CRISIL's rating methodology for RMBS transactions

Introduction

Mortgage-backed securitisation (MBS) refers to the securitisation of mortgage loans. These loans may be against residential or commercial properties. The securitisation of residential mortgage loans is called residential mortgage-backed securitisation (RMBS). This includes securitisation of traditional home loans and loans against property (LAP).

CRISIL's framework for assessment of the credit quality of RMBS transactions encompasses an analysis of

A. Portfolio and processes of originator
B. Characteristics of the underlying pool of loans and comparison with portfolio
C. Interest rate risk and Prepayment risk
D. Counterparty risks and Legal risks
E. Cash flow analysis and Credit enhancement

Scope

This document describes CRISIL's approach in rating RMBS transactions. To determine the sufficiency of credit enhancement in securitisation transactions, CRISIL focuses on:

· Projection of base-case pool collections
· Subjecting the pool collections to stress that varies with the rating
· Sufficiency of credit enhancement levels to cover the stressed shortfall in pool collections compared with investor payouts for a specific credit rating

There is another variant of securitisation transactions - direct assignment of pools of loans - that is also quite prevalent in the Indian market. CRISIL provides its estimate of ultimate credit losses (loss estimates) that such pools could witness. Amongst the various aspects discussed in this article analysis of the originator's portfolio and processes, analysis of the pool and estimate of the base case shortfalls are the relevant aspects that are looked into for the loss estimate exercise.

A.   Portfolio and processes of originator

A.1 Portfolio analysis

The portfolio analysis involves a detailed analysis of historical asset performance. This analysis can be split into two parts:

1. Static pool analysis
2. Dynamic portfolio analysis

A.1.1 Static pool analysis

CRISIL believes that static pool analysis serves as a good reference point to project the performance of the pool being securitised. Cash flow projections based on static pool analysis are appropriate because the securitised pools are also static in nature.

A static pool refers to a pool of contracts originated in a particular period of time, say a month or a quarter. There is no addition of contracts to the static pool over time, unlike a portfolio to which contracts are added every day. Static pool analysis entails a study of the behaviour of such a pool over time. The contracts in the pool may be selected on the basis of specific parameters, and there is no addition or deletion of contracts in the pool once securitised.

To analyse static pools, CRISIL considers data on the performance of all the contracts originated over several years by an originator. CRISIL then analyses contracts originated in a particular period (for example, a quarter or a half-year) as one static pool. CRISIL also takes into consideration the performance of earlier rated pools of the same originator.

CRISIL analyses static pool performance based on various parameters such as interest rate (fixed or floating), loan to value (LTV) ratio, instalment to income ratio (IIR), seasoning, loan amount, and geographical distribution of borrowers, among others.

Illustration 1: Performance of a sample static pool
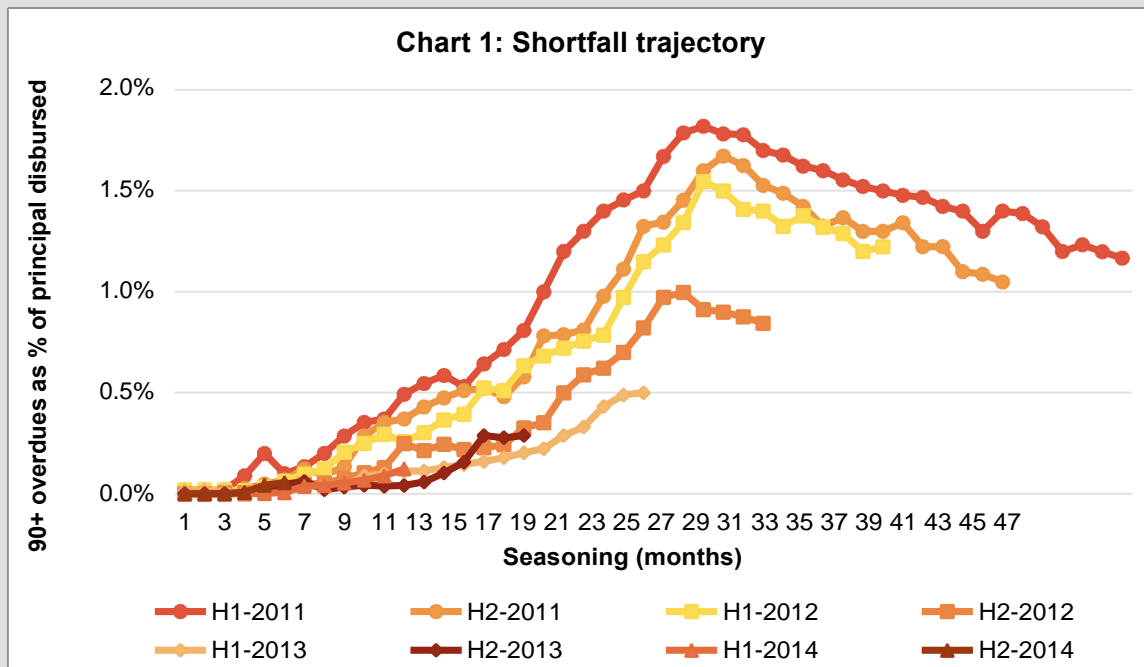
Chart 1: Shortfall trajectory

