Analytics Insights

Education

An introduction to Freddie K

Agency CMBS

February 2022

AUTHORS

Loy Weng
Yield Book Mortgage Research
212-314-1125
loy.weng@lseg.com

Luke Lu
Yield Book Mortgage Research
212-314-1113
an.lu@lseg.com

Overview

Freddie Mac Multifamily K-deals (Freddie K) is one of the major agency CMBS products, with $321 billion outstanding balance as of December 2021. The underlying loans are typically 10-year fixed rate or floating rate loans, with a 30-year amortization period, backed by multifamily properties. Fixed rate loans usually have a strong call protection and muted prepayment activities, while floating rate loans have limited prepayment protection and higher prepayment speeds. Freddie K deals include senior tranches guaranteed by Freddie Mac and unguaranteed subordinate tranches, which are subject to credit risk.

This paper

- provides an introduction to the Freddie K product, including loan characteristics, underwriting, and securitization;
- discusses Freddie K loan performance, prepayment behavior, and prepayment drivers;
- compares Freddie K with GNPL and FN DUS, the two other major agency CMBS products;
- gives a brief summary of Small Balance Loans (SBL), which is another frequently mentioned Freddie Mac multifamily program.

Contents

Executive summary

- Multifamily fundamental has been resilient through the COVID pandemic.
- Freddie Mac underwrites and approves Freddie K loans in house, contributing to strong credit performance historically.
- Freddie K fixed rate loans typically have the strongest call protection among all major agency CMBS products, with lengthy defeasance or yield maintenance period, resulting in muted prepayment activities.
- Freddie K floating rate loans have a relatively weak call protection with low percentage penalty points, and hence much higher prepayment speeds.
- Prepayment and default behavior of Freddie K loans are also found to be correlated with property price appreciation, unemployment rate, loan size, DSCR, and LTV.
- Freddie K senior tranches are guaranteed and have stable cash flows, while the unguaranteed subordinate tranches can provide high risk-adjusted return opportunity.

Multifamily fundamentals

While some commercial real estate sectors such as Hotel and Retail suffered during the pandemic, multifamily has shown strong resilience and significantly appreciated in the last two years (Exhibit 1). Post Global Financial Crisis (GFC), multifamily supply, especially in the affordable rental segment, has been restricted with new construction below the level to keep up with population growth. The COVID pandemic boosted the demand for more living space, as work-from-home became a new norm. In addition, rapidly rising home prices tilted the affordability scale toward rental (vs purchase).

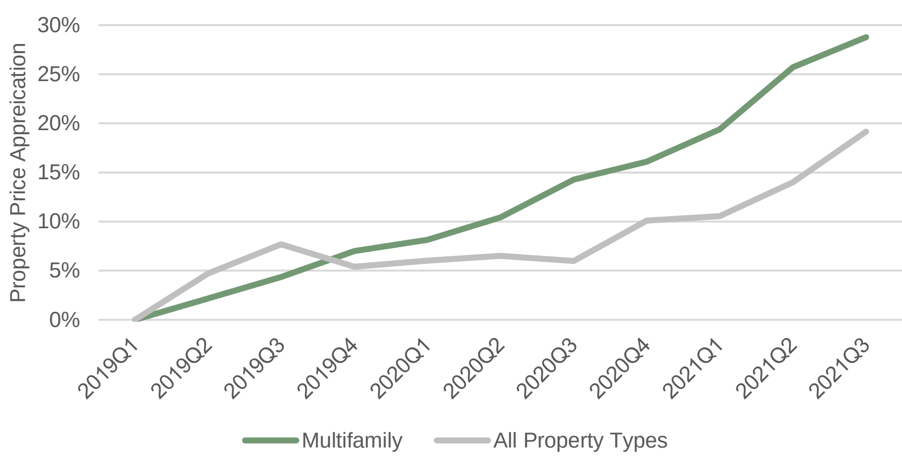
Vacancy rates in multifamily markets are at record lows, driving rent growth to double-digit increase in 2021.

Coming into 2022, strong job growth and economic recovery post pandemic may continue to keep rental demand high and drive up the rental rate.

Over the last decade, multifamily has outperformed most other commercial real estate property sectors, with limited cash flow volatility. As a result, agency CMBS, backed by multifamily loans, has seen tremendous growth during that period.

In this paper, we will introduce Freddie K, one of the major agency CMBS products, which has attracted investors' interest with its stellar historical credit performance.

Exhibit 1 – CRE Property Price Appreciation (Since 2019)



Source: FRED, Yield Book (December 2021).

Freddie K summary

With a mandate to support affordable housing and provide financing liquidity to the rental market, Freddie Mac issues multifamily loans backed by occupied, income-producing multifamily properties.

Since 1993, Freddie Mac has provided $808 billion in financing for approximately 100,000 multifamily properties (as of 9/30/21), representing 11.8 million apartment units [1].

Freddie Mac Multifamily K-deals (Freddie K), since its inception in 2009, has dominated the Freddie Mac multifamily lending program with a total outstanding balance of about $321 billion.

Exhibit 2 shows the profile of new issuance of Freddie K loans in the last three years and the outstanding universe as of year-end 2021. The average note rate is 2.8-3.5%, the average DSCR is 2.0x-2.4x, the average LTV is 66-68%, and the median loan size is $15-18 million for recent new issuances. 75% of the outstanding loans are paying fixed rate, although floating rate loan issuance has gained momentum in recent years (Exhibit 3), amounting to 55% of the issuance volume in 2021. Freddie K loans typically have call protections to prevent prepayment. The prevailing call protection provision is a combination of lockout and defeasance among the outstanding loan universe.

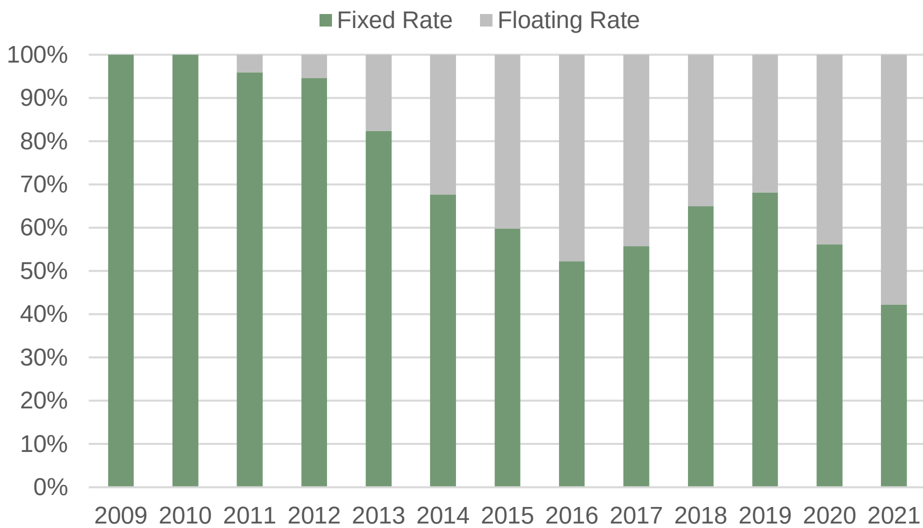
Exhibit 2 – Snapshot of Freddie K New Issuance and Outstanding Universe

	New Issuance			Outstanding Universe
	2019	2020	2021	
UPB ($bn)	61.5	61.8	63.5	321.1
Avg Note Rate (%)	3.5	3.0	2.8	3.5
Avg Loan Term (Months)	114	116	112	115
Avg Amortization Term (Months)	303	276	275	287
Avg IO Term (Months)	50	59	60	45
Avg DSCR	2.0x	2.4x	2.3x	1.8x
Avg LTV	66.5	67.9	67.0	73.0
Median Loan Size($M)	17.6	15.7	17.1	14.3
% Fixed Rate Loans	68.8	63.2	45.0	75.0
% w./ Lockout + Defeasance	63.3	56.3	42.8	70.2
% w./ Yield Maintenance	5.5	5.2	4.2	4.8
% w./ Percentage Penalty	39.5	41.6	56.9	30.9

Source: Freddie Mac, Yield Book (December 2021).

Freddie K loans typically have large loan size, low LTVs (<70%) and high DSCRs (>2.0).

