



PACRA TRANSITION STUDY

A Decade in Transition : CY10 – CY19



You can't control what you can't measure

Adapted from words of Tom DeMarco

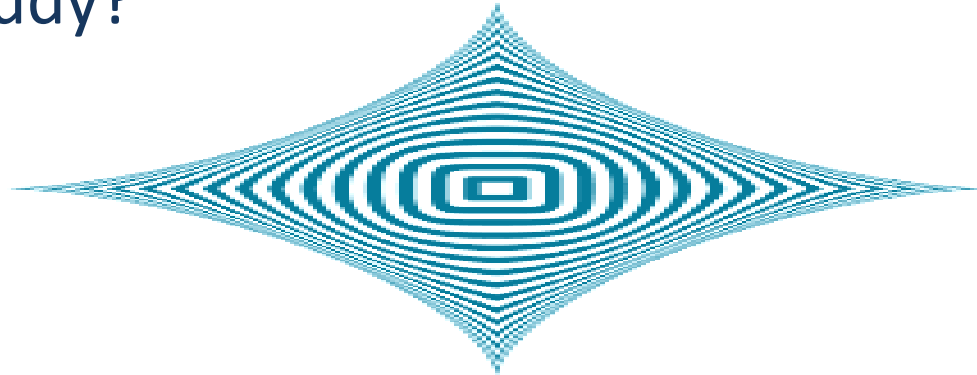
Friday, January 31, 2020

Usama Liaquat
Assistant Manager Criteria

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Concept & Regulatory Framework

- What is a Transition & Default Study?
- Why need a Transition & Default Study?
- What is the Regulatory Framework & Best Practices Guidelines regarding Transition & Default Study?



Definition & Rationale

WHAT IS A TRANSITION & DEFAULT STUDY?

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

WHY NEED A TRANSITION & DEFAULT STUDY?

- Self Assessment of CRA
- Peer Analysis with other CRAs
- Regulatory Requirement

Concept &
Applicable Law

PACRA Transition
Methodology

Transition Study
Limitations

Context

Transition &
Default Trends

Peer Analysis

Regulatory Framework

SECP

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

Credit Rating Companies Regulations, 2016 |
August 05, 2016 (As Amended October 17, 2019)
<https://www.secp.gov.pk/document/credit-rating-companies-regulation-2016/?wpdmdl=16929>

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.

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Regulatory Framework

SBP

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

Eligibility Criteria for recognition of External Credit Assessment Institutions (ECAIs), July 2005
http://www.sbp.org.pk/bsd/Criteria_Rating_Agencies.pdf

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.

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Best Practices Guidelines

ACRAA

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

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

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

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Best Practices Guidelines

IOSCO

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.

CODE OF CONDUCT FUNDAMENTALS FOR CREDIT RATING AGENCIES

- REVISED MARCH 2015

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

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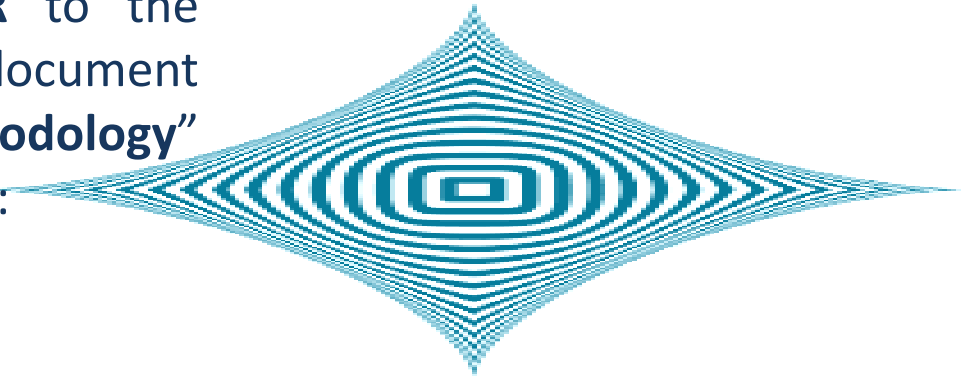
Peer Analysis

