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ECONOMIC & FIXED INCOME ANALYSIS

Fixed Income Analysis
2023 Annual Corporate Default and Ratings Transition Study

MARC

MARC RATINGS BERHAD
202001041436 (1397757-W)

2023 MARC RATINGS ANNUAL CORPORATE DEFAULT AND RATINGS TRANSITION STUDY

Summary

- In 2023, MARC Ratings' corporate portfolio recorded four rating downgrades and three upgrades, an increase compared to the preceding year, where two downgrades and two upgrades were recorded. Meanwhile, there was no rating default in 2023, in contrast to the two rating defaults in 2022. This led to an improved rating drift at -1.1% (2022: -2.2%), suggesting an overall improvement in credit quality.
- There were no defaults recorded in 2023, resulting in a decrease in the long-term average default rate for the 2000-2023 period to 1.7% (2000-2022: 1.8%). We expect default rates to remain low going forward based on the limited number of issuers positioned at the lower end of the rating spectrum.
- The ratings stability rate in 2023 declined slightly to 92.3% compared to 93.3% in 2022. The long-term average ratings stability rate for the period up until 2023 increased slightly to 87.9%, compared to the 2000–2022 average of 87.7%.
- Ratings accuracy improved in 2023 as no default was recorded and all defaults in 2022 came from the lowest non-default rating category of C. Over the long term (1998–2023), the ratings accuracy ratio came in at 74.4%, marginally higher than the 73.6% recorded in the 1998–2022 period.

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FIXED INCOME ANALYSIS
2023 Annual Corporate Default and Ratings Transition Study

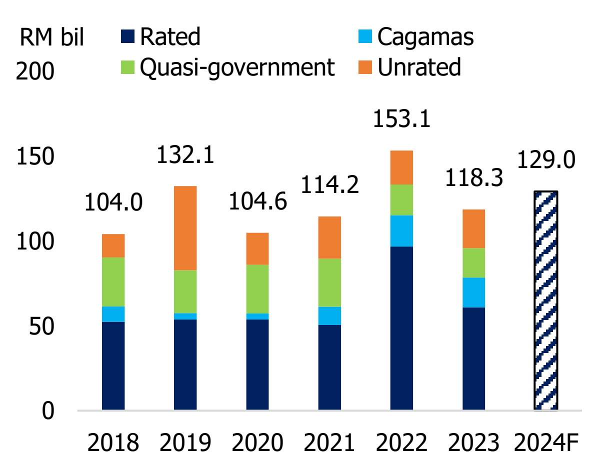
Corporate Bond Market Review

Lower yields supported healthy local corporate bond issuance activities. In 2023, gross issuance of long-term corporate bonds came in lower at RM118.3 billion following a record high of RM153.1 billion in 2022, but was higher than the previous five-year average (2017-2021) of RM115.8 billion. Corporate bond private placements (2023: RM22.8 billion; 2022: RM20.0 billion) registered increases, while rated corporate bonds (2023: RM78.2 billion; 2022: 115.1 billion) were lower for the year.

Highly rated issuers remained prominent in fundraising activities, with AAA and AA rated bonds comprising 95.0% of rated issuances. Nonetheless, the issuance of AAA-rated bonds fell to RM38.7 billion in 2023 from a record high of RM75.8 billion in 2022, attributed in part to the RM25.2 billion large issuance from Projek Lebuhraya Usahasama Berhad (PLUS). By sector, financial services and energy & utilities took the lead in fundraising, recording issuances of RM44.4 billion (2022: RM49.1 billion) and RM21.1 billion (2022: RM17.8 billion).

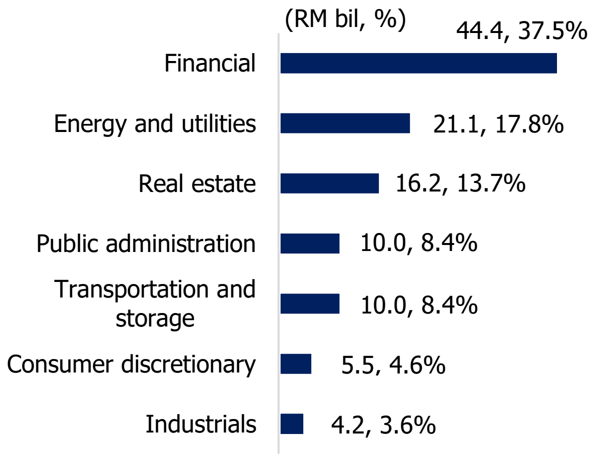
Going forward, we expect the fundraising environment to remain vibrant amid anticipated firmer economic conditions in 2024. With continued financing needs for infrastructure and capital investment activities, we project corporate bond issuance to rise in 2024 to between RM120.0 billion and RM130.0 billion. Notwithstanding this, the quasi-government segment's issuances are expected to face constraints due to the high government debt levels.

Chart 1: Corporate bond issuance trends (RM billion)



Sources: Bond Pricing Agency Malaysia (BPAM), MARC Ratings

Chart 2: Corporate bond issuances in 2023: by industry

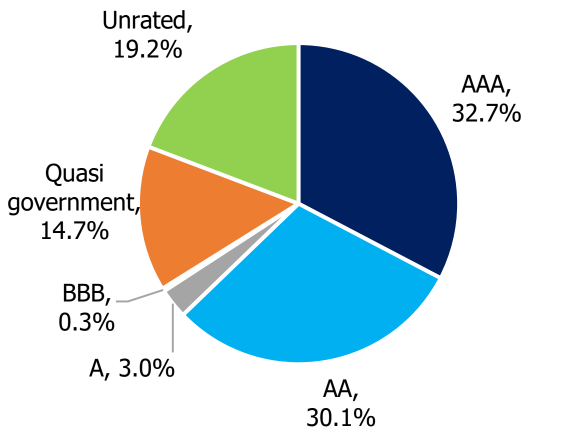


Sources: BPAM, MARC Ratings

Despite lower yields in 2023, the yield curve in 2024 faces the risk of elevated global interest rates and inflation. Corporate bond yields are projected to stabilise in 2024, compared to the decline in yields in 2023, which reflected expectations of peak interest rates. For now, the US Federal Reserve remains wary of elevated inflationary pressures and have signalled a potential delay in interest rate cuts this year.

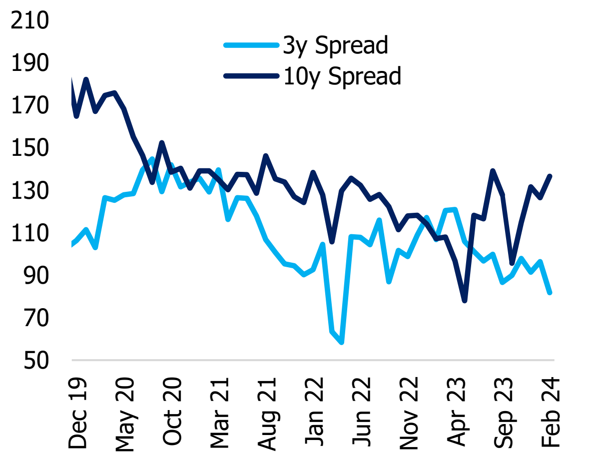
On the domestic front, we expect Malaysia's inflation to trend around 2.5% to 3.0% in 2024 (2023: 2.5%), driven by the gradual rollout of subsidy rationalisation and new tax measures. This is poised to exert upward pressure on yields. A stronger economy may also raise the yield curve but continue to compress credit spreads.

