

CRISIL Default Study 2012



CRISIL Annual Default and
Ratings Transition Study - 2012



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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 firms during the period, expressed as a percentage of the total number of rated firms 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 instances 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 - 2012

The overall annual default rate for CRISIL-rated firms was 5.3 per cent in 2012—a 13-year high—as against 3.5 per cent in 2011. Instances of default by CRISIL-rated firms increased to 341, the highest for any year, from 161 in 2011. The rise in default rates was on account of a significant surge in the number of firms in the 'CRISIL BB' and lower rating categories—these rating categories constituted around 75 per cent of CRISIL's ratings as on December 31, 2012, as against around 20 per cent four years ago. The default rate was also driven by a slowdown in the economy. Though default rates rose in 2012, they were still lower than the historical highs witnessed between 1998 and 2001. Hence, there was an overall decrease in the average default rates of long-term ratings.

The stability rates of long-term ratings have consistently improved over the years, with the overall stability rate across ratings being high at over 87 per cent between 1988 and 2012. These trends were witnessed on a significantly expanded portfolio of more than 10,500 ratings as on December 31, 2012, as against around 900 ratings as on December 31, 2008. The average one-year default rates of short-term ratings witnessed an increase from the previous study on account of accentuated pressures on credit quality of Indian firms and shift in rating composition. Similar to long-term instrument ratings, there was also an increase in stability rates across all rating categories for short-term instrument ratings. CRISIL's ratings on structured finance securities witnessed no defaults in 2012, leading to a decline in the average default rates of structured finance securities.

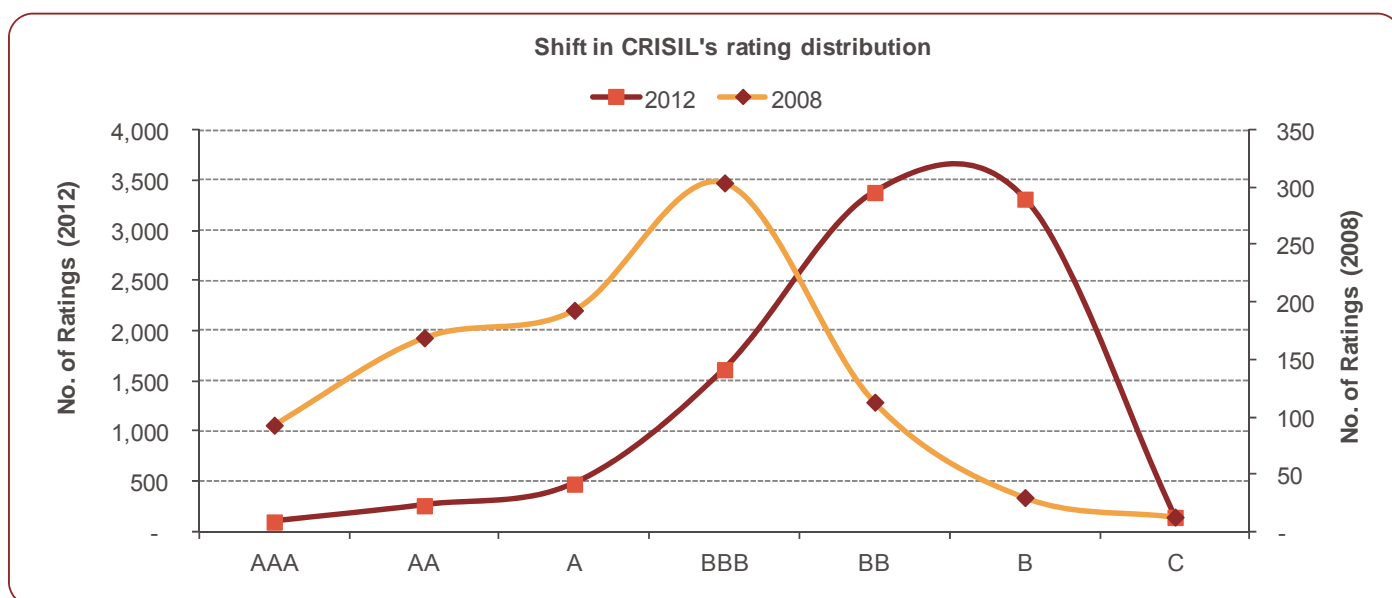
CRISIL's Default and Transition Study incorporates all known global best practices in the computation of default rates. These include a digital definition of default, elimination of period selection bias, using globally accepted marginal default rate method, and employing the monthly frequency static pools as base data. From the 2009 edition of Default Study, 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 past 10 years to provide investors with information on the more recent performance of ratings.

I. A Significant Shift in CRISIL's Rating Distribution

Scale-up in CRISIL's rated portfolio continues: Outstanding ratings increase 11 times in four years

The advent of bank loan ratings has been a significant development in India's credit rating landscape. CRISIL's portfolio of outstanding ratings has continued to expand in recent years, to more than 10,500 ratings as on December 31, 2012, from about 900 four years ago. The portfolio's composition has also changed significantly in recent years on account of a significant surge in the number of firms in the lower rating categories. These rating categories constituted around 75 per cent of CRISIL's ratings as on December 31, 2012, as against around 20 per cent four years ago. Chart 1 indicates the movement in rating distribution in the portfolio: the median rating shifted to 'CRISIL BB' as on December 31, 2012, from 'CRISIL BBB' as on December 31, 2008. This indicates increasing penetration and acceptance of credit ratings in the bank loan market, leading to more robust and informative default and transition statistics.

