

KROLL BOND RATING AGENCY, LLC

Form NRSRO Annual Certification

EXHIBIT 1: Performance Measurement Statistics



Form NRSRO Exhibit 1

Exhibit 1. Provide in this Exhibit performance measurement statistics of the credit ratings of the Applicant/NRSRO, including performance measurement statistics of the credit ratings separately for each class of credit rating for which the Applicant/NRSRO is seeking registration or is registered (as indicated in Item 6 and/or 7 of Form NRSRO):

Overview

Kroll Bond Rating Agency (KBRA) began to issue credit ratings in 2011. The attached tables show transition and default rates for 1-year, 3-year, and 10-year time periods through the most recent calendar year end.

Performance Measurement Statistics

Periods Shown; Institutions Rated; Frequency of Ratings

The data in the attached tables have been compiled from historical published and unpublished ratings. The unit of study for Structured Finance ratings is the rated tranche. For other ratings, the unit of study is either: the distinctly rated tranches of a secured debt transaction; the senior rating or the issuer rating of a government, corporate or financial entity; or the Insurer Financial Strength Rating (IFSR) of an insurance entity regardless of the number of securities rated.

Each table shown is based on a static pool or cohort analysis. The tables show the percent of ratings outstanding at the start of the period (not initial ratings) in each category, compared to where they stood at the end of the stated period. The diagonal is the percent of ratings that remained the same at the start and end of the period. The periods covered are 1-year (comparing ratings on December 31, 2021 with ratings at December 31, 2022), 3-year (comparing ratings on December 31, 2019 with ratings at December 31, 2022) and 10-year (comparing ratings on December 31, 2012 with ratings at December 31, 2022).

The transition and default tables reflect specific time periods. However, the number of entities included may change from period to period, or from the beginning of a period to the end of a period. For example, an institution may merge, dissolve, or otherwise experience an organizational change that causes it to cease to be included in a later period.

For long-term and short-term Credit Ratings, KBRA defines default as occurring if:

1. There is a missed interest payment, principal payment, or preferred dividend payment, as applicable, on a rated obligation which is unlikely to be recovered; or
2. The rated entity files for protection from creditors, is placed into receivership or is closed by regulators such that a missed payment is likely to result; or
3. The rated entity seeks and completes a distressed exchange, where existing rated obligations are replaced by new obligations with a diminished economic value.



In all cases, defaulted entities are not dollar-weighted (*i.e.*, a failure of a large entity and a small entity will be counted the same).

Some cells of the transition matrix do not include a value. This indicates that there were no transitions observed for that cell. A cell with a non-zero value that is less than 0.5% will be shown with a value of "0%" in the transition matrix due to rounding.

For the purposes of KBRA's Exhibit 1 submission, "other SFPs" means a securitization primarily of Containers, Aircraft, Fleet Lease, Franchise, Ground Lease, Rail Car, Solar, Specialty Finance, Net Leases, Residential PACE, Property Tax Liens, Whole Business Securitization, Wireless Spectrum, Timeshare, Trade Receivables, SBA Loans, Lottery Receivables, Structured Settlements, Litigation Finance, Limited Partnership Interests, or other miscellaneous ABS.

Definition of Credit Rating Categories Used by KBRA

Long-Term Credit Rating Scale

KBRA assigns credit ratings to issuers and their obligations using the same rating scale. In either case, KBRA's credit ratings are intended to reflect both the probability of default and severity of loss in the event of default, with greater emphasis on probability of default at higher rating categories. For obligations, the determination of expected loss severity is, among other things, a function of the seniority of the claim. Generally speaking, issuer-level ratings assume a loss severity consistent with a senior unsecured claim. KBRA appends the "sf" indicator to ratings assigned to structured finance obligations.

- AAA** Determined to have almost no risk of loss due to credit-related events. Assigned only to the very highest quality obligors and obligations able to survive extremely challenging economic events.
- AA** Determined to have minimal risk of loss due to credit-related events. Such obligors and obligations are deemed very high quality.
- A** Determined to be of high quality with a small risk of loss due to credit-related events. Issuers and obligations in this category are expected to weather difficult times with low credit losses.
- BBB** Determined to be of medium quality with some risk of loss due to credit-related events. Such issuers and obligations may experience credit losses during stress environments.
- BB** Determined to be of low quality with moderate risk of loss due to credit-related events. Such issuers and obligations have fundamental weaknesses that create moderate credit risk.
- B** Determined to be of very low quality with high risk of loss due to credit-related events. These issuers and obligations contain many fundamental shortcomings that create significant credit risk.
- CCC** Determined to be at substantial risk of loss due to credit-related events, near default or in default with high recovery expectations.
- CC** Determined to be near default or in default with average recovery expectations.
- C** Determined to be near default or in default with low recovery expectations.

D KBRA defines default as occurring if:

1. There is a missed interest payment, principal payment, or preferred dividend payment, as applicable, on a rated obligation which is unlikely to be recovered; or
2. The rated entity files for protection from creditors, is placed into receivership or is closed by regulators such that a missed payment is likely to result; or
3. The rated entity seeks and completes a distressed exchange, where existing rated obligations are replaced by new obligations with a diminished economic value.

KBRA may append - or + modifiers to ratings in categories AA through CCC to indicate, respectively, upper and lower risk levels within the broader category.

Short-Term Credit Rating Scale

KBRA's short-term ratings indicate an ability to meet obligations that typically have maturities of thirteen months or fewer when issued by corporate entities, financial institutions, and in connection with structured finance transactions. When applied to municipal obligations, KBRA's short-term ratings typically indicate an ability to meet obligations of three years or fewer. Short-term ratings may be assigned to both issuers and to specific obligations. As compared to long-term ratings, greater emphasis is placed on an obligor's liquidity profile and access to funding. KBRA appends the "sf" indicator to ratings assigned to structured finance obligations.

K1+ Exceptional ability to meet short-term obligations.

K1 Very strong ability to meet short-term obligations.

K2 Strong ability to meet short-term obligations.

K3 Adequate ability to meet short-term obligations.

B Questionable ability to meet short-term obligations.

C Little ability to meet short-term obligations.

D KBRA defines default as occurring if:

1. There is a missed interest payment, principal payment, or preferred dividend payment, as applicable, on a rated obligation which is unlikely to be recovered;
2. The rated entity files for protection from creditors, is placed into receivership or is closed by regulators such that a missed payment is likely to result; or
3. The rated entity seeks and completes a distressed exchange, where existing rated obligations are replaced by new obligations with a diminished economic value.

Rating Action History

Ratings information that is required to be made available pursuant to SEC Rule 17g-7(b) can be found first by clicking on the link <https://www.krollbondratings.com/regulatory>, and then clicking the hyperlinks "Issue Level Ratings" and "Issuer Level Ratings" under the heading "Rating Action History."

