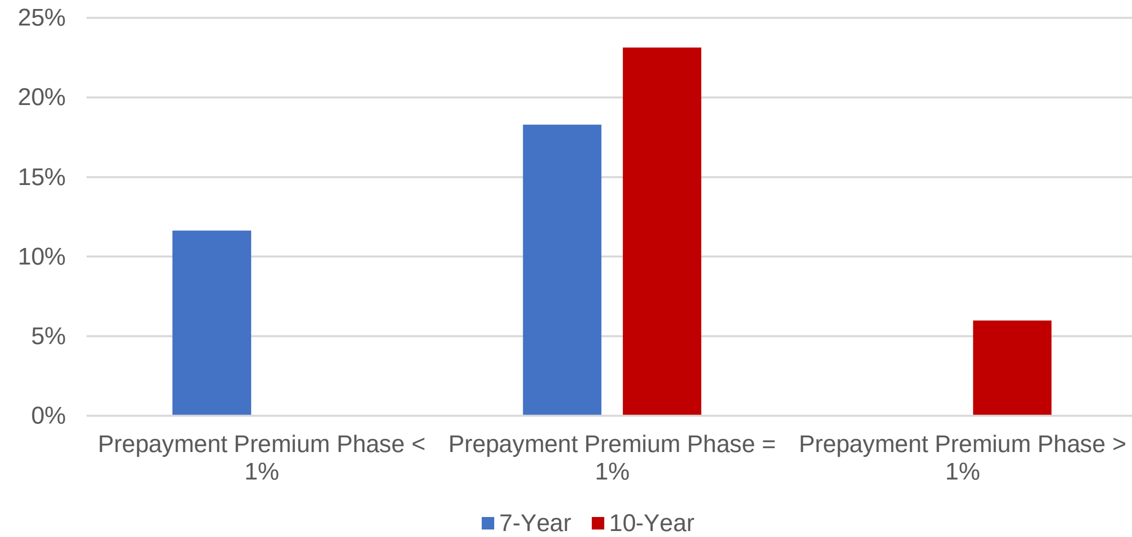
Exhibit 7: CPR by Vintage and Prepayment Premium Phase in the Past 12 Months



Source: Freddie Mac

Since approximately 99% of floating-rate loans are either 7- or 10-year terms, when analyzing prepay speeds by loan term, we grouped loans that are seven years or less into one category and 10 years into another. Exhibit 8 shows the CPR by origination term and prepayment premium phase. Ten-year loans with a prepayment premium of 1% have a higher CPR than its 7-year equivalent. For loans with a prepayment premium of less than 1%, only 7-year loans had any prepayments, while for prepayment premiums of more than 1%, only 10-year loans had any prepayment activity.

Exhibit 8: CPR by Prepayment Premium Phase and Original Term in the Past 12 Months



Source: Freddie Mac

CPRs vary greatly by deal and are heavily dependent on when loans leave the lockout period and enter a prepayment premium phase (see Appendix for deal-level CPRs). In the deal-level analysis, the CPRs are calculated using a weighted average of the number of loans in a post-lockout period in each month to the sum of loans in a post-lockout period over the 12-month reporting period. For example, as of November 2019, K-F50 had 43 post-lockout loans. This represented 16% of the total post-lockout loans in the 12-month reporting period. As of November 2020, only 20 loans were in a post-lockout period, representing 6% of the loans in a post-lockout period. This provides a comparison of CPRs among K-Deals, which shows that prepayment is dependent on loans exiting their lockout period. While the results vary, we typically see higher CPRs in the middle vintage K-F deals while older and newer K-F Deals have generally below-average CPRs.

Fixed-Rate Prepayment Analysis

This section of the report summarizes the prepayment speed of fixed-rate loans based on three years of data, from January 2021 through December 2023. Loans included were 5-, 7-, 10- and 15-year terms as well as single-borrower deals. Typically, multifamily fixed-rate loans offer two prepayment options: lockout-defeasance-open structure and yield maintenance-open structure.[4] The vast majority of fixed-rate loans are lockout-defeasance-open, representing 95% of our business while yield maintenance (YM) followed by an open period represents 5%. YM and defeasance significantly reduce the prepayment risk during the prepayment premium phase of the loan. The average CPR for

[4] Yield maintenance prepayment usually consists of two portions: (1) The loan's unpaid principal balance and (2) a prepayment premium. This premium is typically determined by calculating the present value of the remaining loan payments, with a discount factor equal to the current yield on the U.S. Treasury that matures closest to the loan's maturity date.