Chart 1 shows the trajectory of performance of contracts originating in specific periods (half-years in this case). Contracts originated in H1-2012 (January 2012 to June 2012) have exhibited lower overdues, indicating better performance than contracts originated in H1-2011 and H2-2011 (July 2011 to December 2011). Contracts from recent vintages of 2013 and 2014 appear to exhibit even better performance.

CRISIL's loss expectations are based on overdue levels witnessed in the static pools across vintages.

The analysis of the static pool helps CRISIL to arrive at the assumption of base shortfall for the pool being securitised. The base shortfall usually corresponds to the peak shortfall observed in the static pool of the originator. It serves as a measure of the shortfalls expected in a pool (similar to the portfolio) in a business-as-usual scenario.

Illustration 2: Interpretation of base shortfall

Assume that the base shortfall estimated based on static pool analysis is 2 per cent for a pool with a principal of Rs 100 million. This indicates that the peak shortfall expected in collections during the life of the transaction is likely to be 2 per cent of Rs 100 million, that is, Rs 2 million. Alternatively, the quantum of overdues outstanding at any point in time during the tenure of the transaction is not expected to exceed 2 per cent of Rs 100 million or Rs 2 million in a business-as-usual scenario.

Static pool performance may be affected by changes in several micro and macro factors such as economic environment, interest rate, and underwriting practices of the originator. These factors, along with the characteristics of the pool being securitised, are key inputs for determining the base shortfall assumptions for the pool, which in turn are used to project the base-case pool collections.

A.1.2 Dynamic portfolio analysis

In dynamic pools, contracts may be added every day, unlike in static pools, where contracts are not added over time. The dynamic portfolio analysis provides insights into recent performance and trends in the originator's portfolio; these insights may not always be available in static pool data. CRISIL's dynamic portfolio analysis comprises:

- Delinquency analysis
- Analysis of prepayment data

A.1.2.1 Delinquency analysis

Delinquency analysis[1] refers to segregation of contracts in 'buckets' based on the number of days they have been overdue. It provides a quick measure of portfolio quality and is used by financiers[2] to monitor performance of their portfolios.

Under delinquency analysis, the principal outstanding (POS) on current contracts (those contracts which have no overdue amounts pending to be collected) will belong to the current bucket, POS on contracts that are one month overdue will belong to the '1 to 30 days-past-due' bucket ('1 to 30 dpd' bucket), and so on. The amounts in different buckets are then divided by the total POS to arrive at the exposure of the pool in each bucket, as shown in Illustration 3.

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[1]Also referred to as ageing analysis

[2]Also referred to as 'lenders'. The terms 'financier' and 'lender' can be used interchangeably. Specifically, in context of securitisation, financiers may be referred to as 'originators', as they originate the contracts (loans) being securitised

Illustration 3: Delinquency analysis

As at		Current	Jan-30	31-60	61-90	91-120	121-180	180+	Total
30-Sep-14	POS	700	41.6	16.8	13.2	14	12	2.4	800
	Dpd	88%	5%	2.10%	2%	1.80%	1.50%	0.30%	100%
31-Mar-15	POS	885	49	20	15	15	13	3	1000
	Dpd	89%	5%	2.00%	2%	1.50%	1.30%	0.40%	100%

All amounts in Rs million

In a rapidly-growing portfolio, dpd levels may be understated due to the fact that, in most cases, contracts perform relatively well in the initial months. Further, recently-disbursed contracts cannot move to higher dpd buckets.

In such cases, CRISIL calculates 'lagged' dpd: instead of taking the principal outstanding of the current month as the denominator, the principal outstanding with a lag of say six months is considered. In the example above lagged 180+ dpd as at March 31, 2015, lagged by six months, is 0.4 per cent, against an un-lagged 180+ dpd of 0.3 per cent.

While lagging overcomes some limitations of delinquency analysis, it still does not consider write-offs. In cases where financiers do not expect to make significant recoveries from the borrower or the underlying asset, they resort to write-offs. Writing off loans leads to recognition of losses and the exposure is usually removed from the portfolio of the originator in the delinquency analysis. Thus, the exposure does not show up in any of the delinquency buckets, which leads to an apparent improvement in the dpd profile of the portfolio. All else being equal, originators adopting aggressive write-off policies will show better delinquency levels than others.