List of Tables

| | | |
|----|--|----|
| 1 | Financial Institutions, Brokers, or Dealers - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 3 |
| 2 | Financial Institutions, Brokers, or Dealers - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 4 |
| 3 | Financial Institutions, Brokers, or Dealers - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 5 |
| 4 | Financial Institutions, Brokers, or Dealers - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 6 |
| 5 | Financial Institutions, Brokers, or Dealers - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 7 |
| 6 | Financial Institutions, Brokers, or Dealers - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 8 |
| 7 | Insurance Companies - 1-Year Transition and Default Rates (Insurance Financial Strength Ratings) | 9 |
| 8 | Insurance Companies - 3-Year Transition and Default Rates (Insurance Financial Strength Ratings) | 10 |
| 9 | Insurance Companies - 10-Year Transition and Default Rates (Insurance Financial Strength Ratings) | 11 |
| 10 | Corporate Issuers - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 12 |
| 11 | Corporate Issuers - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 13 |
| 12 | Corporate Issuers - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 14 |
| 13 | Corporate Issuers - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 15 |
| 14 | Corporate Issuers - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 16 |
| 15 | Corporate Issuers - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 17 |
| 16 | RMBS - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 18 |
| 17 | RMBS - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 19 |
| 18 | RMBS - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 20 |
| 19 | RMBS - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 21 |
| 20 | RMBS - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 22 |
| 21 | RMBS - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 23 |
| 22 | CMBS - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 24 |
| 23 | CMBS - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 25 |
| 24 | CMBS - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 26 |
| 25 | CMBS - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 27 |
| 26 | CMBS - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 28 |
| 27 | CMBS - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 29 |
| 28 | CLOs - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 30 |
| 29 | CLOs - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 31 |
| 30 | CLOs - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 32 |
| 31 | CLOs - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 33 |
| 32 | CLOs - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 34 |
| 33 | CLOs - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 35 |
| 34 | CDOs - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 36 |
| 35 | CDOs - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 37 |
| 36 | CDOs - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 38 |
| 37 | CDOs - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 39 |
| 38 | CDOs - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 40 |
| 39 | CDOs - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 41 |
| 40 | Other ABS - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 42 |
| 41 | Other ABS - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 43 |
| 42 | Other ABS - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 44 |
| 43 | Other ABS - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 45 |

| | | |
|----|--|----|
| 44 | Other ABS - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 46 |
| 45 | Other ABS - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 47 |
| 46 | Other SFPs - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 48 |
| 47 | Other SFPs - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 49 |
| 48 | Other SFPs - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 50 |
| 49 | Other SFPs - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 51 |
| 50 | Other SFPs - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 52 |
| 51 | Other SFPs - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 53 |
| 52 | Sovereign Issuers - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 54 |
| 53 | Sovereign Issuers - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 55 |
| 54 | Sovereign Issuers - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 56 |
| 55 | Sovereign Issuers - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 57 |
| 56 | Sovereign Issuers - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 58 |
| 57 | Sovereign Issuers - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 59 |
| 58 | U.S. Public Finance - 1-Year Transition and Default Rates (Long-Term Credit Ratings) | 60 |
| 59 | U.S. Public Finance - 3-Year Transition and Default Rates (Long-Term Credit Ratings) | 61 |
| 60 | U.S. Public Finance - 10-Year Transition and Default Rates (Long-Term Credit Ratings) | 62 |
| 61 | U.S. Public Finance - 1-Year Transition and Default Rates (Short-Term Credit Ratings) | 63 |
| 62 | U.S. Public Finance - 3-Year Transition and Default Rates (Short-Term Credit Ratings) | 64 |
| 63 | U.S. Public Finance - 10-Year Transition and Default Rates (Short-Term Credit Ratings) | 65 |

Table 1: Financial Institutions, Brokers, or Dealers - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|---------------------------------|-------------------------------|---|-----|------|-----|------|-----|-----|------|-----|------|-----|-----|-----|------|---|----|------|-----|------|----|------|---|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 7 | 100% | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 4 | | | 100% | | | | | | | | | | | | | | | | | | | | | |
| AA- | 21 | | | | 95% | 5% | | | | | | | | | | | | | | | | | | | |
| A+ | 22 | | | | | 100% | | | | | | | | | | | | | | | | | | | |
| A | 45 | | | | | 2% | 96% | | | | | | | | | | | | | | | | | 2% | |
| A- | 136 | | | | | 1% | 1% | 94% | | | | | | | | | | | | | | | 1% | 3% | |
| BBB+ | 165 | | | | | | | 2% | 89% | 1% | | | | | | | | | | | | | 1% | 7% | |
| BBB | 154 | | | | | | | | 2% | 88% | 1% | | | | | | | | | | | | 1% | 8% | |
| BBB- | 74 | | | | | | | | | 3% | 87% | 1% | 1% | 1% | | | | | | | | | 3% | 4% | |
| BB+ | 20 | | | | | | | | | | 5% | 85% | | | | | | | | | | | | 10% | |
| BB | 12 | | | | | | | | | | | | 92% | | | | | | | | | | | 8% | |
| BB- | 5 | | | | | | | | | | | | 40% | 60% | | | | | | | | | | | |
| B+ | 5 | | | | | | | | | | | | | | 100% | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 1 | | | | | | | | | | | | | | | | | | | | | 100% | | 100% | |
| CC | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 673 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 2: Financial Institutions, Brokers, or Dealers - 3-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|------|---|----|------|-----|------|----|-----|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 1 | 100% | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 5 | | | 60% | | | | | | | | | | | | | | | | | | | | 40% | |
| AA- | 5 | | | | 60% | | | | | | | | | | | | | | | | | | | 40% | |
| A+ | 11 | | | | | 82% | | | | | | | | | | | | | | | | | | 18% | |
| A | 12 | | | | | 8% | 67% | | | | | | | | | | | | | | | | | 25% | |
| A- | 84 | | | | | 6% | 68% | 5% | | | | | | | | | | | | | | | 10% | 11% | |
| BBB+ | 125 | | | | | | 8% | 64% | 4% | | | | | | | | | | | | | 2% | | 22% | |
| BBB | 86 | | | | | | 2% | 8% | 57% | 6% | | | 1% | 1% | | | | | | | | 1% | 1% | 23% | |
| BBB- | 36 | | | | | 3% | | | | 17% | 54% | 6% | | | | | | | | | | | 6% | 14% | |
| BB+ | 13 | | | | | | | | | | 15% | 55% | | | | | | | | | | | 15% | 15% | |
| BB | 6 | | | | | | | | | | | | 16% | 17% | | | | | | | | | 17% | 50% | |
| BB- | 3 | | | | | | | | | | | 34% | | | | | | | | | | 33% | 33% | | |
| B+ | 1 | | | | | | | | | | | | | | 100% | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 388 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 3: Financial Institutions, Brokers, or Dealers - 10-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | | |
|---------------------------------|-------------------------------|---|-----|----|-----|----|---|-----|------|-----|------|-----|----|-----|----|---|----|------|-----|------|----|---|---------|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| A+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB+ | 3 | | | | | | | 33% | | | | | | | | | | | | | | | | 67% | |
| BBB | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| BBB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 5 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 4: Financial Institutions, Brokers, or Dealers - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 5 | 100% | | | | | | | | |
| K1 | 14 | | 93% | | | | | | | 7% |
| K2 | 205 | | 0% | 93% | 0% | | | | | 7% |
| K3 | 91 | | | 1% | 89% | | | | | 10% |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 315 | | | | | | | | | |

