

Floating- and Fixed-Rate Loan Prepayments

As of December 2022

Research

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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 2022 (January 2022 through December 2022).

Floating-Rate Prepayments Key Takeaways

- The 12-month average constant prepayment rate (CPR) is 36% as of December 2022 — a decrease of 7 percentage points from June 2022. Of the current loans, 95% are in the 1% prepayment premium phase, which is up about 2 percentage points from the June report.
- The prepayment speed decreased due to interest rate increases throughout 2022, after extremely low rates in 2021.
- Floating-rate loans offer borrowers more prepayment flexibility, with 82% choosing a one-year lockout followed by 1% prepayment premium.
- Prepayment speeds are computed based on loans that are eligible to prepay during the reporting period (January 2022 through December 2022) 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.
- Prepayments are generally highest when prepayment premiums are lowest and among more seasoned loans, and interest rates are low.

Fixed-Rate Prepayments Key Takeaways

Nearly all the loans that prepaid were in their open period. The December 2022 12-month annual average CPR for those open period loans was 56%.

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 lower, short-term rates and provides borrowers with more prepayment flexibility than fixed-rate products. Typical loan terms are 5-, 7- and 10-year. Through December 2022, Freddie Mac has funded and securitized 6,444 floating-rate loans totaling over \$156 billion of original unpaid principal balance (UPB).

Prepayment Options Background

We originate 5-, 7- and 10-year floating-rate loans that generally range between \$5 million and \$100 million in size. We stopped accepting new loans indexed to LIBOR during the fourth quarter of 2020, and since then all new floating-rate loans are indexed to 30-day average SOFR. Legacy floating-rate, LIBOR-indexed bonds will be transitioned to an alternative index in connection with the expected cessation of LIBOR at the end of June 2023. 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 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 2022.

The floating-rate program offers borrowers prepay optionality.

Exhibit 1: Available Prepayment Options for Floating-Rate Loans

Option	Prepay Option % by Loan Term			Total % Floating-Rate Business			Total % Floating-Rate Business
	5-year	7-year	10-year	5-year	7-year	10-year	
1-year lock out, then 1%	80%	83%	82%	0%	30%	52%	82%
2-year lock out, then 1%	7%	7%	8%	0%	3%	5%	8%
3% - 2% - 1%	0%	2%	2%	0%	1%	1%	2%
All others*	13%	8%	8%	0%	3%	5%	8%
Total % Floating-Rate Business				0%	36%	63%	100%

Note: All others include a combination of lockout and stepdown. Percentages represent original UPB balance for deals K-F01 through K-F136 and may not total 100% due to rounding. This does not include value-add loans. Source: Freddie Mac.

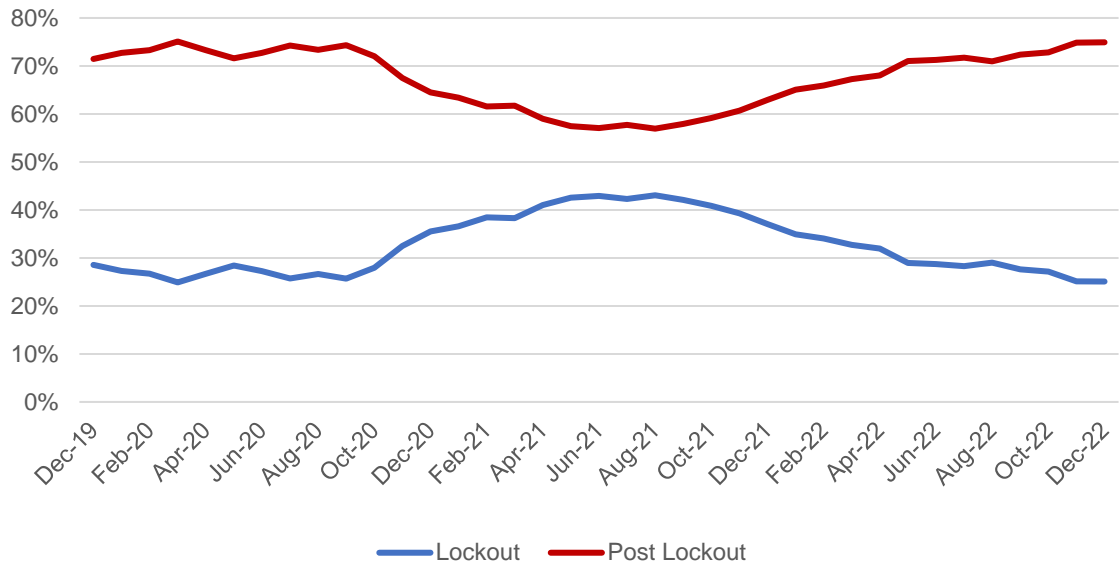
Loans that feature a 1-year lockout period followed by a 1% prepayment premium are by far the most popular structure, representing 82% of our floating-rate originations. Approximately 8% have a 2-year lockout period followed by a 1% premium, while the 3%-2%-1% step-down prepayment premium structure makes 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, making up more than 99% of floating-rate business.

