CRISIL Default Study 2011

CRISIL Annual Default and
Ratings Transition Study - 2011

Analytical Contacts:

Arun Panicker
Chief Analytical Officer
Tel: +91 22 3342 3300
Email: apanicker@crisil.com

Somasekhar Vemuri
Head - Criteria and Product Development
Tel: +91 22 3342 3106
Email: svemuri@crisil.com

Sujeet Kumar
Manager - Criteria and Product Development
Tel: +91 22 3342 3409
Email: skumar@crisil.com

Chahana Kacker
Analyst - Criteria and Product Development
Tel: +91 22 4040 5978
Email: ckacker@crisil.com

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Box 1: Meaning and Significance of Default Rates, Default Definition, and Method of Computation

Default Rates

What are default rates?
The default rate for a specified period is the number of defaults among rated entities during the period, expressed as a percentage of the total number of rated entities whose ratings were outstanding throughout the period. Default rates can be calculated at each rating level, and can be calculated over multiple periods.

What are transition rates?
A transition rate measures the probability of a change in credit rating over a specified period. Transition rates can be calculated for the entire rated population, or can refer to a specified rating level.

How are default and transition rates used?
For all debt market participants, accurate and reliable default and transition rates are critical inputs in formulating the following decisions:

a) *Pricing debt*
Default and transition rates are critical inputs for pricing a debt instrument or loan exposure. Default probabilities associated with ratings help investors and lenders quantify credit risk in their debt exposures, and provide inputs on whether and how much to lend, and at what price.

b) *Structuring and pricing credit-enhanced instruments*
The structuring, rating, and pricing of credit-enhanced instruments depend heavily on the default and transition rates of underlying borrowers and securities.

c) *Credit risk measurement*
Default and transition rates are key inputs for many quantitative risk assessment models. Investors in rated instruments can manage their risk exposures effectively if they have access to reliable default and transition rates. Transition rates are also important for debt funds that need to maintain a certain threshold of credit quality in their portfolios, and for investors who are, because of regulations or otherwise, mandated to invest only in securities that are rated at a certain level or above.

d) *Indicating efficacy of rating scale*
CRISIL's credit ratings are an indicator of probability of default. If ratings are reliable, the default rates should decrease as one moves up the rating scale. Default and transition rates can therefore be used to validate rating scales and quantify rating stability.

Key Variables for Default Rate Computation

(i) **Definition of default**
For the purpose of computing default rates, there needs to be a clear definition of default. CRISIL defines default as any missed payment on a rated instrument. This means that if a rated debt obligation is not serviced in full by the due date, the rating moves to 'CRISIL D' or an equivalent. Furthermore, since CRISIL's credit ratings are an opinion on the timely repayment of debt, any post-default recovery is not factored into CRISIL's credit ratings. CRISIL believes that such an objective definition of default, coupled with its consistent application over time provides a firm foundation for the meaningful third-party use of its default rates. Thus, **CRISIL's default rates are free from default recognition bias.**

(Ii) **Period of computation**
Default rates can be computed over varying timeframes, potentially exposing such computation to period selection bias. For example, if default rates were published over a period of economic strength, they would appear to be artificially low, and hence, would be of limited use to market participants. CRISIL publishes its default rates from inception to date, ensuring that they are **free from period selection bias.**

(iii) **Computation methodology**
Default rates can be computed using different computation methodologies. Each methodology has implications for the numeric outcome as explained in Table A13. CRISIL's default rates are computed using the Annual Average Cumulative Default Rate approach, using the weighted annual marginal default rate methodology, with full year-withdrawal adjustments as explained in Annexure 5.

A 'normalisation' of the above variables must, therefore, precede any comparison of default statistics across rating agencies.

CRISIL Annual Default and Ratings Transition Study - 2011

CRISIL Ratings' overall annual default rate increased to 3.5 per cent in 2011 from 2.3 per cent in 2010. The increase is on account of the weakening credit quality of Indian corporate entities. The number of defaults by entities rated by CRISIL on the long-term scale increased to 161 in absolute terms in 2011 from 68 in 2010. This rise in the default rates was also aided by a surge in rated entities in the lower rating categories, which have traditionally been more susceptible to defaults. This trend in the overall annual default rate is likely to continue as credit pressures are likely to continue in 2012, even as the rating composition shifts further towards the lower rating categories.

Though default rates rose in 2011, they were still far lower than the historical highs witnessed between 1998 and 2001, leading to an overall decrease in the average default rates for 1988-2011 compared with 1988-2010. There was also an increase in stability rates, more significantly in the lower rating categories. These trends were witnessed on a significantly expanded portfolio of more than 8000 ratings as on December 31, 2011, as against 900 ratings as on December 31, 2008; of these, the ratings 'CRISIL BB' and below increased significantly to around 4200 from 150 during the same period.

The short-term instrument ratings also saw similar improvements in default rates and stability rates. CRISIL's ratings for asset-backed securities reported its first-ever default in 2011, after the 19th year since such securities were first rated by CRISIL.

CRISIL incorporates all known global best practices in default rate computation in its default study. These best practices include defining default in a digital manner, eliminating period selection bias, using the globally accepted marginal default rate method, and employing the monthly frequency static pools as base data. Starting Default Study 2009, CRISIL has been using static pools of a monthly frequency in computing default and transition rates; its previous studies factored in only the year-end status of ratings. This method significantly enhances the study's ability to capture defaults and rating changes that have occurred during the year. CRISIL is India's only rating agency to adopt this rigorous method to compute its default rates. CRISIL has also published default and transition statistics over the last ten years to provide investors with information on the more recent performance of ratings.

I. A Significant Shift in CRISIL's Rating Distribution

A surge in ratings in the lower rating categories with smaller companies availing of ratings for their bank loan facilities

There has been a fundamental shift in the distribution of CRISIL's long-term ratings over the past two years. There was a surge in ratings in the 'CRISIL BBB', 'CRISIL BB', and 'CRISIL B' categories with smaller companies entering the bank loan market. Consequently, CRISIL's median rating moved to 'CRISIL BB' in December 31, 2011, from 'CRISIL BBB' in December 31, 2008 (refer to Chart 1). It indicates increasing penetration and acceptance of credit ratings in the bank loan market.

Chart 1: CRISIL's rating distribution
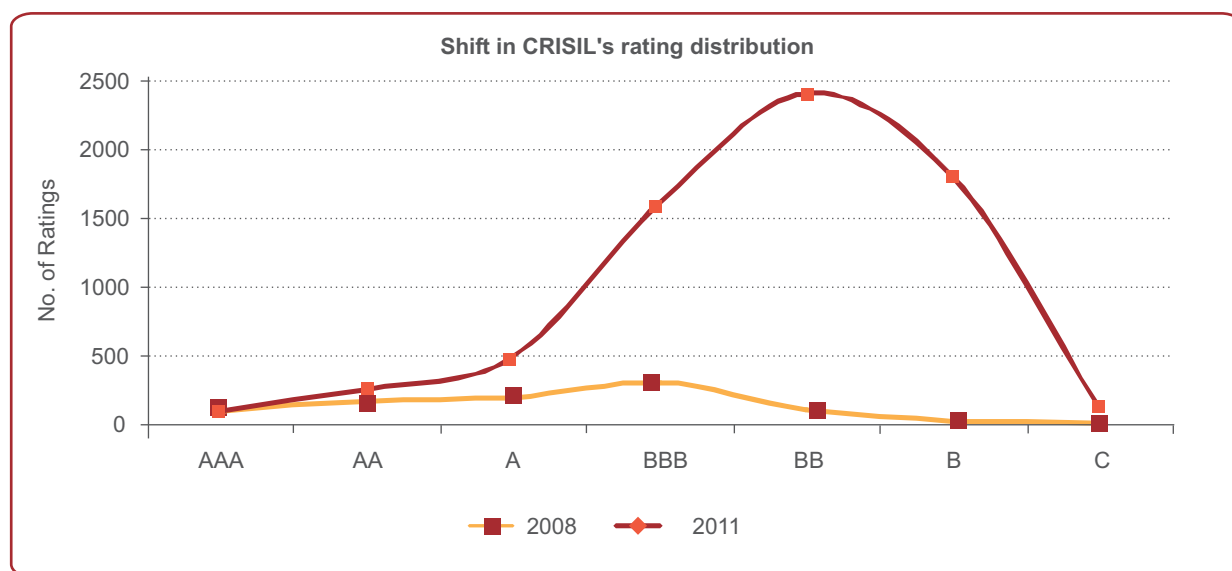
Source: CRISIL Ratings

