



Effective Use of Capital Relief Trade Transactions

Research report in cooperation with IACPM and GCD

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1 Introduction

The Credit Risk Transfer market is currently a small and private market numbering around 54 transactions in 2018 with a dozen investors and a dozen banks mainly in Europe and Canada. There is therefore limited publicly available information. Another challenge is that new regulation is unclear and has certainly not been tested with real transactions. This creates a lot of uncertainty for existing players and even more so for newcomers like standardized banks and supervisors.

We constructed 17 loan portfolios from France, the UK, Belgium, the Netherlands and Sweden and across asset classes such as SME's, Large Corporate, Commercial Real Estate, Residential Mortgages, Aircraft Finance, Shipping Finance, Trade & Commodity Finance and Project Finance based on real portfolio data. For the latter 4 categories, we used historical data from Global Credit Data to calibrate specific stress test models.

For each of the 17 portfolios, we ran 6 different scenarios accommodating current and future regulations (Basel III and Basel IV IRBA, Basel IV with Output Floor, IFRS 9 and STS) and different macro scenarios (European Banking Authority (EBA) Baseline and EBA Adverse), resulting in 102 hypothetical CRT transactions. These 6 scenarios are based on real stress test models and real macro scenarios derived from the EBA stress testing and transparency exercises. Except in scenario 3, we kept the expected IRR (return after loan losses) for the equity investor constant at 7%.

We classify CRT transactions as economically interesting if the Cost of Relieved Capital (CoRC) is below 15% (an ROE before tax). 70% of all CRT transactions meet this objective and, if we exclude the residential mortgages, a considerable 80% of transactions add value for the bank. Even in an adverse scenario where the investor was fully compensated for higher losses, 7 out of 17 CRT transactions have a CoRC of below 15%.

This research was conducted in co-operation with two international associations in the financial sector: The International Association of Credit Portfolio Managers (IACPM) and Global Credit Data (GCD). The extended version of this report with detail about the methodology, assumed transaction structures and analysis of main dynamics is available upon request¹.

2 Concept of CRT transactions

2.1 CRT transactions to support regulatory capital relief and risk management

CRT transactions can be used by a bank to transfer credit risk of an underlying pool of loans to an investor. It is not a full transfer like a whole loan sale as the bank keeps a tranching position on its own books. In return, the non-bank investor has exposure to bank credits and receives a coupon.

The amount of capital relieved is driven by the difference of the RWA the bank holds for the underlying pool of loans – i.e. situation before transaction - versus the RWA of the kept tranche(s) – i.e. situation after transaction. Figure 1 contains an example of this comparison.