PACRA Transition & Default Methodology

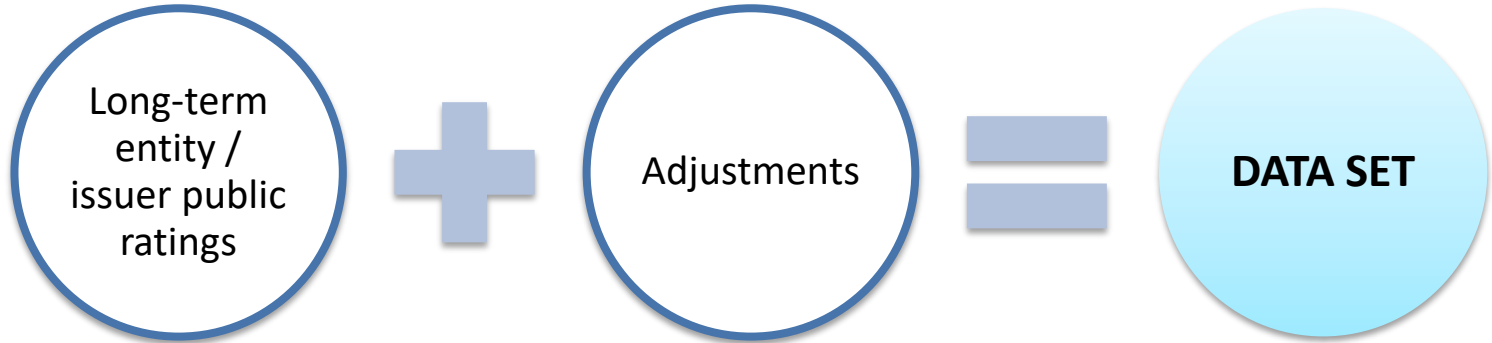
- What are the Study Inputs?
- What are Static Pools?
- How is Rating Transition Analysis conducted?
- How Default Analysis is interpreted?

For further details: REFER to the detailed methodology document “Transition & Default Methodology” available on PACRA’s website:

www.pacra.com



STUDY INPUTS - Data Set & Adjustments



Included

- Entity Ratings - Corporates & Financial Institutions

Excluded

- Short term ratings
- Insurer Financial Strength (IFS) Ratings – Insurance Companies
- Structured finance ratings
- Grading / rankings
- Rating modifiers

- Multiple instruments of a single entity / issuer are consolidated into a single entity rating
- Instrument-only ratings (IOR) are used to derive entity ratings (ER) as per the security structure embedded therein and other clauses
- Ratings emanating from one entity / issuer (credit substitution) are consolidated into one single data-entry

STATIC POOLS at Issuer-Level

Concept & Applicable Law

PACRA Transition Methodology

Transition Study Limitations

Context

Transition & Default Trends

Peer Analysis

STATIC POOLS

WHAT ARE STATIC POOLS ?

Static Pools are groupings of data that stay together in the group for the ENTIRE LENGTH & BREADTH of the measurement period of the pool

What is the Measurement Period?

- Annual (Single / Multiple)

What is Withdrawal Adjustment?

- PACRA Static Pools are adjusted for all withdrawals during a measurement period

Where do Initial ratings GO?

- An initial rating of CY17 will form part of the next year (CY18) pool, if not withdrawn

CAN We HIDE our defaults by “withdrawing” them anytime post-default?

- NO, a rating put in default & subsequently withdrawn is reported as “D” ONLY.

RATING TRANSITION ANALYSIS – Transition Rates

Transition rates are defined as statistics quantifying the transition of ratings on the rating scale.

There are three kinds of Transition Rates:

- *Upgrade Rate*: Proportion of entities / issuers upgraded during the period to total number of entities / issuers.
- *Downgrade Rate*: Number of entities / issuers downgraded during the period to total number of entities / issuers.
- *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

RATING TRANSITION ANALYSIS – Transition matrix illustrated

5-Year Transition Matrix (Year 1 – Year 5)

Beginning-of-Year (Year 1)	Withdrawal adjusted static pool	End-of-Year (Year 5)														Withdrawal			
		AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B		CCC-C	D	
AAA	4	75%	25%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
AA+	8	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
AA	1	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	
AA-	10	30%	-	-	30%	-	-	-	-	-	-	-	40%	-	-	-	-	-	
A+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	2
A	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	5
A-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BBB+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BBB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BBB-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BB+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BB-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Stability of ratings is measured along the diagonal of a transition matrix

transition of ratings is measured on either side of the diagonal of a transition matrix

INTERPRETING – Default rates

PACRA'S DEFAULT RATES ARE USEFUL BOTH AS STATEMENTS OF HISTORICAL FACT AS WELL AS UNBIASED ESTIMATES OF EXPECTED DEFAULT PROBABILITIES

ANNUAL DEFAULT RATES (ADRs)

An ADR captures the Default Rate on a *one-year Measurement Period*. It is computed as the number of entities / issuers defaulting in a year as a proportion of the number of entities / issuers in the Static Pool at the beginning of the year, adjusted for withdrawals.

CUMULATIVE DEFAULT RATES (CDRs)

CDRs are calculated by compounding *constituent* MDRs. For instance, a three-year CDR (CDR-3) has a Measurement Period of three years and would take into account only those Static Pools that have been seasoned for three-years. The average Cumulative Default Rate represents historical cumulative Default probabilities. It is calculated by taking the averages over many pool periods.

Pros and Cons

ADRs

- Conventionally reported default rate
- Easy to understand
- Cannot be compared across time and CRAs

CDRs

- Captures the effect of numerous business cycles
- Better comparability across time and CRAs

INTERPRETING – Time-to-default statistics

Time-to-default - A term denoting how far a rating lies from the time of its default.