Exhibit 3 – Freddie K issuance by rate type (2009-2021)

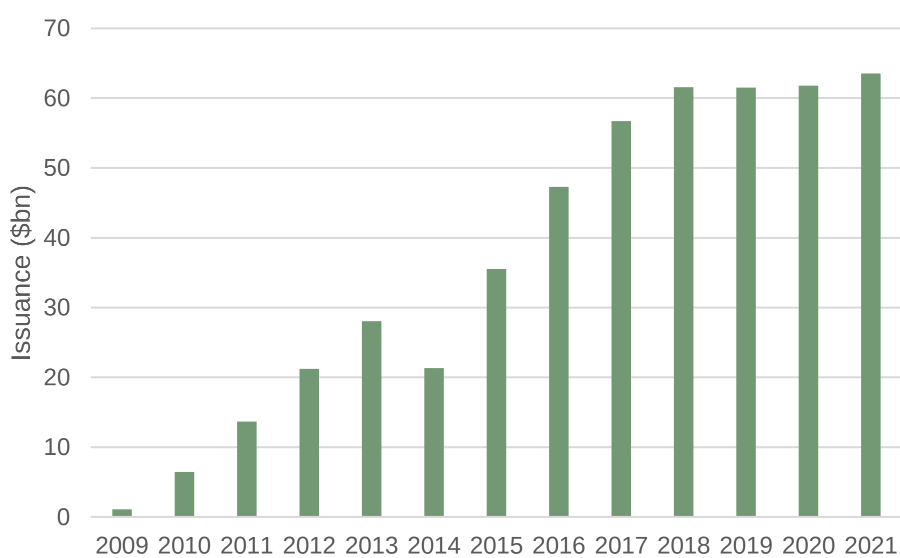


Source: Freddie Mac (December 2021).

Through December 2021, Freddie Mac has issued a total of 458 K deals with $478 billion in combined issuance across 23,020 loans [2].

Exhibit 4 shows the steady growth of Freddie K deal issuance over time from 2009 to 2021.

Exhibit 4 – Freddie K Issuance by Year



The annual issuance volume experienced dramatic growth post GFC, but has leveled out since 2018 with 2021 issuance 3% higher than that of 2020.

Source: Freddie Mac (December 2021).

Freddie K underwriting

Freddie Mac buys loans from a group of approved multifamily lenders (Optigo lender network). The top five lenders (CBRE, Berkadia, JLL, Walker & Dunlop, and Berkeley Point Capital) generated more than 60% of the total origination volume [2].

K-Deals are backed by newly acquired mortgages underwritten to Freddie Mac's underwriting standards. While the origination and servicing are outsourced to the third-party lenders/servicers, credit reviews and approvals are completed by Freddie Mac. This disciplined credit practice may have contributed to the strong performance of Freddie multifamily loans historically.

Freddie Mac retains underwriting and credit approval in house for multifamily loans, contributing to strong credit performance.

Eligible borrowers include limited partners, corporations, limited liability companies, or tenancy in common. If loan size is greater than $5MM, the borrower must be a Single Purpose Entity (SPE). Borrower may be a Single Asset Entity (SAE) for loan size under $5MM.

Eligible property types include multifamily, student housing, senior housing, manufactured housing, cooperative housing and affordable housing.

Loan proceeds can be used for acquisition or refinancing. However, no cash-out is allowed for the latter.

As part of the underwriting criteria, the required minimum DSCRs for the properties generally range from 1.25x to 1.40x, and the maximum LTVs range from 65% to 80%, depending on loan terms and amortization schedules. Full-term IO loans (comparing to amortizing and partial-term IO loans) have tighter LTV/DSCR requirements, and shorter maturity term loans require higher DSCR and lower LTV (Exhibit 5).

Exhibit 5 – Underwriting criteria for Freddie K Loans

	Amortizing		Partial-Term Interest-Only		Full-Term Interest-Only	
	Min DSCR	Max LTV	Min DSCR	Max LTV	Min DSCR	Max LTV
≥ 5-Year and < 7-Year Term	1.30x	75%	1.30x	75%	1.40x	65%
7-Year Term	1.25x	80%	1.25x	80%	1.35x	70%
> 7-Year Term	1.25x	80%	1.25x	80%	1.35x	70%

Source: Freddie Mac (December 2021).

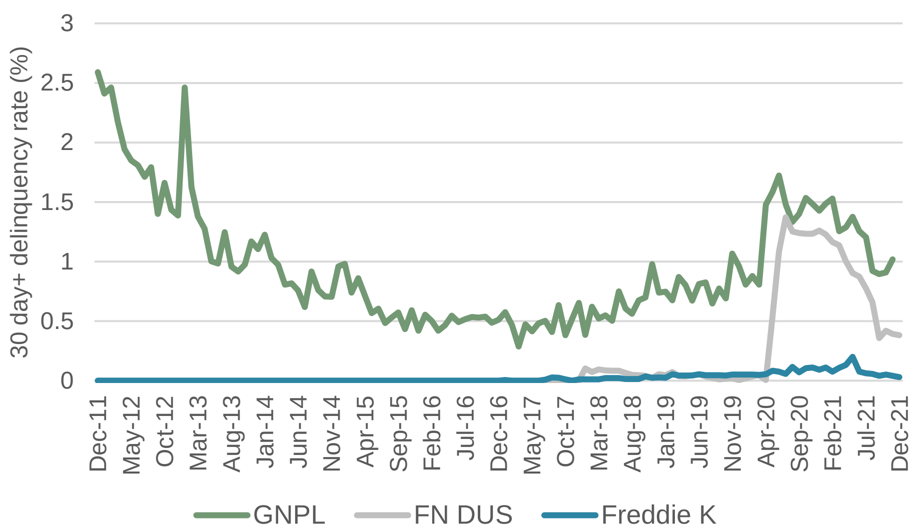
Minimum DSCRs and maximum LTVs are set based on loan terms and IO terms.

Freddie K loans are geographically distributed with top MSAs including Washington DC, Dallas, Atlanta, Houston, and Denver.

Freddie K performance

Freddie K loans historically have a very low 30 day+ delinquency rate, much lower than the other two major agency CMBS products – GNMA Project Loans (GNPL) and FN DUS (Exhibit 6). Both GNPL and FN DUS saw spike of delinquency rates at the onset of the pandemic, while Freddie K only experienced a minor pick-up in 2020.

Exhibit 6 – 30 day+ Delinquency by Agency CMBS Products



Source: Freddie Mac and Yield Book (December 2021).

Freddie Mac published recently the historical default data for multifamily loans (Exhibit 7). From 2006 to 2021, default rates and loss rates were mostly muted, with the highest default rates seen during GFC (1.59% in 2006 and 1.38% in 2008), and the peak loss rate of 42 basis points (bps) in 2006. Since 2014 (including the pandemic period), the default rates have been no more than 4bps and the loss rates have stayed below 1bp. Loan qualities, marked by DSCR and LTV, have also been improving over the last few years.

According to the Freddie Mac Multifamily Loan Performance Database (MLPD) [3], which covers Freddie K loans, SBL loans, and whole loans, a total of 102 properties were disposed since 1994 (as of 2021 Q3) with total value of $897MM, resulting in a total credit loss of $243MM and an average loss severity of 27%.

Exhibit 7 – Freddie Mac Multifamily Loan Performance

Vintage	# of Loans	Total Balance ($MM)	Avg LTV (%)	Avg DSCR	Avg WAC (%)	UPB 21Q3 ($MM)	Default Rate	Loss Rate
2006	949	11,549	67	1.70	5.9	59	1.59%	0.42%
2007	1366	18,042	68	1.57	5.8	314	0.52%	0.22%
2008	1353	17,548	68	1.6	5.6	138	1.38%	0.30%
2009	931	14,869	69	1.74	5.3	89	0.05%	0.01%
2010	850	12,891	69	1.65	5.0	199	0.11%	0.04%
2011	1167	18,555	69	1.71	4.7	1,592	0.28%	0.05%
2012	1483	25,978	68	1.95	4.0	13,831	0.03%	0.01%
2013	1397	24,414	67	1.97	4.0	13,154	0.13%	0.07%
2014	1528	26,282	69	2.12	3.9	11,936	0.00%	0.00%
2015	3331	43,390	70	2.06	3.7	23,006	0.01%	0.00%
2016	4064	52,026	70	1.99	3.9	23,246	0.04%	0.01%
2017	5298	66,253	68	1.83	4.1	43,879	0.00%	0.00%
2018	5578	69,904	68	1.69	4.5	58,630	0.04%	0.01%
2019	4963	72,728	68	1.73	4.3	67,706	0.00%	0.00%
2020	4877	77,973	67	2.04	3.3	76,365	0.00%	0.00%
2021	3287	42,803	67	2.02	3.3	42,765	0.00%	0.00%

Source: Freddie Mac (December 2021).

Freddie K loans have a good track record historically. Some highlights include (as of December 2021) [2]

- 99.97% of loans current
- Only 10 loans in special servicing (<7 bps of outstanding balance)
- Only 1 loan in REO (<1 bp of outstanding balance)
- Historical total incurred loss of $40 million (< 1 bp of total issuance)

Freddie K loans have a pristine credit performance profile.