Borrowers continue to favor 10-year loan terms, representing 63% (by UPB) of floating-rate business, while 36% are 7-year. Since our last report in June 2022, the breakout of 7-year and 10-year loans has shifted 3 percentage points toward the 10-year term, when 10-year accounted for 60% of UPB and 7-year represented 39%.

Comparing December of 2019 with December of 2022, the rate of loans entering their post-lockout period (able to prepay with a premium) is similar at 73% and 75%, respectively (calculated monthly by the percentage of UPB). During 2021 the percentage of UPB post lockout fell significantly. This implies that in 2021 more loans were seasoning out of their lockout period than originated with a lockout period. The end of 2019 saw just under 30% of UPB in the lockout period and just above 70% post lockout, including those loans in the par/window period. In 2021 the percentage of loans post lockout decreased, hitting 57% in July of 2021. Since then, the trend has reversed as the percentage of loans post lockout has risen.

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

Over the past year, the percentage of loans post lockout increased and is now similar to levels seen in early 2020.



Source: Freddie Mac

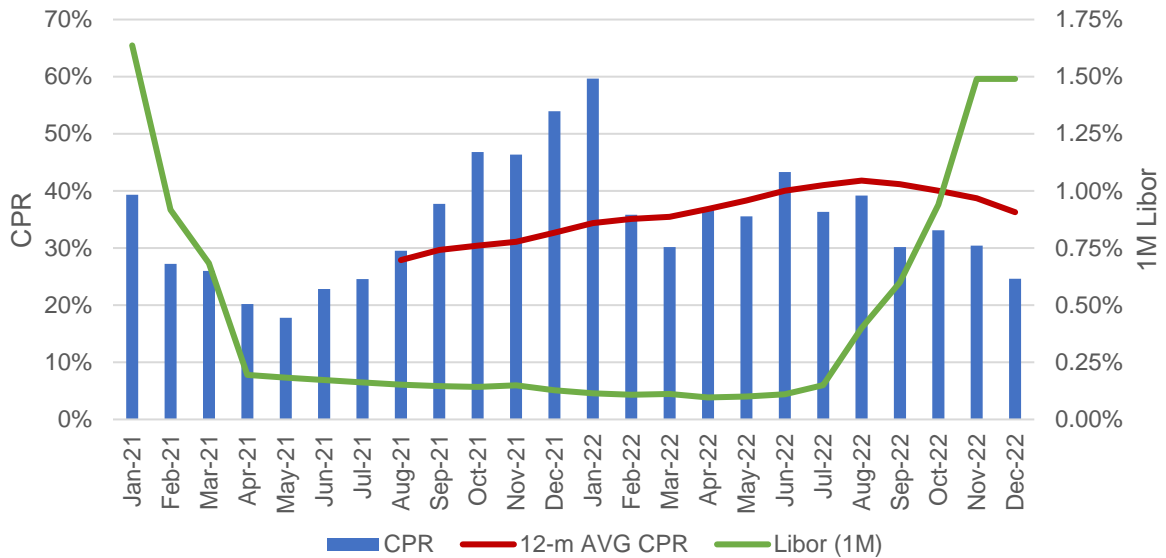
Prepayment Speeds by Loan Characteristics

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 they 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 2022, 2,376 floating-rate loans remain active, representing over \$60 billion in outstanding loan balance. The 12-month average CPR is 36% as of December 2022, compared with 43% in the June 2022 report. Exhibit 3 shows that annualized CPRs were below 30% during the first half of 2021, but then increased markedly through January 2022 when they peaked at 60%. CPRs were generally below 40% for much of the remainder of 2022 and fell to 25% by the end of year.

Part of the reason for the increase in CPR through 2021 and into the beginning of 2022 is the low 1-month LIBOR rate. During 2020, 1-month LIBOR fell from 1.6% in August to less than 0.2% in December and remained near that level for all of 2021 until increasing in the second half of 2022. As interest rates have increased during 2022, prepayment speed has declined from the elevated levels seen in late 2021 when rates were extremely low.

