Revival of European Securitisation Markets

A couple of simple ideas: European SSFA or PCMA

Funding & Capital Market Forum 2015
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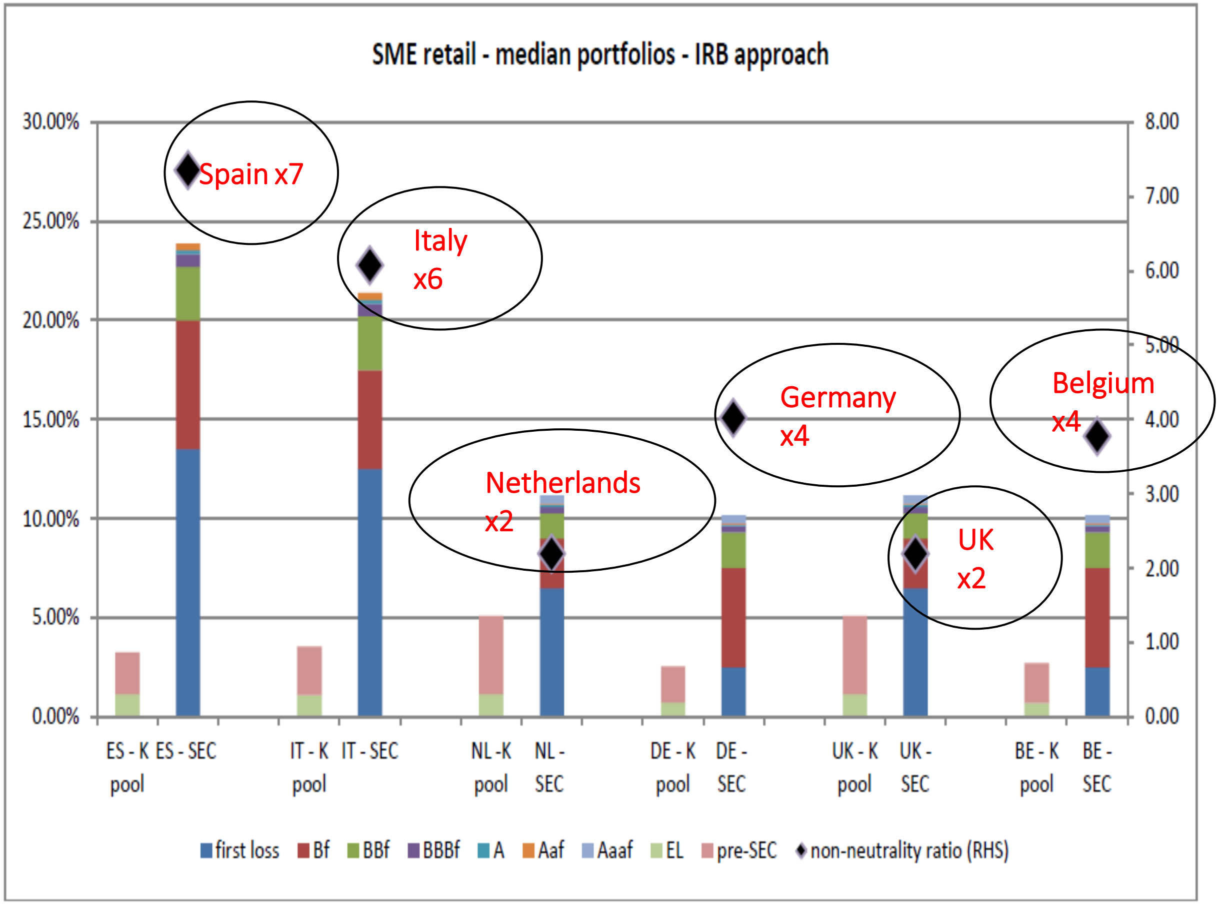
Agenda

1. European capital rules: Identifying the problem
2. Who is really in charge? In Europe: the rating agencies are… but not so in the US
3. A new calibration is needed for HQS, SST, STC… on European assets
4. A new idea for Europe: the “Pool Capital Multiplier Approach” with no reference to ratings agencies

Issues with the current European capital rules
Europe: Rating Agencies, not Regulators, are in control



For each country, the bar on the left is the capital of a pool before securitisation according to the regulators' view; the bar on the right is the capital according to the rating agencies' view. Source: Figure 21 from the EBA paper: Variation from neutrality of the RBM approach on hypothetical SME retail transactions.

- In Europe, securitising leads to a **massive capital increase** in the banking system, and to a disproportionate amount of capital for any risk retained by the originator ➔ ORIGINATION DROUGHT
- The current RBA mapping (rating vs capital charge) is pre-crisis and ignores changes in rating agency methodologies and arbitrary rating caps
- **Rating Agencies, not Regulators, are in control of securitisation capital levels in Europe**

Issues with the current European capital rules
Ratings-based capital is several multiples of K_{IRB} or K_{SA}

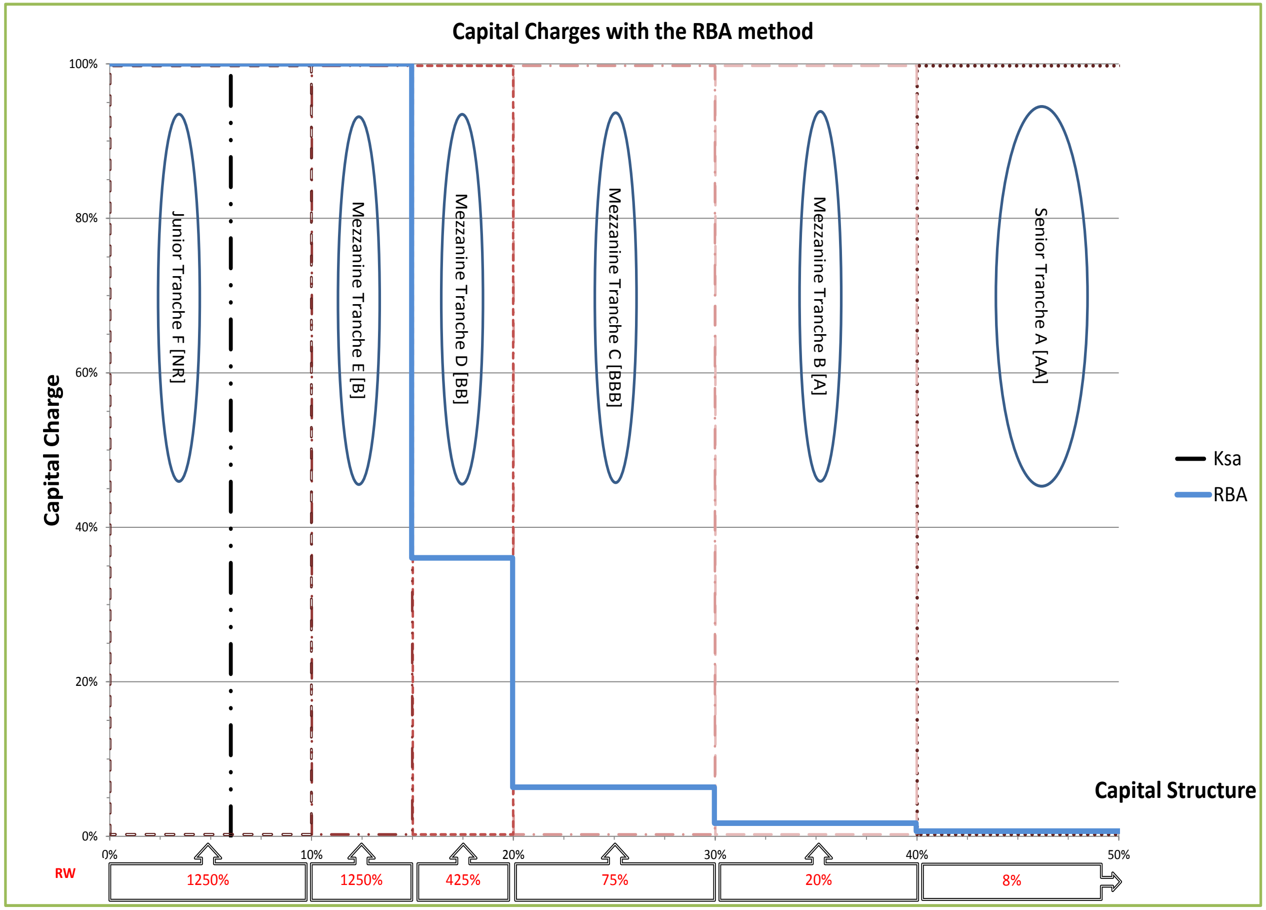


Illustration: tranche capital is the area under the blue line. The capital of the pool is the area on the left of the black dotted line. By comparing both, the problem for an Italian SME Corporate originator is immediately apparent