TIME-TO-DEFAULT FROM INITIAL RATINGS

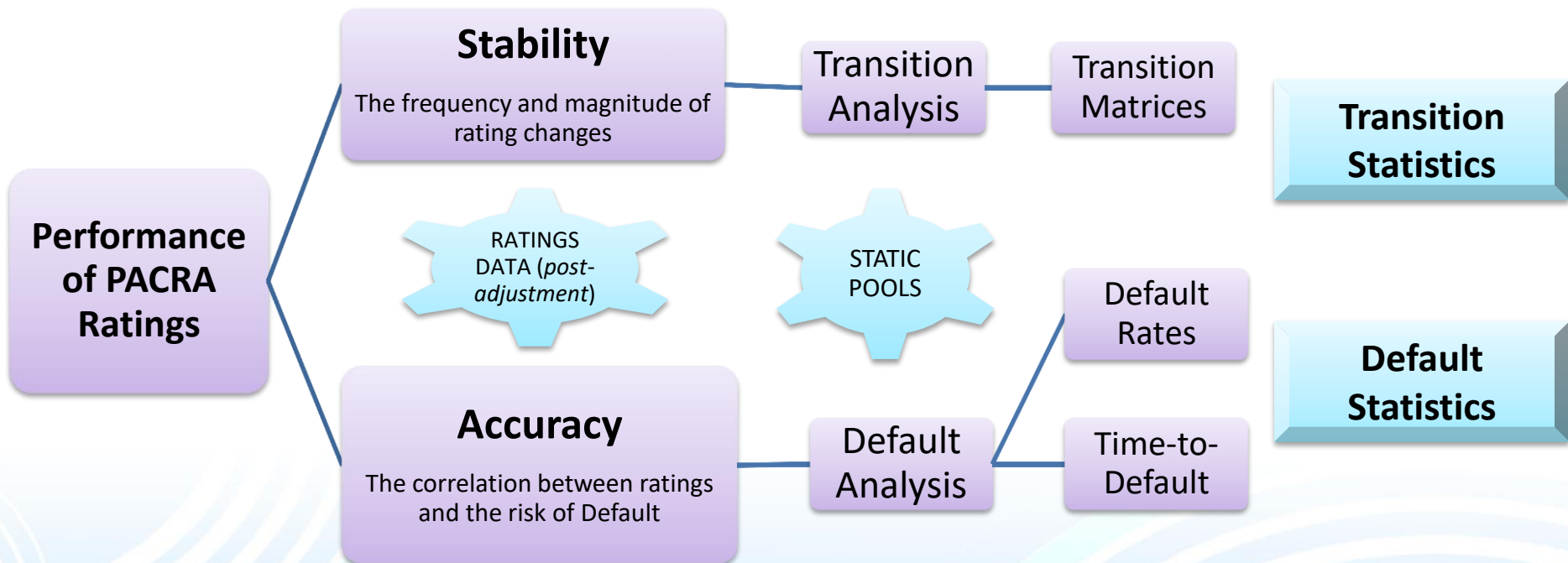
Measures the time elapsed between the initial rating (As assigned by PACRA) and default

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

The higher / lower a rating is on the rating scale, the farther / nearer it should be to default in terms of this measure

SCHEMATIC – A typical Transition & Default Study



PACRA
Transition
Study

**WHAT the Study
MEASURES ?**

Study Analysis

Study Tools

Study Output



PACRA Transition & Default Trends

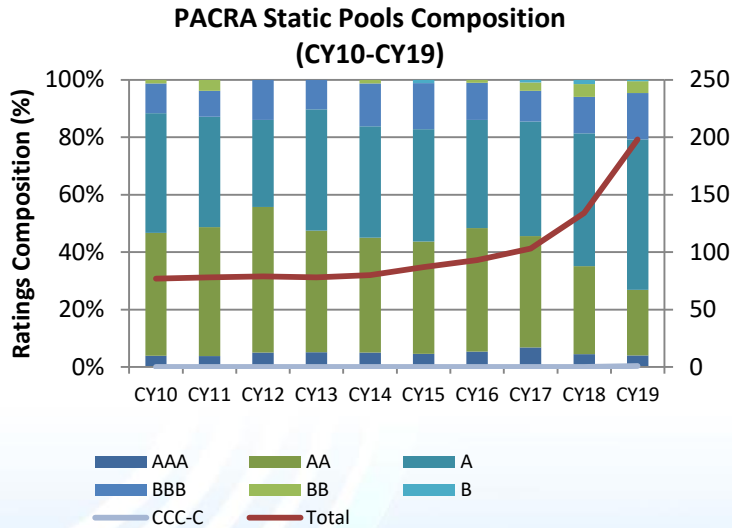
- Where lies the risk in PACRA's Rating Universe?
- What are the key rating transition and default trends ?
- How PACRA's ratings measure up to Stability?
- How PACRA's ratings measure up to Accuracy?