This is a significant development in the credit rating landscape of India, which was earlier dominated by 'AAA' and 'AA' ratings. This will also lead to more robust and informative default and transition statistics.

II. Movement in Overall Annual Default Rates Since Inception

Annual default rates for corporate issuers[1] increase in 2011

Default rates have to be both low and stable, over a given time horizon, to be usefully factored for pricing debt. The trend for CRISIL's annual default rate (the proportion of total defaults in a particular year to total ratings outstanding throughout that year) is shown in Chart 2.

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[1] 'Corporate issuers' is a generic term used here to refer to various types of entities, which have availed of credit ratings from CRISIL and form a part of the Default Study. The term includes companies--both public and private limited, societies, partnerships, proprietorship, and trusts, among others, across the manufacturing, financial, as well infrastructure sectors.

Chart 2: Overall Annual Default Rates

Trends in Overall Annual Default Rate
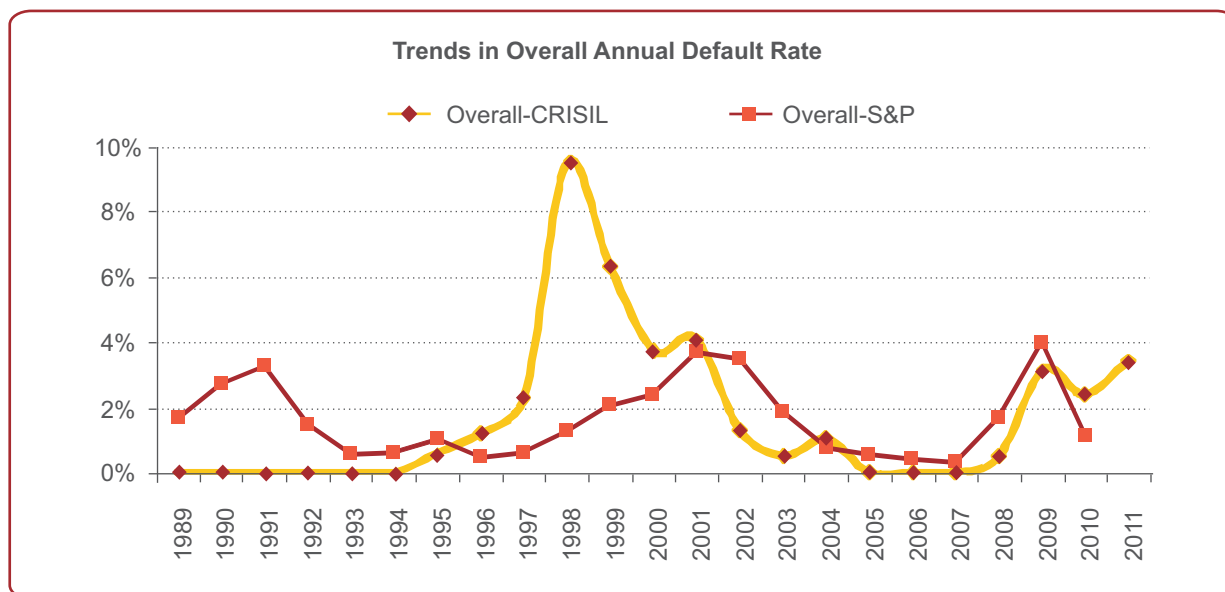
Source: CRISIL Ratings

The annual default rate increased to 3.5 per cent in 2011, the highest in the past 10 years, from 2.3 per cent in 2010. The increase reflects the difficult credit quality environment in 2011, and marks a reversal in the upward trend in credit quality witnessed in 2010.

This trend reversal in corporate India's credit quality in 2011 was also highlighted by CRISIL in its semi-annual publication *Ratings Roundup*, which analyses CRISIL's rating actions and its linkages with macroeconomic factors. The increase in 2011 can also be attributed to a sharp increase in ratings in the lower rating categories (refer to Chart 1), which have traditionally been more susceptible to defaults, leading to an increase in the overall annual default rate in 2011.

III.   For Corporate Issuers

One-year, two-year and three-year cumulative default rates

As credit ratings are opinions on default risk, the higher the rating, the lower should be the probability of default. Such an inverse correlation between credit ratings and default probabilities is desirable for any rating agency and is called the test of ordinality. Table 1 shows CRISIL's one-, two-, and three-year withdrawal-adjusted cumulative default rates across different rating categories from 1988 until December 2011 (Please refer to Annexure 5 for the methodology used in the calculation of default rates). CRISIL's default rates continue to be ordinal. Notably, not a single long-term instrument rated 'CRISIL AAA' has ever defaulted.

Table 1: CRISIL's average cumulative default rates for long-term ratings (withdrawal-adjusted)

One-, Two-, and Three-Year CDRs, between 1988 and 2011				
Rating	Issuer-months	One-Year	Two-Year	Three-Year
CRISIL AAA	11846	0.00%	0.00%	0.00%
CRISIL AA	24368	0.04%	0.40%	1.09%
CRISIL A	25694	0.82%	3.52%	7.66%
CRISIL BBB	29366	1.89%	5.34%	12.27%
CRISIL BB	22685	5.80%	12.52%	24.58%
CRISIL B	11489	8.25%	17.89%	37.90%
CRISIL C	2350	21.36%	37.23%	50.79%
Total	127798			

Source: CRISIL Ratings

There was a general decrease in average default rates for 1988-2011 across all rating categories compared with 1988-2010, even as the overall default rate for 2011 has risen (refer to Chart 2). This is because, despite the increase, the default rates for 2011 are still much lower than the historical highs witnessed in 1998-2001.

CRISIL also publishes the average default rates of the past 10 years (2001-11), to provide a picture of rating behaviour over more recent periods. These are presented in Table A3 in Annexure 3. These default rates are also ordinal.

Since 2009, CRISIL uses monthly static pools to compute default statistics as against annual static pools in the past. However, for the purpose of comparison, the default study also presents the default rates for the periods between 1988 and 2011, and between 2001 and 2011, calculated using annual static pools in Annexure 3 (in Tables A4 and A5, respectively).

One-year transition rates for ratings on both long-term scale and short-term scale

Transition rates indicate the probability of a given rating moving to other rating categories. Since credit ratings drive bonds' yields and, therefore, their prices, transition rates are relevant for investors who do not intend to hold debt instruments to maturity, or need to mark their investments to market regularly. Additionally, they are of crucial importance for investors who are mandated to only hold investments that are of a certain minimum credit quality. Table 2 presents CRISIL's transition rates for various rating categories.

