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2022 Annual Corporate Default and Ratings Transition Study

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Executive Summary

This report presents default statistics and the ratings transition experience of corporate bond issuers with long-term local currency ratings from MARC Ratings during the 1998–2022 period. The key findings of the study include the following:

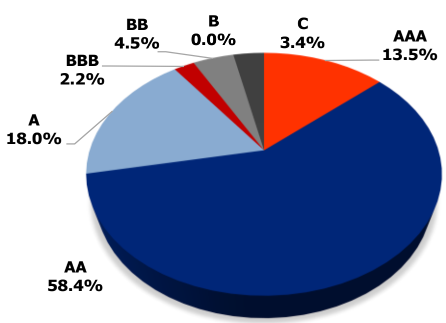
- ***There were two downgrades and two upgrades in 2022.*** When compared to 2021's four downgrades and three upgrades, it suggests improving credit quality given the better downgrade-to-upgrade ratio of 1.0x versus 1.3x previously. With this, the annual corporate downgrade rate came in at 2.2%, lower than 4.8% in 2021 and the long-term average of 5.7%. The annual corporate upgrade rate also dropped to 2.2% versus 3.6% in the preceding year and the long-term average of 4.9%.

- ***Two defaults were recorded in 2022, the first time in four years.*** As a result, the annual corporate default rate came in at 2.2%, slightly above the long-term average of 1.8%. We do not anticipate a sharp spike in default rates going forward given that very few issuers are rated at the lower end of the rating spectrum.

- ***Ratings stability rate in 2022 edged higher to 93.3% (2021: 91.6%).*** This brought the long-term average ratings stability rate modestly higher to 87.5% (2000–2021 average: 87.3%). Ratings stability has been robust primarily due to the dominance of investment-grade issuers in the MARC Ratings' corporate portfolio rating universe with stronger resilience to crises.

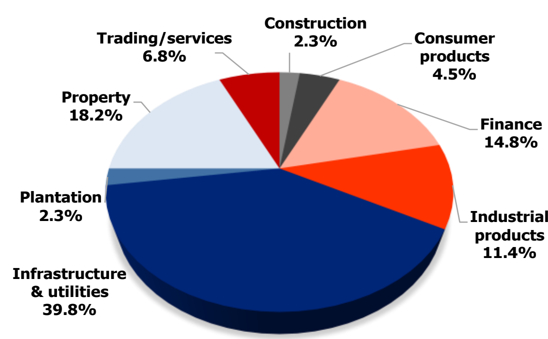
- ***Ratings accuracy improved in 2022 as all defaults came from the lowest non-default rating category of C.*** Over the long term (1998–2022), the ratings accuracy ratio came in at 73.6%, marginally higher than the 71.0% recorded in the 1998–2021 period. This implies that MARC Ratings' corporate portfolio ratings methodology has been consistently effective in rank ordering credit risk in predicting defaults.

Figure 1: Distribution of issuers in MARC Ratings' universe by rating band, 2022



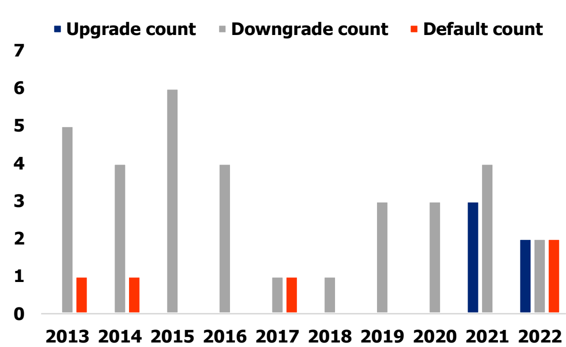
Source: MARC Ratings

Figure 2: Distribution of issuers in MARC Ratings' universe by sector, 2022



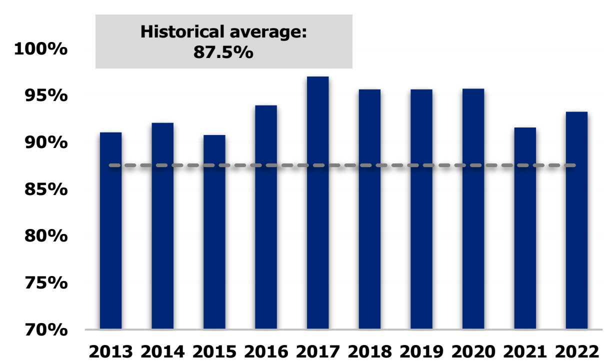
Source: MARC Ratings

Figure 3: Historical rating migration trend



Source: MARC Ratings

Figure 4: Historical ratings stability rate



Source: MARC Ratings

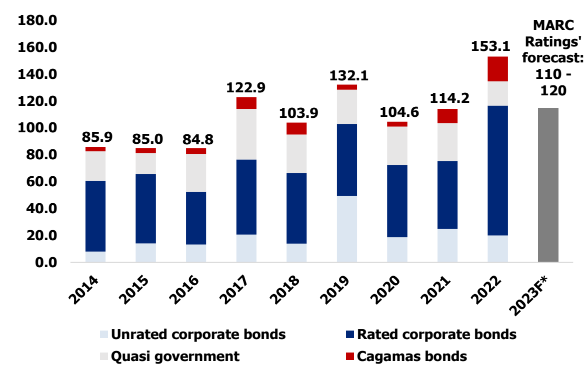
Ringgit Corporate Bond Market

Despite rising yields, local corporate bond issuance activities remained vibrant. In 2022, gross issuance of long-term bonds advanced by 34.0% y-o-y to a record high of RM153.0 billion (2021: RM114.2 billion). Outsized rated corporate bond issuances (2022: RM115.1 billion; 2021: RM61.2 billion) had helped offset declines in issuances in the unrated segment, namely unrated corporate bonds (2022: RM20.0 billion; 2021: RM24.8 billion) and bonds from quasi-government–related entities (2022: RM18.0 billion; 2021: RM28.2 billion).

