

Fixed Income Research

KDN PP 16084/10/2012 (030859)

2019 Annual Corporate Default and Rating Transitions Study



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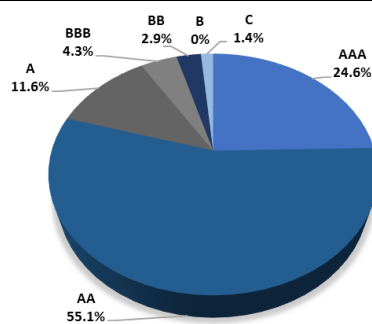
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Executive Summary

This report presents default statistics in MARC’s rating universe and the rating transition experience of corporate bond issuers in 2019. The key findings of our study include:

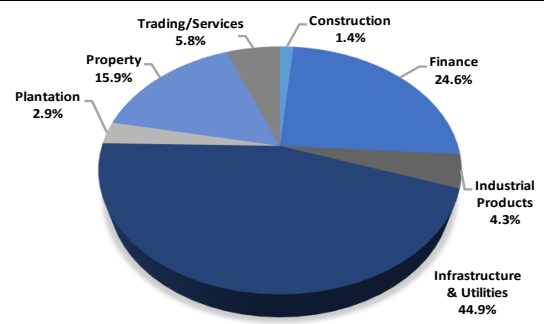
- **Rating stability remains sturdy.** About 95.7% of MARC-rated corporates had maintained their ratings throughout the year, down from 98.6% in 2018 but remaining above the annual average of 86.8% since 2000. MARC’s sturdy ratings stability was largely due to the high concentration of issuers in the high-grade category. This demonstrated the inherent higher stability of high-grade issuers to maintain their ratings over the long term, contrary to high-yield issuers which have higher ratings volatility.
- **Downgrades continued to outpace upgrades.** In 2019, MARC recorded three downgrades (2018: one), and as a result, the downgrade rate rose to 4.3% (2018: 1.4%). This caused the rating drift (upgrades minus downgrades and defaults) to fall deeper into negative territory. Similar to last year, MARC recorded no upgrades for the seventh consecutive year since 2012.
- **Zero defaults in two years.** Although negative rating actions increased in 2019, issuers within MARC’s rating universe experienced no default (2018: zero default). This brought the long-term annual corporate default rate for the period of 2000-2019 marginally lower to 1.9% (2000-2018 period: 2.0%). A further breakdown shows high-grade and high-yield long-term default rates easing to 0.7% (2000-2018 period: 0.8%) and 8.1% (2000-2018 period: 8.5%).
- **Rating accuracy continued to exhibit improvement.** Over the long term, MARC’s ability to predict defaults and be consistently effective in rank ordering credit risk through its ratings showed improvement. For the period of 1998-2019, MARC’s one-year rating accuracy ratio improved to 69.4% (1998-2018 period: 68.6%). This is reflected in the lower number of defaults occurring among high-grade corporates compared to those rated in the lower rating band.

Figure 1: Distribution of issuers in the MARC universe by rating bands, 2019



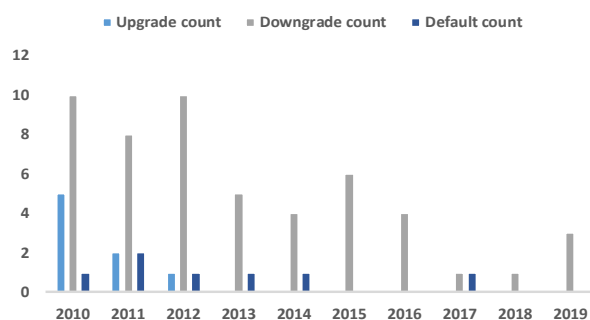
Source: MARC Research

Figure 2: Distribution of issuers in the MARC universe by sector, 2019



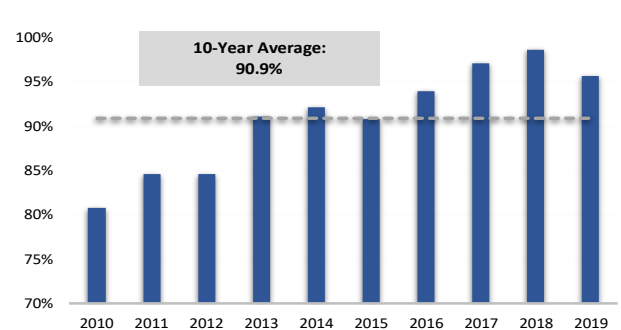
Source: MARC Research

Figure 3: Historical rating migration trend since 2010



Source: MARC Research

Figure 4: Historical ratings stability rate since 2010



Source: MARC Research

Ringgit Corporate Bond Market

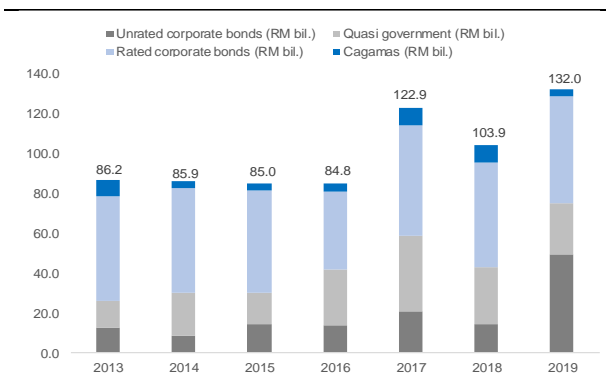
Total gross corporate bond issuances came in strong in 2019. The amount surged to RM132.0 billion in 2019 (2018: RM103.9 billion), the highest issuance level ever recorded. The surge was due to tightening credit spreads and a lower yield environment caused by easing monetary policies. Both the unrated and rated corporate bonds segments led the rise with a combined total of RM103.0 billion. However, both the quasi-government and Cagamas bonds segments recorded a decline, coming in at RM29.0 billion.