¹ Please send your request to info@os-is.com

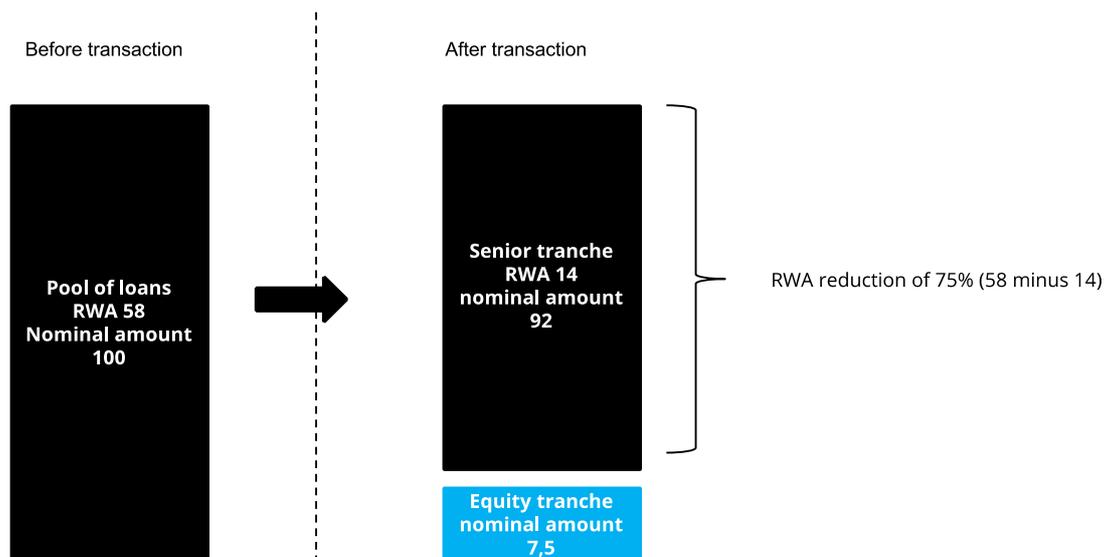


Figure 1: Underlying portfolio versus kept senior tranche

In this example, the bank starts with a pool of loans, which has a nominal value of 100 and a RW of 58%, therefore resulting in an RWA of 58. After the CRT transaction, this pool of assets is split up into two tranches: a senior tranche with a nominal value of 92, RW of 15% and resulting RWA of 14, and an equity tranche with a nominal value of 7.5, RW of 1085% and therefore RWA of 81.

As the equity tranche will be sold to an investor and the bank keeps the senior tranche, there will be an RWA reduction of 44, as this is the difference between the RWA of the pool of loans (58) and the RWA of the senior tranche (14).

In this example, because the most junior tranche was sold, the bank also transferred expected credit losses². The bank has to report the RWA reduction on a quarterly basis and must recalculate the RWA reduction for each quarter. Changes in the RWA of the underlying pool and the size of the sold tranche will change the amount of RWA relief. It is therefore important to forecast each quarter throughout the lifetime of the transaction in function of the most likely macro-economic and applicable regulatory scenario.

2.2 The Economic dynamics of a CRT transaction

To make the effects of CRT transactions comparable across the different scenarios and portfolios, we introduced a concept that captures the costs and benefits to the bank under a single ratio expressing the economic impact of the CRT transaction.

We calculated the sum of protection costs minus transferred credit losses over sum capital relief over the lifetime of a transaction (summations are over time index):

$$\text{CORC} = \frac{\text{Cost}}{\Delta\text{CET1}} = \frac{\sum_{t=1}^T \text{CP}_t - \text{ECL}_t}{\sum_{t=1}^T \Delta\text{CET1}_t}$$

² We assumed that the sold tranche is fully cash collateralized which lead to a 0% RW on the equity tranche. This won't be the case when e.g. the junior tranche is insured and a counterparty risk on the insurer remains.

- CP_t denotes coupon payments to the protection seller
- ECL_t denotes expected credit losses that are transferred to the protection seller
- $\Delta CET1_t$ denotes the amount of common equity tier 1 that is freed up calculated per quarter and then annualized
- T the lifetime of the CRT transactions annualized

We consider a CRT transaction as an alternative for capital funding and therefore we measure the attractiveness of a transaction against the return on equity (ROE) objective of the bank. Because the cost of relieved capital is before tax, we gross up the ROE benchmark based on an assumed tax yield. In this report, we assumed an ROE of 11.25%, a tax yield of 25% and a gross ROE of 15%. This implies that when CoRC is lower than 15%, the transaction is deemed attractive.

If a bank reduces RWA, it will not only relieve CET1 capital, but also Tier 2 capital in the light of MREL or TLAC. Further, we based our calculations on 2018 EBA data which is before the results of the Targeted Review Internal Models ("TRIM") were available. TRIM may increase PD and LGD estimates of banks, which in turn will increase RWA of the bank. Both TRIM and TLAC/MREL will lead to different economics for the bank.

3 CRT research project

3.1 Portfolio data

To create representative portfolios for each asset class and country, we collected information on portfolio level from several public sources. The primary source of information on portfolio detail comes from EBA and from its transparency exercise and stress test disclosures. Pillar III of individual bank reports provide a complementary source of information to obtain rating distributions within portfolios where possible as the EBA disclosures do not cover this.

The combined portfolios were shared with collaborating IACPM members who provided feedback on the representativeness of the portfolio details. While we set out to cover a larger variety of countries, we did not receive sufficient feedback for certain countries and therefore we decided to exclude them from this research. Risk weights are computed using portfolio inputs according to the corresponding Basel formulas.