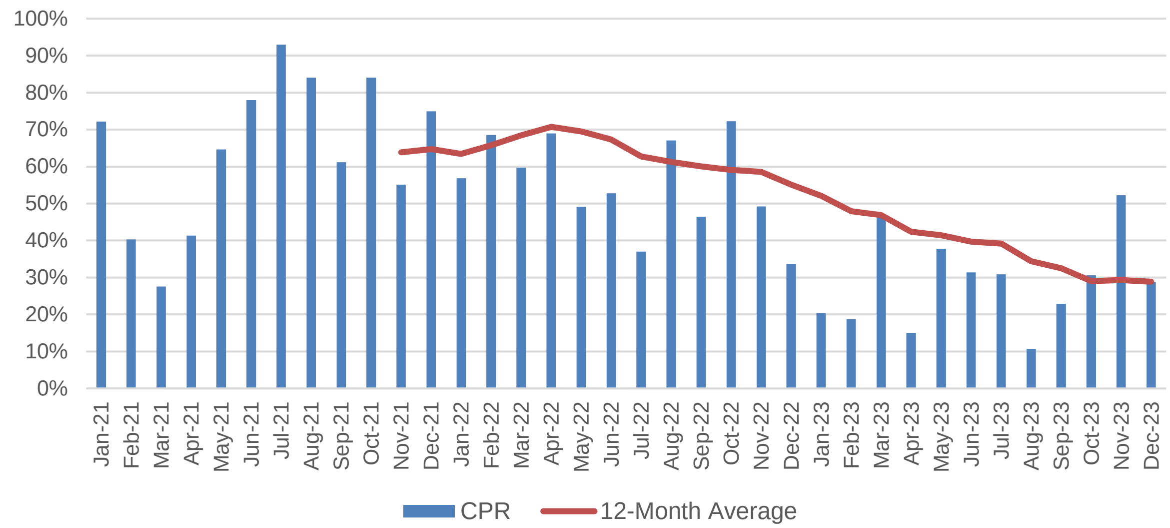
For defeasance prepayment, the borrower replaces the real estate securing its loan with a portfolio of securities that will generate the same debt service as the original collateral would over the term of the loan. Defeasance provides prepayment protection similar to yield maintenance for a multifamily portfolio.

loans in either their defeasance or YM period over the past three years is less than 1%, while the CPR for loans without a prepayment premium is 50%.

Exhibit 9 shows the CPR for those loans in their open period. Over the past three years on a monthly basis, the annualized CPR has varied from over 90% in mid-2021 to a low of about 11% in August 2023, and has been generally falling since mid-2022 as interest rates have been rising. The 12-month average annual CPR as of December 2023 was 29%, down considerably from 40% in June 2023 and 52% in December 2022.

CPRs for fixed-rate loans in their open period have been decreasing as well, but are higher than floating-rate loans.

Exhibit 9: Fixed-Rate Loans Annualized CPR During Open Period



The first Freddie Mac issued callable loans were originated in 2017, which are loans with non-standard prepayment terms[5].Those initial callable loans are just now beginning to exit their lockout period. As these callable loans season, we expect to see more prepayments, however due to the higher interest rate environment, prepayments may be impacted. When a reliable data set is gathered, we will include an analysis of the prepayment rates for these callable loans in future iterations of this report. The analysis presented elsewhere in the report includes any eligible callable loans.

Summary

Floating-rate prepayment speeds continued to decline during 2023 as interest rates rose throughout the year. As of December 2023, the overall 12-month CPR is 15 percentage points lower than the 12-month average as of December 2022 for floating-rate loans, and 8 percentage points lower than the last report with June 2023 data. As these loans season and leave their lockout periods, we would typically expect loans to prepay more quickly and the CPRs to increase. However, the rapid rise in interest rates may impact CPR speeds for floating-rate loans because higher interest rates typically slow down prepayment activity. Fixed-rate loan prepayments are minimal until the loans enter their open period, at which point prepayment speeds increase. However, the CPR of fixed-rate loans in their open period has also been generally falling as interest rates rose.