As in the past, the financial services sector continued to dominate corporate bond primary market activities.

The sector contributed about 60.5% (2018: 48.2%) or RM79.8 billion (2018: RM50.0 billion) of total gross issuance. This was followed by the property and real estate sector which contributed about 9.8% (2018: 11.8%) or RM12.9 billion. Urusharta Jamaah Sdn Bhd (RM27.6 billion), Danalnfra Nasional Bhd (RM12.1 billion) and Maybank Bhd (RM6.6 billion) dominated issuances from the financial services sector, while PNB Merdeka Ventures Sdn Bhd (RM1.7 billion) and Sunway Treasury Sukuk Sdn Bhd (RM1.3 billion) led the property and real estate sector.

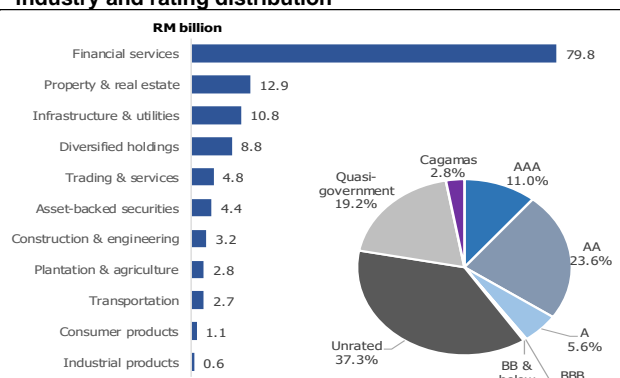
In the rated space (including Cagamas), AA-rated corporate bonds dominated the segment which accounted for nearly 54.3% (2018: 49.7%) of total rated bonds. Meanwhile, AAA-rated and A-rated corporate bonds accounted for 31.6% (2018: 39.7%) and 12.9% (2018: 10.6%). As for the high-yield segment, there were four issues that only accounted for 1.2% (2018: nil) of total rated issuances. Overall, rated bonds only accounted for 43.5% (2018: 59.0%); the drop was due to the large unrated corporate sukuk issuance from Urusharta Jamaah Sdn Bhd.

Figure 5: Corporate bond issuance trends (RM billion)



Sources: BPAM, MARC Research

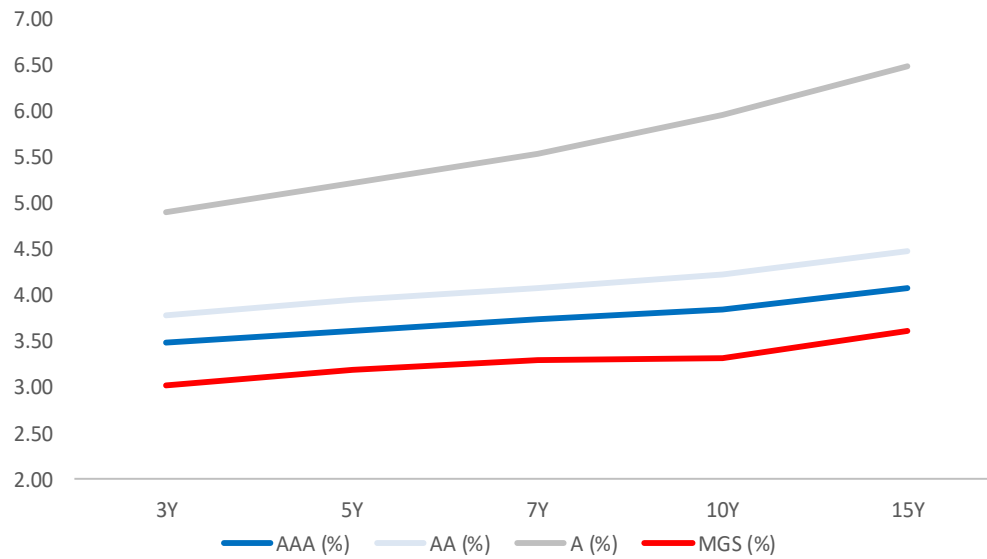
Figure 6: Rated corporate bond issuances in 2019: by industry and rating distribution



Sources: BPAM, MARC Research

Corporate bond credit spreads were also at an all-time low as corporate bonds also experienced an aggressive decline in yields. By end-2019, the 5y blended credit yield spread (AAA, AA and A-rated) stood at 127bps (2018: 164bps). Yields on AAA and AA-rated corporate bonds were broadly lower by 72bps to 89bps y-o-y. Meanwhile, yields for A-rated corporate bonds fell more sharply by 105bps to 236bps y-o-y. Yield curves of AAA, AA and A-rated corporate bonds also turned flatter as yields fell sharply along the 10y15y curve compared to shorter maturities.

