Alternatives to the Current Basel Proposals on Securitisation Capital

by

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Agenda

1. A critique of current Basel proposals
2. An alternative model: the CMA
3. Using the CMA to calibrate the SSFA
4. A 2-parameter extension to the SSFA
5. Use of the CMA to reduce regulatory reliance on ratings

Introduction (1/3)

- Following extensive engagement with the industry, BCBS 269 substantially revised some key assumptions and theoretical underpinnings of both the MSFA and ERBA contained in the earlier BCBS 236:
  1. Risk metric underlying the MSFA was revised to provide greater consistency with the IRB credit risk framework (changed from an expected shortfall ES approach to a VaR approach)
  2. Recognition of (part of) the future margin income of the pool beyond the 1 year horizon for senior tranches (80%)
  3. An intra pool risk factor has been introduced to capture the asset correlation among loans within the securitised pool and to reallocate pool capital between senior and non senior tranches
  4. All loan defaults are now assumed to occur on (M) the maturity of the securitisation (no longer 1 year and M)
  5. The proposal retains the MSFA for calibration purpose in IRBA: this opaque credit risk model is used to calibrate the simple smoothing function of the SSFA in IRBA
- But important issues remain…

Introduction (2/3)

- The current Basel proposals on securitisation capital (BCBS 269), based on IRBA and SA versions of a Simplified Supervisory Formula Approach (SSFA) and an External Ratings Based Approach, have several drawbacks
- Stated concisely, these are:
  1. The hierarchy of approaches implies that capital in Europe will remain largely determined by agency ratings with their various disadvantages
  2. Capital levels remain too high, both:
     - because of capital add-ons implied by the calibration and
     - because of a capital floor that implies excessive capital for senior tranches of key real economy transactions
  3. Maturity is penalised excessively, particularly because the authorities propose to use tranche contractual maturity
  4. The Standardised Approach is inadequately risk sensitive and implies a capital add-on (compared to on-balance-sheet capital) that is excessive except for sub-prime or other high risk deals.
- In this presentation, we set out the latest version of the Arbitrage Free Approach (AFA), the Conservative Monotone Approach (CMA)
- This has advantages compared to the SSFA. Calibrating it sheds light on how the SSFA should itself be calibrated if adopted

Introduction (3/3)

- Excessive conservatism in the Basel proposals (reduced since BCBS 236 but still present in BCBS 269), raises discussions, especially in Europe of whether lower capital might be permitted for a category of High Quality Securitisations (HQS)

- A statement by the Bank of England and ECB in April at the IMF meetings suggested the need to revive the securitisation market in Europe especially, and suggested that one of the roadblocks preventing this is conservative regulation

- Such regulation includes most notably: Solvency II capital rules, LCR eligibility rules and Basel capital rules

- A recent paper, Perraudin (2014), shows there is empirical justification for lower capital for an HQS category of securities since historical return volatility has been much lower for these securities (conditioning on rating)

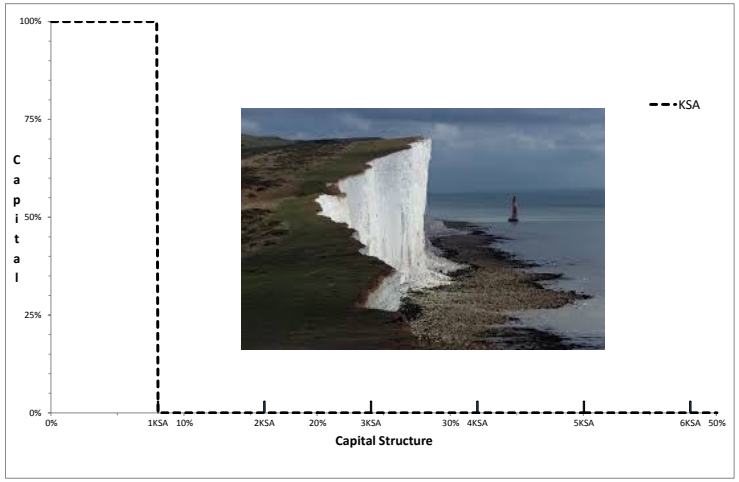
- The May Bank of England-ECB consultation paper expands on the April note and asks for industry views on the usefulness of an HQS category

The Basel Proposals Revolve around the SSFA: An Ad Hoc Formula Already Used in US

2002

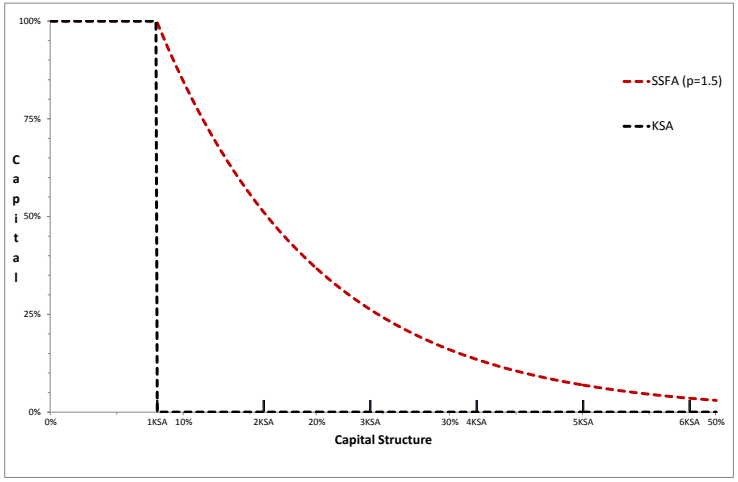
The diagram shows the tranche level UL-based capital as a kind of 'first-loss' on the capital structure

This creates a 'cliff-effect'



Dec 2012

The SSFA in the BCBS 236 proposals smooths the cliff-effect by adding 150% more capital (p=1.5)



Jan 2013

This way of addressing the problem caused concerns in the industry

In the SSFA, capital is a simple exponential function of attachment and detachment points, A and D

$$K_{SSFA}(l,u) = \frac{\left(e^{a\,u} - e^{a\,l}\right)}{a\,(u-l)}$$

l is the lower boundary, defined as the distance from the attachment point A and the 1250% threshold K_T, and the parameter u is the upper boundary, defined as the distance from the detachment point D and the 1250% threshold K_T

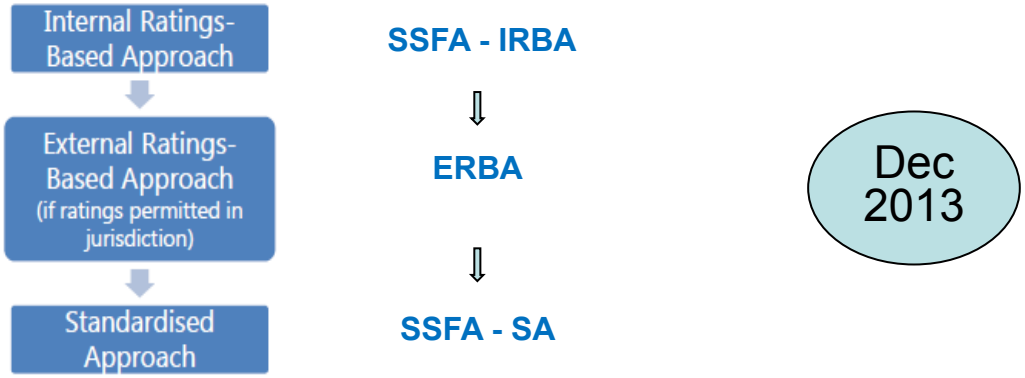
$$l = A - K_T$$
$$u = D - K_T$$

The parameter a is defined as:

$$a = \frac{-1}{p\,K_A}$$

The BCBS 269 Hierarchy

- BCBS 269 streamlines the securitisation framework to a single hierarchy based on three approaches:



- BCBS 269 encourages banks investing in third party securitisation to use the IRBA whenever possible, provided they have internal modelling approval; yet under the current regulatory regime in Europe, banks may not be allowed at this stage to use this opportunity for non retained transactions

- Most European banks investing in third party securitisation will have to use the ERBA, which creates a regional bias as US banks are not allowed to use external ratings for regulatory purposes. The Internal Assessment Approach (IAA) has been retained for unrated ABCP exposures, subject to regulators' approval

- Banks which may not use either of the above approaches would have to use the pool Standardised Approach RW as an input. Failing which, tranche Risk Weights would be set at 1250%

Problems with the Proposed Hierarchy

- External ratings based approaches to securitisation capital have become close to unworkable since the crisis, particularly in Europe because of major practical problems created by ratings agency practices
- These problems are:
    1. Ratings volatility due to:
        a. Methodology changes
        b. Sovereign ceilings
        c. Counterparty caps and triggers
    2. The lack of transparency of ratings agencies approaches
    3. The inconsistency with regulatory risk evaluations

- European regulators aim to reduce reliance on external ratings in financial regulation substantially. In November 2013, the Joint Committee of the European Supervisory Authorities (ESAs: EBA, ESMA and EIOPA) launched a joint consultation on how this might be achieved

- But, the BCBS 269 hierarchy of approaches puts the External Ratings Based Approach (ERBA), above the Standardised Approach (SA). As a result, European institutions will be in a state of continued dependency on external ratings for the large majority of their securitisation holdings

Feb 2014

Academic paper on Reducing the Reliance of Securitisation Capital on Agency Ratings

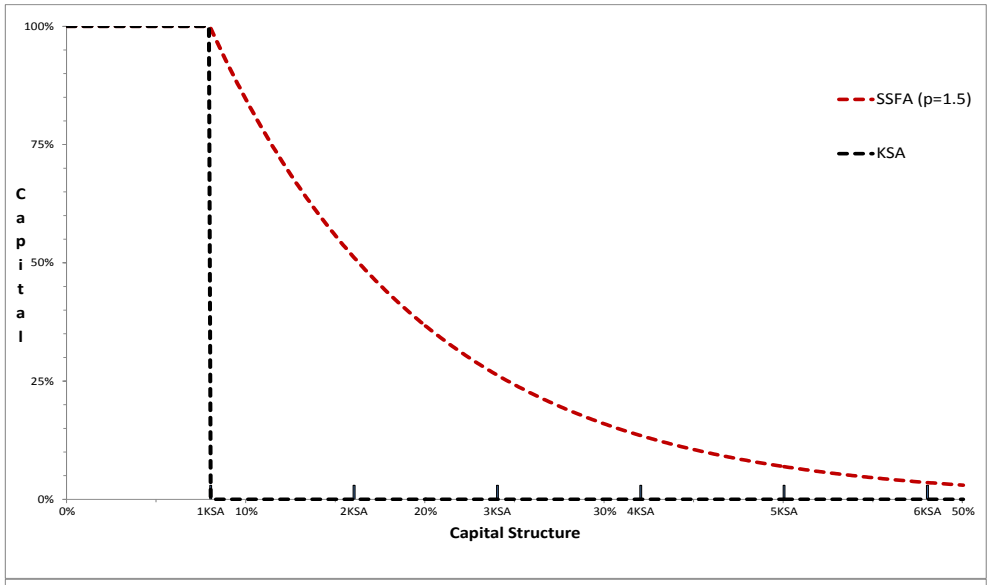
Problems with the Level and Distribution of Capital

- The calibration proposed by BCBS 269 is unconvincing and black box since the authorities have released few details of how it has been accomplished
- The SA version of the model includes a 'p' parameter value of 100%, implying that holding all the tranches attracts double the capital of holding all the pool assets
- This 100% boost in capital is much more than may be sensibly justified on the basis of agency costs in the securitisation process
- The IRBA version of the SSFA is attempting to be risk sensitive in that it includes maturity, K_{IRB}, granularity and LGD as determinants of the 'p' parameter for a given deal
- But, the implied distribution of capital across different deals is counter-intuitive
- In particular:
  1. Low risk weight pools imply a higher 'p' value
  2. Tranche maturity attracts much higher capital which is especially problematical as contractual maturity rather than asset WAL is proposed as the input to the formula
- In what follows, we provide more detail on these issues…

BCBS 269 SSFA (SA): One-Size-Fits-All

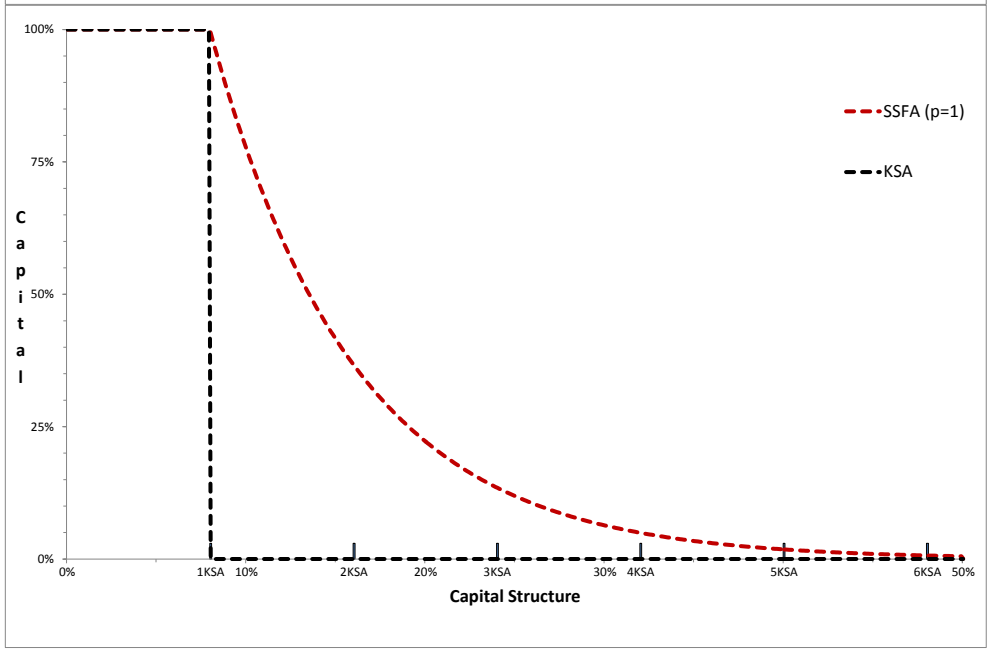
Dec 2012

The SSFA in the BCBS 236 proposals smooths the cliff-effect by adding 150% more capital (p=1.5) (p is the capital surcharge)



Dec 2013

The SSFA in the BCBS 269 proposals is the same, but with a different value of 'p' The SSFA (p=1.0) (100% more capital)