Table 2: CRISIL's average one-year transition rates for long-term ratings

Rating	Issuer-months	CRISIL AAA	CRISIL AA	CRISIL A	CRISIL BBB	CRISIL BB	CRISIL B	CRISIL C	CRISIL D
One-year average transition rates: between 1988 and 2011									
CRISIL AAA	11846	96.79%	3.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRISIL AA	24368	1.77%	91.87%	5.27%	0.72%	0.26%	0.05%	0.03%	0.04%
CRISIL A	25694	0.00%	4.00%	85.71%	6.02%	2.84%	0.20%	0.41%	0.82%
CRISIL BBB	29366	0.00%	0.15%	3.95%	85.78%	6.69%	0.89%	0.65%	1.89%
CRISIL BB	22685	0.00%	0.11%	0.00%	4.29%	84.58%	3.65%	1.57%	5.80%
CRISIL B	11489	0.00%	0.00%	0.05%	0.24%	10.00%	80.43%	1.03%	8.25%
CRISIL C	2350	0.00%	0.00%	0.00%	0.51%	2.47%	15.45%	60.21%	21.36%
Total	**127798**								

Source: CRISIL Ratings

As can be seen, between 1988 and 2011, almost 92 per cent of the instruments rated in the 'CRISIL AA' category remained in that category at the end of one year; around 1.8 per cent were upgraded to a higher rating ('CRISIL AAA'), and around 6.2 per cent were downgraded to a lower rating. The highlighted diagonal of Table 2 contains the stability rates of different rating categories.

As with CRISIL's default rates, CRISIL's one-year transition rates are also comprehensive and reliable because they have been compiled using monthly static pools that cover data since the first rating was assigned by CRISIL and include multiple business cycles. For transition rates based on the annual static pools methodology, refer to Tables A6 and A7 in Annexure 3.

Stability of ratings assigned on short-term ratings scale are critical for investors with a short-term investment horizon as the sensitivity of the credit risk of their investments to rating transitions is more than that for an investor with a long-term investment horizon. Table 3 provides the one-year transition rates for CRISIL's short-term ratings. The diagonal displays the stability rates for each rating. The numbers to the left of the diagonal represent the proportions of upgrades, while that to the right represent the proportion of downgrades. A 'CRISIL A1+' rating has a stability rate of more than 97 per cent over one year, and a 'CRISIL A1' rating has more than 14 per cent rate of transition to a higher rating 'CRISIL A1+' over one year.

Table 3: CRISIL's average one-year transition rates for short-term ratings

Rating*	Issuer-months	CRISIL A1+	CRISIL A1	CRISIL A2	CRISIL A3	CRISIL A4	CRISIL D
One-year average transition rates: between 1988- 2011							
CRISIL A1+	46329	97.24%	2.10%	0.34%	0.29%	0.03%	0.00%
CRISIL A1	8620	14.63%	81.76%	2.33%	0.78%	0.15%	0.35%
CRISIL A2	8771	0.57%	5.94%	88.52%	3.18%	1.10%	0.70%
CRISIL A3	13991	0.00%	0.13%	5.42%	86.58%	6.65%	1.23%
CRISIL A4	23723	0.00%	0.00%	0.06%	2.69%	92.27%	4.99%
Total	**101434**						

Source: CRISIL Ratings
*CRISIL A2, CRISIL A3 and CRISIL A4 include ratings of the respective modifiers levels.

'CRISIL A1' and 'CRISIL A2' ratings show stability of 81.8 per cent and 88.5 per cent, respectively. The stability rates for 'CRISIL A1' were higher during the more recent period between 2001 and 2011 as against the stability rate in the entire 24-year rating history of CRISIL (refer to Table A8 in Annexure 3). For transition rates based on the annual static pools methodology, refer to Tables A9 and A10 in Annexure 3.

Movement in stability rates over the past four years

Stability rates indicate the proportion of ratings remaining unchanged over a given time horizon. The stability of CRISIL's ratings increases with movement up the rating scale; in other words, CRISIL's stability rates are also ordinal. Table 4 shows CRISIL's one-year stability rates over the past 24 years. The stability rate for 'CRISIL BBB' has increased significantly to 85.8 per cent for 1988-2011 from 81.6 per cent for 1988-2010.

Table 4 and 5: Stability rates of CRISIL's long-term ratings

Table 4: One-year average stability rates since 1988				
Period	**CRISIL AAA**	**CRISIL AA**	**CRISIL A**	**CRISIL BBB**
1988-2011	96.80%	91.90%	85.70%	85.80%
1988-2010	96.40%	91.30%	84.60%	81.60%
1988-2009	96.10%	91.00%	83.90%	74.50%
1988-2008	97.10%	91.20%	83.40%	72.50%

Source: CRISIL Ratings

Table 5: One-year average stability rates since 2000				
Period	**CRISIL AAA**	**CRISIL AA**	**CRISIL A**	**CRISIL BBB**
2000-2011	97.30%	94.40%	89.90%	89.30%
2000-2010	96.90%	93.90%	88.80%	87.20%
2000-2009	96.50%	93.80%	88.40%	80.20%
2000-2008	97.90%	94.70%	87.70%	75.80%

Source: CRISIL Ratings

Considering the period since 2000, Table 5 shows the one-year stability rates at individual rating levels since 2000. 'CRISIL AAA' and 'CRISIL AA' stability rates have been consistently above 96 and 93 per cent, respectively. Likewise, 'CRISIL A' and 'CRISIL BBB' ratings have also displayed high stability rates.

IV. For Structured Finance Instruments

CRISIL was the pioneer in rating several complex structured finance securities in the Indian market and its database comprises **3871 issue-years** (including 2053 issue-years for retail asset-backed securities (ABS) and retail mortgage-backed securities (MBS) spanning 19 years). CRISIL has ratings outstanding on a variety of structured finance securities; besides ABS and MBS instruments, these include single-loan sell-downs and instruments backed by full or partial guarantees.

One-year, two-year, and three-year cumulative default rates (CDRs)

Table 6 provides the one-, two-, and three-year average CDRs at each rating category level between 1993[2] and 2011 (Please refer to Table A11 in Annexure 3 for default rates between 2001 and 2011).

Table 6: CRISIL's average CDRs for ratings on structured finance securities (between 1993 and 2011)

One-, Two-, and Three-Year CDRs, between 1993 and 2011				
Ratings	Issue-years	One-Year	Two-Year	Three-Year
CRISIL AAA(SO)	2616	0.04%	0.16%	0.27%
CRISIL AA(SO)	465	0.22%	0.54%	1.02%
CRISIL A(SO)	554	0.36%	1.87%	3.92%
CRISIL BBB(SO)	194	0.00%	1.79%	1.79%
CRISIL BB(SO) and below	42	26.19%	29.71%	29.71%
Total	3871			

Source: CRISIL Ratings

The one-year cumulative default rate for securities rated 'CRISIL AAA(SO)' is 0.04 per cent. This is on account of a central-government-guaranteed 'CRISIL AAA(SO)'-rated instrument that defaulted in 2005, because the trustee delayed the invocation of the guarantee, resulting in a delay in payments to investors; under its rigorous default recognition norms, CRISIL treated this as a default. This default was subsequently cured, the investors were paid in full and the rated instrument redeemed.