Securitization

Almost all multifamily mortgage loans that Freddie Mac purchases are intended for securitization. The Freddie K-Series, or K-Deal, is one of the securitization programs sponsored by Freddie Mac (or "Freddie") to securitize multifamily loans and shift some credit risk from the taxpayers to the private sector. For the securitization, a number of Freddie K loans (average about 40), with geographic, note rate, and quality diversity, are pooled into a trust that issues multiple tranches of various duration and risk profiles. Senior tranches are guaranteed by Freddie Mac, while the subordinate tranches are unguaranteed with credit risk exposure. The K-Deal is an efficient financing vehicle that ensures liquidity and tight spreads for senior tranches (the lion's share of the deal), while removing first loss credit risk. It reduces the overall funding cost and makes the Freddie K loans more affordable to multifamily borrowers.

Exhibit 8 shows the K-Deal issuance volume, average deal size, and average number of loans per deal in the past three years. The annual issuance volume has been consistently around $60-65 billion, with the average deal size slightly below $1 billion.

Freddie K-Deal is an efficient funding vehicle with consistent annual issuance over $60 billion in the last three years.

Exhibit 8 – Snapshot of Freddie K new issuance

	2019	2020	2021
Total Issuance ($bil)	62	62	64
Avg. Deal Size ($M)	947	981	948
Avg. # of loans	39	43	40

Source: Freddie Mac, Yield Book (December 2021).

Exhibit 9 shows a complete list of K-series securitization in terms of loan type, number of deals and outstanding balance. K-000 (10-year loans), K-F00 (Floating rate loans), and K-700 (7-year loans) are by far the largest three K-series.

Exhibit 9 – K-Series by Collateral Type

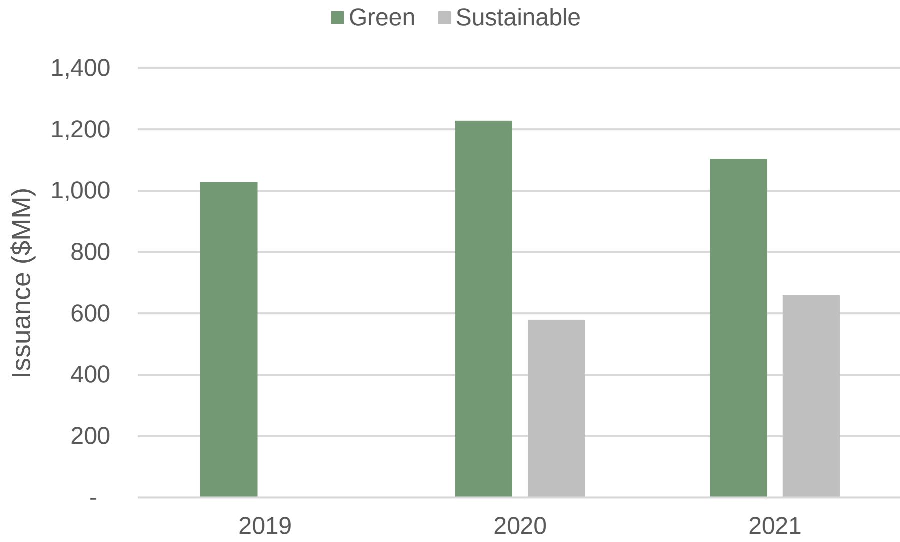
K-Series	Collateral Type	# of Deals	UPB ($bn)
K-000	10-year loans	139	141.37
K-F00	Floating rate loans	127	69.71
K-700	7-year loans	57	44.37
K-150	15-year loans	23	16.67
K-500	5-year loans	15	12.70
K-S00	Senior housing	14	6.89
K-W00	Workforce housing	10	5.73
K-J00	Supplemental loans	35	4.85
K-C00	Non-Standard prepayment terms	7	4.59
K-L00	Large loans	6	3.85
K-G00	Green Advantage loans	6	3.36
K-XYZ	Single-Asset-Single-Borrower loans	9	3.07
K-LU0	Lease-up loans	3	2.03
K-X00	Seasoned loans	4	1.34
K-SG0	Sustainable loans	2	0.58
K-P00	No-subordination loans	5	0.02

Source: Freddie Mac (December 2021).

K-F00 series for floating rate loans have been growing rapidly in the past few years, and the K-G00 series (Green Advantage loans) and K-SG0 series (Sustainable loans) are the new additions as part of the Freddie Mac ESG initiative since 2019 (Exhibit 10).

Exhibit 10 – Freddie K ESG Issuance

There has been significant growth of Freddie Mac ESG issuance in terms of Green and Sustainable loans in recent years.



Source: Freddie Mac (December 2021).

Deal structure

K-Deals are differentiated from other agency CMBS securitizations. They incorporate features from private-label CMBS market including offering the unguaranteed subordinated classes for credit risk exposure. Another practice of K-Deals, borrowed from the CMBS market, is the transparency of property-level and loan-level information before and after securitization. This effectively allows investors to analyze the collateral performance on an ongoing basis.

A typical fixed rate K-Deal, as illustrated in Exhibit , has three main types of classes/tranches:

- Senior tranches (A1, A2 and AM) are guaranteed by Freddie Mac for timely interest and ultimate principal payment, and rated AAA/AA (with WALs ranging from 7 to 10 years).
- Subordinate tranches (B, C, D) are not guaranteed by Freddie Mac and rated A, BBB, and NA respectively (with WALs close to 10 years).
- IO classes (X1, X2A, XAM, X2B, X3) receive excess interest and the prepayment penalties collected by the trustee. X1, X2A, and XAM are guaranteed by Freddie Mac for timely interest payment.

Exhibit 11 – A sample fixed rate Freddie K deal (FREMF 2020-K106)

Classes	Balance ($MM)	Rating Fitch	Subordination %	Coupon (%)	WAL (years)	Maturity	Guaranteed
A1	136	AAA	18.5	1.78	7.41	10/25/2029	Y
A2	852	AAA	18.5	2.07	9.79	1/25/2030	Y
AM	55	AA	14.0	1.78	9.90	2/25/2030	Y
B	49	A	10.0	3.71	9.91	2/25/2030	N
C	30	BBB	7.5	3.71	9.91	2/25/2030	N
D	91	NA	0.0	0.00	9.91	2/25/2030	N
X1	988	AAA		1.48	9.47	1/25/2030	Y
X2A	988	AAA		0.10	9.47	2/25/2030	Y
XAM	55	AA/A+		1.73	9.90	2/25/2030	Y
X2B	224	BBB		0.10	9.91	2/25/2030	N
X3	170	NA		1.99	9.91	3/25/2048	N

Source: Freddie Mac (December 2021).

Among the IO classes, X1 is a WAC IO class supported by excess WAC on top of A1 and A2 tranches, while XAM, also a WAC IO, is supported by AM tranche. X2A and X2B are strip IO classes, backed by A1/A2 and AM/B/C/D tranches, respectively. X3 is supported by D tranche, and thus is subject to credit risk.

Freddie K deal structure resembles that of private-label CMBS deals by offering subordinate credit tranches.

The principal payment is applied sequentially[1] to the principal tranches, starting from the senior tranche A1 all the way down to D tranche, while the credit loss is applied from bottom up from D tranche.

The subordinate tranches are assessed based on the pool composition and collateral quality. Before the pandemic, Freddie K deals typically had subordination levels of 14%, 10% and 7.5%, for AM, B, and C tranche, respectively. Since the pandemic in early 2020, the number of subordinate tranches has reduced to one – D tranche only, which is the first loss tranche. Meanwhile, the thickness of the AM tranche has been growing steadily over time from 4.5% of the deal before 2020, to 13.5% currently [4], and the subordination level of AM tranche has dropped to 5%. Note that none of the Freddie K senior tranches, including AM, has ever realized any credit losses historically. Even if there were a realized loss for AM, it would be reimbursed at the AM's final distribution date along with the full principal payment as per the Freddie Mac guarantee.

Similar to a private label CMBS deal, a master servicer handles the collection of principal and interest payments. Defaulted loans are handled by the special servicer. During the default process, the master servicer advances only the scheduled interest payment for the defaulted loan – the scheduled principal payment due to the amortization and the loan recovery do not get paid to senior bondholder until the resolution of a defaulted loan by the special servicer.

[1] For floating rate deals, principals are distributed pro rata unless waterfall trigger events occur.

K-deal loans are serviced by some major special servicers including CW Capital, Greystone, KeyBank, LNR, PNC Bank, Situs, Torchlight, and Wells Fargo.

The investor base of Freddie K-Deals are banks, money managers, insurance companies/pension funds, and hedge funds. Banks, insurance companies and pension funds are the major investors in the senior tranches for the high credit ratings and stable cash flow, while hedge funds and asset management companies are attracted by the higher yield of the subordinated tranches and IO tranches. Given the minimal default rate of Freddie K loans historically, the subordinated tranches can potentially realize high loss-adjusted returns.

