DefaultStudy

Default Statistics and Rating Transition Rates in Thailand (2021)

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SUMMARY

In 2021, TRIS Rating rated and publicly announced the ratings of 230 issuers. The issuers can be categorized as 175 non-financial institution issuers (non-FI), 50 financial institutions (FI), one structured finance issuer, and four issuers in the "Government" sector.

For the corporate default study, we did not include the structured finance issuer and issuers in the Government sector. We also excluded seven non-FI and four FI issuers that issued only guaranteed bonds. Thus, the corporate default study included 214 issuers, comprising 167 non-FIs and 47 FIs.

There were no defaults in 2021. The cumulative number of defaulters since 1994 was 24 (19 issuers defaulted while still having ratings with TRIS Rating; the remaining five issuers defaulted after withdrawing their ratings). The 214 issuers in 2021 included 16 new issuers and five withdrawn issuers. The one-year stability rate of publicly announced ratings in 2021 (excluding 16 new issuers and five withdrawers) was 81.87%.

Rating actions during the year included 13 upgrades and 22 downgrades. The ratio of downgrades and defaults to upgrades was 1.69 times, down from 4.83 times in 2020. There were 23 changes in rating outlook, 18 upwards and five downwards. Five companies were placed on CreditAlerts during the year, comprising four "negative" and one "developing" implications. Most CreditAlerts were resolved during the year. Only one issuer was downgraded and remained on "negative" CreditAlert at the end of 2021.

The one-, two-, and three-year cumulative default rates during 1994-2021 decreased slightly to 0.912%, 1.962%, and 2.860% from 1.005%, 2.172%, and 3.181%, respectively, during 1994-2020.

The Thai bond market in 2021 recovered from the impact of the Coronavirus Disease 2019 (COVID-19) pandemic. New corporate bonds issued and registered with the Thai Bond Market Association (ThaiBMA) in 2021 increased by 54.2% year-on-year (y-o-y) to THB1.02 trillion. Unrated bonds accounted for 20.3% of the total amount of bonds issued in 2021, increasing from 18.6% in 2020. Issuers in five industries: real estate development, financial services, agriculture/food, telecommunications, and retail, together issued around 64.2% of total bond issuances in 2021.

The value of outstanding long-term corporate debentures at the end of 2021 increased by 7.2% y-o-y to THB3.63 trillion. The proportion of non-rated bonds to total outstanding bonds slightly increased to around 15.6%, from 15.1% in 2020.

CORPORATE DEFAULT STUDY

Rating Actions in 2021

The corporate default study is based on 214 issuers, including 167 non-FIs and 47 FIs. There were 13 upgrades and 22 downgrades. The upgrades comprised 11 non-FI and two FI issuers. Three FI and 19 corporate issuers were downgraded. The downgrade to upgrade ratio decreased to 1.69 times in 2021, from 4.83 times in 2020.

The one-year stability rate of publicly announced ratings in 2021 (excluding new issuers, rating withdrawals, and defaults) was 81.87%. There were 23 changes in outlook, comprising 18 upward revisions and five downward outlook revisions. Five companies were placed on CreditAlerts during the year, comprising one "developing", and four "negative" implications. Only one "negative" CreditAlert remained unresolved at the end of 2021.