- There is no link whatsoever between the regulators' view of risk for the pool and the ratings agencies' view of risk for the same pool once securitised

- Entire sections of the European economy are deprived of funding (SMEs in the periphery in particular) also due to this discrepancy

Issues with the future Basel capital rules
Reliance on external ratings will be reinforced

- The ERBA is a lookup approach similar to the RBA
- But, pool granularity no longer affects capital which now depends on (a) the tranche's external rating (as before), (b) whether the tranche is the most senior in its structure (as before), (c) tranche thickness T_T for non-senior tranches, and (d) tranche maturity M_T
- Italian transactions will be using de-facto $M_T = 5$ years

ERBA problematic calibration will make matters worse for European high quality pools

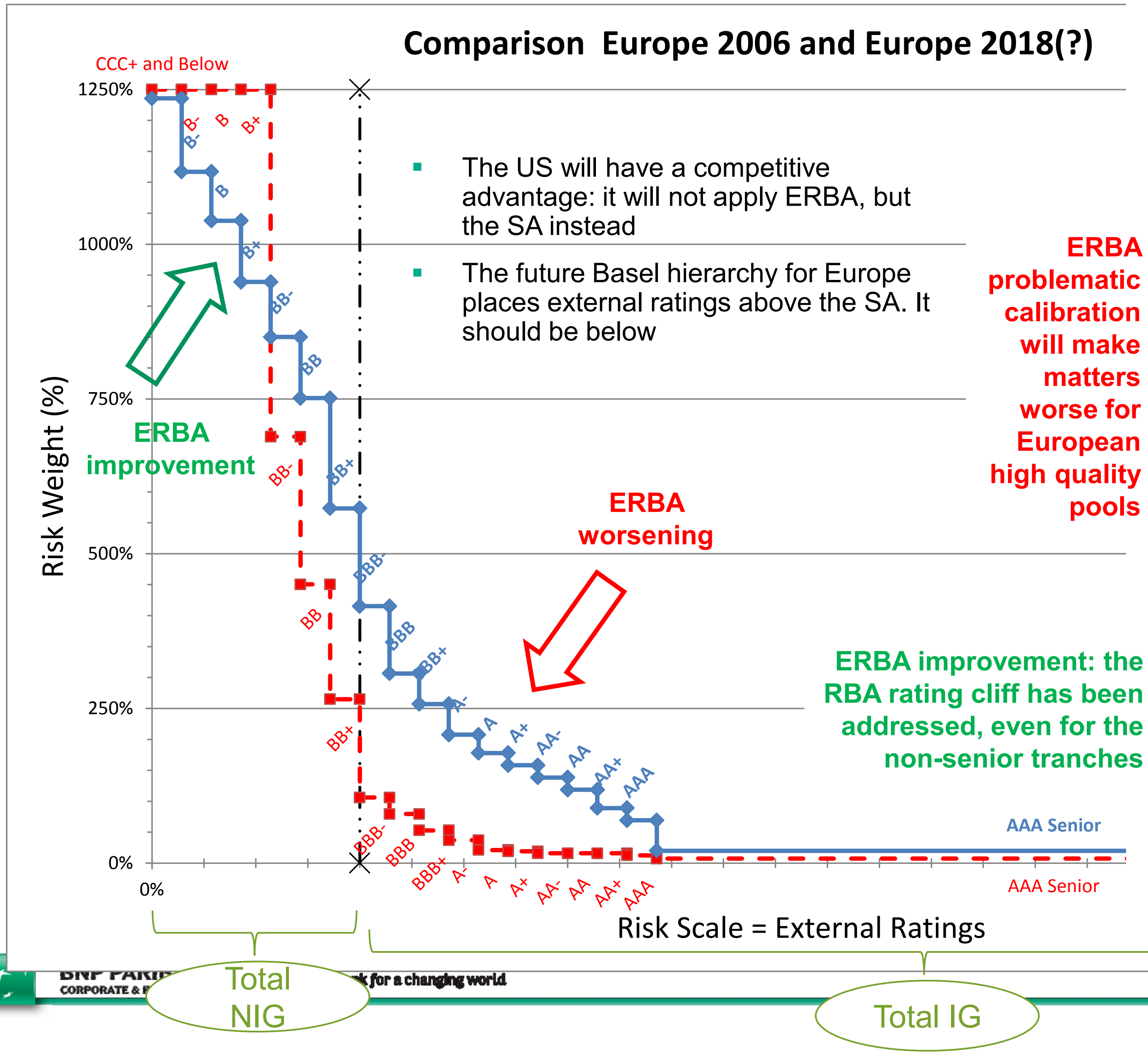
BCBS 303 ERBA risk weights

Tranche Rating	Senior Tranche RW_1 1 year	Senior Tranche RW_5 5 years	Non-Senior (Thin) Tranche RW_1 1 year	Non-Senior (Thin) Tranche RW_5 5 years
AAA	15%	20%	15%	70%
AA+	15%	30%	15%	90%
AA	25%	40%	30%	120%
AA-	30%	45%	40%	140%
A+	40%	50%	60%	160%
A	50%	65%	80%	180%
A-	60%	70%	120%	210%
BBB+	75%	90%	170%	260%
BBB	90%	105%	220%	310%
BBB-	120%	140%	330%	420%
BB+	140%	160%	470%	580%
BB	160%	180%	620%	760%
BB-	200%	225%	750%	860%
B+	250%	280%	900%	950%
B	310%	340%	1050%	1050%
B-	380%	420%	1130%	1130%
CCC [+/-]	460%	505%	1250%	1250%
Below CCC-	1250%	1250%	1250%	1250%

Senior Tranche Risk

Whole Portfolio Risk

Issues with the future Basel capital rules
Reliance on external ratings will be reinforced



External Ratings	RBA (Granular Mezzanine)	ERBA (Non-Senior 5-year)
AAA	12%	70%
AA+	15%	90%
AA	15%	120%
AA-	15%	140%
A+	18%	160%
A	20%	180%
A-	35%	210%
BBB+	50%	260%
BBB	75%	310%
BBB-	100%	420%
BB+	250%	580%
BB	425%	760%
BB-	650%	860%
B+	1250%	950%
B	1250%	1050%
B-	1250%	1130%
CCC- or below	1250%	1250%

Table: Comparison of Thin Tranche Capital between ERBA (future rules) and RBA (current rules)

Issues with the future Basel capital rules
Reliance on external ratings will be reinforced

BCBS303 (Final Rules) streamlines the securitisation framework to a single hierarchy based on 3 approaches:

SEC-IRBA

SEC-ERBA (depending on jurisdictions)

SEC-SA

Securitisation Internal Ratings Based Approach:

SSFA-based formula using

- IRB asset inputs (K_{IRB}, LGD, granularity, asset category)
- tranche inputs (A and D as attachment and detachment points and tranche maturity M, seniority)

Operational constraints in Europe means this approach will hardly be used by investors. This European investors will use the next approach in the hierarchy: SEC-ERBA

Securitisation External Ratings Based Approach:

Using a risk weight mapping using tranche inputs only

- External ratings agencies tranche rating
- Seniority and tranche maturity, and tranche thickness (for non-senior)

Securitisation Standardised Approach:

SSFA-based formula using

- Standardised Approach asset inputs (K_{SA}) and delinquency ratio W
- tranche inputs (A and D as attachment)

The future Basel hierarchy places external ratings above the SA. It should be below

The US will have a competitive advantage: it will not apply ERBA, but the SA instead

Reducing the Reliance of Securitisation Capital on Agency Ratings

- Moving forward, as long as the hierarchy applied in Europe places external ratings approaches above a regulatory formula that uses the appropriate regulatory inputs determined by regulators, ratings agencies' views will always have primacy over the view of regulators, and this will annihilate policy makers' efforts to restart lending, in particular to SMEs via securitisation

- We advocate removing ratings agencies from the hierarchy of approaches used for calculating regulatory capital and replacing it with an alternative, or at least reducing the level of an external ratings based approach within that hierarchy so that agency ratings become a 'last resort' instead of 'first resort'.