SOFR Transition

The Secured Overnight Financing Rate (SOFR) is an alternative index to replace LIBOR, based on the overnight cash lending collateralized by U.S. Treasury securities in the repo market. When LIBOR ceases to be published, all LIBOR-based loans and bonds will need to convert to an alternative index, which may be SOFR. Newly originated Freddie K floating rate loans and newly issued Freddie K floating rate bonds have been indexed with a 30-day average SOFR.

Freddie Mac began to issue the first SOFR indexed bond backed by LIBOR-based loans (LIBOR-SOFR) as part of the KF73 floating rate transaction in December 2019. KF94 was the last Freddie K floating rate deal to offer a LIBOR-SOFR bond.

By issuing LIBOR-SOFR and SOFR-SOFR bonds, Freddie K is well positioned in the floating rate index transition process.

In December 2021, KF95 became the first Freddie K deal to offer SOFR indexed bond backed by SOFR-based loans (Class AS, SOFR-SOFR). Note that KF95 also offers a LIBOR indexed bond backed by LIBOR-based loans (Class AL, LIBOR-LIBOR).

The size of the SOFR tranche has increased from about 20% at the beginning to over 50% in the new floating-rate K deals [5].

To facilitate SOFR transition, Freddie Mac also provides a guarantee to cover the basis mismatch risk in the event SOFR exceeds LIBOR.

Call protection

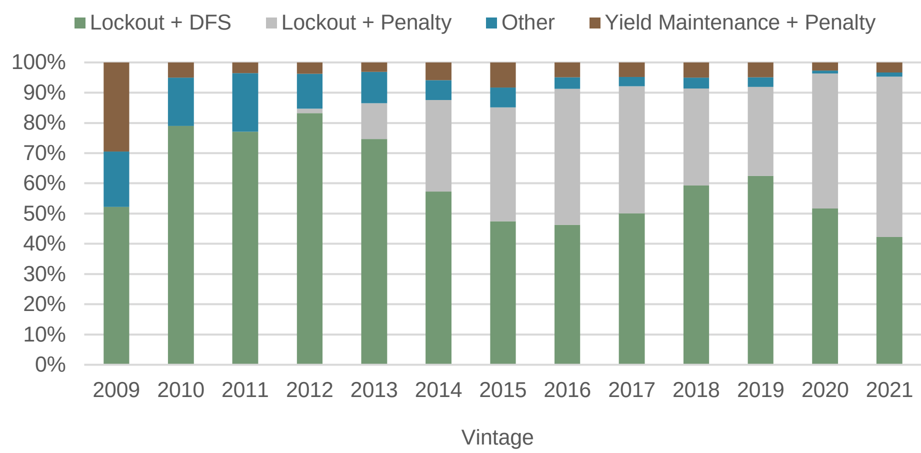
Call protection is one of the main characteristics of Freddie K loans.

Fixed rate Freddie K loans have strong call protections in the form of lockout, defeasance (DFS), and yield maintenance. Typically, these loans are protected by yield maintenance before securitization. After securitization, the protection usually comes in the form of a hard lockout period (2-year), followed by a lengthy defeasance period, which ends 90 days prior to the maturity date. A small portion of the fixed rate loans (~10%) have call protection with a lengthy yield maintenance period, followed by a short period of percentage penalty (3-month).

On the other hand, floating rate Freddie K loans have much weaker call protection provision involving percentage penalty. The most common prepayment protection is a 1-year lockout period, followed by a percentage penalty period (with 1% penalty point) plus a 90-day open period in the end. There are other less common options which have no lockout period, but start with higher penalty points, e.g., 3%, 5%, or 7%, each declining 1% annually until reaching 1%.

Exhibit 12 shows call protection distribution of Freddie K loans by vintage. For the 2021 issuance, “Lockout + Penalty” for floating rate loans and “Lockout + DFS” for fixed rate loans are the two prevailing call protection provisions.

Exhibit 12 – Call Protection Distribution by Vintage



Source: Freddie Mac, Yield Book (December 2021).

Early vintages are dominated by fixed rate loans with a strong call protection of lockout, defeasance, and yield maintenance. Floating rate loans are gaining popularity over the time with weaker call protection of lockout and percentage penalty.

Freddie K historical prepayment speeds

Exhibit 13 shows annual prepay speeds up to 2021 for each vintage as they season. Due to strong call protection for fixed rate loans, the prepay speeds of Freddie K fixed rate loans are largely muted while the speeds are much more pronounced for floating rate loans.

For fixed rate loans, lockout periods are usually followed by lengthy defeasance periods and thus their prepay speeds stay suppressed even after lockout periods.

Exhibit 13 – Historical Prepayment Speeds for Freddie K

Rate Type	Vintage / Age	1	2	3	4	5	6	7	8	9	10
Fixed	2011	0.0	0.0	0.0	1.5	0.9	0.4	1.4	0.6	4.2	33.3
	2012	0.0	0.0	0.1	0.2	0.2	0.4	0.4	0.3	1.2	
	2013	0.0	0.1	0.1	0.2	0.6	0.4	2.8	0.6		
	2014	0.0	0.3	0.4	0.8	1.9	1.7	7.0			
	2015	0.9	2.8	2.2	2.1	3.3	3.6				
	2016	0.1	0.7	1.3	1.4	3.1					
	2017	0.1	0.7	1.0	1.0						
	2018	0.2	0.3	1.0							
	2019	0.2	0.4								
	2020	0.4									

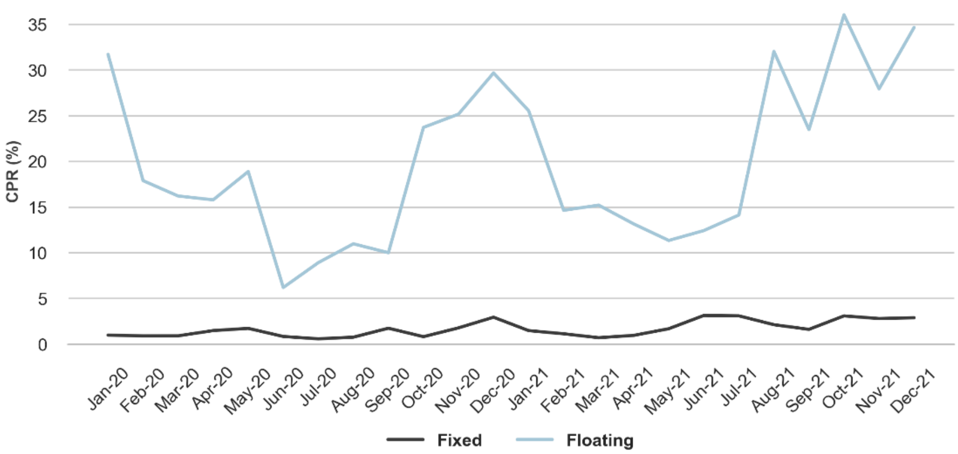
Floating	2014	3.2	23.7	33.2	48.0	35.8	20.6	25.4
	2015	10.5	26.5	42.5	31.3	19.7	83.6	
	2016	15.6	38.9	46.4	37.0	62.2		
	2017	13.3	31.1	27.1	27.7			
	2018	10.8	21.9	34.0				
	2019	5.0	19.9					
	2020	14.8						

Source: Freddie Mac, Yield Book (December 2021).

COVID pandemic impact

During the COVID pandemic in 2020 with rates dropping to record lows, the prepayment speeds for Freddie K fixed rate loans were barely affected, while floating rate loans saw speeds jumping since September 2020 (Exhibit 14).

Exhibit 14 – Freddie K Prepay Speeds 2020-2021



Source: Freddie Mac, Yield Book (December 2021).

Record low interest rate environment through the COVID pandemic had very limited impact to the prepay speeds of fixed rate loans due to the strong call protection provision.

Freddie K loans experienced very low delinquencies during the pandemic, with the highest 30 day+ delinquency rate of 0.2% in May 2021, and stayed mostly below 10bps for other months in the last two years. There have been only four loan defaults resolved with loss through the pandemic so far. Besides the strong multifamily fundamental, government subsidies such as various COVID stimulus/relief packages as well as Freddie Mac forbearance program during the pandemic may have helped mitigate the impact to credit performance of the multifamily loans.