Figure 7: Yield curve comparison (conventional) as at end-December 2019



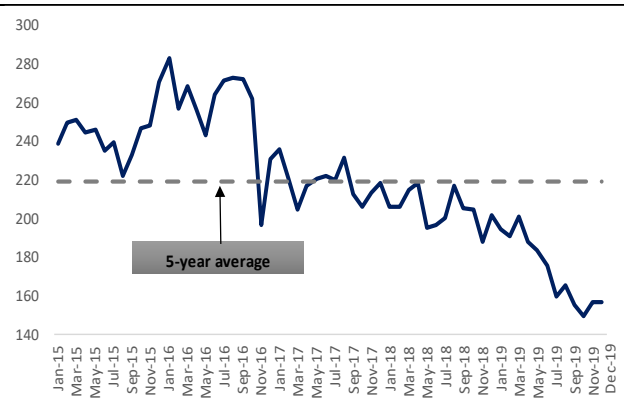
Sources: BNM, MARC Research

Figure 8: AAA, AA, A blended credit spreads (bps)

AAA, AA & A (%)	2018	2019	Y-o-y change
3-year	146	121	-24 bps
5-year	164	127	-36 bps
7-year	176	136	-40 bps
10-year	215	161	-54 bps
15-year	234	168	-65 bps

Sources: BPAM, MARC Research

Figure 9: 5y blended credit spread (bps)



Sources: BNM, MARC Research

Introduction to MARC's Corporate Default and Rating Transitions Study

This report is the 15th annual update of MARC's corporate default and rating transition study. It presents the latest updates on default statistics and the rating transition experience of corporate bond issuers within MARC's universe as at end-2019, as well as for the historical period since 1998. The database used for our study was constructed using long-term standalone ratings of those issuers. Similar to our previous studies, issuers which are domiciled in foreign countries were not included in our study due to the constraints of using a local rating scale. Moreover, all structured finance issuers were also excluded from this study. However, due to the problem of a shrinking sample size, our study also covers the implied senior unsecured debt ratings of corporates, credit enhancement providers and financial institutions rated by MARC (See Appendix I for 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 increase as we move down the credit rating scale.

Notwithstanding this, an element of statistical bias may occur due to sample 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, data enhancement efforts which are being continuously carried out to ensure increased transparency and integrity may limit comparability with earlier default and rating transitions studies. As such, this study is self-contained and supersedes previous studies.

At the beginning of 2019, there were 69 issuers in MARC's corporate rating universe. Most issuers are concentrated in the high-grade rating category, with 63 rated band "A" or above while the remaining six were categorised as high-yield issuers or rated band "BBB" or below. Based on the distribution of issuers by sector, the infrastructure and utilities sector remained the largest contributor to MARC's rating universe at 44.9% of total outstanding, followed by the finance sector at 24.6% and property sector at 15.9%.

Figure 7: Distribution of outstanding issuers by rating band - majority of outstanding issuers are in the high-grade rating category in MARC's corporate rating universe

Year	AAA	AA	A	BBB	BB	B	C	High 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	27.0%	41.3%	17.5%	6.3%	4.8%	1.6%	1.6%	85.7%	14.3%
2015	27.7%	40.0%	16.9%	9.2%	4.6%	1.5%	0.0%	84.6%	15.4%
2016	25.8%	45.5%	13.6%	9.1%	4.5%	1.5%	0.0%	84.8%	15.2%
2017	26.9%	44.8%	11.9%	10.4%	3.0%	3.0%	0.0%	83.6%	16.4%
2018	24.6%	53.6%	10.1%	5.8%	2.9%	2.9%	0.0%	88.4%	11.6%
2019	24.6%	55.1%	11.6%	4.3%	2.9%	0.0%	1.4%	91.3%	8.7%

Source: MARC Research

Summary of 2019 Experience

Ratings stability remains sturdy

MARC's ratings continued to exhibit high stability in 2019. Although moderating slightly from its level in 2018, the stability ratio stood at 95.7% in 2019 (2018: 98.6%), well above the annual average of 86.8% since 2000. This indicates that MARC's ratings have been stable over time since 2013 where rating stability has been consistently clocking above 90.0%. MARC's sturdy ratings stability was largely due to the high concentration of issuers belonging in the high-grade category. This demonstrates the inherent higher stability of high-grade issuers to maintain their ratings over the long term, contrary to high-yield issuers which have higher ratings volatility.

After adjusting for withdrawn ratings, 93.3% of issuers in the high-grade category had maintained their ratings from the beginning of the year to the end since inception in 1998. A detailed breakdown shows that rating stability rates for "AAA", "AA" and "A" came in at 99.6%, 94.8% and 88.7%. As we move towards to the lower rating spectrum (high-yield group), rating stability is generally lower with 79.3% of the issuers having maintained their ratings. However, given the very small sample size of MARC's high-yield group, rating stability across the ratings is not well preserved. The long-term ratings stability rates for "BBB", "BB" and "B" came in at 77.6%, 83.9% and 81.0%.

Figure 8: 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%	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
Arithmetic Mean	5.3%	6.0%	1.9%	8.8%	13.2%	86.8%	n.a.