One-year transition rates

Around 68 per cent of all structured finance ratings—2616 issue-years of the total 3871 issue-years-are rated 'CRISIL AAA (SO)' and show a high stability rate of 97.9 per cent. Table 7 shows the one-year average transition rates between 1993 and 2011 for structured finance securities.

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[2]*CRISIL assigned its first structured finance rating in Jan 1992, which forms a part of 1993 annual static pool. For calculating default and transition rates for structured finance ratings, CRISIL has used annual static pool methodology as defaults in structured finance securities have been rare.*

Table 7: CRISIL's average one-year transition rates for structured finance securities

One-year Average Transition Rates, between 1993 and 2011									
Rating	Issue-years	CRISIL AAA(SO)	CRISIL AA(SO)	CRISIL A(SO)	CRISIL BBB(SO)	CRISIL BB(SO)	CRISIL B(SO)	CRISIL C(SO)	CRISIL D(SO)
CRISIL AAA(SO)	2616	97.94%	1.80%	0.19%	0.00%	0.00%	0.00%	0.04%	0.04%
CRISIL AA(SO)	465	7.53%	87.10%	4.95%	0.22%	0.00%	0.00%	0.00%	0.22%
CRISIL A(SO)	554	0.72%	4.51%	90.61%	0.72%	2.89%	0.18%	0.00%	0.36%
CRISIL BBB(SO)	194	5.16%	2.58%	8.25%	82.47%	0.52%	0.52%	0.52%	0.00%
CRISIL BB(SO)	35	0.00%	0.00%	5.71%	20.00%	54.29%	0.00%	0.00%	20.00%
CRISIL B(SO)	5	0.00%	0.00%	0.00%	0.00%	0.00%	60.00%	0.00%	40.00%
CRISIL C(SO)	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Total	3871								

Source: CRISIL Ratings

The highlighted diagonal in Table 7 shows the stability rates for various rating categories.

Movement in stability rates over the past four years

Tables 8 and 9 present the one-year stability rates of structured finance ratings for different periods.

Table 8: One-Year Stability Rates Since 1993				
Period	CRISIL AAA(SO)	CRISIL AA(SO)	CRISIL A(SO)	CRISIL BBB(SO)
1993-2011	**97.90%**	**87.10%**	**90.60%**	**82.50%**
1993-2010	97.80%	83.10%	87.80%	84.00%
1993-2009	97.50%	83.80%	88.00%	92.20%
1993-2008	97.00%	87.60%	88.10%	97.20%

Source: CRISIL Ratings

Table 9: One-Year Stability Rates Since 2000				
Period	CRISIL AAA(SO)	CRISIL AA(SO)	CRISIL A(SO)	CRISIL BBB(SO)
2000-2011	**98.00%**	**88.60%**	**89.90%**	**82.90%**
2000-2010	97.70%	85.10%	86.70%	84.50%
2000-2009	97.40%	86.40%	86.80%	93.00%
2000-2008	96.90%	91.80%	86.80%	98.60%

Source: CRISIL Ratings

These stability rates are high; however, the Indian securitisation market has been 'CRISIL AAA(SO)'-centric, reflected in the large number of issue-years for this rating. There has been a recent improvement in data density in the other higher rating categories upto 'CRISIL BBB(SO)', largely explaining a move towards ordinality in stability rates since 2010.

V. Retail ABS and MBS Issuance-One Year Transition Rates

CRISIL's database of retail ABS and MBS transactions consists of 2053 issue-years across 19 years (1993 - 2011). **2011 saw the first-ever defaults in CRISIL-rated ABS and MBS instruments, with defaults in two CRISIL-rated ABS pools**. However, investors continued to receive payments and their losses were small.

Table 10 shows the transition rates for ABS and MBS ratings for the period between 1993 and 2011. 'CRISIL AAA(SO)'-rated ABS or MBS instruments, which account for almost 90 per cent of the ratings in the database, have stability rates of 97.9 per cent.

Table 10 : CRISIL's average one-year transition rates for ABS and MBS ratings- between 1993 and 2011

Rating	Issue-years	CRISIL AAA(SO)	CRISIL AA(SO)	CRISIL A(SO)	CRISIL BBB(SO)	CRISIL BB(SO)	CRISIL B(SO)	CRISIL C(SO)	CRISIL D(SO)
CRISIL AAA(SO)	1830	97.98%	1.75%	0.27%	0.00%	0.00%	0.00%	0.00%	0.00%
CRISIL AA(SO)	54	42.59%	48.15%	7.41%	1.85%	0.00%	0.00%	0.00%	0.00%
CRISIL A(SO)	17	23.53%	29.41%	29.41%	17.65%	0.00%	0.00%	0.00%	0.00%
CRISIL BBB(SO)	150	6.67%	3.33%	10.00%	78.67%	0.00%	0.67%	0.67%	0.00%
CRISIL BB(SO) and below	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Total	2053								

Source: CRISIL Ratings

The stability rates of these ratings are comparable with those of other ratings assigned by CRISIL. Data density is sparse below 'CRISIL AAA(SO)', largely explaining the non-ordinal stability rates below 'CRISIL AAA(SO)'. Furthermore, a significant number of 'CRISIL AA(SO)' and 'CRISIL A(SO)' rated instruments have performed well, resulting in upgrades.

Conclusion:

The overall annual default rate increased in 2011 from that in 2010 because of the weakening credit quality of corporate India and a change in rating composition, resulting from a surge in the number of entities in the lower rating categories. However, the default rates in 2011 were far lower than the historical highs witnessed in 1998-2001, leading to a decline in the overall average default rates for 1988-2011 compared with 1988-2010.

The strength of CRISIL's rating process is vetted by the ordinal nature of default rates, high stability, and robust predictive ability of CRISIL's ratings. These processes have been set up, stabilised, and refined in the light of two decades of CRISIL's rating experience, and their robustness is today recognised by issuers and investors. This study is based on CRISIL's ratings assigned over nearly 25 years covering multiple credit cycles. Because of the quality, vintage, and diversity of the instruments, the size of the database, and use of monthly static pool methodology, this remains the most comprehensive study on corporate defaults and rating transitions in India.

VI. Annexures

Annexure 1: Industry-wise Classification of Defaults

CRISIL is the first rating agency in India to have published an industry-wise classification and a chronological account of all the defaults in its portfolio that form part of the static pools used for computing default rates. Over the past 24 years, four industries (textiles-apparel and luxury goods; metals and mining; food products, and non-banking financial companies) accounted for around 40 per cent defaults on CRISIL-rated debt instruments, as shown in Table A1.

Table A1: Industry-wise and chronological break-up of defaults over the last 24 years.