This Transition & Default Study is the *eleventh compilation of PACRA's Transition & Default Study. The study captures the performance of PACRA ratings assigned from **CY10–CY19** – a ten-year period*

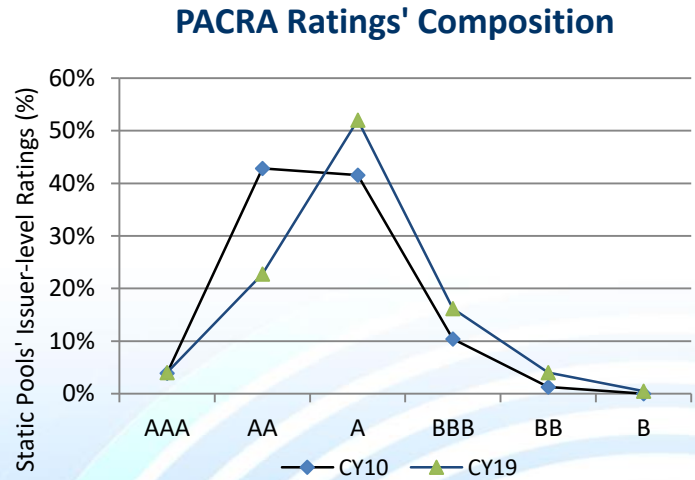
- Measurement Period:** Annual
- Number of static Pools:** 55
- Transition & Default Rates expressed in percentage**



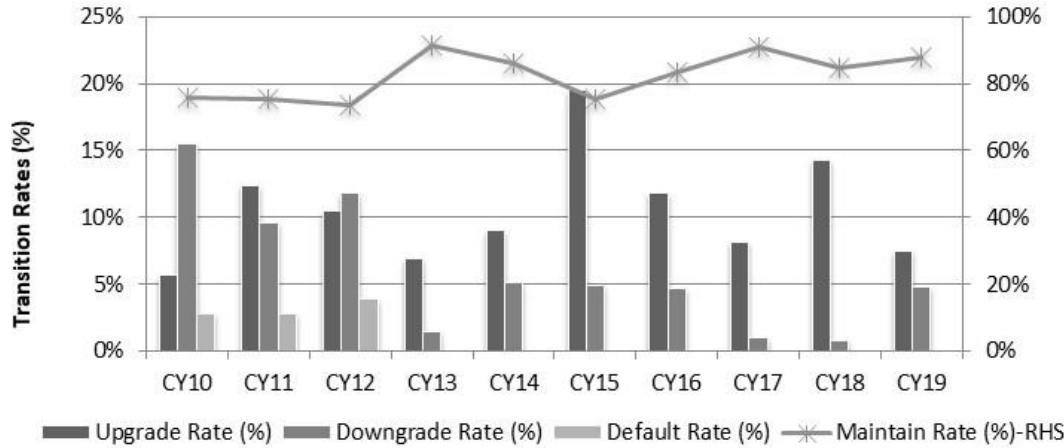
RISK – Universe Composition & Concentration



✓ Concentration in higher rating categories



Annual Rating Activity Trends



— Key Trends

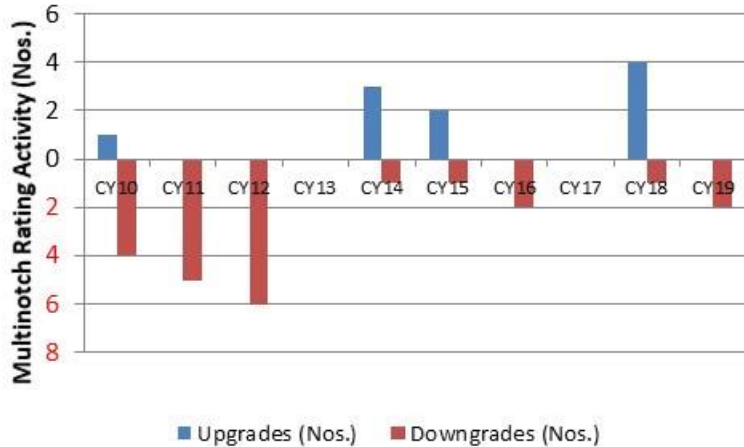
✓ **Rating drift has deteriorated:** The ratio of downgrades versus upgrades moved from 0.1-18 in CY18 to 0.5-1.5 in CY19, showing significant deterioration during the period.

• **Rating Drift** is Calculated as downgrade rate (%) divided by the upgrade rate (%) versus the upgrade rate (%) divided by the downgrade rate (%)