Chart 3: Corporate bond issuance by rating (2023)



Sources: BPAM, MARC Ratings

Chart 4: 3y and 10y blended credit spread (bps)



Note: Blended credit spread refers to average credit spread between corporate and government bonds in the AAA, AA and A bands.
Sources: CEIC, MARC Ratings

Table 1: Corporate bond yields

	2022	2023	y-o-y change (bps)
AAA yield (%)			
3y	4.30	3.85	-45
5y	4.50	3.97	-53
7y	4.64	4.09	-55
10y	4.79	4.18	-61
15y	5.03	4.34	-69
AA yield (%)			
3y	4.53	4.04	-49
5y	4.71	4.18	-54
7y	4.94	4.31	-63
10y	5.11	4.41	-69
15y	5.35	4.61	-74
A yield (%)			
3y	5.44	5.24	-21
5y	5.70	5.55	-14
7y	5.94	5.80	-14
10y	6.16	6.06	-10
15y	6.60	6.50	-9

Note: As of end-2022 and end-2023.
Sources: CEIC, MARC ratings

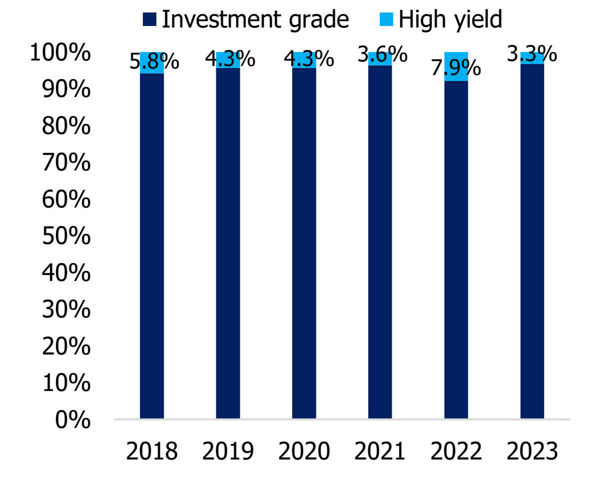
MARC Ratings' Rated Corporate Bonds

At the beginning of 2023, MARC Ratings had 91 corporate bond issuers with long-term local currency ratings. Most issuers were concentrated in the investment-grade rating category, with 88 rated BBB or above (96.7%), while the remaining three (3.3%) were categorised as high-yield issuers or rated BB or below. The 96.7% share of investment-grade ratings in MARC Ratings' issuers portfolio exceeded the 2022 figure of 92.1% and the 2018-2022 average of 94.8%.

MARC Ratings registered an actual issued size-to-programme size of 57.2% in 2023, higher than the 46.8% in 2022. This is notwithstanding the lower programme size and actual issued size observed during the year. Of the total programme size of RM38.0 billion in 2023 (2022: RM82.2 billion), the actual issued size amounted to RM21.7 billion (2022: RM38.5 billion).

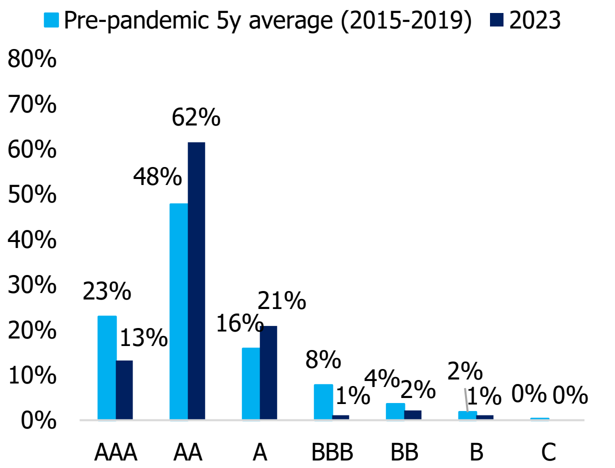
In the MARC Ratings' universe, the largest share among issuers is held by the infrastructure & utilities sector, constituting 40.7%. Following closely are the property (18.7%), finance (12.1%), industrial products (9.9%), and trading/services (6.6%) sectors. Notably, these top five sectors have maintained their positions among issuers in the MARC Ratings' universe from 2022 to 2023.

Chart 5: Outstanding issuers by rating category



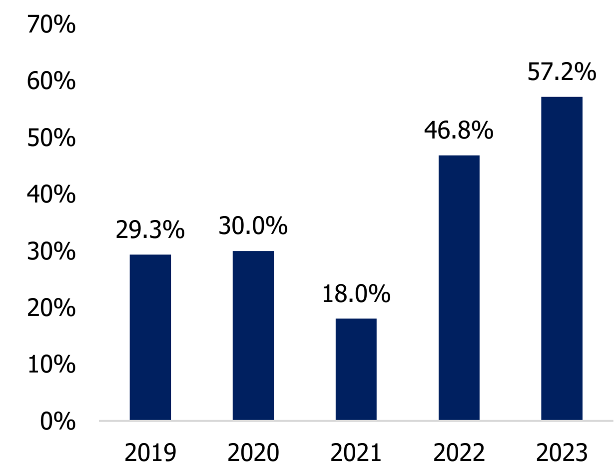
Source: MARC Ratings

Chart 6: Outstanding issuers by rating band



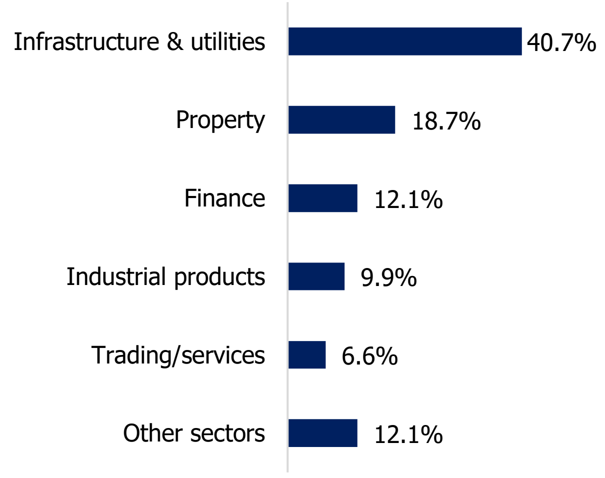
Source: MARC Ratings

Chart 7: Actual issued size-to-programme size



Source: MARC Ratings

Chart 8: Issuers by sector in 2023



Source: MARC Ratings

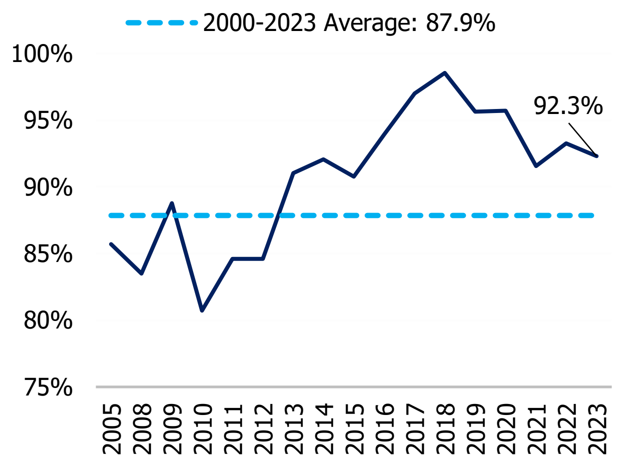
Rating Migrations

Ratings stability remains above 90%. In 2023, due to increased rating migrations resulting from the higher number of upgrades and downgrades, ratings stability saw a slight decline to 92.3% (2022: 93.3%). However, with affirmations remaining dominant in rating actions in MARC Ratings' corporate portfolio, the ratings stability rate has remained above the 90% level since 2013. The higher concentration of investment-grade issuers within the company's corporate portfolio has contributed to the stability as higher-grade issuers tend to maintain their ratings over the long term as opposed to the high-yield issuers that have volatile ratings.

The ratings drift, an indicator of credit quality, reflects upgrades net of downgrades and defaults. Due to the increase in rating downgrades in 2023, the rating drift rate remained negative at -1.1% (2022: -2.2%). However, with the uptick in rating upgrades and the absence of credit defaults, the rating drift rate hit its highest point in over a decade, signalling an overall improvement in credit quality.

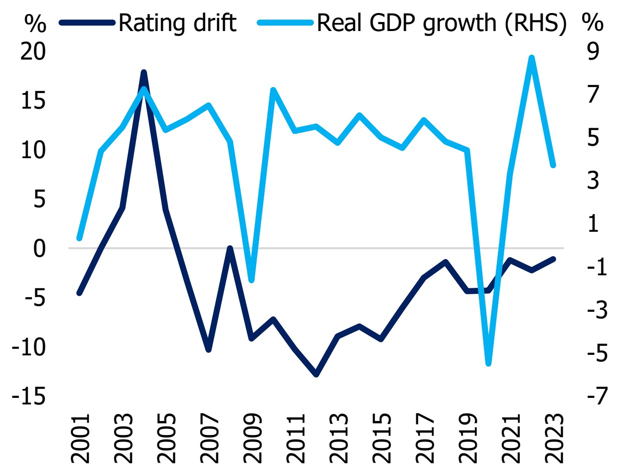
Downgrade-to-upgrade ratio deteriorates. In 2023, MARC Ratings' corporate portfolio had an increase in rating actions, witnessing four downgrades and three upgrades compared to only two upgrades and two downgrades in 2022, which elevated the downgrade-to-upgrade ratio to 1.3x (2022: 1.0x). Similarly, we noted an increase in Asia's downgrade-to-upgrade ratio, which can be attributed to concerns over defaults among China-related companies, owing to its ongoing property market crisis.