Dec 2013

BCBS 269 SSFA (IRBA): Unintuitive Calibration

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

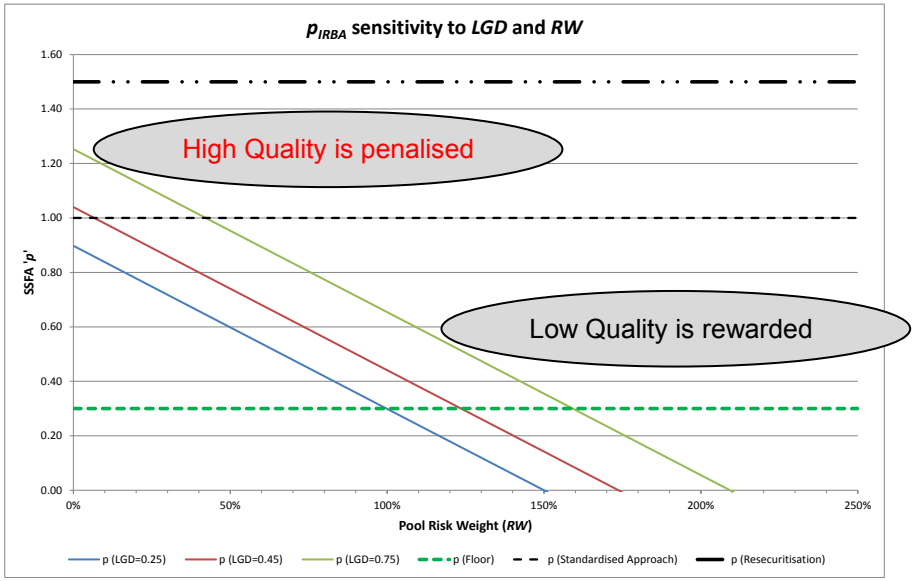
$$p = \max(0.30;\ p_{IRBA})$$

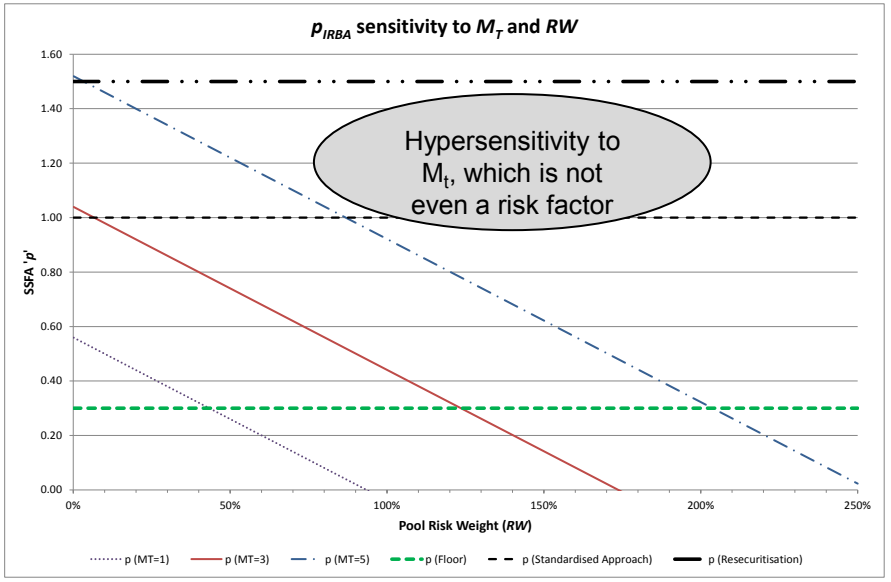
- Believing that a single parameter 'p' is a linear function of all risk parameters is not 'simple', it is 'simplistic'

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

- Calibration by regulatory categories (wholesale and retail), (senior and non-senior), (granular and non-granular) is a welcome conceptual step
- However, with regards to numerical calibration:
  - High Quality Assets are penalised ("C" is negative) and Low Quality Assets are rewarded
  - Use of a non-risk factor (the tranche maturity M_T) instead of a risk factor (asset maturity M). This is not only conceptually incorrect, it is discriminatory within Europe

(Retail)





Tranche Maturity (1/2): an Inappropriate Definition on top of a Conceptual Error

- BCBS 269 proposes the use of Tranche maturity M_T in the SSFA (IRBA) and in ERBA
  - Proposed calculation 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
  - 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)
       - The longest loan 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

Tranche Maturity, as proposed, is not even a risk factor

Mar 2014

Academic paper on the Calibration of the SSFA

Tranche Maturity (2/2): an issue for Europe
Example for Spanish SMEs

- 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**

A real life example: “Spanish SMEs”

- On 7th March 2014, Spain passed the royal decree law 4/2014 which introduces significant changes to the Spanish corporate insolvency framework. The law’s key objective is to increase protection of distressed borrowers from creditors and reduce the number of unnecessary insolvencies. The law highlights that a main reason for the high number of insolvencies of distressed companies was the rigidity of the previous legal insolvency framework. The intention of the framework changes is to give distressed companies more options to avoid collapse
- The authorities (government, central banks) have said that this law is a response to the crisis, to help the Spanish economy
- According to DBRS (14th April 2014), Spanish SME securitisations should adapt and for new transactions, the ”legal maturity should be extended by more than 10 years beyond the longest maturing asset in the portfolio”

- **The Tranche Maturity definition negates the effort of the Spanish government in helping the real economy**

  (This situation is particularly ironic as this is the result of an inappropriate definition on top of a conceptual error in the BCBS 269 proposals)

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Original AFA Principles: 4 Common Sense Requirements

Apr 2013

OBJECTIVE STATISTICAL BASIS	Capital for securitisation exposures should be based on their marginal contribution to a single, widely accepted statistical measure of the bank's total portfolio risk
NEUTRALITY	Apart from model risk charges, the capital a Bank must hold against a set of assets should be unaffected by packaging these assets into securities
REGULATORY CONTROL	Control parameters that permit regulators and supervisors to achieve their objectives and exercise judgments in the allocation of capital across different types of exposure should be available. Such parameters should reflect the economic reality of transactions so that they could, in principle, be calibrated from empirical data
TRANSPARENCY	Capital formulae should reflect in a simple way the nature of risk and be consistent with other regulatory capital approaches to facilitate comparisons and to promote transparency

From AFA/SAFA to CMA

Apr / Jun 2013

Academic papers on AFA and SAFA

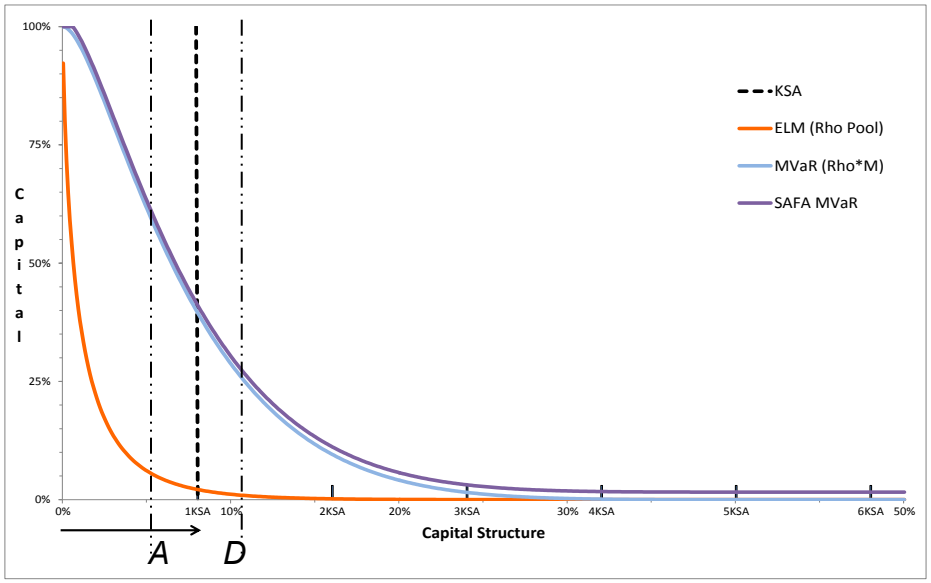
In the AFA/SAFA, the tranche level UL-based capital is the area between blue (MVaR) and red (EL) curves between attachment point *A* and detachment point *D*