Table 1: List of Issuer Rating Changes in 2021

No.	Company	Industry	Rating Change From	Rating Change To	Rating Direction	Outlook Direction	CreditAlert
1	AH	Auto Suppliers	BBB+/Negative	BBB+/Stable		Upward	
2	ANAN	Homebuilders and Real Estate Developers	BBB/Stable	BBB-/Stable	Downgrade		
3	AREEYA	Homebuilders and Real Estate Developers	BB-/Stable	BB-/ Negative		Downward	
4	BCH	Health Care Services	A-/Positive	A/Stable	Upgrade		
5	BEM	Transportation Infrastructure	A/Negative	A-/Stable	Downgrade		
6	BJC	REITs, Real Estate for Rent	A+/Negative	A/Stable	Downgrade		
7	CENTEL	Leisure and Sports	A/Negative	A-/Negative	Downgrade		
8	CHO	Automakers	B+/Stable	B/Negative	Downgrade		
9	CI	Homebuilders and Real Estate Developers	BB+/Negative	BB/Stable	Downgrade		
10	CK	Engineering and Construction	A/Stable	A-/Stable	Downgrade		
11	ECF	Consumer Durables	BB+/Negative	BB+/Stable		Upward	
12	EDL-Gen	Regulated Utilities	BBB/Negative	BBB-/Negative	Downgrade		
13	ESC	Agribusiness and Commodity Foods	BBB/Negative	BBB/Stable		Upward	
14	FPT	Homebuilders and Real Estate Developers	A-/Stable	A/Stable	Upgrade		
15	GLOW	Regulated Utilities	AA-/Stable	AA+/Stable	Upgrade		
16	GOLD	Homebuilders and Real Estate Developers	A-/Stable	A/Stable	Upgrade		
17	GPSC	Regulated Utilities	AA-/Stable	AA+/Stable	Upgrade		
18	GUNKUL	Regulated Utilities	BBB/Positive	BBB+/Stable	Upgrade		
19	IVL	Commodity Chemicals	AA-/Negative	AA-/Stable		Upward	
20	JMART	Retailer	BBB/Stable	BBB/Positive		Upward	
21	JMT	Asset Management / Financial Services	BBB/Stable	BBB/Positive		Upward	
22	KTC	Consumer Finance	A+/Stable	AA-/Stable	Upgrade		
23	LHHOTEL	Leisure and Sports	BBB+/Negative	BBB-/Negative	Downgrade		
24	LIT	Finance	BBB-/Negative	BB+/Stable	Downgrade		
25	LPN	Homebuilders and Real Estate Developers	BBB+/Stable	BBB/Stable	Downgrade		
26	MBK	REITs, Real Estate for Rent	A/Stable	A-/Stable	Downgrade		
27	MIDA	Leisure and Sports	BB+/Negative	BB/Negative	Downgrade		
28	MJD	Homebuilders and Real Estate Developers	BB+/Stable	BB+/Negative		Downward	
29	ML	Leasing	BB+/Negative	BB/Negative	Downgrade		
30	NER	Commodity Trading	BB+/Stable	BBB-/Stable	Upgrade		
31	NPS	Regulated Utilities	BBB/Stable	BBB+/Stable	Upgrade		
32	TIDLOR	Consumer Finance	A-/Stable	A/Stable	Upgrade		
33	ORI	Homebuilders and Real Estate Developers	BBB/Stable	BBB/Positive		Upward	

34	BEYOND*	Leisure and Sports	BBB-/Negative	BB/Negative	Downgrade	
35	PSL	Transportation Cyclical	BB+/Stable	BBB-/Stable	Upgrade	
36	RATCH	Regulated Utilities	AAA/Stable	AA+/Stable	Downgrade	
37	RATCHGEN	Regulated Utilities	AAA/Stable	AA+/Stable	Downgrade	
38	RP	Transportation Cyclical	BB+/Stable	BB+/Negative		Downward
39	SINGER	Consumer Finance	BBB-/Stable	BBB-/Positive		Upward
40	SIRI	Homebuilders and Real Estate Developers	BBB+/Negative	BBB+/Stable		Upward
41	SPCG	Regulated Utilities	A/Stable	A-/Stable	Downgrade	
42	SQ	Engineering and Construction	BBB-/ Negative	BBB-/Stable		Upward
43	STA	Commodity Trading	A-/Stable	A-/Positive		Upward
44	STGT	Branded Nondurables	A-/Stable	A-/Positive		Upward
45	SUPER	Regulated Utilities	BBB/Stable	BBB/Positive		Upward
46	TAA	Transportation Cyclical	BB/AlertNegative	B/AlertNegative	Downgrade	
47	TFG	Agribusiness and Commodity Foods	BBB-/Stable	BBB/Stable	Upgrade	
48	TK	Leasing	A-/Negative	BBB+/Stable	Downgrade	
49	TPCH	Regulated Utilities	BBB/Stable	BBB-/Stable	Downgrade	
50	TPOLY	Engineering and Construction	BBB/Stable	BBB-/Stable	Downgrade	
51	TTA	Transportation Cyclical	BBB/Negative	BBB/Stable		Upward
52	TU	Agribusiness and Commodity Foods	A+/Stable	A+/Positive		Upward
53	UNIQ	Engineering and Construction	BBB+/Stable	BBB+/Negative		Downward
54	UV	Regulated Utilities	BBB/Stable	BBB+/Stable	Upgrade	
55	WHA	Homebuilders and Real Estate Developers	A-/Negative	A-/Stable		Upward
56	WHA ID	Homebuilders and Real Estate Developers	A-/Negative	A-/Stable		Upward
57	WHAUP	Regulated Utilities	A-/Negative	A-/Stable		Upward

Source: TRIS Rating
Notes: 1)   * Formerly known as Padaeng Industry PLC (PDI)
            2)   See full names of issuers in Appendix II

