

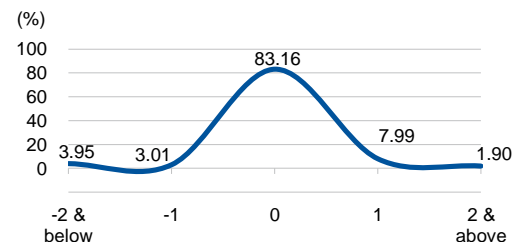
# Ind-Ra's FY18 Transition and Default Study

Stability Rate Improved, Decline in Rating Movement

Special Report

Figure 1

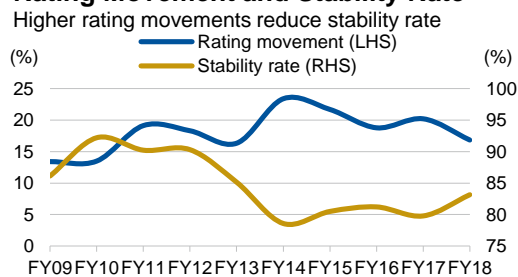
## Rating Stability and Movement – FY18



Note: X-axis represents notch change  
Source: Ind-Ra

Figure 3

## Rating Movement and Stability Rate



Source: Ind-Ra

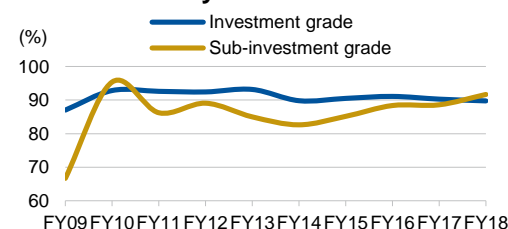
### Contacts

Saurav Singh  
+91 22 4035 6112  
saurav.singh@indiaratings.co.in

Ashwini Jani  
+91 22 4000 1756  
ashwini.jani@indiaratings.co.in

Figure 2

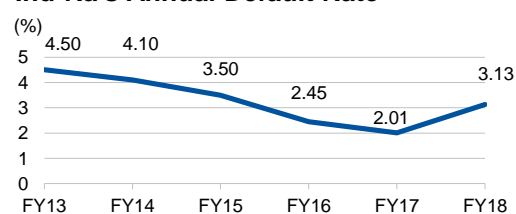
## Annual Stability Rate



Note: Annual Stability rates represent proportion of ratings that remain unchanged during the period out of ratings that remain outstanding at beginning and end of the annual period  
Source: Ind-Ra

Figure 4

## Ind-Ra's Annual Default Rate



Note: Annual Default rate represents proportion of default ratings in the year as a percentage of the total number of non-default ratings outstanding at beginning of the year  
Source: Ind-Ra

**Stability Rate Improved:** India Ratings and Research's (Ind-Ra) corporate finance rating stability rate improved to 83.16% in FY18 (FY17: 79.79%). This was due to an increase in the stability rate of sub-investment grade corporates to 91.7% (88.6%) while that of investment grade corporates was somewhat unchanged at 89.8% in FY18 (FY17: 90.3%). Lower rating movement increases the stability rate. Rating movement decreased in FY18 over FY17. The gross rating movement<sup>1</sup> for FY18 was 16.8% (FY17: 20.2%). It peaked at 23.4% during FY14.

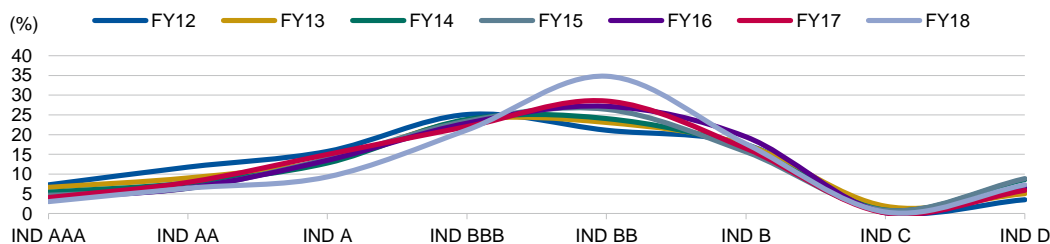
**Annual Default Rate:** Ind-Ra's corporate finance ratings' annual default rate increased to 3.13% in FY18 (FY17: 2.01%, FY16: 2.45%). In FY18, the investment-grade default rate remained low at 1.7% (FY17: 1.1%) while the sub-investment grade default rate increased to 4.3% (2.7%). Of the defaults during FY18, 76% carried a sub-investment grade rating at the beginning of the year (FY17: 76%). The average annual default rate for Ind-Ra's corporate finance ratings over FY08-FY18 was 2.73%. The investment and sub-investment grade average annual default rates for corporate finance issuers over the same time period were 1.39% and 4.09%, respectively.

**Rating through the Cycle:** Ind-Ra follows a rating-through-the-cycle approach which factors in the likely trend of crucial macroeconomic variables such as commodity prices, currency value, current account, demand, inflation, interest rate etc., in the medium-term. While historical performances act as an input for entity level forecasts, evolving or expected economic conditions (domestic and global) have a significant bearing on a rating opinion, thus making it forward looking. Forecasting for through the cycle also involves taking median values of various cyclical aspects of business such as commodity prices and demand. The rating movements in FY18 were based on Ind-Ra's view of a relatively stable economic growth path over FY15-FY18.

<sup>1</sup> Gross rating movement is the number of upgrades and downgrades including notch changes as a proportion of the number of ratings outstanding at the beginning of year

Figure 5

## Changing Composition of Ind-Ra's Rating Universe



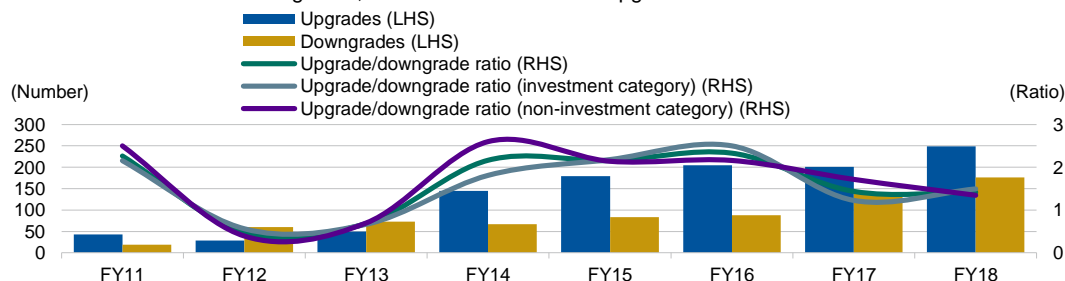
Note: Distribution is based on ratings which remained alive throughout the financial year. 'IND D' also includes those issuers who were in default in the beginning of the year

Source: Ind-Ra

Figure 6

## Ind-Ra's Historical Rating Activities

Increment in number of downgrades, moderation in number of upgrades



Source: Ind-Ra

## Changing Issuer Mix and Impact on Rating Stability

The changing composition of outstanding ratings also impacts rating stability. Our modal rating level transitioned into the sub-investment grade category i.e. 'IND BB' in FY14 and remained there till FY18. The transition has mainly been due to the initiation of bank loan ratings, which has led to several small issuers being rated for their bank facilities. Prior to this, the rating universe was mainly limited to debt market participants, resulting in a higher modal rating level ('IND BBB' from FY10-FY13).