Prepayment behavior and drivers

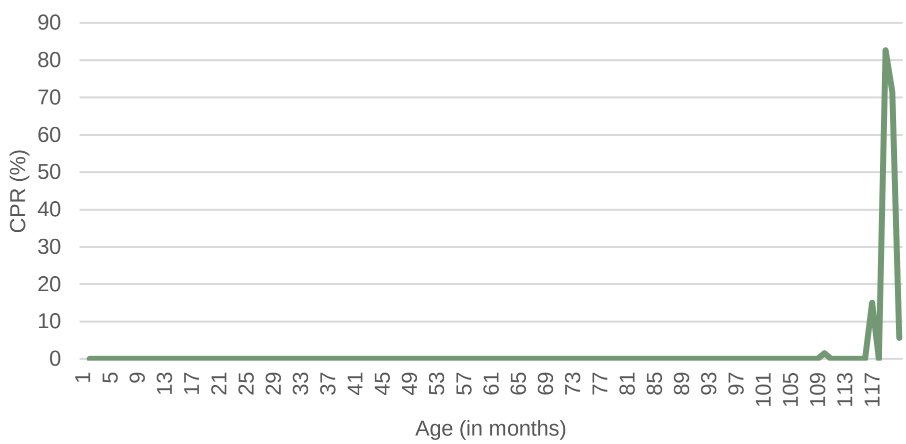
The market pricing convention of 0% CPY (which assumes no prepayment or default) for Freddie K is a simplified assumption, which does not capture the dynamics and unique features of the Freddie K loans. It is quite clear that the historical prepayment speeds varied over time (often significantly departing from 0%, especially for floating rate loans). In the next section, we are going to study the prepayment behavior and drivers of Freddie K loans.

Call protection provision is the dominant driver for prepayment behavior.

Call protection provision

Lockout and Defeasance – A typical lockout period is two years for fixed rate loans. The speeds are virtually zero during lockout periods. After lockout, fixed rate loans are subject to defeasance, which effectively replicates all future cash flows, resulting in no disruption of the scheduled payments. Defeasance typically carries a large premium and high fee, hence prepayment is greatly discouraged. As a result, speeds are almost zero during defeasance periods, and tend to jump right after the defeasance periods due to pent-up demand (Exhibit 15).

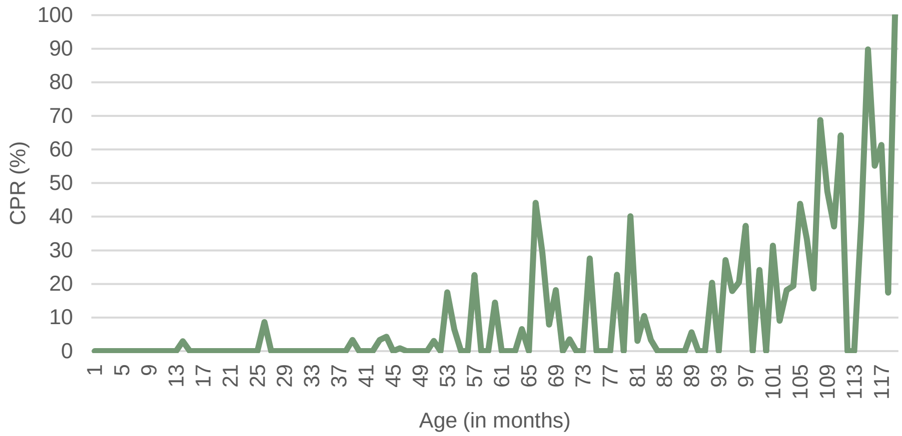
Exhibit 15 – Prepayment Speeds of Fixed Rate Loans of 2-yr Lockout / 7.75-yr Defeasance / 3-Month Open



Source: Freddie Mac, Yield Book (December 2021).

Yield Maintenance (YM) – A relatively small portion of the fixed rate loans (~10%) have yield maintenance as the main prepayment protection. The prepayment speeds tend to increase as loan seasons and YM penalty amount decreases, and spike when approaching the end of the yield maintenance period (Exhibit 16).

Exhibit 16 – Prepay Speeds of Fixed Rate Loans of 9.5-yr Yield Maintenance / 3-Month Penalty / 3-Month Open

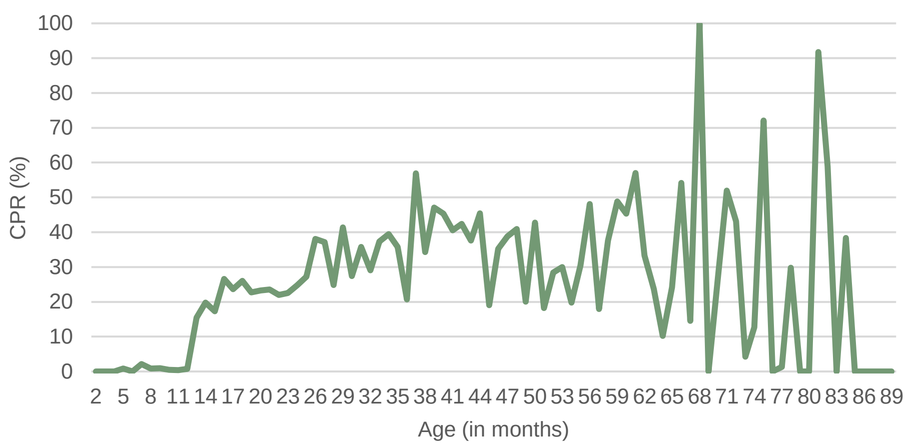


Source: Freddie Mac, Yield Book (December 2021).

Defeasance and yield maintenance are two main call protection features for fixed rate loans, with the former stronger than the latter.

Lockout and Penalty – For floating rate loans, there is usually 1-year lockout period followed by a lengthy percentage penalty period with 1% penalty point. Exhibit 17 shows speeds immediately jumped after the lockout, rising to 40-50 CPR later on as the low penalty point failed to deter prepay activities.

Exhibit 17 – Prepayment Speed of Floating Rate Loans of 1-year Lockout / 8.75-year Penalty / 3-Month Open



Source: Freddie Mac, Yield Book (December 2021).

Property price appreciation

Property price appreciation also plays a role in driving up the prepayment speeds. Exhibit 18 and 19 show the prepayment speeds are higher for larger cumulative property price appreciation for both fixed rate and floating rate loans.

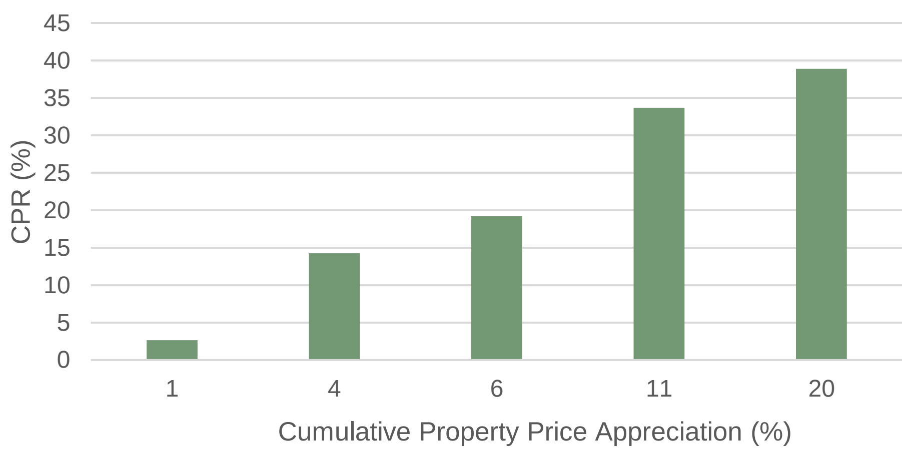
That said, we should be cautious about a caveat that loan seasoning may also potentially lead to higher prepayment speeds and property price appreciation is obviously correlated with the age of the loan.

Exhibit 18 – Prepayment Speed by Property Price Appreciation (Fixed Rate Loans)

Property price appreciation bolsters prepayment.

Source: Freddie Mac, Yield Book (December 2021).

Exhibit 19 – Prepayment Speed by Property Price Appreciation (Floating Rate Loans)

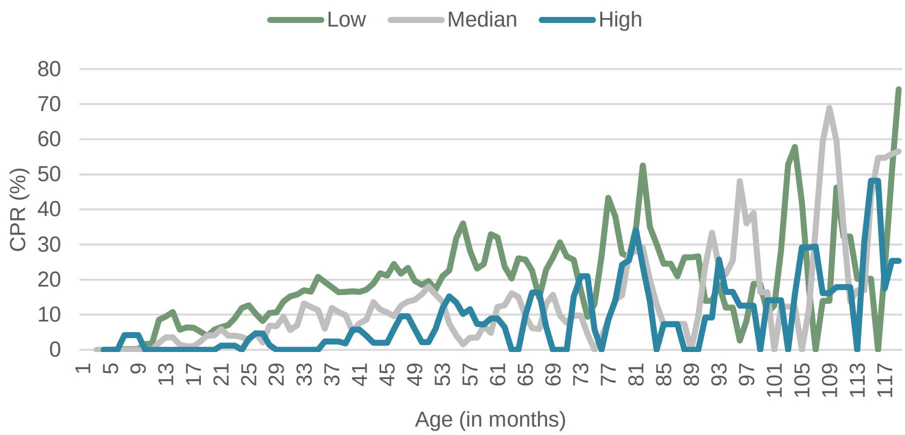


Source: Freddie Mac, Yield Book (December 2021).