Highly rated issuers continued to dominate fundraising activities with AAA and AA rated bonds accounting for circa 70.2% of total bonds issued. Notably, the issuance of AAA-rated bonds surged to a fresh high of RM75.7 billion in 2022 from RM34.3 billion in 2021. By sector, financial services and infrastructure & utilities led the charge with issuances of RM57.5 billion (2021: RM48.4 billion) and RM54.6 billion (2021: RM15.0 billion).

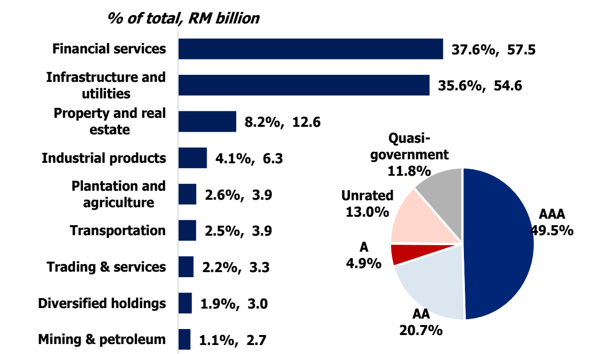
We expect the gross issuance of local long-term corporate bonds in 2023 to normalise to between RM110.0 billion and RM120.0 billion. However, given expected moderating economic growth and investment, as well as tighter financial conditions with at least one additional overnight policy rate (OPR) hike likely in 1H2023, there are downside risks to our projection. As for issuances from the quasi-government segment, we expect them to remain stagnant given less leeway for the government to guarantee future debt amid strained public finances.

Figure 5: Corporate bond issuance trends (RM billion)



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

Figure 6: Corporate bond issuances in 2022: by industry and rating distribution



Sources: BPAM, MARC Ratings

Moving forward, global monetary policy direction, inflation and concerns over a potential economic downturn will continue to shape the yield curve. Bond yields should peak soon as the market prices in the expectation of monetary policy loosening by major central banks. Furthermore, we believe Malaysia's inflation has seen its peak, at least for now, as cost pressures ease on the back of abating supply chain bottlenecks. The lagged impact of Bank Negara Malaysia's interest rate hikes, which should become more apparent in 2H2023, could add to further deceleration in inflation. We envisage inflation pace in 2023 moderating to circa 2.8% (2022: 3.3%), which should be supportive of bonds.

We expect the credit spread to widen amid a slowing economy. Malaysia's gross domestic product (GDP) growth pace will likely come in at 4.2% (2022: 8.7%) on the back of diminishing base effects, higher cost of living, waning pent-up demand and tighter financial conditions. While a severe recession in 2023 is unlikely, we see the growth environment becoming more challenging if geopolitical tensions worsen further. A ramp-up in US rhetoric on China in the run-up to the US presidential election could put relations on a more precarious path. The Ukraine-Russia conflict could also worsen. These developments, if they materialise, will drive financial market volatility further. Amid this likely backdrop, we expect corporate bond yields to fall by a smaller magnitude than those of safe-haven government bonds.

Figure 7: AAA corporate bond yields

AAA (%)	2021	2022	Y-o-y change
3-year	3.18	4.30	112 bps
5-year	3.57	4.50	93 bps
7-year	3.92	4.64	72 bps
10-year	4.08	4.79	71 bps
15-year	4.42	5.03	61 bps

Sources: BNM, MARC Ratings

Figure 8: AA corporate bonds yields

AA (%)	2021	2022	Y-o-y change
3-year	3.44	4.53	109 bps
5-year	3.86	4.71	85 bps
7-year	4.21	4.94	73 bps
10-year	4.39	5.11	72 bps
15-year	4.77	5.35	58 bps

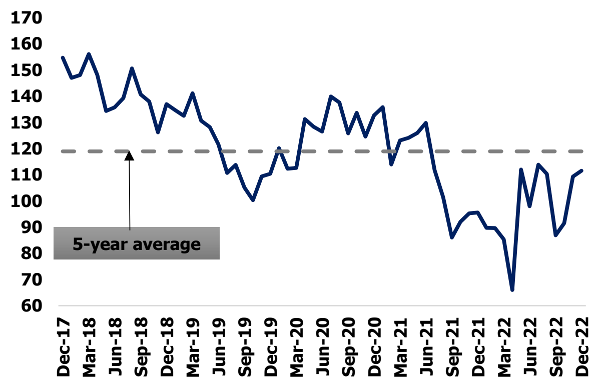
Sources: BNM, MARC Ratings

Figure 9: A corporate bond yields

A (%)	2021	2022	Y-o-y change
3-year	4.51	5.44	93 bps
5-year	4.89	5.70	81 bps
7-year	5.24	5.94	70 bps
10-year	5.69	6.16	47 bps
15-year	6.23	6.60	36 bps

Sources: BNM, MARC Ratings

Figure 10: 5y blended credit spread (bps)



Sources: BNM, MARC Ratings

Introduction to MARC Ratings' Corporate Default and Ratings Transition Study

This report is the 18th 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-2022 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 remain excluded (See Appendix I for further details of the methodology).

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.

At the beginning of 2022, MARC Ratings had 89 corporate bond issuers with long-term local currency ratings. Most issuers were concentrated in the investment-grade rating category, with 80 rated A or above, while the remaining nine were categorised as high-yield issuers or rated BBB or below.