Exhibit 3: Annualized and 12-Month Average CPR and 1-Month LIBOR



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 2022 to December 2022). 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.

Exhibit 4: Percentage of Outstanding Balance by Prepayment Premium Phase

Prepayment Premium Phase	As of December 2021	As of December 2022
<1% Prepayment Premium Phase	2.1%	1.5%
=1% Prepayment Premium Phase	92.2%	95.1%
>1% Prepayment Premium Phase	5.7%	3.4%

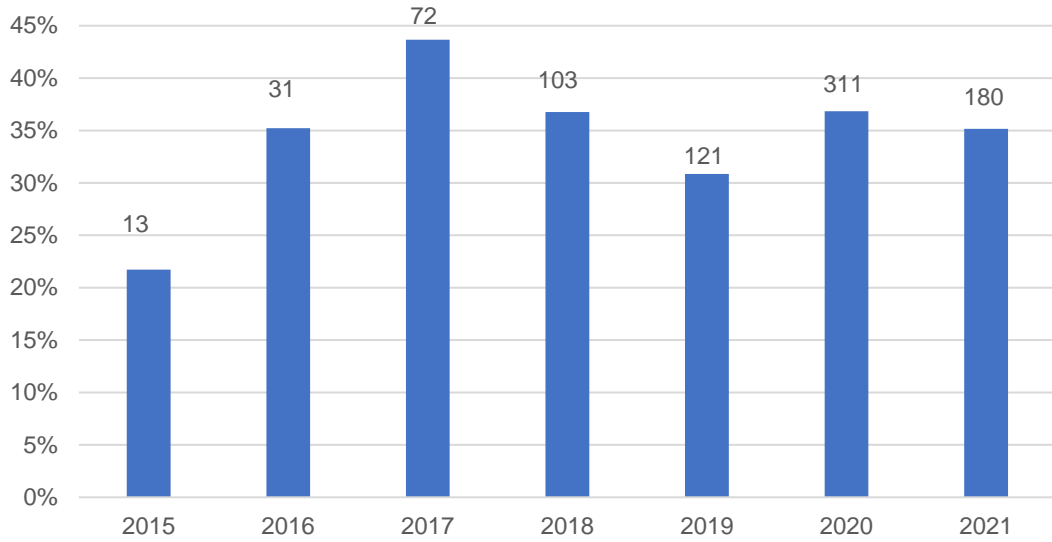
Source: Freddie Mac

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

Over the past 12 months, the highest CPR by vintage are those loans originated in 2017 at 44%, while the highest number of loans that prepaid were originated in 2020. The elevated prepayment rate for loans from 2017 is attributable to these loans reaching five years of seasoning, at which point they typically see increased prepayment rates.

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

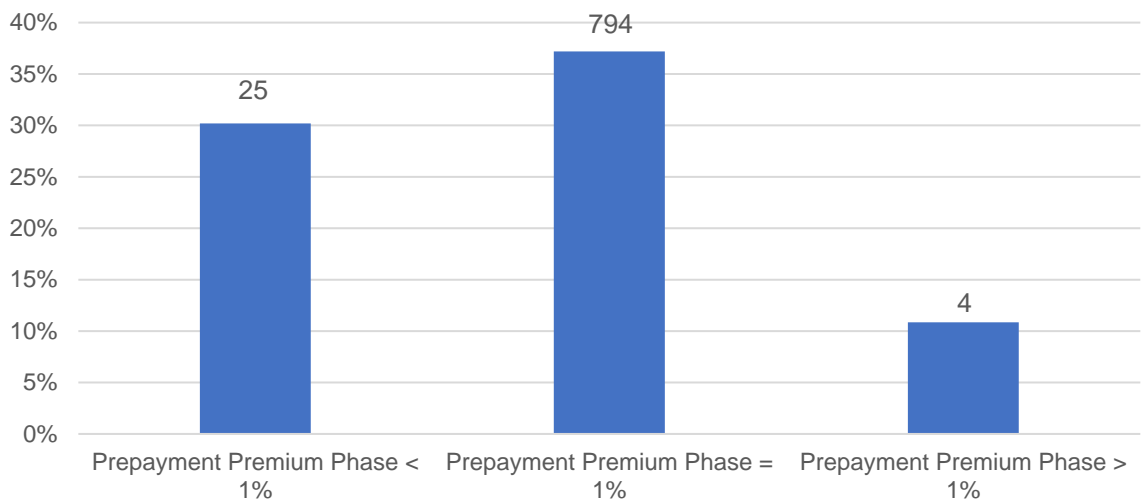
Prepayment speeds since 2016 vintage are between 31% to 44%.



