

Transition & Default Study

CY11-CY22

“One accurate measurement is worth a thousand expert opinions”

31st January 2023



The Pakistan Credit Rating Agency Limited



Section I: Concept of Transition & Default Study

Section II: PACRA Transition & Default Trends

Section III: Peer Analysis

Annexures



SECTION I: CONCEPT OF TRANSITION & DEFAULT STUDY



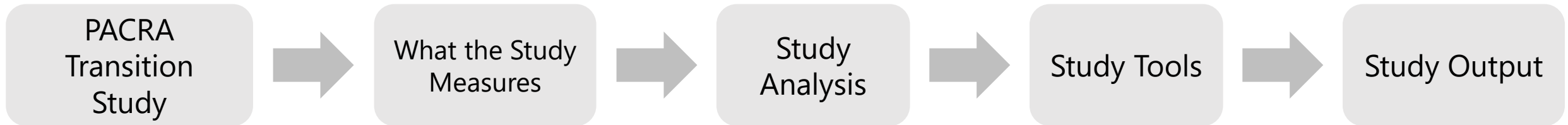
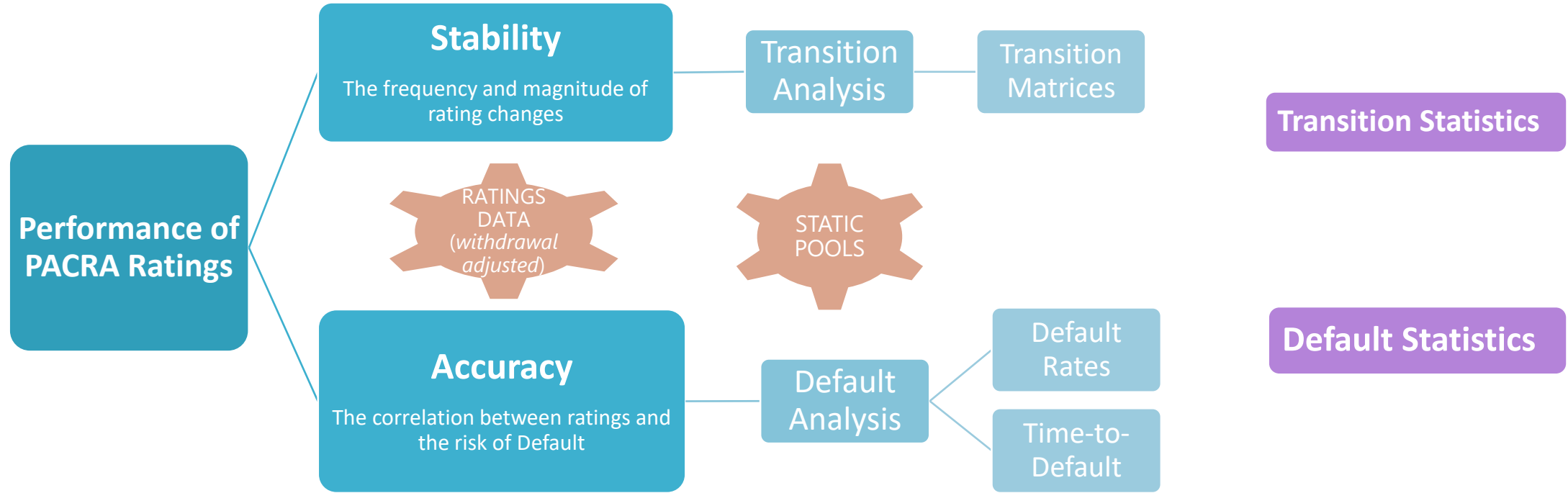
What is a Transition & Default Study?

A Set of Standardized Tools & Analyses for a Credit Rating Company's (CRC) ratings' performance appraisal

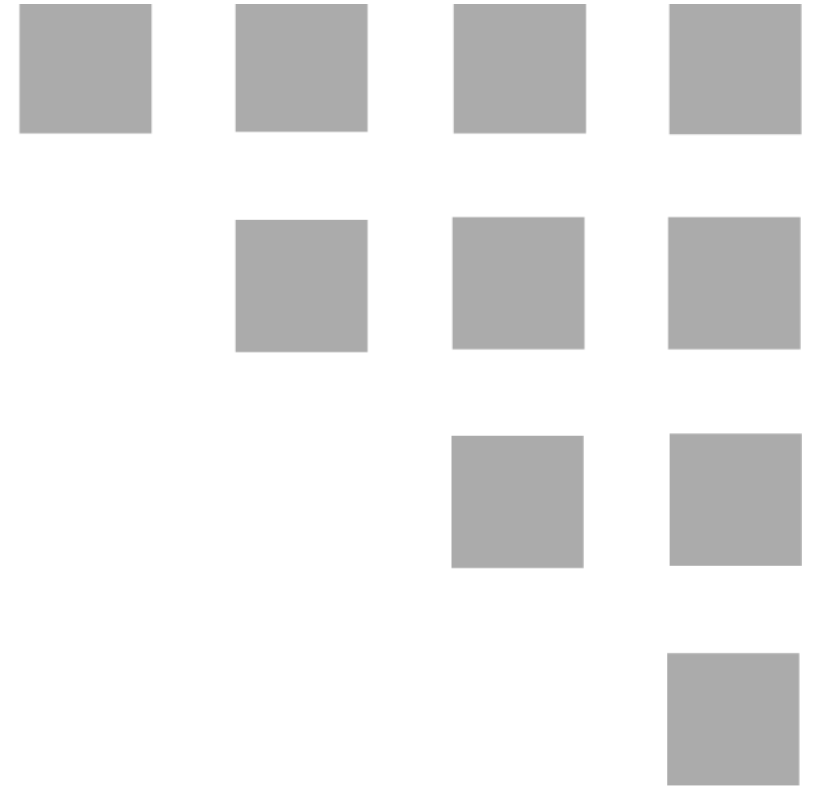
Need for a Transition & Default Study

- Self Assessment of CRC
- Peer Analysis with other CRCs
- Regulatory Requirement