Chart 9: MARC Ratings' rating stability rate



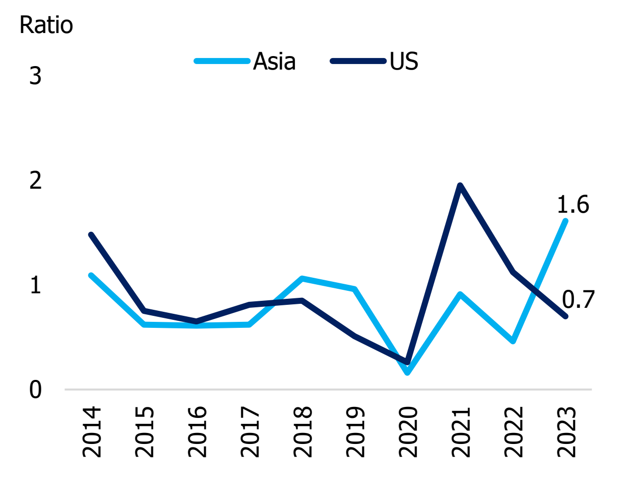
Source: MARC Ratings

Chart 10: MARC Ratings' rating drift



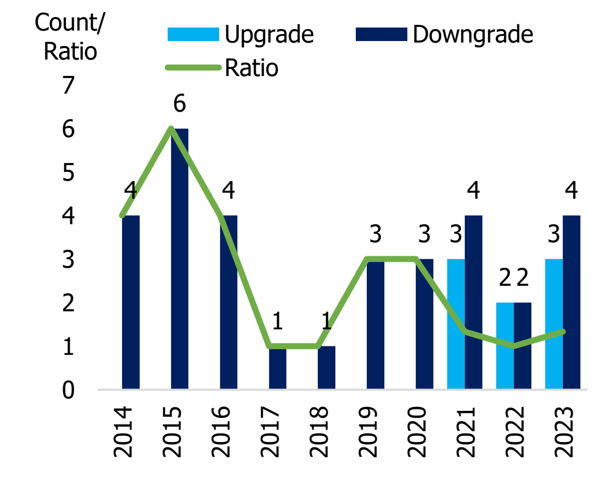
Source: MARC Ratings

Chart 11: Global downgrade-to-upgrade ratio trend



Source: Bloomberg, MARC Ratings

Chart 12: MARC Ratings' downgrade-to-upgrade ratio

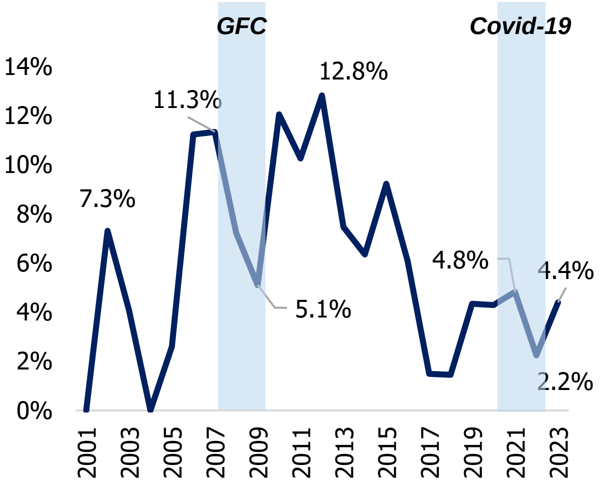


Source: MARC Ratings

An uptick in downgrades in 2023. The increase in downgrades has raised MARC Ratings' annual corporate downgrade rate for 2023 to 4.4%, notably surpassing the previous year's 2.2% and exceeding the five-year (2018-2022) average of 3.4%. Among the downgrades in 2023, two issuers originated from the property sector, one from the industrial products sector, and one from the trading/services sector. The issuer from the trading/services sector held a non-investment grade credit rating, while the rest were rated at investment-grade. Each issuer's credit rating was lowered by one notch.

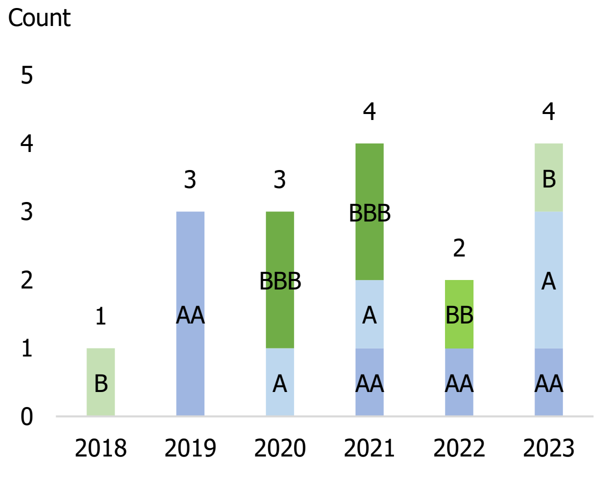
Over the long-term period (2000-2023), the industrial sector experienced the highest number of downgrades at 18.0%, followed by the consumer products sector (11.8%), and the trading/services sector (9.1%). Conversely, the finance sector had the lowest percentage of downgrades at 0.7%, followed by construction (2.9%), as well as the property and plantation sectors, both at 3.4%.

Chart 13: Annual corporate downgrade rates



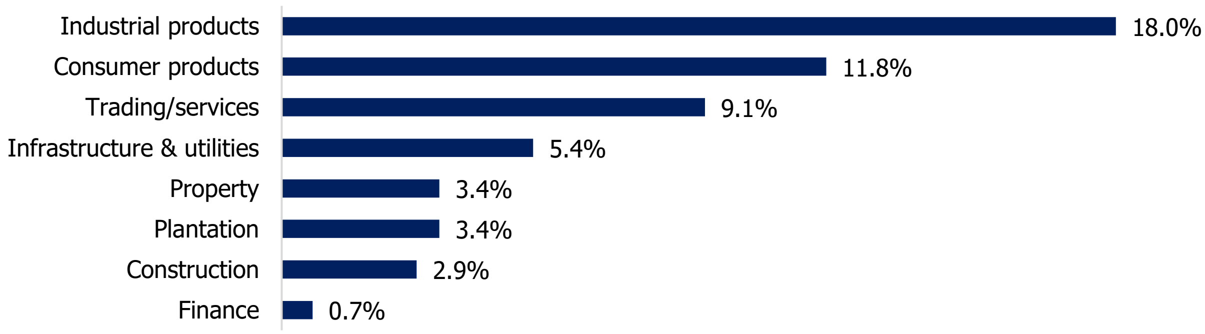
Source: MARC Ratings

Chart 14: Downgrade count by rating band



Source: MARC Ratings

Chart 15: Corporate downgrade rates by industry: long-term average (2000-2023)

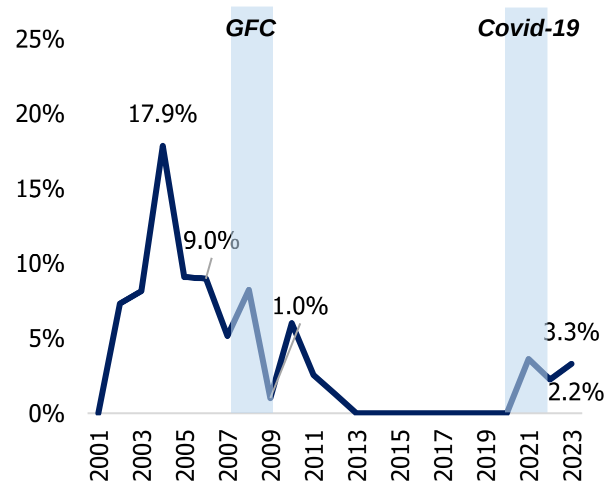


Source: MARC Ratings

Upgrade rate edges higher. MARC Ratings' annual corporate upgrade rate has also increased to 3.3% (2022: 2.2%), significantly surpassing the five-year average (2018-2022) of 1.2%. Out of the three upgrades, two came from the infrastructure & utilities sector, and one from the property sector. Notably, all upgraded issuers were of investment-grade, and each experienced a one-notch increase in their ratings.