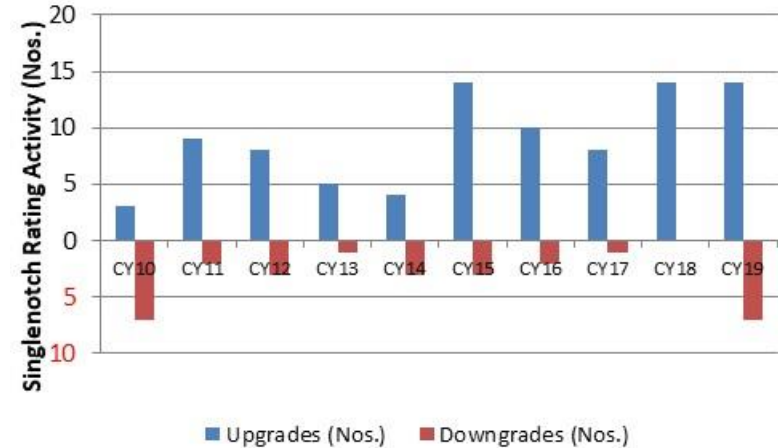
Transition Rates (%)	CY10	CY11	CY12	CY13	CY14	CY15	CY16	CY17	CY18	CY19
Upgrade Rate (%)	5.6%	12.3%	10.5%	6.9%	9.0%	19.5%	11.8%	8.2%	14.3%	7.4%
Downgrade Rate (%)	15.5%	9.6%	11.8%	1.4%	5.1%	4.9%	4.7%	1.0%	0.8%	4.8%
Maintain Rate (%)-RHS	76.1%	75.3%	73.7%	91.7%	85.9%	75.6%	83.5%	90.8%	84.9%	87.8%
Default Rate (%)	2.8%	2.7%	3.9%	-	-	-	-	-	-	-

Rating transition – Activity

Annual Multinotch Rating Activity



Annual Singlenotch Rating Activity



✓ In CY18, considerable multi-notch rating activity was witnessed and such upgrades outpaced such downgrades by 4-to-1. Single-notch upgrades clocked in an impressive 14 versus no such downgrades.

✓ In CY19, the upbeat sentiment has dampened considerably. There is no multi-notch upgrade, whereas multi-notch downgrades are two (2). However Upgrades still outpace downgrades by 14-to-9.

• Multi-notch rating action: A multi-notch rating action is defined as an upgrade / downgrade of more than one notch

Rating transition – CY19 Transition & Stability



		End of Year (CY19)																			
Beginning of Year (CY19)	Transition (Years) : 1	Withdrawal Adjusted Static Pool	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	D	Withdrawals
	AAA	8	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AA+	10	-	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
AA	18	-	-	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
AA-	15	-	-	6.7%	93.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
A+	19	-	-	-	5.3%	84.2%	10.5%	-	-	-	-	-	-	-	-	-	-	-	-	-	4
A	27	-	-	-	-	11.1%	85.2%	3.7%	-	-	-	-	-	-	-	-	-	-	-	-	0
A-	53	-	-	-	-	-	1.9%	90.6%	3.8%	3.8%	-	-	-	-	-	-	-	-	-	-	0
BBB+	10	-	-	-	-	-	-	10.0%	90.0%	-	-	-	-	-	-	-	-	-	-	-	2
BBB	9	-	-	-	-	-	-	-	11.1%	88.9%	-	-	-	-	-	-	-	-	-	-	0
BBB-	11	-	-	-	-	-	-	-	-	27.3%	63.6%	9.1%	-	-	-	-	-	-	-	-	0
BB+	5	-	-	-	-	-	-	-	-	-	20.0%	80.0%	-	-	-	-	-	-	-	-	0
BB	2	-	-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	-	-	-	-	1
BB-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-
B	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
B-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCC-C	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Static Pool Size: 188

✓ In **CY19**, the upgrade rate dwindled and was slashed in half as compared to CY18 (**CY19: 7%; CY18: 14%**), whereas the downgrade rate picked up significantly (**CY19: 4.8%; CY18: 0.8%**)

✓ **Upgrades** were wholly dominated by corporates with nil financial institution. Corporate upgrades were diversified across sectors such as power (3), chemicals (1), textiles (3), construction (1), pharmaceutical (2), infrastructure (1), Rice (1), sugar (1) and passenger cars (1)

✓ **Downgrades** There were two multi-notch downgrades – both corporates | sectors Construction and Batteries



Rating transition – Average Annual Transition & Stability

		Average Annual Transition (CY10-CY19)																			
Transition Period (1-Year)		AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	D	Withdrawal-Adjusted Static Pool	Data Counts
Beginning of Year (Average CY10-CY19)	AAA	97.9%	2.1%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	47
	AA+	3.4%	94.3%	2.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.8	88
	AA	-	4.8%	92.5%	2.0%	-	0.7%	-	-	-	-	-	-	-	-	-	-	-	-	14.7	147
	AA-	-	-	10.3%	86.5%	2.4%	-	0.8%	-	-	-	-	-	-	-	-	-	-	-	12.6	126
	A+	-	-	-	12.1%	81.9%	3.4%	-	-	-	-	0.9%	-	-	-	-	-	-	1.7%	11.6	116
	A	-	-	-	2.3%	11.7%	81.3%	3.1%	-	0.8%	-	-	-	-	-	-	-	-	0.8%	12.8	128
	A-	-	-	-	-	0.6%	7.0%	86.0%	1.9%	3.2%	1.3%	-	-	-	-	-	-	-	-	15.7	157
	BBB+	-	-	-	-	-	-	17.9%	73.2%	8.9%	-	-	-	-	-	-	-	-	-	5.6	0.8
	BBB	-	-	-	-	-	2.8%	5.6%	11.1%	66.7%	2.8%	-	2.8%	-	-	2.8%	-	-	5.6%	3.6	0.6
	BBB-	-	-	-	-	-	-	4.0%	-	24.0%	60.0%	4.0%	4.0%	-	-	-	-	-	4.0%	2.5	-
	BB+	-	-	-	-	-	-	-	-	-	27.3%	72.7%	-	-	-	-	-	-	-	1.1	-
	BB	-	-	-	-	-	-	-	14.3%	-	14.3%	-	28.6%	14.3%	-	-	14.3%	-	14.3%	0.7	-
	BB-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	-	-	0.1	-
	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	50.0%	-	-	-	0.2	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.0%	-	-	-	0.0	-
	B-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	