- Within Europe, this would encourage investment in high quality ABS and enhance securitisations as an important source of funding for the real economy

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US: Regulators, not Rating Agencies, are already in control.
The current US rule for IRB

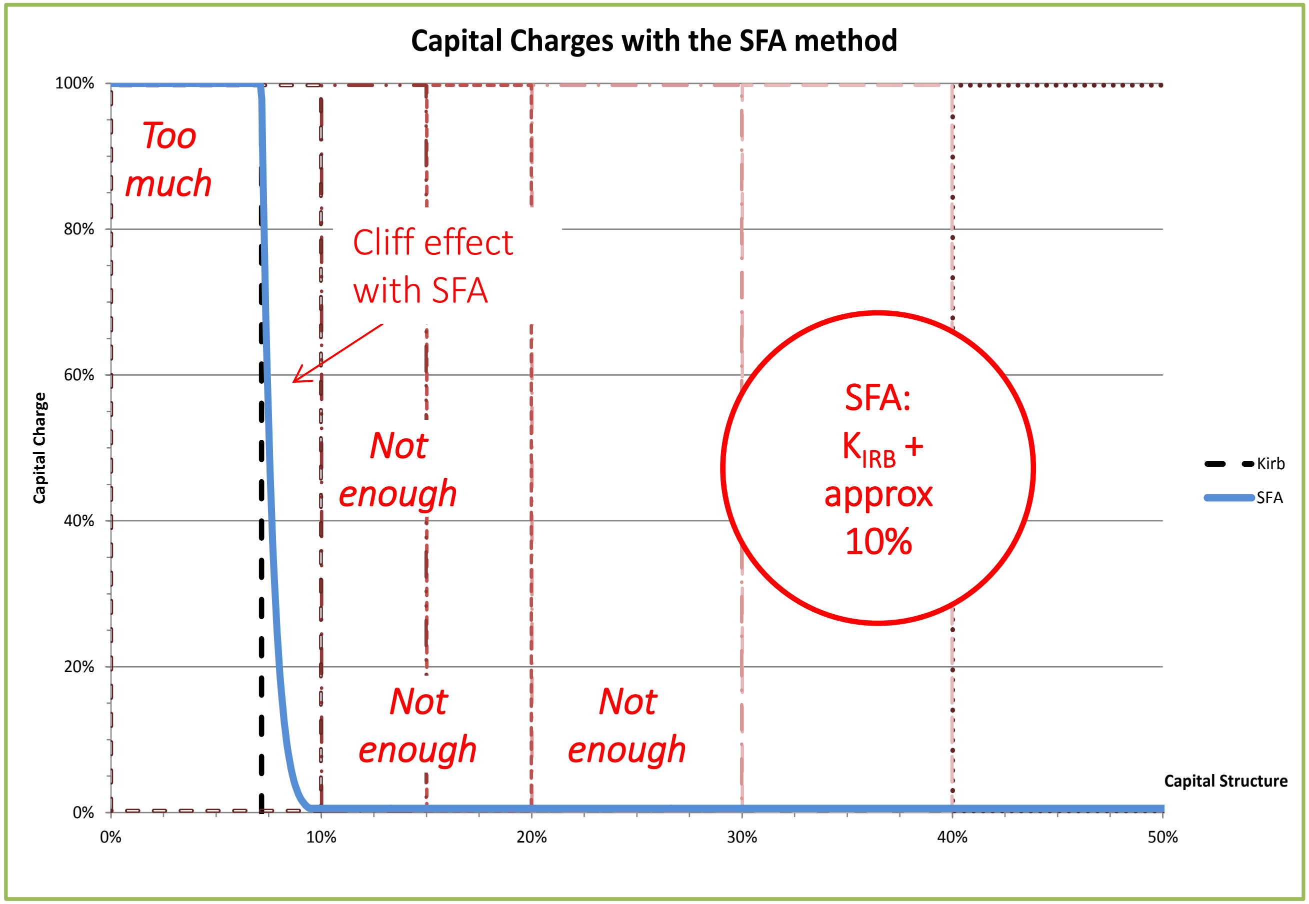
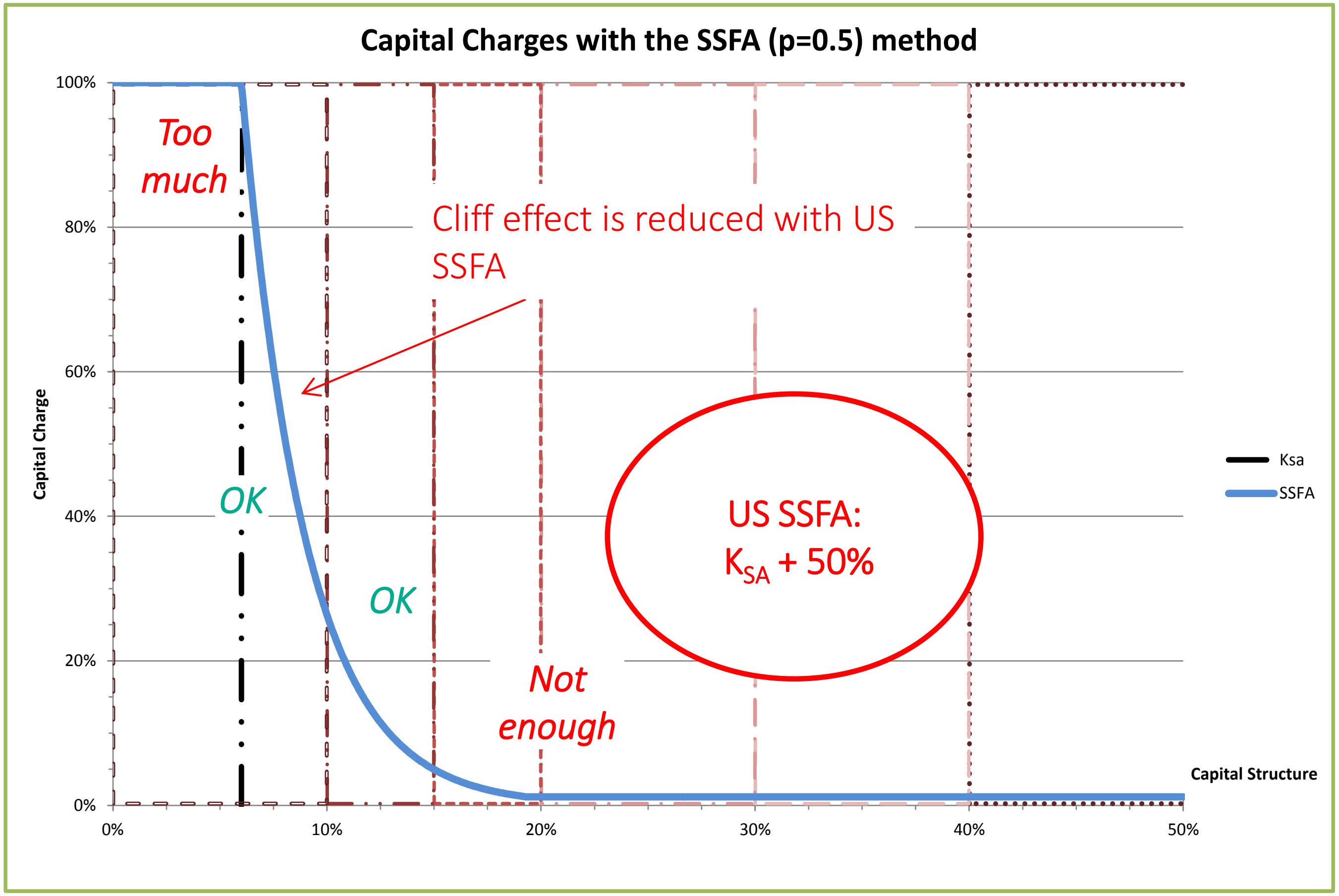