Source: Freddie Mac

Prepayment rates are the highest among loans that have a 1% prepayment premium and those with a prepayment premium of less than 1%, at 37% and 30% CPR, respectively. By comparison, the CPR of loans with higher prepayment premiums is lowest at 11%.

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

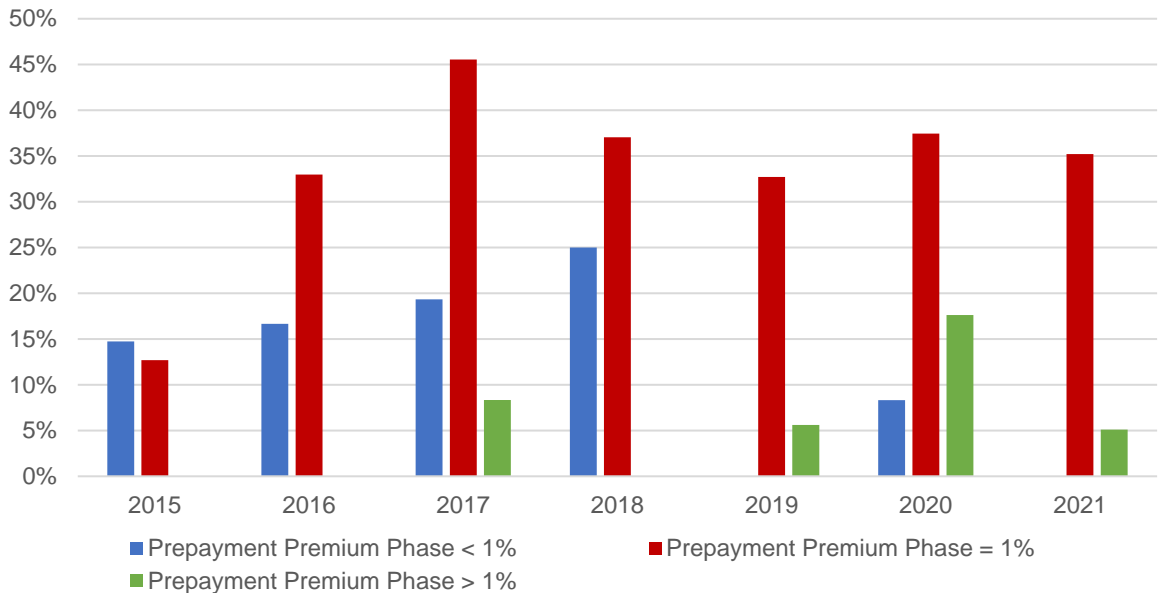


Source: Freddie Mac

Across vintage and prepayment premium phase, there is significant variation in prepayments, as shown in Exhibit 7. Loans with prepayment premiums of 1% or less generally have the highest prepayment rates. Meanwhile, loans with prepayment premiums of more than 1% were comparatively rare, but they have increased since the [last report in June](#). In the June report, the only vintage year with any prepayment activity for loans with a premium of more than 1% was in 2020, when the CPR was 8%.