Table 5: Financial Institutions, Brokers, or Dealers - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 6 | 50% | | | | | | | | 50% |
| K1 | 15 | | 67% | | | | | | | 33% |
| K2 | 162 | | 2% | 76% | 3% | | | | | 19% |
| K3 | 61 | | | 8% | 67% | | | | | 25% |
| B | 2 | | | | | | | | | 100% |
| C | 0 | | | | | | | | | |
| Total | 246 | | | | | | | | | |

Table 6: Financial Institutions, Brokers, or Dealers - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|----|-----|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 1 | | | | | | | | | 100% |
| K1 | 0 | | | | | | | | | |
| K2 | 3 | | | 33% | | | | | | 67% |
| K3 | 1 | | | | | | | | | 100% |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 5 | | | | | | | | | |

Table 7: Insurance Companies - 1-Year Transition and Default Rates (Insurance Financial Strength Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|---------------------------------|-------------------------------|---|------|------|------|----|------|-----|------|------|------|-----|----|-----|----|---|----|------|-----|------|----|---|---------|---|-------------------|--|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) | |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 4 | | 100% | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 4 | | | 100% | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 1 | | | | 100% | | | | | | | | | | | | | | | | | | | | | |
| A+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 17 | | | | | | 100% | | | | | | | | | | | | | | | | | | | |
| A- | 52 | | | | | | | 92% | | | | | | | | | | | | | | | | 8% | | |
| BBB+ | 15 | | | | | | | 13% | 47% | | | | | | | | | | | | | | | 40% | | |
| BBB | 7 | | | | | | | | | 71% | | | | | | | | | | | | | | 29% | | |
| BBB- | 5 | | | | | | | | | 20% | 60% | | | | | | | | | | | | | 20% | | |
| BB+ | 3 | | | | | | | | | 100% | | | | | | | | | | | | | | | | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 108 | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 8: Insurance Companies - 3-Year Transition and Default Rates (Insurance Financial Strength Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|------|----|------|-----|------|------|------|-----|----|-----|----|---|----|------|-----|------|----|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 3 | | 67% | | | | | | | | | | | | | | | | | | | | | 33% | |
| AA | 5 | | 20% | 80% | | | | | | | | | | | | | | | | | | | | | |
| AA- | 1 | | | | 100% | | | | | | | | | | | | | | | | | | | | |
| A+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 10 | | | | | | 100% | | | | | | | | | | | | | | | | | | |
| A- | 36 | | | | | | 6% | 83% | | | | | | | | | | | | | | | | 11% | |
| BBB+ | 10 | | | | | | | 20% | 40% | | | | | | | | | | | | | | | 40% | |
| BBB | 1 | | | | | | | | | 100% | | | | | | | | | | | | | | | |
| BBB- | 5 | | | | | | | | | 20% | 40% | | | | | | | | | | | | | 40% | |
| BB+ | 2 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 74 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 9: Insurance Companies - 10-Year Transition and Default Rates (Insurance Financial Strength Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 10: Corporate Issuers - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|------|----|-----|------|-----|-----|------|-----|------|-----|-----|------|-----|------|------|------|-----|------|----|------|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 1 | | 100% | | | | | | | | | | | | | | | | | | | | | | |
| AA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 3 | | | | | 100% | | | | | | | | | | | | | | | | | | | |
| A | 10 | | | | | | 90% | | | | | | | | | | | | | | | | | 10% | |
| A- | 18 | | | | | | 17% | 61% | | | | | | | | | | | | | | | | 22% | |
| BBB+ | 16 | | | | | | | | 88% | | | | | | | | | | | | | | | 6% | 6% |
| BBB | 48 | | | | | | | | | 86% | 2% | | | | | | | | | | | | | 6% | 6% |
| BBB- | 80 | | | | | | | | | 4% | 81% | | | | | | | | | | | | | 10% | 5% |
| BB+ | 18 | | | | | | | | | | 11% | 66% | 11% | 6% | | | | | | | | | | 6% | |
| BB | 16 | | | | | | | | | | | 6% | 88% | | | | | | | | | | | | 6% |
| BB- | 10 | | | | | | | | | | | | | 100% | | | | | | | | | | | |
| B+ | 6 | | | | | | | | | | | | | | 33% | | | | 17% | | | | | | 50% |
| B | 5 | | | | | | | | | | | | | | | 100% | | | | | | | | | |
| B- | 1 | | | | | | | | | | | | | | | | 100% | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 6 | | | | | | | | | | | | | | | | | | | | | | | 33% | 67% |
| CCC- | 1 | | | | | | | | | | | | | | | | | | | | | 100% | | | |
| CC | 3 | | | | | | | | | | | | | | | | | | | | | | | | 100% |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 242 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 11: Corporate Issuers - 3-Year Transition and Default Rates (Long-Term Credit Ratings)

