



**CUMULATIVE DEFAULT RATES &
TRANSITION MATRIX DATA
2023**

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1. PURPOSE AND SCOPE

The purpose of this study is to examine the results of the 2023 year-end cumulative default rate statistics and transition matrix, which were prepared in accordance with Articles 25 and 26 of the "Regulation on Principles Regarding Authorization and Activities of Rating Agencies" which was published in the official newspaper on April 17, 2012, with the number 28267. According to Article 25 of the Regulation, the results should be shared with the public.

Within the scope of the study, credit rating observations made between 2008-2023, all on demand and contractual, were considered. Corporate Governance Ratings are excluded.

2. DATA ON OBSERVATION

When determining the cumulative default rate for defaulted customers, the rating they had ninety days prior to their default date is considered. Customers that aren't included in this scope are excluded from the observation data.

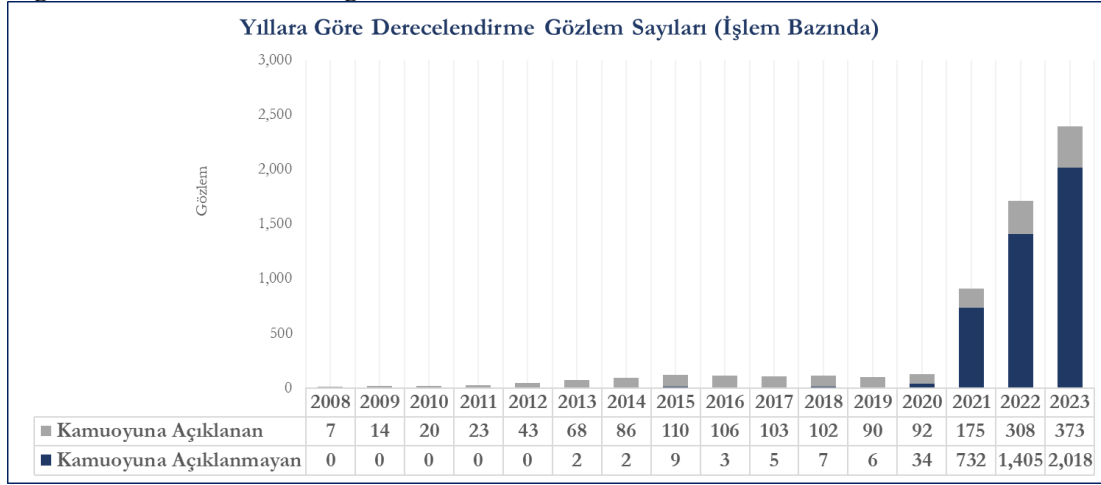
There is a total of 5,943 rating observations between 2008-2023, both on demand and contractual, and a total of 74 default cases related to these observations.

The distribution of the mentioned observations by years on the basis of the rating transaction is given in the table and graphic below.

Table 1 : Number of Rating Observations Based on Transaction

Number of the Rating Observations Based on Transaction						
Year	Public		Non-Public		Total	
	Observation	Default	Observation	Default	Observation	Default
2008	7	0	0	0	7	0
2009	14	0	0	0	14	0
2010	20	0	0	0	20	0
2011	23	0	0	0	23	0
2012	43	0	0	0	43	0
2013	68	2	2	0	70	2
2014	86	9	2	0	88	9
2015	110	11	9	0	119	11
2016	106	8	3	0	109	8
2017	103	6	5	0	108	6
2018	102	3	7	0	109	3
2019	90	1	6	0	96	1
2020	92	2	34	0	126	2
2021	175	1	732	11	907	12
2022	308	0	1,405	13	1,713	13
2023	373	0	2,018	7	2,391	7
Total	1,720	43	4,223	31	5,943	74