Chart 1: CRISIL's rating distribution



Source: CRISIL Ratings

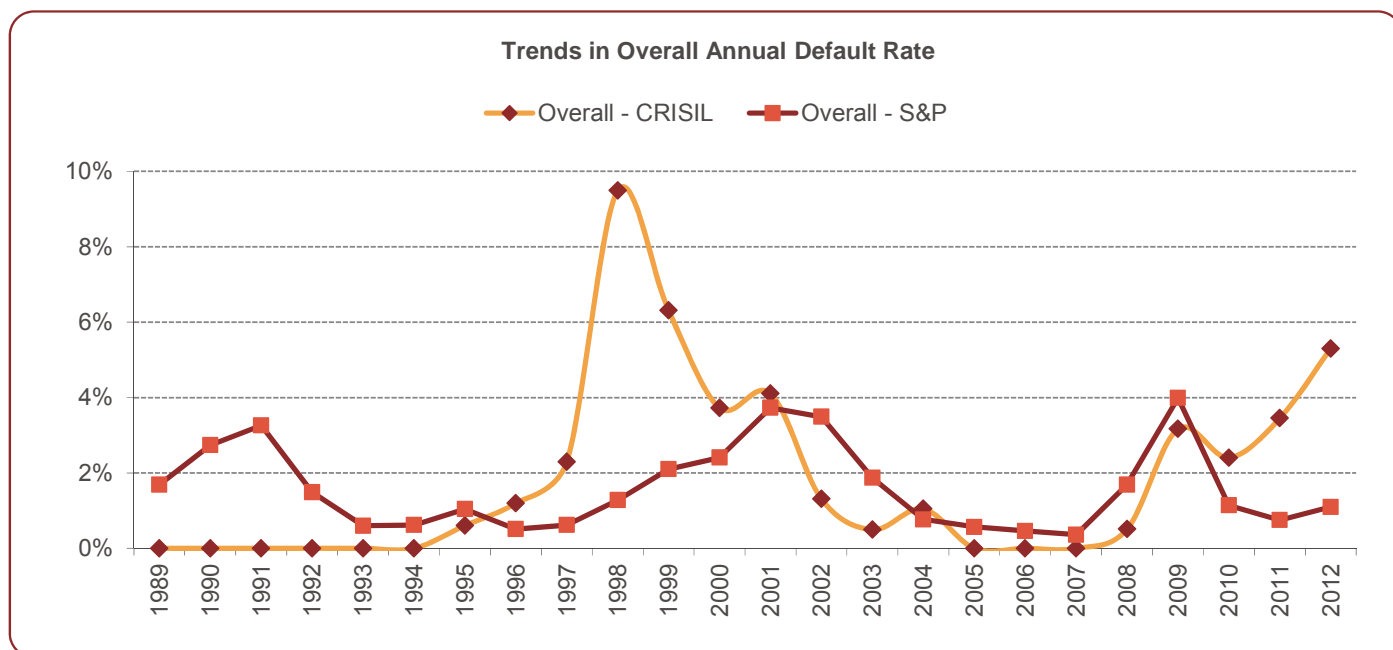
II. Movement in Overall Annual Default Rates Since Inception

Annual default rates for corporate issuers¹ at 13-year high in 2012

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 non-default ratings outstanding throughout that year) is shown in Chart 2.

¹'Corporate issuers' is a generic term used here to refer to various types of firms, 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



Source: CRISIL Ratings

The annual default rate increased to 5.3 per cent in 2012—the highest since 1999—from 3.5 per cent in 2011. The rise is on account of a sharp increase in ratings in the lower rating categories (*refer to Chart 1*), which have traditionally been more susceptible to defaults. The increase can also be attributed to the difficult credit quality environment in 2012. The intense pressure on corporate India’s credit quality in 2012 was also highlighted by CRISIL in its semi-annual publication *Ratings Roundup*, which analyses CRISIL’s rating actions and its link to macroeconomic factors.

III. For Corporate Issuers

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

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 2012 (*Please refer to Annexure 5 for methodology used in 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 2012				
Rating	Issuer-months	One-Year	Two-Year	Three-Year
CRISIL AAA	12997	0.00%	0.00%	0.00%
CRISIL AA	27289	0.03%	0.35%	0.98%
CRISIL A	30926	0.74%	3.18%	6.91%
CRISIL BBB	45564	1.68%	4.36%	9.15%
CRISIL BB	45130	5.15%	10.46%	16.47%
CRISIL B	27092	8.88%	18.09%	23.87%
CRISIL C	3411	18.44%	30.08%	38.14%
Total	192409			

Source: CRISIL Ratings

There was in general, an overall decrease in average default rates for 1988-2012 compared with 1988-2011, even as the overall default rate for 2012 has risen (refer to Chart 2). This is because, despite the increase, the default rates for 2012 are still lower than the historical highs witnessed in 1998-2001.