Illustration: the SFA allocates insufficient capital to tranches above pool capital (K_{IRB}) and too much capital to tranches below pool capital (K_{IRB}) (creating regulatory arbitrage opportunities)

- US Congress (Dodd-Frank) required regulators to remove references to ratings agencies' opinions
- To replace the Basel 2 RBA, US regulators implemented the current SFA formula, which can now be used with inputs which are "IRB proxies"
- If such method was allowed in Europe, it would 'fix the problem' of having to use the 'old' RBA mapping but it would be too aggressive for some mezzanine tranches

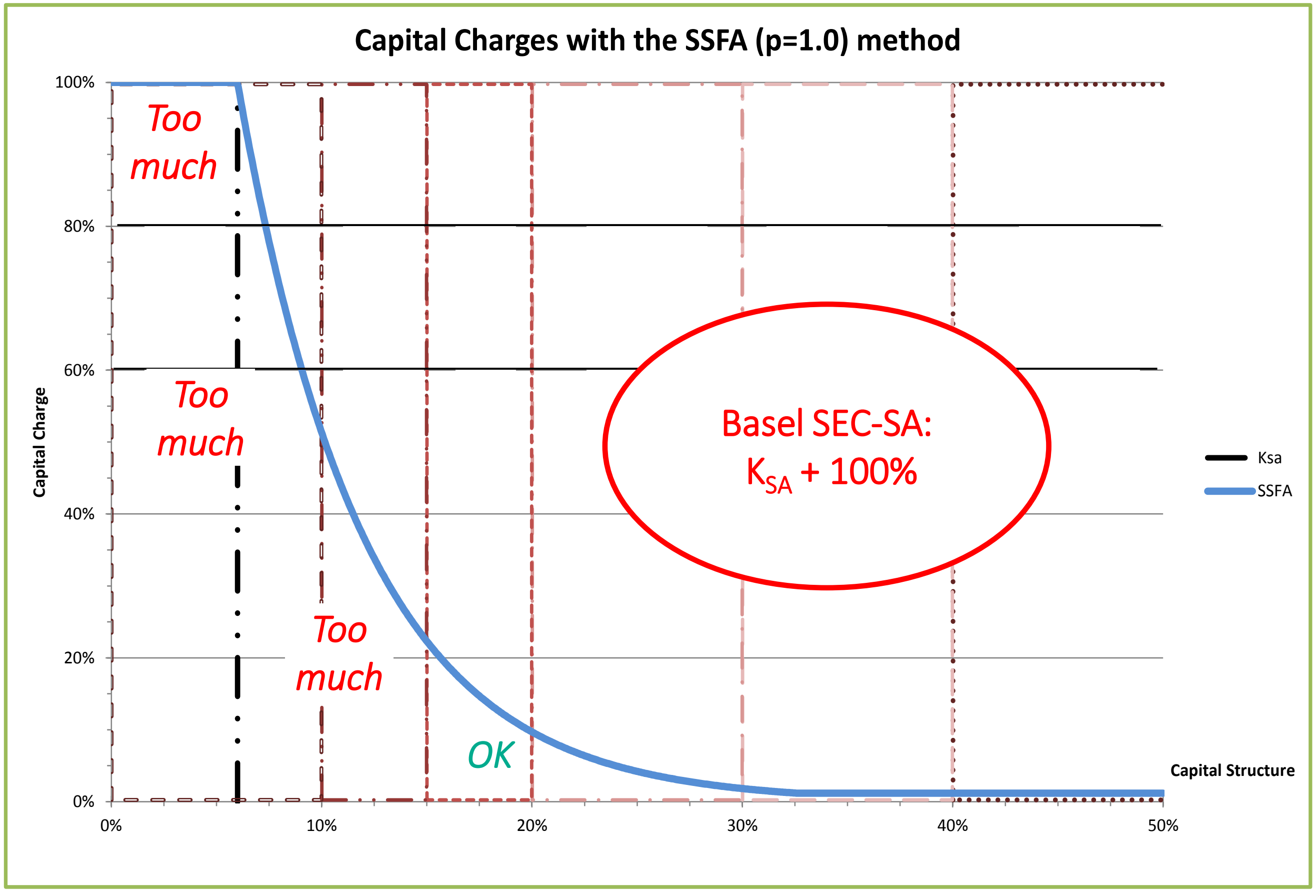
US: Regulators, not Rating Agencies, are already in control.
The current US rule for SA



- To replace the Basel 2 ratings-based Standardised Approach, US regulators implemented a new formula, the "US SSFA" with a 50% capital surcharge (with an exponential allocation)
- Compared to the current SFA, the US SSFA is seen as an improvement. **It can be improved further**

Illustration: The US SSFA reduces the cliff effect simply by adding more capital. Some mezzanines (between 2 and 4 times pool capital) are still not capitalised sufficiently

Basel: Similar to US practice and a problem of calibration



- It has been demonstrated[1] that a **100% capital surcharge is appropriate for US subprime RMBS assets**, not for European high quality pools

- **It is possible to get the right allocation of capital across tranches, without just adding more and more capital**

Illustration: In SEC-SA, the 2018 Basel SSFA capitalises better those mezzanines in the 3 to 4 times pool capital. This is achieved by adding 100% more capital and overcapitalising the junior part of the capital structure

(1): See paper 6 in the reference section

SEC-IRBA: 'p' Function : the problem with the US calibration

$$p_{IRBA} = \mathrm{A} + \mathrm{B} \times \frac{1}{N} + \mathrm{C} \times K_{IRB} + \mathrm{D} \times LGD + \mathrm{E} \times M_T$$

$$p = \max(0.30;\ p_{IRBA})$$

- The coefficient C is negative

→Fantastic calibration for US subprime: the worse the quality of the pool, the smaller the capital surcharge

- The main conceptual problem with the SEC-IRBA approach is the definition of tranche maturity M_T

→Highly detrimental to European high quality retail pools

Coefficients for p_{IRBA}	**Tranche**, Asset pool	A	B	C	D	E
Wholesale	**Senior**, Granular (N>=25)	0	3.56	-1.85	0.55	0.07
	Senior, Non-granular (N<25)	0.11	2.61	-2.91	0.68	0.07
	Non-Senior, Granular (N>=25)	0.16	2.87	-1.03	0.21	0.07
	Non-Senior, Non-granular (N<25)	0.22	2.35	-2.46	0.48	0.07
Retail	**Senior**	0	0	-7.48	0.71	0.24
	Non-Senior	0	0	-5.78	0.55	0.27

24% to 27% additional capital surcharge per "legal maturity" year!