Industry	1988 to 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Sum
Textiles- Apparel and Luxury Goods		1	1	3	1	3	1	1		1					3	8	12	26	61
Metals and Mining			2	1	6	2	2	2			1					2	6	28	52
Food Products				1	2	3					1					3	6	7	23
Non Banking Financial Company				4	12	2												2	20
Machinery					2	2	1									3	3	6	17
Pharmaceuticals			1		1	2		1								4	2	5	16
Hotels Restaurants and Leisure						1										2	5	7	15
Chemicals				1	2	2	3	3	1								1	1	14
Paper and Forest Products				1	1	1									1	1	5	4	14
Construction and Engineering					1			1								3	4	4	13
Construction Materials			1		2	2	1		1							2	1	3	13
Electrical Equipment					1	1											2	7	11
Distributors																1	3	6	10
Diversified Consumer Services																1	1	8	10
Household Durables		1	1		3				1							3		1	10
Independent Power Producers and Energy Traders								1							1	1	3	4	10
Real Estate Development						1		1								1	2	4	9
Auto Components			1		1	1		1								1	1	2	8
Containers and Packaging					2	1										1	3	1	8
Electronic Equipment Instruments and Components						1										1		4	6
Road and Rail				1														5	6
Beverages																	1	4	5
Commercial Services and Supplies						1										3		1	5
Others				1	9	2	2				1				1	2	7	21	46
Total Defaults	0	2	7	13	45	27	12	11	3	1	3	0	0	0	6	43	68	161	402
Overall Annual Default Rate	0.0%	0.6%	1.2%	2.3%	9.5%	6.3%	3.7%	4.1%	1.3%	0.5%	1.0%	0.0%	0.0%	0.0%	0.5%	3.2%	2.3%	3.5%	

Source: CRISIL Ratings

The highest number of defaults, in absolute terms, since inception, was reported in 2011. However, it should be noted that these defaults were on a much higher base of more than 8000 ratings. Moreover, this increase was also aided by a spurt in the lower rating categories, which have traditionally been more susceptible to defaults. The huge number of defaults between 1997 and 1999 were because of a number of factors operating simultaneously in that period, including an economic slowdown, and structural/regulatory changes, especially in the financial sector.

Textiles, and metals and mining industries witnessed the maximum defaults in 2011 as well, in line with observed past trends. These industries have always seen the highest number of defaults on account of being highly leveraged, which makes them more vulnerable to economic cycles.

Annexure 2: Analysis of Defaults: Time to Default

Higher ratings farther away from default

Since CRISIL's inception, there have been 402 defaults by issuers carrying a long-term rating. An analysis of these defaulted issuers indicates that amongst the entities that defaulted, the higher-rated entities were farther away from default in terms of the number of months prior to default than the lower-rated entities. While issuers rated in the 'CRISIL B' or 'CRISIL C' categories that defaulted did so in about 11.5 months on an average, the few entities that defaulted from higher categories did so after a much longer period. For instance, the 3.5 per cent (approximately) of entities that defaulted from the 'CRISIL AA' category did so after 58 months on an average (see Table A2).

Table A2: Average Time to Default (of Defaulted Entities)(In number of months)	
Rating Category	**Months to Default**
CRISIL AAA	No Defaults
CRISIL AA	58
CRISIL A	43
CRISIL BBB	30
CRISIL BB	15
CRISIL B	10
CRISIL C	13

Source: CRISIL Ratings

Annexure 3: Comparative Default and Transition Rates for different periods

Three-year CDRs for long-term ratings-monthly static pools

Table A3: One-, Two-, and Three-Year CDRs, between 2001 and 2011				
Ratings	**Issuer-months**	**One-Year**	**Two-Year**	**Three-Year**
CRISIL AAA	7916	0.00%	0.00%	0.00%
CRISIL AA	12453	0.00%	0.00%	0.00%
CRISIL A	10876	0.25%	0.86%	1.90%
CRISIL BBB	22976	1.27%	2.57%	3.89%
CRISIL BB	19669	3.65%	8.47%	19.50%
CRISIL B	11056	7.78%	15.46%	15.46%
CRISIL C	1575	15.18%	24.58%	26.62%
Total	**86521**			

Source: CRISIL Ratings

Three-year CDRs for long-term ratings - annual static pools

Table A4: One-, Two-, and Three-Year CDRs, between 1988 and 2011				
Ratings	**Issuer-years**	**One-Year**	**Two-Year**	**Three-Year**
CRISIL AAA	1032	0.00%	0.00%	0.00%
CRISIL AA	2115	0.00%	0.29%	0.97%
CRISIL A	2325	0.65%	3.24%	7.26%
CRISIL BBB	3045	1.68%	4.40%	10.20%
CRISIL BB	2590	5.37%	10.89%	21.77%
CRISIL B	1388	8.57%	16.91%	25.22%
CRISIL C	222	19.37%	29.89%	48.18%
Total	**12717**			

Source: CRISIL Ratings

Table A5: One-, Two-, and Three-Year CDRs, between 2001 and 2011				
Ratings	**Issuer-years**	**One-Year**	**Two-Year**	**Three-Year**
CRISIL AAA	727	0.00%	0.00%	0.00%
CRISIL AA	1176	0.00%	0.00%	0.00%
CRISIL A	1107	0.36%	1.28%	2.90%
CRISIL BBB	2522	1.27%	2.39%	3.72%
CRISIL BB	2330	3.61%	7.47%	17.65%
CRISIL B	1353	8.13%	15.31%	15.31%
CRISIL C	159	14.47%	17.37%	27.69%
Total	**9374**			

Source: CRISIL Ratings

One-year transition rates for long-term ratings-annual static pools

Table A6: One-year average transition rates: between 1988 and 2011									
Rating	Issuer- years	CRISIL AAA	CRISIL AA	CRISIL A	CRISIL BBB	CRISIL BB	CRISIL B	CRISIL C	CRISIL D
CRISIL AAA	1032	96.90%	3.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRISIL AA	2115	1.70%	91.90%	5.30%	0.90%	0.20%	0.10%	0.00%	0.00%
CRISIL A	2325	0.00%	3.80%	86.40%	5.70%	2.80%	0.20%	0.50%	0.60%
CRISIL BBB	3045	0.00%	0.10%	3.90%	87.10%	5.90%	0.80%	0.50%	1.70%
CRISIL BB	2590	0.00%	0.10%	0.00%	4.10%	85.90%	3.40%	1.20%	5.40%
CRISIL B	1388	0.00%	0.00%	0.10%	0.30%	9.30%	80.70%	1.10%	8.60%
CRISIL C	222	0.00%	0.00%	0.00%	0.50%	2.30%	17.60%	60.40%	19.40%
Total	**12717**								

Source: CRISIL Ratings

Table A7: One-year average transition rates: between 2001 and 2011									
Rating	Issuer- years	CRISIL AAA	CRISIL AA	CRISIL A	CRISIL BBB	CRISIL BB	CRISIL B	CRISIL C	CRISIL D
CRISIL AAA	727	97.70%	2.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRISIL AA	1176	1.50%	94.60%	3.00%	0.90%	0.00%	0.00%	0.00%	0.00%
CRISIL A	1107	0.00%	4.60%	90.80%	3.50%	0.50%	0.10%	0.10%	0.40%
CRISIL BBB	2522	0.00%	0.00%	3.40%	90.50%	4.20%	0.40%	0.20%	1.30%
CRISIL BB	2330	0.00%	0.00%	0.00%	4.40%	87.90%	3.40%	0.70%	3.60%
CRISIL B	1353	0.00%	0.00%	0.10%	0.10%	9.50%	81.20%	1.00%	8.10%
CRISIL C	159	0.00%	0.00%	0.00%	0.60%	3.10%	24.50%	57.20%	14.50%
Total	**9374**								

Source: CRISIL Ratings

One-year transition rates for short-term ratings- monthly static pools

Table A8: One-year average transition rates between 2001 and 2011—Monthly Static Pools							
Rating*	Issuer-months	CRISIL A1+	CRISIL A1	CRISIL A2	CRISIL A3	CRISIL A4	CRISIL D
CRISIL A1+	26915	98.14%	1.29%	0.16%	0.41%	0.00%	0.00%
CRISIL A1	5186	10.93%	85.63%	1.76%	1.04%	0.25%	0.39%
CRISIL A2	8346	0.16%	5.79%	88.99%	3.20%	1.14%	0.73%
CRISIL A3	13975	0.00%	0.13%	5.42%	86.58%	6.66%	1.22%
CRISIL A4	23716	0.00%	0.00%	0.06%	2.69%	92.26%	4.99%
Total	78138						

Source: CRISIL Ratings
*CRISIL A2, CRISIL A3 and CRISIL A4 include ratings of the respective modifiers levels.