CRISIL also publishes the average default rates of the past 10 years (2002-2012), 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.

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

Transition rates indicate the instances of a given rating migrating 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

One-year average transition rates: between 1988 and 2012									
Rating	Issuer-months	CRISIL AAA	CRISIL AA	CRISIL A	CRISIL BBB	CRISIL BB	CRISIL B	CRISIL C	CRISIL D
CRISIL AAA	12997	97.00%	3.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRISIL AA	27289	1.59%	92.33%	5.06%	0.68%	0.24%	0.04%	0.03%	0.03%
CRISIL A	30926	0.00%	3.58%	86.72%	5.98%	2.43%	0.20%	0.35%	0.74%
CRISIL BBB	45564	0.00%	0.09%	3.37%	86.99%	6.59%	0.74%	0.54%	1.68%
CRISIL BB	45130	0.00%	0.05%	0.00%	3.79%	86.83%	3.21%	0.97%	5.15%
CRISIL B	27092	0.00%	0.00%	0.03%	0.13%	7.88%	82.25%	0.82%	8.88%
CRISIL C	3411	0.00%	0.00%	0.00%	0.35%	2.29%	17.15%	61.77%	18.44%
Total	192409								

Source: CRISIL Ratings

As can be seen, between 1988 and 2012, around 92 per cent of the instruments rated in the 'CRISIL AA' category remained in that category at the end of one year; around 1.6 per cent were upgraded to a higher rating ('CRISIL AAA'), and around 6 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 around 97 per cent over one year, and a 'CRISIL A1' rating has more than 12 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

One-year average transition rates: between 1988- 2012							
Rating*	Issuer-months	CRISIL A1+	CRISIL A1	CRISIL A2	CRISIL A3	CRISIL A4	CRISIL D
CRISIL A1+	51066	97.17%	2.16%	0.37%	0.28%	0.02%	0.00%
CRISIL A1	10773	12.61%	82.82%	3.11%	0.77%	0.25%	0.45%
CRISIL A2	13917	0.36%	5.59%	87.81%	4.02%	1.42%	0.80%
CRISIL A3	23946	0.00%	0.08%	4.69%	86.09%	7.85%	1.29%
CRISIL A4	50443	0.00%	0.01%	0.03%	2.39%	92.11%	5.46%
Total	150145						

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

Source: CRISIL Ratings

'CRISIL A1' and 'CRISIL A2' ratings show stability of 82.8 per cent and 87.8 per cent, respectively. The stability rates for 'CRISIL A1' were significantly higher during the more recent period between 2002 and 2012 as against the stability rate in the entire 25-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 25 years. The stability rate for 'CRISIL BBB' has increased to 87.0 per cent for 1988-2012 from 85.8 per cent for 1988-2011.

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
1988-2012	97.0%	92.3%	86.7%	87.0%
1988-2011	96.8%	91.9%	85.7%	85.8%
1988-2010	96.4%	91.3%	84.6%	81.6%
1988-2009	96.1%	91.0%	83.9%	74.5%
1988-2008	97.1%	91.2%	83.4%	72.5%

Source: CRISIL Ratings

Table 5: One-year average stability rates since 2000				
Period	CRISIL AAA	CRISIL AA	CRISIL A	CRISIL BBB
2000-2012	97.5%	94.7%	90.4%	89.3%
2000-2011	97.3%	94.4%	89.9%	89.3%
2000-2010	96.9%	93.9%	88.8%	87.2%
2000-2009	96.5%	93.8%	88.4%	80.2%
2000-2008	97.9%	94.7%	87.7%	75.8%

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 dataset comprises **4236 issue-years** (including 2200 issue-years for retail asset-backed securities (ABS) and retail mortgage-backed securities (MBS) spanning 20 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

Table 6 provides the one-, two-, and three-year average CDRs at each rating category level between 1993² and 2012 (Please refer to Table A11 in Annexure 3 for default rates between 2002 and 2012).

Table 6: CRISIL’s average CDRs for ratings on structured finance securities (between 1993 and 2012)

One-, Two-, and Three-Year CDRs, between 1993 and 2012				
Rating	Issue Years	One-Year	Two-Year	Three-Year
CRISIL AAA(SO)	2816	0.04%	0.15%	0.25%
CRISIL AA(SO)	523	0.19%	0.48%	0.89%
CRISIL A(SO)	616	0.33%	1.69%	3.54%
CRISIL BBB(SO)	238	0.00%	1.45%	1.45%
CRISIL BB(SO) and below	43	25.58%	29.13%	29.13%
Total	4236			

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 was redeemed.

One-year transition rates

Around 66 per cent of all structured finance ratings—2816 issue-years of the total 4236 issue-years—are rated ‘CRISIL AAA (SO)’ and show a high stability rate of around 98 per cent. Table 7 shows the one-year average transition rates between 1993 and 2012 for structured finance securities.

