Bond Fund Rating Criteria

Assessing Credit and Market Risk in Fixed-income Funds

Master Criteria

Applicable to Various Funds: This criteria report applies to various types of fixed-income funds, such as bond funds, short-term bond funds, government investment pools (GIPs), fixed-income exchange-traded funds and certain managed pools of fixed-income assets. These funds may contain a variety of fixed-income instruments, such as corporate bonds and loans, bank capital, sovereign debt and structured finance securities.

Combined Risk Measures: Bond fund ratings include two measures of risk, to reflect better the risks faced by fixed-income investors. The Fund Credit Rating measures vulnerability to losses as a result of credit defaults, and is primarily expressed by a portfolio's weighted average (WA) rating. A complementary Fund Volatility Rating measures a portfolio's potential sensitivity to market risk factors, such as duration, spread risk, currency fluctuations and others. Credit and volatility ratings are typically assigned together.

Other Risk Factors Considered: The ratings include other fund-specific risk factors that may be relevant. These risk factors include concentration risk, derivatives used for hedging or speculative purposes, leverage, and counterparty exposures.

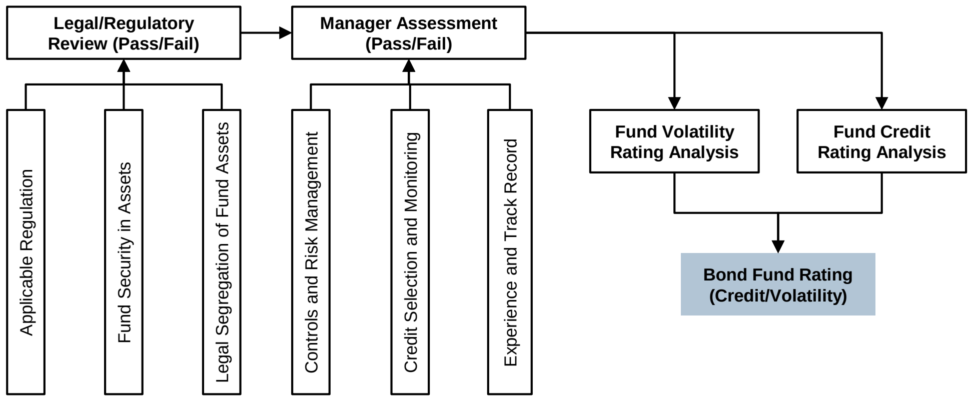
Active Ratings Surveillance: India Ratings and Research (Ind-Ra) requests monthly portfolio holdings and relevant performance statistics in order to actively monitor the ratings.

Asset Manager Assessment: Ind-Ra assesses the fund manager's capabilities to ensure it is suitably qualified, competent and capable of managing the fund. Ind-Ra will not rate funds from managers that fail to pass this assessment.

Legal and Regulatory Review: All Ind-Ra-rated bond funds must pass the agency's legal and regulatory screening process, covering the legal segregation and security of the fund's assets.

Figure 1

Bond Fund Rating Process Diagram



Source: Ind-Ra

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Bond Fund Ratings

Ind-Ra's bond fund ratings include two measures of risk: a Fund Credit Rating and a complementary Fund Volatility Rating. Credit and volatility ratings are typically assigned together to reflect the credit and market risk to which fund investors are exposed. Limitations to Ind-Ra's bond fund rating criteria are presented in *Appendix A* and rating definitions are presented in *Appendix B*.

- **Fund Credit Rating:** an opinion as to the vulnerability to losses as a result of defaults in a bond fund portfolio. Fund Credit Ratings are expressed on the same scale as international long-term credit ratings; however, they do not measure the expectation of default risk for the fund itself, as a fund generally cannot default. Rather, the Fund Credit Ratings are based on the actual and prospective average credit quality of the fund's invested portfolio. The rating is principally driven by the WA credit quality of the fund's portfolio, factoring in the distribution of ratings. Fund Credit Ratings have an element of rating momentum embedded and therefore also capture the likelihood that the fund maintains a given credit quality over time. Fund Credit Ratings are generally complemented by Fund Volatility Ratings to distinguish them from traditional long-term credit ratings.
- **Fund Volatility Rating:** an opinion as to the relative sensitivity of a portfolio's total return (including income and market value) and/or net asset value to assumed changes in credit spreads and interest rates, as well as certain other market risk parameters, and taking into account the effects of leverage, where applicable. The rating is principally driven by the spread adjusted WA duration of the fund's portfolio.

Ind-Ra notes that actively managed bond funds typically follow a set of investment guidelines. The agency considers whether the investment guidelines (where applicable) are consistent with its rating criteria at the relevant rating level.

Ind-Ra assigns ratings after reviewing relevant material and undertaking an assessment of management (unless the fund is not actively managed, as is the case in, for example, index funds). The agency publishes a summary of its analysis. All ratings and related published research are available on Ind-Ra's website at www.indiaratings.co.in.

Ind-Ra may, from time-to-time, elect to assign Bond Fund Ratings to newly launched funds. In such cases the fund's initial portfolio may not be fully representative of its longer-term or target portfolio. Therefore, subject to a satisfactory legal and regulatory review and manager assessment, Ind-Ra may base its ratings on a conservative analysis of the fund's agreed investment guidelines. In such cases the agency may make additional adjustments in its analysis to better reflect potential risks that may affect the fund. Ind-Ra would expect a fund to reach its target portfolio composition and diversification in a reasonable time period, for instance, six months. Should a fund fail to achieve its target composition within a reasonable time period, Ind-Ra may take a negative rating action based on the fund's portfolio composition at the time.

Legal & Regulatory Review

Ind-Ra reviews the legal environment in which a fund operates as it relates to legal segregation of fund assets and that the fund has security in the assets. This review considers the potential difficulties that may arise in identifying ownership of assets and, in particular, whether these assets would be returned to the fund in a timely manner. Typically, funds rated by Ind-Ra will be regulated, with a clear legal structure demonstrating appropriate segregation of, and security in, assets; where this is not the case, Ind-Ra will not rate the fund.