✓ In the period **CY10 - CY19**, the higher rating categories remained largely stable except at the **'BBB'** and **'BBB-'** modifier level

Rating transition – Average 3-Year Transition & Stability

		Average Three-Year Transition (CY10-CY19)																		Withdrawal-Adjusted Static Pool	Data Counts
Transition Period (3-Years)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	D			
Beginning of Year (Average CY10-CY19)	AAA	90.9%	9.1%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	41	
	AA+	10.9%	82.8%	6.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.0	80	
	AA	-	15.7%	75.9%	3.7%	2.8%	1.9%	-	-	-	-	-	-	-	-	-	-	-	13.5	135	
	AA-	-	2.2%	19.8%	65.9%	8.8%	1.1%	2.2%	-	-	-	-	-	-	-	-	-	-	11.4	114	
	A+	-	-	6.1%	27.3%	66.7%	-	-	-	-	-	-	-	-	-	-	-	-	8.3	83	
	A	-	-	2.9%	2.9%	30.4%	55.1%	4.3%	-	1.4%	1.4%	-	-	-	-	-	-	-	8.6	86	
	A-	-	-	1.3%	6.7%	2.7%	12.0%	61.3%	6.7%	5.3%	2.7%	-	-	-	-	-	-	1.4%	9.4	94	
	BBB+	-	-	-	-	-	9.7%	25.8%	58.1%	6.5%	-	-	-	-	-	-	-	-	3.9	0.6	
	BBB	-	-	-	-	6.3%	-	25.0%	25.0%	18.8%	-	-	12.5%	-	-	12.5%	-	-	2.0	0.3	
	BBB-	-	-	-	-	-	-	28.6%	14.3%	14.3%	14.3%	-	-	-	-	14.3%	-	14.3%	0.9	-	
	BB+	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	-	-	-	-	0.1	-	
	BB	-	-	-	-	25.0%	-	25.0%	-	-	-	-	25.0%	-	-	-	-	25.0%	0.5	-	
	BB-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	
	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	
	B-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	
CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-		



Rating transition – Average 5-Year Transition & Stability

		Average Five-Year Transition (CY10-CY19)																			
Transition Period (5-Years)		AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	D	Withdrawal-Adjusted Static Pool	Data Counts
Beginning of Year (Average CY10-CY19)	AAA	81.8%	18.2%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7	37
	AA+	17.4%	71.7%	10.9%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	77
	AA	-	20.5%	66.7%	9.0%	3.8%	-	-	-	-	-	-	-	-	-	-	-	-	-	13.0	130
	AA-	-	3.3%	26.7%	53.3%	15.0%	1.7%	-	-	-	-	-	-	-	-	-	-	-	-	10.0	100
	A+	-	2.6%	5.1%	43.6%	48.7%	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	65
	A	-	2.2%	4.4%	6.7%	33.3%	42.2%	2.2%	-	-	6.7%	-	-	-	-	2.2%	-	-	-	7.5	75
	A-	-	-	6.4%	4.3%	2.1%	10.6%	61.7%	10.6%	2.1%	2.1%	-	-	-	-	-	-	-	-	7.8	78
	BBB+	-	-	-	-	-	14.3%	19.0%	61.9%	4.8%	-	-	-	-	-	-	-	-	-	3.5	0.3
	BBB	-	-	-	-	7.7%	7.7%	38.5%	23.1%	7.7%	-	-	7.7%	-	-	-	-	7.7%	-	2.2	0.2
	BBB-	-	-	-	-	-	-	-	-	-	-	-	100.0%	-	-	-	-	-	-	0.2	-
	BB+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
	BB	-	-	-	-	50.0%	50.0%	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-
	BB-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	
B-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	
CCC-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	

Concept & Applicable Law

PACRA Transition Methodology

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Rating transition – Average 10-Year Transition & Stability

