



MC+ Technical Note December 2022

How to Reduce Credit / Counterparty Risk Charge under the IFPR / ICARA

How much money are you leaving on the table?

Summary The Investment Firms Prudential Regime (IFPR) presents investment management firms with an ideal opportunity to review their methods for computing prudential risk charges and saving capital. This technical note demonstrates that firms can substantially reduce their credit risk charge under ICARA by moving away from the '8%-method' and adopting the relatively simple but effective internal method.

Changes under IFPR & ICARA From 2022 onwards, by introducing activity-based funds requirements, i.e., the K-factors, the IFPR has effectively removed the market and credit risk elements under 'Pillar 1'. However, firms still have to assess the capital or funds requirement for market and credit risk under 'Pillar 2', i.e. they have to an internal assessment method for the funds requirement from counterparties and changes of assets on the balance sheet.

IFPR as an opportunity to introduce internal methods Under the previous rules, most firms computed their prudential capital requirement under both Pillar 1 & 2 using the '8%- method', i.e. multiplied the (risk-weighted) exposures by 8%. However, the IFPR doesn't refer to 'credit risk' or 'market risk'. Instead, it uses terminologies such as "failure of counterparties" and "changes in book value of assets or the value of positions", respectively. It leaves it to firms as to how they assess these risks.). As the name suggests, the Internal Capital and Risk Assessment (ICARA) encourages and allows firms to use valid, internally-developed methods for calculating credit (and market) funds requirement or risk charges.

8-% method is risk-insensitive The purpose of this technical note is to show that firms subject to IFPR can reduce the funds requirement from credit (and market) risk by moving away from the flat 8%-method, which is not risk-sensitive. It does not take into account the specifics of a firm's counterparty. The actual probability of default of any of its counterparties is not constant but goes up when the riskiness of a counterparty increases. The rating agencies provide counterparty risk ratings. Similarly, asset prices are not fixed but change continuously.

Expected Losses from Counterparty Defaults

Any potential failure of an investment firm's counterparties would cause a financial loss. Most investment firms have two sources of counterparty risk - a cash position held at a bank and other counterparties, e.g. debtors or third-party suppliers. In simple terms, the 'expected loss' (EL) from any counterparty is computed as multiplication of the exposure,

probability of default (PD) of a counterparty, and loss given default (LGD) of that counterparty.

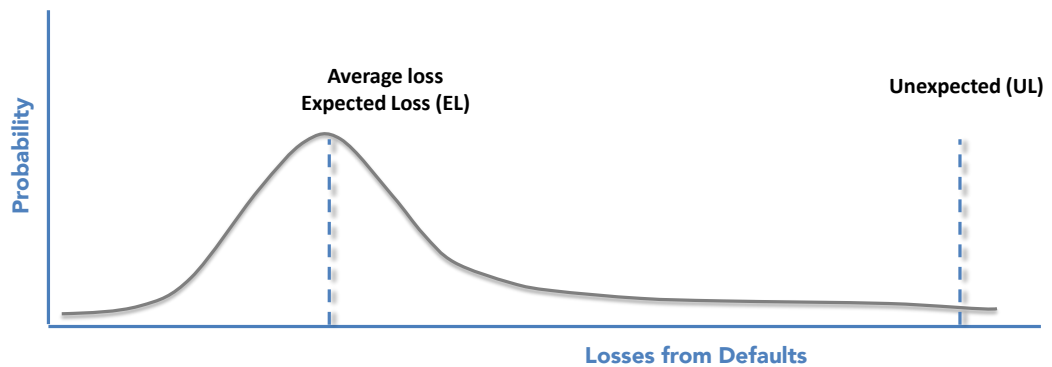
$$\text{Expected Loss (EL)} = \text{Exposure} \times \text{PD} \times \text{LGD}$$

The expected losses from a counterparty failure are higher the higher the exposure, PD and LGD for a counterparty and vice versa. This means, for example, if an investment firm has an exposure of 1m to a counterparty with a PD of 1% it implies an expected loss of 10k, i.e., 1m x 1 %) if we assume that loss given the counterparty's default is 100% (i.e., no recovery of the loss at all).

Expected losses are not sufficient as a capital charge

However, the expected losses are only potential losses "on average". An investment firm could lose more than the expected loss amount. Using the same example of 1m exposure above, the investment firm's loss in case of default could be much larger. In worst case, it could be the full exposure, i.e., 1m. Therefore, for a 1m exposure, the prudential charge from counterparty risk should be higher than the expected loss of 10k, but cannot be 1m. Based on observations of historical default events, the international regulators came up with 8%. In our example, 80k = 8% x 1m. From prudential regulatory perspective, the 8% is a crude method of estimating a reasonably high number, away from 'average' towards the 'tail' from a distribution of potential loss outcomes.