Country	Portfolio Type	Maximum exposure (EUR 1,000)	Exposure Drawn (EUR 1,000)	Exposure At Default (EUR 1,000)	IRBA Risk Weight (BIII) %	SA Risk Weight (BIII) %	Loss Given Default %	1 Year Probability of Default (TTC) %	Residual maturity (years)
NL	SME	1000	987	989	60,33	100,00	25,00	3,12	4,0
NL	CRE	1000	924	1250	21,96	101,63	10,00	3,56	5,0
NL	Large Corporates	1000	926	943	44,73	100,00	25,00	1,87	3,0
NL	Residential Mortgages	1000	1000	1000	8,83	36,07	11,00	0,45	20,0
BE	SME	1000	771	854	58,80	100,00	31,35	2,18	3,0
BE	CRE	1000	938	653	49,28	100,00	25,04	1,76	6,0
BE	Large Corporates	1000	664	785	62,24	100,00	31,00	2,57	2,5
BE	Residential Mortgages	1000	791	992	23,43	35,48	11,00	4,82	17,0
SE	SME	1000	769	769	24,61	100,00	25,00	0,80	1,0
SE	Large Corporates	1000	909	909	27,57	100,00	29,00	0,96	1,0
SE	Residential Mortgages	1000	1000	1000	25,00	37,30	10,00	0,82	21,0
FR	Large Corporates	1000	766	913	53,80	100,00	40,00	1,25	2,5
UK	Large Corporates	1000	559	719	56,63	100,00	40,00	1,25	3,0
international	Aircraft Finance	1000	924	929	29,63	101,36	18,05	1,55	3,3
international	Shipping Finance	1000	648	776	55,28	100,00	36,40	1,54	5,0
international	Trade & Commodity Finance	1000	951	969	34,91	100,22	19,95	1,53	3,0
international	Project Finance	1000	812	906	53,30	99,81	31,15	1,66	5,0

Table 1: Portfolio characteristics

The data on portfolio detail for each of the studied portfolios is split up by rating. Given the rating distribution, loan level data is proxied by assigning exposure to each rating according to the rating distribution.

Portfolio evolution over time is modelled firstly by means of linear amortisation on the basis of residual maturity. Secondly, we replenish the repayment loans with loans from one rating category corresponding with the median rating at the start of the transaction.

We take the Through-the-Cycle (TTC) PD's and LGD's as an input and make a Point-in-Time (PIT) adjustment following the Basel-Vasicek industry standard. We then project IFRS 9 losses for each quarter within a three-year period, i.e. 2018-2020 and subsequently take a historical reversion to the mean.

In addition to forward projection of the portfolios in function of linear amortization and replenishment, we project rating migrations by means of Monte Carlo simulation. Consequently, each loan proxy that starts out with a single rating will have a distribution over ratings for each quarter in the future during its life in function of macroeconomic scenarios. We take the weighted averages of PD midpoints from the EBA data and weight them with the projected rating distribution, which results in TTC PD estimates per rating category. We achieve the PIT adjustment of the newly created TTC PD as well as LGD estimates by means of a Basel-Vasicek approach (further described in paragraph 6.3 of full report). We use PIT PD and LGD estimates in combination with EAD to obtain expected credit losses and IFRS 9 provisions by stage. The TTC parameters, in contrast, are used in computations for RWA. For more detail, please refer to paragraph 6.3 of full report.

In addition to the two macroeconomic scenarios, we differentiate portfolio development with two regulatory conditions: the IRB-Advanced approach and the IRB-Advanced approach with the standardised output floor fully loaded in 2027.

3.2 Macro scenarios & Regulatory scenarios

3.2.1 Used scenarios

In this study, we forecast the results of a CRT transaction for each of the created portfolios under six scenarios, which varied in terms of regulation, future macroeconomic development and portfolio composition. While the first scenario we considered represents a base case, the

other five each highlight deviations from this base case in one aspect. This is done because the base case we employ will not necessarily be entirely representative for actual CRT transactions. We therefore consider the impact on deal performance under these five other scenarios as being very useful to provide the reader with a better grasp of the sensitivities surrounding deal performance. Common to all scenarios is that tranching and pricing of the equity tranche sold to the investor will ensure an expected internal rate of return (IRR) on that tranche of around 7% (except in scenario 3). Each scenario is described in more detail below. We can provide more detail about our modelling approach upon request.

