Rating Criteria for Indian Asset-Backed Securitisations

Sector-Specific Rating Criteria

This criteria report updates and replaces the previous version, dated 29 October 2015

Scope

This criteria report describes India Ratings and Research's (Ind-Ra's) analytical approach towards ratings for Indian asset-backed securities' (ABS) transactions of vehicle financing loans, equipment loans and consumer loans originated by Indian banks and non-banking finance companies (NBFCs). The criteria may also be applicable to similar portfolios of loans extended to promoters/owners with small business enterprises.

The criteria report outlines the qualitative and quantitative factors considered by Ind-Ra while assigning new ratings as well as monitoring existing ratings of Indian ABS transactions.

Key Rating Drivers

Asset Analysis: Obligor default and recovery rates are key assumptions in India Ratings and Research (Ind-Ra) quantitative analysis. Ind-Ra derives portfolio-specific default and recovery base-case expectations based primarily upon originator-specific data but also taking into account the economic outlook, market and peer comparison data.

Credit Enhancement: The stressed default and recovery assumptions are the key drivers of credit enhancement (CE) levels in Indian ABS transactions. The expected cash flows from the securitised pool are analysed using base case and stress case scenarios for the three key performance variables: defaults, recoveries and prepayments.

Liability Analysis: The nature of a transaction's payment structure and cash flow allocations will be a major driver in assessing CE adequacy and rating levels. Ind-Ra uses an internal cash flow model customized to reflect the transaction payment structure and tests the impact of stressing various assumptions, including prepayments, default timing, recovery rates, and recovery lag.

The outputs of the asset analysis and the transaction's payment waterfall are used in Ind-Ra's cash flow model to determine the rating level that can be achieved given the CE and liquidity facility levels provided in the transaction.

Counterparty Risks: The effective operation of the originator/servicer in collecting receivables and distributing funds is reliant upon a number of counterparty relationships. Of specific relevance, from a cash flow perspective, are the servicer (see also below) and account banks holding the cash collateral or acting as a collection and payout agent.

Securitisation structures generally seek to minimise counterparty risk through diversification and replacement procedures. The transaction documentation is reviewed to determine whether the structural protections sufficiently reduce counterparty dependency.

Servicer/Operational Risks: Ind-Ra conducts an originator/servicer review aimed at understanding the policies, processes and practices in place. Based on the review Ind-Ra may make quantitative adjustments to default and recovery assumptions.

Transaction and Legal Structure: The transaction documentation is reviewed to understand the specific structural features and forms of CE available. Legal opinions are also reviewed to determine whether the transaction conforms to the legal assumptions such as bankruptcy-remoteness of assets in the event of bankruptcy or insolvency of the originator, "true-sale" nature of transaction and compliance with extant regulations and governing laws that Ind-Ra has relied on in its credit analysis.

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Application and Limitations of the Criteria

Application of Criteria

Ind-Ra assumes that the ABS portfolios of individual obligors (i) comprise a large number of relatively small balance obligations, (ii) have products with relatively homogenous characteristics, and (iii) contain a diverse range of obligors without any significant obligor, regional or industry concentration. Ind-Ra will validate the applicability of such assumptions prior to applying these criteria. In case the portfolio of loans has minor deviations from the benchmarks suggested above, Ind-Ra will apply suitable adjustments while assessing the default and recovery estimates before applying these criteria. To the extent that the portfolio of loans presents risks that cannot be addressed by such adjustments, it may prevent Ind-Ra from rating such a transaction.

Specific asset-level, liability-level, legal or operational risks may prevent Ind-Ra from rating a transaction or may limit the highest achievable ratings in the agency's analysis. The core areas where such restrictions may apply are generally those detailed in the report, *Criteria for Rating Caps in Structured Finance Transactions*, November 2018, and available at www.indiaratings.co.in. Specific ABS examples include data of inadequate quality, insufficient historical performance, and low origination and servicing standards.

Data Adequacy

Ind-Ra relies on the accuracy of the historical performance data provided by the originator and servicer supplemented by available market data to perform its credit analysis and to form a view on the future performance which could be expected on a particular ABS transaction.

Data Sources

The primary source of data for Ind-Ra transaction-specific analysis is the originator. The originator is the source of the following data types:

- pool data (stratifications or loan level);
- historical performance data; and
- historical portfolio stratifications

Ind-Ra analysis will also be supplemented by market data provided by third parties, either directly to the agency or via the originator, which may be the following data types:

- historical performance data of peer transactions;
- historical performance data of peer originators;
- macroeconomic data on relevant drivers of default

Data Quality

The rating approach outlined in this criteria report utilises historical performance data to form an expectation of future performance. In some cases, historical data analysis may be deemed inappropriate due to (but not limited to): (i) limited data availability, due to the duration of the data series and/or the data series being derived exclusively from a benign economic period; and/or (ii) a lack of granularity within the underlying pool; and/or (iii) a change in the origination practices such that the historical data is not reflective of the securitised assets. In such cases, the agency will determine whether to apply this criteria report versus alternative ratings approaches. Any data limitations, rating caps, data adjustments or assumptions applied by Ind-Ra will be highlighted in its transaction rating reports. Please refer to Ind-Ra criteria report, *Criteria for Rating Caps in Structured Finance Transactions*, November 2018.

Historical performance data are expected to display the performance of the obligors in relation to the original contractual payment terms. Servicer/originator practices such as loan modifications or loan refinancing (outside of the securitisation transaction) may lead to historical delinquency and default levels being understated. In such cases, Ind-Ra expects to be provided with additional data so that the impact of any such servicer/originator practices can be isolated and excluded.

Applicable Criteria

Structured Finance Rating Criteria (October 2015)

Criteria for Rating Caps in Structured Finance Transactions (October 2015)

Asset Analysis

Ind-Ra's asset analysis of the securitised pool is based on a four-step approach:

- Step 1. An originator and servicer review is conducted to evaluate the qualitative factors that could impact the future performance of the securitised loan pool
- Step 2. Base-case assumptions are derived for three key performance variables - defaults, recoveries and prepayments, based on historical data as well as the economic environment and asset class outlook
- Step 3. Loan pool characteristics are analysed and suitable adjustments to base case assumptions are made
- Step 4. Stressed scenarios are applied for the rating level

Originator and Servicer Review

Ind-Ra conducts a complete review of the originator and servicer associated with each securitisation on a periodic basis, as deemed appropriate by the agency. The review will focus on various aspects of the company and overall operations that could impact the quality of the securitised loan pool, which may lead to a neutral or negative adjustment to the model results derived from the data analysis undertaken by Ind-Ra.

The seven areas evaluated during the operational review include:

- Corporate overview, including financial condition, management experience and corporate risk management;
- Origination and underwriting;
- Servicing;
- Collections and default management;
- Staffing and training;
- Procedures and controls; and
- Technology and risk management

Corporate Overview

A thorough understanding of the company's history, corporate structure, strategic objectives, management experience and funding capabilities are fundamental to the operational review undertaken by Ind-Ra. An assessment of the financial condition of the originator (and servicer, if separate from the originator) is carried out by Ind-Ra Financial Institutions group, if there is no public rating available on the originator/servicer. Ind-Ra performs adequate due diligence to establish the going concern of the originator for the tenure of the securitised instrument.

Origination and Underwriting

The quality and consistency of the underwriting process is critical to the future performance of the securitised loan pool. Ind-Ra review includes an understanding of the originator's sourcing practices and how vendors are selected and monitored. In assessing the underwriting practices of the originator, Ind-Ra focuses considerable attention on the application receipt and data verification process, the loan approval process and how credit authority is delegated to underwriters.

While both centralised and decentralised underwriting by originators has a demonstrated success, Ind-Ra does review the control mechanisms for decentralisation of underwriting. The agency also evaluates any conflicts of interest that can be inherent in the roles of the sales or credit staff.

Some originators use credit scorecards to assist in the underwriting process. Credit scoring is a method by which a large sample of defaulted loans is analysed to determine which variables are statistically significant predictors of default, allowing the efficient and accurate credit assessment of numerous applicants. Ind-Ra expects such credit scorecards to cover most of the key variables to assess a borrower's credit profile, and will consider the robustness and stability of such credit scoring models over a period of time, and how and why these variables have changed over time. The agency also expects originators to employ money laundering checks as well as customer identity and address verification procedures.

Ind-Ra will adjust its base-case assumptions to reflect changes in underwriting standards and eligibility criteria.

Servicing

In nearly all ABS transactions, the originator and servicer are the same entity. This is mainly due to the challenges in implementing a third-party or backup servicer. Given the pivotal role that the servicer plays in every transaction, particular attention is paid to a servicer's financial strength and ability to accommodate growth while maintaining collection and repossession procedures.

Given that the originator is typically the servicer for the transaction, the servicing fees charged are usually below market rates. Any transfer of collections to a backup servicer will likely result in increased expenses. Therefore, Ind-Ra may assume a higher market rate in its cash flow model to reflect the change in fees that could arise if the original servicer were to be replaced.

Collections and Default Management

During the review, Ind-Ra will evaluate the collection processes and loss mitigation tactics as well as the servicer's procedures surrounding enforcement and repossession of collateral. The collections process should be flexible enough to allow the borrower sufficient time to pay the arrears while ensuring that appropriate action is administered in a timely manner when non-payment becomes inevitable. Along with tracking payment receipts, billings, insurance and monitoring borrower contact, the servicer's systems should also be able to generate information management reports. As some of the processes undertaken by the servicer relating to collections are automated, such as delinquency letters and calling schemes, Ind-Ra will assess the use of these systems and may request demonstrations of the respective applications.