To factor this into its analysis, CRISIL obtains historic write-off data, net of recoveries from previously written-off contracts. The cumulative write-offs can then be seen at various points of time. This cumulative figure can be seen as a percentage of portfolio principal, say, 12 months prior to the current date. This could give a proxy for net losses on a static pool basis.

A.1.2.2 Analysis of Prepayment data

Prepayments in the underlying pool can affect cash inflows (collections from the pool) to the trust. CRISIL studies monthly prepayments on the originator's portfolio, and average prepayment levels in that asset class across originators, for this purpose. The interest rate scenario and the interest rate at which the contracts to be securitised were entered into are also factored in while calculating prepayment scenarios for the pool. The impact of interest rate and prepayment risks has been discussed in detail in the subsequent sections.

A.2 Analysis of originator's processes

CRISIL's rating methodology involves both qualitative and quantitative analysis. The analysis of the originator's operations is an important qualitative factor. This involves an analysis of management quality, length of experience of the originator in the specific asset class, goals and strategies of the

management, and the size and market position of the originator. In addition, the method of origination (such as directly or through agents), underwriting standards, sanctioning authority and process, collection and recovery mechanisms, and pre- and post-disbursement documentation, also provide indications of the quality of the originator's operations. Even within a specific asset class, originators may choose to focus on lower risk or higher risk sub-segments as part of their strategy. Hence, the quality of origination and underwriting norms impacts the performance of the assets.

B. Pool characteristics analysis

Pool characteristics are a good indicator of the expected future performance of the pool. Securitised pools are typically 'cherry-picked', that is, the quality of the underlying pool of loans may be better than the portfolio quality. CRISIL bases its analysis of pool characteristics on two aspects:

1. Analysis of characteristics of the underlying pool of loans
2. Comparison of the pool with the portfolio

B.1 Analysis of characteristics of the underlying pool of loans

CRISIL studies various parameters in the underlying pool of contracts, and draws on its base of data and experience of the Indian market to ascertain the credit implications of these parameters. A comprehensive list of parameters that provide valuable insights into the pool is given below:

- Asset class
- LTV ratio
- Original tenure
- Geographical distribution
- Borrower profile
- Instalment-to-income ratio (IIR)
- Borrower diversification
- Seasoning profile
- Interest rate
- Loan amount
- Overdue profile

B.1.1 Asset class

CRISIL analyses residential mortgages in its different forms, including traditional home loans, home improvement loans or LAP. Each of these segments may exhibit different performance behaviour. Other factors, such as the originator's familiarity with its customers, and the efficiency and rigour of the originator's collection mechanism, are also studied. CRISIL then bases its analysis on the specific factors affecting the performance of a particular lender. Asset class has been discussed in further detail in CRISIL's criteria document titled *'Evaluating risks in securitisation transactions: A primer'*.

B.1.2 LTV ratio

LTV ratio is the loan amount disbursed as a percentage of the value of the asset. This parameter is important for all asset-backed financing. A low LTV indicates higher initial equity of the borrower in the asset, and hence makes default on loan repayment unattractive to the borrower. As the loan gets repaid in instalments, the borrower's equity in the asset builds up. However, if the LTV is higher, the risk of loss on the loan also increases.

B.1.3 Original tenure

It has been generally observed that all else being equal, longer tenure implies higher uncertainty. Thus, the higher the original tenure of contracts, the greater is the risk of losses.

B.1.4 Geographical distribution

Geographical concentration of a pool can affect pool performance due to the influence of socio-economic conditions in a particular region. What constitutes concentration is decided based on factors such as overall geographical spread of the pool, the geographical diversification within a particular state in which there is concentration, the property prices prevalent in the region, and the economic stability of the region. CRISIL subjects a geographically concentrated pool to higher stress scenarios than a diversified pool.

B.1.5 Borrower profile

CRISIL analyses borrower profiles as the characteristics of one particular borrower segment are distinctly different from those of other segments. For instance, the proportion of salaried and selfemployed borrowers gives a good indicator of the overall profile of the pool. This is because salaried borrowers have a steady income that can be assessed. However, this assessment may not be as accurate in the case of self-employed borrowers.

B.1.6 Instalment-to-income ratio (IIR)

IIR signifies the level of coverage the income provides over debt service obligations. In other words, IIR constitutes the monthly debt outflows as a proportion of net monthly income. A low IIR indicates low outflows to service debt. This, in turn, means a higher amount of free cash flows available to the underlying borrower, and thus, a lower risk of default.