(Warning: the Basel "legal maturity" definition is an anti-European feature and completely against the principle of Capital Markets Union within Europe)

Future Basel Tranche Maturity Definition: why it is anti-European

- In SEC-IRBA and SEC-ERBA, BCBS 303 proposes the use of Tranche maturity M_T calculated as:
  a) the Euro weighted-average maturity of the contractual cashflows of the **tranche** or
  b) the legal final maturity of the **tranche**
- Method a) is not really applicable as there are no contractual cashflows for tranches – only a contractual waterfall (priorities of payments) applicable to the cashflows of the underlying assets
- Method b) will be used. But "legal final" is completely disconnected from the pool's credit risk
- The "legal final maturity" of a tranche is determined by summing up 3 components:
  1. the **replenishment / reinvestment period**
  2. the **longest possible contractual cashflow** in the pool (either real or based on covenants) – this may be an outlier, but it drives the legal final maturity of the tranche
  3. the **length of the judicial process for recoveries in the jurisdiction** where the assets are originated (the judicial process is not part of the Basel 2 "asset maturity" definition. It is taken into account via the LGD, as LGD is defined after payment of deferred interest accumulated during the length of the recovery process (BCBS 115))
     - Tranche legal maturity is longer than the longest underlying asset legal final maturity, whilst there is no added risk thereafter
- The length of the judicial process for recoveries in Europe varies greatly from country to country. To capitalize securitisation tranches on this basis creates capital penalties for countries that have lengthy judicial processes (such as Italy or Portugal - typically more than 5 years) compared to countries that have shorter judicial processes (such as the UK - typically 1 to 2 years).
- **The Tranche Maturity definition, as proposed, is a hidden barrier to trade within Europe**

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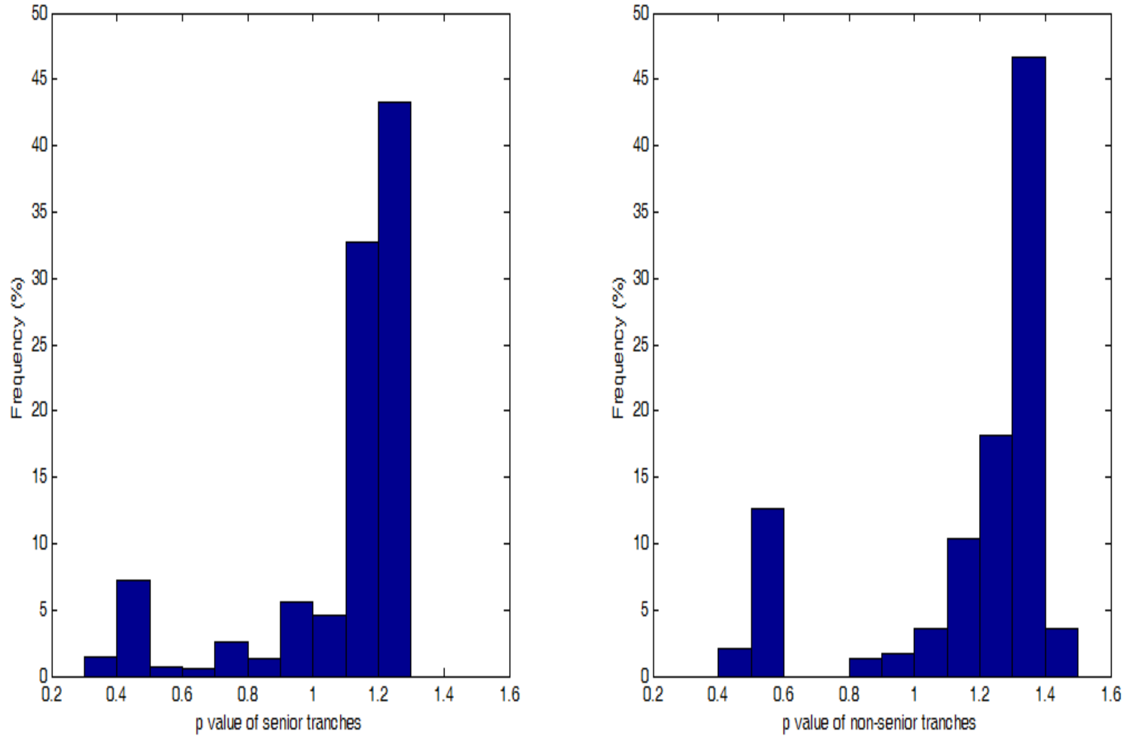
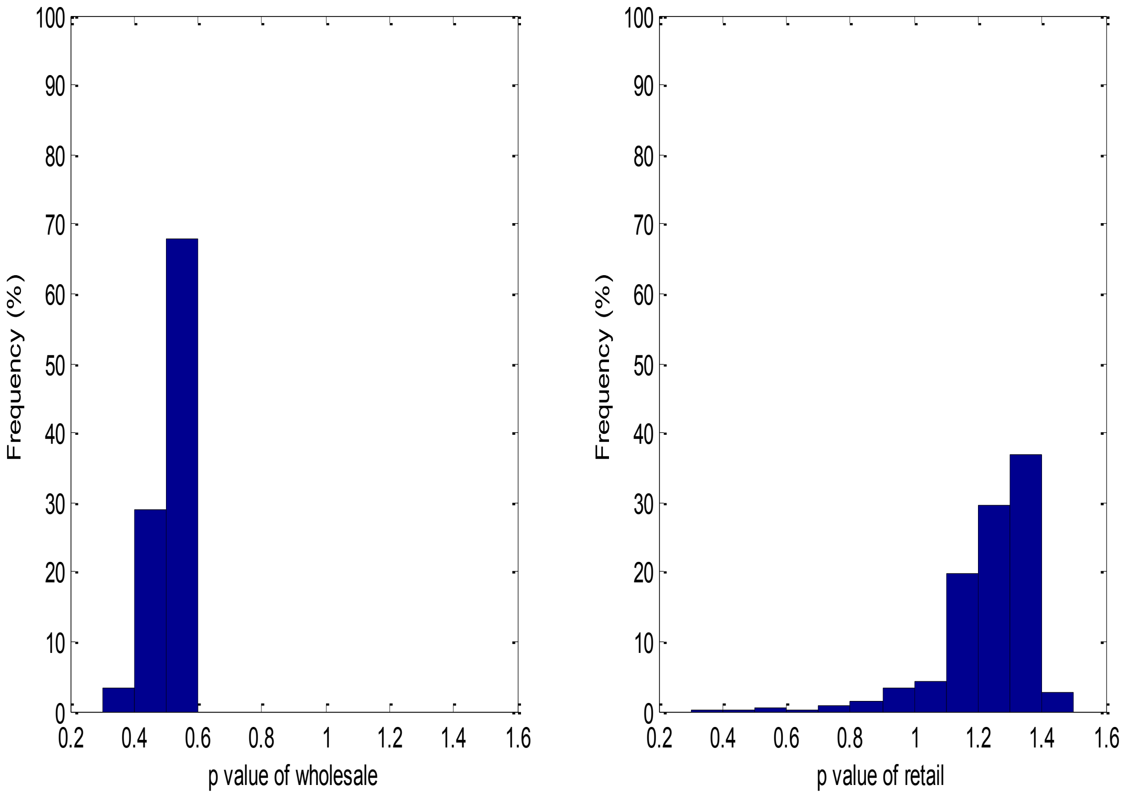
Basel SSFA in IRB mode (1/2) applied to European assets



Approx 100% capital surcharge implies that Basel views High Quality European assets as requiring a similar capital surcharge that is, in our view, adequate only for US subprime assets

- We calculated the IRBA values of the SSFA parameter, p for 550 senior tranches and 1221 non-senior tranches for European RMBS, SME-backed and Other Retail-backed tranches
- The average p value is:
  - for senior tranches: 1.03 (i.e. 103% surcharge)
  - for non-senior tranches: 1.12 (i.e. 112% surcharge)

Basel SSFA in IRB mode (2/2) applied to European assets



120% capital surcharge implies that Basel views High Quality RETAIL European assets as requiring MORE capital surcharge than what would be necessary for US subprime assets!