3.2.2 Baseline realised; Baseline expected; Advanced-IRB (scenario 1)

Under this base case scenario, portfolios are exposed to the EBA baseline scenario, which is a mild macroeconomic stress scenario. Risk weights on the portfolios are computed according to the A-IRB approach, while risk weights on the retained tranches in CRT transaction are computed according to SEC-IRBA formulas. Junior tranche size and coupon are set in anticipation of a baseline scenario, such that an expected IRR of around 7% is achieved.

3.2.3 Adverse realised; Adverse expected; Advanced-IRB (scenario 2)

Similar to scenario 1, portfolios receive risk weights on the basis of the A-IRB approach and risk weights on the retained tranches in CRT transaction are computed according to SEC-IRBA formulas. However, junior tranche size and coupon are set in anticipation of an adverse scenario, such that an expected IRR of around 7% is achieved under this scenario.

3.2.4 Adverse realised; Baseline expected; Advanced-IRB (scenario 3)

Under this scenario, portfolios receive risk weights on the basis of the A-IRB approach, while risk weights on the retained tranches in CRT transaction are computed according to SEC-IRBA formulas. Junior tranche size and coupon are set in anticipation of a baseline scenario, such that an expected IRR of around 7% is achieved under the baseline scenario. However, the adverse scenario will be modelled to materialize. Tranching and pricing based on the baseline scenario will therefore be too optimistic and the targeted IRR of 7% for the investor will not be realised.

While deviations from expectations in terms of macroeconomic development are not necessarily unrealistic (and in reality, actual macroeconomic development will differ in most cases from initial macroeconomic expectations on which the tranching and pricing are based), the point of including this scenario was not necessarily to be realistic, rather, this scenario provides insight into the sensitivity of deal performance (and investor outcomes) to assumptions made on the state of the economy.

3.2.5 Baseline realised; Baseline expected; Advanced-IRB; include CCC loans (scenario 4)

In most CRT transactions, investors want to exclude CCC-rated loans, because these loans are considered to be below the normal underwriting criteria and therefore underperforming. It is interesting to see what the effects are going to be on the economics of a transaction if CCC-rated loans are included. Furthermore, it gives the reader a sense of what the effects of changing a portfolio composition might have on the overall economics of a transaction.

3.2.6 Baseline realised; Baseline expected; Advanced-IRB; STS RW Sr. tranche (scenario 5)

Under the regular SEC-IRBA formula, a minimum risk weight of 15% is attainable on the senior tranche. Deals eligible for STS treatment, which is a European rule, will have this minimum reduced to 10%, thus offering more room for RWA transfer, but only for cash securitisations and synthetic transactions on SME portfolios. A discussion paper from EBA, published 25 September 2019, gives room for further debates as to whether this reduction could also be applicable for all STS compliant synthetic securitisations. We have therefore included this scenario in our analysis.

3.2.7 Baseline realised; Baseline expected; fully-loaded SA-Floor (scenario 6)

In this scenario, risk weightings apply that correspond with the effective SA output floor as in 2027. More specifically, risk weights that amount to 72.5% of the Basel IV SA risk weightings are attributed to the portfolios throughout their entire duration. We project this logic to the SEC-SA risk weighing computations applicable to the retained senior tranche. This scenario offers a future perspective on the profitability of a CRT transaction.

4 Results

This section contains the calculated CoRC for all the 102 different CRT transactions. We plotted the results based on the respective asset class, namely residential mortgages and SME, Large Corporates and Commercial Real Estate and lastly, Specialised Lending. In the plots, we cap the displayed CoRC at 25% and floored at -5%. In practice the results will be different. Banks have room to manoeuvre by changing the portfolio composition and defaults are probably lower because loans (ever) in arrears are removed from the initial securitised pool.

4.1 Retail RESI and SME

This section presents the computed weighted average costs of capital relief for Retail RESI's and SME's in Belgium, the Netherlands and Sweden.