Manager Evaluation

To rate a bond fund, Ind-Ra performs an assessment of the fund manager. With this assessment, the agency seeks to establish that the manager is suitably qualified, competent and capable of managing the fund. If the agency is not satisfied following this assessment, it will not rate the fund.

A manager assessment is based on a meeting between senior management and the agency at the fund manager's offices. The agency will evaluate management's effectiveness in organising and implementing specific steps to achieve its stated investment goals. The manager assessment considers:

- experience and track record in portfolio management;
- quality and stability of credit selection and monitoring processes; and
- the extent and quality of internal controls, operating policies, systems and risk management guidelines.

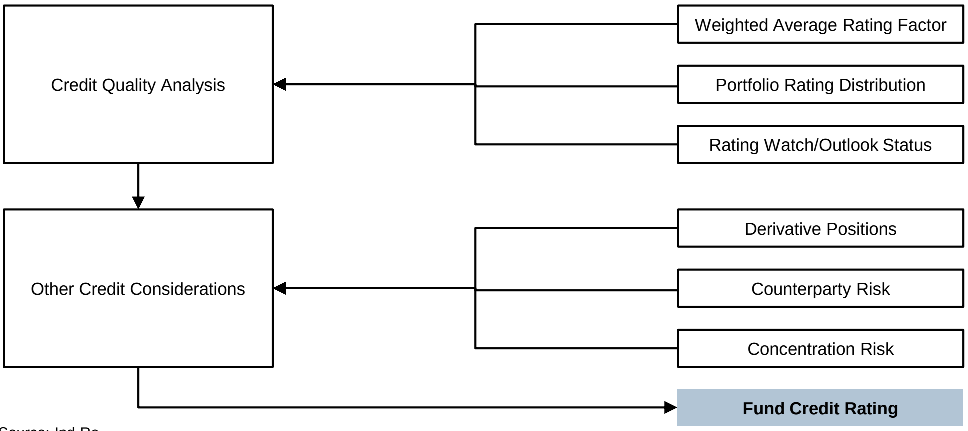
Multiple funds can be rated once the manager assessment process has been completed, provided that all areas of relevant investment by such funds have been covered as part of the manager review. In general, Ind-Ra prefers managers to have a track record in the relevant asset class, for example three or more years. Where a manager does not have a track record, for instance in the case of start-up managers, the agency may consider the experience and/or track record of investment teams or management gained managing funds at a predecessor or competitor asset manager, as well as the depth of funding and operational infrastructure available and necessary for a well run, stable asset management platform.

Furthermore, the assessment of the manager's quality is also a function of its style, typically the degree of active portfolio management. Generally, Ind-Ra expects stronger processes and resources when the portfolio is very actively managed (relative to the liquidity of the asset type). In the event of a material change in the composition of the management team, Ind-Ra will need to perform immediately an updated assessment of the fund manager. Conclusions from this review may result in Ind-Ra changing or withdrawing its ratings on the fund.

Criteria for Fund Credit Ratings

Figure 2

Rating Process Diagram – Fund Credit Rating



Source: Ind-Ra

Fund Credit Ratings result from an evaluation of the credit quality of assets in the portfolio (based primarily on the portfolio's WA credit quality, complemented by an analysis of the rating distribution of the portfolio's securities) and a review of other credit considerations, such as the fund's concentration and the credit quality of key counterparties (eg the account bank for cash holdings). Modifiers ("+" and "-") may additionally be applied to the category rating implied by Ind-Ra's rating analysis to reflect the relative risk of the fund within the rating category.

Credit Quality Analysis

Weighted Average Rating Factor

Ind-Ra calculates the portfolio's WA rating factor (WARF) as the primary driver of the Fund Credit Rating. The Fund Credit Rating will typically match the rating implied by the WARF calculation, although there are occasions where the Fund Credit Rating may differ from the calculated WARF.

The WARF represents a useful indicator of the portfolio's average credit risk and helps in comparing intrinsic credit quality across different portfolios. A portfolio's WARF is the market value-weighted sum of each portfolio security's credit rating factor, factoring in the maturity of the instrument. The WARF is calculated at the category level (eg 'IND BBB') rather than the notch level (eg 'IND BBB+').

Ind-Ra's indicative rating factors can be found in Figure 3. A fund's WARF is calculated based on the market value (notional for CDS) of the portfolio's underlying assets. Consequently, the contribution of individual securities to the overall portfolio WARF will change with those securities' market values. *Appendix C* contains a number of examples of the WARF calculation.

Figure 3

Indicative Credit Rating Factors[a]

Rating category	Remaining maturity of 90 days or less	Remaining maturity of 91 days to 13 months	Remaining maturity of more than 13 months
IND AAA stable, government or government agency	0.00	0.00	0.19
IND AAA others	0.05	0.10	0.19
IND AA[b]	0.10	0.19	0.64
IND A[c]	0.19	0.64	1.58
IND BBB+ and IND BBB[d]	0.64	1.58	4.54
IND BBB-[e]	4.54	4.54	4.54
IND BB	17.43	17.43	17.43
IND B	32.18	32.18	32.18
IND C	100.00	100.00	100.00

[a] Indicative Rating factors are derived from observed 10-year default frequencies, consistent with the approach taken in Ind-Ra's Portfolio Credit Model. These factors are updated periodically and are therefore subject to change
[b] Or for assets only carrying an 'IND A1+' rating
[c] Or for assets only carrying an 'IND A1' rating
[d] Or for assets only carrying an 'IND A2' rating
[e] Or for assets only carrying an 'IND A3' rating
Source: Ind-Ra

Ind-Ra considers a fund's cash balance in its credit analysis to the extent it represents a minimum cash balance that is structurally maintained over time. For example, some fund managers maintain pre-specified levels of cash (eg 5% of portfolio assets) over time to meet potential redemption requests. In these cases, Ind-Ra will consider the rating of the custodian bank in its rating analysis.

Securities of defaulted issuers — or which have otherwise suffered a significant decline in market value due to some other credit event — may contribute to a volatile WARF over time and/or a bar-belled credit risk distribution for the fund. Ind-Ra may reflect this WARF volatility or bar-belled distribution through a more conservative rating than otherwise implied by the WARF. For example, Ind-Ra may decide to use the notional or par value of these securities, rather than market value, when calculating WARF to assess the impact on the fund. Ind-Ra may also elect to continue to include the qualitative consideration of defaulted assets, even after they have been sold or disposed of by the fund; this reflects fund underperformance relative to stated long-term investment objectives.