Figure 1 : Number of Rating Observations Based on Transaction

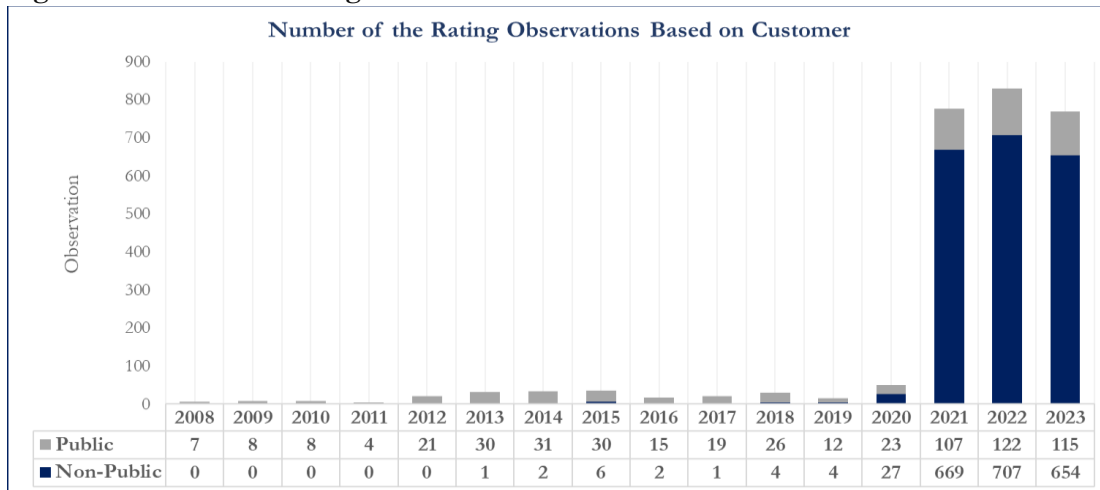


In the table and graphic below, the numbers are given on the basis of companies over the years. The first year that firms receive rating services from our Agency is considered in this customer-based study.

Table 2 : Number of Rating Observations Based on Customer

Number of the Rating Observations Based on Customer						
Year	Public		Non-Public		Total	
	Observation	Default	Observation	Default	Observation	Default
2008	7	0	0	0	7	0
2009	8	0	0	0	8	0
2010	8	0	0	0	8	0
2011	4	0	0	0	4	0
2012	21	0	0	0	21	0
2013	30	2	1	0	31	2
2014	31	7	2	0	33	7
2015	30	5	6	0	36	5
2016	15	3	2	0	17	3
2017	19	1	1	0	20	1
2018	26	1	4	0	30	1
2019	12	1	4	0	16	1
2020	23	1	27	0	50	1
2021	107	0	669	8	776	8
2022	122	0	707	6	829	6
2023	115	0	654	2	769	2
Total	578	21	2,077	16	2,655	37

Figure 2 : Number of Rating Observations Based on Customer



The distribution of on-demand and contractual rating transactions according to asset categories between 2008-2023 by transaction and firm based is given in the tables below.

Table 3 : Number of Rating Observations per Transaction According to Asset Category

Rating main and sub-asset categories	Number of Rating Observations According to Asset Category (per Transaction, 2008-2023)			
	Publicly Announced Observation	Default	Non-Announced to Public Observation	Total Observation
1 Central administrations, public institutions, international organizations and multilateral development banks:	14	0	4	18
1.1 Central administrations of the countries	13	0	3	16
1.2 Public institutions	1	0	1	2
1.3 International organizations and multilateral development banks	0	0	0	0
2 Companies:	1,567	43	4,212	5,779
2.1 Banks	151	0	6	157
2.2 Non-bank financial institutions	335	4	11	346
2.3 Corporate companies	1,081	39	4,195	5,276
2.4 Small and Medium Sized Businesses and other companies	0	0	0	0
3 Projects:	0	0	0	0
3.1 Project finance	0	0	0	0
4 Structured Debt Instruments	139	0	7	146
4.1 Structured Finance	139	0	7	146
4.2 Other structured finance instruments	0	0	0	0
Total	1,720	43	4,223	5,943

Table 4 : Number of Rating Observations per Firm According to Asset Category

Rating main and sub-asset categories	Number of Rating Observations According to Asset Category (per Firm, 2008-2023)			
	Publicly Announced Observation	Default	Non-Announced to Public Observation	Total Observation
1 Central administrations, public institutions, international organizations and multilateral development banks:	4	0	1	5
1.1 Central administrations of the countries	3	0	0	3
1.2 Public institutions	1	0	1	2
1.3 International organizations and multilateral development banks	0	0	0	0
2 Companies:	458	21	2,073	2,531
2.1 Banks	17	0	2	19
2.2 Non-bank financial institutions	58	1	4	62
2.3 Corporate companies	383	20	2,067	2,450
2.4 Small and Medium Sized Businesses and other companies	0	0	0	0
3 Projects:	0	0	0	0
3.1 Project finance	0	0	0	0
4 Structured Debt Instruments	116	0	3	119
4.1 Structured Finance	116	0	3	119
4.2 Other structured finance instruments	0	0	0	0
Total	578	21	2,077	2,655

3. CUMULATIVE DEFAULT RATES

The cumulative default rate represents the default rate of customers for a certain period of time given the same rating and is calculated for each rating in the master rating scale used by our institution.