Ratings in investment-grade categories are largely driven by the strength of a business profile, with financial profile either supporting or strengthening the business profile or in certain cases pulling down ratings. On the other hand, sub-investment grade ratings are largely driven by the strength of a financial profile and liquidity position with business profile playing second fiddle.

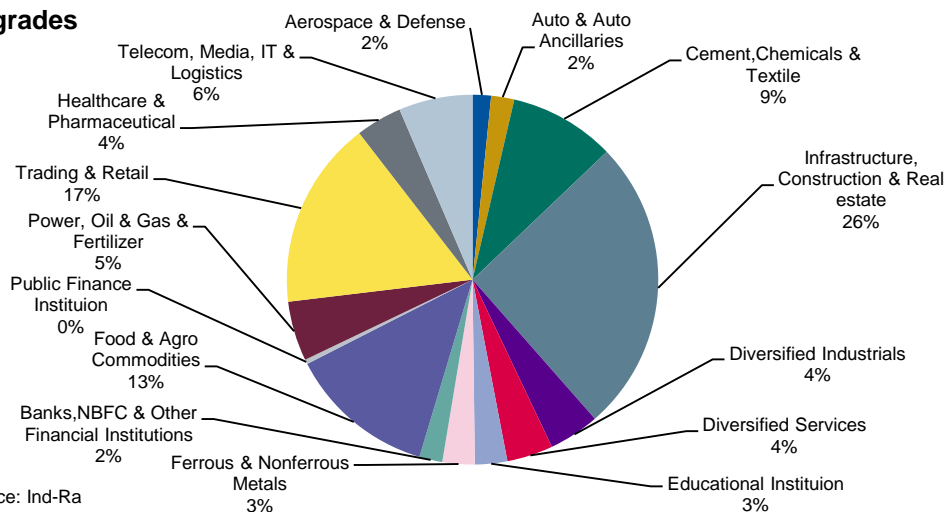
**Rating Activity Remains Positive:** Ind-Ra's corporate finance rating activity in FY18 was net positive. The number of upgrades continued to exceed the number of downgrades; the upgrade-to-downgrade (U-D) ratio for FY18 was 1.41:1 (FY17: 1.44:1). The U-D ratios for FY17 and FY18 are in contrast to those in prior three years, where upgrades outpaced downgrades by a significant margin, with the average U-D ratio being 2.21:1. For FY18, the U-D ratio for investment category increased to 1.49:1 (FY17: 1.23:1) while for sub-investment category it fell down to 1.34:1 (1.72:1).

**Debt Weighted Rating Activity:** The overall debt-weighted U-D ratio for corporate finance issuers remained low at 0.56:1 in FY18 (FY17: 0.52:1), largely due to three issuers' (a public sector bank, non-banking financial company (NBFC) and public sector undertaking) collectively accounting for 50% of the total downgraded debt. Excluding these three issuers, the debt-weighted U-D ratio stood at 1.13:1. For FY18, 39% of total downgraded debt pertains to the financial institution sector, 25% to metals (ferrous & non-ferrous) and 17% to the infrastructure, construction & real estate sectors.

Out of the total volume of debt, around 10% of the downgrades accounted for 87% of the downgraded debt while around 10% of the upgrades accounted for 77% of the upgraded debt. For FY18, 18% of the total upgraded debt pertains to one issuer in the oil & gas sector, and 41% to the infrastructure, construction & real estate sectors.

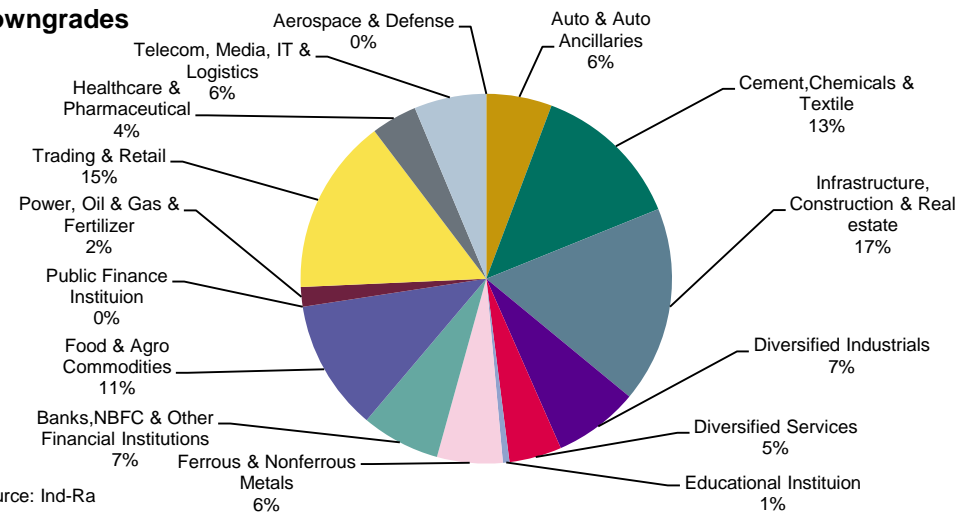
Figure 7  
**Sectoral Distribution of Ind-Ra's Upgrades and Downgrades – FY18**