Schematic – A Typical Transition & Default Study

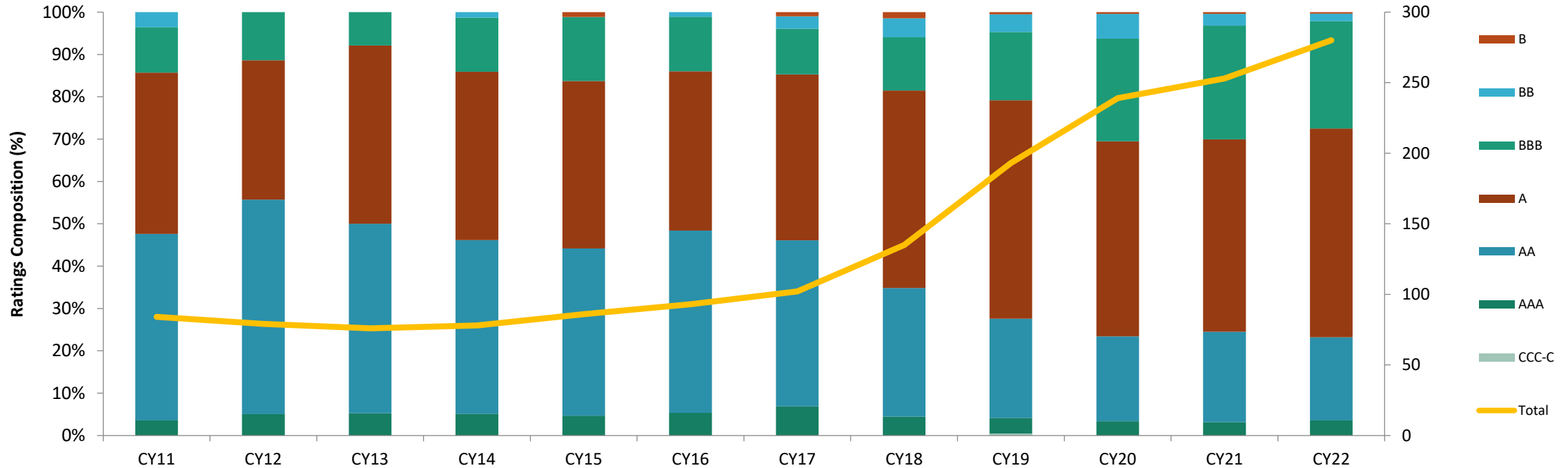


SECTION II: PACRA TRANSITION & DEFAULT TRENDS



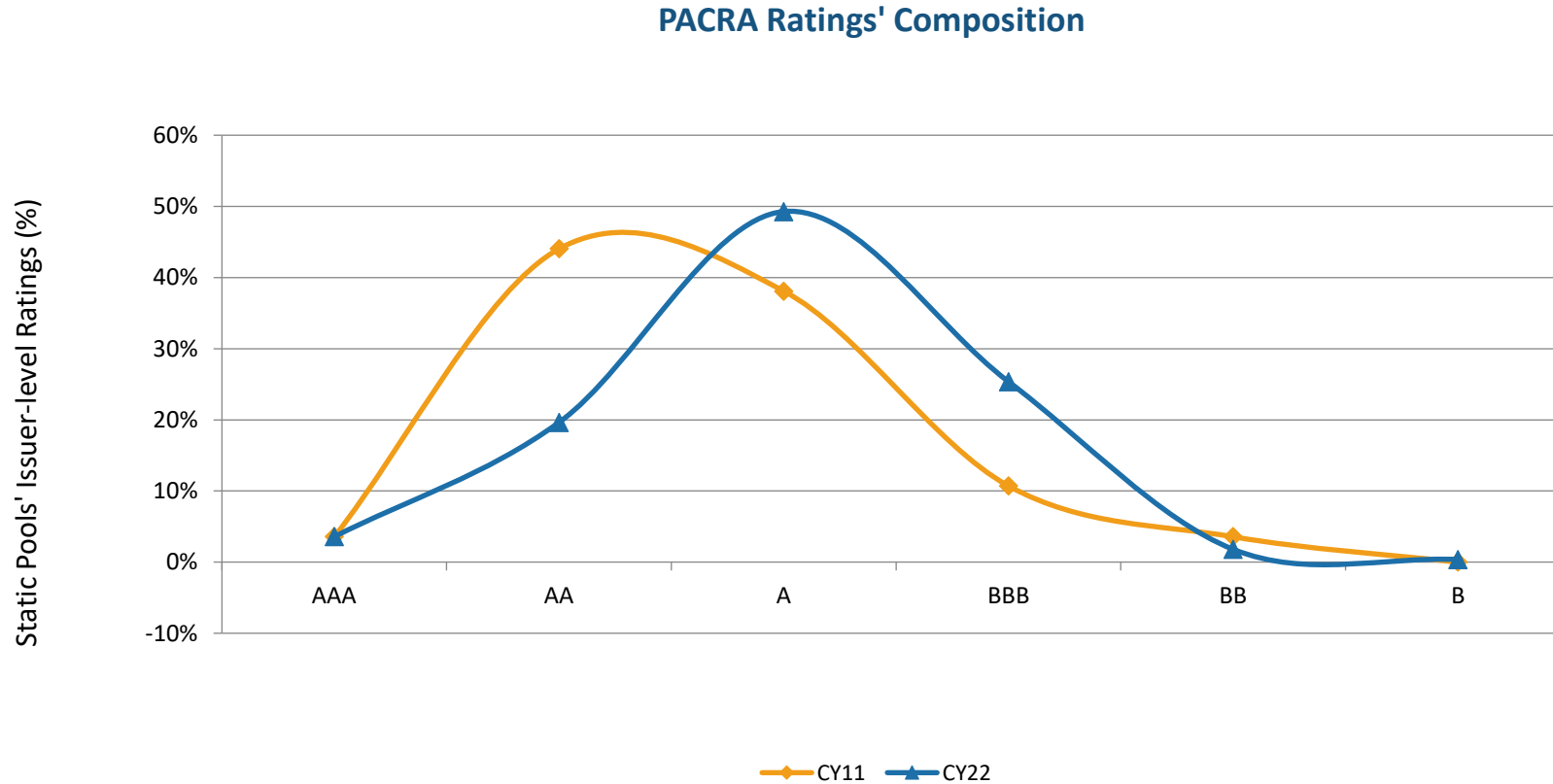
Rating Distribution

PACRA Original Static Pools Composition (CY11-CY22)



Total Opinions	84	79	76	78	86	93	102	135	193	239	253	280
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- PACRA's rating universe was quite limited in size until CY17 which posed limitations to the interpretation of study results.
- Significant growth in rating opinions over the past 5 years has made the results of the study statistically more meaningful.

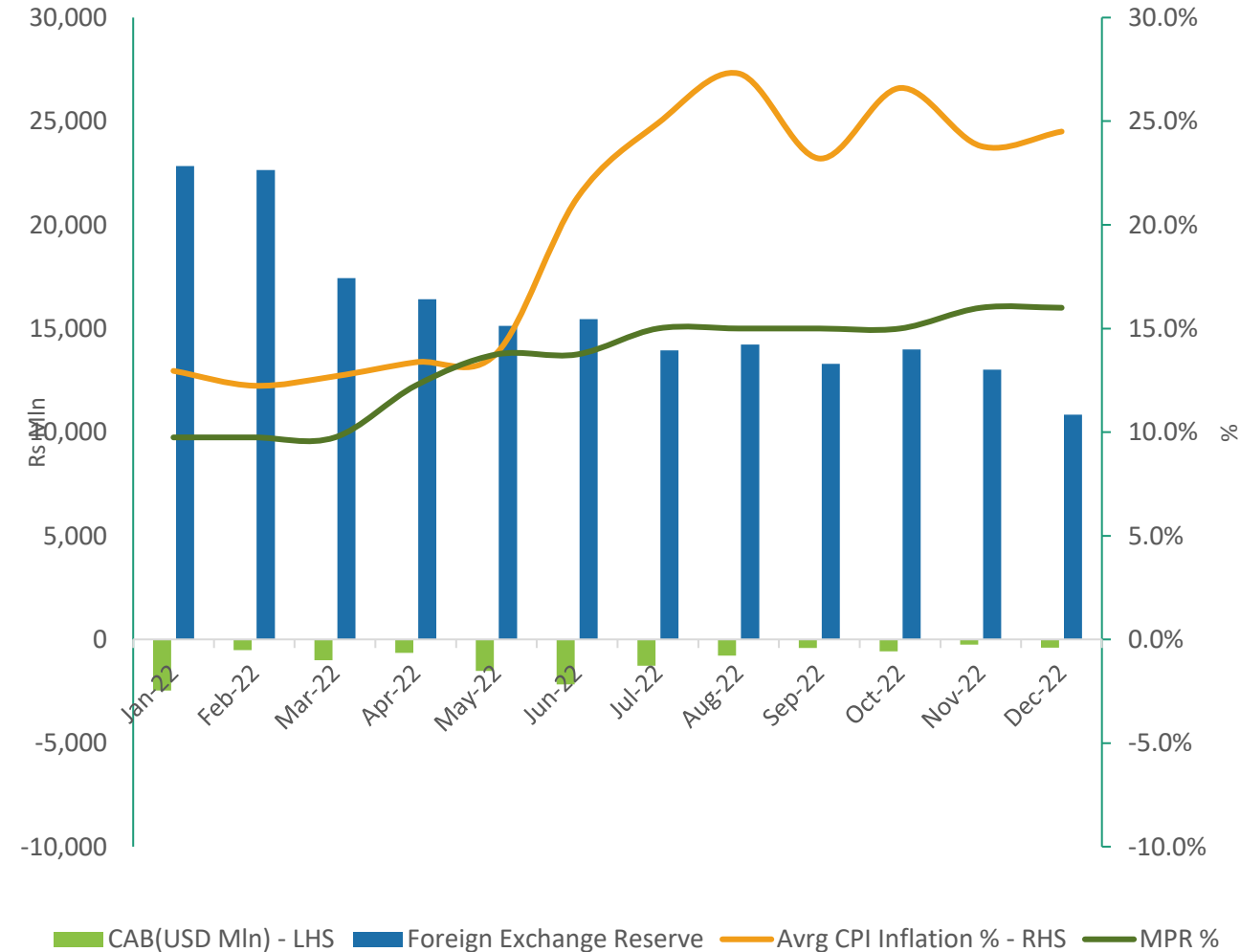


- The mean rating for PACRA has shifted from “AA” to the “A” category between CY11 and CY22 while the median rating category over the same period has largely remained unchanged at “A”.
- The decline in the mean rating is attributable to the rating universe having expanded threefold over the decade, thus resulting in a more balanced rating mix.

Overview of Economy

- CY22 saw a surge in global inflation driven by soaring food and fuel costs, exacerbated by the outbreak of the Russia-Ukraine conflict. The resulting international commodity price spiral coupled with the Pakistani rupee devaluation due to economic and political uncertainty resulted in high domestic inflation. Average CPI Inflation for CY22 clocked in at 24.5% against 12.3% in CY21.
- Meanwhile, high dependence on imported energy and rise in international commodity prices led to a current account deficit of \$11,981mln in CY22 (CY21: \$9,857mln) .
- The policy rate witnessed an upsurge of 625bps during CY22, landing at 16% at year-end, reflecting the State Bank’s efforts to counter inflationary pressures and contain the current account deficit.
- In the foreign exchange market, PKR saw a devaluation of 30.5% of value against USD due to the widening current account deficit coupled with the USD’s appreciation as the Federal Reserve (Fed) aggressively hiked interest rates to combat inflation.