The Banking Regulation and Supervision Agency has the authority to determine our institution's ratings' credit quality level equivalent which is used to calculate the capital adequacy ratio, and the determined ratios are announced to public on the Banking Regulation and Supervision Agency's (BRSA) website.

For each rating in the master scale, it is analyzed for the purpose of matching and reviewing of BRSA;

- The three-year cumulative default rates for the last two years,
- The ten-year averages of the three-year cumulative default rates

The results are given below.

When determining three-year cumulative default rates for defaulted customers, the ratings ninety days prior to their default date is considered. The calculation of the cumulative default rates is based on the on-demand ratings given as a result of the methodologies used by our institution itself.

The annual numbers of observation on the basis of rating is given in the table below.

Table 5 : Number of Observations per Rating According to Years

Rating	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
AAA	2	3	3	4	7	7	9	5	7	9	12	11	15	69	111	137	411
AA+	0	0	0	0	1	2	1	1	1	2	3	2	1	28	78	107	227
AA	1	1	2	2	2	5	5	6	7	8	9	11	10	77	154	164	464
AA-	0	2	1	1	0	7	4	3	4	6	12	10	17	85	168	185	505
A+	1	0	1	1	4	5	2	6	3	3	9	8	11	81	157	239	531
A	0	2	3	5	8	9	9	8	6	12	11	17	12	106	195	274	677
A-	2	2	2	2	3	10	12	17	18	18	23	15	21	105	209	279	738
BBB+	0	0	0	3	3	3	8	18	17	18	12	13	18	70	152	288	623
BBB	1	2	5	1	4	9	16	27	24	22	13	5	13	91	158	251	642
BBB-	0	2	1	3	9	12	21	24	20	10	5	4	6	99	177	251	644
BB+	0	0	1	1	1	0	1	3	1	0	0	0	0	40	83	116	247
BB	0	0	1	0	0	1	0	0	1	0	0	0	1	33	40	55	132
BB-	0	0	0	0	1	0	0	1	0	0	0	0	1	13	16	22	54
B+	0	0	0	0	0	0	0	0	0	0	0	0	0	8	6	14	28
B	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	4	10
B-	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	4
CCC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5
CC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DDD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	7	14	20	23	43	70	88	119	109	108	109	96	126	907	1,713	2,391	5,943

The annual number of defaults on the basis of rating is given in the table below.

Table 6 : Number of 3-Year Cumulative Rating Observations Based on the Rating Year

Rating	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
AAA	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	0	0	0	0	0	0	0	0	0	0
AA	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	0	0	0	0	0	1	0	2	1	4
A+	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	3
A	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	4
A-	0	0	0	0	0	0	1	2	2	1	1	1	1	1	0	2	12
BBB+	0	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	5
BBB	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	3	8
BBB-	0	0	0	0	0	0	6	5	4	2	0	0	0	1	3	1	22
BB+	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	3
BB	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	4
BB-	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
B+	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
CC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DDD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	9	11	8	6	3	1	2	12	13	7	74

As the three-year period has elapsed for companies rated in 2020 and prior, the defaults of mentioned companies within this timeframe have been factored into the table provided. Conversely, for companies rated in 2021 and onward, the observation periods are shorter due to the incomplete three-year span. For instance, a company rated in June 2022 is subject to an 18-month observation period, whereas a company rated in June 2023 is assessed based on only a six-month observation period.

For the attainment of **comparable and meaningful outcomes**, it is essential that the three-year observation period be completed for the cumulative default rates. Within this context, the three-year cumulative default rates have been computed in the table below based on the final year of the three-year observation period. For instance, **the rate calculated for 2023 signifies the default rates in 2023, which marks the culmination of the three-year observation period corresponding to the credit ratings assigned in 2020.**