### Upgrades



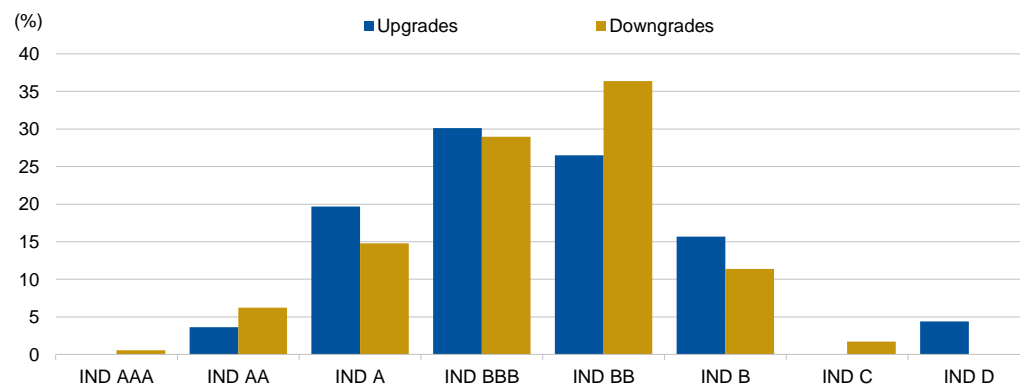
Source: Ind-Ra

### Downgrades



Source: Ind-Ra

Figure 8  
**Rating Category-wise Upgrades and Downgrades – FY18**



Source: Ind-Ra

## Analysis of Rating Upgrades & Downgrades

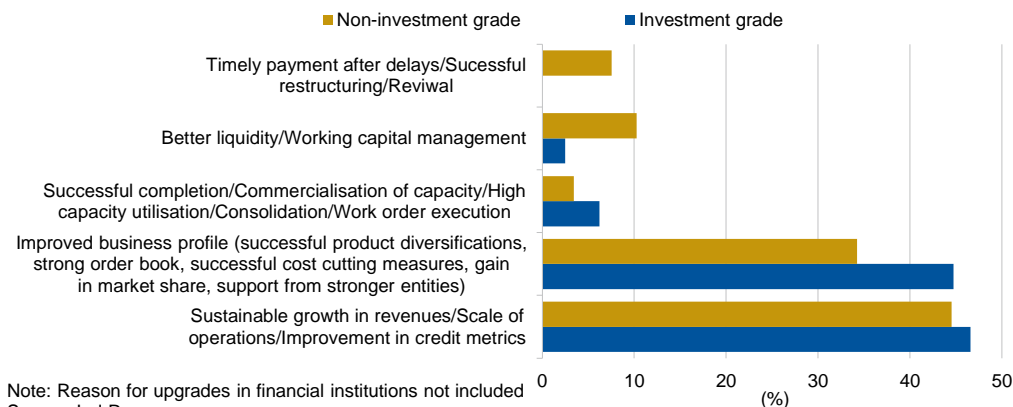
Out of the total upgrades in FY18, 53% were in the investment-grade category while 49% of the total downgrades were from the sub-investment-grade category. 9% of the total upgrades were from the sub-investment to investment-grade categories.

In the investment-grade categories, 30% of the total upgrades were from 'IND BBB' and 19% from 'IND A' while 29% of the total downgrades were from 'IND BBB' and 15% from 'IND A'. Nearly 4% of the total upgrades were from 'IND D'. Of the total downgrades, 22% were from the investment-grade to sub-investment grade categories.

In FY18, only one issuer was downgraded to 'IND AA' from 'IND AAA' and four issuers were upgraded to 'IND AAA'.

Figure 9

## Ind-Ra's FY18 Upgrades – Key Reasons



Among corporate ratings, a significant number of issuers were upgraded for exhibiting sustained growth in the top line, scale of operations and/or improvement in the credit metrics, improved business profiles due to reasons such as strong order book, successful cost-cutting measures, gain in market share, revenue diversification & enhanced support from stronger entities. Upgrades purely on account of improved liquidity and reduction in debt remained few.

Corporate rating downgrades were largely driven by deterioration in the credit metrics due to factors such as weak financial performance, lower-than-expected revenue realisation, weakening of parents' profile and stretched working capital cycles leading to poor liquidity, among others. A significant portion of issuers in the diversified industrials and diversified services sectors belong to the sub-investment grade categories where the ratings are driven by firm-specific factors.

In the infrastructure segment, the commencement of commercial operations, improved sponsor support, improved operational performance, and timely payment after delays were the major reasons for rating upgrades. The downgrades were driven by factors such as project underperformance and delays in debt servicing.

In the financial sector space, three housing finance companies were upgraded due to reasons such as expectation of strong financial support from parent, improvement in credit profile of parent and reasonable credit and risk management practices along with measured growth strategy. One issuer was upgraded following its transition to a small finance bank and two other issuers were upgraded following a capital infusion and significant increase in revenues.

Factors such as worsening standalone credit profile on account of stretched credit costs, stretched profitability and weak capitalisation led to the downgrade of instrument ratings for four banks in FY18. The rating of one holding company was downgraded following default in debt service while four NBFCs were downgraded following a similar rating action on the parent. Two NBFCs were downgraded due to lower aggregate collection and lower disbursement impacting loan books. One NBFC was downgraded due to lower corporate governance standards.

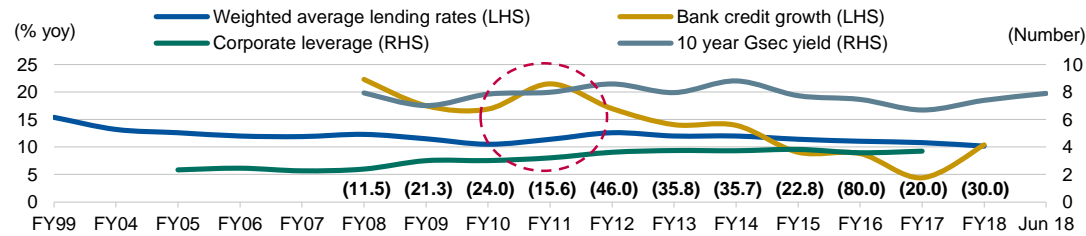
Public finance ratings mirror sovereign ratings and do not move in the short run. In FY18, one public finance institution was upgraded and none was downgraded.

As per the SEBI circular, about 36% of the outstanding non-default ratings were migrated to the non-cooperating category during FY18. Out of these, 86% were from sub-investment grade categories. Such issuers are monitored based on the best available information as per the regulations and were included while computing stability and transition rates.

Figure 10

### Bank Credit Growth vs Corporate Leverage vs Lending Rates

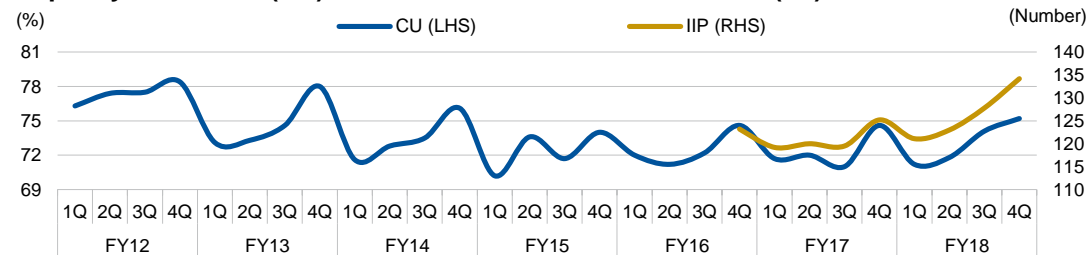
Low lending rates coinciding with peak credit growth and rising leverage



Note: Figures in parenthesis represent NPA growth in the year, Debt/EBITDA has been taken as proxy for Corporate leverage  
Source: RBI, CMIE and Ind-Ra