(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|----|-----|-----|------|-----|------|-----|------|-----|-----|-----|-----|---|-----|------|-----|------|----|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 3 | | 33% | | | 67% | | | | | | | | | | | | | | | | | | | |
| A | 2 | | | | | | 100% | | | | | | | | | | | | | | | | | | |
| A- | 10 | | | | | | | 30% | 10% | | | | | | | | | | | | | | | 20% | 40% |
| BBB+ | 8 | | | | | | | | 62% | | | | | | | | | | | | | | | 13% | 25% |
| BBB | 41 | | | | | | | | 7% | 52% | 10% | 2% | | | | | | | | | | | | 17% | 12% |
| BBB- | 76 | | | | | | | | | 4% | 56% | 11% | 4% | 3% | | | | 1% | | | | | | 13% | 8% |
| BB+ | 5 | | | | | | | | | | 20% | 20% | | 20% | 20% | | | | | | | | | | 20% |
| BB | 5 | | | | | | | | | | | 20% | 40% | | | | | | | | | | | 40% | |
| BB- | 5 | | | | | | | | | | | | 20% | 40% | | | | | | | | | | 20% | 20% |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 2 | | | | | | | | | | | | | | | | 50% | | | | | | 50% | | |
| B- | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 158 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 12: Corporate Issuers - 10-Year Transition and Default Rates (Long-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 13: Corporate Issuers - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 14: Corporate Issuers - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 15: Corporate Issuers - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 16: RMBS - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|-----|-----|-----|------|-----|------|----|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 7052 | 94% | | | | | | | | | | | | | | | | | | | | | | 5% | 1% |
| AA+ | 226 | 25% | 58% | | | | | | | | | | | | | | | | | | | | | 16% | 1% |
| AA | 240 | 37% | 13% | 45% | | | | | | | | | | | | | | | | | | | | 5% | |
| AA- | 86 | 28% | 12% | 22% | 18% | | | | | | | | | | | | | | | | | | | 20% | |
| A+ | 233 | 0% | 32% | 3% | 14% | 45% | | | | | | | | | | | | | | | | | | 6% | |
| A | 335 | | 0% | 51% | 1% | 4% | 27% | | | | | | | | | | | | | | | | | 16% | 1% |
| A- | 184 | | | 1% | 64% | 13% | 9% | 13% | | | | | | | | | | | | | | | | | |
| BBB+ | 239 | | | | 0% | 35% | 3% | 10% | 45% | | | | | | | | | | | | | | | 6% | 1% |
| BBB | 356 | | | | | 5% | 27% | 2% | 5% | 53% | | | | | | | | | | | | | | 8% | |
| BBB- | 243 | | | | | | 16% | 17% | 2% | 19% | 45% | | | | | | | | | | | | | 1% | |
| BB+ | 287 | | | | | | | 32% | 18% | 1% | 17% | 30% | | | | | | | | | | | | 1% | 1% |
| BB | 200 | | | | | | | | 12% | 13% | 4% | 27% | 42% | | | | | | | | | | | 2% | |
| BB- | 100 | | | | | | | | | 4% | 15% | 17% | 12% | 50% | | | | | | | | | | | 2% |
| B+ | 76 | | | | | | | | | | 3% | 11% | 4% | 29% | 50% | | | | | | | | | 3% | |
| B | 96 | | | | | | | | | | | 1% | 8% | 4% | 9% | 78% | | | | | | | | | |
| B- | 64 | | | | | | | | | | | | 5% | 5% | 5% | 30% | 52% | | | | | | | 3% | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 12 | | | | | | | | | | | | | 25% | 42% | 8% | 17% | | | | | | | 8% | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 10029 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 17: RMBS - 3-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|---------------------------------|-------------------------------|---|-----|-----|-----|-----|-----|-----|------|-----|------|-----|----|-----|----|-----|-----|------|-----|------|----|---|---|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 4218 | 63% | | | | | | | | | | | | | | | | | | | | | | 37% | |
| AA+ | 111 | 80% | 1% | | | | | | | | | | | | | | | | | | | | | 19% | |
| AA | 184 | 72% | 1% | 9% | | | | | | | | | | | | | | | | | | | | 18% | |
| AA- | 44 | 41% | 14% | 7% | 6% | | | | | | | | | | | | | | | | | | | 32% | |
| A+ | 72 | 26% | 8% | 6% | 2% | | | | | | | | | | | | | | | | | | | 58% | |
| A | 152 | 43% | 7% | 13% | | 4% | 10% | | | | | | | | | | | | | | | | | 23% | |
| A- | 60 | 17% | 13% | 10% | 7% | 3% | 2% | 3% | | | | | | | | | | | | | | | | 45% | |
| BBB+ | 92 | 12% | 14% | 2% | 4% | 5% | 2% | | | | | | | | | | | | | | | | | 61% | |
| BBB | 268 | 1% | 21% | 11% | 5% | 3% | 6% | 2% | 3% | 8% | | | | | | | | | | | | | | 40% | |
| BBB- | 197 | | | 48% | 1% | 2% | 2% | 2% | | 2% | 1% | | | | | | | | | | | | | 42% | |
| BB+ | 168 | | | 11% | 57% | 16% | 2% | 3% | 3% | 1% | 2% | 1% | | | | | | | | | | | | 4% | |
| BB | 353 | | | | | 21% | 7% | 34% | 2% | 4% | 2% | 4% | 9% | | | | | | | | | | | 17% | |
| BB- | 63 | | | | 2% | | 44% | | 27% | | 8% | | 3% | 5% | | | | | | | | | | 11% | |
| B+ | 107 | | | | | | 53% | 3% | 30% | 5% | | 3% | 1% | 2% | 0% | | | | | | | | | 3% | |
| B | 91 | | | | | | | | 18% | 7% | 8% | 14% | 4% | 8% | 9% | 27% | 1% | | | | | | | 4% | |
| B- | 12 | | | | | 8% | | | | | 17% | | 8% | | | | 34% | | | | | | | 33% | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 6192 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 18: RMBS - 10-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | |
|---------------------------------|-------------------------------|---|-----|----|-----|----|---|----|------|-----|------|-----|----|-----|----|---|----|------|-----|------|----|---|---|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 25 | 20% | | | | | | | | | | | | | | | | | | | | | | 80% | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 2 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 2 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| A- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB | 2 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| BBB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 2 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 33 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 19: RMBS - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 20: RMBS - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 21: RMBS - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 22: CMBS - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|---------------------------------|-------------------------------|---|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|---|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 2941 | 92% | | 0% | 0% | | 0% | | | | 0% | | | | | | | | 0% | 0% | 0% | | | 8% | 0% |
| AA+ | 74 | 3% | 81% | | | | 1% | | | | | | | | | | | | | | | | | 15% | |
| AA | 200 | | 3% | 91% | | | | 1% | | 1% | | | | | | | | | | | | | | 4% | |
| AA- | 231 | | 7% | 2% | 85% | 0% | 0% | | | | | | | 0% | | | | | | | | | | 6% | |
| A+ | 72 | | 6% | 8% | 4% | 64% | | | | 3% | | | | | | | | | | | | | | 15% | |
| A | 161 | | | | | 1% | 91% | | | 2% | | | | | | | | | | | | | | 6% | |
| A- | 367 | | 1% | 1% | 2% | 2% | 2% | 85% | | 2% | 1% | | | | | | 0% | | | | | | | 4% | |
| BBB+ | 148 | | 1% | 1% | 1% | 6% | 5% | 1% | 82% | | | | | | | | | | | | | | | 3% | |
| BBB | 186 | | | | | 2% | 2% | 2% | 5% | 77% | 1% | | 2% | 1% | | 1% | 1% | | 1% | | 1% | | | 4% | |
| BBB- | 491 | | | | | 0% | 0% | 0% | 1% | 2% | 90% | | 2% | 1% | | 1% | 0% | | | | | | | 3% | |
| BB+ | 57 | | | | | | | | | | | 92% | 2% | 2% | | | | | | | | | | 4% | |
| BB | 147 | | | | | | | | | | | | 87% | 2% | | 2% | 3% | | 3% | | | | | 3% | |
| BB- | 312 | | | | | | | | | | | | 2% | 86% | 0% | 3% | 4% | | 1% | | | | | 4% | 0% |
| B+ | 36 | | | | | | | | | | | | | | 91% | | 6% | | | | 3% | | | | |