One-year transition rates for short-term ratings - annual static pool

Table A9: One-year average transition rates between 1988 and 2011—Annual Static Pools							
Rating*	Issuer-years	CRISIL A1+	CRISIL A1	CRISIL A2	CRISIL A3	CRISIL A4	CRISIL D
CRISIL A1+	4061	97.34%	2.00%	0.30%	0.35%	0.03%	0.00%
CRISIL A1	824	12.86%	83.25%	2.55%	0.97%	0.12%	0.24%
CRISIL A2	934	0.54%	6.32%	88.33%	3.21%	0.75%	0.86%
CRISIL A3	1544	0.00%	0.19%	5.38%	87.05%	6.09%	1.30%
CRISIL A4	2772	0.00%	0.00%	0.04%	2.67%	92.42%	4.87%
Total	10135						

Source: CRISIL Ratings
*CRISIL A2, CRISIL A3 and CRISIL A4 include ratings of the respective modifiers levels.

Table A10: One-year average transition rates between 2001 and 2011 - Annual Static Pools							
Rating*	Issuer-years	CRISIL A1+	CRISIL A1	CRISIL A2	CRISIL A3	CRISIL A4	CRISIL D
CRISIL A1+	2525	97.90%	1.50%	0.20%	0.50%	0.00%	0.00%
CRISIL A1	516	10.10%	85.70%	2.50%	1.20%	0.20%	0.40%
CRISIL A2	893	0.20%	6.30%	88.60%	3.20%	0.80%	0.90%
CRISIL A3	1542	0.00%	0.20%	5.40%	87.10%	6.10%	1.20%
CRISIL A4	2771	0.00%	0.00%	0.00%	2.70%	92.40%	4.90%
Total	8247						

Source: CRISIL Ratings
*CRISIL A2, CRISIL A3 and CRISIL A4 include ratings of the respective modifiers levels.

Three-year CDRs for ratings of structured finance securities - for last 10 years

Table A11: One-, Two-, and Three-Year CDRs, between 2001 and 2011				
Ratings	**Issue-years**	**One-Year**	**Two-Year**	**Three-Year**
CRISIL AAA(SO)	2455	0.04%	0.17%	0.29%
CRISIL AA(SO)	419	0.24%	0.61%	1.18%
CRISIL A(SO)	426	0.47%	0.47%	0.83%
CRISIL BBB(SO)	193	0.00%	1.80%	1.80%
CRISIL BB(SO) and below	**40**	**27.50%**	**31.13%**	**31.13%**
Total	**3533**			

Source: CRISIL Ratings

Annexure 4: Lorenz Curve and Gini Coefficient for CRISIL Ratings

Chart 3: Graphical Representation of Gini Coefficient-Lorenz Curve

CRISIL Ratings - Lorenz Curve One-Year Defaults (1988 - 2011)

1 -Yr Gini Coeff. = Q/(P+Q) = 0.63
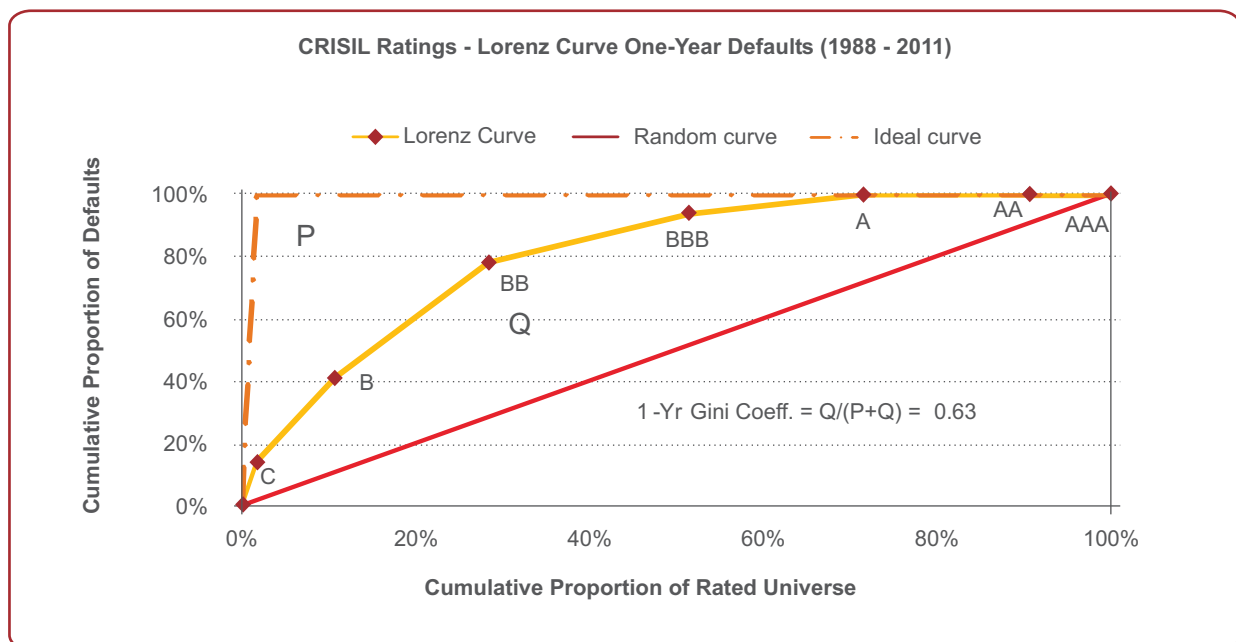
Source: CRISIL Ratings

The Gini coefficient for one-year defaults for 1988-2011 stands at 0.63.

How to read the chart on Gini Coefficient, a measure of rating accuracy

If ratings had no ability to predict default, then default rates and ratings would not be correlated. For example, consider that 30 defaults occur in one year out of 1000 ratings (that is, a default rate of 3 per cent). For a randomly selected set of 100 companies (10 per cent of the rated population), one would expect to have three defaulted companies (10 per cent of the defaulted population), since the number of defaults one would expect in a sample is proportional to the selected number of companies. This is represented by the random curve, which will be a diagonal straight line. On the other hand, if ratings are perfect predictors of default, in the aforementioned example, the lowest 30 ratings should capture all the defaults. This is represented by the ideal curve.

Since no rating system is perfect, the actual predictive power of ratings lies between these two extremes. The cumulative curve (Lorenz curve) represents the actual case. The closer the cumulative curve is to the ideal curve, the better the predictive power of the ratings. This is quantified by measuring the area between the cumulative curve and random curve (area 'Q' in Chart 3) in relation to the area between the ideal curve and random curve (the sum of the areas 'P' and 'Q' in Chart 3). This ratio of Q/(P+Q), called the Gini coefficient or the accuracy ratio, will be 1 if ratings have perfect predictive ability, as the cumulative curve will coincide with the ideal curve. On the other hand, it will be close to zero if ratings have poor predictive power, as in this case, the cumulative curve will almost coincide with the random curve. Thus, a higher Gini coefficient indicates the superior predictive ability of any rating system.