Table 7 : 3 Years Cumulative Default Rates per Rating According to Years

Rating	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Last 10 Years Avg.
AAA	0.0%	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%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AA	0.0%	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%	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%	0.7%
A+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	1.1%
A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	9.1%	0.0%	0.0%	1.7%
A-	0.0%	0.0%	0.0%	8.3%	11.8%	11.1%	5.6%	4.3%	6.7%	4.8%	5.3%
BBB+	0.0%	0.0%	0.0%	0.0%	5.6%	11.8%	11.1%	0.0%	0.0%	0.0%	2.8%
BBB	0.0%	0.0%	11.1%	12.5%	7.4%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%
BBB-	0.0%	0.0%	0.0%	28.6%	20.8%	20.0%	20.0%	0.0%	0.0%	0.0%	8.9%
BB+	0.0%	0.0%		0.0%	33.3%	0.0%					6.7%
BB			100.0%			0.0%				0.0%	33.3%
BB-		0.0%			0.0%					0.0%	0.0%
B+											
B											
B-											
CCC											
CC											
C											
DDD											
DD											
D											
Total	0.0%	0.0%	2.9%	10.2%	9.2%	7.3%	5.6%	2.8%	1.0%	1.6%	4.1%

As can be seen from the table above, the 3-year cumulative default rates do not produce reliable results due to the very low number of defaults and observations. Since most of the assigned ratings belong to 2021 and later and not inclusion of these ratings to this study as the 3-year observation period has not been completed yet result in the lack of enough observation and default data to produce reliable results on a rating basis. When 3-year cumulative average default rate of last ten years is analyzed, it's impossible to make a sound assessment as there are no observations in the B+ and lower ratings (2020 and before). Since there are not enough observations for ratings above B+, the rating notches are grouped and the results of the study are given in the table below.

Table 8 : Number of Observations per Rating Groups According to Years

Rating Group	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
AAA to AA-	3	6	6	7	10	21	19	15	19	25	36	34	43	259	511	593	1,607
A+ to A-	3	4	6	8	15	24	23	31	27	33	43	40	44	292	561	792	1,946
BBB+ to BBB-	1	4	6	7	16	24	45	69	61	50	30	22	37	260	487	790	1,909
BB+ to BB-	0	0	2	1	2	1	1	4	2	0	0	0	2	86	139	193	433
B+ to B-	0	0	0	0	0	0	0	0	0	0	0	0	0	10	11	21	42
CCC & Below	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	6
Total	7	14	20	23	43	70	88	119	109	108	109	96	126	907	1,713	2,391	5,943

Table 9 : Number of Defaults per Rating Groups According to Years

Rating Group	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
AAA to AA-	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	4
A+ to A-	0	0	0	0	0	0	1	2	2	2	3	1	1	3	2	2	19
BBB+ to BBB-	0	0	0	0	0	1	8	8	6	4	0	0	0	1	3	4	35
BB+ to BB-	0	0	0	0	0	1	0	1	0	0	0	0	0	5	2	0	9
B+ to B-	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
CCC & Below	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	0	2	9	11	8	6	3	1	2	12	13	7	74

Table 10 : 3 Years Cumulative Default Rates per Rating Group According to Years

Rating Group	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Last 10 Years Avg.
AAA to AA-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.2%
A+ to A-	0.0%	0.0%	0.0%	4.3%	6.5%	7.4%	6.1%	7.0%	2.5%	2.3%	3.6%
BBB+ to BBB-	0.0%	0.0%	4.2%	17.8%	11.6%	9.8%	8.0%	0.0%	0.0%	0.0%	5.1%
BB+ to BB-	0.0%	0.0%	100.0%	0.0%	25.0%	0.0%				0.0%	17.9%
B+ to B-											
CCC & Below											
Total	0.0%	0.0%	2.9%	10.2%	9.2%	7.3%	5.6%	2.8%	1.0%	1.6%	4.1%

There is no observation data for ratings B+ and below thus it's impossible to make a sound assessment for last two years (2019 & 2020). When 3-year cumulative average default rate of last ten years is analyzed, it is clear that the rating groups with observations (no observations at B+ or below) have a substantial default rate trend. In addition to distributions above, the tables below show observation and default numbers as well as cumulative default rates for investable grade and below investment grade levels.

Table 11 : Number of Observations Based on Rating Level According to Years

Rating Level	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Investment Grade	7	14	18	22	41	69	87	115	107	108	109	96	124	811	1,559	2,175	5,462
Speculative	0	0	2	1	2	1	1	4	2	0	0	0	2	96	154	216	481
Total	7	14	20	23	43	70	88	119	109	108	109	96	126	907	1,713	2,391	5,943

Table 12 : Number of Defaults Based on Rating Level According to Years

Rating Level	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Investment Grade	0	0	0	0	0	1	9	10	8	6	3	1	2	4	7	7	58
Speculative	0	0	0	0	0	1	0	1	0	0	0	0	0	8	6	0	16
Total	0	0	0	0	0	2	9	11	8	6	3	1	2	12	13	7	74