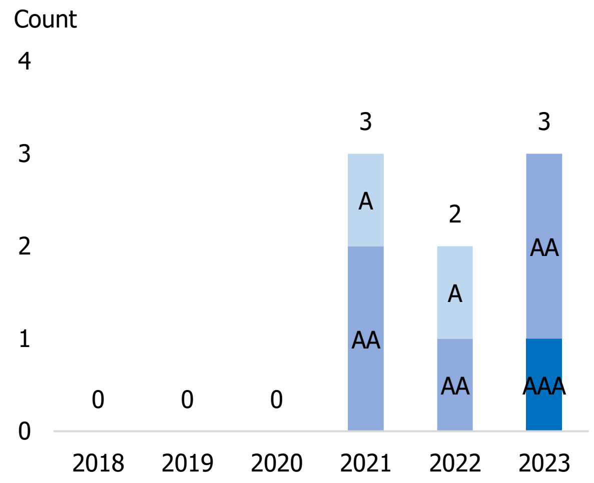
Over the long-term period (2000-2023), the finance sector has had the highest number of upgrades at 12.3%, followed by the plantation sector (5.3%) and the construction sector (5.3%). The lowest percentage of upgrades are from the industrial sector at 1.5%, followed by the trading/services (3.0%) and property (3.6%) sectors.

Chart 16: Annual corporate upgrade rates



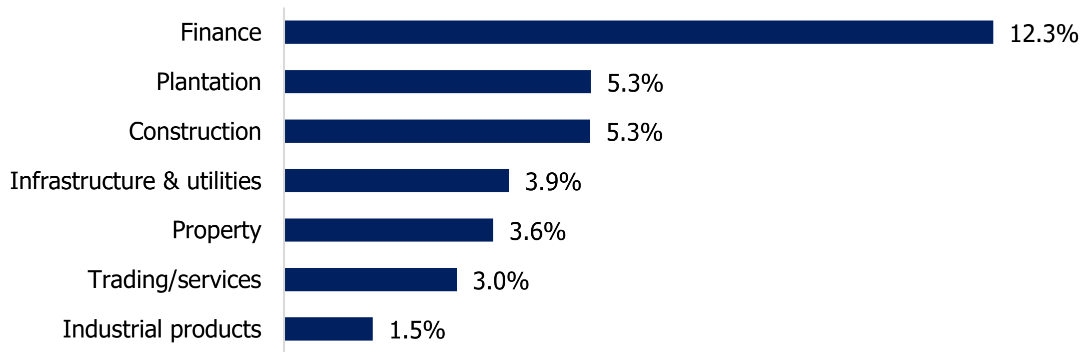
Source: MARC Ratings

Chart 17: Upgrade count by rating band



Source: MARC Ratings

Chart 18: Corporate upgrade rates by industry: long-term average (2000-2023)

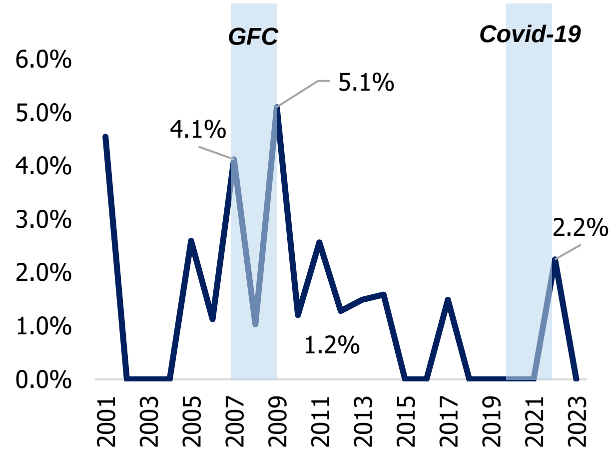


Source: MARC Ratings

Zero defaults in 2023. In 2023, MARC Ratings' corporate portfolio experienced no defaults, resulting in a drop in the long-term annual corporate default rate (2000-2023) to 1.7%, slightly below the previous long-term average (2000-2022) of 1.8%. The long-term default rate for investment-grade bonds decreased marginally to 1.4% (2000-2022: 1.5%), while that for high-yield bonds saw a decline to 5.4% (2000-2022: 5.6%). Across sectors, the industrial products sector recorded the highest long-term weighted average default rate of 4.9%, while the infrastructure & utilities sector retained the lowest default rate at 0.6%.

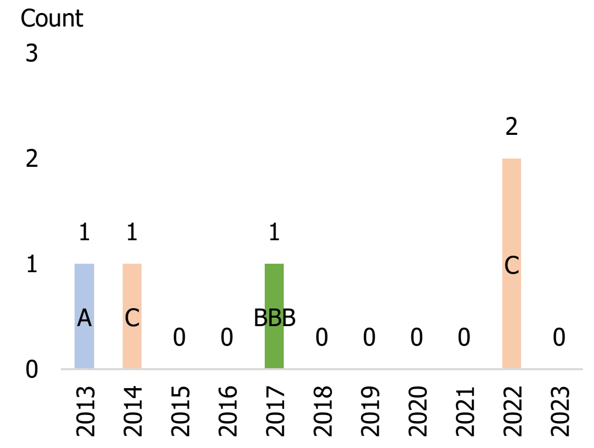
Based on the cumulative default rates from 1998 to 2023, AAA-rated issuers exhibited the lowest default rates, remaining at 0.0% from the first year through to the 10th year, while BBB-rated issuers experienced default rates of 6.2% from the first year, escalating up to 14.4% by the seventh year. The upward trend in default rates within lower rating bands underscores the strong negative correlation between ratings and default rates.

Chart 19: Annual corporate default rates



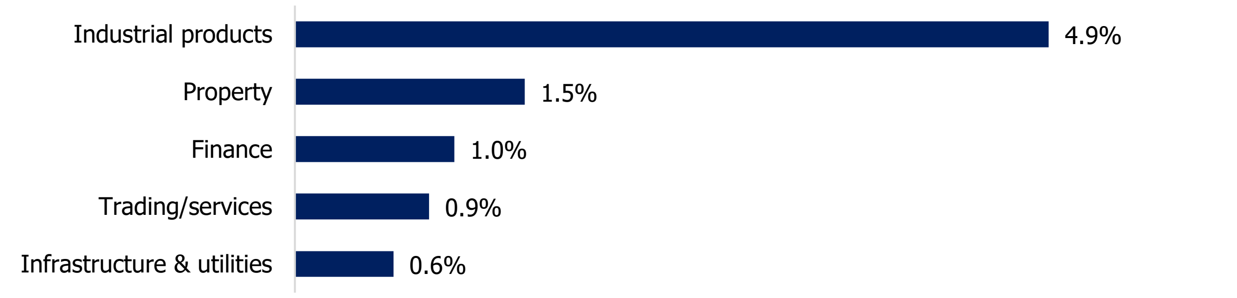
Source: MARC Ratings

Chart 20: Default count by rating band



Source: MARC Ratings

Chart 21: Corporate default rates by industry: long-term average (2000-2023)