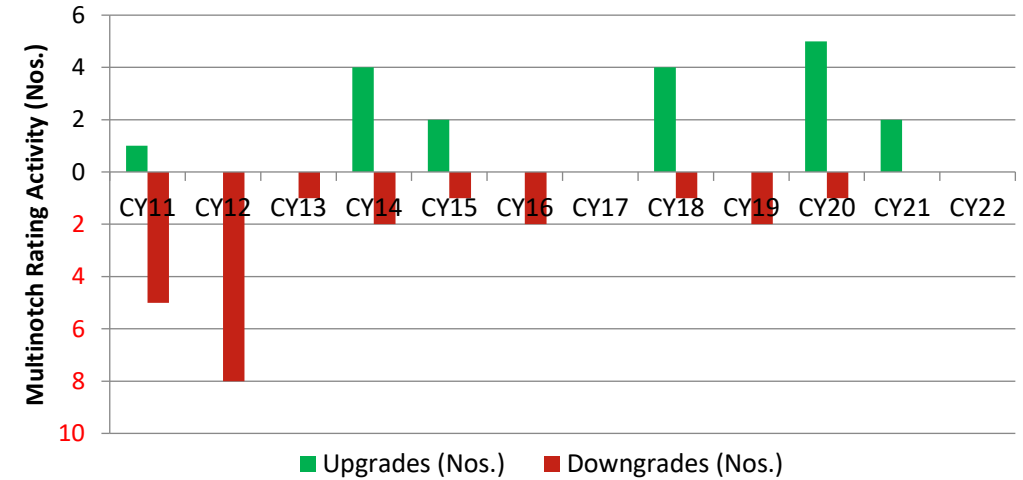
Trend in Key Policy Indicators



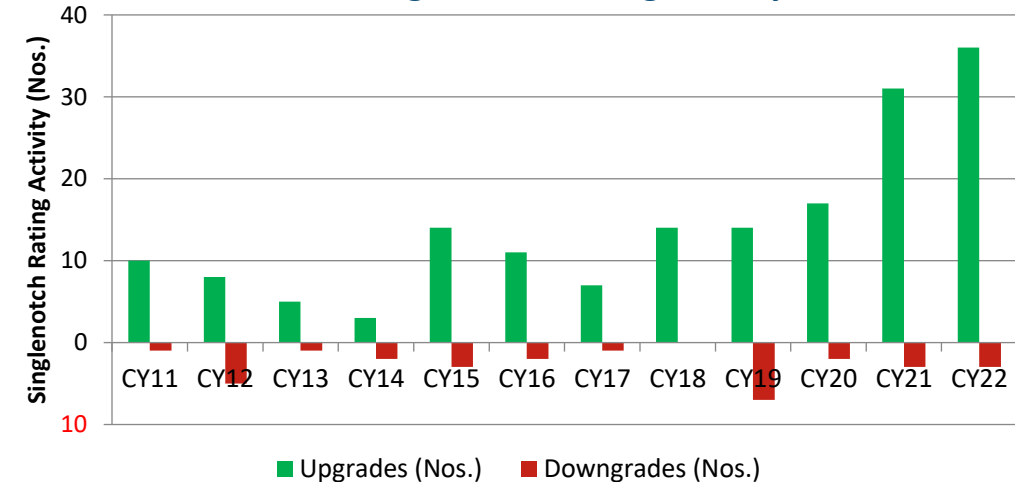
Impact on PACRA rating universe

- PACRA’s rating universe continued to display high resilience in CY22, reflecting the quality of PACRA’s forward-looking opinions. The restrained impact of economic turmoil had largely been taken into account beforehand in ‘through the cycle’ opinions.
- PACRA witnessed stability in its upgrade rate, which stood at ~13.4% in CY22 (CY21: ~13.8%) driven by export-oriented entities.
- Meanwhile, downgrade rate reflected a slight downtick to ~1.1% in CY22 (CY21: ~1.3%).
- No multi-notch upgrades and downgrades were witnessed over the year while single-notch upgrades clocked in an impressive 36 versus 3 single-notch downgrades.

Annual Multi-notch Rating Activity

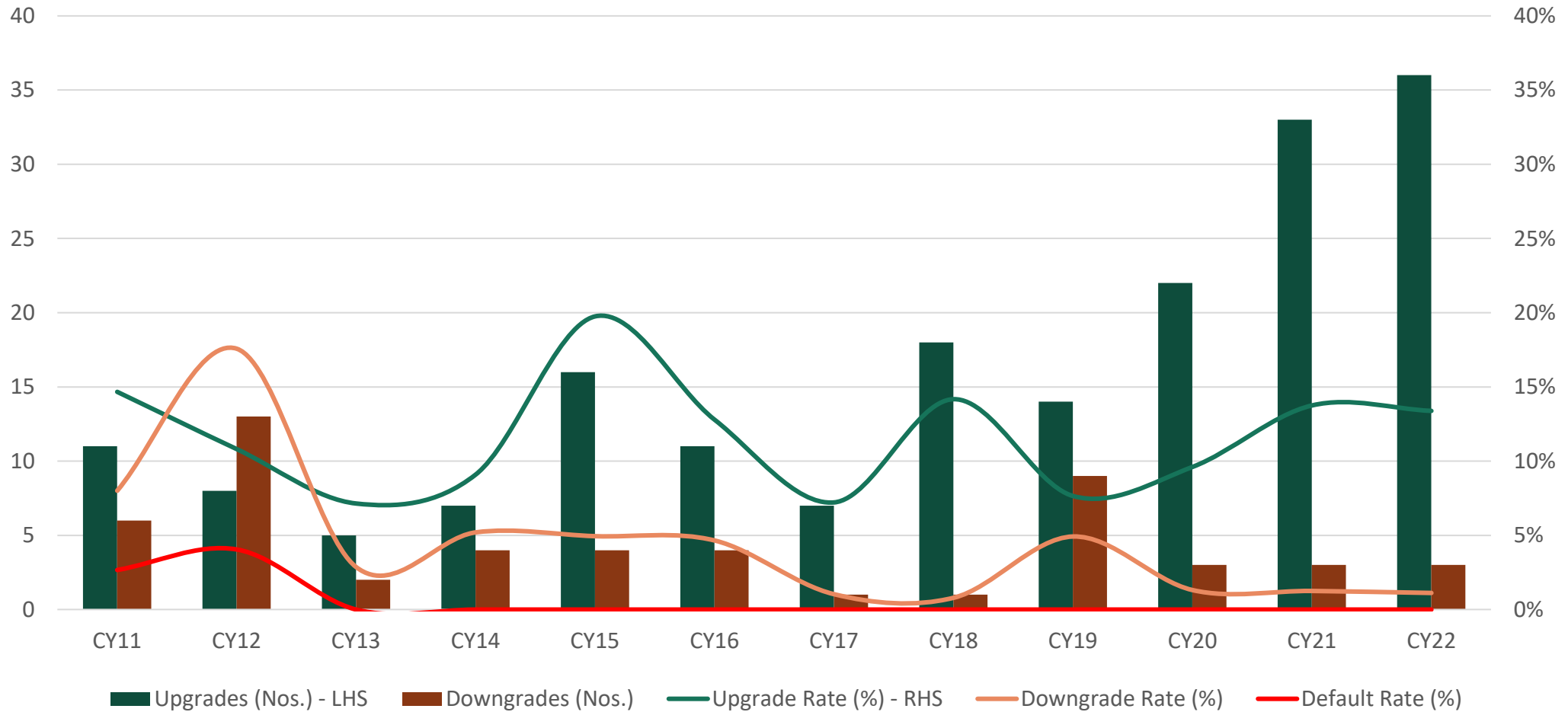


Annual Single-notch Rating Activity



- CY22 witnessed 36 single-notch upgrades and no multi-notch upgrades. The top 3 sectors that witnessed the highest number of upgrades were textile, power, and agriculture.
- Textile sector recovered strongly as demand rebounded following the reopening of economies around the globe after Covid-19. A steep rise in global demand alongside record-high cotton prices led to robust financial performance of textile players, particularly exporters, and resulted in 10 rating upgrades in the sector.
- Upgrades in power sector ratings were mainly on basis of achieving CoD or proof of successful operations post-commissioning. Furthermore, in the case of certain entities, paying off project debts was also viewed positively. PACRA upgraded 6 entities in the power sector during the year.
- Upgrades in agriculture were driven by rice exporters. The international hike in non-basmati rice prices outweighed the impact of production shortages owing to floods. Concessional borrowings on the books of these exporters further strengthened their bottom lines. PACRA upgraded 5 entities in the agriculture sector, 3 being rice exporters.

Annual Rating Activity Trend



➤ The default rate has remained unchanged at 0% after CY12.

CY22 Transition Matrix

Transition (Years) : 1		End of Year (CY22)																			
		Withdrawal Adjusted Static Pool	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	D	Withdrawals
Beginning of Year (CY22)	AAA	10.00	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	AA+	12.00	-	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	AA	21.00	-	-	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	AA-	21.00	-	-	14.3%	85.7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
	A+	24.00	-	-	-	12.5%	83.3%	4.2%	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	A	41.00	-	-	-	-	17.1%	80.5%	2.4%	-	-	-	-	-	-	-	-	-	-	-	3.00
	A-	68.00	-	-	-	-	-	5.9%	94.1%	-	-	-	-	-	-	-	-	-	-	-	2.00
	BBB+	27.00	-	-	-	-	-	-	25.9%	70.4%	3.7%	-	-	-	-	-	-	-	-	-	1.00
	BBB	27.00	-	-	-	-	-	-	-	11.1%	88.9%	-	-	-	-	-	-	-	-	-	2.00
	BBB-	12.00	-	-	-	-	-	-	-	-	33.3%	66.7%	-	-	-	-	-	-	-	-	2.00
	BB+	5.00	-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	-	-	-	-	0.00
	BB	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	BB-	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	B+	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	B	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	B-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%	0.00
CCC-C	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	
Static Pool Size:		269.00																			

➤ Upgrades exceeded downgrades in CY22 where a higher proportion of rating upgrades were observed in rating categories (A-BBB).