Figure 11

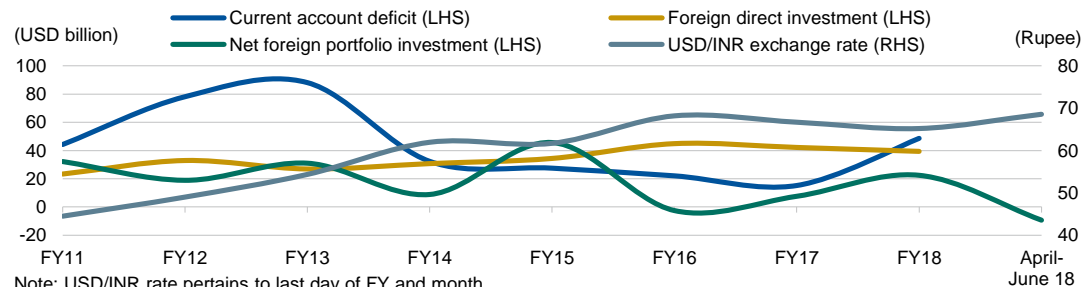
### Capacity Utilisation (CU) and Index of Industrial Production (IIP)



Note: Based on latest round of surveys  
Source: RBI, Ind-Ra

Figure 12

### Indicators



Note: USD/INR rate pertains to last day of FY and month  
Source: RBI, SEBI and Ind-Ra

## Macro Perspective

Ind-Ra expects the Indian economy to grow 7.2% yoy in FY19, driven by higher growth in agriculture and industrial sectors, supported by both private and government expenditure. FY19 growth will continue to be driven largely by consumption and associated sectors. Ind-Ra believes domestic demand will remain the key driver of India's GDP growth even in FY19, with little support expected to come from the global economy

However, the economy is facing a number of headwinds, ranging from the non-performing assets of the banking system and elevated bond yields to increased trade protectionism and tightening global financial conditions. Yields in the bond market have risen as a result, as also on account of concerns over rising inflation, the central government's fiscal slippage and an increase in state governments' borrowings. Also, the current account balance has deteriorated during 2018, adding to interest rate and currency woes, driven by a widening trade deficit. This is further amplified by declining net foreign direct investments and some reversal of portfolio flows. While depreciation of the Indian Rupee should favour exports, how far the benefit of the same is derived along with increased productivity gains is to be seen, given the global environment.

Reviving the investment cycle meaningfully is the biggest challenge at the moment. The economy still has not come out of the debt overhang caused by the debt-fuelled investment boom in the infrastructure sector in the initial years of this decade. The debt overhang in the corporate sector coupled with banks' high NPAs has certainly emerged as a major constraint for catalysing the private sector investment in the economy. Also, the manufacturing sector has not been forthcoming with investments as their aggregate capacity utilisation rates have been hovering between 70%-74% (4QFY11: 81.9%). As a result, investment demand in the economy has remained weak for some time now.

Regulatory reforms such as Insolvency and Bankruptcy Code, granting of powers to the Reserve Bank of India (RBI) towards resolution of stressed assets, steps to deepen markets viz. incremental borrowings through bond markets, are welcome moves. Further, RBI defining non-payment of debt when due as default is expected to instill discipline in both corporates and lenders (as they will have to start working towards resolution plans) alike, providing the much-needed smooth flow of capital within the economy. NPA numbers may still continue to surprise, albeit at a lower rate of growth. Further, substantial deleveraging of the corporate sector may take some time, with corporates facing continuing refinancing risks.

Figure 13  
Ind-Ra's Average Cumulative Default Rates (FY08-FY18)

| (%)                      | Year One    | Year Two    | Year Three  | Year Four    | Year Five    |
|--------------------------|-------------|-------------|-------------|--------------|--------------|
| IND AAA                  | -           | -           | -           | -            | -            |
| IND AA                   | 0.11        | 0.26        | 0.16        | 0.55         | 1.27         |
| IND A                    | 0.98        | 2.51        | 3.83        | 4.81         | 5.73         |
| IND BBB                  | 2.35        | 4.87        | 7.59        | 9.78         | 11.95        |
| IND BB                   | 3.49        | 5.95        | 9.06        | 11.13        | 12.71        |
| IND B                    | 4.65        | 7.99        | 10.66       | 13.70        | 14.47        |
| IND C                    | 15.49       | 16.18       | 17.19       | 19.30        | 17.78        |
| <b>Investment Grade</b>  | <b>1.39</b> | <b>2.93</b> | <b>4.37</b> | <b>5.40</b>  | <b>6.36</b>  |
| <b>Speculative Grade</b> | <b>4.09</b> | <b>6.93</b> | <b>9.89</b> | <b>12.41</b> | <b>13.61</b> |
| <b>All</b>               | <b>2.73</b> | <b>4.82</b> | <b>6.79</b> | <b>8.22</b>  | <b>9.02</b>  |

Note: The cumulative default rate (CDR) represents the likelihood of an entity that was rated at the beginning of any multi-year period defaulting at any time during the multi-year period.

- CDR for rating category X = No. of issuers which defaulted over the multi-year period/Static pool
- Static pool comprises non-defaulted issuers outstanding at the beginning of the multi-year period
- All averaging across static pools for default rate computations are based on the weighted average method where the weights are the number of ratings in each static period

Source: Ind-Ra

Figure 14  
Ind-Ra's One Year Long-term Ratings Transition Rates: FY18

| (%)     | IND AAA | IND AA | IND A | IND BBB | IND BB | IND B | IND C | IND D | Total |
|---------|---------|--------|-------|---------|--------|-------|-------|-------|-------|
| IND AAA | 98.68   | 1.32   | -     | -       | -      | -     | -     | -     | 100   |
| IND AA  | 2.48    | 93.79  | 1.86  | 1.86    | -      | -     | -     | -     | 100   |
| IND A   | -       | 7.25   | 86.64 | 1.91    | 0.38   | -     | 2.29  | 1.53  | 100   |
| IND BBB | -       | -      | 5.12  | 88.80   | 3.04   | -     | 0.19  | 2.85  | 100   |
| IND BB  | -       | -      | -     | 2.64    | 91.63  | 0.92  | -     | 4.82  | 100   |
| IND B   | -       | -      | -     | -       | 4.52   | 92.26 | -     | 3.23  | 100   |
| IND C   | -       | -      | -     | -       | -      | -     | 40.00 | 60.00 | 100   |