| B | 126 | | | | | | | | | | | | | | | 86% | 2% | | 6% | | 2% | 1% | | 3% | |
| B- | 290 | | | | | | | | | | | | | | | 1% | 85% | | 7% | 0% | 2% | 1% | | 4% | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 104 | 1% | | | | | | | | | | | | | | | | | 82% | | 10% | 7% | | | |
| CCC- | 5 | | | | | | | | | | | | | | | | | | | 60% | | 40% | | | |
| CC | 42 | | | | | | | | | | | | | | | | | | | | 80% | 10% | 10% | | |
| C | 59 | | | | | | | | | | | | | | | | | | | | | 88% | 12% | | |
| Total | 6049 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 23: CMBS - 3-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|-----|-----|-----|------|-----|------|----|------|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 2449 | 80% | 0% | 0% | 0% | | 0% | 0% | | | 0% | | | | | 0% | | | 0% | 0% | 0% | | | 20% | 0% |
| AA+ | 58 | 3% | 57% | | 3% | | 2% | | | 2% | | | | | | | 2% | | | | | | | 31% | |
| AA | 156 | 1% | 2% | 84% | | 1% | | | | 2% | 1% | | | | | 1% | | | 1% | | | | | 7% | |
| AA- | 196 | 1% | 7% | 2% | 63% | | 2% | 1% | | 2% | 1% | | 1% | 1% | | | | | | | | 1% | | 18% | |
| A+ | 60 | | 8% | 10% | 5% | 48% | | | | 3% | | | 2% | | | | | | | | 7% | | | 17% | |
| A | 130 | | | 1% | | 1% | 77% | 4% | | 2% | | | 2% | | | 2% | 1% | | 1% | | | | | 9% | |
| A- | 309 | | 1% | 1% | 1% | 2% | 2% | 70% | | 5% | 2% | | 2% | 1% | | 1% | 0% | | 1% | | 0% | | | 11% | |
| BBB+ | 122 | | 1% | 1% | 2% | 7% | 7% | 1% | 67% | 2% | | | 2% | | | 1% | 1% | | | | | 2% | | 6% | |
| BBB | 115 | | | | | 3% | 3% | 3% | 5% | 67% | 5% | | 1% | 1% | | | 2% | | 5% | | | 1% | | 4% | |
| BBB- | 460 | 0% | | | | 0% | 0% | 0% | 1% | 1% | 67% | 1% | 5% | 3% | | 5% | 2% | 3% | 0% | 2% | 1% | 0% | 9% | | |
| BB+ | 54 | | | | | | | | | 2% | | 63% | 6% | 2% | | 6% | 6% | | 6% | | 2% | | | 7% | |
| BB | 154 | | | | | | | | | | 1% | | 50% | 7% | 1% | 9% | 10% | | 7% | | 6% | 3% | 1% | 5% | |
| BB- | 249 | | | | | | | | | | | 1% | 0% | 65% | 1% | 3% | 8% | | 6% | | 3% | 1% | 0% | 12% | 0% |
| B+ | 47 | | | | | | | | | | | | | | 45% | 2% | 13% | | 26% | | 6% | 4% | | 4% | |
| B | 123 | | | | | | | | | | | | | | | 38% | 13% | | 20% | | 9% | 11% | 2% | 7% | |
| B- | 204 | | | | | | | | | | | | | | | | 57% | | 15% | 1% | 4% | 8% | 1% | 14% | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 20 | | | | | | | | | | | | | | | | | 10% | | | | 75% | 15% | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 1 | | | | | | | | | | | | | | | | | | | | | 100% | | | |
| C | 4 | | | | | | | | | | | | | | | | | | | | | | 100% | | |
| Total | 4911 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 24: CMBS - 10-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | | | |
|------------------------------------|-------------------------------------|---|-----|----|-----|----|----|----|------|-----|------|-----|----|-----|----|-----|-----|------|------|------|-----|---|---------|-------------|----------------------|--|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) | |
| AAA | 164 | 5% | | 1% | | | 4% | 1% | | | 2% | | | | | 1% | | | 1% | 1% | 1% | | | 79% | 3% | |
| AA+ | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | | |
| AA | 22 | | | 2% | 5% | | | | | 14% | 5% | | | | | 5% | 5% | | 5% | | | | | | 59% | |
| AA- | 6 | | | | 16% | | | | | | | | | 17% | | | | | | | | | | | 67% | |
| A+ | 2 | | | | | | | | | | | | | | | | | | | | | 50% | | | 50% | |
| A | 26 | | | | | | 2% | | | 4% | | | 8% | | | 8% | 4% | | 4% | | 12% | | | | 58% | |
| A- | 11 | | | | | | | 9% | | | 9% | | | | | | 9% | | | | | | | | 73% | |
| BBB+ | 14 | | | | | | | | 8% | | 7% | | | | | | 7% | | | | | | 21% | | 57% | |
| BBB | 9 | | | | | | | | | | | | | | | 12% | | | 44% | | | | | | 44% | |
| BBB- | 21 | | | | | | | | | | 8% | | | | | | 14% | | 10% | 5% | 10% | 5% | 5% | | 43% | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 15 | | | | | | | | | | | | | | 6% | 7% | | | | | 20% | 20% | 7% | 40% | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 1 | | | | | | | | | | | | | | | | | | 100% | | | | | | | |
| B | 11 | | | | | | | | | | | | | | | | 18% | | | | | 55% | 9% | 18% | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 303 | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 25: CMBS - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 26: CMBS - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 27: CMBS - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 28: CLOs - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|-----|-----|------|------|-----|------|-----|------|-----|----|---|----|------|-----|------|----|---|---------|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 66 | 89% | | | | | | | | | | | | | | | | | | | | | | 11% | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 36 | | | 92% | | | | | | | | | | | | | | | | | | | | 8% | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 6 | | | | | 50% | | | | | | | | | | | | | | | | | | 50% | |
| A | 43 | | | | | | 93% | | | | | | | | | | | | | | | | | 7% | |
| A- | 6 | | | | | | | 100% | | | | | | | | | | | | | | | | | |
| BBB+ | 1 | | | | | | | | 100% | | | | | | | | | | | | | | | | |
| BBB | 22 | | | | | | 5% | | | 90% | | | | | | | | | | | | | | 5% | |
| BBB- | 39 | | | | | | | | 3% | | 92% | | | | | | | | | | | | | 5% | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 2 | | | | | | | | | | | | 100% | | | | | | | | | | | | |
| BB- | 47 | | | | | | | | | | | | | 94% | | | | | | | | | | 6% | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 12 | | | | | | | | | | | | | | | | | 75% | | | | | | 25% | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 280 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 29: CLOs - 3-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|----|-----|-----|------|-----|------|-----|----|-----|----|---|----|------|-----|------|----|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 17 | 17% | | | | | | | | | | | | | | | | | | | | | | 65% | 18% |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 3 | | | 33% | | | | | | | | | | | | | | | | | | | | 67% | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 3 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| A | 4 | | | | | | 25% | | | | | | | | | | | | | | | | | 75% | |
| A- | 3 | | | | | | | 67% | | | | | | | | | | | | | | | | 33% | |
| BBB+ | 1 | | | | | | | | 100% | | | | | | | | | | | | | | | | |
| BBB | 2 | | | | | | | | | 50% | | | | | | | | | | | | | | 50% | |
| BBB- | 2 | | | | | | | | | | 50% | | | | | | | | | | | | | 50% | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 36 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 30: CLOs - 10-Year Transition and Default Rates (Long-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 31: CLOs - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 32: CLOs - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 33: CLOs - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 34: CDOs - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | | |
|---------------------------------|-------------------------------|---|------|-----|-----|----|-----|-----|------|-----|------|-----|-----|-----|-----|-----|-----|------|-----|------|----|---|---------|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 2 | | 100% | | | | | | | | | | | | | | | | | | | | | | |
| AA | 5 | | | 60% | | | | | | | | | | | | | | | | | | | | 40% | |
| AA- | 7 | | | 29% | 43% | | | | | | | | | | | | | | | | | | 14% | 14% | |