One-year Average Transition Matrix

Transition Period (1-Year)		Average Annual Transition (CY11-CY22)																	Withdrawal- Adjusted Static Pool
		AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	
Beginning of Year (Average CY11-CY22)	AAA	98.6%	1.4%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.83
	AA+	3.6%	95.5%	0.9%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.33
	AA	-	4.5%	92.9%	0.5%	1.5%	0.5%	-	-	-	-	-	-	-	-	-	-	-	16.50
	AA-	-	-	10.7%	86.5%	2.2%	-	0.6%	-	-	-	-	-	-	-	-	-	-	14.83
	A+	-	-	-	9.9%	86.3%	3.7%	-	-	-	-	-	-	-	-	-	-	-	13.42
	A	-	-	-	2.2%	12.1%	83.0%	1.8%	-	0.4%	-	-	-	-	-	-	-	-	18.58
	A-	-	-	-	-	0.3%	8.1%	88.4%	1.2%	1.5%	0.6%	-	-	-	-	-	-	-	27.92
	BBB+	-	-	-	-	-	-	20.6%	75.7%	3.7%	-	-	-	-	-	-	-	-	8.92
	BBB	-	-	-	-	-	0.9%	1.8%	12.5%	79.5%	1.8%	-	0.9%	-	-	0.9%	-	-	9.33
	BBB-	-	-	-	-	-	-	3.1%	1.6%	23.4%	67.2%	1.6%	1.6%	-	-	-	-	-	5.33
	BB+	-	-	-	-	-	-	-	-	9.4%	43.8%	46.9%	-	-	-	-	-	-	2.67
	BB	-	-	-	-	-	-	-	12.5%	-	12.5%	-	37.5%	12.5%	-	-	12.5%	-	0.67
	BB-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	0.08
	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	50.0%	-	-	0.17
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	25.0%	25.0%	0.33
	B-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	0.08
	CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00

- It can be observed PACRA's higher rating categories (AAA-AA) have exhibited high level of stability within one-year period.
- Stability rates of PACRA's higher rating categories have generally been higher than those for the lower rating categories.

Three-year Average Transition Matrix

Transition Period (3-Years)		Average Three-Year Transition (CY11-CY22)																	Withdrawal- Adjusted Static Pool	
		AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C		D
Beginning of Year (Average CY11-CY22)	AAA	94.2%	5.8%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.20
	AA+	10.7%	85.7%	3.6%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.40
	AA	-	12.7%	81.3%	2.7%	2.7%	0.7%	-	-	-	-	-	-	-	-	-	-	-	-	15.00
	AA-	-	1.6%	21.9%	67.2%	7.8%	0.8%	0.8%	-	-	-	-	-	-	-	-	-	-	-	12.80
	A+	-	-	1.9%	22.6%	68.9%	6.6%	-	-	-	-	-	-	-	-	-	-	-	-	10.60
	A	-	-	2.3%	5.3%	27.8%	60.2%	3.8%	-	-	0.8%	-	-	-	-	-	-	-	-	13.30
	A-	-	-	0.5%	2.6%	2.1%	18.3%	68.6%	3.1%	3.7%	1.0%	-	-	-	-	-	-	-	-	19.10
	BBB+	-	-	-	-	-	3.8%	36.5%	55.8%	3.8%	-	-	-	-	-	-	-	-	-	5.20
	BBB	-	-	-	-	2.2%	-	13.3%	33.3%	40.0%	2.2%	-	4.4%	-	4.4%	-	-	-	-	4.50
	BBB-	-	-	-	-	-	-	16.7%	8.3%	41.7%	29.2%	-	-	-	4.2%	-	-	-	-	2.40
	BB+	-	-	-	-	-	-	-	-	38.9%	50.0%	11.1%	-	-	-	-	-	-	-	1.80
	BB	-	-	-	-	14.3%	-	28.6%	-	28.6%	14.3%	-	-	-	-	-	-	14.3%	-	0.70
	BB-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	-	-	-	-	-	0.10
	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	50.0%	-	-	0.20
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	-	0.10
	B-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00

➤ The three-year average rating stability, similar to the trend observed for one-year average rating stability manifests that higher rating categories shows greater stability as compared to the lower rating categories.

Five-year Average Transition Matrix

Transition Period (5-Years)		Average Five-Year Transition (CY11-CY22)																	Withdrawal- Adjusted Static Pool
		AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	
Beginning of Year (Average CY11-CY22)	AAA	91.7%	8.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.50
	AA+	18.0%	75.4%	6.6%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.63
	AA	-	19.8%	72.1%	5.4%	2.7%	-	-	-	-	-	-	-	-	-	-	-	-	13.88
	AA-	-	2.2%	32.6%	52.8%	12.4%	-	-	-	-	-	-	-	-	-	-	-	-	11.13
	A+	-	-	4.5%	37.3%	52.2%	6.0%	-	-	-	-	-	-	-	-	-	-	-	8.38
	A	-	1.4%	4.1%	10.8%	33.8%	43.2%	4.1%	-	-	2.7%	-	-	-	-	-	-	-	9.25
	A-	-	-	3.7%	4.9%	2.5%	16.0%	63.0%	8.6%	-	1.2%	-	-	-	-	-	-	-	10.13
	BBB+	-	-	-	-	-	25.0%	29.2%	45.8%	-	-	-	-	-	-	-	-	-	3.00
	BBB	-	-	-	-	-	6.3%	43.8%	31.3%	6.3%	-	6.3%	-	-	-	-	-	6.3%	2.00
	BBB-	-	-	-	-	-	16.7%	50.0%	-	16.7%	-	-	16.7%	-	-	-	-	-	0.75
	BB+	-	-	-	-	-	-	25.0%	25.0%	25.0%	25.0%	-	-	-	-	-	-	-	0.50
	BB	-	-	-	-	33.3%	-	66.7%	-	-	-	-	-	-	-	-	-	-	0.38
	BB-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	-	-	-	-	0.13
	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	0.13
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	B-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00

➤ Due to an increase in the proportion of upgrades, rating category (A) witnessed relatively lower stability in five year average rating transitions.

Ten-year Average Transition Matrix

		Average Ten-Year Transition (CY11-CY22)																	Withdrawal-Adjusted Static Pool
Transition Period (10-Years)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	D	
	Beginning of Year (Average CY11-CY22)	AAA	72.7%	27.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AA+		41.2%	58.8%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.67
AA		4.9%	26.8%	53.7%	12.2%	2.4%	-	-	-	-	-	-	-	-	-	-	-	-	13.67
AA-		-	6.7%	46.7%	30.0%	10.0%	6.7%	-	-	-	-	-	-	-	-	-	-	-	10.00
A+		-	-	33.3%	58.3%	8.3%	-	-	-	-	-	-	-	-	-	-	-	-	4.00
A		-	5.6%	-	16.7%	55.6%	22.2%	-	-	-	-	-	-	-	-	-	-	-	6.00
A-		-	-	10.0%	-	5.0%	20.0%	50.0%	15.0%	-	-	-	-	-	-	-	-	-	6.67
BBB+		-	-	-	-	-	-	50.0%	50.0%	-	-	-	-	-	-	-	-	-	1.33
BBB		-	-	-	-	-	-	40.0%	60.0%	-	-	-	-	-	-	-	-	-	1.67
BBB-		-	-	-	-	-	-	100.0%	-	-	-	-	-	-	-	-	-	-	0.33
BB+		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
BB		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
BB-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
B+		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
B		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
B-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
CCC-C		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00

➤ Ten year average rating transition exhibits an overall trend of migration to higher rating categories.

One-year Average Transition Matrix - Corporates

Transition Period (1-Year)		Average Annual Transition (CY11-CY22)																	Withdrawal- Adjusted Static Pool		
		AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C		D	
Beginning of Year (Average CY11-CY22)	AAA	96.0%	4.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.08	
	AA+	-	97.3%	2.7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.08
	AA	-	2.3%	93.8%	0.8%	2.3%	0.8%	-	-	-	-	-	-	-	-	-	-	-	-	-	10.75
	AA-	-	-	12.1%	83.9%	3.2%	-	0.8%	-	-	-	-	-	-	-	-	-	-	-	-	10.33
	A+	-	-	-	11.2%	85.1%	3.7%	-	-	-	-	-	-	-	-	-	-	-	-	-	11.17
	A	-	-	-	3.1%	12.9%	81.6%	1.2%	-	0.6%	-	-	-	-	-	-	-	-	-	0.6%	13.58
	A-	-	-	-	-	0.4%	9.3%	88.5%	0.4%	1.1%	0.4%	-	-	-	-	-	-	-	-	-	22.50
	BBB+	-	-	-	-	-	-	21.3%	76.0%	2.7%	-	-	-	-	-	-	-	-	-	-	6.25
	BBB	-	-	-	-	-	1.1%	2.2%	11.1%	83.3%	1.1%	-	-	-	-	-	-	-	-	1.1%	7.50
	BBB-	-	-	-	-	-	-	1.9%	1.9%	22.6%	69.8%	1.9%	-	-	-	-	-	-	-	1.9%	4.42
	BB+	-	-	-	-	-	-	-	-	10.3%	44.8%	44.8%	-	-	-	-	-	-	-	-	2.42
	BB	-	-	-	-	-	-	-	-	20.0%	-	60.0%	-	-	-	-	-	-	-	20.0%	0.42
	BB-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	-	-	-	0.08
	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	B-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00

➤ One-year average rating transition of Corporates is consistent with its overall trend of migration to higher rating categories.