Source: MARC Research

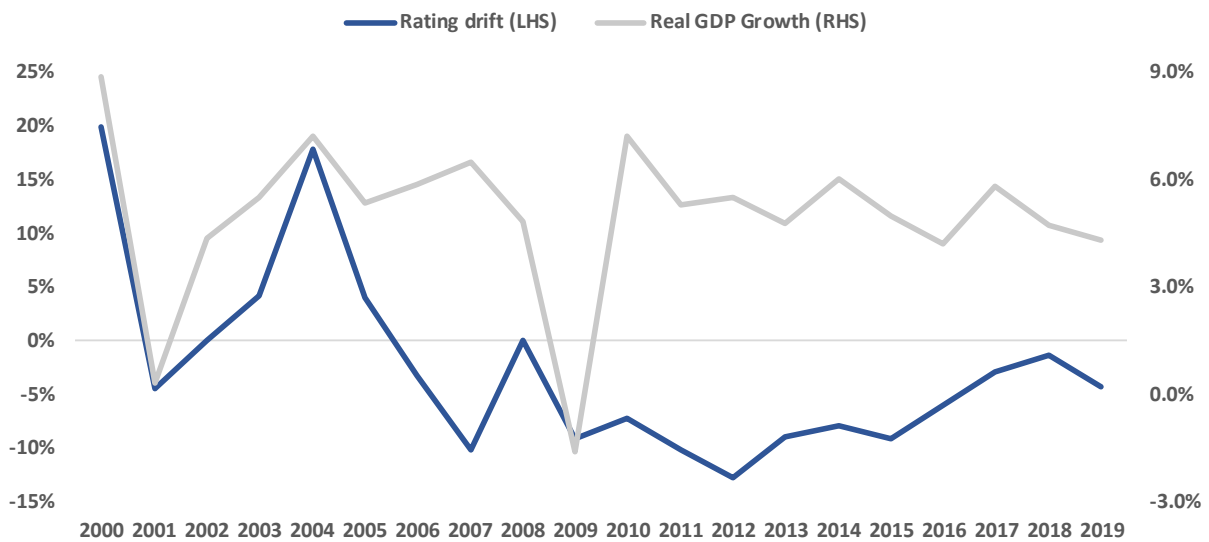
Downgrades continued to outpace upgrades

MARC's rating downgrades outpaced upgrades in 2019, continuing the trend that began in 2009. During the year, a total of three downgrades were recorded in MARC's universe (2018: one), which is the highest since 2016. As a result, the downgrade rate rose to 4.3% (2018: 1.4%). By sector, the infrastructure sector recorded two downgrades while the construction sector recorded one downgrade. It is worth noting that all but one downgrade was single notch. Two issuers were downgraded to "A+" from "AA-" while the other issuer was downgraded to "A" from "AA-". The downgrades were largely due to delays in infrastructure projects and weaker crude palm oil prices that led to weaker financial metrics for these issuers.

Meanwhile, MARC recorded no upgrades for the seventh consecutive year in 2019. The absence of rating upgrades indicates that corporate leverage remained high, which can be partly explained by the prolonged low-yield environment as well as improved access to credit.

The increase in negative rating actions pushed the rating drift deeper into negative territory at -4.3% (2018: -1.4%).

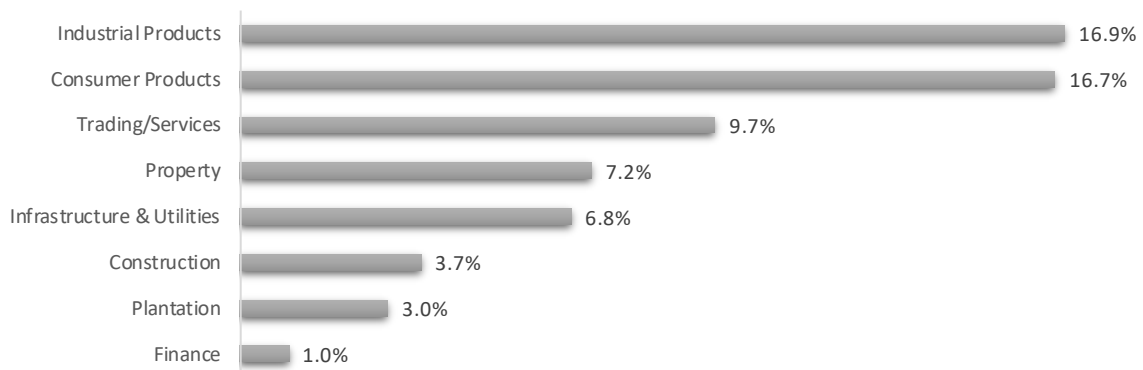
Figure 9: Rating drift* versus real GDP growth in Malaysia



Source: MARC Research

Note: Rating drift is calculated by the total number of upgrades subtracted by the number of defaults as well as downgrades and divided by the number of issuers operating at the beginning of the year

Figure 10: Corporate downgrade rates by industry: long-term average



Source: MARC Research

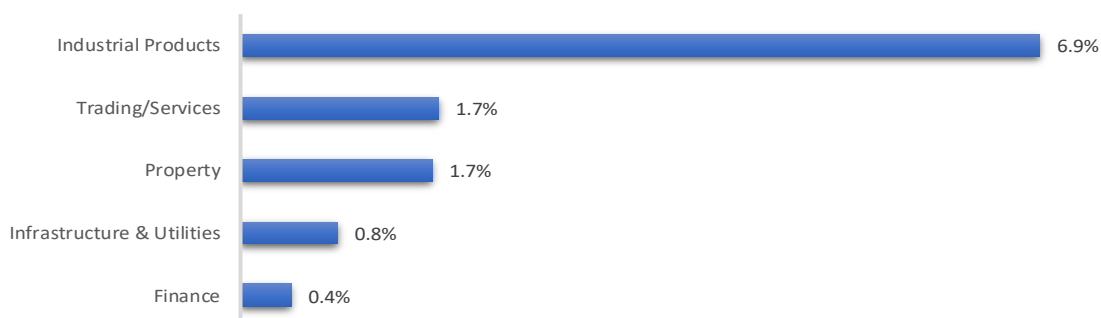
Figure 11: Annual corporate downgrade rates by rating band