| A+ | 8 | | | | 25% | | | | | | | | | | | | | | | | | | 50% | 25% | |
| A | 5 | | | | | | 60% | | | | | | | | | | | | | | | | | 40% | |
| A- | 6 | | | | | | | 50% | | | | | | | | | | | | | | | | 50% | |
| BBB+ | 4 | | | | | | 25% | | 25% | | | | | | | | | | | | | | 50% | | |
| BBB | 6 | | | | | | | | | 34% | | | | | | | | | | | | | 33% | 33% | |
| BBB- | 23 | | | | | | 4% | 4% | 13% | 4% | 53% | | | | | | | | | | | | 9% | 13% | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 5 | | | | | | | | | | | 20% | 60% | | | | | | | | | | 20% | | |
| BB- | 16 | | | | | | | | | 19% | 6% | 6% | 56% | | | | | | | | | | 13% | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 7 | | | | | | | | | | | | | | 43% | 14% | 29% | | | | | | 14% | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 94 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 35: CDOs - 3-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | | |
|---------------------------------|-------------------------------|---|------|-----|-----|----|-----|----|------|-----|------|-----|-----|-----|-----|-----|-----|------|-----|------|----|---|---------|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 1 | | 100% | | | | | | | | | | | | | | | | | | | | | | |
| AA | 2 | | | 50% | | | | | | | | | | | | | | | | | | | | 50% | |
| AA- | 6 | | | 33% | 50% | | | | | | | | | | | | | | | | | | 17% | | |
| A+ | 3 | | | | 33% | | | | | | | | | | | | | | | | | | | 67% | |
| A | 5 | | | | | | 40% | | | | | | | | | | | | | | | | | 20% | |
| A- | 12 | | | | | | | 9% | | | | | | | | | | | | | | | | 8% | |
| BBB+ | 2 | | | | | | | | | | | | | | | | | | | | | | | 50% | |
| BBB | 3 | | | | | | | | | 33% | | | | | | | | | | | | | | 67% | |
| BBB- | 31 | | | | | | 6% | 3% | 10% | 3% | 10% | | | | | | | | | | | | | 23% | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 3 | | | | | | | | | | | 33% | 67% | | | | | | | | | | | | |
| BB- | 21 | | | | | | | | | | 14% | 5% | 5% | 38% | | | | | | | | | | 38% | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 7 | | | | | | | | | | | | | | 43% | 14% | 29% | | | | | | | 14% | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 96 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 36: CDOs - 10-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | | |
|---------------------------------|-------------------------------|---|-----|----|-----|----|---|----|------|-----|------|-----|----|-----|----|---|----|------|-----|------|----|---|---------|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | 100% | | |
| AA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB | 1 | | | | | | | | | | | | | | | | | | | | | | 100% | | |
| BBB- | 1 | | | | | | | | | | | | | | | | | | | | | | 100% | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 4 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 37: CDOs - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 38: CDOs - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 39: CDOs - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 40: Other ABS - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|-----|-----|-----|------|------|------|----|---|---------|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 150 | 45% | | | | | | | | | | | | | | | | | | | | | | 55% | |
| AA+ | 71 | 15% | 27% | | | | | | | | | | | | | | | | | | | | | 58% | |
| AA | 84 | 12% | 17% | 29% | | | | | | | | | | | | | | | | | | | | 42% | |
| AA- | 37 | 5% | 11% | 11% | 49% | | | | | | | | | | | | | | | | | | | 24% | |
| A+ | 47 | 19% | 6% | 2% | 2% | 39% | | | | | | | | | | | | | | | | | | 32% | |
| A | 100 | 10% | 7% | 5% | 7% | 11% | 38% | | | | | | | | | | | | | | | | | 22% | |
| A- | 82 | 5% | 1% | 1% | 6% | 7% | 15% | 44% | | | | | | | | | | | | | | | | 21% | |
| BBB+ | 39 | 13% | 3% | | | | | 10% | 38% | | | | | | | | | | | | | | | 36% | |
| BBB | 116 | 3% | 3% | 2% | 1% | 6% | 8% | 8% | 16% | 38% | | | | | | | | | | | | | | 15% | |
| BBB- | 83 | 1% | 1% | | 2% | 1% | 2% | 8% | 2% | 10% | 66% | | | | | | | | | | | | | 7% | |
| BB+ | 35 | 3% | 3% | | | 6% | 3% | 6% | | 6% | 9% | 35% | | | | | | | | | | | | 29% | |
| BB | 98 | | 2% | | | | 1% | 3% | 2% | 9% | 5% | 8% | 58% | | | | | | | | | | | 12% | |
| BB- | 54 | | | 2% | | | | | 4% | 2% | 7% | 2% | 6% | 68% | | | | | | | | | | 9% | |
| B+ | 14 | | | | | | | | | | | 7% | 7% | 29% | 36% | | | | | | | | | 21% | |
| B | 39 | | | | 3% | | | | | | | 3% | 8% | 3% | 13% | 52% | | | | | | | | 18% | |
| B- | 14 | | | | | | | | 7% | 7% | 7% | | 14% | | | 14% | 51% | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 2 | | | | | | | | | | | | | | | | | | 100% | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1065 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 41: Other ABS - 3-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|----|-----|----|----|----|------|-----|------|-----|-----|-----|----|----|----|------|-----|------|----|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 128 | 4% | | | | | | | | | | | | | | | | | | | | | | 96% | |
| AA+ | 62 | | 1% | | | | | | | | | | | | | | | | | | | | | 97% | 2% |
| AA | 76 | 4% | | 5% | | | | | | | | | | | | | | | | | | | | 87% | 4% |
| AA- | 29 | 3% | 3% | | 5% | | | | | | | | | | | | | | | | | | | 86% | 3% |
| A+ | 50 | 2% | | | | 4% | | | | | | | | | | | | | | | | | | 94% | |
| A | 90 | 7% | 1% | 3% | | | 4% | | | | | | | | | | | | | | | | | 83% | 2% |
| A- | 32 | 3% | 3% | | 3% | 6% | 4% | | | | | | | | | | | | | | | | | 81% | |
| BBB+ | 36 | 3% | | | | | | 3% | 2% | | | | | | | | | | | | | | | 92% | |
| BBB | 104 | 13% | 6% | | | 4% | 2% | 2% | 6% | 3% | | | | | | | | | | | | | | 63% | 1% |
| BBB- | 36 | 8% | 3% | 3% | | 3% | 3% | 8% | | 8% | 8% | | | | | | | | | | | | | 56% | |
| BB+ | 21 | | 5% | | | | | | | | | 9% | | | | | | | | | | | | 86% | |
| BB | 90 | 2% | 1% | 1% | | 1% | 4% | 6% | 1% | 9% | 3% | 2% | 9% | | | | | | | | | | | 61% | |
| BB- | 30 | | 7% | | | 3% | 3% | | 3% | 10% | 7% | | 10% | 4% | | | | | | | | | | 53% | |
| B+ | 11 | | | | | | | | 9% | | | 9% | 9% | | | | | | | | | | | 64% | |
| B | 24 | | | | | | | | | | | | 4% | 13% | 8% | 4% | | | | | | | | 71% | |
| B- | 11 | | | | 9% | | | | 9% | | | | 18% | | | | | | | | | | | 64% | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 830 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 42: Other ABS - 10-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | |
|---------------------------------|-------------------------------|---|-----|----|-----|----|---|----|------|-----|------|-----|----|-----|----|---|----|------|-----|------|----|---|---|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 2 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 3 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 3 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| A- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB | 3 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| BBB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 12 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 43: Other ABS - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|----|----|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 4 | | | | | | | | 100% | |
| K1 | 0 | | | | | | | | | |
| K2 | 0 | | | | | | | | | |
| K3 | 0 | | | | | | | | | |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 4 | | | | | | | | | |