Definitions

Cumulative default curve (also called Lorenz curve)

The Lorenz curve is a plot of the cumulative proportion of defaults category-wise (of issuers with ratings outstanding at the beginning of the year and being in default at the end of the year), against the total proportion of issuers up to that category. For instance, in Chart 3, 78 per cent of the defaults recorded were in the 'CRISIL BB' and lower categories; these categories included only 28 per cent of the total ratings outstanding. In other words, the bottom 28 per cent of the ratings accounted for 78 per cent of all the defaults that occurred.

Random curve

The random curve is a plot of the cumulative proportion of issuers against the cumulative proportion of defaulters, assuming that defaults are distributed equally across rating categories. In such a plot, the bottom 28 per cent of the issuers would account for exactly 28 per cent of the defaults; the plot would, therefore, be a diagonal straight line, and the ratings would have no predictive value.

Ideal curve

The ideal curve is a plot of the cumulative proportion of issuers against the cumulative proportion of defaulters, if ratings were perfectly rank-ordered, so that all defaults occurred only among the lowest-rated entities. As CRISIL's overall default rate is 3.5 per cent, the bottom 3.5 per cent of issuers would have accounted for all the defaults if the ratings were perfect default predictors and any rating categories above this level would have no defaults at all.

Accuracy ratio/Gini coefficient

Accuracy ratio = (Area between the Lorenz curve and the random curve)/(Area between the ideal curve and the random curve)

Annexure 5: Methodology used by CRISIL in this study

Concept of static pools

CRISIL, for calculating default and transition rates, has moved to a monthly static pool methodology from the annual static pool methodology, since the 2009 edition of the default and transition study. The monthly static pool methodology captures more granular monthly data such as intra-year transition and defaults, rendering default and transition rate estimates more accurate and useful.

A static pool of a particular date is composed of a set of entities with a given rating outstanding as on that date. CRISIL forms static pools on the first day of every month for its default and transition study. As CRISIL calculates one-, two-, and three-year cumulative default rates, the static pools formed are of one-, two-, and three-year lengths. Once formed, the pool does not admit any new entities. For an entity to be included in an n-year static pool, its rating has to be outstanding through the entire period of n years. Entities whose ratings are withdrawn or are placed in default in the interim will continue to be withdrawn or in default for the remaining years. Therefore, an entity that ceases to be rated and is subsequently rated again, or an entity in the pool that defaults and recovers later, is not considered for re-inclusion in the pool.

An entity that remains rated for more than one month is counted as many times as the number of months over which it was rated. The methodology assumes that all ratings are current through an ongoing surveillance process, which, in CRISIL's case, is the cornerstone of the ratings' value proposition.

For instance, an entity that had ratings alive (not withdrawn) from January 1, 2000, to January 1, 2002, would appear in twelve consecutive static pools of one-year lengths, such as January 2000 to January 2001; February 2000 to February 2001; March 2000 to March 2001. On the other hand, a company first appearing on January 1, 2002, and having an outstanding rating until February 1, 2003, will appear only in the January 2002 to January 2003 and February 2002 to February 2003 static pools of one-year lengths. The static pools of two-year and three-year lengths are formed in a similar manner.

Weighted average marginal default rate

Notations:

For CRISIL's data,
M: Month of formation of the static pool (between 1988 and 2011)
R: A given rating category on the rating scale ('CRISIL AAA' to 'CRISIL C')
t: Length of the static pool in years on a rolling basis (1, 2, 3)

$P_t^M(R)$ = Defaults from rating category 'R' in the tth year of the M-month static pool
$Q_t^M(R)$ = Non-defaulted ratings outstanding at the beginning of the tth year in the rating category R from the M-month static pool

Illustration[3]: Consider a hypothetical static pool formed in January 2000, and having 100 companies outstanding at a rating of 'CRISIL BB' at the beginning of the month. Suppose that, in this pool, there is one default in the first year (ending December 2000), three in the second year (ending December 2001), and none in the third year (ending December 2002). Also, assume there are no withdrawals in any year. Then, using the above notation,

$P_1^{Jan-2000}$(CRISIL BB) = 1; $P_2^{Jan-2000}$(CRISIL BB) = 3; and $P_3^{Jan-2000}$(CRISIL BB) = 0
$Q_1^{Jan-2000}$(CRISIL BB) = 100; $Q_2^{Jan-2000}$(CRISIL BB) = 99; and $Q_3^{Jan-2000}$(CRISIL BB) = 96

For rating category R, the tth year marginal default rate for the M-month static pool is the probability of an entity, in the static pool formed in the month M, not defaulting until the end of period (t-1), and defaulting only in year t.

Mathematically, the marginal default rate for category 'R' in year t from the M-month static pool, **$MDR_t^M(R)$,** is defined as

$MDR_t^M(R) = P_t^M(R)/Q_t^M(R)$

Therefore, $MDR_1^{Jan-2000}$ (CRISIL BB) = $P_1^{Jan-2000}$ (CRISIL BB)/$Q_1^{Jan-2000}$(CRISIL BB) = 1/100 = 0.01

The average marginal default rate is calculated as the weighted average of the MDRs of all the static pools of similar lengths in the period, with the number of ratings outstanding at the beginning of the period (with appropriate withdrawal adjustments discussed later) as weights.

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[3]This illustration is for explanation only, and does not indicate the actual or observed default rates in any rating category

Cumulative average default rate

The concept of survival analysis is used to compute the cumulative default probabilities. Using the average marginal default rate, we calculate the cumulative probability of an entity defaulting as follows:

| The cumulative probability of an entity defaulting by the end of (t+1) years | = | [| Cumulative probability of the entity defaulting by the end of t years $+$ Probability of the entity defaulting in the $(t+1)^{th}$ year |] |

Furthermore, for an entity to default in the (t+1)th year, it should survive until the end of t years. So,

| Probability of the entity defaulting in the $(t+1)^{th}$ year | = | [| Probability of the entity not defaulting until the end of the tth year $*$ Marginal probability of the entity defaulting in the $(t+1)^{th}$ year |] |

Now,

| Probability of the entity not defaulting until the end of the tth year | = | 1- Cumulative probability of the entity defaulting by the end of t years |

Hence,

| Probability of the entity defaulting in $(t+1)^{th}$ year | = | [| (1- Cumulative probability of the entity defaulting by the end of t years) $*$ Marginal probability of the entity defaulting in the $(t+1)^{th}$ year |] |

Therefore, returning to the first expression,

| The cumulative probability that an entity defaults by the end of (t+1) years | = | Cumulative probability of the entity defaulting by the end of t years | + | [| (1- Cumulative probability of the entity defaulting by the end of t years) $*$ (Marginal probability of the entity defaulting in $(t+1)^{th}$ year) |] |

Restating the above in notation, if **$CPD_{t+1}(R)$** = cumulative default probability of an entity rated R defaulting in t+1 years, then,

$CPD_t(R) = MDR_t(R);$ for t = 1
$CPD_{t+1}(R) = CPD_t(R) + (1- CPD_t(R)) * MDR_{t+1}(R)$ for t = 2, 3

Withdrawal adjustment

In a one-year period, from the month of having obtained the rating, the entity can move to three different states - it can be timely on payments (and have a non-default rating outstanding), can default on its debt repayments, or can repay the debt fully and withdraw the rating. As entities are not monitored post-withdrawal, the 'true state' (whether default or no default) of an entity whose rating has been withdrawn remains unknown in subsequent months. Therefore, a modified $MDR_t^M(R)$ that ignores withdrawn entities is an appropriate measure of marginal default probability. As mentioned earlier, $Q_t^M(R)$ is also adjusted for the entities that belong to the static pool and have defaulted by the beginning of year t. The modified $Q_t^M(R)$ is as follows:

$Q_t^M(R) =$ Number of entities in the static pool formed at the beginning of month M with rating category R

> **less** Number of defaults till the end of period (t-1)
> **less** Number of withdrawn entities until the end of period t

CRISIL uses full-year withdrawal adjustment, as against no-withdrawal adjustment or mid-year withdrawal adjustment since the issuers whose ratings were withdrawn are not immune to the risk of default. Moreover, reliable information meeting CRISIL's stringent requirements is not available post-withdrawal.