		Average Ten-Year Transition (CY10-CY19)																		Withdrawal-Adjusted Static Pool	Data Counts
Beginning of Year (Average CY10-CY19)	Transition Period (10-Years)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC-C	D		
	AAA		66.7%	33.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0
AA+		28.6%	57.1%	14.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.0	70
AA		9.1%	36.4%	36.4%	9.1%	9.1%	-	-	-	-	-	-	-	-	-	-	-	-	-	11.0	110
AA-		-	-	42.9%	42.9%	14.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	7.0	70
A+		-	-	50.0%	-	50.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	20
A		-	-	-	20.0%	80.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	50
A-		-	-	-	-	-	20.0%	40.0%	40.0%	-	-	-	-	-	-	-	-	-	-	5.0	50
BBB+		-	-	-	-	-	-	75.0%	25.0%	-	-	-	-	-	-	-	-	-	-	4.0	0.0
BBB		-	-	-	-	-	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	1.0	0.0
BBB-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0
BB+		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0
BB		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
BB-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
B+		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
B		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
B-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-
CCC-C		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-

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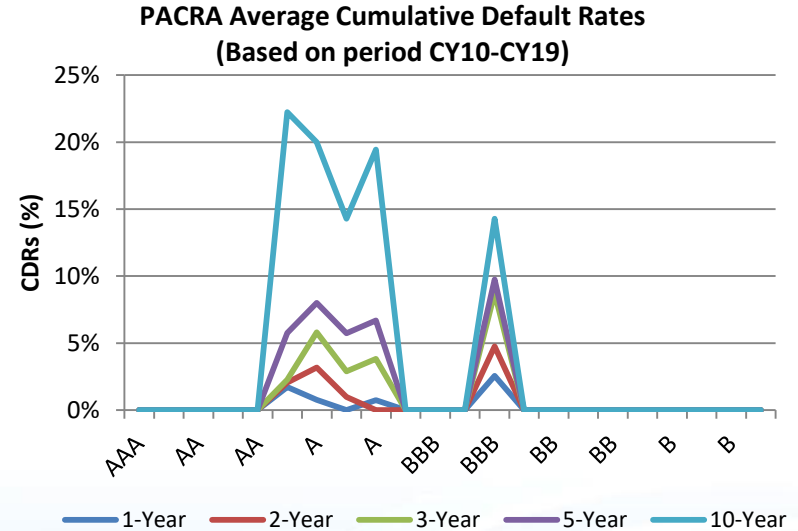
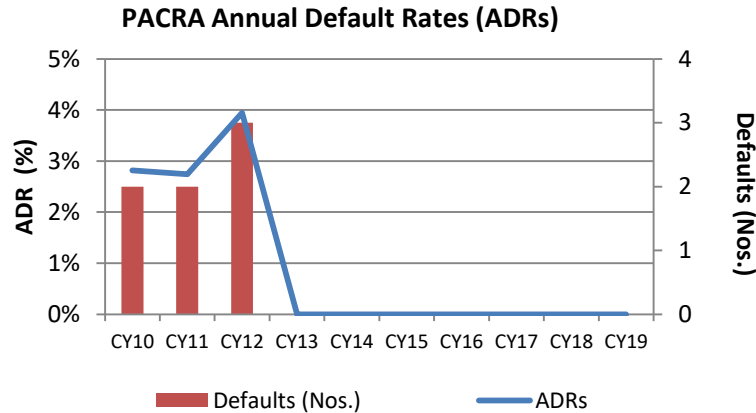
Recognizing Default – Definition of Default

PACRA defines **DEFAULT** as:

- i. **Failure of an obligor to make timely payment of principal and/or interest under contractual terms of any financial obligation**
- ii. **A distressed restructuring whereby the restructuring has the effect of allowing the obligor to avoid payment default**

This definition is uniformly applied both for capital market instruments and bank facilities

Default Trends – ADRs & CDRs



✓ The ADR for PACRA is nil in CY19 for the seventh year running after registering a high of 5.6% in CY09

✓ CDRs for PACRA are most relevant at the A rating modifier level with the CDR reaching 7% in only the fourth year

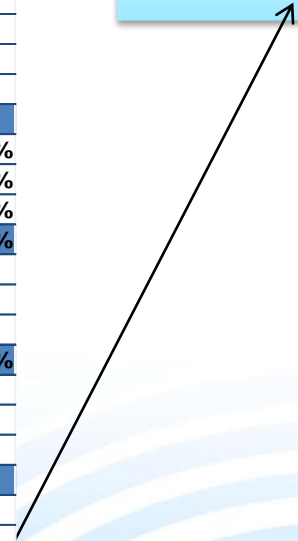
Default Trends – CDRs at modifier levels

PACRA Average Cumulative Default Rates (CDRs) - CY10-CY19

(%, Notch Level)