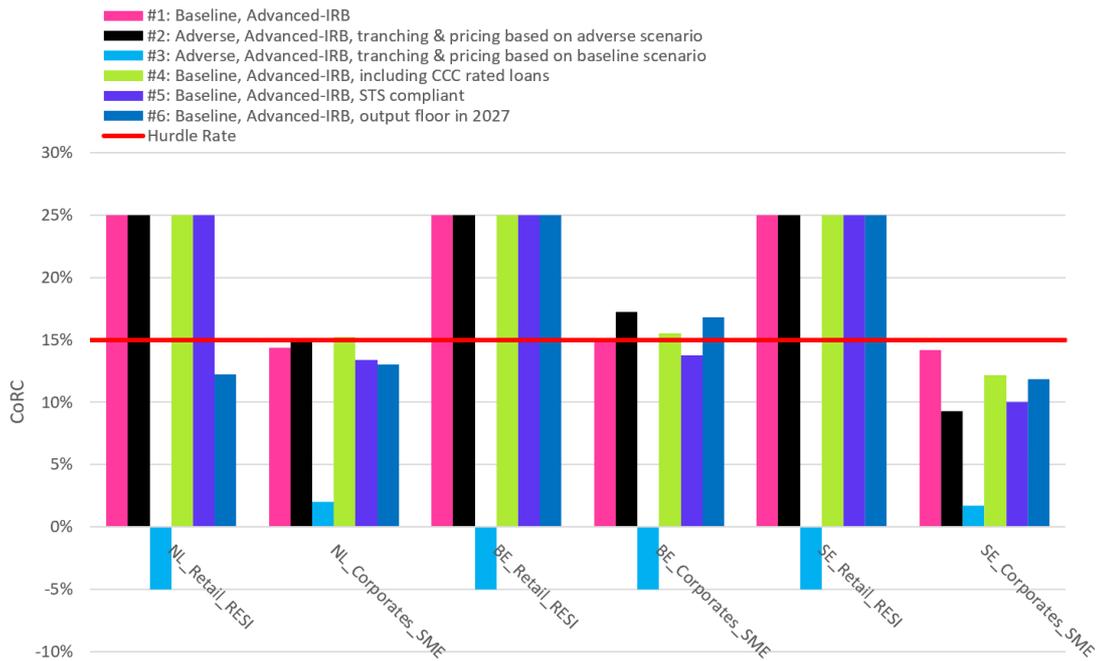


Figure 2: Economic results retail and SME loans

4.2 Large Corporates and CRE

This section presents the computed weighted average costs of capital relief for Large Corporate and CRE exposures in Belgium and the Netherlands, and Large Corporate exposure in Sweden, the UK and France.

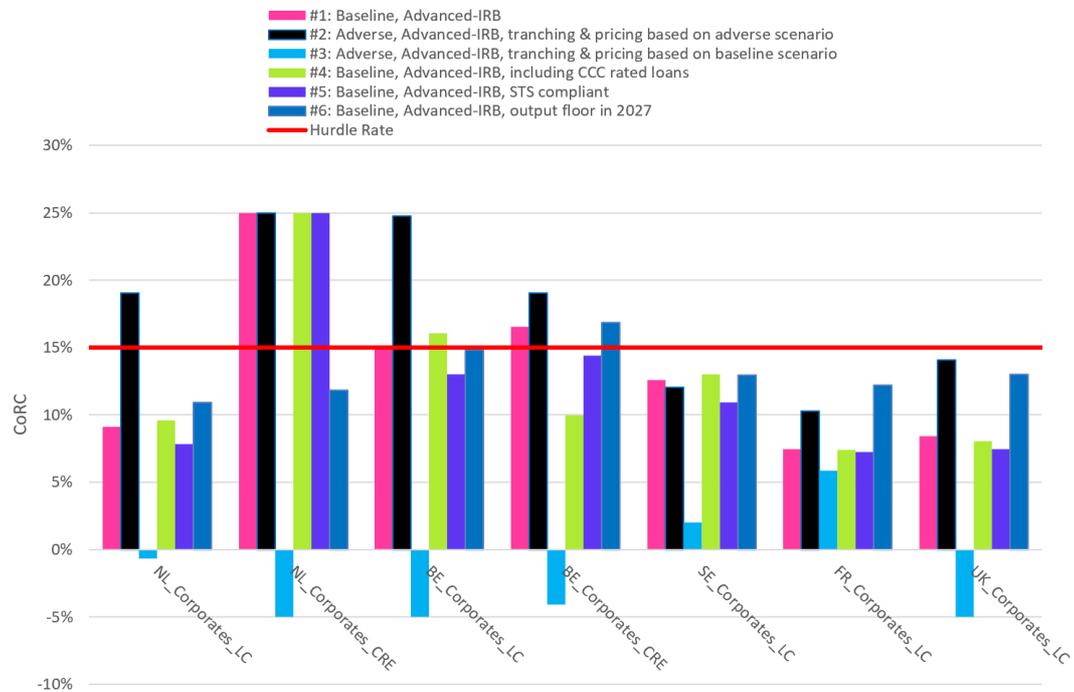


Figure 3: Economic results on large corporate and CRE

4.3 International specialised lending

This section presents the computed weighted average costs of capital relief for the following four specialised lending categories: Aircraft Finance, Shipping Finance, Trade & Commodity Finance and Project Finance.