One-year Average Transition Matrix – Financial Institutions

Transition Period (1-Year)		Average Annual Transition (CY11-CY22)																	Withdrawal- Adjusted Static Pool	
		AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C		D
Beginning of Year (Average CY11-CY22)	AAA	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.75
	AA+	5.3%	94.7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.25
	AA	-	8.7%	91.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.75
	AA-	-	-	7.4%	92.6%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.50
	A+	-	-	-	3.7%	92.6%	3.7%	-	-	-	-	-	-	-	-	-	-	-	-	2.25
	A	-	-	-	-	10.0%	86.7%	3.3%	-	-	-	-	-	-	-	-	-	-	-	5.00
	A-	-	-	-	-	-	3.1%	87.7%	4.6%	3.1%	1.5%	-	-	-	-	-	-	-	-	5.42
	BBB+	-	-	-	-	-	-	18.8%	75.0%	6.3%	-	-	-	-	-	-	-	-	-	2.67
	BBB	-	-	-	-	-	-	-	18.2%	63.6%	4.5%	-	4.5%	-	-	4.5%	-	-	4.5%	1.83
	BBB-	-	-	-	-	-	-	9.1%	-	27.3%	54.5%	-	9.1%	-	-	-	-	-	-	0.92
	BB+	-	-	-	-	-	-	-	-	-	33.3%	66.7%	-	-	-	-	-	-	-	0.25
	BB	-	-	-	-	-	-	33.3%	-	-	-	-	33.3%	-	-	33.3%	-	-	-	0.25
	BB-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00
	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	50.0%	-	-	-	0.17
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	25.0%	25.0%	-	0.33
	B-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	-	0.08
	CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00

➤ Ten year average rating transition of Financial institutions is also following the trend of upward ratings migration.

Transition Rates – Financial Institutions vs. Corporates

		CY11	CY12	CY13	CY14	CY15	CY16	CY17	CY18	CY19	CY20	CY21	CY22
Upgrade Rate (%)	Financial Institution	8.3%	16.2%	14.7%	5.6%	11.8%	13.2%	7.9%	9.8%	-	2.4%	4.3%	8.0%
	Corporate	20.5%	5.4%	-	12.2%	25.5%	12.5%	6.8%	16.3%	9.9%	11.2%	16.1%	14.6%
Downgrade Rate (%)	Financial Institution	5.6%	8.1%	-	11.1%	2.9%	5.3%	2.6%	2.4%	7.3%	-	2.1%	4.0%
	Corporate	10.3%	27.0%	5.6%	-	6.4%	4.2%	-	-	4.2%	1.6%	1.0%	0.5%
Maintain Rate (%)	Financial Institution	86.1%	73.0%	85.3%	83.3%	85.3%	81.6%	89.5%	87.8%	92.7%	97.6%	93.6%	88.0%
	Corporate	64.1%	62.2%	94.4%	87.8%	68.1%	83.3%	93.2%	83.7%	85.9%	87.2%	82.9%	84.9%
Default Rate (%)	Financial Institution	-	2.7%	-	-	-	-	-	-	-	-	-	-
	Corporate	5.1%	5.4%	-	-	-	-	-	-	-	-	-	-

➤ *Financial institutions exhibited overall greater stability compared to corporates.*

Default Trends - CDRs

PACRA Average Cumulative Default Rates (CDRs) - CY11-CY22

	1-Year	2-Year	3-Year	4-Year	5-Year	6-Year	7-Year	8-Year	9-Year	10-Year	11-Year	12-Year
AAA	-	-	-	-	-	-	-	-	-	-	-	-
AA+	-	-	-	-	-	-	-	-	-	-	-	-
AA	-	-	-	-	-	-	-	-	-	-	-	-
AA-	-	-	-	-	-	-	-	-	-	-	-	-
AA	-	-	-	-	-	-	-	-	-	-	-	-
A+	-	-	-	-	-	-	-	-	-	-	-	-
A	0.4%	1.1%	1.4%	1.7%	2.2%	3.0%	3.7%	4.5%	5.4%	6.9%	9.2%	16.9%
A-	-	0.4%	0.5%	0.7%	1.1%	1.5%	1.8%	2.2%	2.9%	4.2%	7.1%	12.5%
A	0.1%	0.5%	0.7%	0.8%	1.1%	1.5%	1.8%	2.3%	2.9%	4.2%	6.6%	11.7%
BBB+	-	-	-	-	-	-	-	-	-	-	-	-
BBB	1.8%	2.4%	3.3%	5.4%	7.1%	8.0%	8.7%	9.5%	11.8%	20.0%	33.3%	-
BBB-	1.6%	4.1%	6.2%	9.0%	16.1%	21.3%	28.6%	40.0%	66.7%	-	66.7%	-
BBB	1.1%	1.9%	2.6%	4.0%	5.6%	6.6%	7.8%	10.0%	13.2%	18.7%	26.1%	20.0%
BB+	-	-	-	-	-	-	-	-	-	-	-	-
BB	12.5%	12.5%	12.5%	14.3%	20.0%	25.0%	-	-	-	-	-	-
BB-	-	-	-	-	-	-	-	-	-	-	-	-
BB	2.4%	2.8%	3.2%	5.6%	9.1%	16.7%	-	-	-	-	-	-
B+	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-
B-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-
CCC – C	-	-	-	-	-	-	-	-	-	-	-	-
Investment Grade (AAA-BBB)	0.3%	0.6%	0.7%	0.8%	1.1%	1.3%	1.6%	1.9%	2.4%	3.3%	4.9%	5.7%

- For investment grade categories , CDRs peaked in the 12th year at 5.7%.
- CDRs increase with the progression of time across all rating grades. This is to be expected as the probability of pure survival diminishes across time in a combinatorial manner.
- In certain cases, the CDRs, themselves, appear to be inflated and above PACRA's realistic expectation. That is because PACRA's rating universe is undergoing constant expansion while there are no events of default following CY12. Thus, the number of defaulting entities occupy a greater proportion of the sample space in older periods.

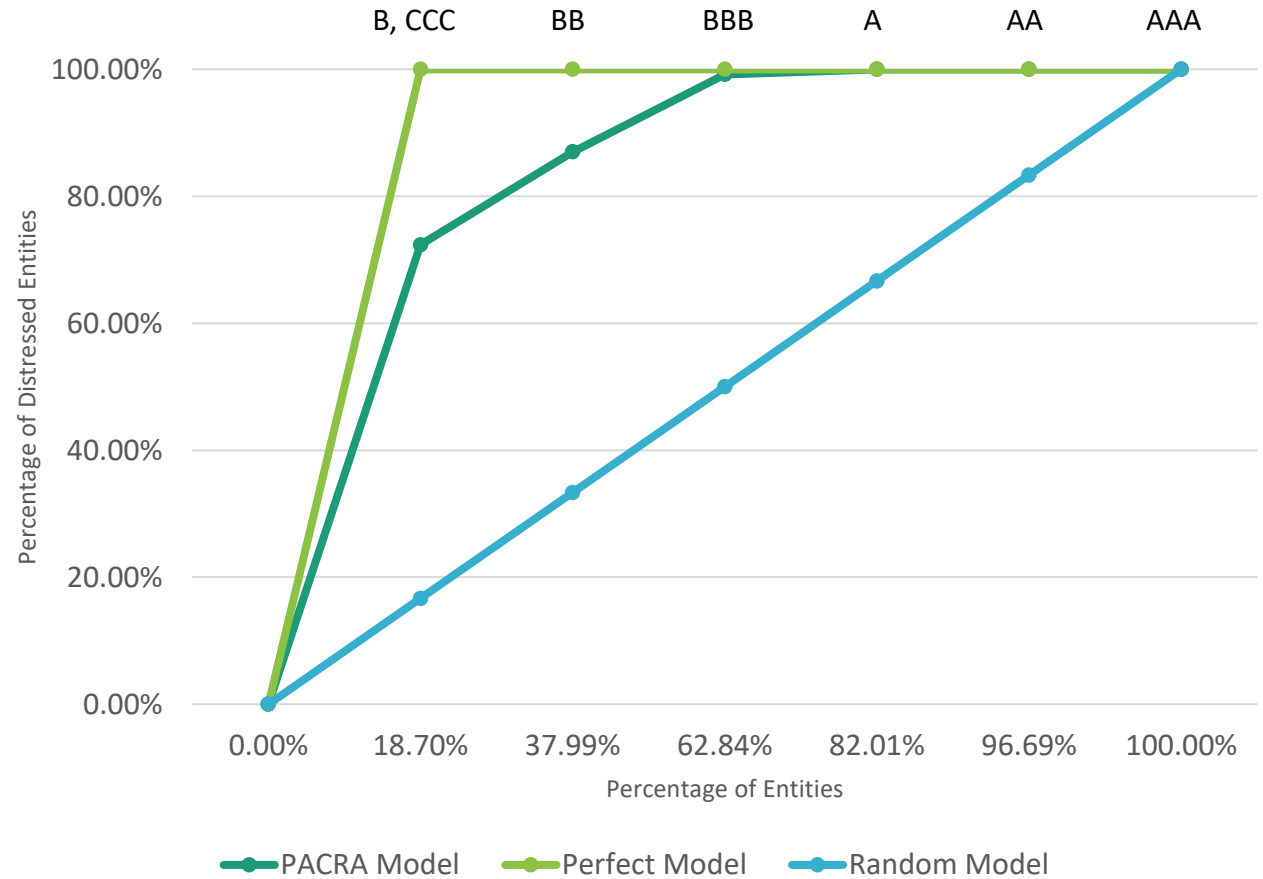
NOTE: "-" notation appears in one of two situations: (i) if the CDR for a rating grade happens to be exactly zero, or, (ii) if there is absence of data to have undergone maturity or "seasoning" for the purpose of CDR calculation.