Loan size

For Freddie K fixed rate loans with a yield maintenance as the main call protection mechanism, the prepayment speeds tend to be negatively correlated to the loan size (Exhibit 20). While it seems counterintuitive, one possible explanation can be that higher loan size results in higher YM penalty in dollar amount, which potentially lowers the prepayment incentive.

Exhibit 20 – Prepayment by Loan Size[2] (Fixed Rate Loan with YM)



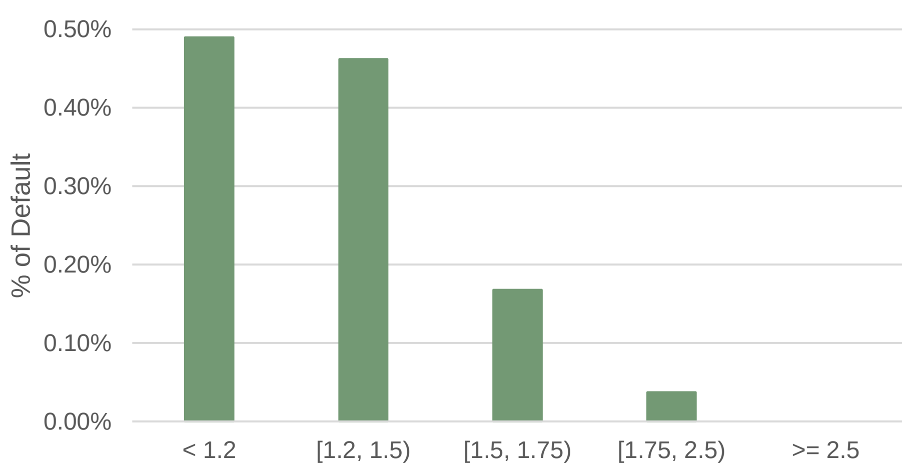
Source: Freddie Mac, Yield Book (December 2021).

DSCR and LTV

Not surprisingly, default (i.e., the involuntary prepayment) is highly correlated to DSCR (Exhibit 21) and LTV (Exhibit 22).

Exhibit 21 – MLPD Default By DSCR

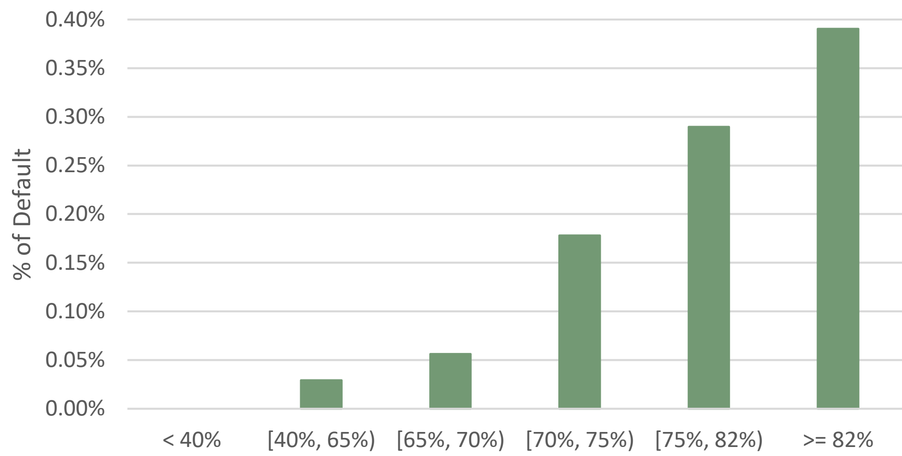
Lower DSCR is associated with a higher default rate.



Source: Freddie Mac, Yield Book (December 2021).

[2] "Low" for loans size below 3.4MM, "Median" for size between 3.4MM and 12.6MM, "High" for the rest.

Exhibit 22 – MLPD Default By LTV



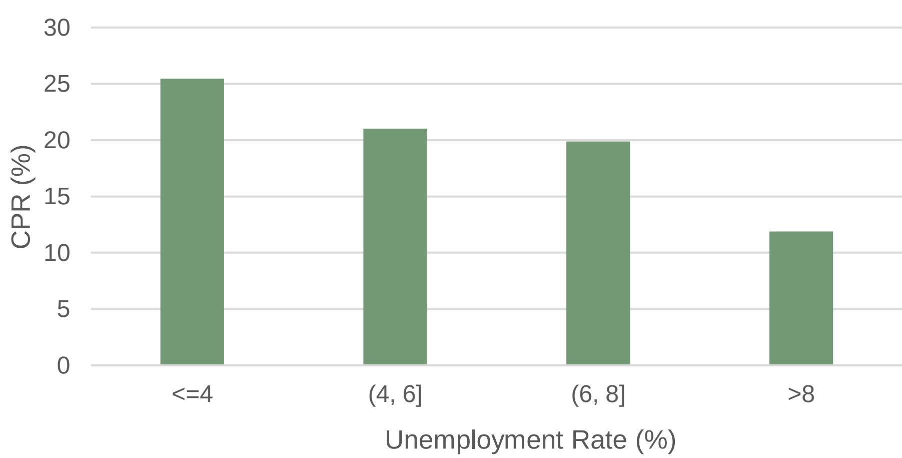
Higher LTV corresponds to a higher default rate.

Source: Freddie Mac, Yield Book (December 2021).

Unemployment rate

Unemployment rate affects the fundamentals of multifamily properties and hence both prepayment and default. We observed that prepayment speeds for floating rate loans are negatively correlated to unemployment rate (Exhibit 23).

Exhibit 23 – Prepay Speed by Unemployment Rate (Floating Rate Loans)



Source: Freddie Mac, Yield Book (December 2021).

Comparison with GNPL and FN DUS

Freddie K, GNPL, and FN DUS, are the three major agency CMBS products. Exhibit 24 shows Freddie K and FN DUS loan issuances were generally comparable in recent years, both are significantly higher than GNPL.

Exhibit 24 – Agency CMBS Market Snapshot

	Freddie K	FN DUS	GNPL
UPB ($bn)	321.37	394.93	149.46
2019 Issuance ($bn)	61.54	62.95	17.99
2020 Issuance ($bn)	61.81	76.72	35.31
2021 Issuance ($bn)	63.54	65.04	42.98
% of Fixed Rate	75.8	91.9	100.0

Source: Ginnie Mae, Fannie Mae, Freddie Mac, Yield Book (December 2021).

Traditionally Freddie K and FN DUS issuances were close to each other, while GNPL had a much lower issuance.

We offer a comparison of these three products from the following perspectives:

1. Loan term and collateral
2. Guarantee
3. Prepayment risk
4. Credit performance

Loan term and collateral

Freddie K loans are similar to FN DUS loans as they both have fixed rate and floating rate, mostly with a 10-year term and 30-year amortization, while GNPL loans are fixed rate only with 35-40 year term and full amortization. Freddie K and FN DUS are backed by multifamily properties only, vs. GNPL which covers both multifamily and health care properties. GNPL also have construction loans which Freddie K and FN DUS do not include.

Guarantee

GNPL has the full and explicit guarantee from the US government with GNPL loans insured by FHA and all GNPL securities guaranteed by GNMA for timely interest and principal payment. FN DUS has the Fannie Mae guarantee for timely interest and principal payment for all FN DUS securities. Freddie Mac guarantees the timely interest and eventual principal payment for K-Deal senior classes and timely interest payment for some IO classes. Freddie Mac also guarantees the principal payment of a defaulted loan at its maturity date to senior K-Deal classes.

GNPL and FN DUS have all securities guaranteed, while Freddie K only has senior securities guaranteed.

Unlike FN DUS, Freddie K lenders don’t share in loan loss with the agency.

Across all the three agency CMBS products, there are no guarantees for prepayment penalty collection.