Table 44: Other ABS - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|----|----|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 3 | | | | | | | | 100% | |
| K1 | 0 | | | | | | | | | |
| K2 | 0 | | | | | | | | | |
| K3 | 0 | | | | | | | | | |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 3 | | | | | | | | | |

Table 45: Other ABS - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|----|----|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 2 | | | | | | | | 100% | |
| K1 | 0 | | | | | | | | | |
| K2 | 0 | | | | | | | | | |
| K3 | 0 | | | | | | | | | |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 2 | | | | | | | | | |

Table 46: Other SFPs - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|------|-----|-----|-----|------|-----|------|-----|-----|-----|-----|-----|-----|------|-----|------|------|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 49 | 96% | | | | | | | | | | | | | | | | | | | | | | 4% | |
| AA+ | 1 | 100% | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 13 | 15% | 23% | 39% | | | | | | | | | | | | | | | | | | | | 23% | |
| AA- | 11 | | | | 100% | | | | | | | | | | | | | | | | | | | | |
| A+ | 15 | | 7% | | 13% | 73% | | | | | | | | | | | | | | | | | | 7% | |
| A | 186 | 1% | | 2% | 1% | 1% | 84% | 3% | 1% | | | | | | | | | | | | | | | 5% | 2% |
| A- | 72 | | | | | 1% | 1% | 83% | 4% | | | | | | | | | | | | | | | 11% | |
| BBB+ | 28 | | | | | | 7% | | 67% | 4% | 7% | 4% | | | | | | | | | | | | 11% | |
| BBB | 181 | | | | | | 1% | | 1% | 84% | 4% | 1% | | | | | | | | | | | | 9% | |
| BBB- | 58 | | | | | | | | | | 86% | 3% | 2% | | | | | | | | | | | 9% | |
| BB+ | 27 | | | | | | | | | | | 59% | 11% | 4% | 7% | | | | | | | | | 19% | |
| BB | 64 | | | | | | | | | | | | 84% | | 3% | 2% | | | | | | | | 9% | 2% |
| BB- | 24 | | | | | | | | | | | | | 88% | | 4% | | | | | | | | 8% | |
| B+ | 3 | | | | | | | | | | | | | | 33% | | | | | | | | | 67% | |
| B | 13 | | | | | | | | | | | | | | | 77% | 15% | | | | | | | 8% | |
| B- | 7 | | | | | | | | | | | | | 14% | | | 43% | | 29% | | | | | 14% | |
| CCC+ | 2 | | | | | | | | | | | | | | | | | 100% | | | | | | | |
| CCC | 42 | | | | | | | | | | | | | | | | | | 95% | | | | | 5% | |
| CCC- | 1 | | | | | | | | | | | | | | | | | | | 100% | | | | | |
| CC | 1 | | | | | | | | | | | | | | | | | | | | 100% | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 798 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 47: Other SFPs - 3-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|------|-----|-----|------|-----|------|-----|-----|-----|-----|-----|----|------|------|------|----|---|---------|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 50 | 72% | | | | | | | | | | | | | | | | | | | | | | 28% | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 9 | | 11% | 11% | | | | | | | | | | | | | | | | | | | | 78% | |
| AA- | 5 | | | | 60% | | | | | | | | | | | | | | | | | | | 40% | |
| A+ | 4 | | | | | 100% | | | | | | | | | | | | | | | | | | | |
| A | 164 | | | 1% | | 4% | 27% | 5% | 11% | 5% | 2% | 2% | 1% | | | | | | | | | | | 41% | 1% |
| A- | 27 | | | | | 4% | 4% | 51% | | 4% | | | | | | | | | | | | | | 37% | |
| BBB+ | 7 | | | | | | 14% | | 43% | | | | | | | | | | | | | | | 43% | |
| BBB | 152 | 1% | | | | | 1% | | 1% | 24% | 6% | 8% | 7% | 1% | 3% | 1% | | | 1% | | | | | 46% | |
| BBB- | 28 | | | | | | | | | | 35% | | 4% | | | 14% | | | 4% | | | | | 36% | 7% |
| BB+ | 6 | | | | | | | | | | | 33% | | | | | | | | | | | | 67% | |
| BB | 60 | | | | | | 2% | | | | | | 19% | | | | 2% | | 35% | | | 2% | 40% | | |
| BB- | 16 | | | | | | | | | | | | | 32% | | 6% | | | 31% | | | | | 31% | |
| B+ | 2 | | | | | | | | | | | | | | 50% | | | | | | | | | 50% | |
| B | 14 | | | | | | | | | | | | 7% | | | 14% | | | 29% | | 7% | 7% | 36% | | |
| B- | 3 | | | | | | | | | | | | | | | | | | 67% | | | | | | 33% |
| CCC+ | 1 | | | | | | | | | | | | | | | | | | 100% | | | | | | |
| CCC | 4 | | | | | | | | | | | | | | | | | | 100% | | | | | | |
| CCC- | 1 | | | | | | | | | | | | | | | | | | | 100% | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 553 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 48: Other SFPs - 10-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | | |
|------------------------------------|-------------------------------------|---|-----|----|-----|----|---|----|------|-----|------|-----|----|-----|----|---|----|------|-----|------|----|---|---------|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 5 | | | | | | | | | | | | | | | | | | | | | | 100% | | |
| A- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 5 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 49: Other SFPs - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 50: Other SFPs - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 51: Other SFPs - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 52: Sovereign Issuers - 1-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|----|------|------|---|----|------|------|------|-----|----|-----|----|---|----|------|-----|------|----|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 4 | 100% | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 2 | | | | 100% | | | | | | | | | | | | | | | | | | | | |
| A+ | 2 | | | | | 100% | | | | | | | | | | | | | | | | | | | |
| A | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB | 3 | | | | | | | | | 100% | | | | | | | | | | | | | | | |
| BBB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 11 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 53: Sovereign Issuers - 3-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|----|-----|------|---|----|------|------|------|-----|----|-----|----|---|----|------|-----|------|----|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 4 | 100% | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A+ | 2 | | | | | 100% | | | | | | | | | | | | | | | | | | | |
| A | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| A- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB | 2 | | | | | | | | | 100% | | | | | | | | | | | | | | | |
| BBB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 8 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 54: Sovereign Issuers - 10-Year Transition and Default Rates (Long-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 55: Sovereign Issuers - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|----|------|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 8 | 100% | | | | | | | | |
| K1 | 0 | | | | | | | | | |
| K2 | 2 | | | 100% | | | | | | |
| K3 | 0 | | | | | | | | | |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 10 | | | | | | | | | |