As there are various ways to organise the collections department within a servicing organisation, Ind-Ra will review the servicer's specific structure, paying particular attention to how collectors are recruited, trained and organised as well as the tools used to manage each collector's performance. Regardless of how the collections department is structured, Ind-Ra expects to see experienced collectors handling the more serious delinquent accounts.

Ind-Ra reviews historical performance within the servicer's existing portfolio as well as for previous transactions. Furthermore, the agency will review timelines from default to recovery, including the timeframe from actual possession to sale of the collateral. Attention will also be paid to the write-off process, including timelines, average write-off amounts, collection of shortfalls if applicable and the approval process for authorising write-offs.

Staffing and Training

The tenure and experience of the underwriting and servicing personnel is reviewed as is the organisational structure of both departments. The retail finance experience of the underwriters is assessed as is the experience of the servicing staff in administering receivables and the experience of call centre or branch personnel in collecting on secured and/or unsecured loans.

Procedures and Controls

Documented policies and procedures for both underwriting and servicing are critical to ensure that the corporate credit policies are followed. The originator should be able to make adjustments to its policies and procedures based on reviews of performing and non-performing portfolios. Ind-Ra will also review the relevant reporting and decision-making procedures.

Quality control is another critical factor in Ind-Ra review of originators. The agency reviews the level of exceptions to credit, which are a concern since they can indicate possible portfolio deterioration. Internal audit procedures should also be in place as well to ensure compliance with all company procedures and industry guidelines, and that appropriate follow-up action is taken for exceptions.

Technology & Risk Management

As part of the review of the originator and servicer (either together or as separate entities), Ind-Ra will evaluate the adequacy of IT systems used to support the management of the portfolio, the administration of the receivables and the ongoing origination of accounts. The review will include an understanding of the company's IT infrastructure and how various applications used for origination, underwriting and servicing interface with one another. Disaster recovery and business contingency are also discussed as well as the company's process for ongoing systems development, and plans for upgrading or replacing existing systems.

The agency will not rate an ABS transaction wherein the originator or servicer's capabilities and competencies are deemed to be inadequate to support the transaction.

Asset Characteristics

Having conducted the originator and servicer review, Ind-Ra analyses the specific asset characteristics of the securitised pool. Ind-Ra assumes that ABS portfolios of individual obligors (i) comprise a large number of relatively small balance obligations, (ii) have products with relatively homogenous characteristics, and (iii) have obligor profile representative of the static pool data provided by the issuer. However, for relatively smaller sized pools, the relevance of this criteria report shall be assessed on a case-by-case basis, depending on portfolio composition and with consideration to additional factors as required.

The analysis involves qualitative and quantitative assessments of borrower-specific and loan-specific features.

Borrower-Specific Features

Despite the introduction of Credit Information Bureaus in India since 2000, individual credit scores are still not as widely available as in other jurisdictions, making it challenging to assess the creditworthiness of a particular borrower. Ind-Ra therefore currently focuses on evaluating the originator's underwriting criteria. Where additional information is available, the agency will analyse the data; for example, breakdown of employment profiles (employed/self-employed/housewife), fixed obligation-to-income ratios (FOIR), historical regional collection trends and consumer credit information reports (CIR).

Loan-Specific Features

Loan-to-Value Ratio (LTV)

High LTVs are associated with high default risk and high loss severity as there is less equity at risk for the borrower and low equity cushion available to the originator. Given that high LTVs are an indication of potentially aggressive lending practices, Ind-Ra compares the LTVs of the loans in the securitised pool with the originator's overall portfolio by LTV bands. If the securitised pool shows higher LTVs, Ind-Ra will increase the base-case default rate for the transaction to adjust for the higher default risk of the securitised pool.

Loan Maturity

Longer loan maturities are associated with increased credit risk. There is not only a greater likelihood of negative credit events occurring during a longer time horizon but also the possibility that extended tenor loans are disbursed to borrowers with low affordability. Loan maturity risk is particularly pronounced in instances where the current value of the collateral is less than the outstanding principal of the loan as a result of the asset depreciation rate being higher than the loan amortisation rate. If the securitised pool shows significantly higher loan maturities, Ind-Ra will increase the base-case default rate for the transaction to adjust for the longer maturity risk of the securitised pool.

Loan Size

Loan level exposures are an indicator of borrower concentration risk. Pools containing commercial equipment loans tend to have high loan values compared to light commercial vehicles (LCVs), and also often have a high degree of borrower concentration. Ind-Ra therefore examines certain number of large borrowers by principal outstanding and the expected loss from such accounts to assess whether the transaction's CE for the rating level is sufficient to sustain the default of a minimum number of borrowers.

Borrower Geography

In certain asset classes like microfinance loans securitisation, the borrowers of a particular geography are generally homogeneous in terms of financial literacy and credit behaviour. This makes the transaction prone to idiosyncratic risks, especially in the wake of any unforeseen trigger event even at the grassroots levels. Hence, analysing the transactions on the basis of geographical concentration and the past track record of key geographies plays an important role in arriving at adequate levels of additional credit protection at a desired rating level for an SF transaction.

Credit Score

In recent times, Ind-Ra has observed that a borrower's credit score provided by the credit bureau is a key decision variable in loan sanction models for quite a few asset classes such as credit cards, unsecured business and personal loans and consumer durable loans. A high weighted average credit score and high percentage of credit score hits for an asset pool signify a healthy credit track record for the underlying borrowers. This is more significant in the aforesaid asset classes since the loans are of unsecured nature and post-default recoveries may not be significant.

Base-Case Assumptions

Having analysed the characteristics of the securitised pool, Ind-Ra establishes its base-case assumptions on the following three key performance variables, which collectively impact the credit risk in a transaction:

- gross defaults over the term of the transaction;
- cumulative recoveries on the defaults in the transaction; and
- monthly prepayment rates

To develop these assumptions, Ind-Ra expects to receive from the originator three to five years of historical data on the relevant asset class as detailed in Appendix 4. The data is expected to reflect at least one economic stress period and the tenor of the underlying assets in the securitised pool. If sufficient originator-specific information is not available, especially for entities that have begun operations in the recent past or have launched a product line recently, and stabilised levels of delinquencies cannot be gauged from the limited vintage of operations, significant market-wide historical performance data, particularly for peers in the same product line, covering at least the same timeframe may often provide proxy information.

Static Pool Analysis

What is a Static Pool?

A static pool comprises loans of a particular asset class that have been originated with the same underwriting criteria during the same month, quarter or year. Ideally, all loans originated in the same period are included in the performance data.

For a particular asset class, the static pool analysis is performed on a number of static pools originated at different dates to assess the performance of the underlying loans over a period.

Unlike an originator's overall portfolio, which is dynamic due to the continuous introduction of new loans, ABS transactions are typically static in nature since they comprise a fixed set of loans as of a certain cut-off date. By studying the performance of historical static pools of an originator, Ind-Ra is able to form a view on the expected performance of the securitised pool over the life of the transaction.

The static pool data provided by the originator is analysed with respect to various parameters based on borrower and loan characteristics. Dynamic pool data can however facilitate comparisons of delinquencies for sub-categories within the same parameter, e.g. LTV, IIR and region.

Economic Environment and Asset Class Outlook

While Ind-Ra recognises the importance of static pool data in calculating expected future defaults, due consideration is also given to the economic environment. The agency therefore also evaluates macroeconomic factors, including GDP components such as agriculture and manufacturing, inflation, interest rates and oil prices as well as other measures of economic activity such as the Index of Industrial Production (IIP). Asset classes such as commercial vehicles, commercial equipment and construction equipment are sensitive to business cycles and macroeconomic conditions.

In a growing economy, with sustained economic activity in core sectors, such assets tend to perform well, with the underlying borrowers having a strong source of income, thereby improving their debt servicing capacity. Conversely, changes in macroeconomic factors leading to a slowdown in demand will adversely impact a borrower's debt servicing capacity. Ind-Ra therefore considers how deterioration in economic factors could impact the pool performance in terms of defaults, recovery rates and prepayments.

Default Probability

To determine the base-case default rate for the securitised pool, Ind-Ra reviews the historically observed default rates of assets of the same quality and composition from the relevant originator, pool-specific collateral characteristics and the level of seasoning and amortisation. Depending on the availability of information, base cases are determined for each individual asset class in the securitised pool.

Default Rate

The information on overdue loans in static pools provided by originators is typically net of recoveries. The net default rate usually represents the total outstanding principal in the 90 days past due bucket inclusive of recoveries, expressed as a percentage of the initial principal. In certain asset classes like microfinance loans or unsecured loans, early delinquency indices of equal to or more than 1 day past due or more than 30 days past due may also act as a proxy for net default rates. This is because, generally, if a borrower moves in to delinquent buckets, a rollback to standard account status is difficult. The precise number of days past due depends on the set definition of default in the transaction documentation. For asset classes such as commercial vehicles and commercial equipment, which in the past have had high recoveries, the net default rate significantly underestimates the gross default rate. The steps below detail how Ind-Ra determines a base-case gross default rate.