- We calculated the IRBA values of the SSFA parameter, p for 221 wholesale tranches and 1550 retail tranches
- The average p value is
  - for wholesale tranches: 0.45 (i.e. 45% surcharge)
  - for retail tranches: 1.19 (i.e. 119% surcharge)

Modifying the SSFA for Europe: Principles and Calibration

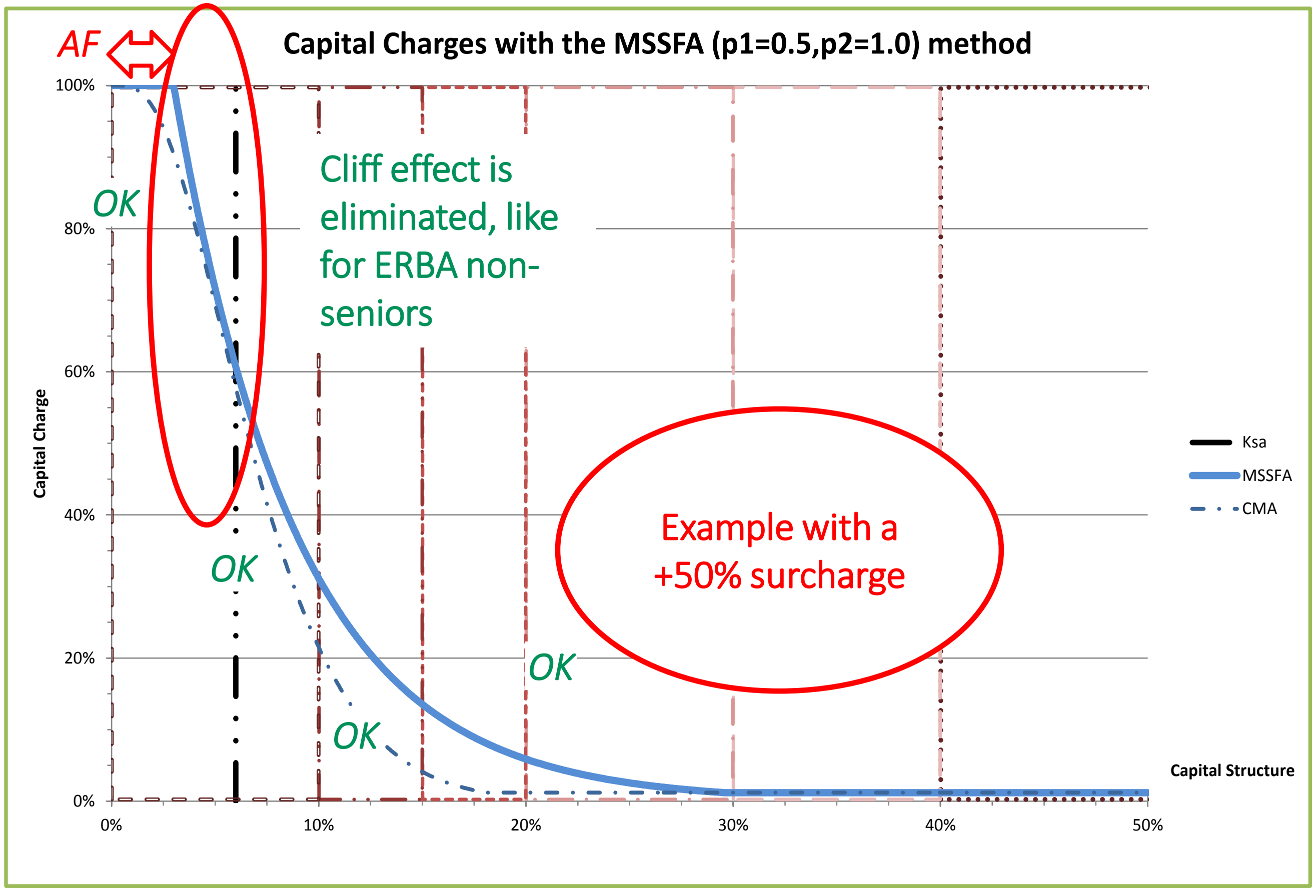
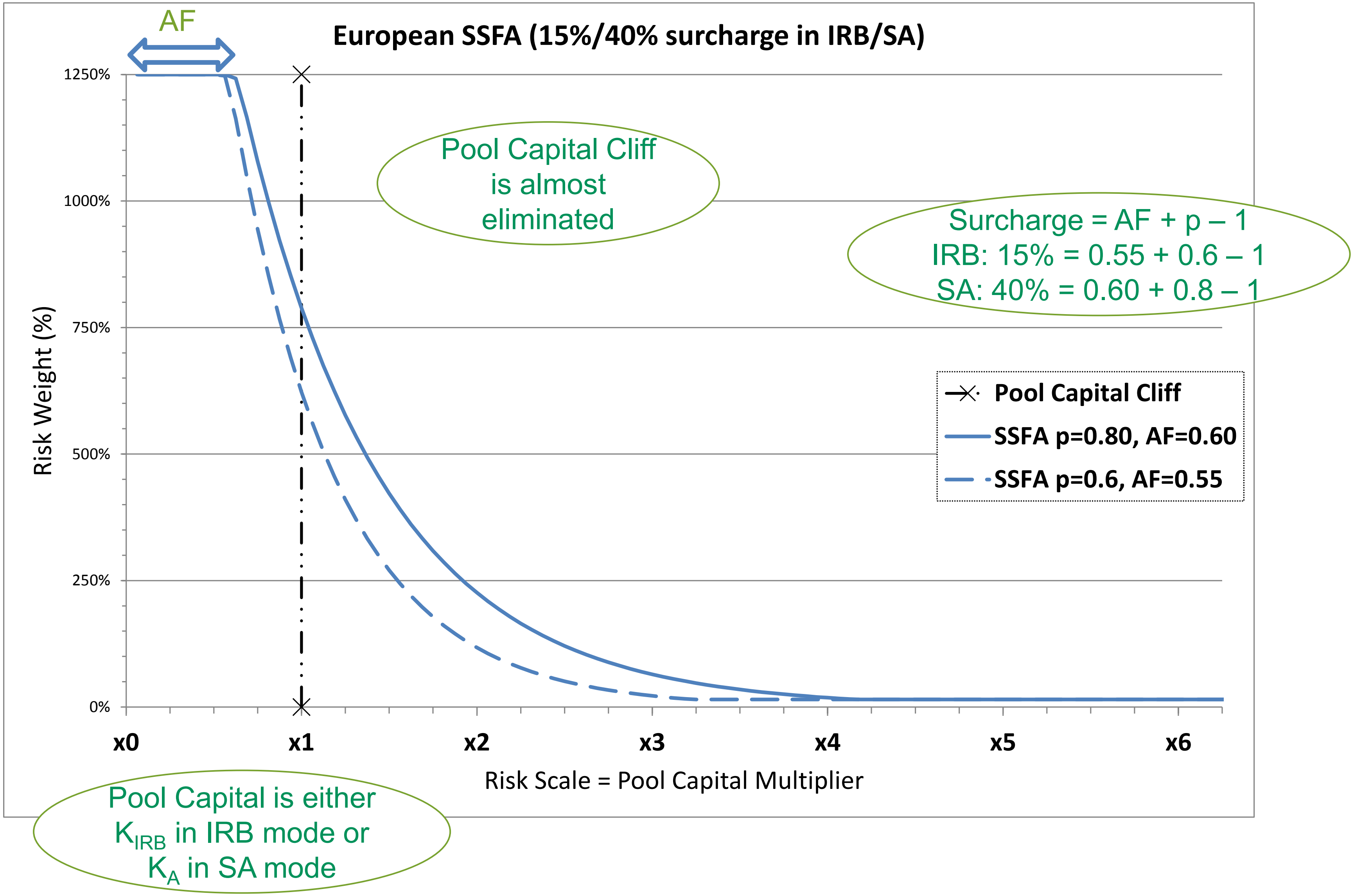