B.1.7 Borrower diversification

Borrower diversity ensures that the pool's performance is not overly dependent on the performance of a few borrowers. To assess the risk due to borrower concentration, CRISIL looks at the granularity of the pool usually in terms of the proportion of loans contributed by the top ten borrowers in the pool.

In a pool with low granularity, that is, high borrower concentration, a large proportion of cash flows is expected from a small number of borrowers. Hence, in the event of default by these borrowers, a high proportion of the pool will be at risk. Thus, CRISIL subjects a concentrated pool to more stressful scenarios than one with lower borrower concentration. On the contrary, a pool with higher granularity, that is, a high number of contracts (say 10,000 or more), is likely to have low borrower concentration and CRISIL may factor in the benefit of diversification in its analysis.

B.1.8 Seasoning profile

Net seasoning refers to the number of instalments paid by the borrower (total seasoning minus overdue status minus moratorium period[3]). CRISIL considers net seasoning of the contract as an important performance driver.

As timely instalments are paid, borrower discipline is established towards debt repayment. A few months of minimum net seasoning, thus, filters out cases of fraud to a large extent; it has been observed that borrowers with intent to defraud the lender usually stop paying the instalments a month or two after disbursement.

CRISIL's analysis takes into account weighted average net seasoning of the pool at the time of securitisation and the seasoning profile of the contracts in the pool. A pool with a higher weighted average net seasoning will be assumed to have lower risk, than a similar pool with lower weighted average net seasoning.

B.1.9 Interest rate

Higher interest rates are typically charged from riskier customers. A comparison of the weighted average interest rate of the pool with the market interest rate scenario at the time of origination of the pool can therefore be a reasonable proxy for the credit quality of customers. However, this needs to be seen in light of the regions the originator operates in, and the level of competition prevalent in those regions.

Moreover, residential mortgage pools may have a mix of floating-rate and fixed-rate contracts. If the weighted average interest rate of the pool is higher than the general market rate, the possibility of re-pricing and prepayment increases. Conversely, a pool with a low rate runs a much lower risk on these counts. CRISIL takes into account these aspects while determining stress levels to be applied in the analysis of such pools.

B.1.10 Loan amount

A high ticket loan is generally perceived to be riskier than a lower ticket one. This is because a high ticket loan corresponds to a high-value asset, which, in the event of default, may have a lower demand in case of resale. However, the credit quality of the target customer and the location of the underlying asset need to be considered before arriving at any conclusion. For instance, the behaviour of a large loan in a metro or Tier-I city where property prices are higher, may be very different from that of a loan of the same amount in a Tier-II city.

B.1.11 Overdue profile

The overdue profile of the pool is analysed in a similar manner as the bucket-wise segregation under delinquency analysis of the portfolio. CRISIL takes into account the proportion of overdue contracts along with the weighted average seasoning of the pool. Thus, a pool with low seasoning and high proportion of overdue contracts indicates a weak credit risk profile, and carries higher risk of losses. On the contrary, a pool with a low proportion of overdue contracts and high weighted average seasoning

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[3]Moratorium period is the initial period of the loan tenure where the instalments are not payable by the borrower. For example, some borrowers may be given a loan for 120 months; however, there may be only 117 instalments to be collected from the borrower with the first three months being a moratorium period.

would comprise of borrowers who have paid instalments in a timely manner. Such a pool would carry lower risk of losses.

B.2 Comparison of pool with portfolio

CRISIL also bases its analysis of the pool on the past performance of the originator's portfolio. As securitised pools may often be cherry-picked, the quality of the underlying pool of loans may differ from the portfolio quality. CRISIL, thus, benchmarks pool characteristics against the portfolio of the originator to evaluate whether the pool is likely to perform better or worse than the portfolio. Accordingly, higher level of losses are assumed where the pool is weaker than the portfolio, whereas due benefit is given in cases where the pool is stronger than the portfolio.

CRISIL compares the pool and the portfolio characteristics on key parameters such as geography, LTV, interest rate, original tenure, balance tenure, borrower profile, and asset category. The performance is benchmarked with delinquency status such as 90+ dpd or 180+ dpd. This helps to ascertain whether the pool has a better or weaker credit risk profile than the portfolio, for a particular characteristic.

Illustration 4: Pool versus portfolio analysis

State	Portfolio		Pool proportion
	Proportion	90+ dpd	
Andhra Pradesh	30%	0.50%	10%
Maharashtra	20%	0.80%	15%
Karnataka	25%	1.00%	30%
Tamil Nadu	25%	1.50%	45%
Total	100%	0.95%	100%
Weighted average pool quality			1.14%

This illustration above compares the pool with the portfolio in terms of geographic distribution. The pool derives a greater proportion of its cash flows from Karnataka and Tamil Nadu than the portfolio does. These are the relatively weaker states in the portfolio, as visible from the higher delinquencies in these regions.