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 - 1993 - 2012									
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)	2816	98.08%	1.67%	0.18%	0.00%	0.00%	0.00%	0.04%	0.04%
CRISIL AA(SO)	523	6.12%	88.91%	4.59%	0.19%	0.00%	0.00%	0.00%	0.19%
CRISIL A(SO)	616	0.65%	4.38%	90.91%	0.81%	2.76%	0.16%	0.00%	0.33%
CRISIL BBB(SO)	238	4.20%	2.52%	13.03%	78.99%	0.42%	0.42%	0.42%	0.00%
CRISIL BB(SO)	36	0.00%	0.00%	5.56%	19.44%	55.56%	0.00%	0.00%	19.44%
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	4236								

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)
1993-2012	98.1%	88.9%	90.9%	79.0%
1993-2011	97.9%	87.1%	90.6%	82.5%
1993-2010	97.8%	83.1%	87.8%	84.0%
1993-2009	97.5%	83.8%	88.0%	92.2%
1993-2008	97.0%	87.6%	88.1%	97.2%

Source: CRISIL Ratings

Table 9: One-Year Stability Rates Since 2000				
Period	CRISIL AAA(SO)	CRISIL AA(SO)	CRISIL A(SO)	CRISIL BBB(SO)
2000-2012	98.1%	90.4%	90.3%	79.3%
2000-2011	98.0%	88.6%	89.9%	82.9%
2000-2010	97.7%	85.1%	86.7%	84.5%
2000-2009	97.4%	86.4%	86.8%	93.0%
2000-2008	96.9%	91.8%	86.8%	98.6%

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 2200 issue-years across 20 years (1993 -2012). 2011 saw the first-ever default 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 2012. ‘CRISIL AAA(SO)’-rated ABS or MBS instruments, which account for around 88 per cent of the ratings in the database, have stability rates of 98.1 per cent.

Table 10 : CRISIL’s average one-year transition rates for ABS and MBS ratings- between 1993 and 2012

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)	1935	98.09%	1.65%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%
CRISIL AA(SO)	61	32.79%	57.38%	8.20%	1.64%	0.00%	0.00%	0.00%	0.00%
CRISIL A(SO)	19	21.05%	31.58%	31.58%	15.79%	0.00%	0.00%	0.00%	0.00%
CRISIL BBB(SO)	183	5.46%	3.28%	16.39%	73.77%	0.00%	0.55%	0.55%	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	2200								

Source: CRISIL Ratings

The stability rate of ‘CRISIL AAA(SO)’ rating category is comparable with that of ‘CRISIL AAA’ 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 2012 from that in 2011 because of continued credit quality pressures on corporate India and a change in rating composition, resulting from a surge in the number of firms in the lower rating categories. However, the default rates in 2012 were still lower than the historical highs witnessed in 1998-2001, leading to a general decline in the overall average default rates for 1988-2012 compared with 1988-2011.

The ordinal nature of default rates, high stability, and robust predictive ability of CRISIL's ratings demonstrate the strength of CRISIL's rating process. These processes have been set up, stabilised, and refined in the light of two decades of CRISIL's rating experience. Their robustness is today recognised by issuers and investors. This study is based on CRISIL's ratings assigned over more than 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. Since CRISIL's inception, there have been 743 defaults by issuers carrying a long-term rating. Over the past 25 years, five industries (textile, metal and mining, food products, distributors, and machinery) accounted for around 43 per cent defaults on CRISIL-rated long-term debt instruments, as shown in Table A1.

Table A1: Industry-wise and chronological break-up of defaults on long-term instruments over the past 25 years

Industry	1988 to 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Sum
Textiles- Apparel and Luxury Goods		1	1	3	1	3	1	1		1					3	8	12	26	50	111
Metals and Mining			2	1	6	2	2	2			1					2	6	28	34	86
Food Products				1	2	3					1					3	6	7	23	46
Distributors																1	3	6	31	41
Machinery					2	2	1									3	3	6	17	34
Hotels Restaurants and Leisure						1										2	5	7	16	31
Construction and Engineering					1			1								3	4	4	16	29
Pharmaceuticals			1		1	2		1								4	2	5	7	23
Construction Materials			1		2	2	1		1							2	1	3	8	21
Containers and Packaging					2	1										1	3	1	13	21
Chemicals				1	2	2	3	3	1								1	1	6	20
Diversified Consumer Services																1	1	8	10	20
Non Banking Financial Company					4	12	2											2		20
Auto Components			1		1	1		1								1	1	2	11	19
Paper and Forest Products				1	1	1									1	1	5	4	4	18
Electrical Equipment						1	1										2	7	6	17
Independent Power Producers and Energy Traders								1							1	1	3	4	7	17
Real Estate Development						1		1								1	2	4	7	16
Household Durables		1	1		3				1							3		1	5	15
Building Products															1			2	9	12
Beverages																	1	4	5	10
Commercial Services and Supplies						1										3		1	5	10
Road and Rail				1														5	4	10
Specialty Retail																		2	8	10
Electronic Equipment Instruments and Components							1									1		4	1	7
Health Care Providers and Services																	1	2	4	7
Media					1													1	5	7
Oil Gas and Consumable Fuels																	1		6	7
Transportation Infrastructure																1	2		4	7
Industrial Conglomerates					1														4	5
Others	0	0	0	1	7	2	2	0	0	0	1	0	0	0	0	1	3	14	15	46
Total Defaults	0	2	7	13	45	27	12	11	3	1	3	0	0	0	6	43	68	161	341	743
Outstanding ratings at year ending December 31	353 [#]	466	607	592	526	507	420	355	317	274	244	230	226	231	943	3002	5178	7525	10588	
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%	5.3%	