Chart 1: Proportion of Rating Changes[1] and GDP Growth (1997-2021)
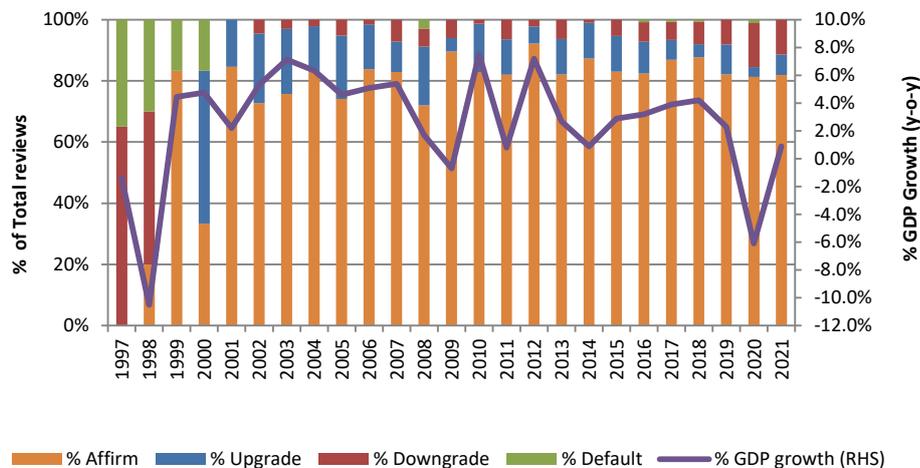
Source: TRIS Rating
Note: % GDP growth in 2021 is projected.

[1] Proportions of rating changes as a percentage of the total number of reviewed companies or issuers, rated by TRIS Rating, are publicly announced by the end of each year.

Table 2: Summary of Rating Changes

Year	Issuers as of 1 Jan (Number)	Upgrades	Downgrades	Defaults*	Withdrawals	(Downgrades + Defaults) Upgrades
1994	6	0%	0%	0%	0%	n.a.
1995	23	5%	0%	0%	9%	-
1996	31	4%	21%	0%	10%	6.00
1997	38	0%	65%	35%	47%	n.a.
1998	15	0%	50%	30%	33%	n.a.
1999	7	0%	0%	17%	14%	n.a.
2000	7	50%	0%	17%	14%	0.67
2001	13	15%	0%	0%	0%	-
2002	25	23%	5%	0%	12%	0.20
2003	33	21%	3%	0%	0%	0.14
2004	49	15%	2%	0%	4%	0.14
2005	60	21%	5%	0%	3%	0.25
2006	75	15%	1%	0%	9%	0.10
2007	74	10%	7%	0%	5%	0.71
2008	76	19%	6%	3%	11%	0.46
2009	74	4%	6%	0%	9%	1.33
2010	76	16%	1%	0%	0%	0.08
2011	82	12%	6%	0%	5%	0.56
2012	91	6%	2%	0%	1%	0.40
2013	99	12%	6%	0%	4%	0.55
2014	104	12%	1%	0%	2%	0.08
2015	119	12%	5%	0%	6%	0.46
2016	127	10%	6%	1%	2%	0.69
2017	141	7%	6%	1%	3%	1.00
2018	165	4%	7%	1%	2%	1.63
2019	189	10%	8%	0%	3%	0.83
2020	193	3%	14%	1%	3%	4.83
2021	198	7%	11%	0%	3%	1.69

Source: TRIS Rating

Notes: 1) * Excluding issuers that defaulted after withdrawing their ratings.

2) The figures have been rebased since 2004 after the removal of three FI issuers for whom we no longer assigned shadow ratings.

- **Ratings were mainly in the "A" and "BBB" categories**

At the end of 2021, companies rated in the "A" and "BBB" categories made up the largest proportion of TRIS Rating's portfolio, accounting for 33.49% and 40.19% of publicly announced ratings (excluding withdrawals and defaults), respectively. The ratings of 16 new issuers were distributed across several rating categories: three "BB", seven "BBB", four "A", and two "AA" ratings. Issuers rated in the lower ranges (i.e., "BB", "B", and "C") have consistently accounted for a small proportion of the rated companies. However, the number of issuers in these categories has increased over time. At the end of 2021, 20 issuers were rated below "BBB-", accounting for 9.57% of publicly announced ratings (excluding withdrawals and defaults).

Chart 2: Distribution of Outstanding Company Ratings (2015-2021)
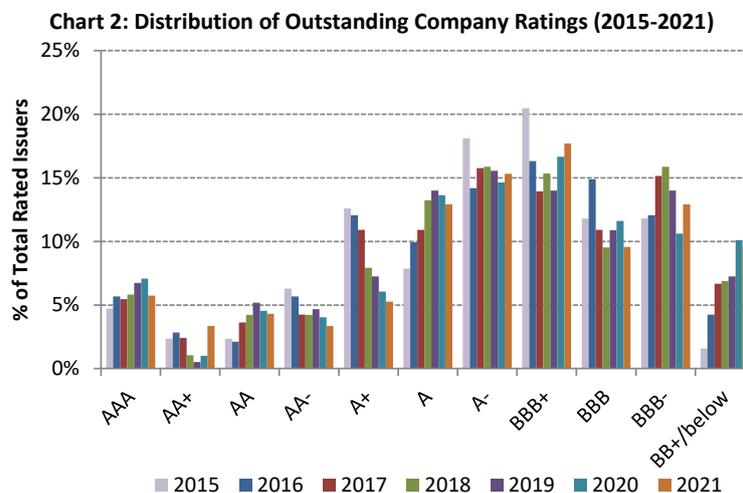
Source: TRIS Rating