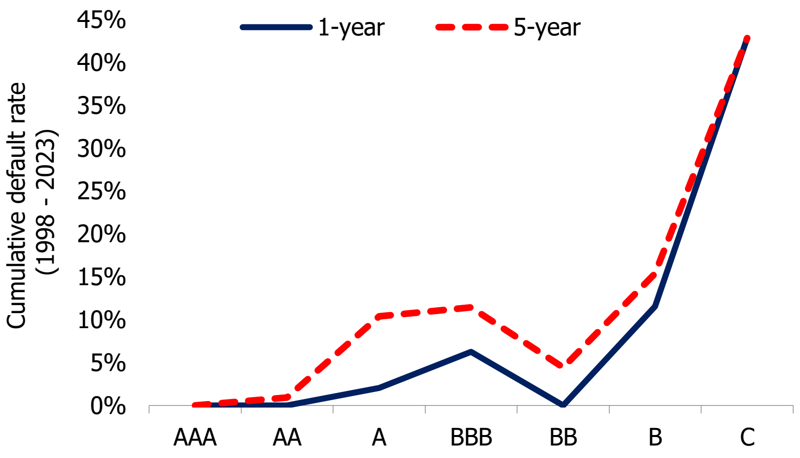
Source: MARC Ratings

Table 2: Cumulative default rates by rating band: 1998–2023

Rating band	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
AAA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	0.0%	0.0%	0.0%	0.3%	0.8%	1.3%	1.7%	1.8%	2.0%	2.2%
A	2.0%	4.5%	7.1%	8.7%	10.1%	10.7%	11.1%	11.2%	11.2%	11.2%
BBB	6.2%	9.3%	9.3%	10.3%	11.3%	12.4%	13.4%	14.4%	14.4%	14.4%
BB	0.0%	2.1%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
B	11.1%	14.8%	14.8%	14.8%	14.8%	14.8%	14.8%	14.8%	14.8%	14.8%
C	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%
Investment grade	1.1%	2.2%	3.2%	4.1%	4.8%	5.3%	5.6%	5.8%	5.9%	5.9%
High yield	7.4%	9.9%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%
All corporate	1.4%	2.6%	3.6%	4.4%	5.1%	5.6%	5.9%	6.1%	6.1%	6.2%

Source: MARC Ratings

Chart 22: Cumulative default rate over 1-year and 5-year periods by rating band: 1998–2023



Source: MARC Ratings

Table 3: List of defaulted issuers since inception

Year announced	Issuers	Initial rating	Rating 1-year prior to default	Last rating prior to default
2000	MOCCIS Trading Sdn Bhd	BBB	BBB	BBB
2001	Johor City Development Sdn Bhd	AA-	AA-	AA-
2005	ABI Malaysia Sdn Bhd	A	A	A-
2005	Pesaka Astana (M) Sdn Bhd	A+	A+	A+
2006	Maxisegar Sdn Bhd	A	A	BB
2007	Paradym Resources Industries Sdn Bhd	A-	A	BB
2007	Sistem-Lingkaran Lebuhraya Kajang Sdn Bhd	A	B-	B-
2007	ACE Polymers (M) Sdn Bhd	A	A-	BBB-
2007	Peremba Jaya Holdings Sdn Bhd	A	BBB-	C
2008	Evermaster Group Bhd	A	A-	BB-
2009	Tracoma Holdings Bhd	A	B	C
2009	Englotechs Holdings Bhd	A	BBB-	BB
2009	Ingress Sukuk Bhd	A+	A	C
2009	Oilcorp Bhd	A	A-	C
2009	Malaysia International Tuna Port Sdn Bhd	A+	A	C
2010	Malaysia Merchant Marine Bhd	A+	A+	BB+
2011	Dawama Sdn Bhd	A	A-	C
2011	Mithrill Bhd	BBB	B+	B
2012	Maxtral Industry Bhd	A	BBB-	BB
2013	Perwaja Steel Sdn Bhd	A	A-	C
2014	Kinsteel Bhd	A	A-	C
2017	Alam Maritim Resources Bhd	AA-	BBB+	BB+
2022	MEX II Sdn Bhd	AA-	C	C
2022	Serba Dinamik Holdings Bhd	C	C	C

Source: MARC Ratings

Ratings Transition

MARC Ratings assigns ratings based on its assessments of the relative likelihood of default, reflecting a combination of qualitative and quantitative considerations. In other words, the ratings summarise the relative ability of issuers to meet their obligations fully and on a timely basis, both in terms of interest payments and principal repayments. Thus, the ratings should be seen as ordinal credit risk measures rather than predictive indicators of actual, cardinal default rates. In assessing an issuer's credit rating, relevant industry risks are taken into account from both short- and long-term perspectives. Nevertheless, rating movement may also be impacted by other structural developments, which are mostly due to idiosyncratic developments affecting a specific issuer.

Ratings transition matrices summarise the empirical behaviour of ratings by illustrating the default risk and migration volatility of each rating band. The calculation of ratings transition rates compares the ratings of issuers at the beginning of the year with ratings at the end of the year (see Appendix I for further details on the methodology).

Over the long term (1998–2023), 99.3% of MARC Ratings' AAA-rated issuers maintained their ratings at the end of one year, contrasting with the lower figure of 84.7% for BBB-rated issuers, the lowest investment grade bonds, upon adjusting for withdrawn issuers. This underscores the strong positive correlation between the ratings assigned to investment-grade issuers and the long-term stability. Similarly, for the one-year ratings transition in 2023, higher credit ratings such as A and above demonstrated a consistent trend of lower likelihood of rating migration.

Nonetheless, the relatively limited sample size within the high-yield rating category has led to counterintuitive ratings stability findings, with no discernible correlation between ratings stability and credit ratings. Over the long term (1998–2023), the ratings stability ratios for BB, B, and C ratings were recorded at 73.8%, 76.2%, and 50.0%.

Table 4: One-year ratings transition matrix: 2023

From / To	AAA	AA	A	BBB	BB	B	C	NR	Default
AAA	**91.7%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	0.0%
AA	1.8%	**94.6%**	1.8%	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%
A	0.0%	5.3%	**94.7%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
BBB	0.0%	0.0%	0.0%	**100.0%**	0.0%	0.0%	0.0%	0.0%	0.0%
BB	0.0%	0.0%	0.0%	0.0%	**100.0%**	0.0%	0.0%	0.0%	0.0%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	100.0%	0.0%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%

Source: MARC Ratings

Table 5: One-year cumulative ratings transition matrix: 1998-2023 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	**99.3%**	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	0.9%	**95.4%**	3.3%	0.0%	0.2%	0.0%	0.0%	0.2%
A	0.0%	2.9%	**92.8%**	3.3%	0.4%	0.0%	0.2%	0.4%
BBB	0.0%	0.0%	4.7%	**84.7%**	4.7%	0.0%	1.2%	4.7%
BB	0.0%	0.0%	0.0%	0.0%	**73.8%**	14.3%	0.0%	11.9%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**76.2%**	9.5%	14.3%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**50.0%**	150.0%

Note: NR refers to issuers which had ratings withdrawn.
Source: MARC Ratings

Table 6: Five-year cumulative ratings transition matrix: 1998–2023 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	**96.4%**	3.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	3.9%	**80.1%**	13.1%	0.8%	0.6%	0.2%	0.0%	1.2%
A	0.2%	11.6%	**70.9%**	10.4%	1.9%	0.4%	0.2%	4.4%
BBB	0.0%	1.0%	14.8%	**44.6%**	9.5%	3.2%	0.6%	26.1%
BB	0.0%	0.0%	0.0%	0.0%	**21.9%**	22.6%	1.5%	54.0%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**25.7%**	2.2%	72.2%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**3.1%**	103.1%

Note: NR refers to issuers which had ratings withdrawn.
Source: MARC Ratings

Ratings Accuracy

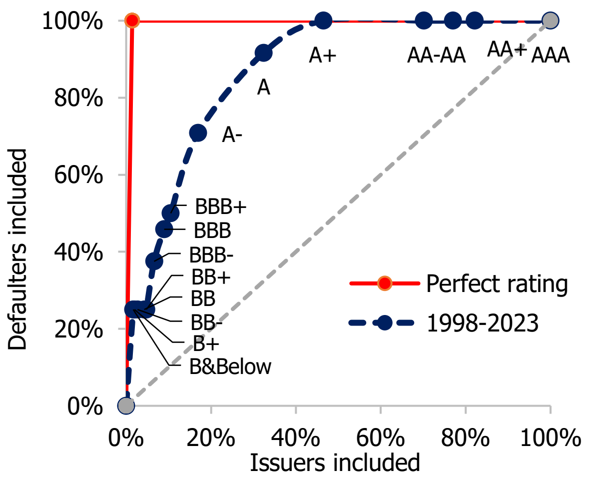
MARC Ratings uses the cumulative accuracy profile (CAP) to evaluate the ordinal accuracy of its ratings, in which a perfect rating indicates that all default cases would only occur in the worst rating category, as shown by the red line in Chart 23 (please refer to Appendix II for more details). Based on the CAP approach, MARC Ratings' corporate portfolio ratings have been consistently effective in rank ordering credit risk in predicting defaults amid the absence of severe negative rating actions or rating cliffs. For the 1998-2023 period, MARC Ratings' long-term ratings accuracy ratio stood at 74.4%, marginally higher than the 73.6% recorded for the 1998-2022 period. Meanwhile, its five-year ratings accuracy ratio (2019-2023) rose to 98.8% from 98.4% in the 2018-2022 period. The improvement was because the two defaulters in 2022 started the year in the lowest non-default rating category of C.