Source: Ind-Ra

Figure 15  
Ind-Ra's Average annual Short-term Ratings Transition Rates: FY16-FY18

| (%)     | IND A1+ | IND A1 | IND A2+ | IND A2 | IND A3+ | IND A3 | IND A4+ | IND A4 | IND D | Total |
|---------|---------|--------|---------|--------|---------|--------|---------|--------|-------|-------|
| IND A1+ | 96.47   | 2.08   | -       | 0.21   | -       | 0.42   | 0.21    | -      | 0.62  | 100   |
| IND A1  | 17.98   | 75.44  | 3.95    | 1.32   | 0.44    | -      | -       | -      | 0.88  | 100   |
| IND A2+ | 1.40    | 12.09  | 73.02   | 5.12   | 1.86    | 1.40   | 0.47    | 3.26   | 1.40  | 100   |
| IND A2  | 1.02    | 3.06   | 11.22   | 79.08  | 1.02    | 1.53   | 2.04    | 0.51   | 0.51  | 100   |
| IND A3+ | -       | 0.49   | 1.46    | 14.08  | 71.84   | 6.80   | 3.88    | 0.97   | 0.49  | 100   |
| IND A3  | 0.47    | -      | 0.47    | 1.66   | 9.95    | 79.15  | 5.92    | 0.47   | 1.90  | 100   |
| IND A4+ | 0.07    | -      | -       | 0.07   | 0.51    | 2.92   | 91.84   | 1.68   | 2.92  | 100   |
| IND A4  | 0.12    | -      | -       | -      | -       | -      | 7.62    | 89.68  | 2.58  | 100   |

Source: Ind-Ra

## Cumulative Default Rates and Transition Rates

The average three-year cumulative default rate across Ind-Ra's corporate finance issuers over 2008-2018 was 6.79%.

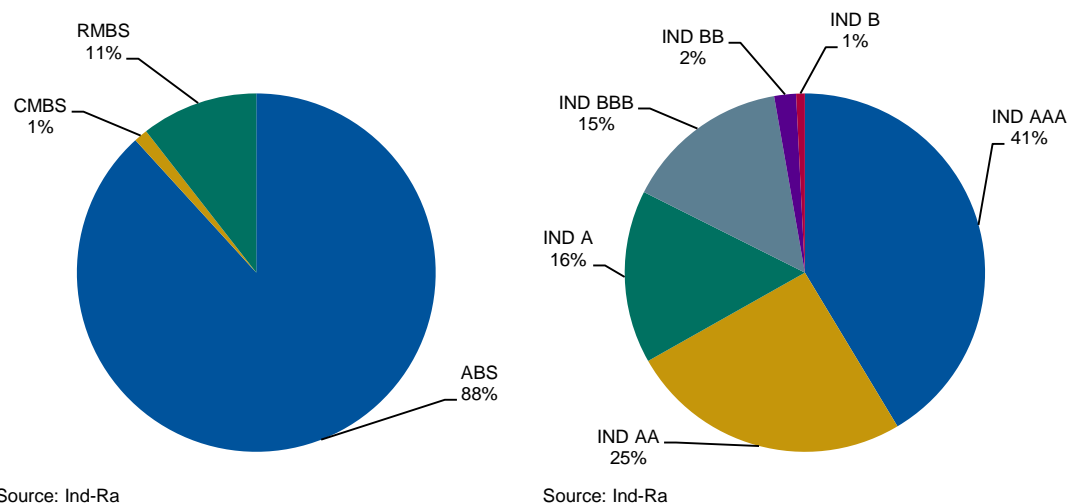
Figure 14 shows the movement of ratings across rating categories, as against to the modifier level, which counts each notch change. The left-hand column identifies ratings outstanding at the beginning of FY18, while each row providing information on the migration pattern of those ratings by end-FY18.

The diagonal value reflects the stability of each rating category. Rating stability for the issuers rated 'IND BB' or below over a longer term is low. Lower stability at the lower end of rating categories is due to multiple factors. The participation of lower rated issuers in the Indian bond market is less and these issuers generally depend on banks/financial institutions for their credit needs. Credit discipline/culture is less established with these issuers. Smaller issuers are also more prone to adversities in money market and credit squeeze. Average annual transition rates and average three-year cumulative transition rates are provided in Annexure I.

The ratings on the short-term scale mirror the movements in the long-term ratings. The stability across the short-term scale has remained robust as depicted in Figure 15.

## Structured Finance Ratings

Figure 16  
Composition of Ind-Ra's Structured Finance Ratings Universe – FY18



Source: Ind-Ra

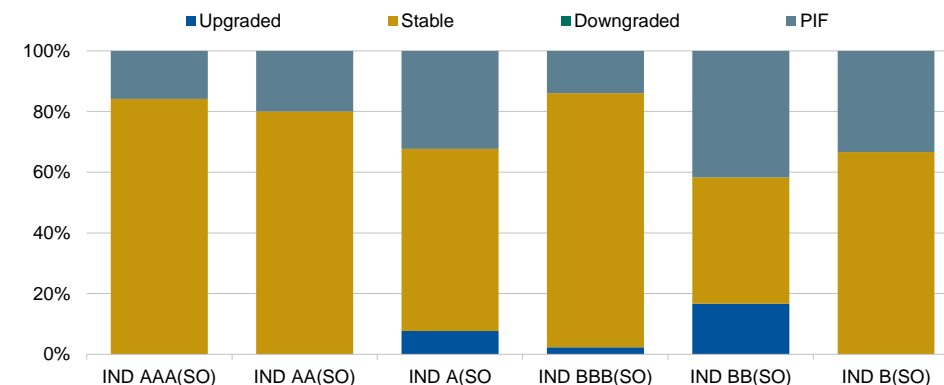
Source: Ind-Ra

Figure 17  
Ind-Ra's One Year Structured Finance Long-term Ratings Transition Rates: FY18

| (%)         | IND AAA(SO) | IND AA(SO) | IND A(SO) | IND BBB(SO) | IND BB(SO) | IND B(SO) | IND C(SO) | IND D(SO) | Total |
|-------------|-------------|------------|-----------|-------------|------------|-----------|-----------|-----------|-------|
| IND AAA(SO) | 100.00      | -          | -         | -           | -          | -         | -         | -         | 100   |
| IND AA(SO)  | -           | 100.00     | -         | -           | -          | -         | -         | -         | 100   |
| IND A(SO)   | -           | 11.36      | 88.64     | -           | -          | -         | -         | -         | 100   |
| IND BBB(SO) | -           | -          | 2.70      | 97.30       | -          | -         | -         | -         | 100   |
| IND BB(SO)  | -           | -          | -         | 28.57       | 71.43      | -         | -         | -         | 100   |
| IND B(SO)   | -           | -          | -         | -           | -          | 100.00    | -         | -         | 100   |
| IND C(SO)   | -           | -          | -         | -           | -          | -         | -         | -         | 100   |

Source: Ind-Ra

Figure 18  
Activity Across Rating Category – FY18



Source: Ind-Ra

Ind-Ra's structured finance stability rate for FY18 remained robust and stood at 93% (7% upgraded). There was no downgrade during FY18. Please refer to [Structured finance performance report](#) available at Ind-Ra's Website for further analysis.