Chart 3: Distribution of Company Ratings by Category (1994-2021)
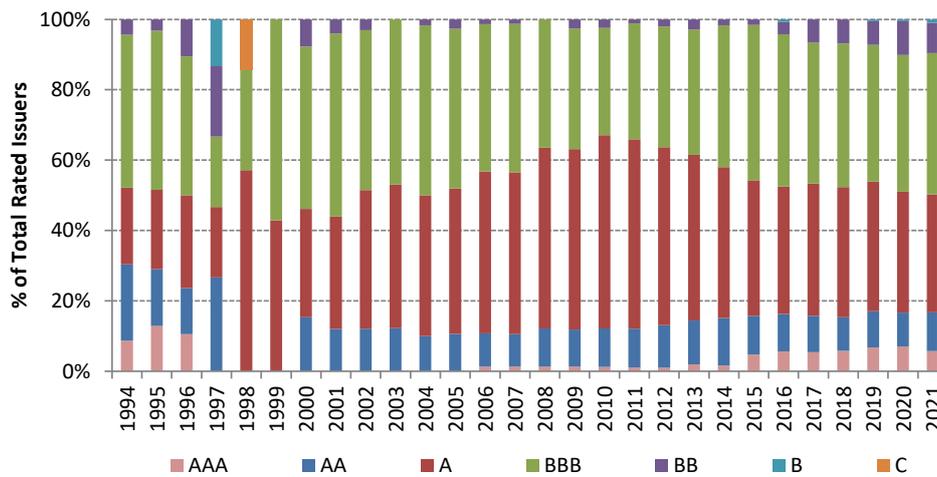
Source: TRIS Rating

- **Cumulative default rates decreased slightly**

We calculated the average cumulative default rates[2] for each rating category to estimate the probability of default during a specified time period after a company was rated. An increase in the sample size with zero defaulted issuers in 2021 has caused the one-, two-, and three-year average cumulative default rates during 1994-2021 to decrease slightly from the period during 1994-2020. The one-, two-, and three-year cumulative default rates during 1994-2021 increased to 0.912%, 1.962%, and 2.860% from 1.005%, 2.172%, and 3.181%, respectively, during 1994-2020.

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[2] *The calculation methodology of the three-year cumulative average default rate is explained in Appendix I.*

Table 3: Annual Default Rates[3] of Rated Companies (1997-2021)

% Annual Default Rate	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AAA	0%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	33%	0%	n.a.	n.a.	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%
A	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%
BBB	50%	33%	0%	33%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	1.8%	1.7%	0.0%	0.0%	0.0%	0.0%
BB	100%	100%	n.a.	n.a.	0%	n.a.	0%	n.a.	0%	0%	0%	n.a.	n.a.	0%	0%	0%	0%	0%	0%	0.0%	0.0%	10.0%	0.0%	0.0%	0.0%
B	n.a.	50%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0%
C	n.a.	n.a.	100%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Investment Grade*	31.6%	14.3%	0.0%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.8%	0.0%	0.0%	0.6%	0.0%
Non-investment Grade**	100%	67%	100%	n.a.	0%	n.a.	0%	n.a.	0%	0%	0%	n.a.	n.a.	0%	0%	0%	0%	0%	0%	0.0%	0.0%	10.0%	0.0%	9.1%	0.0%
Total	35%	30%	17%	17%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0.80%	0.73%	0.62%	0.00%	1.07%	0.00%

Source: TRIS Rating
Notes: 1) n.a. "not available", means there is no issuer rated in the rating category.
  2) * Investment grade issuers, being in the AAA, AA, A, and BBB rating categories.
  3) ** Non-investment grade issuers, being in the BB, B, and C rating categories.

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[3] Annual default rate is the proportion of the number of defaulted issuers in a rating category divided by the total number of rated issuers in that particular rating category.

Table 4: Average Cumulative Default Rates (CDR) for Long-term Ratings (1994-2021) (%)

Rating	--Time Horizon (Years)--									
	1	2	3	4	5	6	7	8	9	10
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
No. of sample	80	64	50	37	26	18	12	9	7	6
AA	0.43%	1.41%	2.51%	3.14%	3.85%	3.85%	3.85%	3.85%	3.85%	3.85%
No. of sample	232	204	178	155	137	120	104	88	75	63
A	0.23%	0.63%	1.08%	1.59%	2.18%	2.63%	2.89%	3.18%	3.52%	3.93%
No. of sample	857	758	663	576	499	436	381	331	283	238
BBB	1.20%	2.44%	3.58%	4.93%	5.61%	6.15%	6.47%	6.47%	6.47%	6.47%
No. of sample	835	713	602	501	419	349	294	249	214	182
BB	4.00%	11.38%	16.31%	16.31%	16.31%	16.31%	16.31%	16.31%	16.31%	16.31%
No. of sample	75	52	36	24	17	14	12	10	8	6
B	50.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
No. of sample	4	1	0	0	0	0	0	0	0	0
C	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
No. of sample	1	0	0	0	0	0	0	0	0	0
Total	0.91%	1.96%	2.86%	3.69%	4.30%	4.71%	4.95%	4.95%	4.95%	4.95%
Total no. of sample	2,084	1,792	1,529	1,293	1,098	937	803	687	587	495