Figure 11: Distribution of outstanding issuers by rating band in MARC Ratings' corporate portfolio

Year	AAA	AA	A	BBB	BB	B	C	Investment grade	High yield
1998	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
1999	33.3%	16.7%	16.7%	33.3%	0.0%	0.0%	0.0%	66.7%	33.3%
2000	30.0%	30.0%	10.0%	30.0%	0.0%	0.0%	0.0%	70.0%	30.0%
2001	18.2%	18.2%	50.0%	9.1%	4.5%	0.0%	0.0%	86.4%	13.6%
2002	12.2%	14.6%	63.4%	7.3%	2.4%	0.0%	0.0%	90.2%	9.8%
2003	12.2%	16.3%	63.3%	6.1%	2.0%	0.0%	0.0%	91.8%	8.2%
2004	8.9%	16.1%	60.7%	10.7%	1.8%	1.8%	0.0%	85.7%	14.3%
2005	9.1%	18.2%	64.9%	6.5%	0.0%	1.3%	0.0%	92.2%	7.8%
2006	10.1%	18.0%	66.3%	3.4%	1.1%	1.1%	0.0%	94.4%	5.6%
2007	10.3%	20.6%	62.9%	3.1%	1.0%	2.1%	0.0%	93.8%	6.2%
2008	12.4%	20.6%	58.8%	4.1%	3.1%	1.0%	0.0%	91.8%	8.2%
2009	15.3%	27.6%	48.0%	3.1%	4.1%	2.0%	0.0%	90.8%	9.2%
2010	19.3%	28.9%	41.0%	3.6%	3.6%	3.6%	0.0%	89.2%	10.8%
2011	23.1%	29.5%	37.2%	5.1%	1.3%	3.8%	0.0%	89.7%	10.3%
2012	28.2%	26.9%	26.9%	11.5%	3.8%	2.6%	0.0%	82.1%	17.9%
2013	32.8%	31.3%	22.4%	6.0%	3.0%	4.5%	0.0%	86.6%	13.4%
2014	25.4%	41.3%	19.0%	6.3%	4.8%	1.6%	1.6%	85.7%	14.3%
2015	24.6%	40.0%	20.0%	9.2%	4.6%	1.5%	0.0%	84.6%	15.4%
2016	22.7%	45.5%	16.7%	9.1%	4.5%	1.5%	0.0%	84.8%	15.2%
2017	23.9%	44.8%	14.9%	10.4%	3.0%	3.0%	0.0%	83.6%	16.4%
2018	21.7%	53.6%	13.0%	5.8%	2.9%	2.9%	0.0%	88.4%	11.6%
2019	21.7%	55.1%	14.5%	4.3%	2.9%	0.0%	1.4%	91.3%	8.7%
2020	20.0%	52.9%	18.6%	4.3%	2.9%	0.0%	1.4%	91.4%	8.6%
2021	15.7%	59.0%	16.9%	4.8%	2.4%	0.0%	1.2%	91.6%	8.4%
2022	13.5%	58.4%	18.0%	2.2%	4.5%	0.0%	3.4%	89.9%	10.1%

Source: MARC Ratings

Summary of 1998-2022 Experience

Figure 12: Summary of annual rating actions

Year	Upgrades	Downgrades	Default	Withdrawn	Migrating	Stable	Margin of downgrade to upgrade
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 : 11
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%	2.9%	5.8%	4.3%	95.7%	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
Arithmetic mean	**4.9%**	**5.7%**	**1.9%**	**8.3%**	**12.5%**	**87.5%**	**n.a.**

Source: MARC Ratings

Ratings stability edged higher

As affirmations dominated rating actions in MARC Ratings' corporate portfolio in 2022, the ratings stability rate edged higher to 93.3% (2021: 91.6%). This brought the long-term average rating stability rate modestly higher to 87.5% (2000-2021 average: 87.3%). It is worth noting that MARC Ratings' corporate portfolio ratings stability rate has consistently clocked above 90.0% since 2013. This is due to the dominance of investment-grade issuers with inherently higher credit strength, as opposed to high-yield issuers that suffer from rating volatility.

Downgrade-to-upgrade ratio has declined

There were two downgrades and two upgrades in MARC Ratings' corporate portfolio in 2022. Relative to 2021's downgrade-to-upgrade ratio of 1.3x when downgrades exceeded upgrades by four to three, 2022's downgrade-to-upgrade ratio of 1.0x suggests improving credit quality.

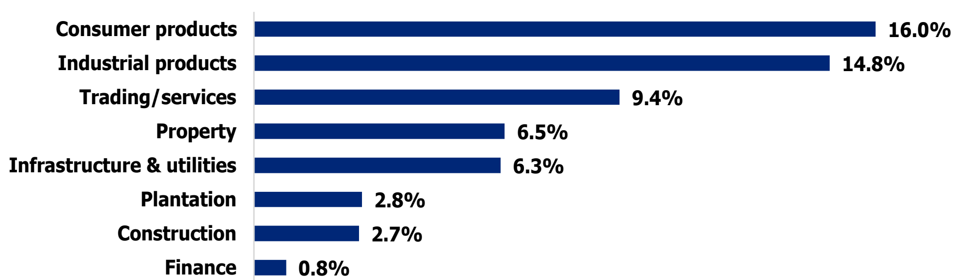
With this, 2022's annual corporate downgrade rate fell to a four-year low of 2.2% (2021: 4.8%), well below the long-term average of 5.7%. It is not surprising that given the fewer downgrades, there were no severe negative rating actions. One high-yield issuer saw its rating fall three notches while the other, an investment-grade issuer, saw its rating fall by a single notch.