[5] An example of a callable loan is a 7-year loan term, with the first 4 years locked out and then 3 years open prepayment.

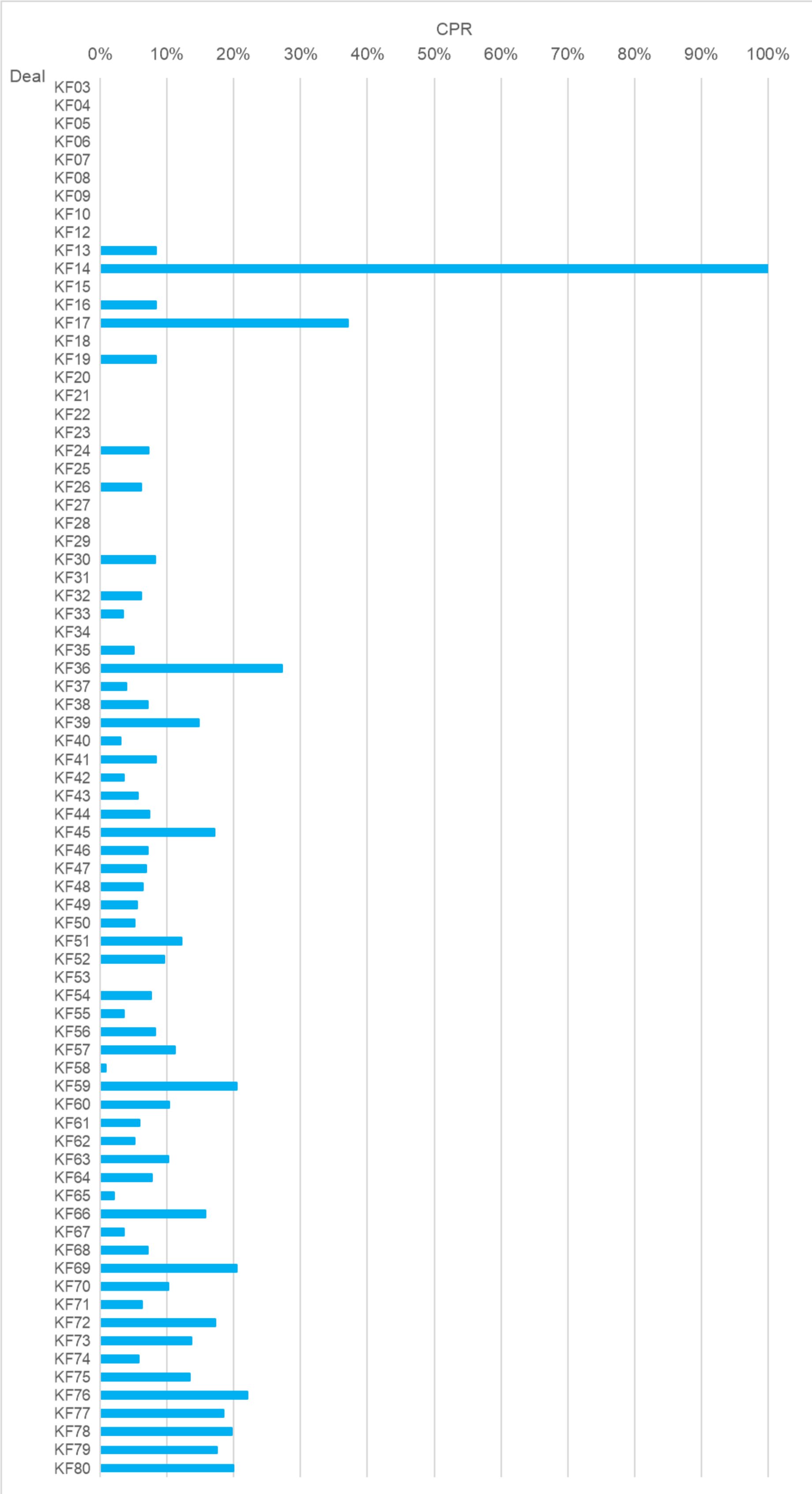
Appendix: CPR by K-F Deal in the Past 12 Months