Path to Default from Original Rating and Last Rating

Initial ratings of issuers negatively correlate with their time to default. Over the 1998-2023 period, the average time to default for issuers initially rated as AA was 90 months, while issuers initially rated as A and BB took 48 months and 50 months to default. For all defaulters, they averaged 52 months or 4.3 years to default.

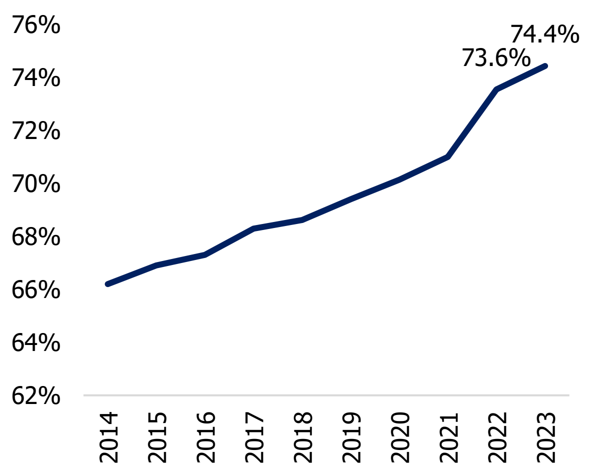
As for the average time it took to default from their last non-default rating, investment-grade issuers took an average of 14 months while high-yield issuers took 4 months. This indicates that most defaulters — prior to their defaulting — had already been downgraded to the high-yield category, especially in the rating band of B.

Chart 23: CAP curve: 1998–2023



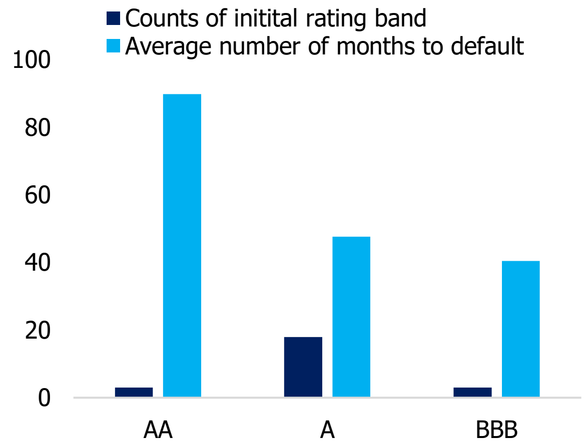
Source: MARC Ratings

Chart 24: Long-term rating accuracy



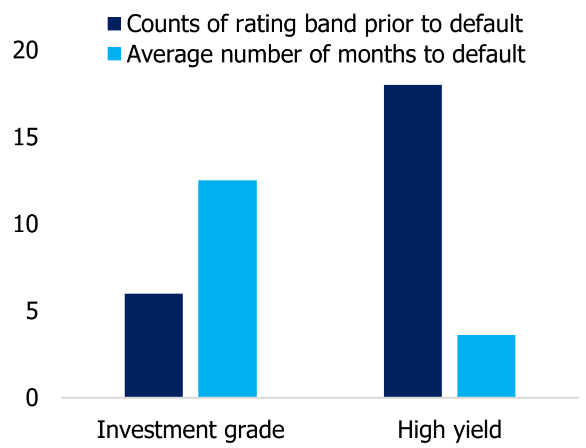
Source: MARC Ratings

Chart 25: Average number of months to default by initial rating band



Source: MARC Ratings

Chart 26: Average number of months to default by rating band prior to default



Source: MARC Ratings

Appendix I: Data and Methodologies

Introduction to MARC Ratings' Corporate Default and Rating Transition Study

This report is the annual update of MARC Ratings' corporate default and ratings transition study. It presents the latest updates on default statistics and the ratings transition experience of corporate bond issuers with long-term local currency ratings from MARC Ratings as at end-2023 and for the historical period since inception in 1998. Similar to the previous studies, this study included implied senior unsecured debt ratings or public information ratings of corporates, financial institutions acting in the capacity of a credit enhancement provider, as well as standalone ratings of underlying issuers with credit enhancement. However, issuers that are domiciled in foreign countries, the structured finance universe, and short-term ratings were excluded.

An entity's credit rating captures its corporate credit risk and relative default probability, and higher credit ratings stability is expected at higher rating bands. Similarly, default rates are expected to be lower for higher-rated debt and should naturally increase as we move down the credit rating scale. Notwithstanding this, an element of statistical bias may occur due to sampling size limitations owing to the small number of issuers in our corporate bond ratings universe. As a result, some of the reported statistics may be inconclusive. Furthermore, ongoing data enhancement efforts will ensure increased transparency and integrity, limiting comparability with earlier default and ratings transition studies. As such, this study is self-contained and supersedes previous studies.

This long-term corporate default and ratings transition study uses MARC Ratings' database of national scale issuer credit ratings, reflecting MARC Ratings' independent opinion of an issuer's ability to meet its debt obligations. The relative likelihood of default is indicated by the rating level assigned to the affected issuers, the rating outlook attached, and the watchlist assigned. MARC Ratings' long-term rating scale has a single C rating level between B and D, compared to global rating agencies which typically have three intermediate categories, i.e. CCC, CC and C. Also, within the three categories, the practice is to append modifiers (+/-) or 1, 2, and 3 to each generic rating.

Continuous data enhancement efforts are carried out to ensure a certain degree of transparency and integrity; however, this may lead to different outcomes from one report to another. This study is self-contained and should supersede previous ones. A major challenge to this study is the extremely small sample size, particularly in high-yield ratings. As a result, some statistics could not be divided for investment-grade and high-yield analysis as the small number of observations would be statistically insignificant.

MARC Ratings assigns ratings based on its assessments of the relative likelihood of default, reflecting a combination of qualitative and quantitative considerations. In other words, the ratings summarise the relative ability of issuers to meet the obligations fully and on a timely basis, both in terms of interest payments and principal repayments. Thus, the ratings should be seen as ordinal credit risk measures rather than predictive indicators of actual, cardinal default rates. In assessing an issuer's credit rating, relevant industry risks are taken into account from both short- and long-term perspectives. Nevertheless, rating movements may also be impacted by other structural developments, which are mostly due to idiosyncratic developments affecting a specific issuer.

Issuers included in this study

This study analyses the rating histories of 256 corporate issuers that were rated by MARC Ratings between 1996 and 2023. MARC Ratings analyses ratings transition and defaults at the issuer level in line with international practice. Each study captures the history of corporate ratings from end-1997 onwards through end of the year indicated for the default study, thus ensuring consistency in the statistical reporting.

To truly reflect an issuer's standalone credit rating, issuing subsidiaries and affiliates were removed where their ratings directly relate to their parent company ratings and are being rated on par with the parent's. Credit enhancements such as bank guarantees, corporate guarantees and financial guarantees have been disregarded when assessing the issuer's standalone credit rating. Only issuers with implicit long-term ratings are included in this study, whereas those with only short-term ratings are not.

Default Definition

Issuers will be rated D upon default. Distressed obligations are typically rated along the continuum of B to C rating categories. In situations where analysis indicates that an instrument is irrevocably impaired where the issuer is not expected to meet payments of interest and/or principal in full in accordance with the terms of the obligation's documentation during the life of the transaction, but where no payment default in accordance with the terms of the documentation is imminent, the obligation may be rated in the B or C categories.

MARC Ratings will assign default ratings where it has reasonably determined that payment has not been made on a material obligation in accordance with the requirements of the obligation's documentation, or where it believes that a default rating consistent with MARC Ratings' published definition of default is the most appropriate rating to assign.