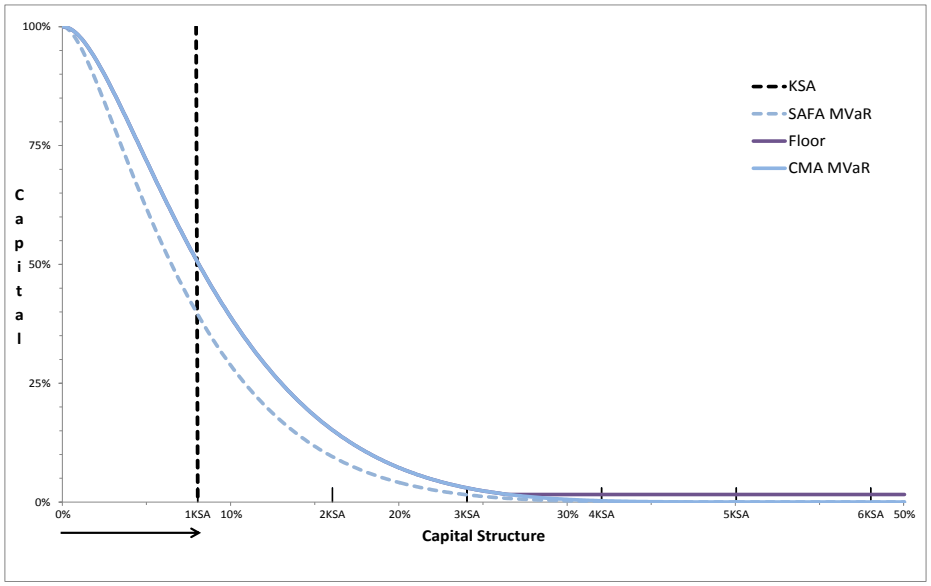
May / Jul 2013

Dialogue with EBA / BCBS leading to the "CMA"

CMA: Departing from Neutrality

- Modifying the AFA to include expected losses with a risk premium, one obtains a "**Monotone"** version of the model (regulators' requirement)
- Removing a technical factor (model risk scaling factor) enforcing capital neutrality and adding a floor, one obtains a **"Conservative"** version of the model
- Taking into account asset maturity effects in the expected loss and the conditional correlation, one increases the level of conservatism

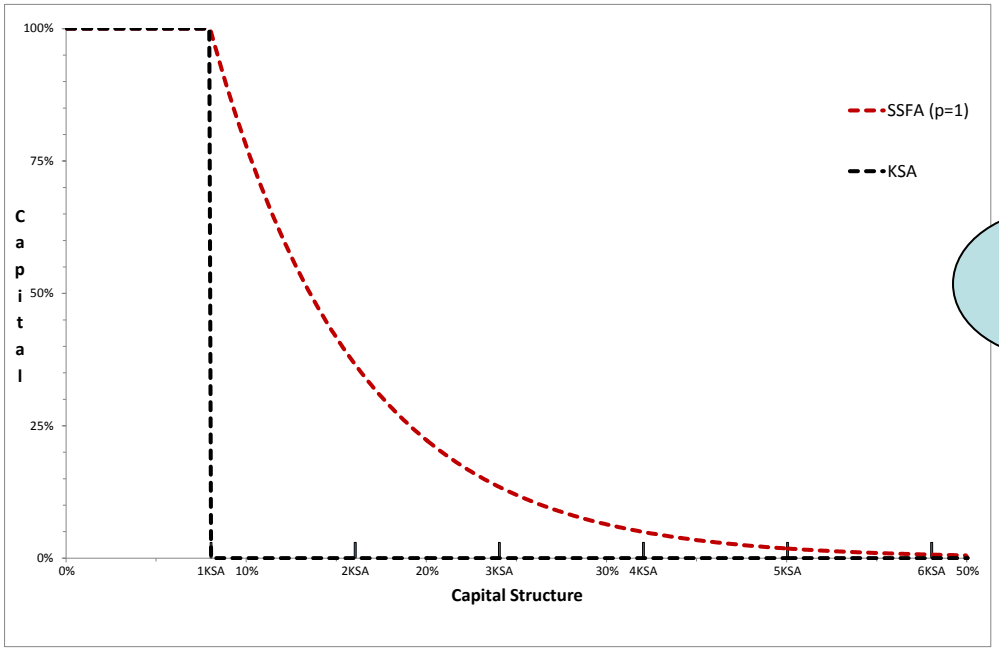




Reducing the Cliff Effect with the CMA

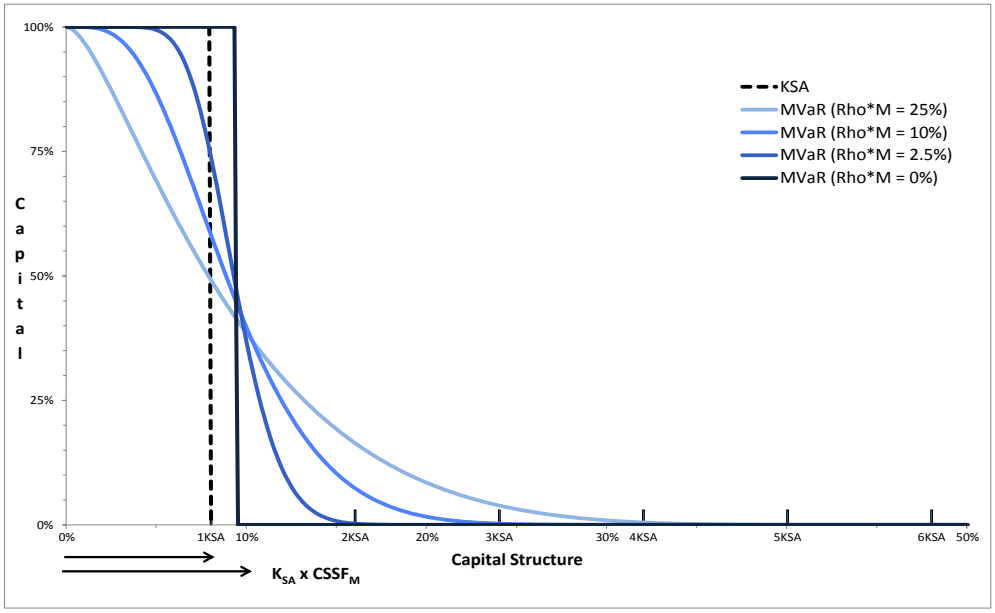
The SSFA reduces the cliff effect by using an exponential function which is not a risk model

In Dec 2013, the 'p' value was lowered from 150% additional capital to 100% additional capital, in the Standardised Approach



Dec 2013

The CMA does not exhibit a cliff effect. As conditional pool correlation ρ^*_M increases with asset maturity, more capital is allocated towards the senior mezzanines



Sep 2013

Academic papers on Maturity and Granularity

CMA: Simple Implementation

For a performing subpool P, there are 7 key inputs to the CMA:

- 3 inputs for the tranche: attachment point A and detachment point D and whether a tranche is senior or not;
- 4 regulatory risk drivers for the pool: RW_P, LGD_P, $CSSF_M$, ρ_M^*

For the delinquent subpool, one needs the delinquency ratio W and the risk weight of the delinquent assets RW_W.