Figure 13: 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%	0.0%	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	5.4%	25.0%	7.3%
2003	0.0%	0.0%	6.5%	0.0%	0.0%	n.a	4.4%	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%	2.8%	0.0%	2.6%
2006	0.0%	6.3%	11.9%	33.3%	100.0%	0.0%	9.5%	40.0%	11.2%
2007	0.0%	10.0%	13.1%	33.3%	0.0%	0.0%	11.0%	16.7%	11.3%
2008	0.0%	0.0%	5.3%	100.0%	0.0%	0.0%	3.4%	50.0%	7.2%
2009	0.0%	3.7%	4.3%	33.3%	25.0%	0.0%	3.4%	22.2%	5.1%
2010	0.0%	12.5%	14.7%	0.0%	33.3%	33.3%	10.8%	22.2%	12.0%
2011	0.0%	13.0%	17.2%	0.0%	0.0%	0.0%	11.4%	0.0%	10.3%
2012	0.0%	9.5%	19.0%	22.2%	33.3%	50.0%	9.4%	28.6%	12.8%
2013	4.5%	4.8%	20.0%	0.0%	0.0%	0.0%	8.6%	0.0%	7.5%
2014	0.0%	3.8%	16.7%	25.0%	0.0%	0.0%	5.6%	11.1%	6.3%
2015	6.3%	3.8%	15.4%	33.3%	0.0%	0.0%	7.3%	20.0%	9.2%
2016	0.0%	3.3%	9.1%	16.7%	33.3%	0.0%	3.6%	20.0%	6.1%
2017	0.0%	0.0%	10.0%	0.0%	0.0%	0.0%	1.8%	0.0%	1.5%
2018	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	12.5%	1.4%
2019	0.0%	7.9%	0.0%	0.0%	0.0%	n.a	4.8%	0.0%	4.3%
2020	0.0%	0.0%	15.4%	33.3%	0.0%	n.a	3.1%	16.7%	4.3%
2021	0.0%	2.0%	7.1%	50.0%	0.0%	n.a	2.6%	28.6%	4.8%
2022	0.0%	1.9%	0.0%	0.0%	25.0%	n.a	1.3%	11.1%	2.2%
Arithmetic Mean	0.5%	4.3%	8.4%	16.5%	16.7%	8.9%	4.8%	14.1%	5.7%
Standard Deviation	1.6%	5.0%	7.0%	24.5%	30.6%	18.8%	3.8%	14.3%	4.0%
Coefficient of Variation	335.8%	116.0%	82.7%	147.8%	183.7%	211.0%	78.9%	101.6%	70.4%

Source: MARC Ratings

Figure 14: Corporate downgrade rates by industry: long-term average



Source: MARC Ratings

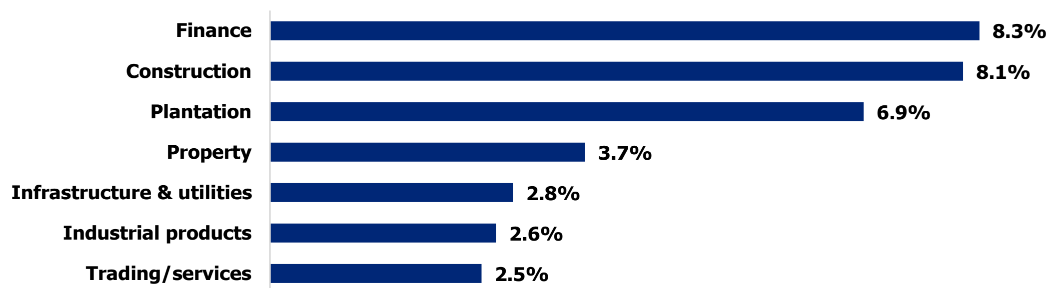
The upgrade rate also dropped to 2.2% versus 3.6% in the preceding year. It also remained lower than the long-term average of 4.9%. The two upgraded issuers — one from infrastructure & utilities and the other from plantation — were rated at the investment grade level at the beginning of the year.

Figure 15: Annual corporate upgrade rates by rating band

Year	AA	A	BBB	BB	B	C	Investment grade	High yield	All corporate
2000	0.0%	100.0%	66.7%	n.a.	n.a.	n.a.	14.3%	66.7%	30.0%
2001	0.0%	0.0%	0.0%	0.0%	n.a.	n.a.	0.0%	0.0%	0.0%
2002	0.0%	7.7%	33.3%	0.0%	n.a.	n.a.	5.4%	25.0%	7.3%
2003	0.0%	12.9%	0.0%	0.0%	n.a.	n.a.	8.9%	0.0%	8.2%
2004	11.1%	23.5%	16.7%	0.0%	0.0%	n.a.	18.8%	12.5%	17.9%
2005	7.1%	10.0%	20.0%	n.a.	0.0%	n.a.	8.5%	16.7%	9.1%
2006	12.5%	10.2%	0.0%	0.0%	0.0%	n.a.	9.5%	0.0%	9.0%
2007	10.0%	4.9%	0.0%	0.0%	0.0%	n.a.	5.5%	0.0%	5.2%
2008	10.0%	8.8%	0.0%	0.0%	100.0%	n.a.	7.9%	12.5%	8.2%
2009	0.0%	2.1%	0.0%	0.0%	0.0%	n.a.	1.1%	0.0%	1.0%
2010	12.5%	5.9%	0.0%	0.0%	0.0%	n.a.	6.8%	0.0%	6.0%
2011	4.3%	0.0%	25.0%	0.0%	0.0%	n.a.	1.4%	12.5%	2.6%
2012	0.0%	0.0%	11.1%	0.0%	0.0%	n.a.	0.0%	7.1%	1.3%
2013	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%
2015	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%	n.a.	0.0%	0.0%	0.0%
2017	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%	n.a.	0.0%	0.0%	0.0%
2019	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%	n.a.	0.0%	0.0%	0.0%	0.0%
2021	4.1%	7.1%	0.0%	0.0%	n.a.	0.0%	3.9%	0.0%	3.6%
2022	1.9%	6.3%	0.0%	0.0%	n.a.	0.0%	2.5%	0.0%	2.2%
Arithmetic Mean	3.2%	8.7%	7.5%	0.0%	6.7%	0.0%	4.1%	6.7%	4.9%
Standard Deviation	4.7%	20.8%	16.1%	0.0%	25.8%	0.0%	5.2%	14.8%	7.1%
Coefficient of Variation	147.6%	239.5%	214.0%	n.a.	387.3%	n.a.	127.3%	223.2%	147.1%