- Ind-Ra first examines the performance of the static pools in terms of peak net default rates based on the number of months since origination and the level of amortisation.
- By analysing the origination year of the securitised pool and mapping it to the peak net default rates of the loans of the same vintage in the static pools, the base-case net default rate is obtained
- Ind-Ra then makes adjustments to the base-case net default rate based on various qualitative and quantitative factors. Potential reasons for adjustment s include changes in underwriting or servicing standards and differences in asset characteristics of the securitised pool compared to the static pools. The details of the adjustments to the base-case net default rate due to such factors are mentioned in the *Originator and Servicer Review and Asset Characteristics* sections

- The base-case net default is expected to address the potential impact of the macroeconomic environment on the future performance of the securitised pool. If the historical data already incorporates a severe stress period, such that the base case is not expected to be exceeded despite macroeconomic deterioration, no further adjustment would be made to the base-case net default rate. However, if macroeconomic indicators such as GDP, IIP and other forecasts suggest that economic activity is expected to deteriorate materially from historical averages, then upward adjustments are made to the base-case net default rate. Such adjustments may be formulated following discussions with rating analysts of the relevant Ind-Ra Corporates sector group, Financial Institutions group
- The base-case net default rate is then grossed up by simulating a base-case gross default rate based on the historical recovery rate range observed for the specific asset class. The procedure adopted by Ind-Ra to simulate the base-case gross default rate is detailed in *Appendix 5*

Seasoning and Amortisation

While seasoning (the amount of time that borrowers have already made payments on a loan pool since origination) can be an indicator of credit behaviour of the pool, it should be studied in conjunction with the proportion of amortisation that has taken place in the securitised pool. Ind-Ra will only adjust for seasoning where at least 20% of the securitised pool has already amortised with no delinquencies. The adjustment for seasoning will be influenced by a number of factors, including loss speed, shape of the default curve and the underlying credit collateral quality.

Recoveries

Once a loan has been classified as defaulted, usually a recovery procedure is undertaken on the underlying asset. The recovery rate is defined by the total liquidation proceeds over the outstanding balance of the defaulted loan.

Ind-Ra reviews historical recovery information to estimate the net proceeds received from the liquidation of the underlying asset and the recovery timing process. A static data analysis is conducted, with the time of default being the starting point for the recovery vintages, to estimate how long it takes to collect the recoveries from the defaulted assets. Ind-Ra also forms a view on recoveries from other data provided by the originator or from recovery data provided by other entities in the same asset class and similar regions of operations. Some loans classified as defaulted can become current through continued collection efforts past the definition of default. The agency only gives benefit to this type of recovery where the collection history presents a consistent recovery trend.

Ind-Ra therefore determines its base-case assumptions for recovery rates and recovery timings based upon available historical information. The base-case recovery rate and recovery timing for the securitised pool is further adjusted based on certain interrelated factors, which have been mentioned below:

Recovery Policy

Once a loan account has become delinquent, the servicer/originator can follow a distinct collection strategy depending on the delinquency bucket the borrower is in as well as the size of the delinquent amount. The success of the recovery strategy depends not only on the experience and expertise of the servicer, but also on macroeconomic factors and regulatory guidelines regarding collections. For instance, a recovery policy focused heavily on repossessions of the underlying assets will be more sensitive to economic conditions than an alternative strategy that is based on cash recovery by means of negotiations, which will be more sensitive to regulatory guidelines on recovery proceedings.

Collateral Characteristics

Certain vehicle and equipment attributes such as the age of the asset (new or used), expected life of the asset, purpose of usage (commercial or personal) as well as the physical condition affect the market value of the asset.

Macroeconomic Conditions

In periods of high economic growth, the demand for underlying assets such as commercial vehicles and commercial equipment is usually high and so higher recoveries can be expected. Conversely, in periods of economic slowdown, demand in the auction market is likely to be weaker, leading to lower recoveries. If macroeconomic indicators such as GDP, IIP and other forecasts suggest that economic activity will deteriorate materially from historical averages, then appropriate caution is exercised by the agency while estimating the default proxies for the tenure of the transaction. Such adjustments may be formulated following discussions with rating analysts of the relevant Ind-Ra sectoral groups.

Prepayments

Prepayments occur when borrowers pay part of their loans before the scheduled payment date. The two key drivers of prepayment behaviour are the availability of cheaper refinancing options and an increase in disposable income levels after a change in personal financial circumstances. On a relative basis, premium structures are significantly more sensitive to prepayments than par structures.

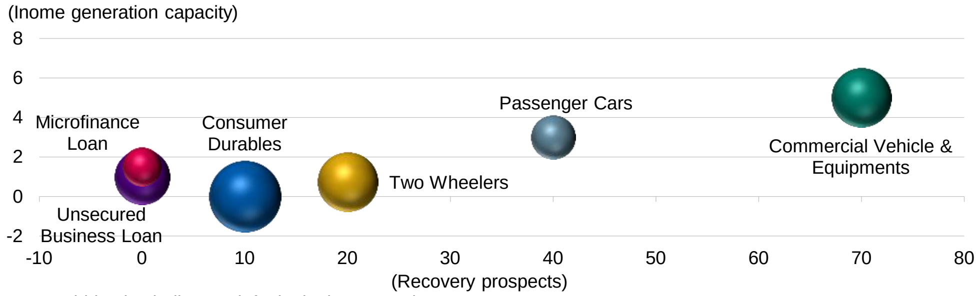
Ind-Ra reviews available dynamic and static prepayment data provided by the originator to understand the history of average prepayments for the particular asset class. If prepayment data is unavailable, Ind-Ra assumes a prepayment rate based on information available on similar asset classes from other originators as well as the prevailing and expected interest rate environment.

Asset Class Comparison

The chart below summarises the gross default rates, expected recoveries and income generation capacities on an asset class basis. The size of each of the bubbles indicates its relative default probability.

Figure 1

Relative Default Probability by Asset Class



Note: Bubble size indicates defaults in the asset class
Source: Ind-Ra analysis

For instance, the commercial vehicle and equipment asset classes are significantly high on recovery prospects as compared to the unsecured business loan asset class, while default probability for the same is higher than that for the passenger cars asset class. However, in terms of income generating capacity, again, commercial vehicle and equipment perform much better than all other asset classes for lenders.

Stress Scenarios

After developing base-case assumptions for gross defaults, recoveries and prepayments, Ind-Ra stresses these variables and applies a yield compression stress for the rating level.

Gross Default Rate Stresses

The stresses shown in the table are applied to the base-case gross default rate for ABS ratings to arrive at the stressed default rate. Ind-Ra's rating analysis uses stress multiples to establish a degree of remoteness from the base case assumption that is appropriate for the assigned rating level. It addresses the risk that actual default performance may be worse than the base-case assumption. The stressed assumptions are intended to provide a basis to account for the impact of economic deterioration on the transaction's cash flows.

Notch-specific default rate stresses are derived by linear interpolation between the stresses applicable to adjacent rating categories. As there are usually two notches between rating categories, the steps between notches are one-third of the difference between the categories.

Figure 2

Gross Default Rate Stress Multiples – All Asset Classes Except Microfinance Loans

Rating category	Multiple (x)
IND AAA(SO)	4.00–5.50
IND AA(SO)	3.00–4.00
IND A(SO)	2.00–3.00
IND BBB(SO)	1.50–2.00

Source: Ind-Ra

While the above range of stresses provides a tool to reflect the expectation that different portfolios will respond differently to economic deterioration, Ind-Ra highlights that the application of higher stresses does not negate the importance of adequate origination and servicing practices, as well as the availability of sufficient and reliable historical data when setting base case expectations. In the absence of adequate origination and servicing practices and/or adequate data, Ind-Ra may be unable to derive base-case expectations with a sufficient degree of robustness to apply this rating approach, and in such an event, a rating cap will be applied to the transaction.

Stress multiples at the higher end of the range will be used based on the qualitative factors mentioned below:

1. Originator has less established underwriting and servicing capabilities or the servicer has weaker financial standing
2. Originator has exhibited volatile historical loss performance
3. If the base case default, defined to cover the default performance expectation for the term of the transaction, is lower than the long-term average default performance of the originator

Conversely, stress multiples at the lower end of the range will be used for well-established originators with substantial historical performance data exhibiting consistent and low historical volatility of loss levels.

The stress multiples have been validated against historical peak default data of structured finance transactions. The details of the empirical study are shown in *Appendix 6*.

Figure 3

Gross Default Rate Stress Multiples – Microfinance Loan

Rating category	Multiple (x)
IND A(SO)	4.00–5.50
IND BBB(SO)	3.00–4.00
IND BB(SO)	2.00–3.00
IND B(SO)	1.50–2.00

Source: Ind-Ra

Adjustments to Gross Default Stress Multiples

Additional stresses outside of the standard multiples shown will be applied to address risks associated with limited availability of static pool data. If Ind-Ra base-case gross default rate already incorporates a severe stress period observation, the agency will reduce the multiple applied. Similarly, for high credit risk assets, the multiples may be lower, as the base-case gross default rate in these portfolios already reflects the inherent riskiness of the asset class.

As part of Ind-Ra performance analytics process, the agency will assess the economic outlook and its likely impact on future asset performance. During periods of significant stress, Ind-Ra will re-assess the potential for further deterioration in asset performance. This may lead to an increase in Ind-Ra breakeven CE for certain rating categories, reflecting changes in its view of their relative proximity to default. For high investment-grade rating categories, Ind-Ra revised breakeven CE may rise less proportionally than for lower rating categories as long as the high investment-grade categories are still expected to be relatively remote from default compared to lower rating categories.

Default Timing Stress

The timing of defaults has a significant impact on the performance of a transaction. For example, in a par structure, if the defaults are front-ended, the excess spread available to the transaction is reduced.