Year	AAA	AA	A	BBB	BB	B	High 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%	18.2%	25.0%	0.0%	0.0%	5.6%	11.1%	6.3%
2015	5.6%	3.8%	18.2%	33.3%	0.0%	0.0%	7.3%	20.0%	9.2%
2016	0.0%	3.3%	11.1%	16.7%	33.3%	0.0%	3.6%	20.0%	6.1%
2017	0.0%	0.0%	12.5%	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%
Arithmetic Mean	0.5%	4.8%	9.0%	14.9%	18.1%	8.9%	5.2%	13.4%	6.0%
Standard Deviation	1.6%	5.2%	7.4%	24.5%	32.6%	18.8%	3.9%	15.0%	4.2%
Coefficient of Variation	309.5%	109.5%	82.0%	165.0%	180.7%	211.0%	76.1%	112.0%	70.4%

Source: MARC Research

Zero defaults in two years

Although negative rating actions increased in 2019, issuers within MARC's rating universe experienced no defaults, the same as in the preceding year. This brought the long-term annual corporate default rate for the period of 2000-2019 marginally lower to 1.9% (2000-2018 period: 2.0%). A further breakdown shows high-grade and high-yield long-term default rates easing to 0.7% (2000-2018 period: 0.8%) and 8.1% (2000-2018 period: 8.5%). Across sectors, the industrial products sector has the highest long-term weighted average default rate at 6.9%.

Figure 12: Corporate default rates by industry: long-term average

Source: MARC Research

Figure 13: Annual corporate default rates by rating band

Year	AAA	AA	A	BBB	BB	B	C	High 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	3.3%	22.2%	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%	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%
Arithmetic Mean	0.0%	0.0%	1.5%	8.8%	0.0%	8.9%	50.0%	0.7%	8.1%	1.9%
Standard Deviation	0.0%	0.0%	2.2%	15.6%	0.0%	18.8%	70.7%	1.1%	12.4%	2.5%
Coefficient of Variation	0.0%	0.0%	146.6%	177.9%	0.0%	211.0%	141.4%	143.2%	153.2%	129.9%

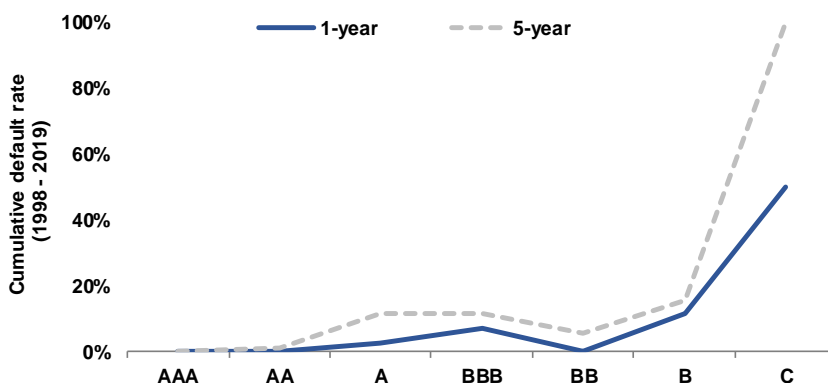
Source: MARC Research

Figure 14: Cumulative default rates by rating band: 1998 – 2019

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%	0.2%	0.7%	1.2%	1.7%	2.0%	2.2%	2.5%
A	2.3%	5.1%	7.9%	9.8%	11.3%	12.0%	12.4%	12.6%	12.6%	12.6%
BBB	6.9%	9.2%	9.2%	10.3%	11.5%	13.8%	14.9%	14.9%	14.9%	14.9%
BB	0.0%	2.7%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%
B & Lower	14.3%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%
High Grade	1.0%	2.3%	3.5%	4.4%	5.3%	5.8%	6.1%	6.3%	6.3%	6.4%
High Yield	6.6%	9.2%	9.9%	10.5%	11.2%	12.5%	13.2%	13.2%	13.2%	13.2%
All Corporate	1.6%	3.0%	4.2%	5.1%	5.9%	6.5%	6.9%	7.0%	7.1%	7.2%

Source: MARC Research

Figure 15: Effectiveness of MARC's corporate ratings as default predictor: 1998 – 2019



Source: MARC Research

Figure 16: List of defaulted issuers since inception in 1998

Year Announced	Issuers	First 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	Davama 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+

Source: MARC Research

Rating Transition

MARC's rating transition matrices summarise the empirical behaviour of its ratings by illustrating the default risk and migration volatility of each rating band. The calculation of rating 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 details of the methodology).

An examination of the rating transitions as depicted in Figures 17 – 22 were done at the broad rating category, i.e. from "AAA" to "AA", as opposed to the transitions at the modifier level i.e. "AAA" to "AA+". Nevertheless, for transparency purposes, MARC has also computed the transition matrices at the modifier level which are attached in Appendix III.

Over the long term (1998 – 2019), 95.0% of MARC's AAA-rated credits maintained their ratings at the end of one year, whereas the comparable share for BBB-rated credits was only 59.8% (see Figure 17). This is not surprising as the incidence of rating changes tends to be lower in higher ratings compared to lower ratings.

The same relationship holds even after adjusting for withdrawn issuers (see Figure 18). Rating stability rates for the "AAA", "AA" and "A" bands stood at 99.6%, 94.8% and 88.7%, a reflection of the strong positive relationship between the ratings of high-grade credits and long-run ratings stability. In the case of the high-yield group, the small sample size has contributed to counter-intuitive ratings stability measures, with no specific correlation between ratings stability and credit rating. The long-term ratings stability rates for the "BBB", "BB" and "B" bands came in at 77.6%, 83.9% and 81.0%.

Nevertheless, given the significant sample constraints in MARC's universe, in particular the high-yield segment, caution should be exercised when interpreting the transition matrices.