On the whole, the weighted average pool quality, after superimposing the 90+ dpd levels witnessed on the portfolio is 1.14%. This is higher than the portfolio 90+ dpd of 0.95%. This suggests that the pool is in fact weaker than the portfolio and will attract some penalisation. On the contrary, a pool that is better than the portfolio is given appropriate benefit.

CRISIL performs similar analysis for other parameters such as LTV, interest rate, original tenure, borrower profile, and asset category.

C.   Interest rate risk and prepayment risk

C.1 Assessment of interest rate risk

Interest on home loans can be charged on fixed-rate or floating-rate basis. Additionally, the yield payable to investors may also be on a fixed-rate or floating-rate basis. The floating rate chargeable to borrowers is generally linked to an internal benchmark of the lender - base rate (or prime lending rate). Borrowers have an option to switch from floating-rate to fixed-rate, or vice versa, at any point during the tenure of the loan by incurring a cost. This switch can affect the interest inflows to the pool frequently and unpredictably.

In case of fixed-rate PTCs, the outflows to investors are predetermined, whereas in case of floating-rate PTCs, they are arrived at based on benchmarks (pool yield, MIBOR, etc). Movement of the base rate may lead to variation in interest inflows and outflows, giving rise to interest rate risk, also called 'basis risk'. Assessing this risk and building it into the computation of the enhancement levels is a critical step in CRISIL's RMBS rating process.

Interest rate movements impact par structures and premium structures[4] differently, as explained below:

C.1.1 Interest rate risk under a par structure

If the interest rates on home loans drop to a level below the PTC yield, the transaction would be subjected to a 'negative carry', as the income earned on the assets would be insufficient to pay the interest due on the liabilities.

Illustration 5: Assume that home loans in a pool yield, on average, 11 per cent per annum, and that PTCs carry a fixed coupon of 9.5 per cent per annum. Thus, there is an excess interest spread (EIS) of 1.5 per cent per annum. If the loans in the pool get re-priced to an average of 10 per cent per annum, the EIS in the transaction reduces to 0.5 per cent. Subsequently, if the loans get re-priced to a rate lower than 9.5 per cent (PTC yield), it will result in a 'negative carry' in the transaction.

The likelihood and magnitude of these potential shortfalls has to be assessed to determine the sufficiency of the credit enhancement available for the transaction.

C.1.2 Interest rate risk under a premium structure

In a premium structure, if the pool yield falls due to downward revision in the base rate, the cash inflows to the pool reduce. If the assets earn lower cash flows than are payable to the PTCs, the resulting mismatch will need to be met out of the credit enhancement available.

C.2 Assessment of prepayment risk

Home loans offer the flexibility for prepayment of the loans at any point of time. Borrowers may prepay for a variety of reasons such as refinancing at lower rates, higher income levels, or sale of property. Prepayments constitute a risk because they result in a reduction of the outstanding pool principal, and change the timing of cash inflows. Prepayments impact par and premium structures differently.

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[4] To understand par and premium structures, please refer to CRISIL's criteria document titled *'Evaluating risks for securitisation transactions: A primer'*.

C.2.1 Prepayment risk under a par structure

Prepayments do not have a significant impact on par transactions since the principal prepaid by the borrower (equal to the investor's principal) will be passed on to the investor. However, if loans being prepaid are at rates higher than the weighted average interest rate of the pool, there will be a reduction in excess interest spread (EIS) [5].

C.2.2 Prepayment risk under a premium structure

In transactions structured as premium, the investor pays a 'premium' over and above the pool principal in order to acquire all the cash inflows to the pool. In case of prepayment of a loan, the borrower prepays only the outstanding principal and correspondingly saves on the proportionate future interest payable. This leads to lower pool cash flows than initial estimation, thereby reducing the overall inflows available in meeting PTC liability. The resulting shortfall will need to be met out of the credit enhancement available.

C.3 How CRISIL analyses these risks

Re-pricing (interest rate variations) and prepayment play a critical role in an RMBS transaction. To analyse these risks, CRISIL considers following factors:

· 　The interest rate profile of the pool being securitised, compared to the interest rate scenario in the market at the time of securitisation
· 　Historical movement of fixed and floating interest rates offered by the originator, compared to those offered by its competitors
· 　Historical movement of the originator's base rate compared to market benchmarks (MIBOR, G-Sec yields, etc.)
· 　Monthly prepayments and re-pricing in pools rated in the past, and in the originator's portfolio · Historical and current geographical spread of the originator's operations

Based on these factors, and the rating on the instrument, CRISIL generates various stressed interest rate and prepayment scenarios. These scenarios evaluate the reduction in EIS or pool cash inflows on account of change in benchmark rate and prepayment rate, vis-à-vis PTC yields, resulting in reducing levels of credit protection available from the transaction. Based on this sensitivity analysis, CRISIL determines the sufficiency of credit enhancement to cover shortfalls associated with the assigned ratings.

