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# ASSESSING CREDIT RISK DERIVATIVES

## *What methods are used by banks?*

Banks traditionally take very exciting, volatile, and hair-raising products such as real estate, interest rate volatility, non-investment grade loans, and turn them into extremely boring, non-volatile, safe products. In this article, I review how banks assess the credit risk in derivatives, and how credit mitigants may be used to reduce the risk in these assets.

## HOW TRS WORKS

The Total Return Swap (TRS) instrument is a case in point. Under a TRS, the Total Return Payer pays the total return (capital appreciation, distributions and dividends) of an underlying asset or portfolio of assets to a Total Return Receiver, in return for receiving any losses plus a financing charge. Such trades are used to obtain synthetic exposures to a wide variety of assets including loans, bonds, equities, indices, hedge funds, structured paper, or even portfolios of these assets. Typical Total Return Receivers include hedge funds, fund of funds, pension plans, and corporate counterparties.

TRS products offer several advantages over holding the physical asset outright, including: i) outsourced asset administration, ii) improved average cost of funds, and iii) access to otherwise inaccessible asset classes such as new issue loans. However, the chief motivation for buyers of TRS is, almost always, leverage and financing.

In this way, a TRS has many similarities to a CDO-type instrument, where the TRS receiver has taken an equity position in the reference portfolio. Key differences, however, involve: i) custom portfolios, ii) flexible terms and maturity (unwind mechanisms), and iii) the off-balance sheet nature of a TRS.

## MEASURING RISK

Quantification of the “second loss” or senior credit risk taken on by the TRS payer can be analyzed using methodologies adopted from those used by rating agencies to measure the risk in structured credit transac-

tions. It is also possible to map the rating agency’s concepts of probability of default, loss given default, and exposure into the bank credit concepts of loan-equivalent amount and facility ratings.

Such analysis supports the conclusion that a moderate amount of credit mitigation, such as collateral on loan-equivalent exposure, can remove a substantial portion of the expected loss distribution. Furthermore, in certain instances in a TRS on a portfolio of equities, a log-normal distribution of the underlying assets can be assumed in order to arrive at an analytic estimate of the loan-equivalent exposure.

In other asset classes, such as portfolios of debt, it is possible to resort to more primitive methods such as sampling of historical data to estimate the potential downside. For debt assets, we borrow from the Moody’s CDO BET methodology and condition the sampling on the portfolio WARF and Diversity Score,

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producing a matrix of loan-equivalent exposures by WARF and Diversity Score.

Following these methods can allow one to derive a deemed risk function that flattens out quickly as the number of assets approaches 20. Previous studies of the marginal benefits of diversification support such an outcome.

Ultimately, Total Return Swaps are cost-efficient leverage vehicles that allow investors to access various asset classes. Credit mitigants such as collateral and margin triggers can effectively make a portfolio of exciting assets into an exposure that is palatable even to a bank, and therefore a value-added derivative for its investing clients. ■