Figure 4

Recovery Rate Scaling Factors for Secured Loans

Rating category	Stress case (%)
IND AAA(SO)	60
IND AA(SO)	70
IND A(SO)	80
IND BBB(SO)	90

Source: Ind-Ra

Ind-Ra formulates its default curves using historical performance data to observe trends exhibited by static pools and fully seasoned securitisation transactions. The agency employs various default timing scenarios depending on the weighted-average life (WAL) to assess the ability of the structure to withstand various clusters of defaults at three different points in the transaction lifecycle: front, middle and back. As an example, the default timings used for a pool with a WAL of three years would be as follows:

Figure 5

Default Timings for a Pool with a WAL of Three Years

Year	Front	Middle	Back
1	60	25	0
2	40	50	40
3	0	25	60

Source: Ind-Ra

Recovery Rate Stresses

Ind-Ra recovery rate stresses recognise the pro-cyclical nature of defaults and recoveries, with lower recoveries occurring during periods of higher defaults. Therefore, in ABS transactions backed by secured loans, Ind-Ra assumes that the asset recovery rate is inversely related to the rating level. The scaling applied to recoveries at the different rating levels is as shown on the left.

Figure 6

Prepayment Stress Multiples

Rating category	Multiples (x)
IND AAA(SO)	2.00–2.50
IND AA(SO)	1.50–2.00
IND A(SO)	1.20–1.50
IND BBB(SO)	1.10–1.20

Source: Ind-Ra

Adjustments to Recovery Rate Stress

Adjustments will be made to the standard scaling factors shown above to address risks associated with availability of historical data. If Ind-Ra base-case recovery rate already incorporates a severe stress period observation, the agency will reduce the scaling factors.

Recovery Timing Stress

In the same way that the allocation of defaults over time affects the use of excess spread as it flows down the waterfall, the generation of recovery over time matters. Ind-Ra determines its recovery timing assumptions based on the historically observed time to recovery as well as the rating level. The recovery timings that Ind-Ra uses typically for commercial vehicle financing transactions are shown below.

Figure 7

Recovery Timings

Rating category	Months
IND AAA(SO)	Base case timeline + 5 to 6 months
IND AA(SO)	Base case timeline + 4 to 5 months
IND A(SO)	Base case timeline + 2 to 3 months
IND BBB(SO)	Base case timeline + 1 to 2 months

Source: Ind-Ra

Prepayment Stresses

Ind-Ra will stress base-case monthly prepayment rates for the relevant rating level. The stress for each rating category will depend on the portfolio's yield, current interest rate environment, competitive landscape and economic factors. Considering the sensitivity of premium transactions to prepayments, Ind-Ra assumes a higher prepayment rate for premium structures compared to par structures. The monthly prepayment stress multiple ranges that Ind-Ra uses are shown on the left. These stress multiples have been validated against historical prepayment data of Indian structured finance transactions. The details of the empirical study are shown in *Appendix 6*.

Yield Compression Stresses

To address the risk of relatively higher interest rate loans in the securitised pool either prepaying or defaulting, Ind-Ra applies a yield compression stress to the pool yield.

Figure 8

Yield Compression Stress

Rating category	Top borrowers (%)
IND AAA(SO)	40
IND AA(SO)	30
IND A(SO)	20
IND BBB(SO)	15

Source: Ind-Ra

The agency reviews the yield distribution of the assets in the securitised pool and assumes a certain percentage of borrowers (depending on the rating level) with the highest interest rate loans will either prepay or default. The percentage reduction in the pool yield is then deducted from the month-on-month weighted-average pool yield and applied to the interest collections in Ind-Ra cash flow model. The yield compression stresses that the agency uses are shown on the left.

Liability Analysis

Ind-Ra uses its cash flow model to test whether the stressed asset cash flows, as well as the CE and liquidity facility provided in the transaction, are able to cover the timely interest and timely principal payments on the rated pass-through certificates (PTCs).

Cash Flow Modelling

Ind-Ra cash flow model considers two sides of the transaction: the assets and the liabilities.

The key assumptions for the asset side of the cash flow model are the base-case gross default rate, timing of defaults, recoveries, pool yield and prepayments. These assumptions are subject to rating-specific stresses within the cash flow model to reflect the various stress scenarios that affect principal and interest collections received from the assets in each period.

The stressed asset cash flows are then applied to the liability side of the cash flow model based on the priority of payments/waterfall set out in the transaction documentation. The liabilities of the structure typically include fees and expenses as well as payments due to the PTCs. ABS transactions typically incorporate a combined waterfall structure where principal and interest collected from the loans are merged and distributed according to one priority of payments.

The charts below (Figure 8, Figure 9 and Figure 10) detail the main steps incorporated in Ind-Ra cash flow model for a typical ABS transaction.

Figure 9

Asset Side: Stressed Asset Cash Flows

Opening Principal Balance

↓

Defaults: The principal outstanding of loans which default in a current period depends on the stressed default assumptions and default timelines.

↓

Prepayment: The principal outstanding of loans which prepay in a current period depends on the prepayment assumption and the non defaulted principal outstanding.

↓

Principal Amortisation: The principal collected in the current period depends on the amortisation schedule, outstanding principal after defaults and prepayments.

↓

Actual Interest Collections: The interest collected in the current period depends on the principal outstanding after defaults, scheduled pool yield and yield compression assumptions.

↓

Recoveries: Recoveries from defaulted loans with a recovery lag.

↓

Ending Principal Balance: The Opening Principal Balance minus prepayments, defaults and principal amortised in the current period.

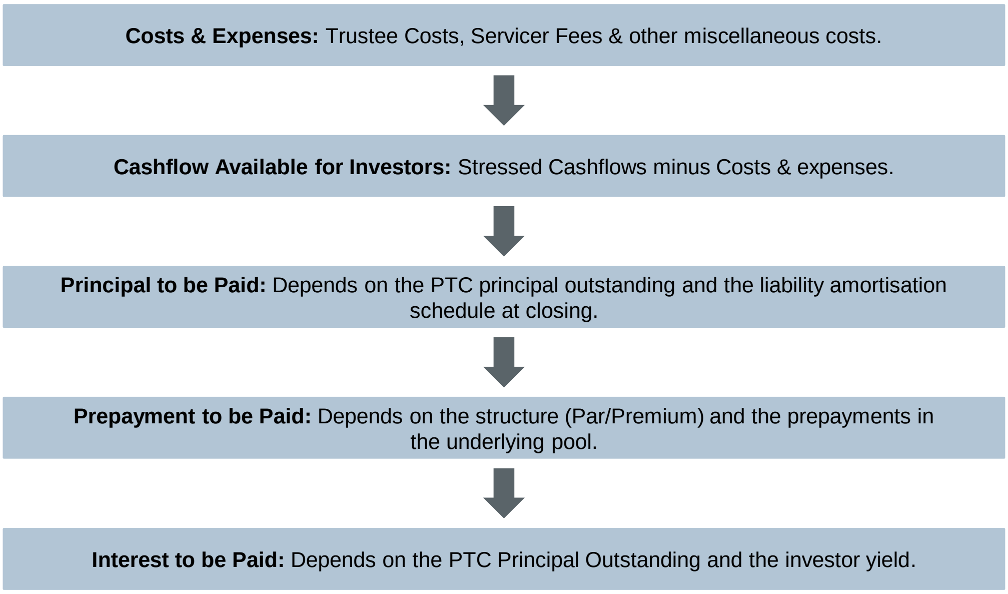
↓

Stressed Asset Cashflows: Sum of prepayments, principal amortised, interest collections and recoveries.

Source: Ind-Ra

Figure 10

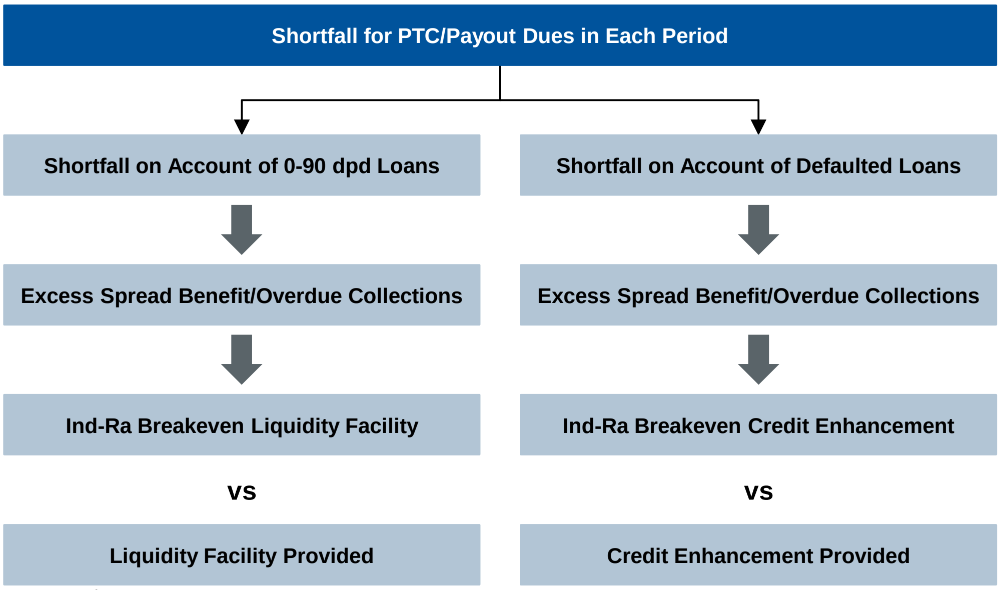
Liability Side: Expenses and Payouts



Source: Ind-Ra

Figure 11

Assets vs. Liabilities Analysis



Source: Ind-Ra

The stressed asset cash flows are applied to the specified liability waterfall. The shortfall in each period is calculated to determine whether the CE and liquidity facility provided in the transaction exceed Ind-Ra breakeven CE and liquidity facility amount. If so, the transaction has sufficient CE and liquidity facility to meet the timely payment of interest and timely payment of principal for the rating level.