Table 13 : 3 Years the Cumulative Default Rates Based on Ratings Level According to Years

Rating Level	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Last 10 Years Avg.
Investment Grade	0.0%	0.0%	1.4%	10.3%	8.7%	7.5%	5.6%	2.8%	1.0%	1.6%	3.9%
Speculative	0.0%	0.0%	100.0%	0.0%	25.0%	0.0%				0.0%	17.9%
Total	0.0%	0.0%	2.9%	10.2%	9.2%	7.3%	5.6%	2.8%	1.0%	1.6%	4.1%

When the 10-year averages of the 3-year cumulative default rates are analyzed, it is seen that there is a significant default rate differentiation. The average cumulative default rates over the last ten years varies dramatically between the two categories, as shown in the table above.

4. TRANSITION MATRIX RESULTS

The transition matrix is a table that illustrates the percentage or decimal distribution of the companies' ratings that they had at the beginning of the period according to the ratings that they had at the end of the period for the companies. Ratings of the companies whose contracts are not renewed during the calculation periods are not considered in the transition matrix computations, but their figures are provided in the tables for information purposes. As the structured finance ratings' validity time are dictated by the maturity of the security subject to financing, they are not included in the transition matrix analysis.

Transition matrix results for the last 3 years are given in the tables below.

Table 14 : Transition Matrix between 2020-2023 based on the Ratings

Rating	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC	CC	C	D	Default	W/D	Total		
AAA	100.0%																						0	8	
AA+		100.0%																						0	1
AA	50.0%		37.5%		12.5%																		1	9	
AA-		7.7%	53.8%	7.7%	7.7%		7.7%	7.7%														7.7%	1	14	
A+	10.0%	20.0%	20.0%	50.0%																			1	11	
A		9.1%	18.2%	18.2%	54.5%																		1	12	
A-			11.1%	5.6%	27.8%	33.3%	11.1%															5.6%	3	21	
BBB+			8.3%	25.0%		41.7%	25.0%																6	18	
BBB					30.0%	10.0%	30.0%	20.0%	10.0%														3	13	
BBB-			20.0%		20.0%	20.0%	40.0%																1	6	
BB+																							0	0	
BB																							1	1	
BB-							100.0%																0	1	
B+																							0	0	
B																							0	0	
B-																							0	0	
CCC																							0	0	
CC																							0	0	
C																							0	0	
D																							0	0	
Total	13	5	16	9	12	16	10	10	3	1	0	0	0	0	0	0	0	0	0	0	2	18	115		

W/D: Withdrawn describes companies that can't be rated since their contract has not been renewed.

Table 15 : Transition Matrix between 2021-2023 based on the Ratings

Rating	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC	CC	C	D	Default	W/D	Total	
AAA	96.8%	3.2%																					4	66
AA+	38.5%	34.6%	15.4%	7.7%	3.8%																		0	26
AA	6.8%	26.0%	50.7%	6.8%	6.8%	1.4%	1.4%																3	76
AA-	1.4%	11.0%	38.4%	28.8%	12.3%	1.4%	6.8%																4	77
A+	1.3%	2.6%	1.3%	28.9%	44.7%	13.2%	3.9%	2.6%														1.3%	3	79
A	2.0%	1.0%	5.0%	14.9%	25.7%	35.6%	8.9%	2.0%	2.0%	1.0%				1.0%								1.0%	4	105
A-		1.0%	3.9%	4.9%	16.5%	34.0%	24.3%	9.7%	3.9%	1.0%												1.0%	3	106
BBB+				1.6%	6.3%	18.8%	32.8%	25.0%	10.9%	3.1%	1.6%												6	70
BBB				1.1%	9.1%	15.9%	18.2%	26.1%	20.5%	5.7%	3.4%												3	91
BBB-	1.0%			1.0%	2.0%	12.2%	25.5%	22.4%	26.5%	4.1%	1.0%										1.0%	4	102	
BB+					2.3%	2.3%	2.3%	18.6%	34.9%	27.9%	9.3%											2.3%	2	45
BB						2.3%	2.3%	3.1%	18.8%	25.0%	37.5%	6.3%										9.4%	3	35
BB-							7.1%	28.6%	35.7%	14.3%	7.1%											7.1%	0	14
B+								14.3%	14.3%	14.3%	14.3%	14.3%										42.9%	1	8
B									50.0%														0	2
B-																							2	2
CCC																							0	0
CC																							0	0
C																							0	0
D																							0	0
Total	80	42	79	73	106	112	93	80	62	62	29	22	4	3	2	1	0	0	0	0	12	42	904	