Source: MARC Ratings

Figure 16: Corporate upgrade rates by industry: long-term average



Source: MARC Ratings

Two defaults in 2022

In 2022, MARC Ratings' corporate portfolio recorded two rating defaults, the first time in four years. As a result, the annual corporate default rate came in at 2.2%, slightly above the long-term average of 1.8%. The two defaulting issuers had been rated C — i.e., at the lowest non-default high-yield category — at the start of 2022. Their subsequent defaults unsurprisingly pushed the high-yield category's long-term average default rate higher to 8.0% (2000-2021 average: 7.4%). Meanwhile, the long-term average default rate for the investment-grade category remained unchanged at 0.7%.

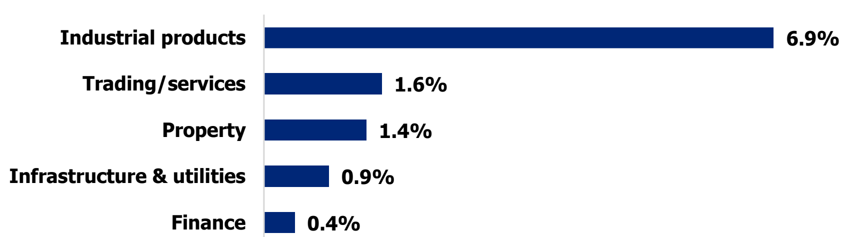
One defaulted issuer is a toll road operator unable to meet its project milestone because of severely strained liquidity. Despite two extensions, it had missed principal and profit payments on its outstanding sukuk. The other issuer, mainly involved in the oil and gas industry, missed the coupon obligation on the outstanding USD sukuk issued by a wholly-owned subsidiary. This had triggered a cross-default clause in its IMTN/ICP programmes.

Figure 17: 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.	0.0%	33.3%	10.0%
2001	0.0%	0.0%	0.0%	50.0%	0.0%	n.a.	n.a.	0.0%	33.3%	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.	2.8%	0.0%	2.6%
2006	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	n.a.	1.2%	0.0%	1.1%
2007	0.0%	0.0%	3.3%	33.3%	0.0%	50.0%	n.a.	2.2%	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.	3.4%	22.2%	5.1%
2010	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	n.a.	1.4%	0.0%	1.2%
2011	0.0%	0.0%	3.4%	0.0%	0.0%	33.3%	n.a.	1.4%	12.5%	2.6%
2012	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	n.a.	0.0%	7.1%	1.3%
2013	0.0%	0.0%	6.7%	0.0%	0.0%	0.0%	n.a.	1.7%	0.0%	1.5%
2014	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	11.1%	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.	0.0%	9.1%	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%	22.2%	2.2%
Arithmetic mean	0.0%	0.0%	1.3%	7.6%	0.0%	8.9%	33.3%	0.7%	8.0%	1.8%
Standard deviation	0.0%	0.0%	2.1%	14.8%	0.0%	18.8%	47.1%	1.0%	12.2%	2.4%
Coefficient of variation	n.a.	n.a.	161.6%	194.2%	n.a.	211.0%	141.4%	156.7%	151.9%	134.9%

Source: MARC Ratings

Figure 18: Corporate default rates by industry: long-term average



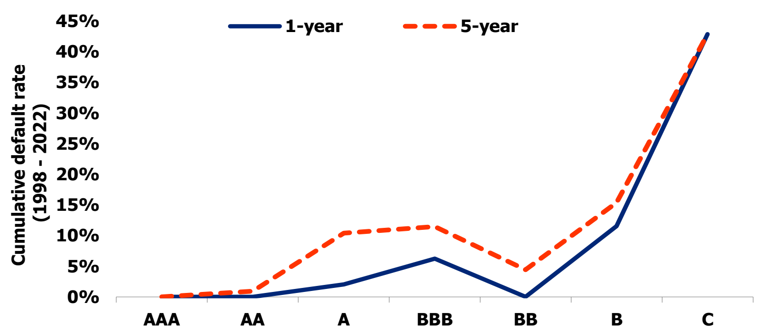
Source: MARC Ratings

Figure 19: Cumulative default rates by rating band: 1998–2022

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%	0.4%	0.9%	1.5%	1.8%	2.0%	2.2%	2.4%
A	2.0%	4.6%	7.3%	9.0%	10.4%	11.1%	11.4%	11.6%	11.6%	11.6%
BBB	6.3%	9.4%	9.4%	10.4%	11.5%	13.5%	14.6%	14.6%	14.6%	14.6%
BB	0.0%	2.2%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
B	11.5%	15.4%	15.4%	15.4%	15.4%	15.4%	15.4%	15.4%	15.4%	15.4%
C	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%	42.9%
Investment grade	0.8%	1.9%	3.0%	3.9%	4.7%	5.1%	5.4%	5.6%	5.6%	5.7%
High yield	6.9%	9.8%	10.3%	10.9%	11.5%	12.6%	13.2%	13.2%	13.2%	13.2%
All corporate	1.5%	2.8%	3.8%	4.6%	5.4%	6.0%	6.3%	6.4%	6.5%	6.5%

Source: MARC Ratings

Figure 20: Effectiveness of MARC Ratings' corporate ratings as default predictor: 1998–2022



Source: MARC Ratings

Figure 21: 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 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 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 of the methodology).