Source: TRIS Rating

Corporate Rating Transitions (1994-2021)

A rating transition is the probability of a given issuer rating moving to another rating category within a specified time period. Generally, the ratings of investment-grade issuers are more likely to remain at the same level over a one-year period than the ratings of non-investment grade issuers. The highlighted cells in Table 5 contain the stability rates of each rating category. For example, the stability rate for the "AAA" issuers is 93.75%.

The rating stability of the investment grade companies exceeded 90%. For the "A" rating category, 94.72% of the issuers in this category had their ratings maintained at this level in 2021. Around 2.81% of the "A" rated issuers were upgraded to "AA", while 2.11% were downgraded to "BBB". However, the rating stability of the "AA" rated issuers was lower than the rating stability of the "A" rated issuers. This was due to the relatively small sample size of issuers in the "AA" rating category. In 2021, there were 23 "AA" rated issuers, compared with 70 "A" rated issuers.

As credit ratings should reflect risk of default, the higher the rating, the lower the probability of default. However, due to both the small sample size as well as the widespread and severe financial crisis that led to multiple defaults in the financial sector in 1997, the default rate of the "AA" rating category is abnormally higher than the default rate of the "A" rating category.

Table 5: Average One-year Transition Rates (1994-2021)

Ratings	No. of Sample	AAA	AA	A	BBB	BB	B	C	D	Cumulative Withdrawals
AAA	80	93.75%	6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3
AA	232	3.02%	92.67%	3.88%	0.00%	0.00%	0.00%	0.00%	0.47%	10
A	857	0.00%	2.80%	94.75%	2.10%	0.12%	0.00%	0.00%	0.23%	38
BBB	835	0.00%	0.00%	3.95%	91.38%	3.23%	0.24%	0.00%	1.20%	36
BB	75	0.00%	0.00%	0.00%	9.33%	84.00%	2.67%	0.00%	4.00%	18
B	4	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	25.00%	50.00%	1
C	1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	-
Total	2,084									106

Source: TRIS Rating

Performances of One-year Relative Corporate Ratings

To measure the relative accuracy of ratings assigned by TRIS Rating, we focus on the relation between credit ratings (ranked from the highest rating, "AAA", to the lowest, "C") and the default rates of issuers in each rating category. Normally, a higher-rated entity should have a lower default probability relative to a lower-rated entity.

TRIS Rating measures rating performance or rating accuracy by plotting the cumulative proportion of a universe of rated issuers (ordered from the lowest rating, "C", to the highest rating, "AAA") against the cumulative proportion of defaulted issuers across all rating categories, which are also ranked from the lowest to the highest rating. This curve is called the cumulative accuracy profile (CAP) curve, also known as the "Lorenz Curve".

Chart 4 depicts the performances of one-year relative corporate ratings, based on 2,084 observations of issuers rated by TRIS Rating during 1994-2021. The upper curve (as represented by the left end of the horizontal axis), or the ideal curve, is derived from the assumption that defaults occur only among the lowest-rated entities. The middle curve, or the CAP curve, is derived from the actual default rate of each rating category, drawing from the 2,084 observations of issuers rated by TRIS Rating during 1994-2021. The lower curve is a random curve. The random curve assumes that the assigned ratings have no relation to the default rates. Therefore, the cumulative percentage share of defaulters grows at the same rate as the cumulative percentage share of rated issuers. Generally, the closer the CAP curve resembles the ideal curve, the greater the accuracy of the rating model.

The CAP curve is based to calculate the accuracy ratio or the "Gini Coefficient". The closer the accuracy ratio is to one, the greater the rating accuracy it reflects of the rating model. The formula used to calculate the accuracy ratio is:

Accuracy ratio = area between CAP curve and random curve (Y)/area between ideal curve and random curve (X+Y)

If the credit ratings have no correlation with the defaulting cohorts, the CAP curve will resemble the random curve and the accuracy ratio will be equal to zero (0). On the contrary, if all defaults are concentrated among the lowest-rated issuers, the

CAP curve will resemble the ideal curve and the accuracy ratio should be equal or close to one (1). If the accuracy ratio equals one, the assigned ratings are perfectly accurate.