Counterparty Risks

Counterparty risks arise in all situations where the transaction places either operational reliance or dependency on payment obligations from counterparties or other supporting parties. These parties can include the originator, servicer, corporate undertaking or guarantee provider and account bank as well as an interest rate swap provider.

Ratings of Ind-Ra ABS transactions are dependent on the financial strength of certain counterparties as well as being directly linked to the performance of the securitised pool. To address the issue of counterparty risk, transaction documents typically include structural mitigating factors that aim to reduce the reliance on specific counterparties. In ABS transactions, this has often taken the form of minimum rating thresholds ("rating trigger"), where it is specified in the transaction documentation that upon the loss of a minimum rating the counterparty will take certain remedial actions. Depending on the counterparty function, these actions usually include replacement with another counterparty or finding an eligible guarantor.

Ind-Ra Financial Institutions and NBFC groups are closely involved in assisting in the monitoring of the counterparty risks in ABS transactions. Rating committees will consider the specifics of an ABS transaction and could decide that the counterparty is not suitable for a particular exposure at the highest rating levels even if the counterparty appears to meet the criteria. Where such exceptions to criteria arise, the circumstances and rationale for the decision will be fully described and explained in Rating Action Commentaries and any transaction reports that accompany the rating action.

Originator

The originator exposes the transaction to both credit enhancement and set-off risk.

Credit Enhancement Risk

In many ABS transactions, the cash collateral and liquidity facility amount are held in a bank account in the name of the originator with a lien marked to the trust. r. This letter also instructs the account bank to operate the bank account solely upon the written instructions of the trustee/investor. Transaction documents usually specify that in the event that the originator is downgraded below a certain threshold, usually an 'IND A1' or 'IND A' level, all monies held in the bank account are usually transferred to a newly established bank account in the name of the trust within 30 days.

Set-Off Risk

The representation and warranties provided by originators usually state that the borrowers do not have any right to set off their liabilities specified in the underlying loan agreements against any deposits maintained by them with the originator. If borrowers do proceed to set off, the originator typically has the right to repossess the underlying asset. Alternatively, if the originator were to default, the transaction would also be exposed to potential set-off risk. The mitigation of set-off risk is contingent upon the exact nature of the set-off exposure and the credit strength of the originator. Where significant set-off exposure exists, Ind-Ra will assess the mitigating factors that have been structured into the transaction (if any). In the event set-off risk is evident and the risk has not been reduced, the rating of the transaction could be capped as it may not be possible for the transaction to be effectively isolated from the risk of the originator. Please refer to Ind-Ra criteria report, *Criteria for Rating Caps in Structured Finance Transactions*, November 2018.

Servicer

The servicer can expose transactions to both commingling and operational risk through the servicing functions.

Commingling Risk

Monthly collateral collections are usually held in accounts with the servicer before being paid to investors as interest and principal. In an insolvency or bankruptcy event of the servicer, collections belonging to the trust/purchaser can run the risk of being commingled with the defaulting servicer's estate if it is not fully isolated. In addition, any redirection of funds would take a certain time while borrowers may continue to pay into the original collection account. Transaction documents often aim to limit the extent of the commingling period to the next payout date if the servicer is rated at least 'IND A1' and 'IND A' or daily sweeps depending on the rating of the servicer.

Operational Risk

Some transactions include a servicer replacement event where if the servicer's rating falls below 'IND A1' or 'IND A' then investors can decide to replace the existing servicer with a new servicer within 30 calendar days. In the absence of a servicer replacement event, Ind-Ra will assess the mitigating factors that have been structured into the transaction.

Account Bank

The account bank often holds the cash collateral as well as the liquidity facility amount. To limit the account bank exposure, transaction documentation usually specifies that the account bank will have to be replaced within 30 days if it gets downgraded below a certain rating threshold, usually set at 'IND A1' or 'IND A'. If transactions have 'excessive account bank dependency, it is expected that such risks are suitably mitigated. For ABS Transactions, please see the Ind-Ra comment Excessive Account Bank Dependency Risks in SF Transactions.

Corporate Undertaking or Guarantee Provider

If CE is provided in the form of a corporate undertaking or guarantee (including adequate draw down provisions - see below), the rating of the PTCs will be analysed in a manner similar to that for Account Bank as described in the previous section. If the entire CE is provided by a single counterparty leading to excessive dependence on the counterparty, the rating of the PTCs will be capped at Ind-Ra rating of the corporate or guarantor.

Guarantees by nature are less easily replaceable than fixed deposits placed with account banks on the counterparty becoming ineligible. In such cases, it is expected that, within 14 days from such downgrade of the guarantor, if a replacement guarantee is not arranged from an eligible counterparty rated at least 'IND A'/'IND A1', the original guarantee will be drawn down fully and the cash placed in a fixed deposit with an eligible counterparty within 14 days.

Absence of Event Based Triggers in Transaction Documents

In case the transaction documents do not contain the aforesaid triggers related to the rating of counterparties involved, Ind-Ra will itself mention appropriate triggers at the time of rating the transaction, which shall govern the transition in rating of the SF instrument in accordance with the transition in rating of the counterparties involved in the transaction.

Transaction and Legal Structure

Ind-Ra reviews the transaction documentation to understand the specific structural features and forms of credit enhancement available in the transaction.

Structural Features

Key structural features that have been incorporated into ABS transactions include the following.

Par & Premium Structures

ABS transactions incorporate either par or premium structures. In a par structure, the securitised pool is assigned to the trust for a purchase consideration equal to the pool's principal balance. In contrast, in a premium structure, the securitised pool is assigned for a purchase consideration in excess of the value of the pool's principal balance. The principal on the PTC is derived by discounting the total scheduled cash flows from the pool at a fixed PTC yield, thereby allowing the originator to monetise upfront the value embedded in the future interest receivables.

Premium structures are inherently riskier than par structures given the following features.

- The PTC principal balance is greater than the pool's principal balance (under-collateralisation at the onset of the transaction)
- Each interest payment made on an underlying loan asset effectively represents a partial principal payment to PTC investors. Any significant variation in the interest payments of the underlying loan assets and the expected cash flows could therefore result in a loss of PTC principal. The variation could arise from delinquencies, defaults or prepayments

- No excess spread is available for the benefit of the transaction

Given the risks and sensitivities mentioned above, Ind-Ra breakeven credit enhancement for a premium structure is higher than that for a par structure.

Direct Assignment Structures

An alternative to the PTC structure is a direct assignment structure where there is a bilateral assignment from the originator/seller directly to the investor/purchaser. In the absence of a trust and PTC issuance, the purchaser of the specific pool receives the scheduled interest and principal payouts directly from the originator/seller. In direct assignment transactions, Ind-Ra provides its estimate of potential losses in the underlying pool principal in the form of a loss assessment report which looks at only the cash flows expected from the pool of loans post default and recovery.

Liquidity Facility

Many ABS structures incorporate a separate liquidity facility provided by the originator or a third party at the onset of the transaction. The liquidity facility is available to be drawn down from the account bank to protect the transaction against any shortfall on account of loans in the less than 90 days overdue bucket. Any draw down of the liquidity facility is usually temporary in nature and therefore reimbursed on the subsequent payout date at the top of the transaction waterfall. The liquidity facility therefore does not provide any CE to the transaction.

To determine whether the liquidity facility amount in the transaction is sufficient for the rating stress level, Ind-Ra uses a cash flow model to analyse stress scenarios of the current and overdue collection efficiencies. The base case collection efficiencies are derived using historical collection trends observed in the static pools provided by the originator and the performance of transactions under surveillance.

In transactions where no separate liquidity facility is provided, Ind-Ra breakeven CE is higher as the available CE will be used to cover any cash flow shortfalls on account of both credit losses as well as any liquidity shortfalls on account of temporary delinquent loans.

Other structural features often incorporated in Indian ABS transactions are mentioned in *Appendix 2*.

Forms of Credit Enhancement

CE can be classified into two forms – external and internal. External CE is provided by cash collateral, guarantees and corporate undertakings while internal CE is provided by excess spread, subordination and overcollateralisation.

Cash Collateral

The most common form of CE in ABS transactions is cash collateral provided by the originator or a third party. The cash collateral is typically available to cover any shortfalls in amounts due to PTC investors on account of defaulted loans, which are usually defined as loans in the over 90 days past due bucket. The cash collateral is often in the form of a fixed deposit account in the name of the originator with a lien marked to the trustee of the transaction (as detailed in the *Counterparty Risk* section above). The trustee typically has the sole operational and withdrawal rights on the bank account. Once the cash collateral has been utilised for the first time, any excess collections (after payment towards expenses and PTC) are usually used to top up and restore the cash collateral to its initial level. The cash collateral is typically split into two facilities. The first loss facility is used as the first level of credit protection and the second loss facility is used only once the first loss piece has been fully exhausted.

Subordination

In a simple two-class senior-subordinated (senior/sub) structure, the subordinated class provides credit enhancement to the senior class by having all losses on the asset pool allocated to it first until its balance is reduced to zero (assuming that the proceeds of the subordinated note were applied to purchase performing receivables). Typically, interest and principal due to the senior tranche is paid first, and whatever cash is remaining is paid to the subordinated tranche.

Guarantees and Corporate Undertakings

In some Indian ABS transactions, the CE has been in the form of a guarantee or corporate undertaking provided by the originator or a third party. In such cases, Ind-Ra assesses the credit rating of the guarantor or undertaking provider (as detailed in the *Counterparty Risk* section above). Ind-Ra analysts evaluate the guarantee (or undertaking) documents as well as the legal opinion provided by the transaction legal counsel to determine the strength of the guarantee with respect to whether the guarantee is unconditional and irrevocable as well as the coverage of the guarantee with regards to the amount payable, the time taken for payment to be made upon invocation and the availability of the guarantee for the whole tenor of the transaction.