The risk weight of a tranche $RW_{Tranche}(A, D)$ is obtained by:

$$K_T = W \times RW_W \times 8\%$$

$$l = \max\left(0, \frac{A - K_T}{1 - K_T}\right)$$

$$u = \frac{D - K_T}{1 - K_T}$$

$$K_{CMA}(l, u) = MVaR(l, u, RW_P, LGD_P, CSSF_M, \rho_M^*)$$

1. $D \leq K_T$, $RW_{Tranche}(A, D) = 1250\%$
2. $A < K_T < D$, $RW_{Tranche}(A, D) = 1250\% \times \left(\left[\left(\frac{K_T - A}{D - A}\right)\right] + \left[\left(\frac{D - K_T}{D - A}\right) \times K_{CMA}(l, u)\right]\right)$
3. $K_T \leq A$, $RW_{Tranche}(A, D) = 1250\% \times K_{CMA}(l, u)$

Excel Implementation of the CMA(*)

CMA CAPITAL MODEL

Inputs should be entered only in the bright yellow cells.

Securitisation Regulatory Asset Class

Granular SME

		SA and IRBA	SA	IRBA
Delinquency Ratio	**W**	2.00%		
Loss Given Default on delinquent	**LGD_W**		0.50	35%
			K_SA	**K in IRBA**
			6.000%	5.200%
Non-Delinquent subpool Risk Weight	**RW_P**		75%	69%
Average Pool Risk Weight	**RW_Pool**		86.0%	76.3%
Loss Given Default	**LGD_P**		45%	30%

Capital Structure (Tranche Number)	Tranche Name	Attachment Point (A)	Detachment Point (D)	Thickness	Category
1	Class A	25.00%	100.00%	75.00%	Senior
2	Class B	15.00%	25.00%	10.00%	Non-Senior
3	Class C	10.00%	15.00%	5.00%	Non-Senior
4	Class D	7.50%	10.00%	2.50%	Non-Senior
5	Class E	5.00%	7.50%	2.50%	Non-Senior
6	Class F	2.50%	5.00%	2.50%	Non-Senior
7	Class G	0.00%	2.50%	2.50%	Non-Senior
8	Class H	0.00%	0.00%	0.00%	Non-Senior

SA: Standardised Approach — Effective capital surcharge **16%**

IRBA: Internal Ratings Based Approach — Effective capital surcharge **16%**

Calibrated CMA **TRANCHE RW%**	Calibrated CMA **TRANCHE RW%**
0%	**0%**
28%	**6%**
190%	**112%**
446%	**356%**
733%	**670%**
1062%	**1039%**
1241%	**1238%**
1250%	**1250%**

(*) Available upon Request from the authors

Capital Surcharge Scaling Factor: building on BCBS work

$$CSSF_{M\,(senior)} = 1 + \frac{EL_M - FMI_{Senior}}{K_{Pool}} \; with \begin{cases} K_{Pool} = K \times 1.06 \; in \; IRBA \\ K_{Pool} = K_{SA} \; in \; SA \end{cases}$$

$$EL_M = LGD_{Pool} \times \mathrm{N}\left(\mathrm{N}^{-1}(pd_M) + \frac{M-1}{\sqrt{M}} \times \gamma\right)$$

Approach suggested in Basel Working Paper 23 (BCBS, 2013b, pg. 8):

$$pd_M = \frac{1}{1+exp\left(-\ln\left(\frac{PD_1}{1-PD_1}\right) - \left(5 - 0.15 \times \ln\left(\frac{PD_1}{1-PD_1}\right)\right)(M^{0.2}-1)\right)}$$

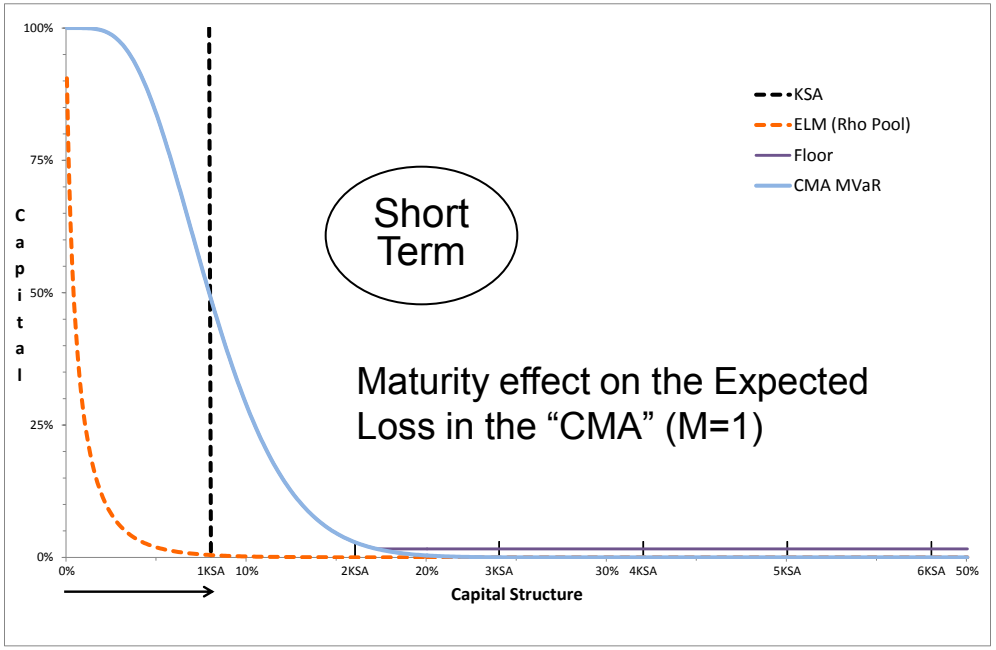
We follow BCBS (2013a, pg. 19) to specify a risk premium: $\gamma = \lambda \cdot \sqrt{\rho}$

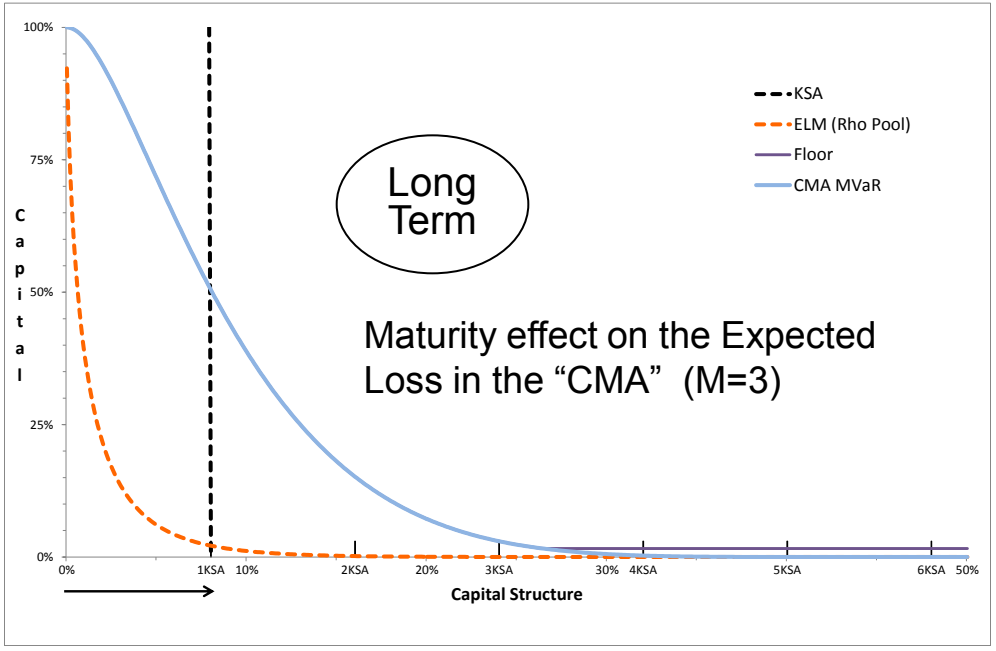
$CSSF_M$ is not sensitive to LGD as LGD is in both EL_M and K_{Pool} and FMI is expressed as a function of EL_1 and EL_M