Table 16 : Transition Matrix between 2022-2023 based on the Ratings

Rating	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC	CC	C	D	Default	W/D	Total		
AAA	95.8%	4.2%																					2	98	
AA+	10.6%	77.3%	7.6%	3.0%	1.5%																		2	68	
AA	0.7%	11.3%	76.8%	7.0%	4.2%																		11	153	
AA-	1.3%	0.6%	14.7%	60.3%	13.5%	3.2%	3.8%	1.3%														1.3%	7	163	
A+			0.7%	16.1%	62.4%	13.4%	4.7%	1.3%														0.7%	6	155	
A	0.5%			3.8%	18.3%	60.2%	11.3%	3.2%	1.1%	0.5%				0.5%								0.5%	10	196	
A-			0.5%	1.0%	8.4%	22.5%	49.2%	12.6%	5.8%														18	209	
BBB+					3.4%	7.6%	26.2%	42.1%	16.6%	4.1%													9	154	
BBB					1.3%	2.6%	11.9%	27.8%	45.0%	7.9%	3.3%												6	157	
BBB-					0.6%	2.5%	11.7%	21.0%	54.3%	5.6%	1.2%	0.6%										1.9%	17	179	
BB+								4.9%	33.3%	48.1%	8.6%	3.7%										1.2%	8	89	
BB									2.5%	27.5%	55.0%	7.5%	7.5%										7	47	
BB-									5.6%	5.6%	27.8%	44.4%	11.1%									5.6%	1	19	
B+										14.3%				71.4%									14.3%	2	9
B									16.7%					16.7%	33.3%								16.7%	1	7
B-															100.0%								1	2	
CCC																							11.1%	1	10
CC																							66.7%	3	6
C																							100.0%	0	1
D																								1	1
Total	103	72	139	139	178	196	188	156	143	138	66	36	15	12	4	1	3	6	1	0	14	113	1723		

As can be seen from the tables above, there are sufficient number of observations only for 2022-2023 period to make an evaluation on the basis of the ratings. For other two periods there is not sufficient number of observations. The stability of rating scores is high at higher grades in the transition matrix for 2022-2023 period. It may be misleading to make an inference due to the low number of observations in low grades. In order to make a sound assessment rating are grouped and the results of the study is given in the tables below.

Table 17 : Transition Matrix between 2020-2023 based on the Ratings Groups

Rating Group	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ to B-	CCC & Below	Default	W/D	Total
AAA to AA-	83.3%	10.0%	3.3%				3.3%	2	32
A+ to A-	41.0%	53.8%	2.6%				2.6%	5	44
BBB+ to BBB-	7.4%	51.9%	40.7%					10	37
BB+ to BB-			100.0%					1	2
B+ to B-								0	0
CCC & Below								0	0
Total	43	38	14	0	0	0	2	18	115

Table 18 : Transition Matrix between 2021-2023 based on the Ratings Groups

Rating Group	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ to B-	CCC & Below	Default	W/D	Total
AAA to AA-	90.2%	9.8%						11	245
A+ to A-	21.1%	69.6%	7.9%		0.4%		1.1%	10	290
BBB+ to BBB-	1.6%	36.4%	57.6%	3.6%	0.4%		0.4%	13	263
BB+ to BB-		2.2%	40.4%	50.6%	1.1%		5.6%	5	94
B+ to B-			22.2%	11.1%	33.3%		33.3%	3	12
CCC & Below								0	0
Total	274	311	204	55	6	0	12	42	904

Table 19 : Transition Matrix between 2021-2023 based on the Ratings Groups

Rating Group	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ to B-	CCC & Below	Default	W/D	Total
AAA to AA-	90.7%	8.5%	0.4%				0.4%	22	482
A+ to A-	6.8%	83.7%	8.9%		0.2%		0.4%	34	560
BBB+ to BBB-		18.1%	77.3%	3.7%	0.2%		0.7%	32	490
BB+ to BB-			23.7%	71.2%	3.6%		1.4%	16	155
B+ to B-			7.1%	7.1%	64.3%	14.3%	7.1%	4	18
CCC & Below					7.7%	61.5%	30.8%	5	18
Total	453	562	437	117	17	10	14	113	1723

On the basis of rating groups, the transitions are considered as within reasonable levels.

Best Regards,

JCR EURASIA RATING