From the 2,084 observations of issuers rated by TRIS Rating during 1994-2021, there were 19 observations in which an issuer defaulted in a one-year observation period. The default rate was 0.912%, a slight decline from 1.005% during 1994-2020. From the CAP curve, issuers rated at "BBB+" and below represent 43.9% of the overall observations. However, 84.2% of all defaulters (16 out of 19 defaulters) were in this group.

The accuracy ratio, calculated from the observations during 1994-2021, is equal to 0.53, lower than 0.54 obtained in the previous assessment covering 1994-2020. The relatively low accuracy ratios are attributed to two main reasons: the small number of observations and the financial crisis faced by all issuers in 1997. There were 12 defaults during 1997-2000.

If we use observations during the last 10 years (2011-2021), the accuracy ratio improves slightly to 0.55, down slightly from 0.56 during 2010-2020. There were 1,387 observations in this cohort and only five observations defaulted during this period. This implies an overall default rate of 0.36%, leaving the remaining 99.64% of the observations with no defaults.

Chart 4: One-Year Relative Corporate Ratings Performance (1994-2021)

Accuracy ratio = Y/(X+Y) = 0.53
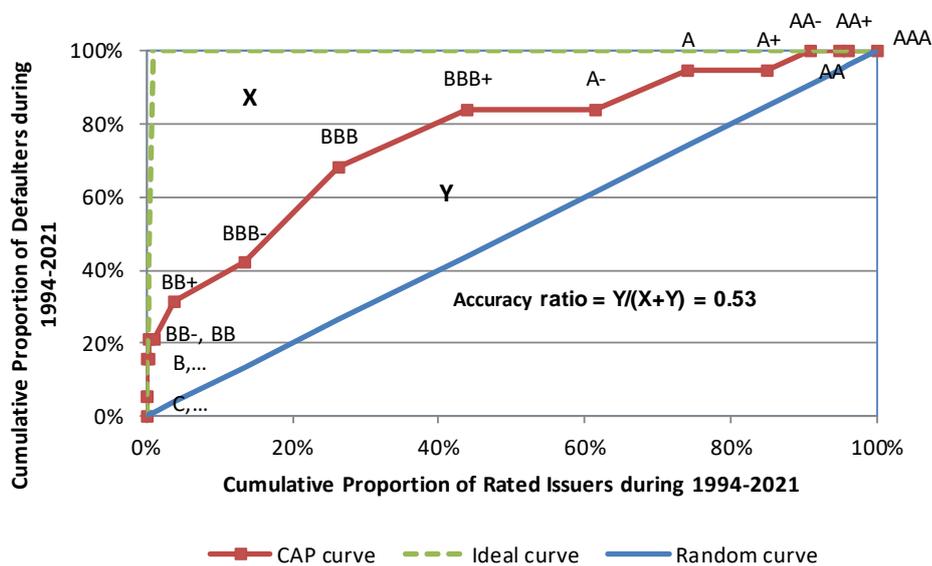
Source: TRIS Rating

Chart 5: One-Year Relative Corporate Ratings Performance (2011-2021)

Accuracy ratio = Y/(X+Y) = 0.55
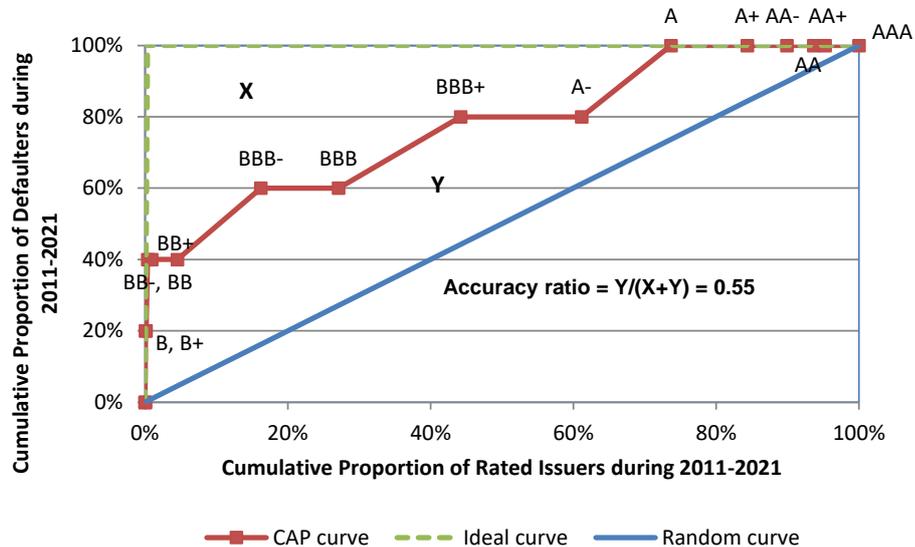
Source: TRIS Rating

STRUCTURED FINANCE DEFAULT STUDY

There were only seven structured finance transactions rated by TRIS Rating. However, four were fully guaranteed by the originators and one transaction was partially guaranteed by the originator. These transactions are not included in this study. The two remaining transactions are LSPV Co., Ltd. and DAD SPV Co., Ltd. The first transaction, LSPV, is involved with an inventory securitization. This issue was rated "A-" in 1999 and was fully redeemed in 2002. The second transaction, DAD SPV, is a securitization program backed by a 30-year lease and service payment agreement from the Treasury Department. The rating of the second transaction has been maintained at "AAA".