$CSSF_M$ increases, ceteris paribus when:

- PD_1 increases and this positive sensitivity is higher for non-senior tranches than for senior tranches. In the CMA, low risk assets attract less capital surcharge than high risk assets
- the pool maturity increases and this positive sensitivity is higher for retail pools than for wholesale pools given the maturity adjustment effect in the K_{Pool} for wholesale pools
- the Basel systemic correlation ρ decreases
- γ increases

Regulatory-Asset-Class-Based Approach to Calibration





- Rather than trying to allow for heterogeneity by introducing parameters and estimating functions, we propose a regulatory-asset-class-based approach to calibration
- A single capital formula is then employed but, for example, a maturity representative for that asset class is used rather than trying to introduce explicit dependence on maturity
- For corporate deals, we allow for a medium/long class versus a short-maturity class. For other underlying pools, we use a unified approach

Nov 2013

Moving from the theory to the practical aspects of calibration

CMA: a Risk Sensitive Calibration

Calibrating the CMA under the SA, we observe the desired risk sensitivities:

	Securitisation Regulatory Asset Class	*LGD* (can be replaced by IRB values)	ρ^*_M	$CSSF_M$	
				Senior	Non-Senior
Wholesale	Granular Short Term Bank/Corporate	46%	8%	1.00	1.05
	Granular Low RW Medium to Long Term Bank/Corporate	46%	22%	1.05	1.18
	Granular High RW Medium to Long Term Bank/Corporate	46%	16%	1.10	1.36
	Granular Small- and Medium-sized Entities	45%	15%	1.05	1.17
	Specialised Lending (Commodities Finance)	27%	13%	1.00	1.18
	Specialised Lending (Project Finance)	27%	33%	1.10	1.33
	Specialised Lending (Object Finance)	27%	27%	1.16	1.52
	Specialised Lending (Income Producing Real Estate)	47%	36%	1.06	1.19
	Specialised Lending (High Volatility Commercial Real Estate)	47%	34%	1.08	1.24
	Other Granular Wholesale	76%	30%	1.07	1.23
	Other Non-Granular Wholesale	53%	40%	1.08	1.26
Retail	Low RW Residential Mortgages	25%	11%	1.14	1.47
	High RW Residential Mortgages	45%	12%	1.22	1.73
	Revolving Qualifying Retail	75%	3%	1.06	1.39
	Other Retail	75%	12%	1.10	1.35

Maturity Effect

Maturity Effect

Quality Effect

Maturity Effect

Quality Effect

Granularity Effect

Apr 2014

Academic paper on CMA Calibration

CMA: Calibration under IRBA is close to SA

	Securitisation Regulatory Asset Class	IRBA RW (Input)	IRBA LGD (Input)	ρ_M^*	$CSSF_M$	
					Senior	Non-Senior
Wholesale	Granular Short Term Bank/Corporate	86%	37%	8%	1.00	1.06
	Granular Low RW Medium to Long Term Bank/Corporate	76%	37%	23%	1.05	1.17
	Granular High RW Medium to Long Term Bank/Corporate	184%	46%	14%	1.12	1.47
	Granular Small- and Medium-sized Entities	85%	41%	12%	1.07	1.26
	Specialised Lending (Commodities Finance)	92%	32%	14%	1.00	1.10
	Specialised Lending (Project Finance)	23%	11%	35%	1.08	1.26
	Specialised Lending (Object Finance)	38%	11%	25%	1.17	1.57
	Specialised Lending (Income Producing Real Estate)	84%	27%	32%	1.09	1.27
	Specialised Lending (High Volatility Commercial Real Estate)	203%	52%	23%	1.16	1.53
	Other Granular Wholesale	130%	52%	28%	1.10	1.30
	Other Non-Granular Wholesale	88%	38%	38%	1.11	1.35
Retail	Low RW Residential Mortgages	12%	22%	11%	1.12	1.39
	High RW Residential Mortgages	124%	43%	12%	1.23	1.77
	Revolving Qualifying Retail	41%	45%	3%	1.06	1.37
	Other Retail	61%	42%	8%	1.17	1.63

- Banks with access to IRBA information can calibrate a specific surcharge scaling factor $CSSF_M$ and conditional pool correlation ρ_M^*
- Alternatively, without losing much risk sensitivity, banks with access to IRBA information can use the same calibration for $CSSF_M$ and ρ_M^* as under the SA , and use in the CMA only K_{IRBA} and LGD_{IRBA}
- As the CMA is consistent under the SA and IRBA, it enables to treat mixed pools

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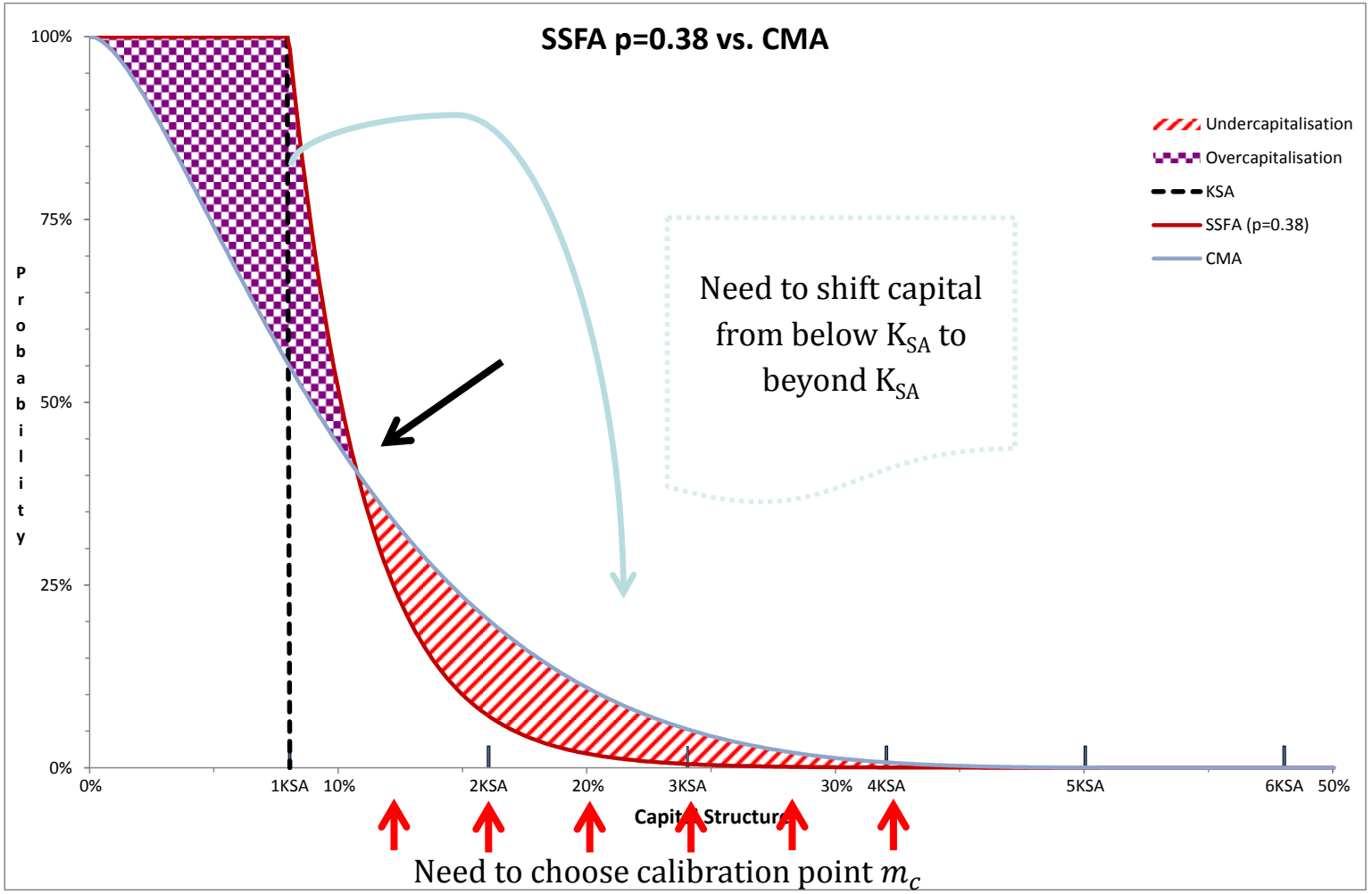
5. Use of the CMA to reduce regulatory reliance on ratings