Excess Spread

In a par structure, excess spread is the difference between the yield received from the securitised pool and the yield paid to the PTC investor. In each payout period, excess spread can act as a first line of protection against delinquencies and therefore used to meet temporary shortfalls in the amount due to PTC investors.

Ind-Ra assesses the extent to which excess spread is available to PTC investors as per the transaction waterfall. In some transactions, the excess spread is effectively released to the originator on each payment date on a “use it or lose it” basis and therefore is not available to cover future defaults or losses. Alternatively, the entire excess spread is available in transactions where the waterfall stipulates that the excess spread will be ‘trapped’ in the collection and payout account.

In certain transactions, on the basis of certain triggers, the excess spread may be trapped in a reserve account, and shall not flow back to the originator at the bottom of the payment waterfall. In such cases, the excess spread shall be available for curing delinquencies during the subsequent payment periods as well.

As mentioned in the *Par versus Premium Structures* section above, in premium structures, there is no excess spread as the excess interest is effectively monetised at the onset of the transaction when determining the PTC principal balance.

Overcollateralisation of Receivables

In par structures overcollateralisation exists when a specified percentage of receivables in each period is allocated to be used as protection against any PTC investor shortfalls. Therefore, the scheduled payouts to the PTC investor every month benefit from the excess pool cash flows (overcollateralisation of monthly receivables).

In Ind-Ra view, overcollateralisation of monthly receivables is a weaker form of CE compared to cash collateral as the support provided by overcollateralisation is dependent on asset performance, prepayments and collection efficiencies. To reflect this credit risk and liquidity risk, as part of its analysis, Ind-Ra applies its stresses to all of the loan assets in the transaction, including the specified percentage of loans that are providing the overcollateralisation.

Legal Analysis

Ind-Ra reviews the transaction documentation to understand whether the terms and legal structure of the transaction conform to information previously received. The key transaction documents prepared by the transaction counsel in a typical ABS transaction are shown in Appendix 3.

Legal Opinions for PTC Transactions

PTC Securitisations

These transactions are structured to isolate the underlying pool of loan receivables from the bankruptcy and insolvency risk of the other parties involved in the transaction. This is accomplished by transferring/ assigning the loans by means of a true sale to a bankruptcy-remote entity also referred to as a trust, which issues the PTCs.

Ind-Ra relies, in its credit analysis, on legal and/or tax opinions provided by a reputable transaction counsel. Although some legal issues that are difficult to analyse will always remain, such as the risk of a change in the legal or tax regime and fraud, which are beyond the scope of a rating, given the legal framework governing securitisation in India, Ind-Ra expects the legal opinions to cover the following key legal issues.

Incorporation of the Trust and the Capacity of the Parties Involved

The trust has been validly constituted under the trust deed for the purpose of the specific securitisation and all parties to the transaction have the power, capacity and authority to enter into the transaction agreements and to exercise their rights and perform their obligations as per the documentation.

Enforceability of Transaction Documents

The transaction documents have been duly executed and constitute legal, valid, binding obligations, which are enforceable against the trust and all other parties to the transaction. Furthermore, the legal opinion is expected to comment that the underlying loan agreements do not provide for any restriction on the transfer/assignment of the assets by the seller.

True Sale of Assets from the Seller to the Trustee

Assets are assigned to a trust (established by an independent trustee under the provisions of the Indian Trust Act, 1882) by way of a trust deed. While the term “true sale” has neither been legally defined under Indian law nor tested in any Indian courts, the Reserve Bank of India’s “Guidelines on Securitisation of Standard Assets” dated 1 February 2006 stipulates inter alia that to satisfy the test of a true sale (a) all right, title, interest and benefits of the seller in the assets are transferred to the trustee and (b) none of the seller’s creditors shall have any right in or to the assets, including in the case of liquidation or winding up of the seller. As such, the PTC investors will have no recourse to the seller and the creditors of the seller will not be able to overturn the sale and claw back any loan receivables, claiming they form part of the bankruptcy estate of the seller.

It should be noted that if a winding up of the originator commences within six months of a transaction being entered into, then the issue of assignment of receivables being assailed on the grounds of “fraudulent preference” under Section 531 of the Companies Act, 1956 (Companies Act) can arise and can, in the event of the originator being wound up, be deemed a fraudulent preference of its creditors and be invalid accordingly. Further, under Section 531A, voluntary transfers made within a period of one year of the winding up could be voided by the liquidator. However, the defence available to the originator could be that the same has been done bona fide and for valuable consideration, in the ordinary course of business and therefore the transfer is not in favour of a creditor.

In ABS transactions backed by vehicle financing loans, it is important to note that Indian vehicle registration rules impact the actual transfer of the asset collateral. The underlying security interest is not directly held by the trustee but is instead held by the seller in its capacity as security trustee for the beneficial interest of the trustee and PTC investors.

Bankruptcy Remoteness of Cash CE and Liquidity Facility from the Originator

In most ABS transactions, the CE and liquidity facility are usually provided in the form of a fixed deposit in a bank account. For these to be bankruptcy remote from the originator, both can be deposited in the name of the trust in an account owned by the trustee. In some cases, the legal opinion further specifies that any earned deposit interest can only flow back to the originator along with the credit enhancement at the end of the transaction.

In most transactions, however, the CE and liquidity facility are held as fixed deposits in the name of the originator with a lien marked to the trustee. In Ind-Ra view, this introduces counterparty risk as the fixed deposits are not bankruptcy remote and, in the event of a winding up of the originator, the trustee may be in the position of a secured creditor. To mitigate this risk, transaction documents usually include a rating trigger stating that the fixed deposits are held in the name of the originator only while the originator is highly rated (see *Counterparty Risks* section).

A less common alternative approach to address the bankruptcy-remoteness risk is when a tripartite agreement is signed between the trustee, account bank and originator stating that the operational control rights of the fixed deposit clearly remain with the trustee, who has the sole right to choose when to break the fixed deposit as and when there is a shortfall in the PTC investor payout.

Impact of Vehicle Registration Rules on Auto Loan Securitisations

The Motor Vehicles Act 1998 governs the security interest for vehicles under which the secured party's interest is evidenced by notation of a lender's name on the registration certificate issued for the vehicle. Given the time and cost involved in changing the lender's name from the seller to the trustee and that the originator/seller continues to act as the servicer for the loans, the transaction documentation for a securitisation states that the underlying security continues to be held by the seller but for the benefit of the trustee and PTC investors.

Compliance with Governing Laws, Securitisation Guidelines and Taxation

The transaction complies with the Reserve Bank of India's "Guidelines on Securitisation of Standard Assets" and that the transaction documents have been duly stamped as per the stamp laws applicable in the place of execution. As part of its cash flow analysis, Ind-Ra does not take into account any income taxes that may be imposed on the trust, as these income taxes, if any, are assumed to be borne by PTC investors.

Compliance with Existing Laws and Securitisation Guidelines

The transaction is not in contravention of any of the existing laws and the transaction documents are legal, valid, binding and enforceable against the originator and all other parties to the transaction. Market participants tend to adopt the "Guidelines on Securitisation of Standard Assets" as best practice in transactions.

It should be noted that Ind-Ra does not provide legal and/or tax advice or confirm that the legal and/or tax opinions or any other transaction documents or any transaction structures are sufficient for any purpose.

Rating Sensitivity Analysis

This section provides an insight into the model-implied sensitivities of the transaction when the base case assumptions with respect to one or more variables are changed, while holding others equal. The results below should only be considered as one of the many potential outcomes, given that the transaction is dynamically exposed to multiple risk factors.

Rating Sensitivity to Defaults

The rating migration that will occur if the base case default rate of each loan is increased by a relative amount is demonstrated in the Rating Sensitivity to Default Rate table. For example, if the actual default rate increases (worsens) by 20% from the base case default expectation, the rating of the transaction may be downgraded to 'IND AA+(SO)'.

Figure 12

Rating Sensitivity to Default Rate

	Rating
Original rating	IND AAA(SO)
Base case increase by 10%	IND AAA(SO)
Base case increase by 20%	IND AA+(SO)

Source: Ind-Ra

Rating Sensitivity to Recovery Rates

The rating migration that will occur if the base case recovery rate of each loan is decreased by a relative amount is demonstrated in the Rating Sensitivity to Recovery table. For example, if the base case recovery rate decreases (worsens) by 20%, the rating of the transaction may be downgraded to 'IND AA+(SO)'.

Figure 13

Rating Sensitivity to Recovery

	Rating
Original rating	IND AAA(SO)
Base case decrease by 10%	IND AAA(SO)
Base case decrease by 20%	IND AA+(SO)

Source: Ind-Ra

Rating Sensitivity to Shifts in Multiple Factors

The Rating Sensitivity to Multiple Factors table summarises the rating sensitivity attributed to stressing default rate and recovery assumptions concurrently.

Figure 14

Rating Sensitivity to Multiple Factors (Default Rate & Recovery)

	Default rate		
Recovery rate	**Base case**	**Base case + 10%**	**Base case + 20%**
Base case	IND AAA(SO)	IND AAA(SO)	IND AA+(SO)
Base case – 10%	IND AAA(SO)	IND AA+(SO)	IND AA(SO)
Base case – 20%	IND AA+(SO)	IND AA(SO)	IND AA−(SO)

Source: Ind-Ra

Performance Analytics

Objective

Ind-Ra monitors transaction performance to determine whether base case assumptions, note ratings and Rating Outlooks remain appropriate in the agency's opinion. Specifically, Ind-Ra reviews whether the base-case assumptions remain appropriate in light of reported performance, as well as the agency's forward-looking expectations for the sector and the country.