As such, MARC Ratings defines a default as one of the following:

- Failure of an issuer/obligor to make timely payment of principal and/or interest under the contractual terms of the rated financial obligation (first dollar missed payment basis);
- Bankruptcy filings, administration, receivership, liquidation, winding-up or cessation of business of an issuer/obligor; or
- Distressed or other coercive exchange of a rated financial obligation, where creditors were offered securities with diminished structural or economic terms compared with the existing financial obligation of the issuer/obligor.

Default Rate Calculation

The default rate is defined as the number of defaulters among rated corporates in year *t*, expressed as a percentage of the total number of outstanding ratings at the beginning of year *t*. Rating withdrawals are removed from the default rate calculation as corporates who have their ratings withdrawn are no longer at risk of default over the measurement period. Hence, three possible scenarios need to be modelled to predict the default rate under the scope of MARC Ratings' Corporate Default Study: survival to the next time period, rating withdrawal, and defaulted issuer. It is also important to note that this study is conducted based on the actual historical default experience of issuers rated by MARC Ratings. It is important to note that the ratings indicated in this study do not imply a specific probability of default.

Ratings Transition Analysis

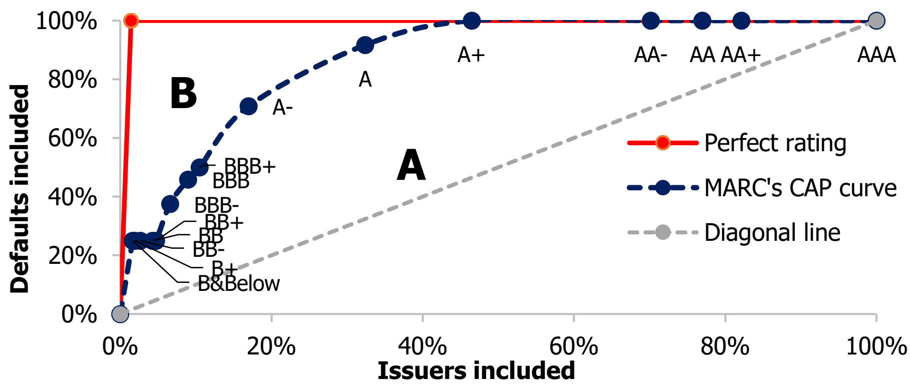
Similar to the methodology used to calculate annual default rates, ratings transition analysis compares issuer ratings at the beginning of the time period (January 1) with ratings at the end of the period (December 31). An issuer that remains rated for more than one year will continue to be captured year-in, year-out as long as it has not been withdrawn from the rating universe.
For example, if MARC Ratings began rating one issuer in 1997 and if its issue had not been withdrawn from the universe until the end of 2023, then this issuer would appear in 26 consecutive 1-year transition tables from 1998 to 2023. If the rating of the issuer was withdrawn in 2023, it would be categorised as NR in the 1-year transition table for 2023 and excluded from the 1-year transition tables from 2024 onwards. This is the same for a default.

CAP and Ratings Accuracy Ratio

MARC Ratings uses CAP to evaluate the ordinal accuracy of its ratings. A greater CAP indicates that the rating system is more discriminatory, indicating that defaulters are generally found in the high-yield category rather than the high-grade category. To construct the CAP graph, rating and default data are arranged from the lowest rating category (rated B & below here because of sample size constraints) to the highest category (rated AAA). The cumulative share of defaulters is then plotted against the cumulative share of issuers by rating until all issuers and defaulters are included to render the accuracy of its rank-ordering visually. Ratings accuracy ratios reported in this study measure MARC Ratings' ability to predict defaults one year ahead.

If the rating methodology does not differentiate the credit risk profile, then the CAP curve would lie along the diagonal line (45-degree straight line). In this case, its accuracy ratio, which summarises the statistical information in the CAP curve, would be 0%. In contrast, if the rating methodology perfectly ranks issuers according to default risk, all default cases would only occur in the worst rating category. In this case, the CAP would capture all areas above the diagonal line and the accuracy ratio would be equal to 100%. We compute the accuracy ratios by dividing area A (rating under analysis) over area A + B (perfect rating model).

Appendix II: CAP curve



Source: MARC Ratings

Appendix III: Published rating migrations in 2023

Issuers	Main sector	Rating action (Outlook)	Rating as of end-2022	Rating as of end-2023	Reason(s) for rating action
Segi Astana Sdn Bhd	Property	Upgraded (Negative)	A+	AA-	The upgrade in the rating is attributed to both the liquidity support from parent company WCT Holdings Berhad and the improved performance of gateway@klia2. However, the negative outlook follows WCT Holdings Berhad's.
Celcom Networks Sdn Bhd	Infrastructure & Utilities	Upgraded (Stable)	AA+	AAA	The rating action follows the relatively smooth merger of Celcom Networks's parent Celcom Berhad (Celcom) and Digi.Com Berhad to form CelcomDigi Berhad, alleviating concerns on integration and execution risks.
Pelabuhan Tanjung Pelepas Sdn Bhd	Infrastructure & Utilities	Upgraded (Stable)	AA-	AA	The rating upgrade for the company is due to increased cash flow from higher handling volume and improved margins. The company has also demonstrated resilience to economic challenges, including the pandemic and geopolitical tensions.
YNH Property Bhd	Property	Downgraded (Negative)	A+	A	The downgrade reflects YNH's weak liquidity position relative to financial obligations, attributed to its weak business profile. The negative outlook highlights challenges in improving business prospects due to limited financial flexibility.
TG Excellence Bhd	Industrial Products	Downgraded (Negative)	AA-	A+	The rating action reflects Top Glove's continued weak financial performance, with no meaningful recovery in sales volume and revenue. The negative outlook highlights industry overcapacity and stiff competition.
Tropicana Corporation Bhd	Trading/ Services	Downgraded (Negative)	A+	A	The rating downgrade for Tropicana Corporation is due to its weak financial performance and slow asset disposals. The negative outlook reflects uncertainties in the timely completion of asset sales and/or refinancing initiatives.
Alpha Circle	Trading/ Services	Downgraded (Negative)	B-	C (NR)	The rating downgrade was due to the deferment of its Senior Sukuk payment of RM11 million caused by continued payment delays, with outstanding receivables of RM52.4 million from the government, caused by operational and pandemic-related disruptions.

Note: Due to programme expiry, Alpha Circle is no longer rated by MARC Ratings as of November 30, 2023.
Source: MARC Ratings

Appendix IV: One-year rating migrations at modifier level

From / To	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	C	NR	Default
AAA	92%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%
AA+	14%	86%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AA	0%	0%	92%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%
AA-	0%	0%	3%	95%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A+	0%	0%	0%	7%	79%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A-	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BBB+	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BBB	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BBB-	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BB+	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
BB-	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B+	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B-	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: MARC Ratings

Appendix V: Summary of annual rating actions

Year	Upgrades	Downgrades	Default	Withdrawn	Migrating	Stable	Margin of downgrades to upgrades
2000	30.0%	0.0%	10.0%	0.0%	40.0%	60.0%	0 : 3
2001	0.0%	0.0%	4.5%	4.5%	4.5%	95.5%	0 : 0
2002	7.3%	7.3%	0.0%	0.0%	14.6%	85.4%	3 : 3
2003	8.2%	4.1%	0.0%	10.2%	12.2%	87.8%	2 : 4
2004	17.9%	0.0%	0.0%	8.9%	17.9%	82.1%	0 : 10
2005	9.1%	2.6%	2.6%	6.5%	14.3%	85.7%	2 : 7
2006	9.0%	11.2%	1.1%	9.0%	21.3%	78.7%	10 : 8
2007	5.2%	11.3%	4.1%	9.3%	20.6%	79.4%	11 : 5
2008	8.2%	7.2%	1.0%	5.2%	16.5%	83.5%	7 : 8
2009	1.0%	5.1%	5.1%	18.4%	11.2%	88.8%	5 : 1
2010	6.0%	12.0%	1.2%	22.9%	19.3%	80.7%	10 : 5
2011	2.6%	10.3%	2.6%	14.1%	15.4%	84.6%	8 : 2
2012	1.3%	12.8%	1.3%	20.5%	15.4%	84.6%	10 : 1
2013	0.0%	7.5%	1.5%	13.4%	9.0%	91.0%	5 : 0
2014	0.0%	6.3%	1.6%	4.8%	7.9%	92.1%	4 : 0
2015	0.0%	9.2%	0.0%	6.2%	9.2%	90.8%	6 : 0
2016	0.0%	6.1%	0.0%	6.1%	6.1%	93.9%	4 : 0
2017	0.0%	1.5%	1.5%	9.0%	3.0%	97.0%	1 : 0
2018	0.0%	1.4%	0.0%	5.8%	1.4%	98.6%	1 : 0
2019	0.0%	4.3%	0.0%	1.4%	4.3%	95.7%	3 : 0
2020	0.0%	4.3%	0.0%	2.9%	4.3%	95.7%	3 : 0
2021	3.6%	4.8%	0.0%	3.6%	8.4%	91.6%	4 : 3
2022	2.2%	2.2%	2.2%	7.9%	6.7%	93.3%	2 : 2
2023	3.3%	4.4%	0.0%	3.3%	7.7%	92.3%	4 : 3
Mean	**4.8%**	**5.7%**	**1.7%**	**7.5%**	**14.1%**	**87.9%**	**6: 5**