Illustration: by introducing an Adjustment Factor (AF) for the point below pool capital where the risk weight is no more 1250%, the cliff effect can be eliminated, while appropriately capitalising mezzanines, without overcapitalising needlessly the securitisation

- We propose a "Modification" to the Basel SSFA to allocate capital appropriately for junior, mezzanine and senior tranches
- We benchmark the allocation against a rigorous risk model: the Conservative Monotone Approach (CMA)
- One may read off the capital premium implied by the modification in a transparent fashion
- In Europe, we calibrate it to European assets

Modifying the SSFA – How a calibration on European assets looks like



European SSFA: How to simplify the Basel Formulae

User inputs: (SA) W and K_{SA} or (IRB) K_{IRB} for the pool, A and D for the tranche
Regulatory inputs: AF, p (in SA or IRB, fixed value), $Floor$

In SA: $K_P = K_{SA}$
In IRB: $K_P = K_{IRB}$

In SA: $K_T = AF \times (1 - W) \times K_{SA} + W \times 0.5$
In IRB: $K_T = AF \times K_{IRB}$

$l = \max(0, A - K_T)$
$u = D - K_T$
$a = \frac{-1}{p \times K_P}$
$K_{SSFA}(l,u) = \frac{e^{au} - e^{al}}{a(u-l)}$

$$K_{Tranche} = \begin{cases} D \leq K_T & \rightarrow \quad 100\% \\ K_T \leq A & \rightarrow \quad K_{SSFA}(l,u) \\ A < K_T < D & \rightarrow \quad \left(\frac{K_T - A}{D - A} + \frac{D - K_T}{D - A} \times K_{SSFA}(l,u)\right) \end{cases}$$

$RW_{Tranche} = \max(Floor; K_{Tranche} \times 12.5)$

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Currently 2 routes to calculate capital: but who is really in charge?

Securitisation Regulators

Mapping

based on

~~External Ratings~~

~~Ratings Agencies~~

~~Formula~~

based on

Pool Capital

~~Mathematicians~~ & Securitisation Regulators

Bank Regulators

European SST?

Simple, Standard, Transparent (SST)?
Why do Securitisation Regulators need Ratings Agencies for SST securitisations?
Why be constrained by mathematical limitations?

Securitisation Regulators

New Mapping

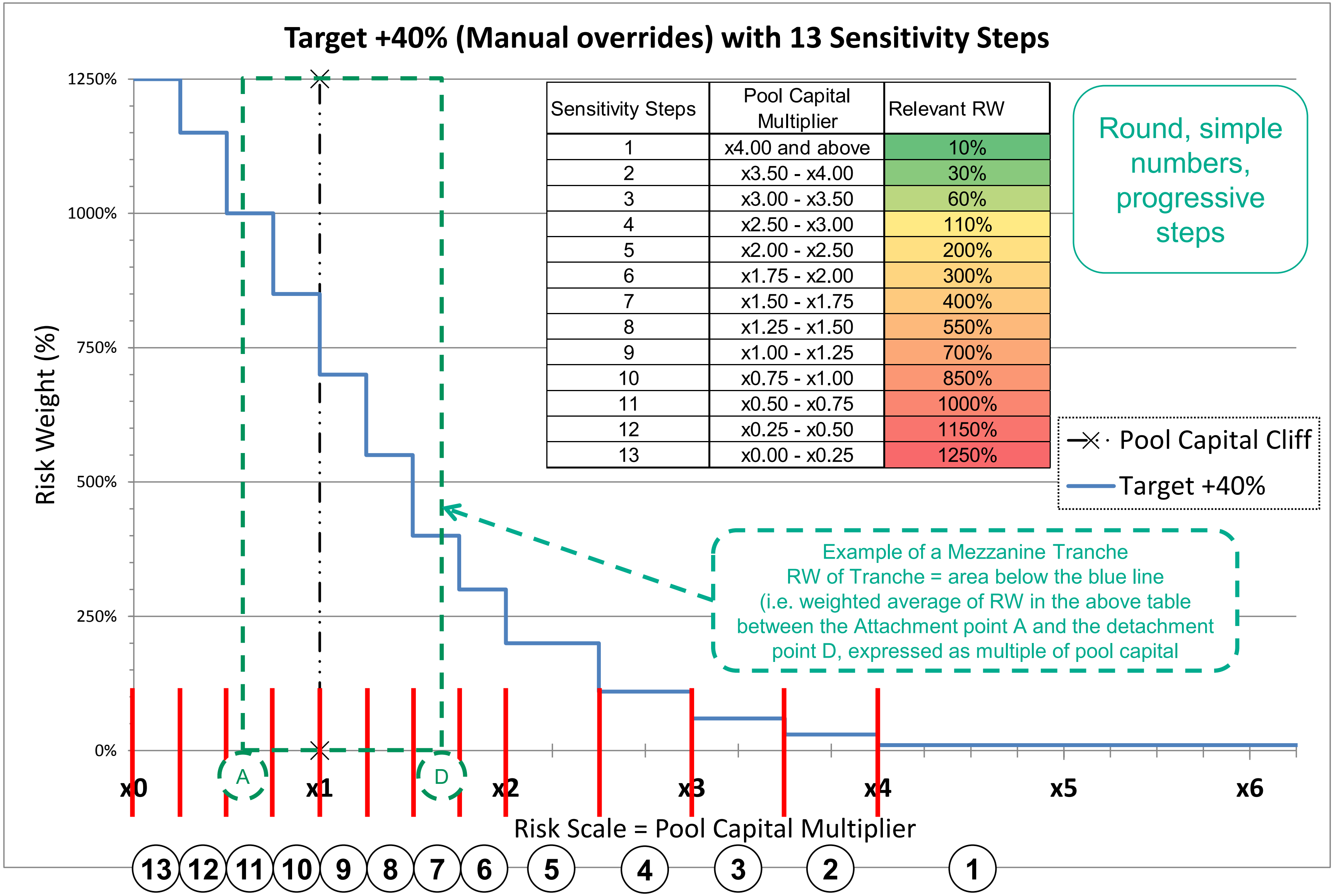
based on

Pool Capital

Bank Regulators

A mapping based on Pool Capital would result in a stable and consistent regulatory framework, that adapts to changes in Bank Regulators' approaches for the pool and enables Securitisation Regulators to have a greater control of the capital allocation rule

Example for Standardised Approach with a 40% Capital Surcharge



Sensitivity Steps	Pool Capital Multiplier	Relevant RW
1	x4.00 and above	10%
2	x3.50 - x4.00	30%
3	x3.00 - x3.50	60%
4	x2.50 - x3.00	110%
5	x2.00 - x2.50	200%
6	x1.75 - x2.00	300%
7	x1.50 - x1.75	400%
8	x1.25 - x1.50	550%
9	x1.00 - x1.25	700%
10	x0.75 - x1.00	850%
11	x0.50 - x0.75	1000%
12	x0.25 - x0.50	1150%
13	x0.00 - x0.25	1250%

European legislators could decide the capital surcharge for SST

Target Capital Surcharge for Securitisation(1)