Table 6: Average One-year Transition Rates for Structured Finance Ratings (1999-2021)

Ratings	No. of Sample	AAA	AA	A	BBB	BB	B	C	D
AAA	16	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.00%**
AA	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.00%**
A	2	0.00%	0.00%	100%	0.00%	0.00%	0.00%	0.00%	**0.00%**
BBB	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.00%**
BB	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.00%**
B	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.00%**
C	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.00%**
Total	18								

Source: TRIS Rating

Appendix I

1. Methodology and Definitions

1.1 Definition of Default

TRIS Rating assigns a "Default (D)" or "Selective Default (SD)" rating to an entity or a company on the date the entity or the company misses a payment of a financial obligation, according to the terms and conditions stipulated in the borrowing agreement, irrespective of whether the financial obligation issue is rated or unrated.

1.2 Cumulative Default Rates

The default rate is the number of defaulted issuers as a percentage of the total number of issuers in each rating category. Therefore, the default rate represents the default probability of companies in each particular rating category. The cumulative default rate tends to rise over time.

For example, the three-year cumulative default rate of any particular rating category is the probability that the companies rated in that category will default within three years. The average three-year cumulative default rate is computed by subtracting the average three-year cumulative survival rate from 100%. The average three-year cumulative survival rate is derived by multiplying the first-year survival rate by the second-year rate and the third-year rate. The survival rate for any given year is calculated by subtracting the default rate of that year from 100%.

1.3 Rating Transition Rates

The rating transition rate is the percentage of the issuer ratings changing from a particular rating category at the beginning of a given year to another rating category by the end of that year. To compute a one-year rating transition rate, issuers rated in each rating category at the beginning of the year are tracked for any rating changes by the end of the calendar year.

2. Scope

2.1 Credit Rating Inclusion:

Corporate Ratings

2.1.1 For corporate ratings, the ratings used are the ratings of entities (companies or issuers) rather than ratings of the debenture issues (or debentures). The reason is to simplify the default rate calculation process, particularly the cases in which a company has issued several debentures. The different debenture issues might receive different ratings due to different priorities of claims and different expected losses in the case of default.

2.1.2 In the case that the issuer wants to publicly announce only its issue rating, TRIS Rating may also assign a shadow rating to the issuer. Previously, the shadow rating was assigned internally and used in the default study. However, due to the discontinuation of information, TRIS Rating will no longer include the shadow rating in the default study. Therefore, since 2020, we have excluded from our default study all shadow ratings assigned to three issuers during 2004-2020, 2013-2020, and 2018-2020, respectively.

2.1.3 The period of analysis covers ratings from the first year of TRIS Rating's operation in 1993 until year-end 2021. The number of rated companies at the end of each year will be recorded as the static pool for the following year. For example, rated clients at the end of 1993 are recorded as the 1994 pool.

Structured Finance Ratings

2.1.4 TRIS Rating also provides the one-year rating transition rates of structured finance securities. For the ratings of structured finance securities, TRIS Rating uses the ratings of the debentures or a series of debentures issued under the same program.

2.1.5 TRIS Rating will include rating transition rates of structured finance securities, e.g., asset-backed securities (ABS), collateralized debt obligations (CDO), commercial mortgage-backed securities (CMBS), and residential mortgage-backed securities (RMBS).

2.2 Credit Rating Exclusion:

2.2.1 *Ratings that are not publicly announced*

Ratings assigned by TRIS Rating can be categorized into those that are publicly announced and those that are kept private, based on the issuers' wishes.

2.2.2 *Selected structured finance ratings*

This category includes ratings of project finance instruments, such as Khanom Electricity Generating Co., Ltd. (KEGCO), and partially or fully guaranteed debentures.

2.2.3 *Local government ratings*

This category includes the rating of Bangkok Metropolitan Administration (BMA).

2.2.4 *Ratings that are withdrawn in the specified period*

A company that was initially rated by TRIS Rating in mid-1994 but withdrew its rating in 1997 will be included in the static pools for 1995 and 1996 but not for 1997.

2.2.5 *Supranational and sovereign ratings*

This category includes the ratings of the Lao People's Democratic Republic (Lao PDR), Neighboring Countries Economic Development Cooperation Agency (NEDA), and Credit Guarantee and Investment Facility (CGIF).