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



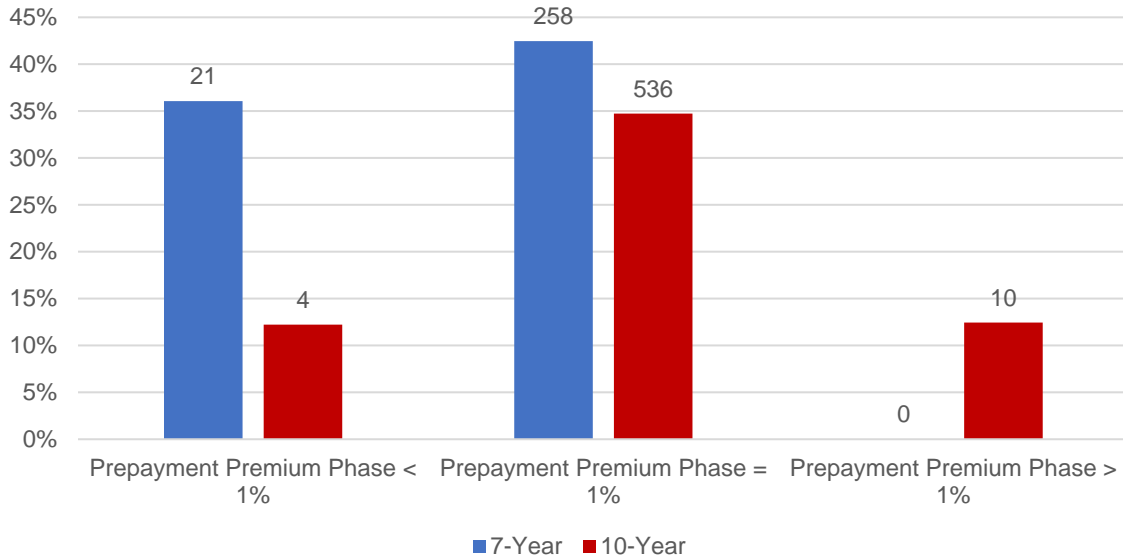
Note: To preserve scale we removed two loans from the chart that originated in 2021 with a prepayment premium of <1% and have since paid off with a CPR of 100%.

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. Across two of the three prepayment premiums, 7-year or shorter loans have a higher CPR than their 10-year counterparts. While the CPR for 10-year loans with a prepayment premium of 1% or more is low, no 7-year loans with a prepayment premium of 1% or more have prepaid.

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

Loans with lower prepayment premiums and shorter loan terms have higher CPRs.



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 K-F Deals either have no (or very few) loans remaining in the pools and below-average CPRs.

Fixed-Rate Prepayment Analysis

This section of the report summarizes the prepayment speed of fixed loans based on three years of data, from December 2019 through December 2022. Loans included were 5-, 7-, 10- and 15-year as well as single-borrower deals. Typically, multifamily fixed-rate loans offer two prepayment options: Lockout-defeasance-open structure and yield maintenance-open structure.¹ 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

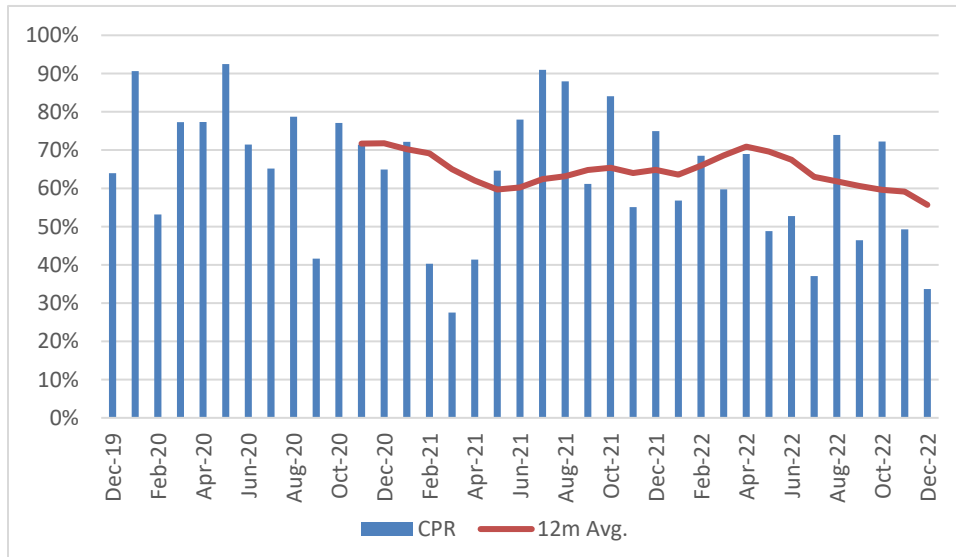
¹ Yield maintenance prepayment usually consists of two portions: (1) The loan’s unpaid principal balance and (2) a prepayment premium. This premium is typically determined by calculating the present value of the remaining loan payments, with a discount factor equal to the current yield on the U.S. Treasury 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 64%.

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 about 28% to 92%. The 12-month average annual CPR as of December 2022 was 56%, representing a downward trend since April 2022. There is almost no prepayment activity during fixed loans’ defeasance or YM period. But once fixed loans enter the open period, the average CPR increases dramatically.

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



Summary

During the second half of 2021, the monthly floating prepayment rate increased with continued low interest rates and the optimism surrounding the strength of the economic recovery. However, interest rates rose quickly during 2022 and as a result, floating-rate prepayment speed dropped, especially during the second half of the year. As of December 2022, the overall 12-month CPR is 7 percentage points lower than the 12-month average as of June 2022 for floating-rate loans. As these loans season and leave their lockout periods, we 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.