FIGURE 1: Relationship between EL and UL



Unexpected Losses: 8% versus the IRB Method

Unexpected losses are similar to expected losses but at the tail

The 8% is a basic method to estimate 'unexpected losses' from potential default events. The Basel Committee on Banking Supervision (BCBS) introduced the Internal Ratings Based (IRB) method. In a nutshell, it is an estimation method for computing the unexpected loss (i.e. the prudential capital or fund requirement) at a reasonably high confidence level. The computed risk charge is a function (f) of exposure, probability of default (PD), loss given default (LGD) and correlation of the counterparty with the overall state of the economy.

$$\text{Counterparty Risk (IRB)} = f(\text{Exposure, PD, LGD, correlation})$$

From the ICARA perspective, firms subject to IFPR are interested in estimating a risk charge from potential defaults at the 99.5% confidence level, i.e. reasonably high conviction - there is only 0.5% probability (1/200) that potential losses from defaults could be larger.

The IRB method ‘translates’ default probabilities to prudential risk capital charges. In other words, it is a method of mapping probability of default (PD), loss given default (LGD) to an ‘expected loss (EL)’ and ‘unexpected loss (UL)’ for each dollar of exposure. The table below is an example how it translates S&P default probabilities to ‘expected’ and ‘unexpected losses’.

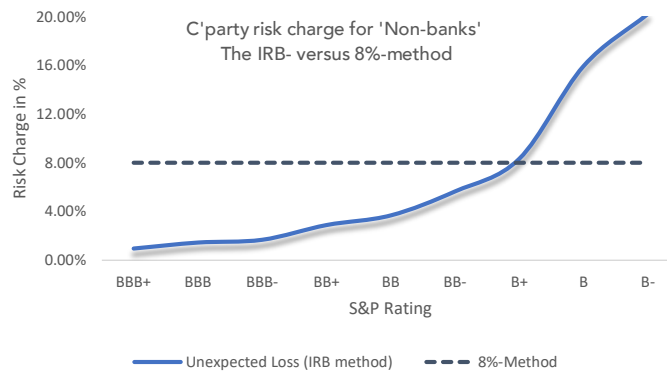
TABLE 1:
Potential
Savings
using the
IRB-method

S&P Rating	PD in %	LGD in %	Exposure	Expected Loss	Unexpected Loss (IRB method)	Requirement in %	Unexpected Loss (8% method)	Potential Savings	Savings in %
A-	0.07%	45%	1,000,000	315	5,990	0.60%	80,000	74,010	7.40%
BBB+	0.12%	45%	1,000,000	540	9,427	0.94%	80,000	70,573	7.06%
BBB	0.20%	45%	1,000,000	900	14,346	1.43%	80,000	65,654	6.57%
BBB-	0.24%	45%	1,000,000	1,080	16,625	1.66%	80,000	63,375	6.34%
BB+	0.48%	45%	1,000,000	2,160	28,735	2.87%	80,000	51,265	5.13%
BB	0.66%	45%	1,000,000	2,970	36,665	3.67%	80,000	43,335	4.33%
BB-	1.18%	45%	1,000,000	5,310	56,388	5.64%	80,000	23,612	2.36%
B+	2.05%	45%	1,000,000	9,225	83,253	8.33%	80,000		
B	5.62%	45%	1,000,000	25,290	159,493	15.95%	80,000		
B-	8.50%	45%	1,000,000	38,250	202,353	20.24%	80,000		
Sum			10,000,000	86,040	613,275		800,000	391,824	39.18%

Note: The counterparty risk computation in column 6 (the IRB-method) is computed at the 99.5% confidence level. In order to be conservative, it assumes a correlation of 24%, which is the highest possible value cited by the regulators.

For a BB rating, the implied PD of 0.66% is translated to a prudential requirement of 3.67%, i.e. well below 8%. Therefore, for a 1m exposure a firm subject to IFPR can save 43k = (8% - 3.67%) x 1m. The table shows that the savings are higher the lower the rating or PD of its counterparty and vice versa. It turns out that using the S&P ratings the IRB method produces lower prudential requirements than 8% below a rating of B+ (i.e., a PD of 2.05%). As can be seen, for A- rated counterparty an investment firm can save for each 1m exposure 74k. The break-even is somewhere between BB- and B+ where the risk charges from both the IRB and 8%-method provide the same result.