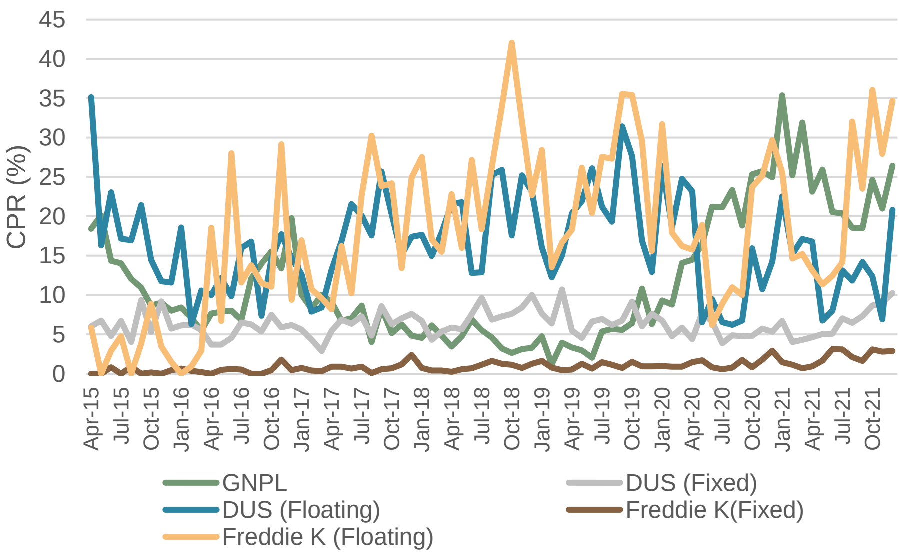
Prepayment risk

For fixed rate loans, Freddie K loans have strong call protection dominated by a 7.75-year defeasance following a 2-year lockout. FN DUS loans mostly have yield maintenance till 6-month before maturity. GNPL loans typically have a declining percentage penalty period up to 10 years (e.g., 10-year declining penalty period from 10% to 1%).

For floating rate loans, both Freddie K and FN DUS loans usually have 1-year lockout followed by an 8.75-year percentage penalty period of 1% penalty point till 3-month before maturity.

It is safe to say that Freddie K fixed rate loans have the most stringent prepayment protection comparing to the other agency CMBS products. As a result, Freddie K fixed rate loans demonstrated the lowest prepay speeds while GNPL loans have the highest (Exhibit 25). Historically, Freddie K and FN DUS floating rate loans had similar prepay speed levels in general until 2020 when Freddie K started to prepay faster than FN DUS.

Exhibit 25 – Historical Speeds by Products



Freddie K fixed rate loans have the strongest call protection across all agency CMBS products, and hence the lowest prepay speeds.

Source: Ginnie Mae, Fannie Mae, Freddie Mac, Yield Book (December 2021).

Fixed rate Freddie K deal senior bonds have limited WAL risk because of the strong call protections in the underlying loans and muted default, which also leads to tighter spreads and less spread volatility comparing to those of private label CMBS and some agency CMBS products.

Another advantage of Freddie K over FN DUS is that Freddie K is not subject to binary prepayment or default risk as all securities are backed by a diversified pool of loans, which is not the case for FN DUS where majority (80%) of the securities are backed by a single loan (DUS MBS) or a small number of loans (Mega) - only about 20% backed by a pool of loans (GeMS). Freddie K bonds might also enjoy better secondary market liquidity than FN DUS GeMS as Freddie K has much higher issuance volume [1].

Credit performance

As discussed earlier (Exhibit 6), Freddie K has the lowest 30 day+ delinquency rate among all three agency CMBS products, thanks to Freddie Mac's in-house underwriting practice. The delinquency rate for Freddie K peaked at 20bps in May 2021 and ended at 3bps in December 2021. As a contrast, GNPL had the highest delinquency rates peaking at 1.7% in June 2020 and dropping to 1% as of November 2021. FN DUS delinquency rate peaked at 1.4% in July 2020 and declined to 0.38% in December 2021.

Freddie SBL Summary

Freddie Mac added of the Small Balance Loans (SBL) line of business to its lending platform in October 2014, and it has become the second largest Freddie Mac multifamily program behind Freddie K.

SBL generally refers to loans between \$1 million – \$7.5 million and properties with 5-50 units. They have 5-, 7- and 10-year maturity term for fixed rate loans and 20-year for hybrid ARM loans, and up to 30-year amortization. Prepayment protection is in the form of yield maintenance and declining percentage penalty.

Exhibit 26 shows the profile of new issuance of Freddie SBL loans in the last three years and the outstanding universe as of December 2021. The total outstanding balance is about \$25 billion. The average note rate is 3-5% and median loan size around \$2.2-2.4 million for recent new issuance. About 60% of the outstanding loans are paying fixed rate, and the call protection is dominated by the declining percentage penalty.

Comparing to Freddie K, SBL loans have much smaller loan size and higher note rate.

Exhibit 26 – Snapshot of Freddie SBL New Issuance and Outstanding

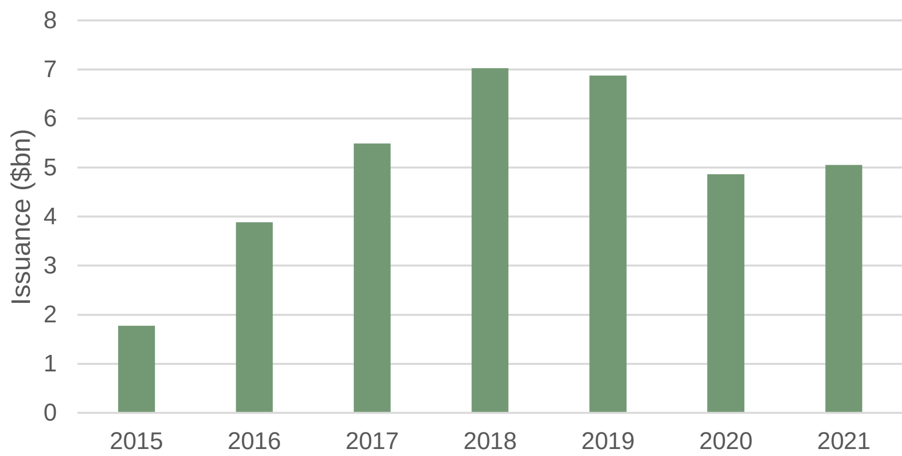
	New Issuance			Outstanding Universe
	2019	2020	2021	
UPB ($bn)	6.9	4.9	5.1	25.0
Avg Note Rate (%)	4.6	3.8	3.4	4
Avg Loan Term (Months)	189	196	167	182
Avg Amortization Term (Months)	357	349	344	351
Avg IO Term (Months)	17	21	19	18
Median Loan Size($M)	2.2	2.4	2.3	2.1
% Fixed Rate Loans	43.9	71.1	79.8	58.6
% w./ Yield Maintenance	30.2	61.8	61.6	44.4
% w./ Percentage Penalty[3]	75.5	76.1	64.9	69.9

Source: Freddie Mae, Yield Book (December 2021).

[3] Note that some fixed rate loans with yield maintenance also have a short period of penalty between the yield maintenance period and open period, and almost all floating rate loans have percentage penalty as call protection.

Exhibit 27 shows the Freddie SBL deal issuance slowed down to about $5 billion in the past two years after peaking in 2018 at $7 billion.

Exhibit 27 – Freddie SB Deal Issuance by Year



Source: Freddie Mac (December 2021).

Issuance of SBL is less than 10% of Freddie K.

SBL underwriting

Freddie Mac has 12 designated lenders for SBL underwriting[4]. Eligible borrowers include limited partnerships, limited liability companies, Single Asset Entities, Special Purpose Entities, tenancy in common with up to five unrelated members, and irrevocable trusts with an individual guarantor. In addition, borrower cannot have subordinate debt. Senior housing, student housing, and military housing are not eligible.

As part of the underwriting criteria, the required minimum DSCRs for the properties generally range from 1.25x to 1.40x, and the maximum LTVs range from 65% to 80%, across different markets[5] and IO structures (Exhibit 28).

Exhibit 28 – Underwriting criteria for SBL Loans

	Non-IO		IO	
	Min DSCR	Max LTV	Min DSCR	Max LTV
Top SBL Markets	1.20x	80%	1.35x	65%
Standard SBL Markets	1.25x	80%	1.40x	65%
Small SBL Markets	1.30x	75%	1.40x	60%
Very Small SBL Markets	1.40x	75%	1.50x	60%

Source: Freddie Mac (December 2021).