Rating Distribution

Ind-Ra complements its analysis of a portfolio's WA credit quality with a review of the distribution of ratings in the portfolio, according to the relative proportion (according to the market value (notional for CDS)) of the fund's portfolio represented in each rating category. The Fund Credit Rating will typically be consistent with the most frequent rating category, although differences can occur, notably in the case of short-term portfolios (in which a rating uplift may be warranted) or where the fund's portfolio holdings are deemed by Ind-Ra to include significant tail risk (in which case a rating cap may be warranted).

Bond fund portfolios may be constructed that are bar-belled, ie containing a large amount of assets both of high and low ratings. In its analysis, Ind-Ra takes into account the distribution of asset ratings within the fund's portfolio. Based on this analysis, it will determine whether a bar-belled strategy is being pursued, and may make downward adjustments to the Fund Credit Rating to better capture the risk associated with larger amounts of low-rated names in a portfolio. As a result the Fund Credit Rating assigned to a fund Ind-Ra considers bar-belled may differ from the rating implied simply by the fund's WA credit quality (see *below*).

In most cases, Ind-Ra imposes a cap on the Fund Credit Rating to reflect the presence of low-rated securities in the fund's portfolio. Rating caps are primarily applied to highly rated funds where Ind-Ra views a maximum rating differential of two rating categories between the Fund Credit Rating and the rating of newly purchased securities to be an appropriate means to limit the risk of individual underlying asset performance being inconsistent with the rating assigned to the fund. As an example, a fund rated 'IND AAmfs' would not be expected to invest in assets rated below the 'IND BBB' category and would not be expected to have material exposures to securities rated below the 'IND BBB' category.

Ind-Ra always uses issue-specific ratings in its analysis, which take into consideration relative subordination. The agency starts with its own ratings. Where this is not available, the lowest of other ratings assigned by recognised global agencies is applied. Additionally, when providing ratings, — and when Ind-Ra or any globally recognised rating agency ratings are not available — Ind-Ra may, on a case-by-case basis, consider credit ratings provided by local credit rating agencies in assessing portfolio credit risk, following a review of the track record and outputs of the agency in question.

For assets that are not publicly rated by one or more globally-recognised rating agencies, Ind-Ra would expect most of the assets to be analysed internally by Ind-Ra's relevant analytical team, in the form of a credit opinion. In the absence of a public rating or credit opinion, the agency may elect to treat unrated securities in the fund's portfolio as 'IND C' rated, in the interests of being conservative in its assessment. In only very limited circumstances, the agency may consider the fund manager's own credit assessment, subject to a review of the internal credit assessment by a relevant Ind-Ra analyst covering substantively the same sector. This would, however, only be on a case-by-case basis and the agency would expect securities with ratings obtained in this manner to make up an extremely small percentage of credits.

Treatment of Assets with Watch or Outlook Status

Bond fund portfolios may contain assets that are subject to a Rating Outlook or a Rating Watch. Rating Outlooks and Watches can provide useful forward-looking indicators of rating movements and are therefore considered in Ind-Ra's analysis. Where a portfolio contains a significant amount of assets subject to Negative Outlook or Rating Watch Negative (RWN), Ind-Ra may apply deterministic stresses in its portfolio analysis. These stresses may include, for example, notching down (ie reducing the rating by one or more notches) the ratings of assets subject to a Negative Outlook or RWN, or other scenario-based analyses. On that basis, the Fund Credit Rating of a fund containing a significant proportion of securities subject to Negative Outlook or RWN may be lower than the rating implied from the WARF calculation.

Other Credit Considerations

Credit Risk in Derivative Positions

Long positions in single-name CDS are treated like the reference obligation for the purpose of the WARF calculation, on the basis of the CDS notional.

Ind-Ra recognises the use of CDS by funds to hedge existing positions. In this case, netting of positions is permitted, provided it is only to match underlying reference entities/assets with an equal or lower seniority as the physical asset being hedged. Furthermore, CDS maturities should approximate to the exposure period of the hedged instrument.

Counterparty Risk

Bond funds are exposed to counterparty risk stemming from different sources, including repurchase agreements or swap counterparties, as well as the account bank for cash deposits. In its rating criteria, Ind-Ra will look to the rating of the counterparty and the quality of the collateral and margining policy, when relevant, when assessing the overall credit quality of the portfolio. Where there is a substantial exposure to an account bank through cash deposits, Ind-Ra will incorporate the rating of the account bank into its portfolio WARF calculation, according to the proportion of the fund's assets held in cash at the account bank and the account bank's Issuer Default Rating. At higher rating levels, Ind-Ra would typically expect key counterparties, such as the custodian bank, to be highly rated.

Concentration Risk

Concentrated portfolios carry greater tail risk. Such portfolios are more likely to exhibit higher vulnerability to losses than those of funds of similar credit quality, but that are more highly diversified. This is due to the fact that concentration can increase idiosyncratic risk and loss severity.

Ind-Ra's analysis of diversification primarily focuses on issuer concentration. The agency assesses exposure with particular focus on the percentage of the portfolio attributed to the largest issuers in the portfolio (among other measures). For this purpose, the agency will aggregate parent and subsidiary exposures to the level of the parent and supported asset-backed commercial paper exposures to the sponsoring entity. Ind-Ra typically excludes supranational, sovereign and sovereign-related entities (such as Government agencies) from its concentration risk analysis.

- Where the largest issuer exceeds 15% ***or*** the top five issuers exceed 50% of the fund's total portfolio, Ind-Ra may deem the portfolio moderately concentrated. In this case, the agency will take a case-by-case approach, typically involving deterministic stress tests and/or qualitative adjustments to the WARF-implied Fund Credit Rating of one or more notches.
- Where a fund has a top three issuer exposure in excess of 50%, Ind-Ra may deem the portfolio concentrated. In such cases, Ind-Ra will typically adjust the WARF-implied Fund Credit Rating by one or more notches.