D.　Counterparty risks and legal risks

D.1 Counterparty risk analysis

Counterparty risk primarily comprises two kinds of risks:

1. Servicer risk
2. Commingling risk

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[5]Explained in detail below in Section E.2.2.2

D.1.1 Servicer risk

In most cases in India, subsequent to the securitisation of a pool of contracts, the originator continues to be the servicer for the underlying contracts. Thus, the investors in securitisation transactions are exposed to the risk of bankruptcy and non-performance of the servicer, making the servicer the most crucial counterparty in the transaction. While it is legally possible to appoint an independent third-party servicer for the transaction for a fee, an alternative servicer is unlikely to be able to service the securitised pool with the same level of efficiency as the originator.

The sustained performance of the servicer throughout the tenure of the pool is a crucial element of the securitisation process. To assess servicer risk, CRISIL analyses qualitative factors such as:
- Management quality of the servicer - length of experience in the concerned business, goals and strategies of the management
- Size, market position, and reach of the servicer
- Collection process and organisation structure of the servicer - collection strategies and follow-up mechanism
- Quality of management information systems (MIS) - critical for efficient ongoing monitoring of performance of the securitised pool

Apart from these qualitative factors, CRISIL looks at the servicer's credit risk profile in the context of the pool tenure. In general, the longer the tenure of the rated securitised instruments, the higher is the minimum credit quality of the servicer that CRISIL requires for a specific rating. This ensures that longtenure instruments are backed by servicers of high credit quality.

Servicer risk analysis also indicates whether there is a need for a back-up servicer. In cases where a back-up servicer is required, CRISIL carries out the same analysis for such a servicer. Additionally, the following factors are considered:

- Familiarity of back-up servicer with primary servicer's operations
- Back-up servicer's track record/past experience in that asset segment
- Size and geographical spread of the pool vis-à-vis backup servicer's operations

In such cases, CRISIL will appropriately factor in the cost of bringing in a back-up servicer, including the potential deterioration in collection performance.

D.1.2 Commingling risk

This risk refers to the mixing of pool collections with the servicer's own cash flows. In Indian securitisation transactions, typically, the servicer collects instalments from the underlying borrower in the pool in a particular month, and deposits the money into a separate Trust and Retention Account[6] (TRA), set up for the purpose of the securitisation transaction, in the next month. In the interim, the collections lie with the servicer and may commingle with the servicer's own cash flows. While these collected amounts are held in trust by the servicer, in the event of the servicer going bankrupt, there could be partial or total loss of commingled amounts, or delayed recovery due to legal proceedings.

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[6]Also referred to as Collection and Payout Account

CRISIL assesses the risk of bankruptcy of the servicer by analysing the credit risk profile of the servicer. In case the credit risk profile is weaker than 'CRISIL A1', the amount likely to be commingled with the servicer's funds is estimated to determine the sufficiency of credit enhancement. The instrument rating is also an important factor assessing the commingling risk.

D.2 Legal risk analysis

Legal risk assumes great importance in securitisation transactions. Instruments issued under securitisation transactions may have a rating different from that on the plain vanilla instrument issued by the originator. The main attribute of securitisation that allows this to happen, is that the SPV is bankruptcy remote from the originator. Bankruptcy remoteness requires that the assets belonging to the SPV will not be attached with the assets of the originator in the event of bankruptcy of the originator.

Legal risk analysis comprises an analysis of:

- True sale of the pool receivables to the SPV
- 'Bankruptcy remoteness' of the pool and cash collateral
- Compliance with local laws such as those related to stamp duty payment and registration

For detailed criteria on legal risk, please refer to CRISIL's criteria document titled "Legal analysis in structured finance transactions".

Cash flow analysis and credit enhancement

E.1 Cash flow analysis

After the above analysis, CRISIL creates a customised cash flow model for the transaction. The cash flow model comprises three major steps:

1. Projection of pool collections (inflows)
2. Projection of investor payouts (outflows)
3. Comparison of inflows with outflows

E.1.1 Projection of pool collections (inflows)

Based on an analysis of the static pool and moving portfolio delinquencies, CRISIL arrives at the base case shortfall assumption for the pool. Pool collections are projected based on this assumption and stress cases are then built up to derive the stressed inflows from the pool. Stresses are determined keeping in mind the following factors:

- Specific rating for the instrument
- Relative comparison of the pool versus the portfolio
- Volatility in historical asset performance of rated pools
- Prepayment expectations
- Sensitivity to Interest-rate movements
- Track record of the originator (or lack thereof)
- Geographical concentration

- Borrower concentration

E.1.2 Projection of investor payouts (outflows)

Depending upon the structure of the transaction and the priority of payment, the expected investor payouts are calculated. These payouts represent the total outflows payable to the investors. The investor payouts are calculated for each scenario of interest rate variation and prepayments.