### Scope & Coverage

The analysis above comprises ABS, RMBS and CMBS ratings, a total of 324 ratings in FY18. The study excludes short-term ratings.

Average annual transition rates and average three-year cumulative transition rates for Ind-Ra's structured finance long-term ratings are provided in Annexure II.

Figure 19  
**Average Time to Default for Ind-Ra's Corporate Finance Ratings**

| Rating category | Months to default |
|-----------------|-------------------|
| IND AAA         | No defaults       |
| IND AA          | 84 <sup>a</sup>   |
| IND A           | 45                |
| IND BBB         | 34                |
| IND BB          | 27                |
| IND B           | 22                |
| IND C           | 13                |

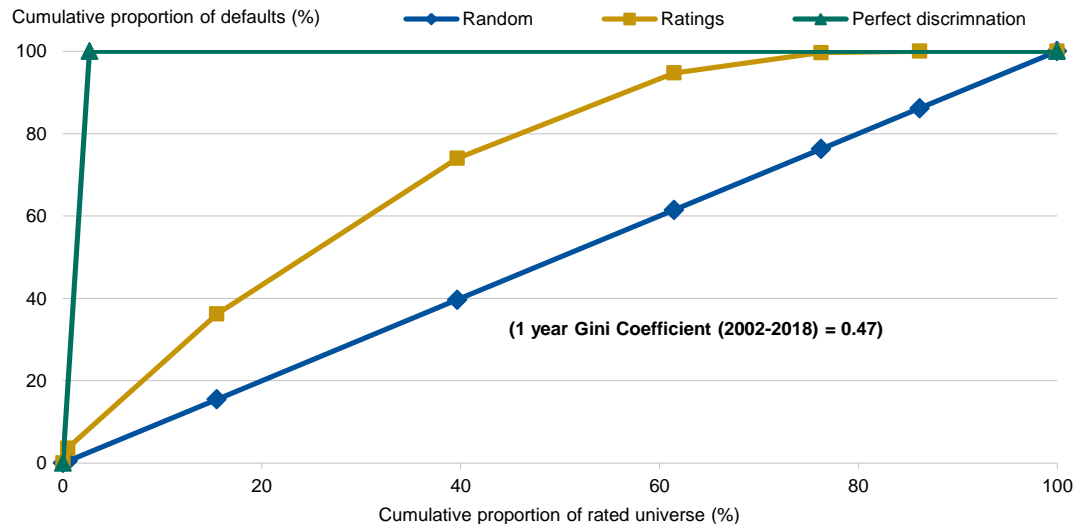
<sup>a</sup> On account of default by four issuers

Note: The study covers 300 defaults which happened during 2005-2018.

Source: Ind-Ra

Figure 20

### Gini Coefficient for Ind-Ra's Ratings



For one-year defaults between 2002 & 2018 across Ind-Ra's Rating Universe

Source: Ind-Ra

### Average Time to Default

Out of 300 defaults during FY05-FY18, four issuers were initially rated at IND AA'. The average time to default for the investment-grade categories was 38 months while that of the sub-investment categories was 25 months.

### Gini Coefficient

For Ind-Ra's overall ratings universe, Gini coefficient for one-year defaults between FY02-FY18 stood at 0.47 (FY02-FY17: 0.52). The Gini coefficient (also known as the accuracy ratio) is a widely used measure of discriminatory power. It is defined as the area under the cumulative accuracy profile (CAP curve) of the rating model in relation to the area under the CAP curve of a hypothetical perfectly discriminating rating model. However, Ind-Ra does not follow a simple fixed model for assigning ratings. Ratings assigned by Ind-Ra are opinions based on established criteria and methodologies that Ind-Ra is continuously evaluating and updating. The Gini coefficient, when being applied on Ind-Ra's ratings, provides a summary statistic only for a snapshot of Ind-Ra's ratings. Also, the Gini coefficient only provides a measure of discrimination between defaults and non-defaults, i.e. of the ability to differentiate relative risks. Just as Ind-Ra's ratings do not imply or convey a specific statistical probability of default, so the Gini coefficient does not make a statement about the ratings' correspondence with historical default probabilities. Furthermore, ratings are not facts, and therefore cannot be described as being accurate or inaccurate. Correspondingly, the Gini coefficient (despite its widely used alias) does not constitute a measure of ratings accuracy, but of a measure of degree of discrimination.



## Ind-Ra's Transition and Default Methodology

All Ind-Ra's ratings, comprising publicly rated, corporate, financial institutions, project and public finance long-term issuer/issue ratings from 2008 to the present are included in transition and default rate statistics. These do not include short-term ratings and structured finance ratings, for which computations have been shown separately. The study includes corporates, banks, NBFCs, subnational and infrastructure companies: a total of 2,663 corporate finance issuer/issue ratings in FY18.

Ind-Ra employs a static pool approach in calculating its default rates. Static pools or, alternatively, cohorts are created by grouping ratings according to the year in which the ratings were active and outstanding at the beginning of the respective year. For example, issuers with ratings outstanding at the beginning of 2007 constitute the 2007 cohort, with the same true for the 2008, 2009, and additional cohorts. Issuers newly rated by Ind-Ra in any given year are included in the following year's cohort. For example, the performance of ratings initiated in mid-2007 would be followed as part of the 2008 and future cohorts.

Issuers migrated to the non-cooperating category are monitored based on the best available information as per the regulations and were included while computing stability and transition rates.

Ind-Ra's continuing data enhancement efforts may result in different statistics than in previously published studies. Therefore, this most recent study supersedes all previous versions. In addition, comparisons with earlier Ind-Ra's transition and default studies should be viewed within the context of the differing methodologies, whether rating movements were analysed across the broad rating categories or at both the modifier and flat levels.

## Transition Rates

To calculate transition rates, Ind-Ra examines the performance of ratings outstanding at the beginning and end of a fiscal year. Withdrawn ratings are excluded from the transition table calculations since they do not fit these criteria; namely, the ratings must be outstanding over a full year or over the full period under observation. For the purpose of computation, Paid in Full - PIF issues are treated as withdrawn ratings.

Issuer ratings may reside in multiple cohorts, as long as their ratings are outstanding at the beginning and end of the year, or multiple-year horizons under observation. For example, the annual performance of an issuer rating initiated in 2006 and therefore outstanding at the beginning of 2007 and withdrawn in 2010 would be included in the 2007, 2008, and 2009 cohorts. The rating's performance over multiple-year horizons would also be included in the two-year and three-year transition rates for each of the cohorts noted, but excluded from four-year transition rates since the rating was withdrawn in year four, and was not outstanding for four full years as part of any cohort.