The application of qualitative rating adjustments to reflect concentration risk is generally more associated with highly-rated short-term funds which, on the basis of the WARF calculation alone, may be rated higher than the fund's modal rating category. For example, a highly concentrated short-term fund with the majority of assets in the 'IND AA' rating category, but with an implied Fund Credit Rating of 'IND AAAmfs' based on the calculated WARF, may have its Fund Credit Rating capped in the 'IND AAmfs' category should Ind-Ra deem the portfolio concentrated. An example is presented in *Appendix C*.

Ind-Ra generally views positively fund diversification by geography, industry sector and asset type; however, its primary measure of concentration risk is at the issuer level.

At high concentration levels, Ind-Ra would expect any qualitative adjustments reflecting concentration risk made to the Fund Credit Rating to be correlated with any qualitative adjustment made to the Fund Volatility Rating (see *below*). These adjustments reflect different fund risk attributes which can be affected by concentration.

Ind-Ra notes that funds operating in Indian market and rated on the national rating scale may be prevented from achieving the levels of diversification seen in other national and international markets, due to the structural characteristics of Indian market. The agency may consider the fund's average term to maturity a mitigant of concentration risk in some cases.

Criteria for Fund Volatility Ratings

Ind-Ra's Fund Volatility Rating is an opinion as to the sensitivity of the total return (income and market value) on a portfolio or a fund's shares to changes in broad market risk factors, including interest rates, spreads, fund leverage, prepayment speeds, currency exchange rates and a limited number of other market conditions. Fund Volatility Ratings are based primarily on an analysis of a fund portfolio's WA interest rate duration and spread duration, adjusted for the effects of leverage (where applicable), in addition to other market risk considerations. Fund Volatility Ratings are expressed on a scale ranging from 'IND V1' (very low market risk) to 'IND V6' (very high market risk). Full definitions are in *Appendix B*.

Figure 4
Fund Volatility Ratings

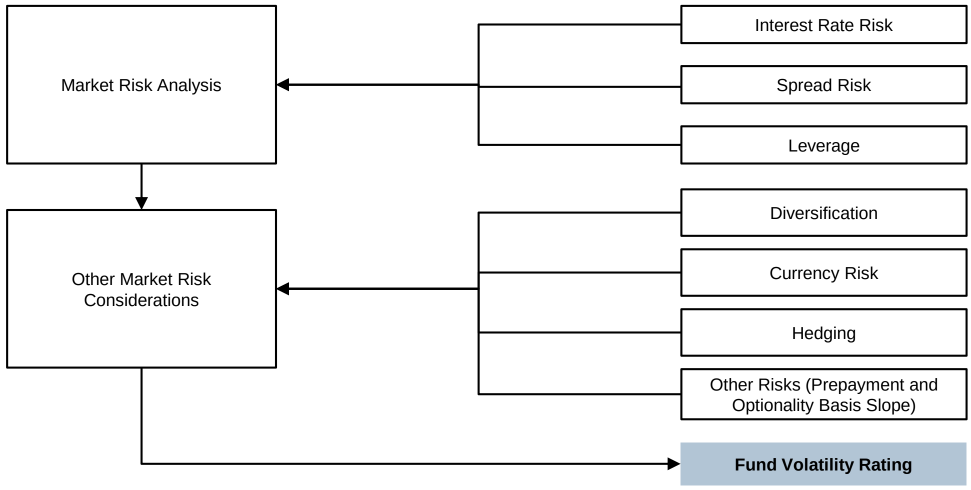
Market risk	Fund volatility rating	Market risk factor
Very low	IND V1	<2
Low	IND V2	2-4.5
Moderate	IND V3	4.5-7.5
Moderate to high	IND V4	7.5-12.5
High	IND V5	12.5-17.5
Very high	IND V6	17.5-25.0
Not available or meaningful	IND V-NR	Not measurable or meaningful due to market illiquidity or other factors

Source: Ind-Ra

When assigning Fund Volatility Ratings to GIPs and investment pools managed by public entities, Ind-Ra complements its analysis with an evaluation of the pool management's capabilities in projecting cash inflows and outflows. This approach potentially enables a cash flow-matching investment policy and reduces liquidity risk. Ind-Ra also considers the nature of the pool's depositors. A highly stable or captive nature of depositors serves as a mitigating factor in reducing the pool's liquidity and reinvestment risks. These factors may also reduce the likelihood of the pool incurring an otherwise unrealised loss associated with changes in interest rate and/or credit spreads.

Figure 5

Rating Process Diagram – Fund Volatility Rating



Source: Ind-Ra

Market Risk Analysis

An analysis of the portfolio's market risk factor serves as the primary tool used in assigning Fund Volatility Ratings.

A portfolio's market risk factor can be calculated by combining the WA interest rate duration and risk-adjusted spread duration of the bonds in the portfolio, and adjusting the result for the effect of any leverage. The weight of a bond is the proportion of the market value of a portfolio represented by that security. As a general rule, the higher the portfolio's market risk factor, the higher the sensitivity to interest rate, spread and other market risk variables.

To derive a portfolio's market risk factor, Ind-Ra begins its analysis with interest rate risk, as measured by the interest rate duration of each asset in the portfolio. This measurement is combined with an analysis of the spread risk, as measured by the spread duration of each asset in the portfolio, the results of which are adjusted for the impact of leverage (where applicable). Ind-Ra may impose qualitative Fund Credit Rating and/or Fund Volatility Rating caps or elect not to rate funds that, in Ind-Ra's opinion, use an excessive amount of leverage. Other market risk factors that Ind-Ra may factor into its analysis include diversification, currency risk, hedging strategies and other risks. These various risk attributes are incorporated into a fund's overall market risk factor, as detailed below, in order to assign a Fund Volatility Rating.

Interest Rate Risk

Ind-Ra's primary measure of interest rate risk is duration (ie sensitivity to changes in the levels of interest rates, assuming a parallel shift in the yield curve). Ind-Ra evaluates interest rate risk through an analysis of duration at the individual security and portfolio levels. The agency may also calculate a portfolio's WA maturity to interest rate reset date in its interest rate risk analysis as a conservative proxy for duration, most notably for short-term bond funds.