Source: MARC Ratings

Appendix VI: Annual corporate downgrade rates by rating band

Year	AAA	AA	A	BBB	BB	B	Investment grade	High yield	All corporate
2000	0.0%	0.0%	0.0%	0.0%	n.a	n.a	0.0%	n.a	0.0%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	n.a	0.0%	0.0%	0.0%
2002	0.0%	16.7%	3.8%	0.0%	100.0%	n.a	5.0%	100.0%	7.3%
2003	0.0%	0.0%	6.5%	0.0%	0.0%	n.a	4.2%	0.0%	4.1%
2004	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2005	0.0%	0.0%	4.0%	0.0%	n.a	0.0%	2.6%	0.0%	2.6%
2006	0.0%	6.3%	11.9%	33.3%	100.0%	0.0%	10.3%	50.0%	11.2%
2007	0.0%	10.0%	13.1%	33.3%	0.0%	n.a	11.7%	0.0%	11.3%
2008	0.0%	0.0%	5.3%	100.0%	0.0%	0.0%	7.5%	0.0%	7.2%
2009	0.0%	3.7%	4.3%	33.3%	25.0%	0.0%	4.3%	16.7%	5.1%
2010	0.0%	12.5%	14.7%	0.0%	33.3%	33.3%	10.4%	33.3%	12.0%
2011	0.0%	13.0%	17.2%	0.0%	0.0%	0.0%	10.8%	0.0%	10.3%
2012	0.0%	9.5%	19.0%	22.2%	33.3%	50.0%	11.0%	40.0%	12.8%
2013	4.5%	4.8%	20.0%	0.0%	0.0%	0.0%	8.1%	0.0%	7.5%
2014	0.0%	3.8%	16.7%	25.0%	0.0%	0.0%	6.9%	0.0%	6.3%
2015	6.3%	3.8%	15.4%	33.3%	0.0%	0.0%	9.8%	0.0%	9.2%
2016	0.0%	3.3%	9.1%	16.7%	33.3%	0.0%	4.8%	25.0%	6.1%
2017	0.0%	0.0%	10.0%	0.0%	0.0%	0.0%	1.6%	0.0%	1.5%
2018	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	25.0%	1.4%
2019	0.0%	7.9%	0.0%	0.0%	0.0%	n.a	4.5%	0.0%	4.3%
2020	0.0%	0.0%	7.7%	66.7%	0.0%	n.a	4.5%	0.0%	4.3%
2021	0.0%	2.0%	7.1%	50.0%	0.0%	n.a	5.0%	0.0%	4.8%
2022	0.0%	1.9%	0.0%	0.0%	25.0%	n.a	1.2%	14.3%	2.2%
2023	0.0%	1.8%	10.5%	0.0%	0.0%	100.0%	3.4%	33.3%	4.4%
Mean	**0.4%**	**4.2%**	**8.2%**	**17.2%**	**15.9%**	**15.6%**	**5.3%**	**14.7%**	**5.7%**

Source: MARC Ratings

MARC

Appendix VII: Annual corporate upgrade rates by rating band

Year	AAA	AA	A	BBB	BB	B	C	Investment grade	High yield	All corporate
2000	0.0%	0.0%	100.0%	66.7%	n.a.	n.a.	n.a.	30.0%	n.a	30.0%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	n.a.	0.0%	0.0%	0.0%
2002	0.0%	0.0%	7.7%	33.3%	0.0%	n.a.	n.a.	7.5%	0.0%	7.3%
2003	0.0%	0.0%	12.9%	0.0%	0.0%	n.a.	n.a.	8.3%	0.0%	8.2%
2004	0.0%	11.1%	23.5%	16.7%	0.0%	0.0%	n.a.	18.5%	0.0%	17.9%
2005	0.0%	7.1%	10.0%	20.0%	n.a.	0.0%	n.a.	9.2%	0.0%	9.1%
2006	0.0%	12.5%	10.2%	0.0%	0.0%	0.0%	n.a.	9.2%	0.0%	9.0%
2007	0.0%	10.0%	4.9%	0.0%	0.0%	0.0%	n.a.	5.3%	0.0%	5.2%
2008	0.0%	10.0%	8.8%	0.0%	0.0%	100.0%	n.a.	7.5%	25.0%	8.2%
2009	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	n.a.	1.1%	0.0%	1.0%
2010	0.0%	12.5%	5.9%	0.0%	0.0%	0.0%	n.a.	6.5%	0.0%	6.0%
2011	0.0%	4.3%	0.0%	25.0%	0.0%	0.0%	n.a.	2.7%	0.0%	2.6%
2012	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	n.a.	1.4%	0.0%	1.3%
2013	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2014	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2015	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2016	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2017	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2018	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2019	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%	0.0%
2021	0.0%	4.1%	7.1%	0.0%	0.0%	n.a.	0.0%	3.8%	0.0%	3.6%
2022	0.0%	1.9%	6.3%	0.0%	0.0%	n.a.	0.0%	2.4%	0.0%	2.2%
2023	0.0%	1.8%	10.5%	0.0%	0.0%	0.0%	n.a.	3.4%	0.0%	3.3%
Mean	**0.0%**	**3.1%**	**8.7%**	**7.2%**	**0.0%**	**6.3%**	**0.0%**	**4.9%**	**1.1%**	**4.8%**

Source: MARC Ratings

Appendix VIII: Annual corporate default rates by rating band

Year	AAA	AA	A	BBB	BB	B	C	Investment grade	High yield	All corporate
2000	0.0%	0.0%	0.0%	33.3%	n.a.	n.a.	n.a.	10.0%	n.a.	10.0%
2001	0.0%	0.0%	0.0%	50.0%	0.0%	n.a.	n.a.	4.8%	0.0%	4.5%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	n.a.	0.0%	0.0%	0.0%
2003	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	n.a.	0.0%	0.0%	0.0%
2004	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2005	0.0%	0.0%	4.0%	0.0%	n.a.	0.0%	n.a.	2.6%	0.0%	2.6%
2006	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	n.a.	1.1%	0.0%	1.1%
2007	0.0%	0.0%	3.3%	33.3%	0.0%	50.0%	n.a.	3.2%	33.3%	4.1%
2008	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	n.a.	1.1%	0.0%	1.0%
2009	0.0%	0.0%	6.4%	33.3%	0.0%	50.0%	n.a.	4.3%	16.7%	5.1%
2010	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	n.a.	1.3%	0.0%	1.2%
2011	0.0%	0.0%	3.4%	0.0%	0.0%	33.3%	n.a.	1.4%	25.0%	2.6%
2012	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	n.a.	1.4%	0.0%	1.3%
2013	0.0%	0.0%	6.7%	0.0%	0.0%	0.0%	n.a.	1.6%	0.0%	1.5%
2014	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	20.0%	1.6%
2015	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2016	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2017	0.0%	0.0%	0.0%	14.3%	0.0%	0.0%	n.a.	1.6%	0.0%	1.5%
2018	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
2019	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%	0.0%
2020	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%	0.0%
2021	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%	0.0%
2022	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	66.7%	0.0%	28.6%	2.2%
2023	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a.	0.0%	0.0%	0.0%
Mean	**0.0%**	**0.0%**	**1.3%**	**7.3%**	**0.0%**	**8.3%**	**33.3%**	**1.4%**	**5.4%**	**1.7%**

Source: MARC Ratings

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