** The proportion of total defaults in a particular year to total non-default ratings outstanding at the beginning of the year (adjusted for withdrawals)

Outstanding ratings at year ending December 31, 1994

Source: CRISIL Ratings

The highest number of defaults, in absolute terms, since inception, was reported in 2012. However, it should be noted that these defaults were on a much higher base of more than 10,500 outstanding ratings. Moreover, this increase was also aided by a spurt in the lower rating categories, which have traditionally been more susceptible to defaults. The large number of defaults between 1997 and 1999 was because of a number of factors operating simultaneously in that period, including an economic slowdown, and structural/regulatory changes, especially in the financial sector.

Textile, and metal and mining industries witnessed the maximum defaults in 2012 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

An analysis of the 743 defaults since CRISIL's inception by issuers carrying a long-term rating indicates that the higher-rated firms were farther away from a default in terms of the number of months prior to default than lower-rated firms. While issuers rated in the 'CRISIL B' or 'CRISIL C' categories that defaulted did so in about 12 months on an average, the few firms that defaulted from higher categories did so after a much longer period. For instance, the 3.5 per cent (*approximately*) of firms that defaulted from the 'CRISIL AA' category did so after 58 months on an average (see Table A2).

Rating Category	Months to Default
CRISIL AAA	No Defaults
CRISIL AA	58
CRISIL A	43
CRISIL BBB	29
CRISIL BB	15
CRISIL B	11
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

Rating	Issuer-months	One-Year	Two-Year	Three-Year
CRISIL AAA	8399	0.00%	0.00%	0.00%
CRISIL AA	14300	0.00%	0.00%	0.00%
CRISIL A	15586	0.26%	1.17%	2.55%
CRISIL BBB	39009	1.27%	2.84%	5.52%
CRISIL BB	41988	4.11%	8.74%	13.47%
CRISIL B	26626	8.71%	17.46%	22.11%
CRISIL C	2592	13.89%	21.54%	25.69%
Total	148500			

Source: CRISIL Ratings

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

Table A4: One-, Two-, and Three-Year CDRs, between 1988 and 2012				
Rating	Issuer-years	One-Year	Two-Year	Three-Year
CRISIL AAA	1128	0.00%	0.00%	0.00%
CRISIL AA	2363	0.00%	0.25%	0.86%
CRISIL A	2775	0.54%	2.88%	6.34%
CRISIL BBB	4359	1.65%	4.21%	8.90%
CRISIL BB	4849	5.22%	10.74%	16.30%
CRISIL B	3110	9.52%	18.78%	24.09%
CRISIL C	326	17.18%	27.33%	39.44%
Total	18910			

Source: CRISIL Ratings

Table A5: One-, Two-, and Three-Year CDRs, between 2002 and 2012				
Rating	Issuer-years	One-Year	Two-Year	Three-Year
CRISIL AAA	768	0.00%	0.00%	0.00%
CRISIL AA	1335	0.00%	0.00%	0.00%
CRISIL A	1505	0.20%	1.23%	2.47%
CRISIL BBB	3821	1.39%	3.05%	6.07%
CRISIL BB	4579	4.32%	9.26%	14.16%
CRISIL B	3072	9.34%	18.26%	23.17%
CRISIL C	258	13.18%	19.69%	29.14%
Total	15338			

Source: CRISIL Ratings

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

Table A6: One-year average transition rates: between 1988 and 2012									
Rating	Issuer- years	CRISIL AAA	CRISIL AA	CRISIL A	CRISIL BBB	CRISIL BB	CRISIL B	CRISIL C	CRISIL D
CRISIL AAA	1128	97.16%	2.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRISIL AA	2363	1.52%	92.30%	5.08%	0.85%	0.17%	0.09%	0.00%	0.00%
CRISIL A	2775	0.00%	3.35%	86.92%	6.16%	2.49%	0.14%	0.40%	0.54%
CRISIL BBB	4359	0.00%	0.07%	3.26%	86.65%	7.04%	0.71%	0.62%	1.65%
CRISIL BB	4849	0.00%	0.04%	0.02%	3.55%	87.15%	3.26%	0.76%	5.22%
CRISIL B	3110	0.00%	0.00%	0.03%	0.13%	7.01%	82.48%	0.84%	9.52%
CRISIL C	326	0.00%	0.00%	0.00%	0.31%	2.15%	19.63%	60.74%	17.18%
Total	18910								