Post-default return of an entity

Post-default, entities sometimes recover, and consequently, receive a non-default rating in subsequent years. As CRISIL's credit rating is an indicator of the probability of default, default is considered an 'absorbing state', that is, an entity cannot come back to its original static pool post-default. In static pool methodology, the recovered entity is considered a new entity, which, if continues to be rated, appears in the static pool of the month in which it recovered.

Methodology for transition rates

The t-year transition rate (from rating R1 to rating R2) for a static pool, is the proportion of entities rated R1 at the beginning of the static pool, that are found to be in R2 at the end of t years. This proportion is called the t-year transition probability from R1 to R2. The t-year transition matrix is formed by computing transition probabilities from various rating categories (except CRISIL D) to other rating categories.

Withdrawal-adjusted transition rates are computed as mentioned above, but excluding entities that are withdrawn at the end of the t years. In the computation of t-year transition rates, ratings at a point of time, and at the end of the tth year thereafter, are considered.

Table A13 lists various elements of default rate computation and the competing approaches.

Table A13: Various Approaches to Computing Default Rates		
Withdrawal Adjustments	**Approach 1: Full-year withdrawal adjustments** Exclude all the ratings withdrawn during a year from the base for calculating default rates. **Approach 2: Mid-year withdrawal adjustments** Exclude half of the ratings withdrawn during a year from the base for calculating default rates. **Approach 3: No withdrawal adjustments** Take all the ratings outstanding at the beginning of a year as the base, notwithstanding some of them were withdrawn during the course of the year.	CRISIL follows Approach 1 since it believes that the issuers whose ratings were withdrawn are not immune to the risk of default subsequent to the withdrawal. More importantly, reliable information about the timeliness of debt repayments, which meets CRISIL's stringent requirements, is not available post withdrawal of the rating. Approach 1 results in the most conservative estimate of the default rates among the three approaches.
Calculating Cumulative Default Rate (CDR)	**Approach 1: Calculate CDR directly, without using Marginal Default Rate (MDR)** Calculate CDR over a period as the number of entities defaulting as a ratio of the number of entities at the beginning of the period, ignoring intra-period withdrawals. **Approach 2: Average MDR Methodology** Calculate MDR, weigh it by sample size and accumulate it over a period to arrive at average CDR.	CRISIL follows Approach 2, which takes into account only the ratings that are were not withdrawn at the end of each year as the base. So it results in a more accurate and conservative estimate of default rate. Approach 1 is not comprehensive since it ignores a large portion of the credit history of entities who may have been rated just a little while after the formation of the static pool.
Post Default Return of an Entity	**Approach 1: Treat default as an 'Absorbing State'** Retain the status of a defaulted entity as default even after recovery. Treat the recovered entity as a new entity from the point of recovery. **Approach 2:** Treat a defaulted and subsequently recovered entity as a non-defaulted entity from the point of recovery. So, if a non-defaulted entity defaults in the 2nd year and recovers in the 3rd year, it will not be treated as a defaulted entity in the 3rd year MDR calculation.	CRISIL follows Approach 1. Since credit ratings are an opinion of the likelihood of default, the default state is treated as an absorbing state or an end point, and the entity's rating continues to be in 'default.' If an entity emerges from default and has a non-default rating on its debt instruments, this entity is treated as a new company forming a part of a different static pool from the time its rating is revised from 'CRISIL D'.
Data Pooling	**Approach 1: Static Pool** Charge defaults against all the ratings of the issuer during the period. **Approach 2:** Charge defaults against the initial rating of the issuer. **Approach 3:** Charge defaults against the most recent year's rating of the issuer.	CRISIL follows Approach 1. Debt instruments are tradable in nature and can be held by different investors at different points of time. Since credit ratings, which convey an opinion on the likelihood of default are intended to benefit the investors through the life of the instrument, CRISIL believes that charging defaults against all the ratings of the issuer during the period is the most appropriate approach in computing default rates. Other approaches may have limited utility. For instance, Approach 2 may be of relevance only to the investor who invests in the first-rated debt issuance of an entity and holds it to maturity. Approach 3 may be relevant only to those investors who happen to be holding the instrument just a year prior to its default.

About CRISIL Limited

CRISIL is a global analytical company providing ratings, research, and risk and policy advisory services. We are India's leading ratings agency. We are also the foremost provider of high-end research to the world's largest banks and leading corporations.

About CRISIL Ratings

CRISIL Ratings is India's leading rating agency. We pioneered the concept of credit rating in India in 1987. With a tradition of independence, analytical rigour and innovation, we have a leadership position. We have rated over 46,000 entities, by far the largest number in India. We are a full-service rating agency. We rate the entire range of debt instruments: bank loans, certificates of deposit, commercial paper, non-convertible debentures, bank hybrid capital instruments, asset-backed securities, mortgage-backed securities, perpetual bonds, and partial guarantees. CRISIL sets the standards in every aspect of the credit rating business. We have instituted several innovations in India including rating municipal bonds, partially guaranteed instruments and microfinance institutions. We pioneered a globally unique and affordable rating service for Small and Medium Enterprises (SMEs).This has significantly expanded the market for ratings and is improving SMEs' access to affordable finance. We have an active outreach programme withissuers, investors and regulators to maintain a high level of transparency regarding our rating criteria and to disseminate our analytical insights and knowledge.

Our Offices

Ahmedabad
Unit No.706, 7th Floor, Venus Atlantis
Near Reliance Petrol Pump
Prahladnagar Satellite
Ahmedabad - 380 015
Phone: +91 79 4024 4500
Fax: +91 079 4024 4520

Bengaluru
W-101,1st Floor, Sunrise Chambers
22, Ulsoor Road
Bengaluru - 560 042
Phone: +91 80 2558 0899
Fax: +91 80 2559 4801

Chennai
Thapar House, Mezzanine Floor
43/44, Montieth Road Egmore
Chennai - 600 008
Phone: +91 44 2854 6205
Fax: +91 44 2854 7531

Hyderabad
3rd Floor, Uma Chambers
Plot No. 9 &10, Nagarjuna Hills
(Near Punjagutta Cross Road)
Hyderabad - 500 082
Phone: +91 40 2335 8103
Fax: +91 40 2335 7507

Kolkata
Horizon,Block'B', 4th Floor
57, Chowringhee Road
Kolkata - 700 071
Phone: +91 33 2289 1949
Fax: +91 33 2283 0597

New Delhi
The Mira G-1, 1st Floor, Plot No.1 & 2
Ishwar Nagar, Mathura Road,
New Delhi - 110 065
Phone: +91 11 4250 5100
Fax: +91 11 2684 2212

Pune
1187/17, Ghole Road, Shivaji Nagar,
Pune - 411 005
Phone: +91 20 4018 1900
Fax: +91 20 4018 1930