E.1.3 Comparison of inflows with outflows

Once the pool inflows and outflows are computed, they are compared on a monthly basis to derive monthly surpluses or shortfalls. These monthly shortfalls/surpluses are cumulated to find out the cumulative shortfalls at the end of each month. The peak of these monthly cumulative shortfalls is the enhancement requirement for the investors since it represents the maximum shortfall that needs to be covered during the transaction tenure.

E.2 Forms of credit enhancement

In the Indian context, credit enhancement is typically provided by the originator. The credit enhancement can be split into two broad categories:

1. External credit enhancements
2. Internal credit enhancements

As per a Reserve Bank of India (RBI) circular dated July 1, 2013 on reset of credit enhancement in securitisation transactions, the original amount of credit enhancement can be reset and excess withdrawn by the credit enhancement provider subject to the RBI guidelines.

E.2.1 External credit enhancements

External credit enhancements are forms of credit enhancement which create exposure for investors to counterparties other than the underlying borrowers. They may be further classified as:

- Cash collateral
- Bank guarantee or corporate guarantee

E.2.1.1 Cash collateral

Credit enhancement can be maintained in the form of cash or cash equivalents. This includes cash deposited in a designated cash collateral account, fixed deposits, or investments in liquid mutual funds. The cash collateral account can be operated only by the trustee. Any shortfall in investor payouts can be met by the trustee by drawing on the cash collateral account. This is the best form of credit enhancement as its availability during a month does not depend upon the pool performance in that month.

For cash collateral maintained in the form of fixed deposits, the credit quality of the bank holding the fixed deposit also becomes a consideration while evaluating the transaction. However, fixed deposits can be easily replaced and shifted to other banks within a very short time frame. In such cases, the short-term rating of the bank becomes critical to minimise the risk exposure for the transaction. CRISIL's

rating/internal credit view on the short-term debt of the banks holding the fixed deposits for securitisation transaction is dependent on the instrument rating as given below.

Long-term rating on the instrument	Minimum short-term rating of bank where fixed deposit is placed
CRISIL AAA (SO)	CRISIL A1+
CRISIL AA+ (SO)	CRISIL A1+
CRISIL AA (SO)	CRISIL A1+
CRISIL AA- (SO)	CRISIL A1+
CRISIL A+ (SO)	CRISIL A1
CRISIL A (SO) and below	Security rating

For instruments rated 'CRISIL AA (SO)' and above, if cash collateral is in the form of investments in liquid mutual funds, the fund must carry a credit quality rating (CQR) of 'CRISIL AAmfs' or higher. For instruments rated 'CRISIL AA- (SO)' and lower, the CQR rating on the liquid mutual funds must be the same or higher than the rating on the instruments.

E.2.1.2 Bank guarantee or corporate guarantee

In some cases, originators arrange for a bank guarantee or give a corporate guarantee as credit enhancement instead of cash collateral. These forms of enhancement work in a similar manner as cash collateral. For meeting shortfalls, the trustee will send a notice to the guarantor invoking the guarantee.

For instruments rated 'CRISIL AA- (SO)' and lower, a bank may provide the guarantee if CRISIL's rating/internal credit view on the unsecured senior debt of the bank is as good as or better than the rating of the highest-rated instrument in the transaction. For instruments rated 'CRISIL AA (SO)' and above, a bank may provide the guarantee if CRISIL's rating/internal credit view on the unsecured debt of the bank is 'CRISIL AA' or above.

Additionally, banks with unsecured debt rated 'CRISIL AA' or 'CRISIL AA+' may also provide a trigger-based guarantee for instruments rated 'CRISIL AAA (SO)', as long as the guarantee is provided with the necessary rating-based trigger. In such cases, whenever CRISIL's rating/internal credit view of the guarantor falls below 'CRISIL AA' (rating trigger event), the same must be replaced by another guarantor, or the credit enhancement must be substituted in the form of a fixed deposit within a period of 30 calendar days from the date of the rating trigger event (replacement guarantor or bank holding fixed deposit to be in line with CRISIL's criteria as stated above).

Similarly, credit enhancement may be provided in the form of corporate guarantee instead of cash collateral only if CRISIL's rating/internal credit view on the provider's unsecured debt is as good as or better than the rating of the highest-rated instrument in the transaction.