Source: CRISIL Ratings

Table A7: One-year average transition rates: between 2002 and 2012									
Rating	Issuer- years	CRISIL AAA	CRISIL AA	CRISIL A	CRISIL BBB	CRISIL BB	CRISIL B	CRISIL C	CRISIL D
CRISIL AAA	768	97.92%	2.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRISIL AA	1335	1.35%	94.98%	2.77%	0.90%	0.00%	0.00%	0.00%	0.00%
CRISIL A	1505	0.00%	3.32%	91.03%	4.85%	0.47%	0.07%	0.07%	0.20%
CRISIL BBB	3821	0.00%	0.00%	2.88%	88.83%	6.10%	0.42%	0.39%	1.39%
CRISIL BB	4579	0.00%	0.00%	0.02%	3.69%	88.27%	3.23%	0.46%	4.32%
CRISIL B	3072	0.00%	0.00%	0.03%	0.07%	7.10%	82.72%	0.75%	9.34%
CRISIL C	258	0.00%	0.00%	0.00%	0.39%	2.71%	24.81%	58.92%	13.18%
Total	15338								

Source: CRISIL Ratings

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

Table A8: One-year average transition rates between 2002 and 2012—Monthly Static Pools							
Rating*	Issuer-months	CRISIL A1+	CRISIL A1	CRISIL A2	CRISIL A3	CRISIL A4	CRISIL D
CRISIL A1+	29138	97.75%	1.64%	0.22%	0.39%	0.00%	0.00%
CRISIL A1	7078	8.66%	86.25%	3.18%	0.99%	0.38%	0.54%
CRISIL A2	13459	0.07%	5.50%	88.08%	4.06%	1.46%	0.83%
CRISIL A3	23924	0.00%	0.08%	4.70%	86.09%	7.85%	1.28%
CRISIL A4	50436	0.00%	0.01%	0.03%	2.39%	92.11%	5.46%
Total	124035						

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

Source: CRISIL Ratings

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

Table A9: One-year average transition rates between 1988 and 2012—Annual Static Pools							
Rating*	Issuer-years	CRISIL A1+	CRISIL A1	CRISIL A2	CRISIL A3	CRISIL A4	CRISIL D
CRISIL A1+	4457	97.24%	2.11%	0.31%	0.31%	0.02%	0.00%
CRISIL A1	1017	11.01%	83.68%	3.93%	0.89%	0.30%	0.20%
CRISIL A2	1352	0.37%	5.25%	86.24%	5.03%	1.92%	1.18%
CRISIL A3	2320	0.00%	0.13%	4.31%	85.43%	8.79%	1.34%
CRISIL A4	5480	0.00%	0.02%	0.02%	2.26%	91.77%	5.93%
Total	14626						

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

Source: CRISIL Ratings

Table A10: One-year average transition rates between 2002 and 2012- Annual Static Pools							
Rating*	Issuer-years	CRISIL A1+	CRISIL A1	CRISIL A2	CRISIL A3	CRISIL A4	CRISIL D
CRISIL A1+	2715	97.53%	1.84%	0.18%	0.44%	0.00%	0.00%
CRISIL A1	685	7.88%	85.69%	4.67%	1.02%	0.44%	0.29%
CRISIL A2	1308	0.08%	5.20%	86.39%	5.12%	1.99%	1.22%
CRISIL A3	2317	0.00%	0.13%	4.32%	85.46%	8.80%	1.30%
CRISIL A4	5479	0.00%	0.02%	0.02%	2.26%	91.77%	5.93%
Total	12504						