Calibrating the SSFA with only one 'p' (1/3)

CMA vs SSFA: Undercapitalisation and Overcapitalisation when the 1250% threshold is too high and the p value is too low



Calibrating the SSFA with only one 'p' (2/3)

Choosing an appropriate Calibration Multiple m_c

$m_c = 2.0$ →

Calibration multiple	Short Term Corporate Exposures (Trade Receivables and Trade Finance)		Long Term Corporate Exposures (Corporate Loan Books)	
Value of m_c	Value of p	Thin tranche capital (RW%)	Value of p	Thin tranche capital (RW%)
1.5	0.26	187.9%	0.41	364.8%
2.0	0.28	36.6%	0.53	191.3%
2.5	0.27	4.7%	0.57	90.5%
3.0	0.25	0.4%	0.57	37.7%
3.5	0.22	0.0%	0.55	13.2%
4.0	0.20	0.0%	0.51	3.5%

Calibrating the SSFA with only one 'p' (3/3)

	Securitisation Regulatory Asset Class	Senior	Non-Senior
		p	p
Wholesale	Granular Short Term Bank/Corporate	0.27	0.29
	Granular Low RW Medium to Long Term Bank/Corporate	0.47	0.54
	Granular High RW Medium to Long Term Bank/Corporate	0.36	0.52
	Granular Small- and Medium-sized Entities	0.43	0.49
	Specialised Lending (Commodities Finance)	0.21	0.28
	Specialised Lending (Project Finance)	0.55	0.69
	Specialised Lending (Object Finance)	0.5	0.77
	Specialised Lending (Income Producing Real Estate)	0.55	0.62
	Specialised Lending (High Volatility Commercial Real Estate)	0.52	0.62
	Other Granular Wholesale	0.54	0.62
	Other Non-Granular Wholesale	0.58	0.67
Retail	Low RW Residential Mortgages	0.44	0.66
	High RW Residential Mortgages	0.44	0.89
	Revolving Qualifying Retail	0.23	0.41
	Other Retail	0.46	0.61

Maturity Effect

Maturity Effect

With only one 'p', there are not enough degrees of freedom (for both correlation and surcharge), leading to counterintuitive results

Agenda

1. A critique of current Basel proposals
2. An alternative model: the CMA
3. Using the CMA to calibrate the SSFA
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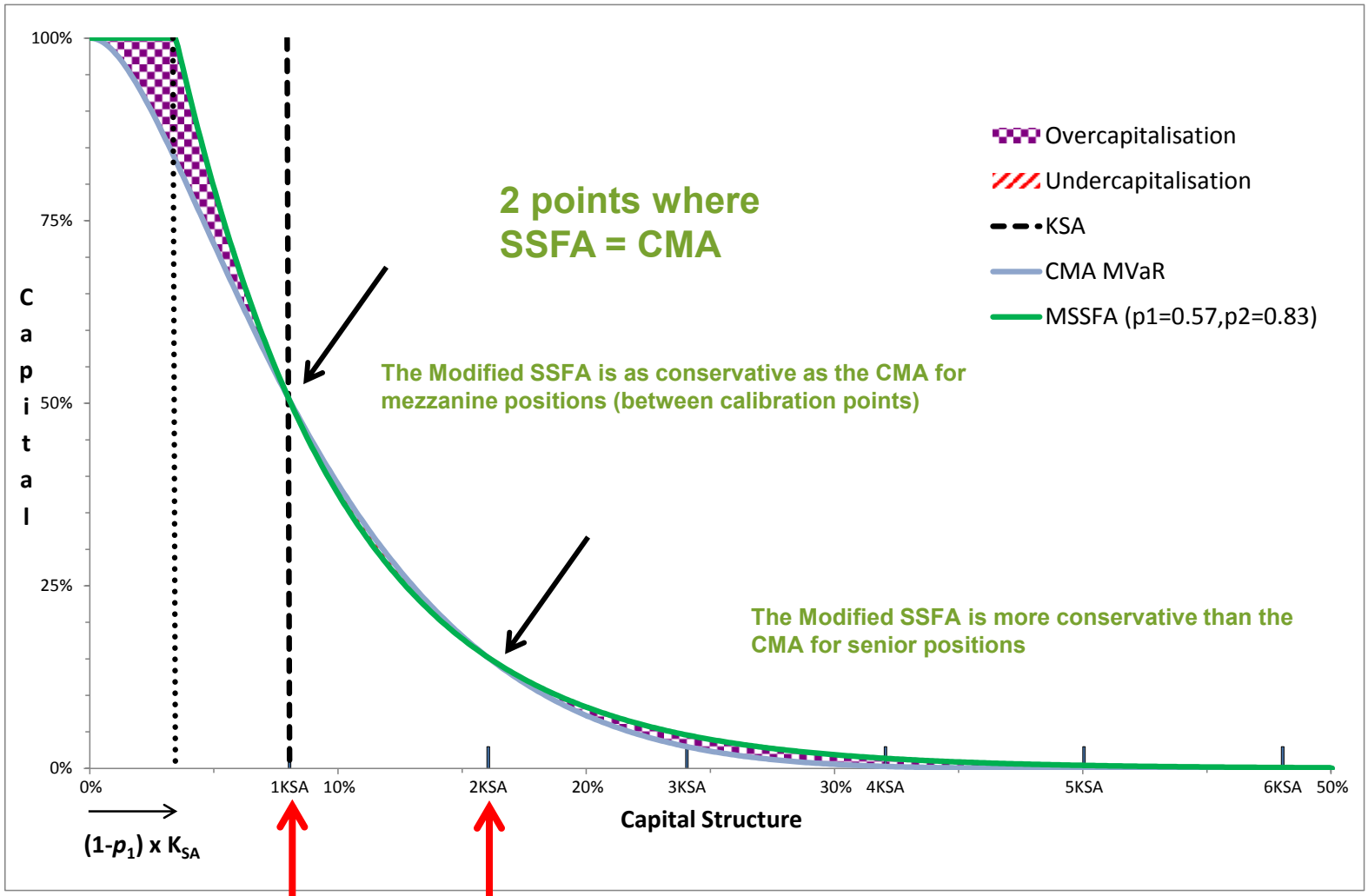
Calibrating the MSSFA with 'p_1' and 'p_2' (1/2)

The Modified SSFA is more conservative than the CMA for junior positions



Calibrating the MSSFA with 'p_1' and 'p_2' (2/2)

The capital surcharge in the MSSFA is equal to $(\boldsymbol{p_2 - p_1})$

With two 'p's, there are enough degrees of freedom for both correlation and surcharge