Executed Documentation

Ind-Ra often assigns provisional ratings prior to the transaction closing date. Provisional ratings indicate that the transaction can be assigned a final rating subject to the receipt of executed documentation (transaction documentation and legal opinions) conforming to information already received.

Ind-Ra assigns final ratings upon receipt of executed documentation, which the agency expects to receive within 45 days of the transaction closing date. If, at this point, Ind-Ra has not received the executed documentation, it will communicate to the trustee (with a notification to the arranger) to bring the matter to their attention, thereby providing the trustee with an opportunity to inform investors. If, after a further 45 days have elapsed — that is 90 days from the transaction closing date — Ind-Ra is still not in receipt of the executed transaction documentation, it will consider withdrawing the provisional ratings of the transaction.

Review Process

Ind-Ra will initiate surveillance only once final ratings have been assigned to a transaction. Clear and timely reporting is essential in assessing current performance and forming an accurate credit view.

The report from the servicer is expected to provide the following information with respect to collections from the pool contracts during the previous month:

- billed amount to the borrowers;
- actual collections from borrowers towards this billed amount during the month;
- the amount and number of contracts of prepayments/advance payments from the borrowers;
- ageing analysis of overdues;
- actual payments made to the investors;
- any prepayments from borrowers or foreclosures (number of contracts and amounts obtained therefrom);
- revised cash flow schedule; and
- loan level information

On each payout date, Ind-Ra will review the transaction-specific data. The performance levels will be compared to: (i) Ind-Ra transaction-specific base case expectations; (ii) Ind-Ra defined and transaction defined performance triggers; and (iii) previous periods in order to identify inconsistencies or trends.

Rating surveillance committees are convened in the following circumstances: (i) for a review at least once every 12 months; (ii) following the breach of a performance trigger or identification of negative or positive performance trends; (iii) following a rating change of a material transaction counterparty; (iv) following a change in the economic outlook or the rating of the relevant sovereign, (v) Request for reset of credit enhancement in accordance with RBI guidelines

Review Methodology

The methodology for surveillance is consistent with Ind-Ra initial rating approach, where collateral performance and structural changes, if any, are reviewed prior to the cash flow analysis. The analysis focuses on the levels of enhancement available in the transaction and whether, under stressed conditions, the transaction can withstand a level of losses commensurate with the risk associated with a particular rating category.

Over time, performance may trend positively or negatively away from historical levels. If the performance of a transaction’s collateral begins to deviate significantly from the base case assumptions, Ind-Ra will conduct an in-depth review of the portfolio. This may result in the determination of new base case assumptions, which could, in turn, have an effect on a transaction’s ratings.

Auditor’s Reports

In some ABS transactions, Ind-Ra has noted that certain trustees appoints a due diligence auditor on an annual basis to audit the records of the servicer and the details of the monthly report. Typically, the role of the third-party due diligence auditor is to independently and objectively audit and verify the information presented by the servicer. The due diligence auditor’s report is presented to the trustee/investors with a copy provided to Ind-Ra for the agency’s review.

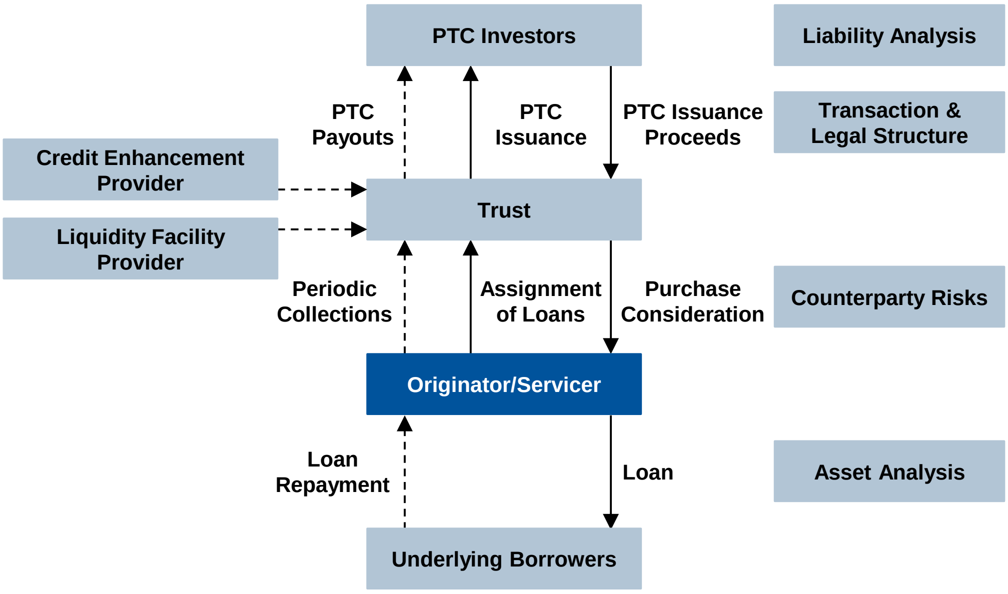
Appendix 1: Overview of Indian ABS

For the purposes of this report, Ind-Ra has classified the loans securitised in ABS transactions into the following product types:

- vehicle financing loans for passenger cars, two wheelers, three wheelers, tractors, utility vehicles and light and heavy commercial vehicles;
- loans for construction and agricultural equipment;
- unsecured personal and consumer durable loans;
- unsecured business loans
- loan against property
- microfinance loans

Figure 15

Structure Diagram



Source: Ind-Ra

Indian ABS transactions are structured by a transfer of a specific pool of loans from the seller/originator to a trust. The trust then issues PTCs to investors and transfers the proceeds to the seller/originator by way of a purchase consideration. The future cash flows from the securitised pool are used to pay expenses and the scheduled interest and principal payouts to the PTC investors.

The scheduled interest and principal payouts to the PTC investors are detailed in the transaction documentation at the transaction closing date. The scheduled principal PTC payout is recalculated one month in advance given the occurrence of principal prepayments. The recalculation is therefore based on the scheduled principal of the remaining underlying loans in the securitised pool. The scheduled interest PTC payout is dependent on the opening PTC principal outstanding at the start of the particular payout period and the coupon rate of the PTCs.

Ind-Ra's rating of the PTCs addresses the timely payment of interest and the timely payment of principal/ ultimate payment of principal to the PTC investor by the scheduled maturity date in accordance with the transaction documentation.

Suffix of (SO) is included to denote that the issuance is a structured obligation. Ind-Ra's Complexity Indicator for Indian ABS transactions is "High" as the relationship between the numerous interdependent risk factors and the intrinsic return characteristics is highly involved, requiring forward-looking analysis and projections. For further details on Ind-Ra's Complexity Indicators for Indian Market Instruments, please refer to www.indiaratings.co.in

Appendix 2: Other Structural Features in Indian ABS

Clean-Up Call Options

In some transactions, the originator/seller has a clean-up call option to repurchase fully performing residual loan assets if, in aggregate, they form less than 10% of the original securitised pool balance. Typically, the right to exercise this option is solely with the originator/seller but on the condition that the available credit enhancement is sufficient to fully cash collateralise the outstanding PTC balance. If the clean-up call option is exercised, PTC holders expect to receive all amounts due to them in accordance with the transaction documentation.

Transaction-Specific Performance Triggers

Some ABS transactions incorporate specific performance triggers; for example, a maximum threshold of delinquency and defaults or a minimum threshold on the cumulative collection efficiency. These triggers are included to address the PTC investor's concern that a breach in a performance trigger could be an indication that the servicer is not performing as well as initially envisaged and the trustee should therefore take corrective action by replacing the servicer. While some ABS transactions incorporate servicer replacement events, these replacement provisions remain untested to date.

Interest Rate and Basis Risk

The vast majority of ABS transactions have no interest rate risk as the underlying securitised loans and the PTCs issued both carry a fixed interest rate (natural hedge).

In instances where the securitised pool carries a fixed interest rate but the PTC liabilities are floating interest rate, the transaction may seek to hedge the interest-rate risk or basis risk by swapping: (i) the securitised pool's fixed rate to floating; or (ii) the PTCs' floating-rate coupon to a fixed rate. In the former, the risk of over- or under-hedging is apparent as the loans in the securitised pool could amortise faster than originally forecasted due to the acceleration of prepayments or defaults. In the latter, if there is an early amortisation event of the PTCs, this could affect the hedge's coverage as the transaction PTCs' liability amortisation is accelerated. In addition to evaluating the financial mechanics of the hedge instruments, Ind-Ra will examine the payment waterfalls and counterparties involved.

For transactions that do not incorporate interest-rate risk hedging mechanisms, Ind-Ra will evaluate available structural features that aim to mitigate any interest rate or basis mismatches.

Appendix 3: Transaction Documents

For PTC structures, the documents prepared by the transaction legal counsel typically include the following.