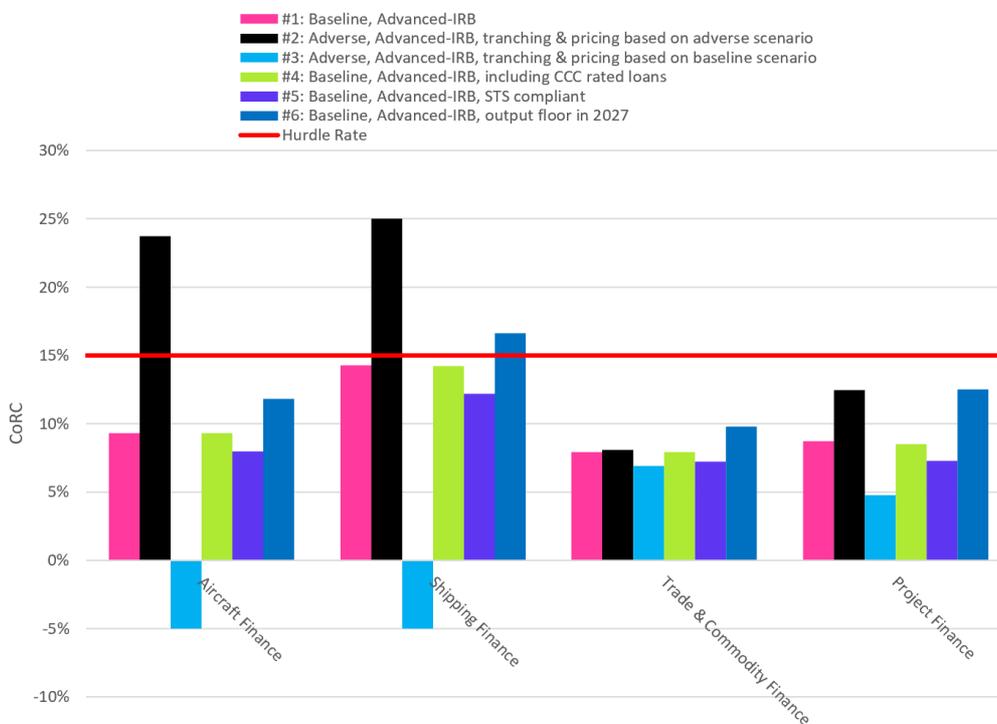


Figure 4: Economic results on specialised lending

Trade & Commodity and Project Finance outperform the benchmark of 15% regardless of the scenario. Aircraft Finance generally performs well, except under scenario 2, and Shipping Finance is generally quite close to the benchmark, but scenario 2 is well over the benchmark. As the ECL of shipping loans are much higher than the other asset classes, the CRT transaction requires more conservative tranching and a higher coupon. Both result in much higher protection fees and therefore a worse CoRC.

All transactions do better when they become STS compliant (scenario 5) and all do worse under the fully loaded floor of Basel IV in 2027 (scenario 6), mainly because the SEC-SA formula will require a large mezzanine tranche for which the bank pays a coupon of 3%.

5 Conclusion & findings

- In **70%** of all cases CRT is a **good alternative** to traditional issuance of new capital and in 80% if we exclude residential mortgages
- In **40%** of all cases CRT also works well during a **downturn scenario**, even if investors are compensated for higher losses.
- **Floor risk weight senior tranche** makes low risk assets, e.g. residential mortgages unattractive.
- Transactions can be **optimized** in several ways:
 - Keep the **first loss tranche as low as possible**
 - Use **excess spread** for portfolios with high expected losses relative to risk weights
 - Apply **pro rata/sequential trigger** to support the transaction economics in a downturn
 - Change **portfolio composition** e.g. by adding lower rated loans for Dutch CRE.