Spread Risk

Spread risk considers the portfolio's market value sensitivity to changing credit spreads. Credit spreads essentially reflect a risk premium demanded by the market for holding securities of a "lesser" quality than "the highest quality" (usually government) securities — for credit, liquidity or technical reasons.

Spread risk can be measured by calculating a portfolio's spread duration (sensitivity to changing credit spreads) and adjusting that calculation according to a spread risk factor. The agency may also calculate a portfolio's WA life in its spread risk analysis as a conservative proxy for spread duration.

Ind-Ra adjusts the spread risk calculation primarily based on observed fixed-income index return volatility (for various indices representing different levels of credit risk) and therefore considers both the sensitivity to spread movements — as can be measured by the fund's spread duration — as well as the relative level of spread volatility observed historically. Ind-Ra has observed that credit spread volatility tends to increase with the level of credit risk.

Figure 6

Spread Risk Factors[a]

Rating category	Spread risk factor
IND AAA	0.00
IND AA	0.10
IND A	0.33
IND BBB	0.67
IND BB	1.50
IND B	4.00
IND C and below	6.00

[a] Based on an analysis of Bank of America Merrill Lynch global fixed income market index total return volatility for the period 2000 - 2011
Source: Ind-Ra, Bank of America Merrill Lynch

Ind-Ra's spread risk factors reflect the relative index volatility associated with different levels of credit quality. Spread risk is accounted for by multiplying the security's spread duration by the spread risk factor corresponding to the credit quality of the security. This calculation may be performed at a portfolio level or at an individual security level. An example of this calculation is presented in *Appendix C*.

Market Risk Factor = Duration + (Spread Duration[1] x Spread Risk Factor[2])

Leverage (Financial and Economic)

Funds may elect to employ leverage to achieve their investment objectives. This is done typically through securitised lending arrangements (notably reverse repurchase agreements), bank lines, margin financing or derivatives such as futures or total return swaps, to achieve enhanced returns. Many derivatives or structured securities also create de-facto or economic leverage, offering investors higher yields with lower upfront investment, at the expense of greater price and total return volatility.

When evaluating the impact of leverage on funds, Ind-Ra applies a multiplier to its market risk factor in a linear manner – see *Appendix C* for worked examples. Building on the previous formula, the market risk factor calculation can be expanded to incorporate leverage as follows.

Market Risk Factor = {Duration + (Spread Duration x Spread Risk Factor)} x Leverage

If the agency deems the fund's leverage excessive relative to the fund's objectives, risk profiles or market conditions, it may apply a heavier penalty. Ind-Ra may also elect not to rate or cease rating a fund if leverage levels are deemed inappropriate for the underlying invested portfolio. The agency does not impose maximum leverage levels. Rather, an evaluation is to be conducted on a case-by-case basis, considering portfolio leverage in the context of the underlying assets of the fund.

In the case of derivatives or structured notes, Ind-Ra seeks to understand the effect on the fund's market risk volatility. For example, a structured note may have a duration that is very different than that implied by its maturity. Similarly, derivative positions can be viewed as a form of pure leverage, where the risk is a function of the notional exposure.

[1] In the case of fixed-rate bonds and notes, the spread duration is the same as the first duration metric

[2] The spread risk factor is a ratio that compares the historical volatility of relevant credit spreads to general changes in interest rates

Additionally, Ind-Ra considers how the various forms of leverage may affect the fund under adverse conditions. In the case of direct borrowing, for example, changes in collateralisation rules or advance rates for repo, or the triggering of covenants for credit lines, could materially affect performance. This may take the form of deterministic stresses applied in Ind-Ra's analysis. Borrowed funds may also be used periodically to meet short-term liquidity requirements, thereby obviating the need to sell investments at inopportune times. Leverage that is incurred to meet temporary cash management needs and that is small in relation to portfolio size may not be accounted for in Ind-Ra's analysis.

Other Market Risk Factor Adjustments

The market risk factor may be further adjusted as necessary to incorporate any additional risk attributes not reflected in the duration, spread risk and leverage metrics. These include concentration, currency, prepayment/optionality, and other risks (such as basis and slope risk, among others), offset by any benefits that may accrue to the portfolio from hedging programmes.

Concentration Risk

All else being equal, Ind-Ra expects that the total return of a highly concentrated fund will generally be more volatile than that of a highly diversified fund. The agency has observed from historical analysis that diversification via sector and, to a lesser extent, geographical allocation, has some potential to reduce volatility and drawdown (ie peak-to-trough NAV decline), thereby providing some downside protection from market risk. However, the agency also notes that the potential for market risk reduction from a portfolio's increased granularity within a given sector is limited, as credit spreads are typically observed to be highly correlated.

While interest rate risk and spread risk are the primary determinants of a Fund Volatility Rating, if the fund's calculated market risk factor is close to the limit for that rating category, and Ind-Ra deems the portfolio concentrated, then the agency may, on a case-by-case basis, consider applying a qualitative limitation in its market risk analysis. For example, if a concentrated portfolio had a calculated market risk factor of 1.9 (ie consistent with an 'IND V1' rating), Ind-Ra may elect to rate the fund 'IND V2' to reflect concentration risk as 1.9 is near to the 2.0 limit for a 'IND V2' rating.

Currency Risk

For funds that include (unhedged) multi-currency assets and/or liabilities, Ind-Ra may apply a qualitative rating cap in its market risk analysis. For example, a fund with a market risk factor of 5.8 (consistent with a 'IND V3' rating) is likely to have its rating capped at a level no greater than 'IND V4' (and possibly lower) to reflect the unhedged currency risk faced by investors in the portfolio. The impact of currency risks is assessed relative to the base currency of the fund in which the investment is made. Thus, a fund that is composed of a single pool of securities denominated in different currencies, but that offers investors a choice of the currency in which their participation is denominated, may have different volatility ratings for each currency class.

Investors should note that any subsequent translation of returns into their own particular base (or accounting) currency from the currency in which the fund is denominated is not accounted for, and this risk remains for them to hedge — or not — accordingly.