Default Trends – Time to Default (since inception)

Rating Category	Time to default (in months)	
	Initial Ratings	All Ratings
AAA	N/A	N/A
AA	N/A	81
A	53* (7)**	47
BBB	74 (3)	41
BB	81 (2)	17
* Time to Default ** Default Counts		

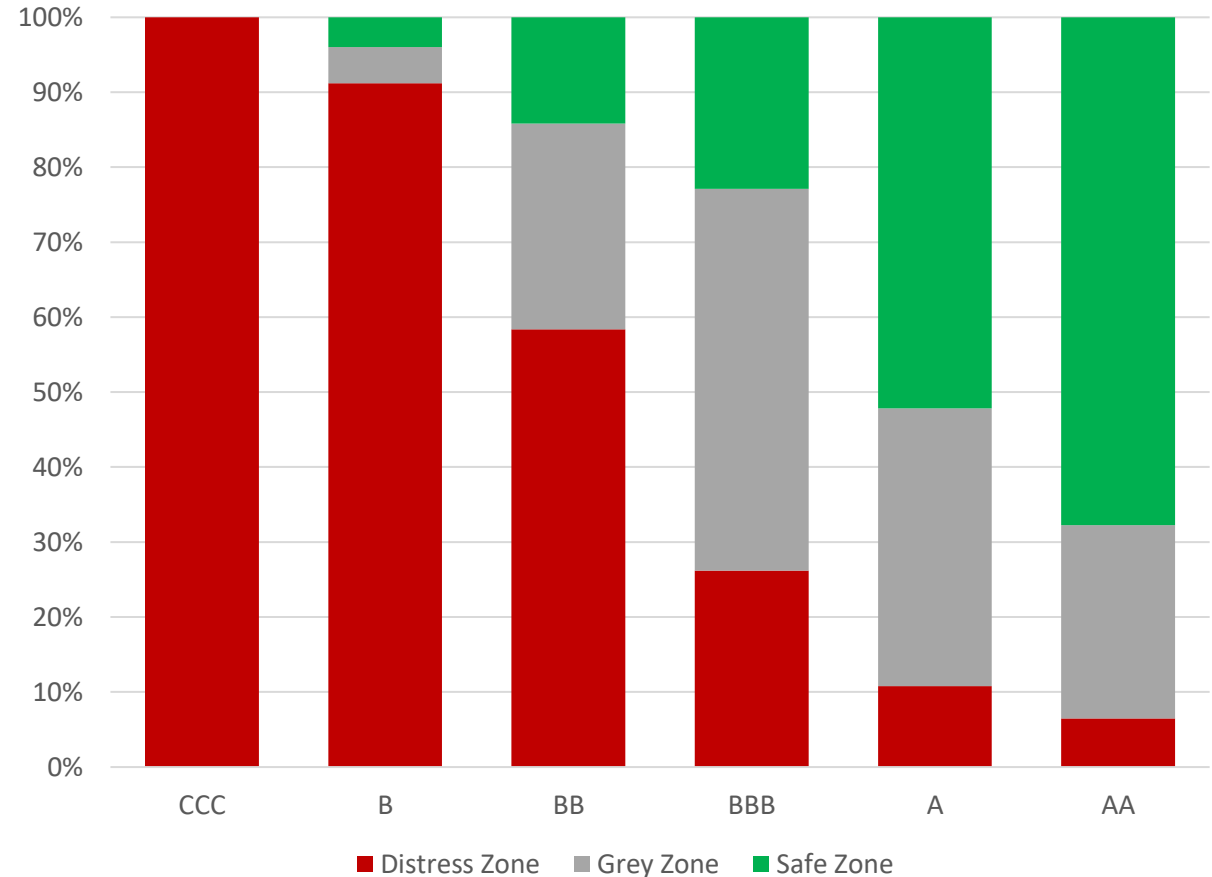
- There are no defaults in the AAA category
- The AA category has one (1) default from an entity that attained its lifetime-high rating within this category that was re-affirmed twice
- The A category has an average time-to-default from the initial rating of 53 months and from all ratings of 47 months
- For the BBB category, it is 74 months from initial ratings and 41 months from all ratings
- The time-to-default for initial ratings is not representative at the BB category. This is so as PACRA has only two defaults emanating from this category widely varying in the time elapsed pre-default - One entity defaulting after 148 months and the other only after 14 months, hence skewing the data

- The high degree of overall stability exhibited by PACRA's ratings is reflected in the discriminatory power of its rating models.
- The validation of PACRA's rating models supports that the model with lower defaults in the higher rating categories
- This is reflected in the Receiver Operating Characteristic (ROC) as depicted here
- A rating model's performance is judged by the steepness of the ROC curve at the left end and the closeness of the ROC curve's position to the point (0,1)
- The ROC for PACRA's model is visibly steep at the left end, indicating strong discriminatory power.

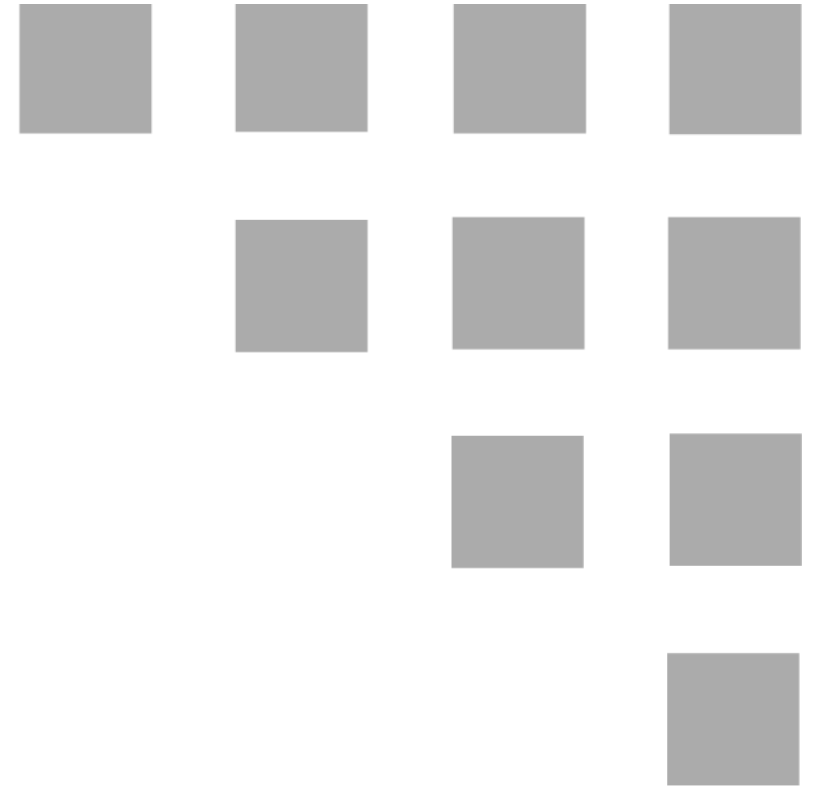


NOTE: These results displayed here are based on PACRA's model validation exercise undertaken in CY22. The next exercise will be undertaken in CY23, as per PACRA's internal model review and validation policy

- The Altman Z-score is the output of a credit-strength test that gauges a company's likelihood of bankruptcy.
- The Altman Z-score is based on five financial ratios
- Comparison of PACRA's model results with Altman Z-Score depicts high correlation with the results of PACRA models, with higher rated observations predominantly lying in the **safe zone**, while, as ratings move into the lower grades, they are increasingly found in the **grey zone** and **red zone**. This indicates strong historical robustness.