Over the long term (1998–2022), 94.1% of MARC Ratings' AAA-rated credits maintained their ratings at the end of one year, whereas the comparable share for A-rated credits was only 79.4% (see Figure 22). This is not surprising as rating changes tend to be lower in higher ratings than lower ratings.

A similar relationship holds even after adjusting for withdrawn issuers (see Figure 23). Ratings stability rates for the AAA, AA and A bands stood at 99.6%, 95.7% and 89.3%, a reflection of the strong positive relationship between the ratings of investment-grade credits and long-run ratings stability.

However, the relatively small sample size in the high-yield rating category has contributed to counter-intuitive ratings stability measures, with no specific correlation between ratings stability and credit rating. The ratings stability ratios for BBB, BB and B came in at 77.6%, 84.2% and 81.0%.

Figure 22: One-year cumulative ratings transition matrix: 1998–2022

From / To	AAA	AA	A	BBB	BB	B	C	NR	Default
AAA	**94.1%**	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	5.5%	0.0%
AA	0.6%	**90.4%**	3.1%	0.2%	0.2%	0.0%	0.0%	5.5%	0.0%
A	0.0%	2.7%	**79.4%**	4.1%	0.3%	0.2%	0.2%	11.1%	2.0%
BBB	0.0%	0.0%	4.2%	**61.5%**	5.2%	1.0%	1.0%	20.8%	6.3%
BB	0.0%	0.0%	0.0%	0.0%	**71.1%**	13.3%	0.0%	15.6%	0.0%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**65.4%**	3.8%	19.2%	11.5%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**42.9%**	14.3%	42.9%

**The abbreviation 'NR' indicates withdrawn ratings*
Source: MARC Ratings

Figure 23: One-year cumulative ratings transition matrix: 1998–2022 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	**99.6%**	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	0.6%	**95.7%**	3.3%	0.2%	0.2%	0.0%	0.0%	0.0%
A	0.0%	3.1%	**89.3%**	4.6%	0.4%	0.2%	0.2%	2.3%
BBB	0.0%	0.0%	5.3%	**77.6%**	6.6%	1.3%	1.3%	7.9%
BB	0.0%	0.0%	0.0%	0.0%	**84.2%**	15.8%	0.0%	0.0%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**81.0%**	4.8%	14.3%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**50.0%**	50.0%

Source: MARC Ratings

Figure 24: Two-year cumulative ratings transition matrix: 1998–2022 (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	1.1%	**91.7%**	6.2%	0.5%	0.4%	0.0%	0.0%	0.1%
A	0.0%	5.7%	**80.0%**	7.7%	1.0%	0.4%	0.3%	4.8%
BBB	0.0%	0.2%	8.8%	**60.5%**	10.7%	3.1%	1.8%	15.0%
BB	0.0%	0.0%	0.0%	0.0%	**70.9%**	26.1%	0.8%	2.3%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**65.5%**	6.2%	28.2%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**25.0%**	75.0%

Source: MARC Ratings

Figure 25: Three-year cumulative ratings transition matrix: 1998–2022 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	**98.9%**	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	1.7%	**87.9%**	8.6%	0.8%	0.6%	0.1%	0.0%	0.3%
A	0.1%	7.9%	**72.0%**	9.7%	1.6%	0.8%	0.4%	7.5%
BBB	0.0%	0.4%	11.0%	**47.4%**	13.0%	5.0%	1.8%	21.3%
BB	0.0%	0.0%	0.0%	0.0%	**59.7%**	32.3%	1.6%	6.4%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**53.1%**	6.2%	40.7%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**12.5%**	87.5%

Source: MARC Ratings

Figure 26: Four-year cumulative ratings transition matrix: 1998–2022 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	**98.6%**	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	2.2%	**84.4%**	10.6%	1.2%	0.7%	0.2%	0.0%	0.6%
A	0.1%	9.7%	**65.1%**	10.8%	2.3%	1.1%	0.5%	10.3%
BBB	0.0%	0.7%	12.4%	**37.3%**	14.1%	6.8%	1.8%	26.9%
BB	0.0%	0.0%	0.0%	0.0%	**50.3%**	35.6%	2.3%	11.8%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**42.9%**	5.6%	51.4%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**6.3%**	93.8%

Source: MARC Ratings

Figure 27: Five-year cumulative ratings transition matrix: 1998–2022 (NR adjusted)

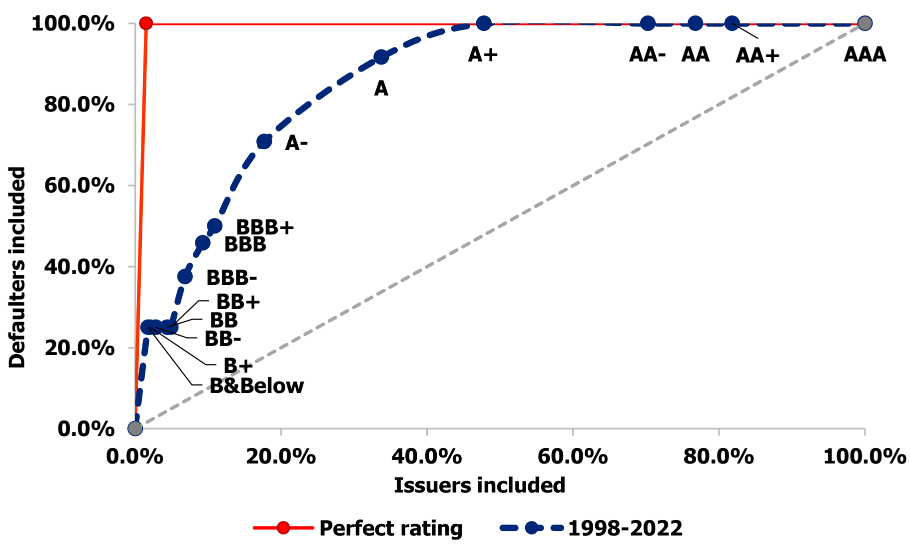
From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	**98.2%**	1.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	2.7%	**81.1%**	12.3%	1.6%	0.9%	0.3%	0.1%	1.0%
A	0.2%	11.3%	**59.0%**	11.4%	2.9%	1.6%	0.6%	13.0%
BBB	0.0%	1.1%	13.0%	**29.5%**	14.4%	8.2%	1.7%	32.0%
BB	0.0%	0.0%	0.0%	0.0%	**42.3%**	36.7%	2.9%	18.0%
B	0.0%	0.0%	0.0%	0.0%	0.0%	**34.8%**	4.9%	60.4%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**3.1%**	96.9%