Hedging

Some funds have the ability to use derivative instruments to hedge some of their risks or manage their risk exposures more dynamically. In its assessment, Ind-Ra distinguishes systematic hedging and discretionary trading/adjustment. Recognition for discretionary hedging may be given in the Fund Volatility Rating if the manager can demonstrate its ability to structurally reduce volatility out of these positions. To be accounted for in the Fund Volatility Rating assessment, any hedging must be coupled with proven management capabilities. Ind-Ra also monitors the residual unhedged risk during its surveillance process.

Other Risks

In its market risk evaluation, Ind-Ra may also assess other risk factors a fund can be exposed to, such as:

- prepayment risk and optionality (convexity analysis, generally in portfolios containing larger proportions of structured finance securities);
- basis (CDS vs. bond spreads); and
- slope (CDS spreads with different maturities).

Liquidity Risk

When assigning Fund Volatility Ratings to GIPs and investment pools managed by public entities, Ind-Ra complements its analysis with an evaluation of the pool management's capabilities in projecting cash inflows and outflows, which enables a cash flow-matching investment policy and reduces liquidity risk. Ind-Ra also considers the nature of the pool's depositors. A highly stable or captive nature of depositors serves as a mitigating factor in reducing the pool's liquidity and reinvestment risks. These factors may also reduce the likelihood of the pool incurring an otherwise unrealized loss associated with changes in interest rate and/or credit spreads.

While liquidity risk is not a specific rating criterion for other bond funds, Ind-Ra would typically expect short-term funds rated under its global bond fund rating criteria to maintain prudent levels of overnight, weekly and monthly liquidity, based on actual maturity dates. Such liquidity may be sized off investor concentrations or observed fund flows, among other factors.

Surveillance

Ind-Ra reviews portfolios periodically, typically monthly, to monitor outstanding ratings. The agency requests individual portfolio holdings level information as well as summary statistics on the fund's portfolio and investment activities. Ind-Ra typically requests monthly performance data from the fund's administrator or custodian, as parties independent of the investment manager. Where it is not possible to obtain such data from a source deemed by Ind-Ra to be independent then, within reason, Ind-Ra will pursue alternative means of independently verifying data received. These alternatives may include periodic reconciliation against records held by a fund's trustee, prime broker or other agent, or the reconciliation of portfolio holdings against the fund's audited annual or other periodic reports or other regulatory publications.

Figure 7

Ind-Ra Surveillance Process

Source	Fund Administrator	Fund Manager
Data	• Balance Sheet • Holdings • Trades • NAV Series • Redemption and Subscription Activity	• Investor Reporting • Risk Reports, Stress Testing Analysis, etc
Frequency	Monthly	

Source: Ind-Ra

Ind-Ra recognises that, in limited circumstances, a bond fund may moderately and temporarily deviate from the parameters outlined in the agency's rating criteria. For example, an underlying asset downgrade may moderately increase the fund's WARF. While material and/or continuous deviations from rating criteria will ultimately have rating implications, there is often a reasonable basis for a short grace period, provided the asset manager has proposed credible and achievable near-term remedial actions to resolve or mitigate the risks associated with the situation. Ind-Ra will evaluate such instances on a case-by-case basis to determine the appropriate course of action.

Ind-Ra reviews all bond fund ratings at least annually, although it may review bond fund ratings more frequently should it detect a deteriorating credit or market risk profile in its monthly surveillance, or in times of heightened market stress.

Appendix A: Limitations

Limitations

Not all rating factors in this criteria may apply to each rating action. Each specific rating action commentary or rating report will discuss those factors most relevant to the individual rating action.

The primary focus of this criteria report is on fixed-income funds, including short-term bond funds and LIGPS, (collectively referred to as funds in this report) that invest in debt-instruments, both short and longer term. In general, Ind-Ra will rate money market funds under its National Scale Money Market Fund Rating *Criteria,* dated October 2015. Funds with a somewhat broader risk mandate are likely to be rated by Ind-Ra under these criteria, notably in some national markets where structural market characteristics differentiate such funds from global money market funds. While highly rated short-term bond funds are expected to offer a degree of liquidity and limited downside risk to fund NAV, they are typically not directly comparable to money market funds, where capital preservation and liquidity are embedded within fund operating guidelines and, in certain jurisdictions, mandated by regulation.

The issue of leverage in individual funds is not factored into the Fund Credit Rating; however, it is addressed in the Fund Volatility Rating scale. Additionally, Ind-Ra may impose qualitative rating caps to the Fund Credit Rating and/or Fund Volatility Rating, or elect not to rate funds that, in Ind-Ra's opinion, use an excessive amount of leverage.

In terms of the ratings themselves, Ind-Ra relies on factual information it receives from issuers and fund managers and from other sources the rating agency believes to be credible, notably the fund's administrator and/or custodian. Ind-Ra conducts a reasonable investigation of the factual information relied upon by it in its rating analysis and obtains reasonable verification of that information from independent sources, to the extent such sources are available for a given fund or in a given jurisdiction.

Additionally, the agency will make a judgement relating to the robustness of data received; where it feels data is insufficiently robust or cannot be independently verified to a satisfactory standard, it will either refuse to rate, or cease rating a fund. While Ind-Ra expects that each issuer that has agreed to participate in the rating process, or its agents, will supply promptly all information relevant for evaluating the ratings, Ind-Ra neither has, nor would it seek, the right to compel the disclosure of information by any issuer or any agents of the issuer

Another limitation to Ind-Ra's fund ratings includes "event risk". Event risk is defined as an unforeseen event which, until the event is known, is not included in the existing ratings. Prominent event risks for funds include sudden, dramatic and unexpected changes in financial market prices or liquidity, adverse regulatory decisions, litigation and massive redemptions, driven by the abovementioned factors or otherwise. Ratings may already include a reasonable assumption that a fund is vulnerable to financial market events or regulatory pressures, but the specifics of the event and its effect will not be known until the event is announced or completed, at which point the effect on ratings can be ascertained.