- **Trust Deed** – The document settles the trust and also lays down the powers and duties of the trustees to manage the trust property and make payments to the PTC holders. The trust deed can also provide for certain important provisions in relation to the PTC holders and the waterfall mechanism
- **Assignment Agreement/Deed of Assignment** – The conveyance document under which the underlying pool of loans is sold to the trustee. The document also incorporates the representations, warranties and undertakings of the seller
- **Collection and Servicing Agreement** – The trustee appoints the collection and servicing agent as its agent under this document and sets out the powers and duties of the collection agent in collecting the receivables, enforcing security and making payments to the trust account
- **Credit Enhancement/Liquidity Support Agreements (as Applicable)** – The documents under which the seller or third party provides the credit enhancement and liquidity support. These can be in the form of undertakings, agreements or corporate guarantee and will set out the manner and the circumstances in which the amounts can be drawn upon by the trustee
- **Power of Attorney Issued by the Seller in Favour of the Trust (if Appropriate)** – Under this document, the seller authorises the trustee to take all actions in relation to collecting and enforcing payment of the receivables
- **Power of Attorney Issued by the Trust in Favour of the Collection and Servicing Agent (if Appropriate)** – Under this document, the trustee authorises the collection and servicing agent to take all actions to recover the receivables as its agent

Additionally, the prospectus or Information Memorandum issued by the arranger/ trustee describes the underlying pool of loans and the nature of the securities issued. The terms and conditions of the PTCs as well as the procedure for application are also provided.

It should be noted that as Ind-Ra is not a party to any of the legal documents of a transaction, it does not provide consent to or approval of amendments to the transaction documents or structure. Ind-Ra is not responsible for the structuring of transactions - which remains the sole preserve of transaction parties.

Appendix 4: Information Expected from Originators

To analyse a securitised loan pool, Ind-Ra expects to receive details of the underwriting and servicing functions as well as stratification data for the securitised pool and portfolio performance history. Ind-Ra expects there should be at least three to five years' performance history for the relevant asset class.

Securitised Pool Stratification Data

- Total number of accounts and current outstanding balance
- Delinquency status of all borrowers
- Account level information on various pool characteristics, including loan-to-value, internal rate of return (IRR), original and balance tenor, state location and employment profile
- Information on the underlying asset, including type of asset class, value of the underlying vehicle and vehicle make

Portfolio Historical Data

- Static pool delinquencies and defaults
- Static pool recoveries
- Static pool monthly prepayments
- Dynamic delinquencies showing periodic aging by delinquency bucket
- Delinquency levels on a dynamic basis for different borrower segments
- Collection performance (on a cumulative, current and overdue basis)

Appendix 5: Simulation of the Gross Default Rates

The static pools provided by originators typically show the outstanding loan principal in either 90+ or 180+ days past due (dpd) in each payout period. As recoveries are incorporated into these static pools, an approximate gross default rate needs to be determined.

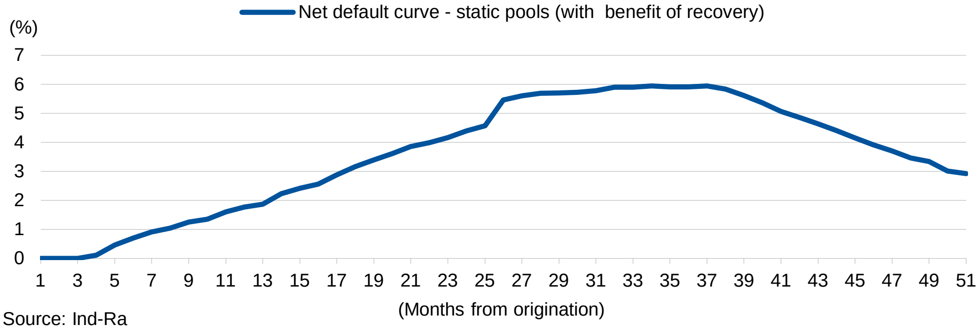
For unsecured asset classes such as personal loans and consumer durables, the recovery potential is often either minimal or the net default rate does not decline at the tail end of the loan tenor. Ind-Ra therefore considers the peak of the net default rate from the static pools and assumes zero recoveries. However, in certain cases where sufficient track record of recoveries has been established by the originator, Ind-Ra may assume appropriately stressed levels of recoveries.

For asset classes such as commercial vehicles, commercial equipment and consumer autos where recoveries have historically ranged from 20% to 80%, Ind-Ra adjusts the base-case net default rate to simulate a base-case gross default rate.

Specifically, assume an ABS transaction backed by new commercial vehicles where the tenor of the loan pool is 51 months and where the base-case peak 90+ dpd observed is 5.9% of the initial pool principal as shown below.

Figure 16

Net Default Curve – Static Pools (With Benefit of Recovery)

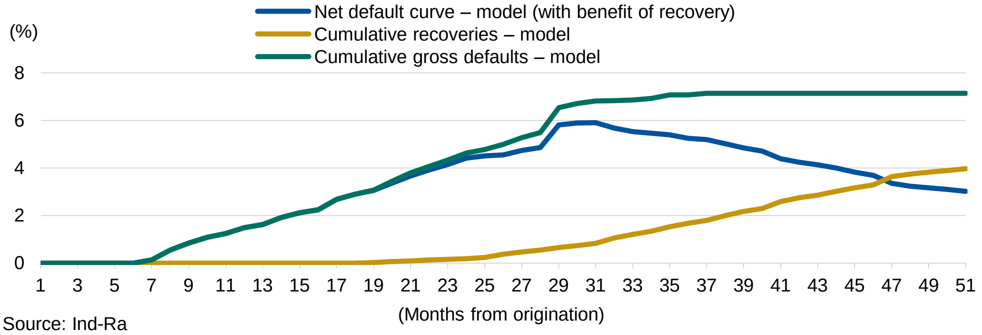


Source: Ind-Ra

- The base-case net default rate curve shown above is a function of the actual gross default rates, recovery rates and the time to recovery
- Based on the information provided by the originator, the following variables can be estimated:
  - The recovery rate for the originator's new commercial vehicle portfolio for defaulted loans ranges from 60 to 80%
  - Time to recovery varies from 12 to 18 months
  - The gross default timeline peaks at the 37th month

Figure 17

Simulated Cumulative Gross Default Curve



Source: Ind-Ra

- Ind-Ra approximates the gross default curve by assuming an initial peak gross default level and the gross default timeline
- Ind-Ra then performs a number of iterations on the gross default curve to match the simulated net default rate with the actual one in the chart above. The iterations are performed by varying the recovery rate, time to recovery and the cumulative gross default timelines
- The peak of the cumulative gross default curve is then considered as the base-case gross default rate in Ind-Ra cash flow model. As shown in the chart above, the peak of the estimated gross default rate is 7.1%, which on account of recoveries shows a peak net default rate of 5.9%
- The recovery rate assumed on the defaulted loans is based on the rating level as well as the historical recovery range considered in the simulation.

Appendix 6: Empirical Data Study

Ind-Ra conducted an empirical study on the performance of the ABS transactions as of May 2018 to validate the default and recovery stresses against historical worst case observations.

Default Rates

Ind-Ra studied the default statistics of over 300 ABS issuances across more than 20 originators for various different asset classes to ascertain the maximum, average, minimum and base case default levels as a percentage of initial principal outstanding.

Figure 18

Default Statistics

			Defaults as of May 2018		
Asset class	**No. of pools**	**Min (%)**	**Average (%)**	**Max (%)**	**Max/average**
Commercial vehicle-90+ DPD	191	0.01	1.81	3.13	1.73
Tractor-90+ DPD	29	0.06	3.19	6.01	1.88
Tractor-180+ DPD	29	-	1.27	2.22	1.74
CE-90+DPD	32	-	1.39	2.69	1.93
Microfinance-0+DPD	21	2.85	4.92	9.02	1.83

Source: Ind-Ra analysis

It may be noted from the aforementioned data analysis that for all asset classes, irrespective of the asset class, the ratio of the maximum default to average default rate remained within similar range. The difference lay in the magnitude of the defaults, which gets addressed during the base case default analysis of a particular originator. It may also be noted, however, that the aforesaid figures are derived from analysis of securitised pools, which are generally cherry-picked by the investors as per their risk appetite, and are generally expected to perform relatively better as compared to the overall portfolio of the originator.

To address this data limitation, Ind-Ra has studied non-performing asset (NPA) trends in new private sector banks to estimate peak default rates in a period of economic stress. The gross NPA/total advances ratios for 2001-2017 are shown below.

Figure 19

Gross NPAs/Total Advances

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Scheduled Commercial Banks	11.4	10.4	8.8	7.2	4.9	3.3	2.5	2.3	2.3	2.5	2.4	2.9	3.2	3.8	4.3	7.5	9.3
Public Sector Banks	12.4	11.1	9.4	7.8	5.4	3.7	2.7	2.2	2	2.3	2.3	3.2	3.6	4.4	5	9.3	11.7
New Private Sector Banks	5.1	8.9	7.6	5	3.8	2.4	2.2	2.5	2.9	3	2.5	2.1	1.8	1.8	2.1	2.8	4.1

Source: Reserve Bank of India, Ind-Ra

Although the gross NPAs/total advances ratio provides a useful measure of portfolio credit quality for banks, the ratio is of limited use in estimating stressed default rate multiples for securitised pools where the loans usually become NPAs with a time lag of approximately one year. If the above ratio is modified and defined as gross NPA/lagged total advances, then the analysis becomes more representative of the characteristics of a securitised pool. The lagged ratio for new private sector banks is shown below:

Figure 20

Gross NPAs/Lagged Total Advances for New Private Sector Banks

(%)	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Max/Min
Lagged ratio	7.1	7.3	9.4	6.3	7.2	3.4	2.9	3.1	3.2	3.0	3.1	2.5	2.3	2.1	2.5	3.5	4.7	**4.48**

Source: Ind-Ra, Reserve Bank of India

The above lagged ratio multiple of 4.48x provides an estimate of the volatility of default rates in the economic downturn period during 2001-2003 and 2008-2010.