E.2.2 Internal credit enhancements

Internal forms of credit enhancement are available on account of the structural features of the transaction. These may be further classified as:
· Subordination and over-collateralisation
· Excess interest spread (EIS)

E.2.2.1 Subordination and over-collateralisation

Multiple instruments (tranches) of senior or subordinated nature may be issued under a securitisation transaction. An instrument is classified as senior or subordinated based on the waterfall mechanism for the transaction.

A subordinated instrument represents a subordinated right to the pool collections. Thus, a senior instrument will be first entitled to the pool collections, followed by the subordinated tranche. The subordinated instrument provides cushion against shortfalls in pool collections for the senior investor payouts.

Over-collateralisation for a given tranche is the extent of protection offered by its subordinate tranches.

> **Illustration 6: Subordination in securitisation transactions**
> *If the scheduled pool EMIs in a month are Rs 100 and senior investor payouts are Rs 90, the subordinated strip accounts for the remaining Rs 10. The collections from the pool will first be allocated to the senior investor; only the balance, if any, will be paid to the subordinated instrument. If the pool collections are Rs 95 in that month, Rs 90 will be paid to the senior investor and the balance Rs 5 is paid to the subordinated strip. However, if the collections were only Rs 90 or lower, the entire pool collections are paid to the senior investor.*

E.2.2.2 Excess Interest Spread

EIS represents the difference in interest yield on the pool assets and the yield payable to the investors. EIS in transactions structured at par is typically subordinated to the investor payouts. The effect of EIS is therefore similar to that of over-collateral. In case of any shortfalls in the pool inflows, the EIS will first be utilised to meet these shortfalls. The remaining EIS may then either flow back to the originator or be trapped in the TRA. EIS, when trapped on a monthly basis, is available to meet shortfalls in subsequent months as well. However, prepayments and re-pricing may result in substantial variations in the EIS in the pool.

> **Illustration 7: EIS**
> *Consider a pool with inflows comprising Rs 100 of principal and Rs 20 of interest, and outflows (PTC payouts) comprising Rs 100 of principal and Rs 12 of interest. The difference of the interest inflows and outflows, Rs 8 in this case, represents the EIS in the transaction.*

E.2.3 Minimum cash collateral requirement

CRISIL believes that a minimum amount of cash collateral/guarantee is needed in the structure for any contingencies. One such contingency is a failure/breakdown of the servicer's MIS. The performance of a securitisation transaction depends solely on the collections from the pool. These collections are deposited by the servicer in the TRA, a few days before the payout date.

The amount to be deposited into the TRA is ascertained by the servicer through the MIS report, typically generated at the beginning of the month subsequent to collections. If the servicer faces a system failure or breakdown, MIS generation can get delayed. Consequently, the servicer will not be able to ascertain the amount to be deposited into the TRA. Hence, collections will not be deposited into the account on

time. In such a case the investor payouts can only be made through utilisation of the external forms of credit enhancement in the transaction.

The primary factor considered for the amount of minimum cash collateral/guarantee needed is the adequacy of the servicer's disaster recovery system.

Evaluation of servicer's disaster recovery system

Given the importance of MIS in an MBS transaction, the servicer must have adequate disaster recovery systems. CRISIL considers the following for evaluation of a disaster recovery system:

- Adequacy of contingency plans
- Frequency of testing and audit
- Risk of permanent loss of information
- Time taken to recover normal functioning
- Any untoward incident in the past

The benefit of adequate disaster recovery systems ensuring sufficient time between the MIS generation and payout dates to enable recovery from any system failures is appropriately factored into the minimum cash collateral/guarantee requirement for the transactions.

Conclusion

CRISIL's criteria for rating RMBS transactions factor in the key parameters that may impact the credit quality of the securitised instruments. Quantitative parameters such as delinquencies, pool and portfolio characteristics, interest-rate and prepayment, counterparty credit ratings and cash flow projections along with the qualitative factors relating to originators' processes, servicers' capabilities and legal aspects of the transaction are critical to determine the sufficiency of credit enhancement in securitisation transactions.

CRISIL believes that the criteria outlined above incorporate all the factors relevant to rating these transactions in the existing Indian context. In line with CRISIL's past practice, and in keeping with the evolution of the market, CRISIL is committed to continuously updating the criteria as required.

List of Abbreviations used

MBS	Mortgage-backed securitisation
RMBS	Residential mortgage-backed securitisation
LAP	Loans against property
Dpd	Days past due
POS	Principal outstanding
LTV	Loan-to-value
IIR	Instalment-to-income ratio
BLR	Base lending rate
PTC	Pass-through certificate
SPV	Special purpose vehicle
CQR	Credit quality rating
EIS	Excess interest spread
TRA	Trust and retention account
MIS	Management information system

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