Ind-Ra assigns Fund Credit Ratings in conjunction with Fund Volatility Ratings to promote transparency, with limited exceptions. Each rating addresses a specific risk faced by investors in funds and is therefore limited in scope and complemented by the other rating. Fund Credit Ratings do not address the risk of loss due to changes in prevailing interest rates, credit spreads and other market conditions, nor do they comment on the adequacy of market value or address the extent to which fund expenses and costs might reduce distributions to shareholders. Fund Volatility Ratings do not predict the direction or magnitude of changes in market conditions and therefore do not predict whether, or the extent to which, any particular fund will perform favourably or adversely in the future.

Appendix B: Ind-Ra’s Fund Rating Definitions

Fund Credit Ratings

Fund Credit Ratings are an opinion as to the vulnerability to losses within the portfolio as a result of a default in a bond fund portfolio. Fund Credit Ratings are expressed on the same scale as long-term credit ratings but unlike IDRs, do not measure expectation of default risk, as a fund generally cannot default. They are based on the actual and prospective average credit quality of the portfolio. Fund Credit Ratings have an element of rating momentum embedded and therefore also capture the likelihood that the fund maintains a given credit quality over time.

A Fund Credit Rating does not address the risk of loss due to changes in prevailing interest rates, credit spreads and other market conditions, nor does it comment on the adequacy of market price or address the extent to which fund expenses and costs might reduce distributions to shareholders. Credit and volatility ratings are assigned together to reflect the credit and market risk to which fund investors are exposed. For certain illiquid markets and/or asset classes however, it may not be feasible to derive a volatility rating. In these instances, Ind-Ra assigns a ‘V-NR’ rating in lieu of a volatility rating to indicate this. ‘+’ or ‘-’ may be appended to the Fund Credit Rating to denote relative status within a rating category. Such suffixes do not apply to the ‘IND AAAmfs’ category.

The ratings below relate to national scale bond ratings in India. It is important to note that this rating scale is unique to India and merely ranks the degree of perceived risk relative to the lowest default risk in India. Therefore, comparisons between funds rated on different national scales, or between an individual national scale and the international rating scale, are inappropriate.

IND AAAmfs

Schemes with this rating are considered to have the highest degree of safety regarding timely receipt of payments from the investments that they have made.

IND AAmfs

Schemes with this rating are considered to have the high degree of safety regarding timely receipt of payments from the investments that they have made.

IND Amfs

Schemes with this rating are considered to have the adequate degree of safety regarding timely receipt of payments from the investments that they have made.

IND BBBmfs

Schemes with this rating are considered to have the moderate degree of safety regarding timely receipt of payments from the investments that they have made.

IND BBmfs

Schemes with this rating are considered to have moderate risk of default regarding timely receipt of payments from the investments that they have made.

IND Bmfs

Schemes with this rating are considered to have high risk of default regarding timely receipt of timely receipt of payments from the investments that they have made.

IND Cmfs

Schemes with this rating are considered to have very high risk of default regarding timely receipt of timely receipt of payments from the investments that they have made.

Ind-Ra's Fund Volatility Rating

A Fund Volatility Rating is an opinion as to the sensitivity of the total return (income and market value) on a portfolio or a fund's shares to changes in broad market risk factors, including interest rates, spreads, fund leverage, currency exchange rates and a limited number of other market conditions.

A Fund Volatility Rating does not, however, predict the direction or magnitude of changes in such market conditions and therefore does not predict whether, or the extent to which, any particular fund will perform favourably or adversely in the future. Furthermore, the rating does not gauge the sensitivity of a bond fund to extreme risks that may result from reduced liquidity in secondary markets during certain periods.

Fund Volatility Ratings are solely an opinion of the relative risk of such factors endogenous to the Indian market. Market risk factor cut-off points may differ in certain national markets. Therefore, comparisons between different national scales, or between an individual national scale and the international rating scale, are inappropriate.

Fund Volatility Ratings are expressed on a scale of 'IND V1' (lowest risk) to 'IND V6' (highest risk). While highly rated funds (ie 'IND V1' rated) are expected to offer limited risk on NAV and good liquidity, they are in no way comparable to funds rated by Ind-Ra according to its National Scale Money Market Fund Rating Criteria. Such funds will typically include capital preservation and liquidity as core investment objectives.

In general, Ind-Ra will rate money market funds under its National Scale Money Market Fund Rating Criteria at the 'IND A1mfs', 'IND A2mfs' and 'IND A3mfs' rating levels.

For further information on Ind-Ra's approach to rating money market funds, see the criteria report: National Scale Money Market Fund Rating Criteria, dated October 2015.

IND V1 Very Low Market Risk

Funds rated 'IND V1' are considered to have very low sensitivity to market risk. On a relative basis, total returns are expected to exhibit high stability, performing consistently across a broad range of market scenarios. These funds offer very low risk exposure to interest rates, credit spreads and other risk factors. These funds usually have a representative market risk factor of less than two. They are generally short-term government or high credit quality bond funds.

IND V2 Low Market Risk

Funds rated 'IND V2' are considered to have low sensitivity to market risk. On a relative basis, total returns are expected to exhibit relative stability, performing consistently across a broad range of market scenarios. These funds offer low risk exposure to interest rates, credit spreads and other risk factors. These funds usually have a representative market risk factor of 2 to 4.5. They are typically short- to medium-term government or high credit quality bond funds with various investment objectives.

IND V3 Moderate Market Risk

Funds rated 'IND V3' are considered to have moderate sensitivity to market risk. On a relative basis, total returns are expected to perform consistently over medium- to long-term holding periods, but will exhibit some variability over shorter periods due to greater exposure to interest rates, credit spreads and other risk factors. These funds usually have a representative market risk factor of 4.5 to 7.5. They are generally medium-term government or short-term corporate bond funds.

IND V4 Moderate to High Market Risk

Funds rated 'IND V4' are considered to have moderate to high sensitivity to market risk. On a relative basis, total returns are expected to experience significant variability across a broad range of market scenarios. These funds typically exhibit significant exposure to interest rates, credit spreads and other risk factors. These funds usually have a representative market risk factor of 7.5 to 12.5. They are typically longer-term government or medium-term corporate bond funds with some low investment-grade or high yield exposure.