NOTE: These results displayed here are based on PACRA's model validation exercise undertaken in CY22. The next exercise will be undertaken in CY23, as per PACRA's internal model review and validation policy



SECTION III: PEER ANALYSIS



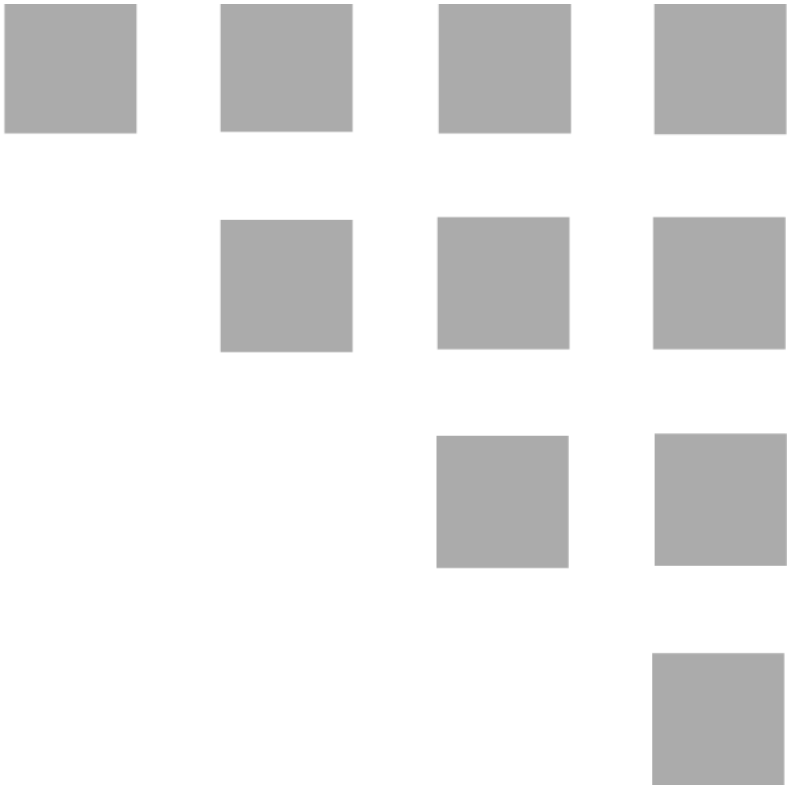
PACRA Defaults

Transition to Default					
Entity / Issuers	Key Lifetime Ratings		Prior-to-Default Rating		DEFAULT
	Initial	Highest	One year	Last	
Financial Institutions					
Network Leasing	BBB (Mar-00)	BBB (Mar-00 to Oct-06)	BBB (Dec-04)	BBB (Oct-06)	D (Oct-06)
First Dawood Investment Bank	BBB (Aug-99)	A+ (Mar-03 to Mar-08)	A+ (Mar-08)	BB (May-09)	D (Dec-09)
Trust Investment Bank	BB+ (Apr-99)	AA- (Nov-04 to Apr-07)	BBB (May-11)	C (Sep-12)	D (Oct-12)
Industrial Corporates					
Dewan Cement	A (Jul-06)	A (Jul-06 to Aug-07)	A- (Sept-08)	CC (May-09)	D (Nov-09)
Maple Leaf Cement Factory	A (Oct-07)	A (Oct-07)	BBB+ (Dec-08)	BBB- (Dec-09)	D (Dec-09)
Shakarganj Mills	BBB+ (Feb-08)	BBB+ (Feb-08)	BBB+ (Feb-08)	BB- (Nov-09)	D (Nov-09)
Pace (Pakistan)	A+ (Jun-07)	A+ (Jun-07 to May-08)	A (Aug-09)	A (Oct-10)	D (Mar-11)
Azgard Nine	A- (Sept-03)	A+ (Sept-07 to Nov-08)	A+ (Nov-08)	BB+ (Jun-10)	D (Sept-10)
Agritech	A+ (Sept-07)	A+ (Sept-07 to Nov-08)	A+ (Nov-08)	BB+ (Jun-10)	D (Sept-10)
Maple Leaf Cement Factory	BB (Jul-10)	BB (Jul-10 to Jul-11)	BB (Jul-10)	BB (Jul-11)	D (Sept-11)
Pak Elektron	A (Jul-06)	A (Jul-06 to Jun-10)	A (Jun-10)	BBB (Oct-11)	D (Jan-12)
WorldCall Telecom	A+ (Jul-06)	A+ (Jul-06 to Sep-08)	A- (Jul-11)	BB+ (Jul-12)	D (Jul-12)

- For PACRA, 12 Entities / Issuers have defaulted since inception
- It is worth noting that most of the defaults occurred at higher ratings. This is due to likelihood of default increasing in tougher operating environments and PACRA's historically limited coverage of the lower ratings market
- PACRA expects this latter anomaly to remain intact till the time when the ratings universe in Pakistan would increase to have a more equitable distribution of ratings across the entire length and breadth of the rating scale

Transition to Default					
Entity / Issuers	Key Life time Ratings		Prior-to-Default Rating		Default
	Initial	Highest	One Year	Last	
Financial Institutions					
Security Leasing	A (Dec-04)	A (Dec-04)	BBB (Mar-09)	BBB- (May-09)	D (Mar-10)
BRR Guardian Modaraba	A- (Oct-02)	A (June-07 to Oct-07)	A (Oct-07)	BBB (June-10)	D (July-10)
Invest Capital Investment Bank	A- (June-08)	A- (June-08 to July-10)	A- (July-09)	A- (July-10)	D (Sep-10)
Saudi Pak Leasing	A- (Dec-05)	A- (Dec-05 to Aug-08)	BBB- (May-09)	C (Aug-10)	D (Oct-10)
Al Zamin Leasing	AA- (Aug-02)	AA- (Aug-02 to July-06)	C (Sep-10)	C (Sep-10)	D (Jan-13)
Industrial Corporates					
Gharibwal Cement	BBB (June-06)	BBB (June-06 to July-07)	BBB (July-07)	BB+ (July-08)	D (July-08)
New Allied Electronics	A- (Nov-06)	A- (Nov-06 to Sep-08)	A- (April-07)	BB+ (Nov-08)	D (Dec-08)
Gharibwal Cement	BB+ (June-09)	BB+ (June-09)	BB+ (June-09)	BB+ (June-09)	D (Oct-09)
Eden Housing	A (May-08)	A (May-08 to Oct-09)	A (May-08)	A (Oct-09)	D (Jan-10)
Wateen Telecom	A (Nov-06)	A (Nov-06 to Mar-09)	A (Mar-09)	A (Mar-09)	D (Oct-10)
Amtext Textiles	A- (Dec-08)	A (Dec-08 to Nov-10)	A- (Dec-08)	A- (Nov-10)	D (Jan-11)
TeleCard	A (Oct-04)	A (Oct-04 to Oct-05)	BBB (Feb-09)	BBB (Oct-10)	D (Jun-11)
Quetta Textiles	A- (Mar-08)	A- (Mar-08 to Mar-09)	BBB+ (May-10)	BB (Mar-12)	D (Mar-12)
Summit Bank Ltd	A (Apr-11)	A (Apr-11, Dec-14 to Jun-15)	A- (Jul-18)	BBB- (Nov-18)	D (Feb-19)
Hascol Petroleum Ltd	A- (Dec-12)	AA- (Nov-17 to Apr-19)	BB+ (Apr-20)	CC (Mar-21)	D (Mar-21)

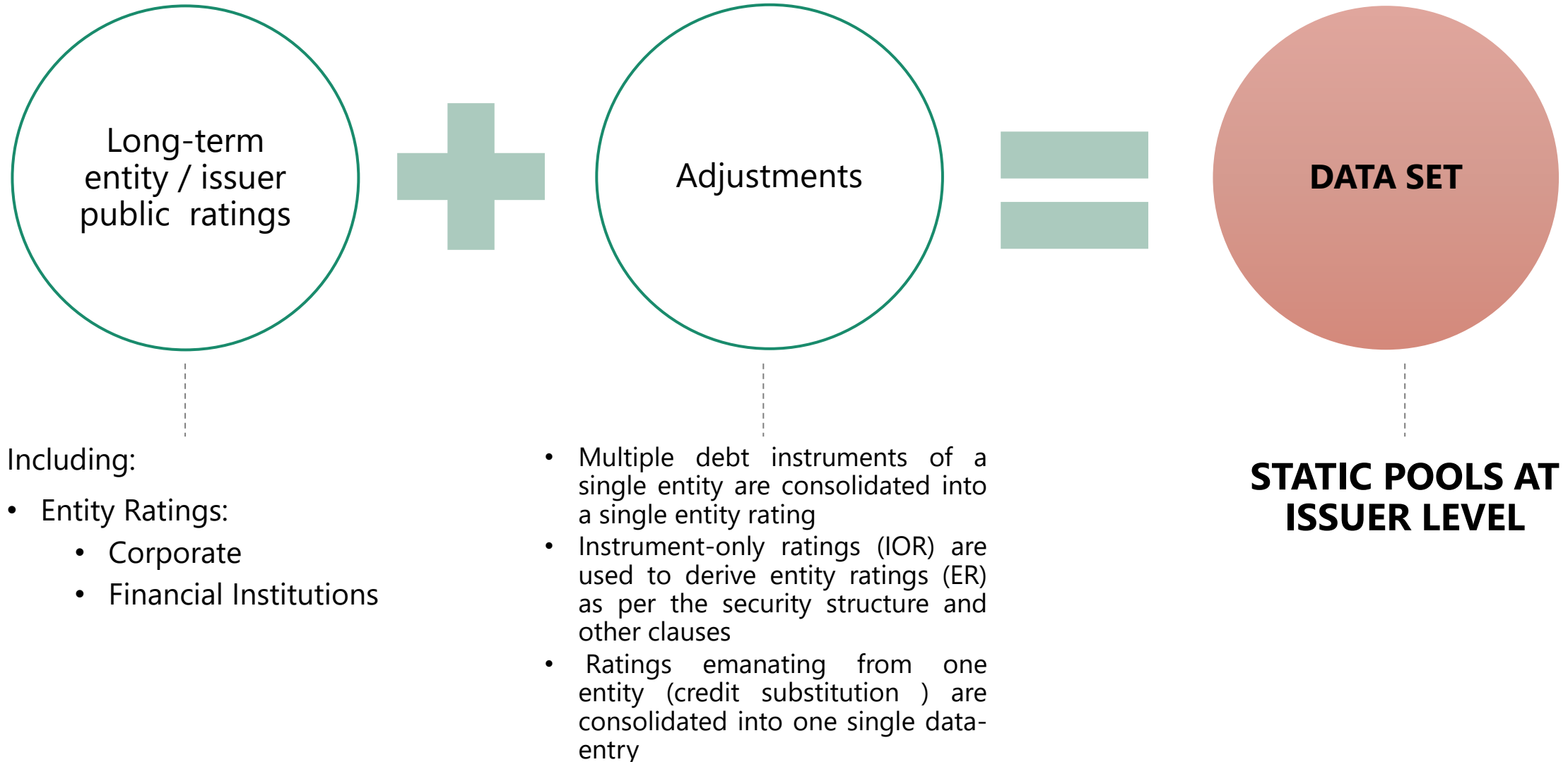
➤ For VIS, 15 Entities / Issuers have defaulted since inception



ANNEXURES



Key Terms	Definition / Explanation
Static Pool	Groupings of data that stay together in the group for the entire length and breadth of the measurement period of the pool
Upgrade Rate	The rate of upward rating transition (Ceiling: Triple A "AAA")
Downgrade Rate	The rate of downward rating transition (Floor: Single C "C")
Default Rate	Proportion of entities / issuers that have been assigned a Default "D" rating (As per PACRA Default Policy "How PACRA Recognizes Default") to the total number of entities / issuers over the measurement period
Transition Rate	Statistics quantifying the transition of ratings on the rating scale between a certain time period
Time-to-Default	A term denoting how far a rating lies from the time of its default.