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

Source: CRISIL Ratings

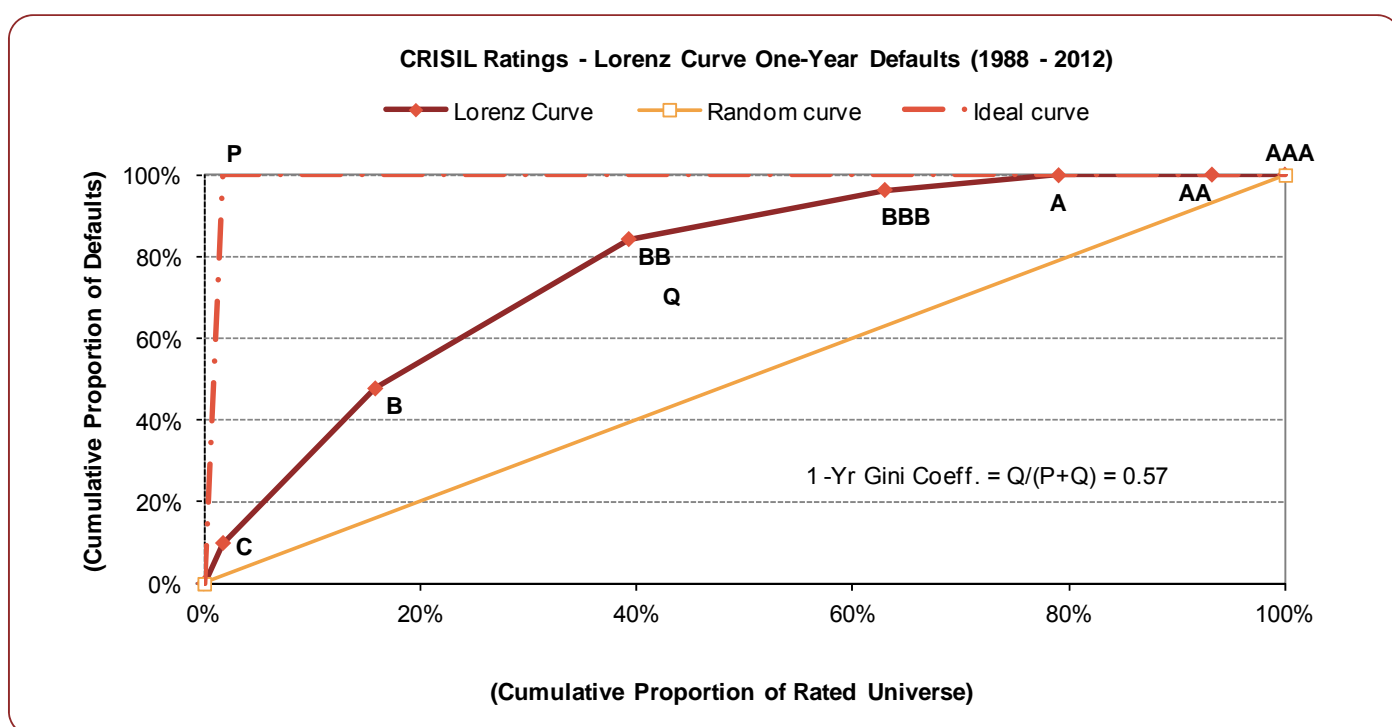
Three-year CDRs for ratings of structured finance securities - for last 10 years

Table A11: One-, Two-, and Three-Year CDRs, between 2002 and 2012				
Rating	Issue-years	One-Year	Two-Year	Three-Year
CRISIL AAA(SO)	2598	0.04%	0.16%	0.16%
CRISIL AA(SO)	462	0.22%	0.55%	1.04%
CRISIL A(SO)	442	0.45%	0.45%	0.82%
CRISIL BBB(SO)	237	0.00%	1.46%	1.46%
CRISIL BB(SO) and below	32	12.50%	17.36%	17.36%
Total	3771			

Source: CRISIL Ratings

Annexure 4: Lorenz Curve and Gini Coefficient for CRISIL Ratings

Chart 3: Graphical Representation of Gini Coefficient-Lorenz Curve



Source: CRISIL Ratings

The Gini coefficient for one-year defaults for 1988-2012 stands at 0.57.

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, 84 per cent of the defaults recorded were in the 'CRISIL BB' and lower categories; these categories included only 39 per cent of the total ratings outstanding. In other words, the bottom 39 per cent of the ratings accounted for 84 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 39 per cent of the issuers would account for exactly 39 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 firms. As CRISIL's overall default rate is 5.3 per cent, the bottom 5.3 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 firms 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 firms. For a firm to be included in an n-year static pool, its rating has to be outstanding through the entire period of n years. Firms 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, a firm that ceases to be rated and is subsequently rated again, or a firm in the pool that defaults and recovers later, is not considered for re-inclusion in the pool.

A firm 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, a firm 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 firm 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 2012)

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 t^{th} year of the M-month static pool

$Q_t^M(R)$ = Non-defaulted ratings outstanding at the beginning of the t^{th} year in the rating category R from the M-month static pool

Illustration³: 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,

$P_1^{\text{Jan-2000}}(\text{CRISIL BB}) = 1$; $P_2^{\text{Jan-2000}}(\text{CRISIL BB}) = 3$; and $P_3^{\text{Jan-2000}}(\text{CRISIL BB}) = 0$

$Q_1^{\text{Jan-2000}}(\text{CRISIL BB}) = 100$; $Q_2^{\text{Jan-2000}}(\text{CRISIL BB}) = 99$; and $Q_3^{\text{Jan-2000}}(\text{CRISIL BB}) = 96$

For rating category R, the t^{th} year marginal default rate for the M-month static pool is the probability of a firm, 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, $\text{MDR}_t^M(R)$, is defined as

$$\text{MDR}_t^M(R) = P_t^M(R)/Q_t^M(R)$$

Therefore, $\text{MDR}_1^{\text{Jan-2000}}(\text{CRISIL BB}) = P_1^{\text{Jan-2000}}(\text{CRISIL BB})/Q_1^{\text{Jan-2000}}(\text{CRISIL BB}) = 1/100 = 0.01$

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.