Source: MARC Ratings

Cumulative Accuracy Profile (CAP) and Ratings Accuracy

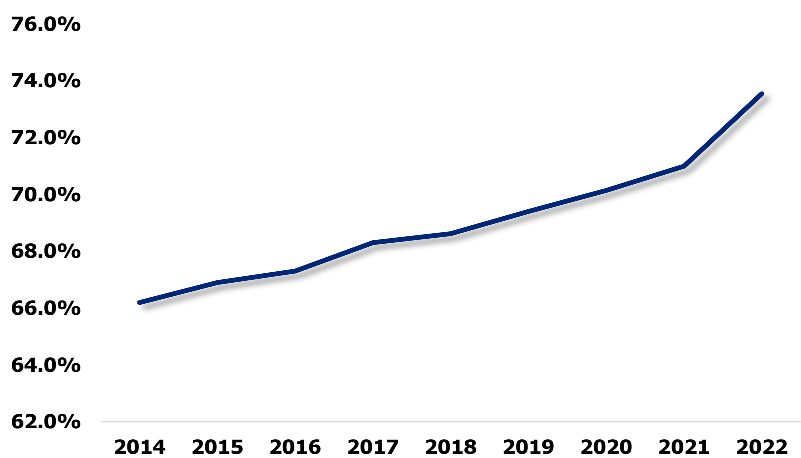
Based on the CAP approach, MARC Ratings' corporate portfolio ratings have been consistently effective in rank ordering credit risk in predicting defaults. This is not surprising given the absence of severe negative rating actions or rating cliffs. For the 1998-2022 period, MARC Ratings' one-year ratings accuracy ratio stood at 73.6%, marginally higher than the 71.0% recorded for the 1998-2021 period. Meanwhile, its one-year ratings accuracy ratio over five years through 2022 rose to 98.4% from 79.6% in 2017-2021 period. The significant improvement was due to the fact that the two defaulters in 2022 started the year with the lowest non-default rating category of C.

Figure 28: One-year CAP curve: 1998–2022



Source: MARC Ratings

Figure 29: Long-term one-year ratings accuracy ratio



Source: MARC Ratings

Path to Default from Original Rating and Last Rating

Initial ratings of issuers negatively correlate with their time to default. In other words, the average time to default for issuers rated initially as investment-grade is longer compared to that of issuers rated initially as high-yield.

Over the 2000 to 2022 period, the average time to default for issuers rated initially as investment-grade was 4.5 years (median: 3.8 years). Defaulters rated initially as high-yield, on the other hand, took only 3.4 years (median: 1.5 years). For all defaulters, they averaged 4.3 years (median: 3.5 years).

As for the average time it took to default from their last non-default rating, investment-grade issuers took an average of 1.8 years while high-yield issuers took 0.4 years. This indicates that most defaulters — prior to their defaulting — had already been downgraded to the high-yield category.

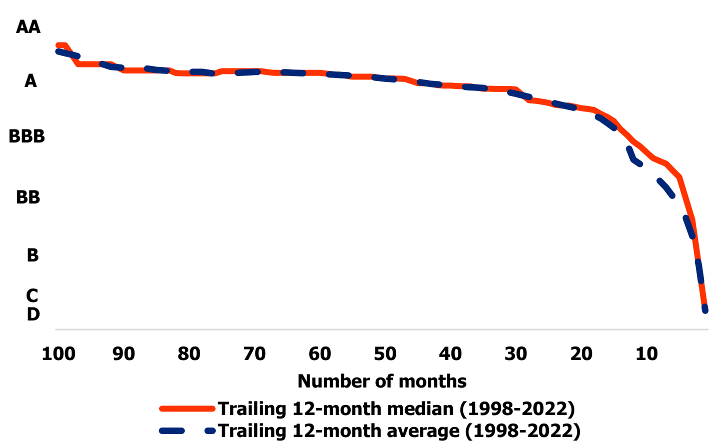
Figure 30: Average time to default and default rating path (number of months)

Original band	Defaulted issuers	Average months from original rating	Median months from original rating
AAA	0	n.a.	n.a.
AA	3	90	78
A	18	48	40
BBB	3	40	18
BB	0	n.a.	n.a.
B	0	n.a.	n.a.
C	0	n.a.	n.a.
Investment grade	**21**	**54**	**46**
High yield	**3**	**40**	**18**
All corporate	**24**	**52**	**42**

Band prior to default	Defaulted issuers	Average months from last rating	Median months from last rating
AAA	0	n.a.	n.a.
AA	0	n.a.	n.a.
A	2	22	22
BBB	4	10	10
BB	6	1	1
B	2	16	16
C	10	3	1
Investment grade	**2**	**22**	**22**
High yield	**22**	**5**	**4**
All corporate	**24**	**6**	**6**

Source: MARC Ratings

Figure 31: Number of months prior to default



Source: MARC Ratings

Ratings Support from Strong Buffers

We foresee Malaysia's GDP growth pace in 2023 coming in at 4.2% (2022: 8.7%) on the back of waning post-COVID-19 pandemic recovery, high inflation, and tighter financial conditions. If geopolitical tensions worsen further, the growth environment could become even more challenging. A recession is, however, unlikely especially given China's reopening and still robust crude oil prices.