Figure 17: One-year cumulative rating transition matrix: 1998-2019

From / To	AAA	AA	A	BBB	BB	B	C	NR	Default
AAA	95.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%	0.0%
AA	0.7%	89.6%	4.0%	0.2%	0.0%	0.0%	0.0%	5.4%	0.0%
A	0.0%	2.6%	77.9%	4.3%	0.4%	0.2%	0.2%	12.2%	2.3%
BBB	0.0%	0.0%	4.6%	59.8%	4.6%	1.1%	0.0%	23.0%	6.9%
BB	0.0%	0.0%	0.0%	0.0%	70.3%	13.5%	0.0%	16.2%	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%	50.0%	0.0%	50.0%

**the abbreviation 'NR' indicates withdrawn ratings*

Source: MARC Research

Figure 18: One-year cumulative rating transition matrix: 1998-2019 (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	0.8%	94.8%	4.2%	0.3%	0.0%	0.0%	0.0%	0.0%
A	0.0%	3.0%	88.7%	4.9%	0.4%	0.2%	0.2%	2.6%
BBB	0.0%	0.0%	6.0%	77.6%	6.0%	1.5%	0.0%	9.0%
BB	0.0%	0.0%	0.0%	0.0%	83.9%	16.1%	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 Research

Figure 19: Two-year cumulative rating transition matrix: 1998–2019 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	1.5%	89.9%	7.7%	0.7%	0.0%	0.0%	0.0%	0.1%
A	0.0%	5.5%	79.1%	8.2%	1.0%	0.5%	0.3%	5.4%
BBB	0.0%	0.2%	9.9%	60.5%	9.7%	3.3%	0.1%	16.3%
BB	0.0%	0.0%	0.0%	0.0%	70.3%	26.6%	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 Research

Figure 20: Three-year cumulative rating transition matrix: 1998–2019 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	98.8%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	2.2%	85.5%	10.6%	1.1%	0.1%	0.0%	0.0%	0.4%
A	0.1%	7.6%	70.8%	10.2%	1.7%	0.9%	0.3%	8.4%
BBB	0.0%	0.5%	12.4%	47.5%	11.8%	5.2%	0.2%	22.5%
BB	0.0%	0.0%	0.0%	0.0%	59.0%	32.9%	1.6%	6.5%
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 Research

Figure 21: Four-year cumulative rating transition matrix: 1998–2019 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	98.4%	1.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	2.9%	81.3%	13.1%	1.6%	0.2%	0.1%	0.0%	0.8%
A	0.1%	9.3%	63.7%	11.5%	2.3%	1.3%	0.4%	11.4%
BBB	0.0%	0.8%	13.9%	37.5%	12.8%	6.8%	0.4%	27.9%
BB	0.0%	0.0%	0.0%	0.0%	49.5%	36.1%	2.4%	12.0%
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 Research

Figure 22: Five-year cumulative rating transition matrix: 1998–2019 (NR adjusted)

From / To	AAA	AA	A	BBB	BB	B	C	Default
AAA	98.0%	1.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	3.5%	77.5%	15.1%	2.1%	0.3%	0.2%	0.0%	1.3%
A	0.2%	10.7%	57.6%	12.0%	2.9%	1.7%	0.4%	14.5%
BBB	0.0%	1.2%	14.6%	29.8%	13.0%	8.2%	0.5%	32.8%
BB	0.0%	0.0%	0.0%	0.0%	41.5%	37.2%	2.9%	18.4%
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%

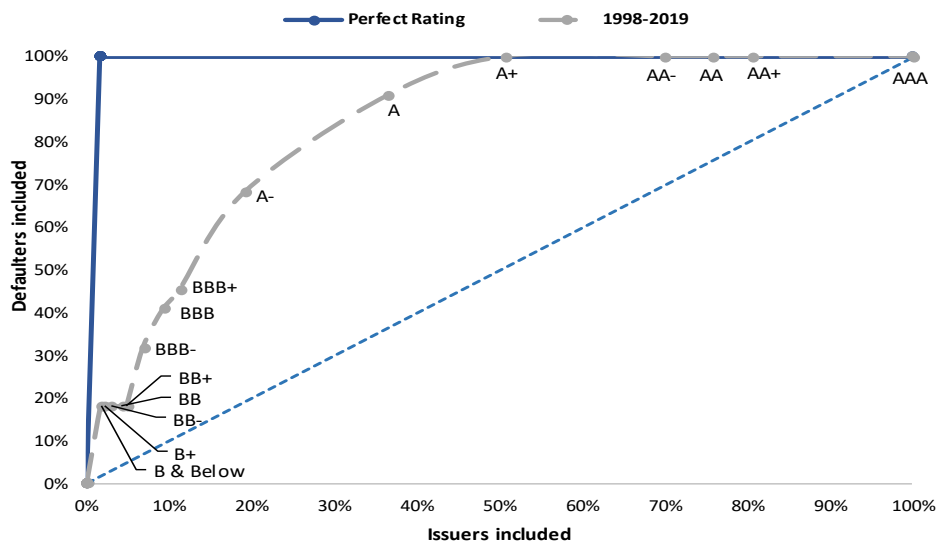
Source: MARC Research

Cumulative Accuracy Profile (CAP) and Accuracy Ratio

MARC uses CAP – one of the commonly used measures for rating performance – to evaluate the accuracy of its ordinal rating systems in predicting defaults. 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 (See Appendix I for details of the methodology) to visually render the accuracy of its rank ordering. Rating accuracy ratios reported in this study measure MARC’s ability to predict defaults one year ahead.