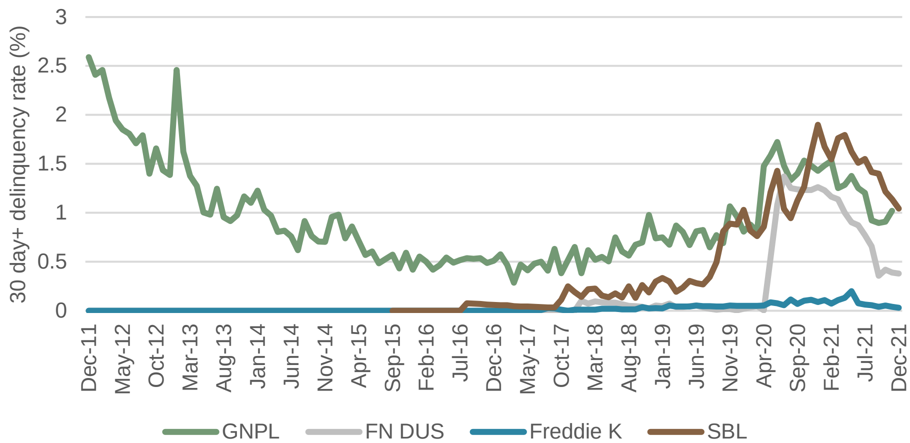
[4] For more details on SBL lenders, see https://mf.freddiemac.com/borrowers/lenders-sbl.html.

[5] See market tiering definition in https://multifamily.freddiemac.com/multisuite/resources/sbl_market_tiering.xlsm.

The 30 day+ delinquency rates of SBL are significantly higher than Freddie K. They are also higher than FN DUS (and GNPL since 2021). During the pandemic, SBL delinquency rates peaked at 1.9% in December 2020 and have declined to about 1% as of December 2021 (Exhibit 29).

Exhibit 29 – 30 day+ Delinquency by Agency CMBS Products including SBL

During the pandemic, SBL had elevated delinquency rates (similar to GNPL), and underperformed FN DUS and Freddie K.



Source: Freddie Mac (December 2021).

Securitization and deal structure

Freddie Mac purchases and aggregates SBL loans for securitization with loans deposited into a trust which issues multiple securities.

Freddie Mac guarantees the senior securities which are publicly offered. The unguaranteed subordinate securities are privately offered to third-party investors.

A sample Freddie SB deal, as illustrated in Exhibit 30, has three main types of classes/tranches:

- Senior tranches (A10F, A5F, A7F and A7H) with a 10% subordination level guaranteed by Freddie Mac.
- Subordinate tranche (B), the first loss credit tranche, is unguaranteed.
- IO class (X1) receives excess interest (guaranteed by Freddie Mac) and the prepayment penalties collected by the trustee.

Exhibit 30 – A sample Freddie SB deal (FRESB 2021-SB84)

Class	CUSIP	Original Balance (MM)	Current Balance (MM)	Factor	Coupon	Coupon Type	Credit Enhancement	
							Secur	Current
A10F	30318CAG2	$165.1	$158.1	95.7567%	1.1800%	Fixed Rate	10.000%	10.144%
A5F	30318CAA5	$89.7	$83.1	92.7315%	0.6700%	Fixed Rate	10.000%	10.144%
A7F	30318CAC1	$55.3	$55.0	99.3329%	0.8600%	Fixed Rate	10.000%	10.144%
A7H	30318CAE7	$94.0	$93.1	99.0472%	0.9500%	Fixed Rate	10.000%	10.144%
B	30318CAL1	$44.9	$43.9	97.8840%	3.0577%	JUN PI	0.000%	0.000%
R	30318CAN7	$0.0	$0.0	0.0000%	0.0000%	Fixed Rate, Residual	0.000%	0.000%
X1	30318CAJ6	$404.1	$389.3	96.3403%	1.7385%	Variable IO		

Source: Freddie Mac (December 2021).

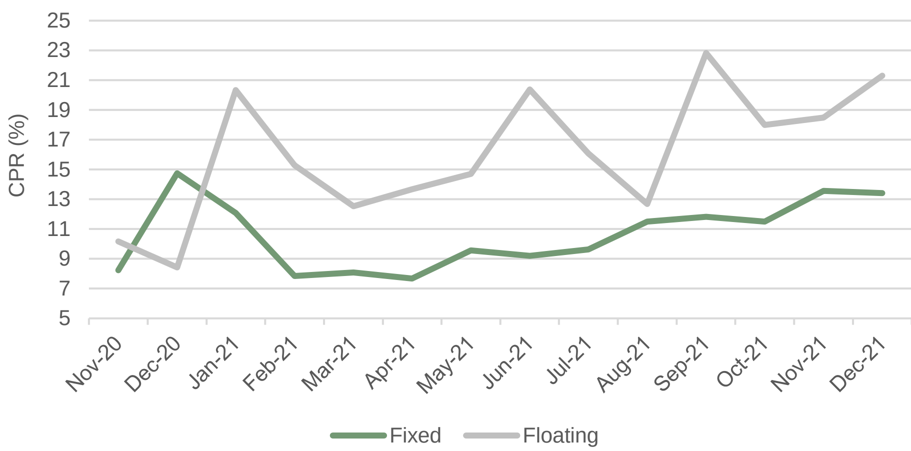
Call protection and prepayment speeds

In terms of call protection, most fixed rate SBL loans have a yield maintenance of 10 years, while others have a percentage penalty with 5-10 years and up to 5% penalty points.

The majority of floating rate SBL loans have a percentage penalty period of 20 years with 5% penalty points.

The prepayment speeds for SBL fixed rate loans are generally lower than those of floating rate loans (Exhibit 31).

Exhibit 31 – SBL Prepayment Speeds



Similar to Freddie K, floating rate SBL loans prepay faster than fixed rate SBL loans.

Source: Freddie Mac, Yield Book (December 2021).

Exhibit 32 shows the annual SBL prepayment speeds for recent vintages (2015-2020) with seasoning.

Exhibit 32 – Historical Prepayment Speeds for SBL by Vintage

Vintage/ Age	1	2	3	4	5	6
2015	1.2	7.7	13.0	13.4	24.3	30.8
2016	2.6	9.5	15.4	16.6	25.6	
2017	2.5	9.0	9.7	15.6		
2018	2.9	8.4	15.0			
2019	2.9	12.3				
2020	4.1					

Source: Freddie Mac, Yield Book (December 2021)

Conclusion

Thanks to the stringent underwriting and in-house credit approval, the performance for Freddie K loans have been consistently strong through economic downturns including the GFC and the COVID pandemic. With a GSE guarantee, strong call protection provisions in the underlying loans, and high market liquidity, Freddie K senior bonds (especially those of fixed rate deals) have enjoyed better spreads stability than those of private label CMBS and some other agency CMBS products. On the other hand, investment in Freddie K floating rate deals would require more careful study in prepayment speeds as the floating rate loans may prepay fast, with weaker call protection provisions. As a unique feature among agency CMBS securitizations, Freddie K offers unguaranteed subordinate bonds with a high risk-adjusted return potential given the pristine credit profile of the underlying loans.

Ultimately, the positive multifamily fundament outlook, coupled with strong historical collateral performance, will continue to drive the growth of Freddie K market as a benchmark agency CMBS asset class for securitized product investors.

References

[1] "Multifamily Securitization Overview," September 2021. [Online]. Available: https://mf.freddiemac.com/docs/mf_securitization_investor-presentation.pdf.

[2] "K-Deal Performance," Freddie Mac, December 2021. [Online]. Available: https://mf.freddiemac.com/docs/k_deal_performance_presentation.pdf.

[3] "MLPD Loss Summary," Freddie Mac, September 2021. [Online]. Available: https://mf.freddiemac.com/docs/MLPD_Loss_Summary.pdf.

[4] "K-Deal M Class," Freddie Mac, June 2021. [Online]. Available: https://mf.freddiemac.com/docs/k_deal_a_m_class_highlights.pdf.

[5] "Taking Comfort with the Transition to SOFR," November 2020. [Online]. Available: https://mf.freddiemac.com/docs/LIBOR-to-SOFR-transition.pdf.

About FTSE Russell

FTSE Russell is a leading global provider of benchmarks, analytics and data solutions with multi-asset capabilities, offering a precise view of the markets relevant to any investment process. For over 30 years, leading asset owners, asset managers, ETF providers and investment banks have chosen FTSE Russell indexes to benchmark their investment performance and create investment funds, ETFs, structured products and index-based derivatives. FTSE Russell indexes also provide clients with tools for performance benchmarking, asset allocation, investment strategy analysis and risk management.

About Yield Book

Yield Book by FTSE Russell is a trusted and authoritative source for fixed income analytics that enables market makers and institutional investors to perform complex analysis of their portfolios, benchmarks, trading decisions, historical performance, and risk. Yield Book products offer analytical insight into an extensive range of financial products in the fixed income space including governments, agencies, corporates, high yield, emerging markets, mortgages, ABS, CMBS, CMOs, and derivatives. The platform utilizes dedicated centralized servers that help ensure reliable, prompt data delivery.

To learn more, contact us at sales@yieldbook.com or visit our website: yieldbook.com

Americas
+1 646 989 2200

EMEA
+44 20 7334 8963

Asia-Pacific
Hong Kong +852 2164 3333
Tokyo +81 3 4563 6346
Taipei +866 2 8726 9778