2.3 Data Used to Calculate Default Rates

Static pools are established to represent the sample groups. In any given year, a static pool includes all entities with active ratings at the beginning of a year that remain rating clients at the end of that year. For example, there were 20 issuers rated by TRIS Rating on 1 January 1995 and all 20 issuers had remained clients through 31 December 1995. The 1995 static pool comprised 20 issuers. The default records of these 20 issuers are tracked in each subsequent year.

In any given year, the pool is static because no issuer is taken out of the pool even though the issuer may subsequently withdraw its rating. For example, Dhana Siam Securities Co., Ltd. (DS) was initially rated in 1993 but withdrew its rating in 1997, shut down operations, and then defaulted on 14 August 1998. In this circumstance, DS was included in the static pool for 1994, 1995, and 1996, but not for 1997. The subsequent default of DS in 1998 was counted as a two-year default for the 1996 static pool, a three-year default for the 1995 static pool, and a four-year default for the 1994 static pool.

3. Database Limitations

The corporate debenture market in Thailand is at the developing stage. The Thai bond market is largely dominated by debt instruments issued by the government, the Bank of Thailand (BOT), and state enterprises. These debt instruments are not required by law to have credit ratings. As a result, TRIS Rating has considerably fewer clients than the long-established international rating agencies.

One problem with the limited sample size is that it exaggerates the default rate statistics because the number of observations in each rating category is used as the denominator to calculate the default rate. Thus, the fewer the observations in any particular rating category, the higher the default rate.

4. Impact from the Financial Crisis on Cumulative Default Rates

The financial crisis in 1997 and 1998 forced the government to shift to a managed float exchange rate system. This action raised the value of foreign denominated debts in terms of local currency. The credit risks of many FIs and non-FIs rose significantly as a result. As shown in Table 3, the annual default rates of the companies rated by TRIS Rating in 1997 and 1998 were unusually high at 35% and 30%, respectively. The annual default rate of 33% in the "AA" rating category in 1997 was the result of a default by an FI that was ordered by the BOT to cease operations. The default rate is thus overstated because of the relatively small number of rated issuers in that particular rating category. In 1997, there were only three companies in the "AA" rating category and 10 companies rated "BBB". The default of one company rated "AA" and five companies rated "BBB" made the annual default rates equal to 33% and 50% in these two rating categories in 1997. Five out of six defaulting issuers in 1997 were FIs that defaulted after they were ordered to cease operations by the BOT.

Appendix II

Full Names of Issuers

Abbreviation	Company Name
AH	AAPICO Hitech PLC
ANAN	Ananda Development PLC
AREEYA	Areeya Property PLC
BCH	Bangkok Chain Hospital PLC
BEM	Bangkok Expressway and Metro PLC
BJC	Berli Jucker PLC
CENTEL	Central Plaza Hotel PLC
CHO	Cho Thavee PLC
CI	Charn Issara Development PLC
CK	CH. Karnchang PLC
ECF	East Coast Furnitech PLC
EDL-Gen	EDL-Generation Public Company
ESC	Eastern Sugar & Cane PLC
FPT	Frasers Property (Thailand) PLC
GLOW	Glow Energy PLC
GOLD	Golden Land Property Development PLC
GPSC	Global Power Synergy PLC
GUNKUL	Gunkul Engineering PLC
IVL	Indorama Ventures PLC
JMART	Jay Mart PLC
JMT	JMT Network Services PLC
KTC	Krungthai Card PLC
LHHOTEL	LH Hotel Leasehold Real Estate Investment Trust
LIT	Lease IT PLC
LPN	L.P.N. Development Co., Ltd.
MBK	MBK PLC
MIDA	Mida Assets PLC
MJD	Major Development PLC
ML	Mida Leasing PLC
NER	North East Rubber PLC
NPS	National Power Supply PLC
TIDLOR	Ngern Tid Lor PLC
ORI	Origin Property PLC
BEYOND[4]	Bound and Beyond PLC
PSL	Precious Shipping PLC
RATCH	RATCH Group PLC
RATCHGEN	Ratchaburi Electricity Generating Co., Ltd.
RP	Raja Ferry PLC
SINGER	Singer Thailand PLC

[4] *Formerly known as Padaeng Industry PLC (PDI)*

SIRI	Sansiri PLC
SPCG	SPCG PLC
SQ	Sahakol Equipment PLC
STA	Sri Trang Agro-Industry PLC
STGT	Sri Trang Gloves (Thailand) PLC
SUPER	Super Energy Corporation PLC
TAA	Thai Airasia Co., Ltd.
TFG	Thaifoods Group PLC
TK	Thitikorn PLC
TPCH	TPC Power Holding PLC
TPOLY	Thai Polycons PLC
TTA	Thoresen Thai Agencies PLC
TU	Thai Union Group PLC
UNIQ	Unique Engineering and Construction PLC
UV	Univentures PLC
WHA	WHA Corporation PLC
WHA ID	WHA Industrial Development PLC
WHAUP	WHA Utilities and Power PLC

Source: TRIS Rating

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