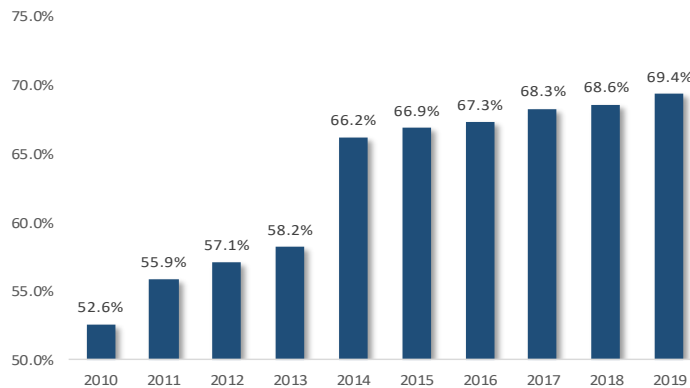
MARC’s ability to predict defaults and to be consistently effective in rank ordering credit risk through its ratings showed improvement over the long term. For the period of 1998-2019, MARC’s one-year ratings accuracy ratio improved to 69.4% (1998-2018 period: 68.6%) amid the absence of severe negative rating actions or rating cliffs. This indicates that MARC’s ratings have demonstrated an improvement in the effectiveness of its ratings as a measure of relative default risk.

Figure 23: One-year CAP curve: 1998-2019



Source: MARC Research

Figure 24: Long-term one-year accuracy ratio



Source: MARC Research

Path to Default from Original Rating and Last Rating

In line with our rating migration and accuracy studies, initial ratings of issuers within MARC's rating universe exhibited a negative correlation with their time to default. The average time to default for issuers in the high-grade category is longer compared to issuers from the high-yield category. For the entire pool of defaulters from 2000 to 2019, the average time to default for high-grade issuers was 4.6 years with a median of 4.1 years. In comparison, high-yield issuers took an average time of default of only 3.3 years with a median of 1.5 years. For all issuers, the average time to default was 4.4 years with a median of 3.8 years.

In the case of examining the average time to default from prior rating bands, MARC's ratings have again been proven to be effective in predicting defaults. High-grade issuers took an average of 1.8 years to default while high-yield issuers took an average of 0.4 years to default. This demonstrated that most issuers had been downgraded by MARC to the high-yield category before the default event. As such, issuers from the high-yield category are more vulnerable to default.

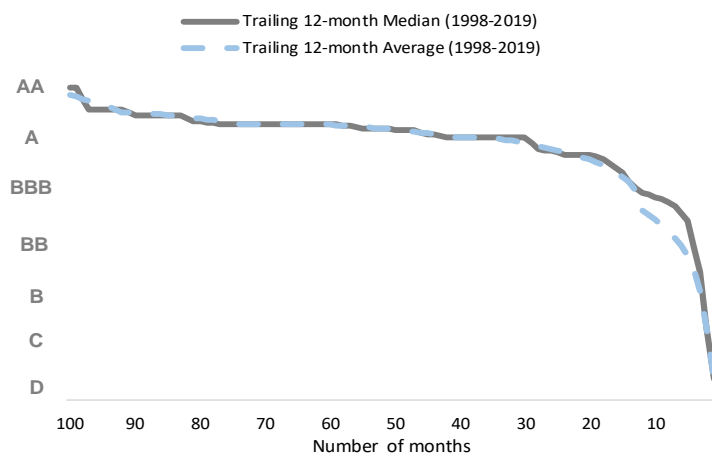
Figure 25: Average time to default and default rating path (number of months)

Original Band	Defaulted Issuers	Average Months from Original Rating	Median Months from Original Rating
AAA	0	n.a.	n.a.
AA	2	100	100
A	17	50	43
BBB	3	40	18
BB	0	n.a.	n.a.
B	0	n.a.	n.a.
C	0	n.a.	n.a.
High Grade	19	55	49
High Yield	3	40	18
All Corporate	22	53	45

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	8	2	1
High Grade	2	22	22
High Yield	20	5	4
All Corporate	22	6	6

Source: MARC Research

Figure 26: Number of months prior to default



Source: MARC Research

Appendix I: Data and Methodologies

This long-term corporate default and rating transitions study uses MARC's database of national scale issuer credit ratings which reflect MARC's 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 as well as the watchlist assigned. MARC's 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.

Data enhancement efforts which are being continuously carried out to ensure a certain degree of transparency and integrity 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 of the 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 219 corporate issuers that were rated by MARC between 1996 and 2019. MARC conducts its analysis of rating transitions 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 have a direct relation 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 issuers with only short-term ratings are removed for this study. Issuers that only issued structured finance instruments are also excluded. Furthermore, issuers domiciled in foreign countries were also not included in this study due to constraints of using a local rating scale.

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 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's published definition of default is the most appropriate rating to assign.

Default is defined 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 used in MARC's Corporate Default Study is defined as the number of defaulted 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, there are three possible scenarios that need to be modelled to predict the default rate under the scope of MARC's Corporate Default Study: survival to the next time period, rating withdrawal and defaulted issuer.