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 a firm defaulting as follows:

$$\text{The cumulative probability of a firm defaulting by the end of } (t+1) \text{ years} = \left[\begin{array}{c} \text{Cumulative probability of the firm defaulting by the end of } t \text{ years} \\ + \\ \text{Probability of the firm defaulting in the } (t+1)^{\text{th}} \text{ year} \end{array} \right]$$

Furthermore, for a firm to default in the $(t+1)^{\text{th}}$ year, it should survive until the end of t years. So,

$$\text{Probability of the firm defaulting in the } (t+1)^{\text{th}} \text{ year} = \left[\begin{array}{c} \text{Probability of the firm not defaulting until the end of the } t^{\text{th}} \text{ year} \\ * \\ \text{Marginal probability of the firm defaulting in the } (t+1)^{\text{th}} \text{ year} \end{array} \right]$$

Now,

$$\text{Probability of the firm not defaulting until the end of the } t^{\text{th}} \text{ year} = 1 - \text{Cumulative probability of the firm defaulting by the end of } t \text{ years}$$

Hence,

$$\text{Probability of the firm defaulting in } (t+1)^{\text{th}} \text{ year} = \left[\begin{array}{c} (1 - \text{Cumulative probability of the firm defaulting by the end of } t \text{ years}) \\ * \\ \text{Marginal probability of the firm defaulting in the } (t+1)^{\text{th}} \text{ year} \end{array} \right]$$

Therefore, returning to the first expression,

$$\text{The cumulative probability that a firm defaults by the end of } (t+1) \text{ years} = \text{Cumulative probability of the firm defaulting by the end of } t \text{ years} + \left[\begin{array}{c} (1 - \text{Cumulative probability of the firm defaulting by the end of } t \text{ years}) \\ * \\ \text{(Marginal probability of the firm defaulting in } (t+1)^{\text{th}} \text{ year)} \end{array} \right]$$

Restating the above in notation, if $\text{CPD}_{t+1}(\mathbf{R})$ = cumulative default probability of a firm rated \mathbf{R} defaulting in $t+1$ years, then,

$$\text{CPD}_t(\mathbf{R}) = \text{MDR}_t(\mathbf{R}); \quad \text{for } t = 1$$

$$\text{CPD}_{t+1}(\mathbf{R}) = \text{CPD}_t(\mathbf{R}) + (1 - \text{CPD}_t(\mathbf{R})) * \text{MDR}_{t+1}(\mathbf{R}) \quad \text{for } t = 2, 3$$

Withdrawal adjustment

In a one-year period, from the month of having obtained the rating, the firm 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 firms are not monitored post-withdrawal, the ‘true state’ (whether default or no default) of a firm whose rating has been withdrawn remains unknown in subsequent months. Therefore, a modified $MDR_t^M(R)$ that ignores withdrawn firms is an appropriate measure of marginal default probability. As mentioned earlier, $Q_t^M(R)$ is also adjusted for the firms that belong to the static pool and have defaulted by the beginning of year t . The modified $Q_t^M(R)$ is as follows:

$$Q_t^M(R) = \begin{aligned} & \text{Number of firms in the static pool formed at the beginning of month } M \text{ with rating category } R \\ & \textit{less} \text{ Number of defaults till the end of period } (t-1) \\ & \textit{less} \text{ Number of withdrawn firms until the end of period } t \end{aligned}$$

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 a firm

Post-default, firms 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, a firm cannot come back to its original static pool post-default. In static pool methodology, the recovered firm is considered a new firm, 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 firms 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 firms 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 t^{th} 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		
<p>Withdrawal Adjustments</p>	<p><u>Approach 1: Full-year withdrawal adjustments</u> Exclude all the ratings withdrawn during a year from the base for calculating default rates.</p> <p><u>Approach 2: Mid-year withdrawal adjustments</u> Exclude half of the ratings withdrawn during a year from the base for calculating default rates.</p> <p><u>Approach 3: No withdrawal adjustments</u> 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.</p>	<p>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.</p>
<p>Calculating Cumulative Default Rate (CDR)</p>	<p><u>Approach 1: Calculate CDR directly, without using Marginal Default Rate (MDR)</u> Calculate CDR over a period as the number of firms defaulting as a ratio of the number of firms at the beginning of the period, ignoring intra-period withdrawals.</p> <p><u>Approach 2: Average MDR Methodology</u> Calculate MDR, weigh it by sample size and accumulate it over a period to arrive at average CDR.</p>	<p>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 firms who may have been rated just a little while after the formation of the static pool.</p>
<p>Post Default Return of a firm</p>	<p><u>Approach 1: Treat default as an 'Absorbing State'</u> Retain the status of a defaulted firm as default even after recovery. Treat the recovered firm as a new firm from the point of recovery.</p> <p><u>Approach 2:</u> Treat a defaulted and subsequently recovered firm as a non-defaulted firm from the point of recovery. So, if a non-defaulted firm defaults in the 2nd year and recovers in the 3rd year, it will not be treated as a defaulted firm in the 3rd year MDR calculation.</p>	<p>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 firm's rating continues to be in 'default.'</p> <p>If a firm emerges from default and has a non-default rating on its debt instruments, this firm is treated as a new firm forming a part of a different static pool from the time its rating is revised from 'CRISIL D'.</p>
<p>Data Pooling</p>	<p><u>Approach 1: Static Pool</u> Charge defaults against all the ratings of the issuer during the period.</p> <p><u>Approach 2:</u> Charge defaults against the initial rating of the issuer.</p> <p><u>Approach 3:</u> Charge defaults against the most recent year's rating of the issuer.</p>	<p>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 a firm 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.</p>

About CRISIL Limited

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