IND V5 High Market Risk

Funds rated 'IND V5' are considered to have high sensitivity to market risk. On a relative basis, total returns are expected to experience substantial variability across a broad range of market scenarios. These funds generally exhibit substantial exposure to interest rates, credit spreads and other risk factors. These funds usually have a representative market risk factor of 12.5 to 17.5. They are typically very long-term government or long-term corporate bond funds with low investment-grade or high yield exposure.

IND V6 Very High Market Risk

Funds rated 'IND V6' are considered to have very high sensitivity to market risk. On a relative basis, total returns are expected to experience extreme variability across a broad range of market scenarios. These funds generally exhibit very substantial exposure to interest rates, credit spreads and other risk factors. These funds usually have a representative market risk factor of 17.5 to 25.0. They are typically long-term corporate bond funds with substantial low investment-grade and/or high yield exposure.

Appendix C: Example Calculations

Fund Credit Rating

Example 1: Bond Fund WARF

Diversified, long-term (ie all securities having residual maturities greater than 13 months) bond fund portfolio, by market value percentage of portfolio by rating category.

- 30% 'IND AAA'; rating factor: 0.19
- 30% 'IND AA'; rating factor: 0.64
- 30% 'IND A'; rating factor: 1.58
- 10% 'IND BBB'; rating factor: 4.54

WARF: {(30% X 0.19) + (30% X 0.64) + (30% X 1.58) + (10% X 4.54)} = **1.177**

- WARF indicates 'IND Amfs' weighted average credit quality.
- Likely Fund Credit Rating category: **'IND Amfs'.**

Example 2: Bond Fund WARF

Diversified, short-term bond fund portfolio, by market value percentage of portfolio by rating category.

- 10% 'IND AAA' government securities maturing in 12 months; rating factor: 0.0
- 20% 'IND AAA' others maturing in 90 days; rating factor: 0.05
- 40% 'IND AA' maturing in 397 days (13 months); rating factor: 0.19
- 20% 'IND A' maturing in 13 months; rating factor 0.64
- 10% 'IND BBB' maturing in 13 months; rating factor: 1.58

WARF: {(10% X 0.0) + (20% X 0.05) + (40% X 0.19) + (20% X 0.64) + (10% X 1.58)} = **0.372**

- WARF indicates 'IND AAAmfs' weighted average credit quality.
- However, presence of material exposure to securities rated 'IND BBB' means Ind-Ra will typically apply a rating cap, limiting fund credit rating to a maximum of two rating categories greater than lowest rated security.
- Likely Fund Credit Rating category: **'IND AAmfs'.**

Example 3: Concentrated Portfolio

Concentrated, short-term bond fund portfolio, by issuer exposure.

- Largest issuer exposure: 20%, 'IND AA' maturing in 13 months; rating factor: 0.19.
- Issuer 2 exposure: 17.5%, 'IND AAA' others maturing in 90 days; rating factor: 0.05.
- Issuer 3 exposure: 15%, 'IND A' maturing in 13 months; rating factor: 0.64.
- Issuer 4 exposure: 7.5%, 'IND AAA' government securities maturing in 13 months; rating factor: 0.0.
- Equal exposure to a further eight issuers: 5% (totalling the remaining 40% of the portfolio), 'IND AA' maturing in 13 months; rating factor: 0.19.

WARF: {(20% X 0.19) + (17.5% X 0.05) + (15% X 0.64) + (7.5% X 0.0) + (40% X 0.19)} = **0.219**

- WARF indicates 'IND AAAmfs' weighted average credit quality.
- However, fund is concentrated as the largest three issuers exceed 50% of the portfolio:
    - largest issuer exposure: 20%;
    - largest three issuer exposures: 52.5%.
- Likely Fund Credit Rating category: **'IND AAmfs'.**
    - Reflects modal portfolio rating category.

Fund Volatility Rating

Market Risk Factor = {Duration + (Spread Duration x Spread Risk Factor)} x Leverage

Example 1: Market Risk Factor, Unlevered Portfolio, Issuer Level Calculation

Diversified, long-term portfolio, by market value percentage of portfolio.

- 10% 'IND A' rated, fixed rate bonds with remaining maturity of three years (interest rate duration = 3, spread duration = 3, Spread Risk Factor: 0.33).
- 40% 'IND BBB' rated, floating-rate bonds with remaining maturity to reset date of six months, remaining maturity to final of four years (interest rate duration = 0.5, spread duration = 4, Spread Risk Factor: 0.67).
- 40% 'IND BBB' rated, fixed-rate bonds maturing in four years (interest rate duration = 4, spread duration = 4, Spread Risk Factor: 0.67).
- 10% 'IND BB' rated, fixed-rate bonds maturing in four years (interest rate duration = 4, spread duration = 4, Spread Risk Factor: 1.50).

Weighted average interest rate duration:

- {(10% X 3) + (40% X 0.5) + (40% X 4) + (10% X 4)} = **2.5**

Risk-adjusted weighted average spread duration:

- {(10% X 3 X 0.33) + (40% X 4 X 0.67) + (40% X 4 X 0.67) + (10% X 4 X 1.50)} = **2.8**

Market Risk Factor = weighted average interest rate duration + risk adjusted weighted average spread duration.

- **(2.5 + 2.8) = 5.3**
- Indicative Fund Volatility Rating: **IND V3 (4.5 – 7.5)**

Example 2: Market Risk Factor, Unlevered Portfolio, Portfolio Level Calculation

Diversified, long-term portfolio.

- Portfolio interest rate duration: 2.5.
- Portfolio spread duration: 4.
- Portfolio weighted average credit quality: 'IND BBB' (spread risk factor: 0.67).

Market Risk Factor = weighted average interest rate duration + risk adjusted weighted average spread duration.

- **2.5 + (4 X 0.67) = 5.2**
- Indicative Fund Volatility Rating: **IND V3 (4.5 – 7.5)**

Example 3: Market Risk Factor, Levered Portfolio

Same portfolio as *Example 1*; however, fund uses leverage of 50% ie total exposure is 150% of fund's liabilities.

- Market Risk Factor (as calculated above) = (5.3 X 1.5) = **8.0**
- Indicative Fund Volatility Rating: **IND V4 (7.5 – 12.5)**