Table 56: Sovereign Issuers - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|----|------|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 6 | 100% | | | | | | | | |
| K1 | 0 | | | | | | | | | |
| K2 | 2 | | | 100% | | | | | | |
| K3 | 0 | | | | | | | | | |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 8 | | | | | | | | | |

Table 57: Sovereign Issuers - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

KBRA has not assigned credit ratings in this class/subclass for the length of time necessary to produce a Transition/Default Matrix.

Table 58: U.S. Public Finance - 1-Year Transition and Default Rates (Long-Term Credit Ratings)

(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|---------------------------------|-------------------------------|---|------|-----|-----|-----|------|------|------|-----|------|-----|----|-----|----|------|----|------|-----|------|----|---|---|----------|-------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 21 | 100% | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 20 | | 100% | | | | | | | | | | | | | | | | | | | | | | |
| AA | 25 | | | 96% | | | | | | | | | | | | | | | | | | | 4% | | |
| AA- | 25 | | | 4% | 96% | | | | | | | | | | | | | | | | | | | | |
| A+ | 22 | | | | 5% | 95% | | | | | | | | | | | | | | | | | | | |
| A | 8 | | | | | | 100% | | | | | | | | | | | | | | | | | | |
| A- | 8 | | | | | | | 100% | | | | | | | | | | | | | | | | | |
| BBB+ | 2 | | | | | | | | 50% | | | | | | | | | | | | | | | 50% | |
| BBB | 13 | | | | | | | | 15% | 77% | 8% | | | | | | | | | | | | | | |
| BBB- | 4 | | | | | | | | | 25% | 75% | | | | | | | | | | | | | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 1 | | | | | | | | | | | | | | | 100% | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 149 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 59: U.S. Public Finance - 3-Year Transition and Default Rates (Long-Term Credit Ratings)

(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|-----|-----|------|-----|-----|------|-----|------|-----|----|-----|----|-----|----|------|-----|------|----|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) |
| AAA | 15 | 100% | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 15 | 20% | 66% | 7% | | | | | | | | | | | | | | | | | | | | 7% | |
| AA | 19 | | 5% | 90% | | | | | | | | | | | | | | | | | | | | 5% | |
| AA- | 22 | | | 9% | 86% | | | | | | | | | | | | | | | | | | | 5% | |
| A+ | 12 | | | | | 100% | | | | | | | | | | | | | | | | | | | |
| A | 6 | | | 17% | | | 83% | | | | | | | | | | | | | | | | | | |
| A- | 11 | | | | | | | 64% | | 18% | | | | | | | | | | | | | | 9% | |
| BBB+ | 3 | | | | | | | | 34% | 33% | | | | | | | | | | | | | | 33% | |
| BBB | 7 | | | | | | | | 29% | 28% | 14% | | | | | | | | | | | | | 29% | |
| BBB- | 6 | | | | | | | | | 33% | 33% | | | | | 17% | | | | | | | | 17% | |
| BB+ | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 1 | | | | | | | | | | | | | | | | | | | | | | | 100% | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 118 | | | | | | | | | | | | | | | | | | | | | | | | |

Table 60: U.S. Public Finance - 10-Year Transition and Default Rates (Long-Term Credit Ratings)
(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | | | | | | | | | | | | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|-----|------|-----|------|---|-----|------|-----|------|-----|----|-----|----|---|----|------|-----|------|----|---|---------|---|----------------------|--|
| Credit Rating | Number of Ratings Outstanding | AAA | AA+ | AA | AA- | A+ | A | A- | BBB+ | BBB | BBB- | BB+ | BB | BB- | B+ | B | B- | CCC+ | CCC | CCC- | CC | C | Default | Paid Off | Withdrawn (other) | |
| AAA | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| AA+ | 2 | 100% | | | | | | | | | | | | | | | | | | | | | | | | |
| AA | 2 | | | 100% | | | | | | | | | | | | | | | | | | | | | | |
| AA- | 2 | | | | 50% | | | | | | | | | | | | | | | | | | | 50% | | |
| A+ | 3 | | | 33% | | 67% | | | | | | | | | | | | | | | | | | | | |
| A | 2 | | | | | 100% | | | | | | | | | | | | | | | | | | | | |
| A- | 2 | | | | | | | 50% | | | | | | | | | | | | | | | | 50% | | |
| BBB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| BBB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| BB+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| BB | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| BB- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| B+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| B- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC+ | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCC- | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CC | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 13 | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 61: U.S. Public Finance - 1-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2021 through December 31, 2022)

| Credit Ratings as of 12/31/2021 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2021 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|------|----|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 9 | 78% | | | | | | | 22% | |
| K1 | 1 | | 100% | | | | | | | |
| K2 | 0 | | | | | | | | | |
| K3 | 0 | | | | | | | | | |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 10 | | | | | | | | | |

Table 62: U.S. Public Finance - 3-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2019 through December 31, 2022)

| Credit Ratings as of 12/31/2019 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2019 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|----|----|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 6 | 66% | | | | | | | 17% | 17% |
| K1 | 0 | | | | | | | | | |
| K2 | 0 | | | | | | | | | |
| K3 | 0 | | | | | | | | | |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 6 | | | | | | | | | |

Table 63: U.S. Public Finance - 10-Year Transition and Default Rates (Short-Term Credit Ratings)

(December 31, 2012 through December 31, 2022)

| Credit Ratings as of 12/31/2012 | | Credit Ratings as of 12/31/2022 (Percent) | | | | | | Other Outcomes During 12/31/2012 - 12/31/2022 (Percent) | | |
|------------------------------------|-------------------------------------|---|----|----|----|---|---|---|-------------|----------------------|
| Credit Rating | Number of Ratings Outstanding | K1+ | K1 | K2 | K3 | B | C | Default | Paid Off | Withdrawn (other) |
| K1+ | 1 | | | | | | | | | 100% |
| K1 | 0 | | | | | | | | | |
| K2 | 0 | | | | | | | | | |
| K3 | 0 | | | | | | | | | |
| B | 0 | | | | | | | | | |
| C | 0 | | | | | | | | | |
| Total | 1 | | | | | | | | | |