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

Deal	CPR	Active Loans as of December 2022	Original Loan Count	Deal	CPR	Active Loans as of December 2022	Original Loan Count
KF02	.	.	1	KF75	52%	10	32
KF03	.	.	2	KF76	28%	22	39
KF04	.	.	3	KF77	27%	9	24
KF05	.	.	5	KF78	17%	21	33
KF06	.	.	7	KF79	9%	28	37
KF07	2%	3	9	KF80	34%	20	41
KF08	.	.	10	KF81	36%	17	42
KF09	50%	.	9	KF82	10%	17	28
KF10	50%	.	10	KF83	12%	19	35
KF11	.	.	5	KF84	28%	15	36
KF12	0%	1	13	KF85	38%	7	40
KF13	8%	2	6	KF86	42%	7	33
KF14	6%	1	18	KF87	36%	14	49
KF15	14%	.	17	KF88	28%	10	23
KF16	8%	2	15	KF89	17%	13	35
KF17	5%	3	10	KF90	26%	19	37
KF18	8%	1	3	KF91	32%	20	41
KF19	22%	4	20	KF92	31%	25	45
KF20	.	.	7	KF93	34%	18	43
KF21	0%	37	42	KF94	27%	30	45
KF22	67%	.	15	KF95	25%	23	38
KF23	8%	2	16	KF96	25%	27	49
KF24	0%	3	17	KF97	26%	21	37
KF25	12%	7	28	KF98	21%	22	31
KF26	0%	3	10	KF99	23%	20	28
KF27	25%	1	32	KF100	43%	17	41
KF28	8%	1	16	KF101	32%	16	33
KF29	5%	4	28	KF102	20%	19	36
KF30	16%	4	26	KF103	32%	18	31
KF31	12%	3	18	KF104	31%	14	26
KF32	28%	3	21	KF105	22%	18	29
KF33	8%	6	19	KF106	21%	22	30
KF34	32%	4	28	KF107	35%	18	30
KF35	7%	4	32	KF108	45%	22	37
KF36	23%	3	37	KF109	36%	22	40
KF37	16%	6	25	KF110	10%	36	42

Deal	CPR	Active Loans as of December 2022	Original Loan Count	Deal	CPR	Active Loans as of December 2022	Original Loan Count
KF38	13%	5	30	KF111	28%	25	43
KF39	26%	6	25	KF112	42%	21	38
KF40	30%	5	29	KF113	33%	31	39
KF41	13%	2	12	KF114	22%	33	44
KF42	26%	5	44	KF115	24%	50	65
KF43	8%	7	27	KF116	16%	30	37
KF44	18%	13	58	KF117	16%	45	61
KF45	23%	16	46	KF118	20%	35	42
KF46	47%	4	41	KF119	15%	36	44
KF47	35%	6	50	KF120	12%	40	46
KF48	19%	6	34	KF121	21%	25	28
KF49	22%	11	49	KF122	4%	35	37
KF50	30%	8	46	KF123	13%	30	32
KF51	37%	6	37	KF124	17%	30	35
KF52	33%	7	34	KF125	8%	24	25
KF53	19%	10	43	KF126	0%	34	35
KF54	23%	15	41	KF127	2%	33	34
KF55	23%	15	40	KF128	0%	42	42
KF56	11%	8	20	KF129	35%	32	36
KF57	25%	13	41	KF130	0%	24	24
KF58	14%	8	41	KF131	9%	47	48
KF59	26%	15	40	KF132	0%	35	35
KF60	22%	19	45	KF133	0%	29	29
KF61	9%	14	33	KF134	0%	29	29
KF62	26%	9	37	KF135	0%	30	30
KF63	16%	22	36	KF136	0%	33	33
KF64	22%	5	26	KF137	0%	32	32
KF65	29%	11	26	KF138	0%	38	38
KF66	20%	18	30	KF139	0%	43	43
KF67	9%	11	21	KF140	0%	33	33
KF68	12%	13	29	KF141	0%	44	44
KF69	18%	12	33	KF142	0%	27	27
KF70	26%	11	32	KF143	0%	21	21
KF71	11%	24	34	KF144	0%	32	32
KF72	16%	9	27	KF145	.	30	30
KF73	17%	27	38	KF146	.	32	32
KF74	34%	5	19				