	1-Year	2-Year	3-Year	4-Year	5-Year	6-Year	7-Year	8-Year	9-Year	10-Year
AAA	-	-	-	-	-	-	-	-	-	-
AA+	-	-	-	-	-	-	-	-	-	-
AA	-	-	-	-	-	-	-	-	-	-
AA-	-	-	-	-	-	-	-	-	-	-
AA	-	-	-	-	-	-	100.0%	-	-	-
A+	1.7%	2.1%	2.3%	4.7%	5.8%	7.5%	-	-	19.1%	22.2%
A	0.8%	3.2%	5.8%	6.6%	8.0%	9.3%	11.2%	13.7%	19.6%	20.0%
A-	-	1.0%	2.9%	4.8%	5.7%	7.1%	-	-	17.6%	14.3%
A	0.7%	-	3.8%	5.6%	6.7%	-	100.0%	14.3%	19.4%	19.4%
BBB+	-	-	-	-	-	-	-	-	-	-
BBB	-	-	-	-	-	-	-	-	-	-
BBB-	-	-	-	-	-	-	-	-	-	-
BBB	2.6%	4.8%	8.8%	8.1%	9.7%	-	-	-	14.8%	14.3%
BB+	-	-	-	-	-	-	-	-	-	-
BB	-	-	-	-	-	-	-	-	-	-
BB-	-	-	-	-	-	-	-	-	-	-
BB	-	-	-	-	-	-	-	-	-	-
B+	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-
B-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-
CCC – C	-	-	-	-	-	-	-	-	-	-
Investment Grade (AAA-BBB)	0.6%	1.4%	2.3%	3.0%	3.6%	4.3%	5.4%	-	8.9%	9.1%

✓ For the higher rating categories as a whole, the CDRs peak in the 10th year at 9.1%



Default Trends – Time-to-Default

Rating Category	Time-to-Default <i>from</i>	
	Initial Ratings	All Ratings
	<i>Months</i>	
AAA	NA	NA
AA	NA	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

Global Default Experience					
CRA	S&P	Moody's	CRISIL	RAM	PACRA
2013					
Sovereign Risk	USA: AA+	USA: AAA	India: BBB-	Malaysia: A-	Pakistan: B-
Annual Default Rate (%)	1.1	1.4	4.4	0	0
<i>(No. of defaults)</i>	81	69	346	0	0
2014					
Sovereign Risk	USA: AA+	USA: AAA	India: BBB-	Malaysia: A-	Pakistan: B-
Annual Default Rate (%)	0.7	1	4.4	0	0
<i>(No. of defaults)</i>	60	55	378	0	0
2015					
Sovereign Risk	USA: AA+	USA: AAA	India: BBB-	Malaysia: A-	Pakistan: B-
Annual Default Rate (%)	1.4	1.7	4.1	0	0
<i>(No. of defaults)</i>	113	116	395	0	0
2016					
Sovereign Risk	USA: AA+	USA: Aaa	India: BBB-	Malaysia: A-	Pakistan: B
Annual Default Rate (%)	2.1	2.1	4.2	0.63	0
<i>(No. of defaults)</i>	162	144	403	1	0
2017					
Sovereign Risk	USA: AA+	USA: Aaa	India: BBB-	Malaysia: A-	Pakistan: B
Annual Default Rate (%)	1.2	1.64	4.1	0	0
<i>(No. of defaults)</i>	95	104	384	0	0
2018					
Sovereign Risk	USA: AA+	USA: Aaa	India: BBB-	Malaysia: A-	Pakistan: B
Annual Default Rate (%)	1.03	1.12	4.4	0	0
<i>(No. of defaults)</i>	82	77	345	0	0

Transition to Default (for PACRA Defaults)

Entity / Issuers	Key Lifetime Ratings		Prior-to-Default Rating		DEFAULT
	<i>Initial</i>	<i>Highest</i>	<i>One year</i>	<i>Last</i>	
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 due to tougher operating environment 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

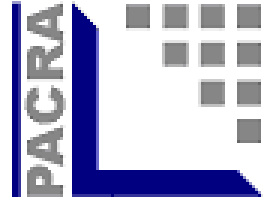
Transition to Default (For VIS Defaults)

Entity / Issuers	Key Lifetime Ratings		Prior-to-Default Rating		DEFAULT
	<i>Initial</i>	<i>Highest</i>	<i>One year</i>	<i>Last</i>	
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 (Jun-07 to Oct-07)	A (Oct-07)	BBB (Jun-10)	D (Jul-10)
Invest Capital investment Bank	A- (Jun-08)	A- (Jun-08 to Jul-10)	A- (Jul-09)	A- (Jul-10)	D (Sept-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 Corporation	AA- (Aug-02)	AA- (Aug-02 to Jul-06)	C (Sept-10)	C (Sept-10)	D (Jan-13)
Industrial Corporates					
Gharibwal Cement	BBB (Jun-06)	BBB (Jun-06 to Jul-07)	BBB (Jul-07)	BB+ (Jul-08)	D (Jul-08)
New Allied Electronics	A- (Nov-06)	A- (Nov-06 to Sept-08)	A- (Apr-07)	BB+ (Nov-08)	D (Dec-08)
Gharibwal Cement	BB+ (Jun-09)	BB+ (Jun-09)	BB+ (Jun-09)	BB+ (Jun-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)
Amtex 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)

✓ For VIS, 13 Entities / Issuers have defaulted since inception.

DISCLAIMERS

- 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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The Pakistan Credit Rating Agency
Awami Complex, FB-1, Usman Block, New Garden Town, Lahore

Phone: +92 42 3586 9504 - 6

Fax: +92 42 3583 0425

E-mail: usama.liaquat@pacra.com