Deal	CPR	Active Loans as of December 2023	Original Loan Count	Deal	CPR	Active Loans as of December 2023	Original Loan Count
KF03	0%	0	1	KF82	10%	13	28
KF04	0%	0	1	KF83	29%	10	35
KF05	0%	0	3	KF84	16%	11	36
KF06	0%	0	6	KF85	8%	6	40
KF07	0%	3	7	KF86	11%	3	33
KF08	0%	0	8	KF87	36%	7	49
KF09	0%	0	5	KF88	2%	9	23
KF10	0%	0	4	KF89	16%	9	35
KF12	0%	1	4	KF90	18%	12	37
KF13	8%	1	4	KF91	21%	14	41
KF14	100%	0	15	KF92	38%	15	45
KF15	0%	0	15	KF93	18%	14	43
KF16	8%	1	9	KF94	26%	20	45
KF17	37%	0	5	KF95	14%	19	38
KF18	0%	1	2	KF96	33%	14	49
KF19	8%	1	13	KF97	13%	16	37
KF20	0%	0	4	KF98	10%	15	31
KF21	0%	37	37	KF99	6%	10	28
KF22	0%	0	11	KF100	14%	14	41
KF23	0%	0	7	KF101	11%	12	33
KF24	7%	1	14	KF102	6%	14	36
KF25	0%	6	19	KF103	7%	16	31
KF26	6%	1	9	KF104	21%	8	26
KF27	0%	1	17	KF105	14%	13	29
KF28	0%	1	4	KF106	7%	17	30
KF29	0%	4	22	KF107	15%	13	30
KF30	8%	2	11	KF108	27%	15	37
KF31	0%	3	10	KF109	15%	16	40
KF32	6%	2	13	KF110	12%	27	42
KF33	3%	5	12	KF111	18%	19	43
KF34	0%	4	21	KF112	24%	13	38
KF35	5%	3	18	KF113	20%	25	39
KF36	27%	.	25	KF114	26%	25	44
KF37	4%	5	21	KF115	25%	36	65
KF38	7%	4	23	KF116	17%	21	37

Freddie Mac MULTIFAMILY

Deal	CPR	Active Loans as of December 2023	Original Loan Count	Deal	CPR	Active Loans as of December 2023	Original Loan Count
KF39	15%	4	17	KF117	31%	21	61
KF40	3%	4	19	KF118	17%	26	42
KF41	8%	1	9	KF119	30%	19	44
KF42	4%	4	27	KF120	10%	34	46
KF43	6%	6	17	KF121	21%	19	28
KF44	7%	12	38	KF122	31%	25	37
KF45	17%	10	36	KF123	25%	21	32
KF46	7%	3	28	KF124	10%	25	35
KF47	7%	5	37	KF125	12%	20	25
KF48	6%	5	28	KF126	19%	25	35
KF49	5%	10	27	KF127	14%	28	34
KF50	5%	7	26	KF128	30%	26	42
KF51	12%	4	20	KF129	0%	32	36
KF52	10%	5	24	KF130	9%	21	24
KF53	0%	10	35	KF131	13%	36	48
KF54	8%	12	36	KF132	5%	29	35
KF55	4%	14	33	KF133	4%	27	29
KF56	8%	6	20	KF134	14%	25	29
KF57	11%	10	37	KF135	6%	28	30
KF58	1%	7	31	KF136	28%	21	33
KF59	21%	7	39	KF137	15%	25	32
KF60	10%	14	43	KF138	4%	37	38
KF61	6%	12	30	KF139	12%	35	43
KF62	5%	8	33	KF140	13%	28	33
KF63	10%	18	35	KF141	15%	39	44
KF64	8%	4	20	KF142	0%	27	27
KF65	2%	10	26	KF143	0%	21	21
KF66	16%	14	30	KF144	0%	32	32
KF67	4%	10	21	KF145	9%	28	30
KF68	7%	12	28	KF146	0%	31	32
KF69	20%	6	32	KF147	0%	29	29
KF70	10%	9	31	KF148	0%	28	28
KF71	6%	22	34	KF149	0%	31	31
KF72	17%	5	24	KF150	0%	30	30
KF73	14%	21	38	KF151	0%	30	31
KF74	6%	3	19	KF152	0%	31	31
KF75	13%	7	32	KF153	0%	22	22