Measurement period

- Annual (Single / Multiple)
- Monthly (Smallest measurement period)

Withdrawal Adjustment

Static Pools are adjusted for all withdrawals during a measurement period

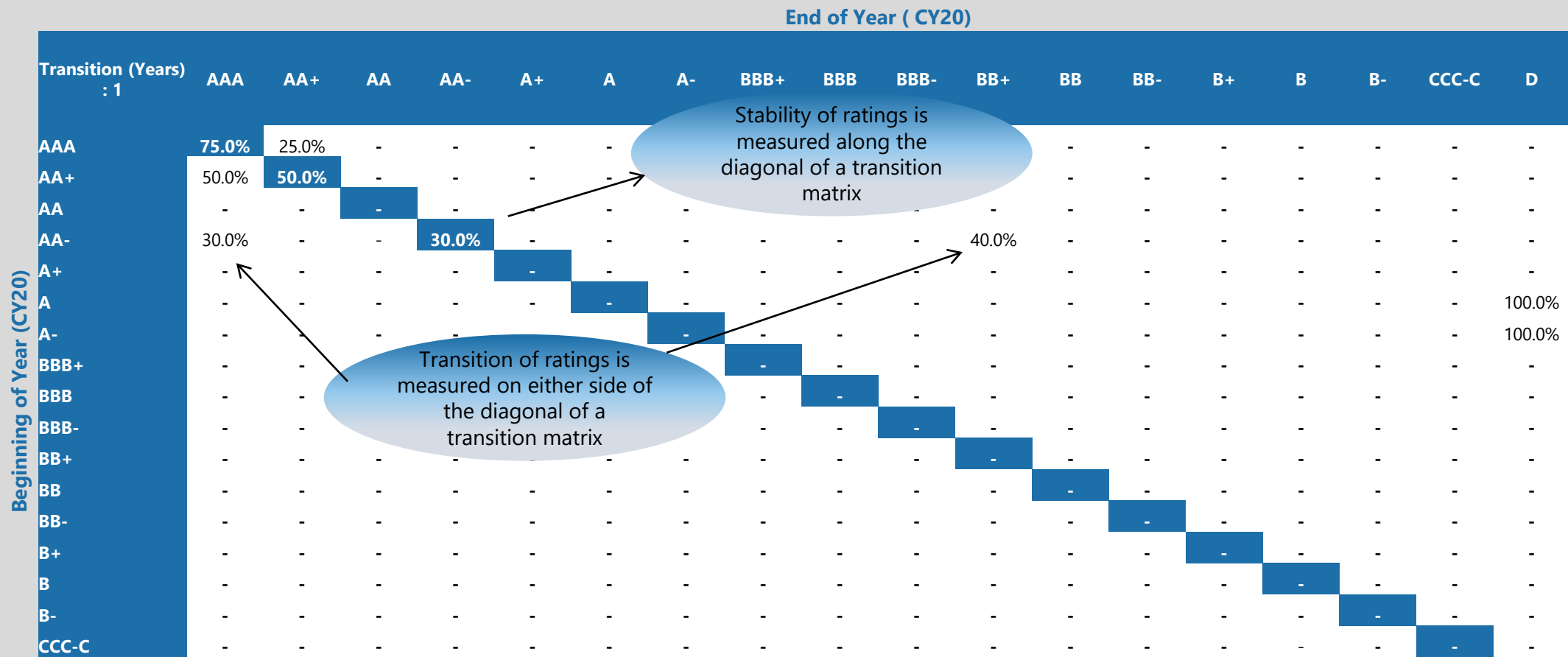
Treatment of initial ratings

An initial rating of CY21 will form part of the next year (CY22) pool, if not withdrawn

Post-default withdrawals

A rating put in default & subsequently withdrawn is reported as “D” (Default) only

Understanding Rating Transition Analysis



ADRs and CDRs

- Annual Default Rates (ADRS) reflect the probability that an entity / issuer that has survived in a Static Pool in the beginning of a particular year will default by the end of the same year
- Cumulative Default Rates (CDRs) reflects the probability that an entity / issuer that has survived in a Static Pool up to the beginning of each subsequent year of the Measurement Period underlying the CDR will default by the end of last year of such Measurement Period.

Time-to-default Statistics

- Time-to-Default from **Initial** ratings: Measures the time elapsed between the initial rating (as assigned by PACRA) and default
- Time-to-Default from **All** ratings: Measures the rating path to default, tracking from the time of initial rating to all successive rating transitions on the rating scale prior to default

SECP | Credit Rating Companies Regulations, 2016 | August 05, 2016 (As Amended October 17, 2019)

III-11-A-(I): A credit rating company shall, - *publish annually, within one month of calendar year, a comprehensive default and transition study developed in line with methodologies practiced by credit rating agencies globally. The annual default and transition study must contain cumulative default rates (CDRs) and transitions for each rating grade for periods 1, 3 and 5 years*

Annexure H: *Other information to be disseminated on the website of a credit rating company/agency*

3: *Detail of transitions/changes in the credit ratings reviewed during the last five years. The detail should contain the ratings upgraded, downgraded and those remained unchanged. For ease of comparison both the rating i.e. before and after the review and the number of notches upgraded or downgraded should be disclosed.*

6: *Definition of the term, "default".*

7: *Entity-wise list of defaults for all the outstanding issues and for all the issues redeemed during the last five years.*

8: *Rating scale-wise list of default for all the outstanding issues and for all the issues redeemed during the last five years separately for structured instruments and non-structured instruments.*

SBP | Eligibility Criteria for recognition of External Credit Assessment Institutions (ECAIs), July 2005

a) Objectivity of the methodology: *ECAI should have methodology of assigning credit rating that is rigorous, systematic, continuous and subject to validation. To establish that ECAI fulfills this primary component of eligibility criteria, it must demonstrate that it meets minimum standards given below:*

5. *ECAI should demonstrate that the rating methodologies are subject to quantitative back testing. For this purpose, ECAI should calculate and publish default studies, recovery studies and transition matrices. For the purpose, the ECAI should have a definition of default that is equivalent to international standard and is relevant to domestic market.*

d) Disclosure: *ECAI should demonstrate that it provide access to information that are sufficient to enable its stakeholders to make decision about the appropriateness of risk assessments. The purpose of this disclosure requirement is to promote transparency and bring in market discipline. ECAI is therefore expected to make public following information:*

2. *Definition of default*

6. *Actual default rates experienced in each assessment category*

7. *Transition matrices*

http://www.sbp.org.pk/bsd/Criteria_Rating_Agencies.pdf

ACRAA | Code of Conduct Fundamentals for domestic Credit Rating Agencies – April 2011

ACRAA Explanation of Clause 3.8 -

1. *Each rating agency should publish at least annually a default and transition study along with the methodology*
2. *The default study should provide details of the following:*
 - *Annual default rates for each rating category;*
 - *3-year average cumulative default rates;*
 - *1-year transition rates*

<http://acraa.com/images/pdf/DCRA.pdf>

IOSCO CODE OF CONDUCT FUNDAMENTALS FOR CREDIT RATING AGENCIES - REVISED MARCH 2015

3.18: *To promote transparency and to enable investors and other users of credit ratings to compare the performance of different CRAs, a CRA should disclose sufficient information about the historical transition and default rates of its credit rating categories with respect to the classes of entities and obligations it rates. This information should include verifiable, quantifiable historical information, organized over a period of time, and, where possible, standardized in such a way to assist investors and other users of credit ratings in comparing different CRAs. If the nature of the rated entity or obligation or other circumstances make such historical transition or default rates inappropriate, statistically invalid, or otherwise likely to mislead investors or other users of credit ratings, the CRA should disclose why this is the case.*

<https://www.iosco.org/library/pubdocs/pdf/IOSCOPD482.pdf>



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DISCLAIMER

Each transition and default study issued by PACRA is self-contained. This is so as PACRA's continuing data enhancement efforts may result in slightly different statistics than in previously published studies and statistics. In addition, comparisons with earlier studies should be viewed within the context of the differing methodologies and definitions, employed therein.

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