Sensitivity Steps	Pool Capital Multiplier	Thickness (as Pool Capital Multiplier)	Target +0%	Target +5%	Target +10%	Target +15%	Target +20%	Target +25%	Target +30%	Target +35%	Target +40%
1	x4.00 and above		7%	7%	7%	7%	10%	10%	10%	10%	10%
2	x3.50 - x4.00	0.5	8%	9%	10%	12%	15%	18%	20%	25%	30%
3	x3.00 - x3.50	0.5	15%	18%	20%	25%	30%	35%	40%	50%	60%
4	x2.50 - x3.00	0.5	35%	40%	45%	55%	65%	75%	80%	95%	110%
5	x2.00 - x2.50	0.5	70%	85%	100%	115%	130%	140%	160%	180%	200%
6	x1.75 - x2.00	0.25	125%	150%	170%	185%	200%	225%	250%	275%	300%
7	x1.50 - x1.75	0.25	200%	230%	260%	280%	300%	325%	350%	375%	400%
8	x1.25 - x1.50	0.25	300%	340%	380%	400%	425%	450%	500%	525%	550%
9	x1.00 - x1.25	0.25	425%	475%	500%	525%	550%	600%	650%	675%	700%
10	x0.75 - x1.00	0.25	600%	625%	650%	700%	725%	750%	800%	825%	850%
11	x0.50 - x0.75	0.25	800%	825%	850%	900%	925%	950%	950%	975%	1000%
12	x0.25 - x0.50	0.25	1050%	1075%	1075%	1100%	1150%	1150%	1150%	1150%	1150%
13	x0.00 - x0.25	0.25	1250%	1250%	1250%	1250%	1250%	1250%	1250%	1250%	1250%
		Surcharge (Excluding Floor)	0.1%	5.5%	9.7%	15.1%	20.1%	24.7%	30.0%	35.0%	40.0%

Capital Neutrality can even be achieved: 0% capital surcharge
(but not recommended)

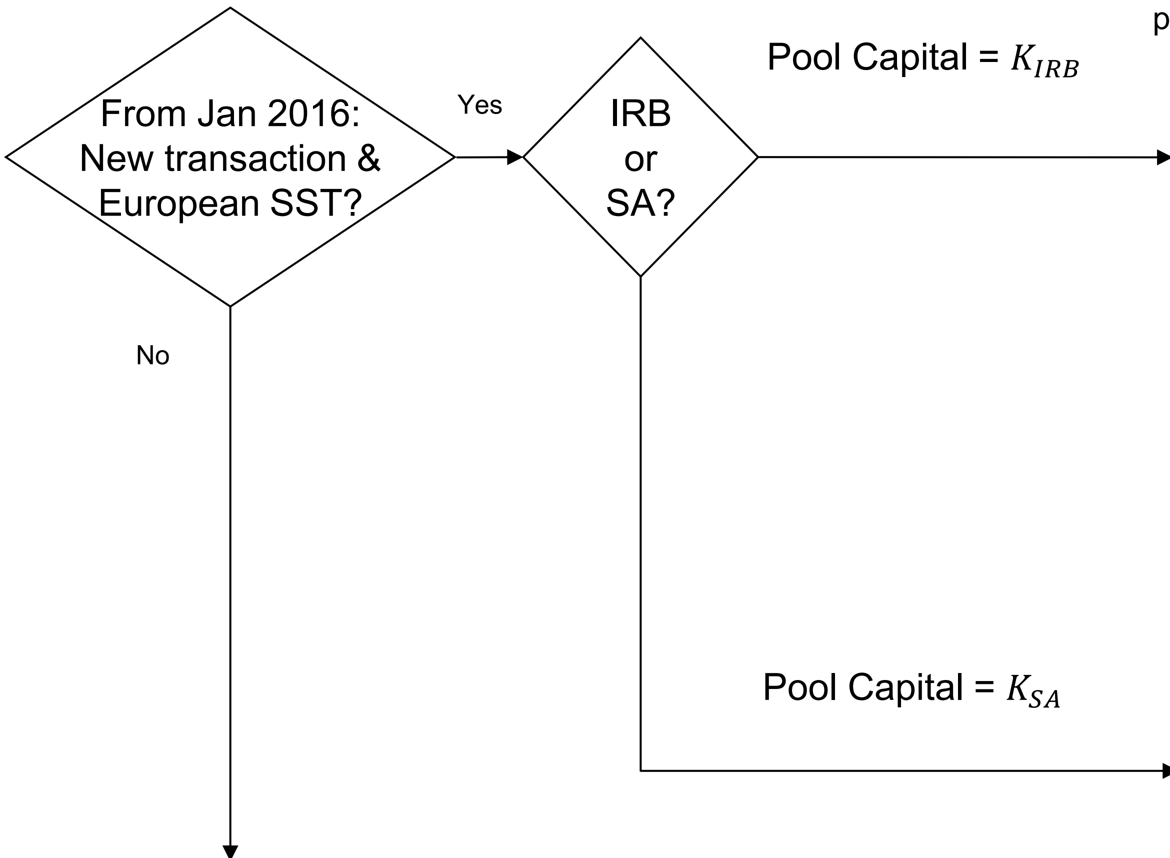
Proposal for IRB: 15% of capital surcharge

Proposal for SA: 40% of capital surcharge

(1): the Target Capital Surcharge excludes the additional capital derived from the application of the floor. The risk weight of Sensitivity Step 1 (i.e. x4.00 and above) is de facto a risk weight floor

Of note, the Capital Surcharge when using Rating Agencies in Europe for SME pools is currently between 100% and 600%! (Source: EBA)
To keep in mind: the Capital Surcharge in future Basel Rules to be applied in 2018 in Europe will be between 120% and 150% for SST-like transactions in SEC-IRBA and 100% for SEC-SA.

Pool Capital Multiplier Approach (PCMA)



Tranche Risk Weight depends on tranche's position in the capital structure expressed as a pool capital multiplier

Sensitivity Steps	Pool Capital Multiplier	Relevant RW
1	x4.00 and above	7%
2	x3.50 - x4.00	12%
3	x3.00 - x3.50	25%
4	x2.50 - x3.00	55%
5	x2.00 - x2.50	115%
6	x1.75 - x2.00	185%
7	x1.50 - x1.75	280%
8	x1.25 - x1.50	400%
9	x1.00 - x1.25	525%
10	x0.75 - x1.00	700%
11	x0.50 - x0.75	900%
12	x0.25 - x0.50	1100%
13	x0.00 - x0.25	1250%

Surcharge: +15%, RW Floor: 7%

Sensitivity Steps	Pool Capital Multiplier	Relevant RW
1	x4.00 and above	10%
2	x3.50 - x4.00	30%
3	x3.00 - x3.50	60%
4	x2.50 - x3.00	100%
5	x2.00 - x2.50	200%
6	x1.75 - x2.00	300%
7	x1.50 - x1.75	400%
8	x1.25 - x1.50	550%
9	x1.00 - x1.25	700%
10	x0.75 - x1.00	850%
11	x0.50 - x0.75	1000%
12	x0.25 - x0.50	1150%
13	x0.00 - x0.25	1250%

Surcharge: +40%, RW Floor: 10%

From 2016: apply current CRR with
RBA/SA(RB)/SFA/IAA

From 2018: apply future Basel rules
(SSFA-IRB, ERBA, SSFA-SA)

Advantages of Pool Capital Multiplier Approach (PCMA)

Definition: the tranche risk weight is equal to the weighted average of the PCMA risk weights of each sensitivity steps contained in the tranche

- The PCMA is very intuitive for originators and investors and the definition is very simple
- The PCMA can be calibrated by the European legislators in an intuitive way, by setting first a target capital surcharge for SST, and then by allocating the capital surcharge to all sensitivity steps(1). **The European legislators have now a tool to revive the European Securitisation markets**
- It is not a revolution, but an evolution of current CRR (precedents exists where the European legislators modified the mapping because of US subprime experience or to help the European SME sector). It removes external ratings for SST: it contributes to Europe’s objective of removing all ratings by 2020
- Other technical advantages
  - Tranche thickness is taken into account automatically and thinner tranches attract higher risk weights for a given attachment point. Unlike in the future SEC-ERBA rules, tranche thickness is sensitive to the underlying pool risk
  - Like in the future SEC-SA rules, the PCMA does not require tranche maturity, a problematic and anti-European feature present in future SEC-ERBA and SEC-IRBA rules

(1): Examples of allocation are provided on the next slide once for a given percentage of capital surcharge

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