The occurrence and timing of both rating upgrades and downgrades for corporate issuers can be attributed to changes in qualitative and/or quantitative factors. Both measures are used to assess the business and financial risks of corporate issuers. A qualitative analysis includes examining industry risk, operating environment, market position, management, and accounting policies. In contrast, the quantitative aspect of Ind-Ra's corporate ratings focuses on a company's policies in relation to operating strategies, acquisitions and divestitures, leverage targets, dividend policy, and financial goals. Key elements in determining an issuer's overall financial health are profits and cash flow, an important component in the analysis is the company's ability to generate cash, which is reflected in the ratios that measure profitability and coverage on a cash flow basis.

The rating transitions outlined in this study represent a distinct historical period, and may not therefore represent future rating migration patterns. Transition rates are influenced by a number of factors, including macroeconomic variables, credit conditions, and corporate strategy. It is useful to examine the performance of Ind-Ra's ratings on a relative scale within each rating category. In addition, it is important to point out that while transition matrices are presented in this study at the flat levels, some statistical analysis was conducted at the modifier level, unless noted otherwise.

## Default Rates

Ind-Ra's default rates are calculated on an issuer/issue basis, rather than by Indian rupee amount. First, defaults are examined by year for each static pool and individual rating category. For example, if 25 issuers defaulted in 2012, and the 2012 static pool consisted of 2,000 issuer ratings, the resulting annual default rate for all ratings in 2012 would be 1.3%. If 10 of these defaults consisted of defaults among issuers rated at 'BB' at the beginning of the year, and the 'BB' cohort at the beginning of the year totalled 500, the 'BB' 2012 default rate would be 2% (10/500).

From these annual default rates, Ind-Ra derives average annual default rates by weighting each cohort's default rates by the number of ratings outstanding at the beginning for the given cohort relative to the number of total ratings outstanding for all cohorts. The 2012 'BB' annual default rate of 2%, calculated in the example above, might be followed by a 2013 'BB' annual default rate of 1%. A straight average of these two rates would ignore potential differences in the size of the two cohorts. Instead, weighting the results based on the relative number of 'BB' ratings outstanding in 2012 and 2013 gives greater emphasis to the results of the 'BB' cohort with the most observations. The same technique is used to calculate average default rates over multiple-year horizons. For example, the two-year default rate for the 2012 'BB' rating pool would be averaged with the two-year default rate for the 2013 'BB' rating pool by weighting the default rates by the relative size of each pool. The name of issuers/issues which defaulted in FY18 is provided in Annexure III.

## Annexure I

Figure 21  
Ind-Ra's Corporate Ratings' Average Annual Transition Rates: FY08-FY18

| (%)     | IND AAA | IND AA | IND A | IND BBB | IND BB | IND B | IND C | IND D | Total  |
|---------|---------|--------|-------|---------|--------|-------|-------|-------|--------|
| IND AAA | 98.83   | 0.98   | 0.20  | -       | -      | -     | -     | -     | 100.00 |
| IND AA  | 1.62    | 95.71  | 2.09  | 0.46    | -      | -     | -     | 0.12  | 100.00 |
| IND A   | -       | 3.92   | 89.86 | 3.85    | 0.77   | 0.14  | 0.42  | 1.05  | 100.00 |
| IND BBB | -       | -      | 4.60  | 87.99   | 4.38   | 0.13  | 0.22  | 2.69  | 100.00 |
| IND BB  | -       | -      | 0.11  | 4.29    | 89.49  | 1.75  | 0.18  | 4.18  | 100.00 |
| IND B   | -       | -      | -     | -       | 7.42   | 86.70 | 0.12  | 5.77  | 100.00 |
| IND C   | -       | -      | -     | -       | -      | 5.88  | 72.55 | 21.57 | 100.00 |

Source: Ind-Ra

Figure 22  
Ind-Ra's Corporate Ratings' Average Two Year Cumulative Transition Rates: FY08-FY18

| (%)     | IND AAA | IND AA | IND A | IND BBB | IND BB | IND B | IND C | IND D | Total  |
|---------|---------|--------|-------|---------|--------|-------|-------|-------|--------|
| IND AAA | 97.27   | 2.28   | 0.46  | -       | -      | -     | -     | -     | 100.00 |
| IND AA  | 3.17    | 91.49  | 4.62  | 0.43    | -      | -     | -     | 0.29  | 100.00 |
| IND A   | -       | 7.61   | 81.03 | 6.51    | 1.47   | 0.18  | 0.27  | 2.93  | 100.00 |
| IND BBB | -       | 0.13   | 9.99  | 75.57   | 6.92   | 0.60  | 0.53  | 6.26  | 100.00 |
| IND BB  | -       | -      | 0.13  | 10.22   | 77.02  | 3.23  | 0.54  | 8.87  | 100.00 |
| IND B   | -       | -      | -     | 0.55    | 16.41  | 69.26 | -     | 13.79 | 100.00 |
| IND C   | -       | -      | -     | -       | 7.14   | 3.57  | 50.00 | 39.29 | 100.00 |

Source: Ind-Ra

Figure 23  
Ind-Ra's Corporate Ratings' Average Three-Year Cumulative Transition Rates: FY08-FY18

| (%)     | IND AAA | IND AA | IND A | IND BBB | IND BB | IND B | IND C | IND D | Total  |
|---------|---------|--------|-------|---------|--------|-------|-------|-------|--------|
| IND AAA | 96.40   | 3.05   | 0.55  | -       | -      | -     | -     | -     | 100.00 |
| IND AA  | 4.55    | 87.43  | 7.10  | 0.73    | 0.18   | -     | -     | -     | 100.00 |
| IND A   | 0.25    | 11.15  | 74.02 | 7.73    | 1.65   | 0.25  | 0.25  | 4.69  | 100.00 |
| IND BBB | -       | 0.21   | 16.86 | 64.26   | 6.26   | 1.48  | 0.85  | 10.07 | 100.00 |
| IND BB  | -       | -      | 0.25  | 17.39   | 62.82  | 3.93  | 0.76  | 14.85 | 100.00 |
| IND B   | -       | -      | -     | 2.18    | 26.14  | 48.80 | -     | 22.88 | 100.00 |
| IND C   | -       | -      | -     | -       | 15.38  | -     | 38.46 | 46.15 | 100.00 |

Source: Ind-Ra

## Annexure II

Figure 24  
**Ind-Ra's Structured Finance Ratings' Average Annual Transition Rates: FY08-FY18**

| (%)         | IND AAA(SO) | IND AA(SO) | IND A(SO) | IND BBB(SO) | IND BB(SO) | IND B(SO) | IND C(SO) | IND D(SO) | Total  |
|-------------|-------------|------------|-----------|-------------|------------|-----------|-----------|-----------|--------|
| IND AAA(SO) | 99.88       | -          | 0.12      | -           | -          | -         | -         | -         | 100.00 |
| IND AA(SO)  | 3.05        | 96.95      | -         | -           | -          | -         | -         | -         | 100.00 |
| IND A(SO)   | 2.44        | 12.80      | 72.56     | 0.61        | 1.22       | 10.37     | -         | -         | 100.00 |
| IND BBB(SO) | 1.78        | 5.92       | 22.49     | 69.82       | -          | -         | -         | -         | 100.00 |
| IND BB(SO)  | -           | -          | -         | 25.00       | 75.00      | -         | -         | -         | 100.00 |
| IND B(SO)   | -           | -          | -         | -           | -          | 100.00    | -         | -         | 100.00 |
| IND C(SO)   | -           | -          | -         | -           | -          | -         | -         | -         | 100.00 |