Deal	CPR	Active Loans as of December 2023	Original Loan Count	Deal	CPR	Active Loans as of December 2023	Original Loan Count
KF76	22%	15	39	KF154	0%	28	28
KF77	19%	6	23	KF155	0%	28	28
KF78	20%	15	33	KF156	0%	29	29
KF79	18%	20	37	KF157	0%	20	20
KF80	20%	13	41	KF158	0%	20	20
KF81	17%	11	42	KF159	0%	12	12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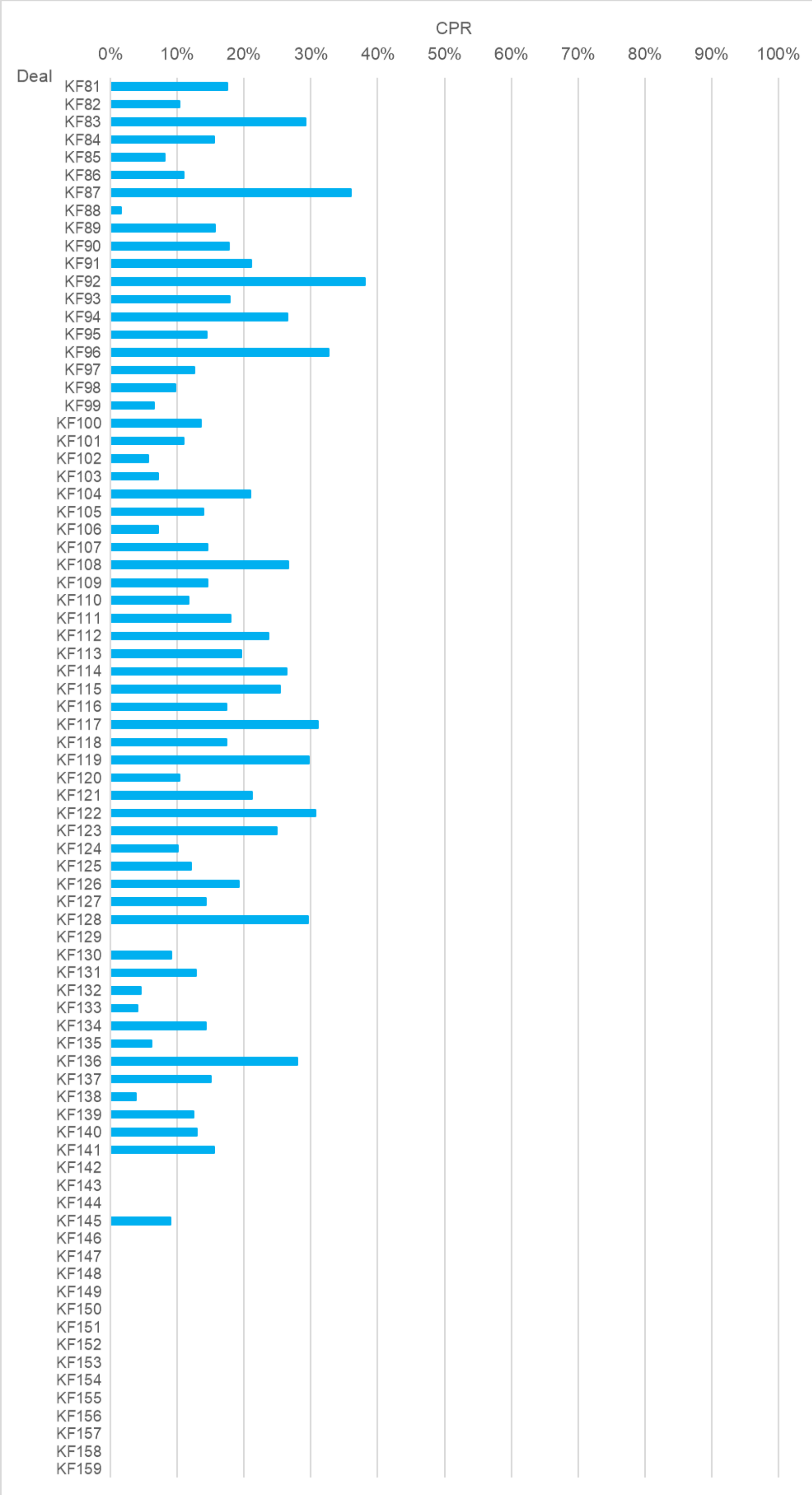
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