FIGURE 2:
IRB-method
versus 8%
for ‘non-
banks’

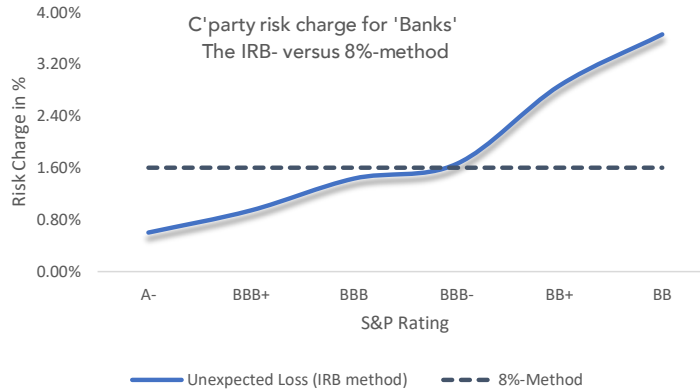


Even if the investment firm had equal size of exposures to counterparties with varying ratings the overall result from the IRB-method is more beneficial than the 8% method. As can be seen from the last row in the table that the use of the IRB method implies overall a lower prudential charge than the 8%-method (i.e., 613k versus 800k, respectively).

How does the IRB method compare with the current method of multiplying the risk weighted assets (RWA) with banking counterparties? Remember, under the simplified 8%-method the RWAs for a banking institution that are rated will be first multiplied by

20% and then the 20% of the RWA, in a second step, will be multiplied with 8%. Therefore, for a rated banking counterparty we have to compare the IRB method with 1.6% (i.e. $1.6\% = 20\% \times 8\%$).

FIGURE 3:
IRB-method
versus 1.6%
rated
banking
institutions



As the figure above shows under the S&P Rating of BBB- the IRB method implies a lower prudential charge for counterparty risk than 1.6%. cursory research shows that most larger banks in the UK have credit ratings BB+ or better. Therefore, the IRB method implies substantial potential savings for those counterparties instead of the risk-insensitive flat rate method.

Advantages of a risk-sensitive method

Dynamic
instead of
insensitive

The IRB method is risk-sensitive. It links the credit risk charges for each counterparty to its current credit rating (which implies a default probability). Though this relationship is not linear, it is relatively easy to understand. It can readily form the basis of risk-related policies and of comparing exposures to risk appetite statements.

Develop risk
actions
based on the
method

The computed values above suggest ways to improve credit risk management overall. For example, the risk policy could be formulated as "don't deal with counterparties with credit ratings below BBB". Reducing the IRB method to a single input has further advantages. By doing so, the firm can easily produce sensitivity measures. For example, the sensitivity of the risk charge to a change in the counterparties' default probabilities (i.e. risk delta) can be computed by applying, as an example, a 1 basis point shift to each counterparty's default rate and computing the resulting difference.

Conclusion

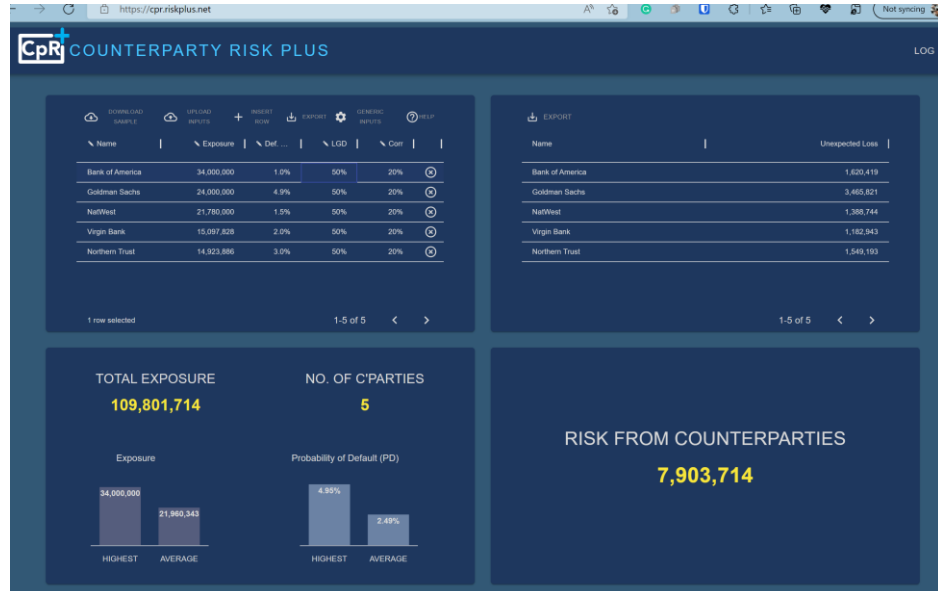
Satisfies the
'use-test'
requirement

Failing to address counterparty risk analytically simply leaves money (in the form of unnecessary prudential capital allocation) on the table. Using a relatively simple model based on counterparty risk assessment, as presented here, provides both analytically meaningful and managerially useful information for firms. As shown here, a model doesn't have to be complex. A simplified IRB model:

- improves analysts' understanding of credit risk;
- eliminates unnecessary prudential capital provisions;
- derives a meaningful and defensible number for prudential capital requirements for credit/counterparty risk that will satisfy regulators; and
- provides important and useful management information to support decision-making.

Technical implementation

Here is the implemented method: <https://cpr.riskplus.net/>



Contact

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