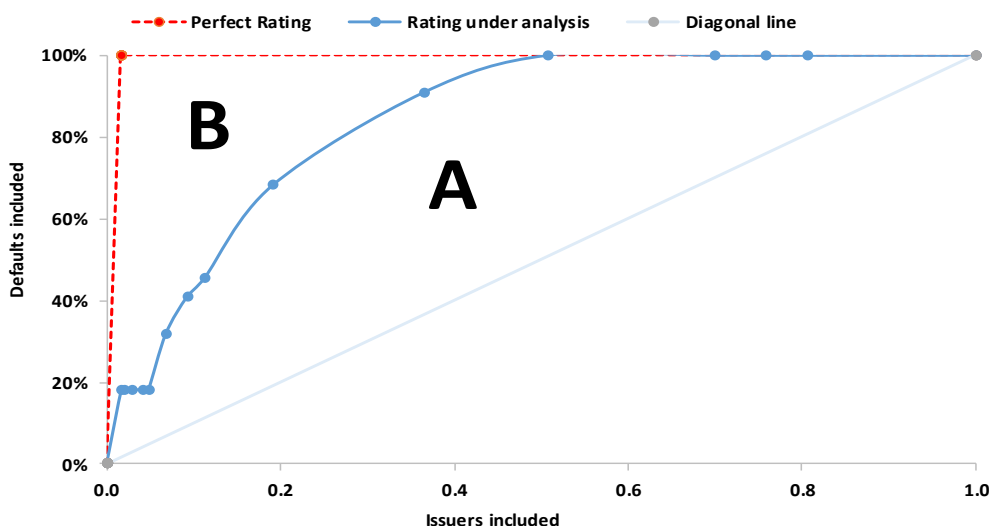
This study is conducted based on actual historical default experience of issuers rated by MARC. It is important to note that the ratings indicated in this study do not imply a specific probability of default.

CAP and Accuracy Ratio

To construct the CAP graph, the rating and default data are arranged from the lower rating category (B & below) to the highest category (AAA). Subsequently, the fraction of all defaulters that occurred among borrowers rated B & below are plotted against the fraction of all issuers that are rated B & below. This gives us the first point of the curve. Similarly, the second point of the curve is obtained by plotting the fraction of all defaulters that occurred among borrowers rated B+ & below against the fraction of all issuers that are rated B+ & below. Then, the cumulative share of defaulters is plotted again against the cumulative share of issuers by rating until all issuers and defaulters are included (AAA & below).

If MARC's rating methodology does not differentiate credit risk profile at all, 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 MARC's 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 (MARC's rating under analysis) over area A + B (perfect rating model).

Figure 27: CAP curve



Source: MARC Research

Transition Analysis

Similar to the methodology used to calculate annual default rates, MARC's rating transition analysis calculates rating transition rates by comparing issuer ratings at the beginning of the time period (January 1) with ratings at the end of the period (December 31). As such, rating migrations that occur in between are not taken into consideration. Multiple counts of an issuer, however, are possible. That is, an issuer that stays in the rating universe 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 began rating one issuer in 1997 and if its issue had not been withdrawn from the universe until 2019, then this issuer would appear in 22 consecutive 1-year transition tables from 1998 to 2019. If the rating of the issuer was withdrawn in 2015, it would be categorised as "NR" in 1-year transition table for 2015 and it would be excluded from the 1-year transition tables from 2016 onwards. Similarly, if the issuer defaulted in 2015, it would be included in the "Default" column in 1-year transition table for 2015 and it would be excluded from the 1-year transition tables from 2016 onwards.

Appendix II: Details on 2019 Rating Migrations

Main Sector	Issuer Name	Date Announced	Rating Action	Rating (Before)	Rating (After)	Reasons
Infrastructure & Utilities (Power)	Quantum Solar Park (Semenanjung) Sdn Bhd	25-Jan-19	DOWNGRADED	AA-	A+	The rating action reflects the heightened risk of termination of solar power purchase agreements (SPPAs) related to QSP Semenanjung's Merchang and Jasin solar power plant projects following the unlikely event of achieving commercial operation date (COD) at these plants by the walkaway event date.
Plantation	TSH Resources Bhd	19-Jun-19	DOWNGRADED	AA-	A+	The rating downgrade takes into consideration TSH's continued high leverage position that the group has not been able to address, given its modest cash flow generation that has been hampered by low crude palm oil (CPO) prices in recent years
Infrastructure & Utilities (Toll Road)	MEX II Sdn Bhd	18-Oct-19	DOWNGRADED	AA-	A	The downgrade reflects the lack of project progress, the lengthier delay and the consequent deterioration in the company's debt-servicing metrics that are no longer consistent with the previous ratings.

Source: MARC Research

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	95.0%	0.4%	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%	4.6%	0.0%
AA+	4.6%	89.2%	1.5%	1.5%	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%	3.1%	0.0%
AA	0.0%	2.5%	82.3%	2.5%	1.3%	1.3%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.9%	0.0%
AA-	0.0%	0.0%	2.7%	86.9%	4.2%	0.4%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%
A+	0.0%	0.0%	0.5%	6.3%	70.3%	6.3%	2.1%	0.5%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	11.5%	1.0%
A	0.0%	0.0%	0.0%	0.4%	6.8%	69.8%	5.1%	1.7%	0.0%	1.7%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	11.9%	2.1%
A-	0.0%	0.0%	0.0%	0.0%	0.0%	7.5%	60.4%	6.6%	2.8%	1.9%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	14.2%	4.7%
BBB+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.8%	37.0%	14.8%	3.7%	0.0%	0.0%	0.0%	0.0%	3.7%	0.0%	0.0%	22.2%	3.7%
BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	51.5%	9.1%	0.0%	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	27.3%	6.1%
BBB-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	3.7%	51.9%	7.4%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	18.5%	11.1%
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%	82.4%	5.9%	5.9%	0.0%	0.0%	0.0%	5.9%	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%	50.0%	0.0%	50.0%

Source: MARC Research

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