Against this backdrop, we envisage corporates in MARC Ratings' rating universe continuing predominantly on stable ratings trajectories given the high concentration of investment-grade issuers. While the balance of risks remains tilted to the downside, these issuers enjoy sufficiently strong buffers against shocks that include pressure on cash flow due to slower growth, protracted cost pressure, and tighter financing conditions.

Appendix I: Data and Methodologies

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.

Issuers included in this study

This study analyses the rating histories of 251 corporate issuers that were rated by MARC Ratings between 1996 and 2022. To be clear, 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 December 1997 onwards through December 31 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 defaultersamong 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.

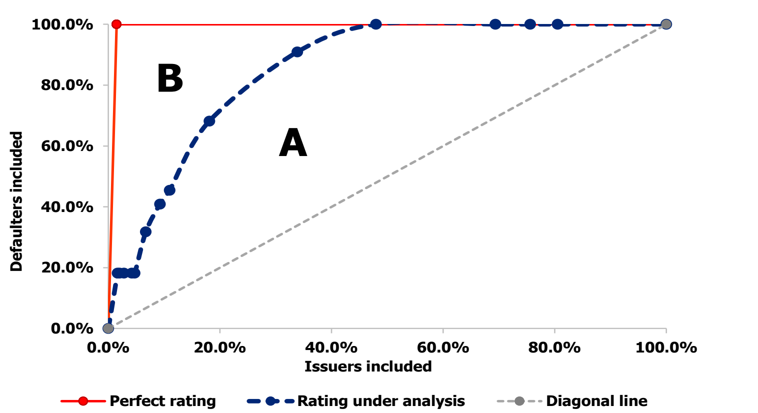
For example, if MARC Ratings began rating one issuer in 1997 and if its issue had not been withdrawn from the universe until the end of 2021, then this issuer would appear in 24 consecutive 1-year transition tables from 1998 to 2022. If the rating of the issuer was withdrawn in 2022, it would be categorised as NR in the 1-year transition table for 2022 and excluded from the 1-year transition tables from 2023 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).

Figure 32: CAP curve



Source: MARC Ratings

Appendix II: Published rating migrations in 2022

Issuers	Main sector	Rating action	Rating as of end-2021	Rating as of end-2022	Reason(s) for rating action
MEX II Sdn Bhd	Infrastructure & Utilities	Default	C	D	The rating action follows a non-payment on the principal and profit totalling RM107.8 million on the outstanding sukuk of RM1.3 billion on due date. The non-payment is after two previous extensions granted by sukukholders in the past.
Serba Dinamik Holdings Bhd	Industrial Products	Default	C	D	The rating action follows the declaration of an event of default by the ICP sukukholder, which is the outcome of a cross-default trigger on the IMTN/ICP programmes following the missed coupon obligation on an outstanding USD sukuk issued by its wholly-owned subsidiary.
Alpha Circle Sdn Bhd	Trading/Services	Downgraded	BB	B	The downgrades reflect Alpha Circle's weakened financial position to fully meet its upcoming senior sukuk payment of RM55.0 million on February 23, 2022.
UITM Solar Power Sdn Bhd	Infrastructure & Utilities	Downgraded	AA-	A+	The rating downgrade reflects the company's weakened liquidity and cash flow coverage metrics from the prolonged shutdown of its 50MWac plant in Gambang, Pahang due to equipment damage.
TSH Sukuk Murabahah Sdn Bhd	Plantations	Upgraded	A+	AA-	The rating upgrade is premised on TSH's improved credit profile that has been aided by strong cash flow generation on the back of high crude palm oil (CPO) prices in recent periods and stronger balance sheet from reduced borrowings and higher liquidity.
Northport (Malaysia) Bhd	Infrastructure & Utilities	Upgraded	AA-	AA	The rating upgrade is premised on Northport's sustained strong profitability metrics, resulting in strong cash flow from operations (CFO) interest and debt coverage ratios. The rating action also considered its maintenance of a healthy liquidity position.

Source: MARC Ratings

Appendix III: 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	94.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.5%	0.0%
AA+	3.8%	90.0%	1.3%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	0.0%
AA	0.0%	2.9%	82.7%	1.9%	1.0%	1.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.6%	0.0%
AA-	0.0%	0.0%	2.2%	88.5%	3.4%	0.3%	0.6%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	4.7%	0.0%
A+	0.0%	0.0%	0.4%	6.3%	73.2%	5.8%	1.8%	0.4%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	9.8%	0.9%
A	0.0%	0.0%	0.0%	0.4%	6.3%	71.4%	5.1%	1.6%	0.4%	1.6%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	11.0%	2.0%
A-	0.0%	0.0%	0.0%	0.0%	0.0%	7.4%	61.1%	6.5%	2.8%	1.9%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	13.9%	4.6%
BBB+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.4%	34.6%	15.4%	3.8%	0.0%	0.0%	0.0%	0.0%	3.8%	0.0%	0.0%	23.1%	3.8%
BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	53.8%	10.3%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%	2.6%	23.1%	5.1%
BBB-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	3.2%	54.8%	6.5%	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	16.1%	9.7%
BB+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%
BB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	80.0%	4.0%	4.0%	4.0%	0.0%	0.0%	8.0%	0.0%
BB-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	58.3%	8.3%	16.7%	8.3%	0.0%	8.3%	0.0%
B+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	40.0%	0.0%	20.0%	0.0%
B	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	44.4%	22.2%
B-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	75.0%	8.3%	0.0%	8.3%
C	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	42.9%	14.3%	42.9%

Source: MARC Ratings

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