Source: Ind-Ra

Figure 25  
**Ind-Ra's Structured Finance Ratings' Average Three-Year Cumulative Transition Rates: FY08-FY18**

| (%)         | IND AAA(SO) | IND AA(SO) | IND A(SO) | IND BBB(SO) | IND BB(SO) | IND B(SO) | IND C(SO) | IND D(SO) | Total  |
|-------------|-------------|------------|-----------|-------------|------------|-----------|-----------|-----------|--------|
| IND AAA(SO) | 100.00      | -          | -         | -           | -          | -         | -         | -         | 100.00 |
| IND AA(SO)  | -           | 100.00     | -         | -           | -          | -         | -         | -         | 100.00 |
| IND A(SO)   | -           | 45.00      | 55.00     | -           | -          | -         | -         | -         | 100.00 |
| IND BBB(SO) | 13.73       | 15.69      | 50.98     | 19.61       | -          | -         | -         | -         | 100.00 |
| IND BB(SO)  | -           | -          | -         | -           | -          | -         | -         | -         | -      |
| IND B(SO)   | -           | -          | -         | -           | -          | -         | -         | -         | -      |
| IND C(SO)   | -           | -          | -         | -           | -          | -         | -         | -         | -      |

Source: Ind-Ra

## Annexure III

Figure 26

### Corporate Finance Defaults: FY18

| Issuer  | Rating at Beginning of Year (2018) | Issuer   | Rating at Beginning of Year (2018) |
|---|------------------------------------|--|------------------------------------|
| Continental Hospitals Private Limited           | IND A+                             | Manpuria Consortium LLP                            | IND BB                             |
| RHC Holding Private Limited                     | IND A                              | Manpuria Agro Products Private Limited             | IND BB                             |
| Bajaj Energy Limited                            | IND A                              | Maktel Power Limited                               | IND BB                             |
| Shilpi Cable Technologies Limited               | IND A-                             | Indus Projects Limited                             | IND BB                             |
| JBF Industries Limited                          | IND BBB+                           | GVR Nagaur Bikaner Tollway Private Limited         | IND BB                             |
| GVR Ashoka Chennai ORR Limited                  | IND BBB+                           | GVR Ajmer Nagaur Tollway Private Limited           | IND BB                             |
| Virinchi Healthcare Private Limited             | IND BBB                            | GSK Infrastructures                                | IND BB                             |
| Anand Teknow Aids Engineering India Limited     | IND BBB                            | Crystal Cable Industries Limited                   | IND BB                             |
| Shree Krushna Enterprises                       | IND BBB-                           | Arya Ship Charterers Private Limited               | IND BB                             |
| Dwarikamayee Bhandar                            | IND BBB-                           | Arpit Projects Limited                             | IND BB                             |
| Mahavir Enterprises                             | IND BBB-                           | Ansal Housing & Construction Limited               | IND BB                             |
| Ali Agency                                      | IND BBB-                           | South East U.P. Power Transmission Company Limited | IND BB-                            |
| Ricoh India Limited                             | IND BBB-                           | Shree Sukhakarta Developers Private Limited        | IND BB-                            |
| Petron Engineering Construction Limited         | IND BBB-                           | Shiv Shakti Exporters Private Limited              | IND BB-                            |
| J.R. Agrotech Private Limited                   | IND BBB-                           | Radiant Bizcom Private Limited                     | IND BB-                            |
| Indian Acrylics Limited                         | IND BBB-                           | Linus Agroventures Private Limited                 | IND BB-                            |
| Adhunik Industries Limited                      | IND BBB-                           | Kotak Urja Private Limited                         | IND BB-                            |
| Abhirama Steels Limited                         | IND BBB-                           | Gargs Weldmesh Private Limited                     | IND BB-                            |
| Shirpur Power Private Limited                   | IND BB+                            | Dinesh Oils Limited                                | IND BB-                            |
| Rashmi Yarns Limited                            | IND BB+                            | Deep Weldmesh Private Limited                      | IND BB-                            |
| Moenus Textile Private Limited                  | IND BB+                            | Bhadresh Trading Corporation Limited               | IND BB-                            |
| Man Tubinox Limited                             | IND BB+                            | Vijay Textiles Limited                             | IND B+                             |
| Maa Kalika Bhandar                              | IND BB+                            | Trading Engineers (International) Limited          | IND B+                             |
| Kohenoor Industries                             | IND BB+                            | The Saswad Mali Sugar Factory Limited              | IND B+                             |
| Kashipur Sitarganj Highways Private Limited     | IND BB+                            | Synergy Remedies Private Limited                   | IND B+                             |
| Incom Cables Private Limited                    | IND BB+                            | Shital Gems Private Limited                        | IND B+                             |
| Ask Home Furnishing Private Limited             | IND BB+                            | San Marine Exports                                 | IND B+                             |
| Aegan Industries Private Limited                | IND BB+                            | Sai Print & Pack                                   | IND B+                             |
| Warana Dairy And Agro Industries Limited        | IND BB                             | Hi-Tech Hydraulic Engineers                        | IND B+                             |
| Sri Textile Erode Private Limited               | IND BB                             | VSK Laboratories Private Limited                   | IND B                              |
| Shriram EPC Limited                             | IND BB                             | Varidhi Hygiene Products Private Limited           | IND B                              |
| Shital Diam                                     | IND BB                             | Shree Vardhman Township Private Limited            | IND B                              |
| Rupnarayan Vanjiya Private Limited              | IND BB                             | Selvaraaj Prabhu and Company                       | IND B-                             |
| Prime Technoplast Private Limited               | IND BB                             | Parsvnath Hotels Limited                           | IND B-                             |
| Precise Seamless Apparels Private Limited       | IND BB                             | Daron Engineering Private Limited                  | IND B-                             |
| Perfect Infraengineers Limited                  | IND BB                             | Adams Marketing Private Limited                    | IND B-                             |
| Noslar International Limited                    | IND BB                             | GVR Behari Hanumana Tollway Private Limited        | IND C                              |
| Mehadia Sales Trade Corporation Private Limited | IND BB                             | GVR Panna Amanganj Tollway Private Limited         | IND C                              |
| Manpuria Realators Private Limited              | IND BB                             | Monnet Power Company Limited                       | IND C                              |

Source: Ind-Ra

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