	Securitisation Regulatory Asset Class	Senior			Non-Senior		
		p_2	p_1	(p_2-p_1)	p_2	p_1	(p_2-p_1)
Wholesale	Granular Short Term Bank/Corporate	0.34	0.28	*0.07*	0.37	0.26	*0.11*
	Granular Low RW Medium to Long Term Bank/Corporate	0.77	0.64	*0.13*	0.85	0.58	*0.26*
	Granular High RW Medium to Long Term Bank/Corporate	0.47	0.31	*0.17*	0.63	0.22	*0.41*
	Granular Small- and Medium-sized Entities	0.65	0.54	*0.12*	0.73	0.49	*0.25*
	Specialised Lending (Commodities Finance)	0.25	0.19	*0.06*	0.32	0.14	*0.18*
	Specialised Lending (Project Finance)	0.98	0.78	*0.2*	1.16	0.69	*0.47*
	Specialised Lending (Object Finance)	0.73	0.47	*0.26*	1.03	0.35	*0.69*
	Specialised Lending (Income Producing Real Estate)	1.06	0.93	*0.13*	1.16	0.87	*0.29*
	Specialised Lending (High Volatility Commercial Real Estate)	0.90	0.72	*0.18*	1.03	0.65	*0.37*
	Other Granular Wholesale	1.01	0.88	*0.13*	1.12	0.81	*0.31*
	Other Non-Granular Wholesale	1.17	1.00	*0.17*	1.34	1.00	*0.34*
Retail	Low RW Residential Mortgages	0.62	0.42	*0.21*	0.86	0.31	*0.55*
	High RW Residential Mortgages	0.56	0.29	*0.28*	1.03	0.16	*0.88*
	Revolving Qualifying Retail	0.27	0.18	*0.09*	0.44	0.09	*0.35*
	Other Retail	0.73	0.57	*0.16*	0.9	0.48	*0.42*

CMA Calibration - Summary

With the Conservative Monotone Approach (or CMA), we obtain desirable benefits:

- A simple closed-form capital formula
- Based on a rigorous underlying credit model
- Monotone in seniority
- Risk sensitivity
- Conservative capital requirements
- Transparent calibration enabling regulatory control
- Consistent calibration under both the SA and IRBA enabling to treat mixed pools

- The CMA enables to have an appropriate calibration of the SSFA by deriving the value of the SSFA parameter "p" by individual asset class

- A much better fit between the SSFA and the CMA may be achieved if a single additional parameter is introduced in the SSFA

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Reducing Regulatory Reliance on Agency Ratings (1/3)

- **Our solution to the current excessive reliance on ratings in the BCBS 269 proposals**:
- 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 the hierarchy of approaches 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
- The CMA could be a substitute for agency ratings here as in other regulatory contexts
- The CMA, has 3 key properties valuable in regulatory applications:
  - The CMA takes as input the risk weight of the pool RW_{Pool}. This ensures that the risk hierarchy among assets classes identified by regulators is respected both before and after securitisation. For example, SME and large corporate BBB-rated loans have risk weights of 75% and 100% respectively which in turn implies that capital calculated for a securitisation tranche with an SME loan pool will be lower than a similar tranche with a BBB-rated large corporate pool
  - The CMA includes sensitivity to sudden deterioration in the pool by lowering the tranche attachment and detachment points, A and D, when collateral has defaulted
  - The CMA avoids agency ratings sensitivity to changes in ratings methodology, restoring predictability in future capital requirements

Reducing Regulatory Reliance on Agency Ratings (2/3)

The benefits of adopting the CMA:

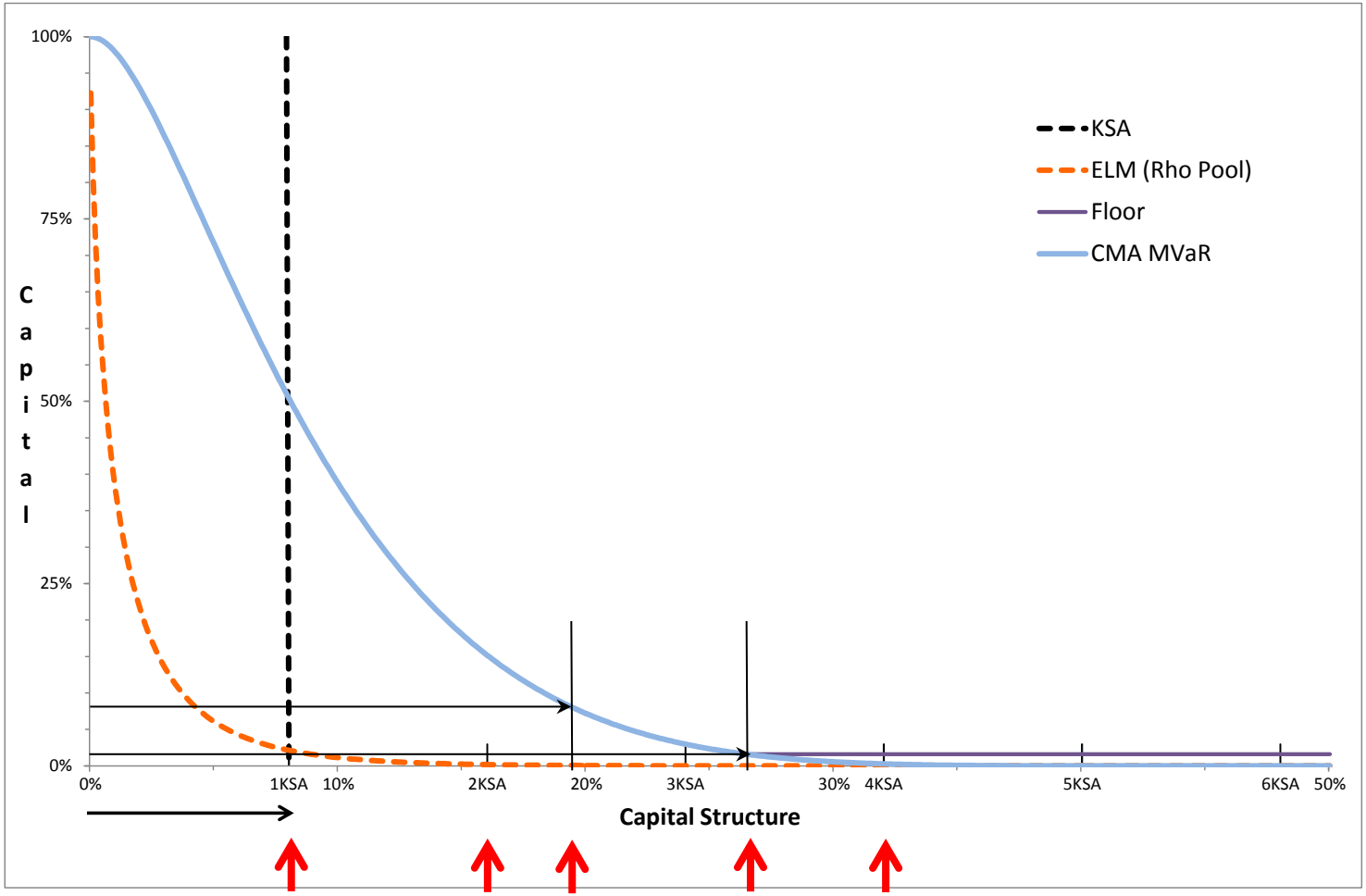
- The CMA would limit the impact of sovereign contagion on capital requirements and other aspects of financial regulations due to automatic, en-masse downgrades in tranche ratings and ratings caps. Such downgrades have hampered bank funding and recovery in some countries. It would limit the future damage to the financing of the economies of countries whose rating is no longer AAA
- The CMA would reduce the negative effect created by the unpredictability in ratings agencies' methodologies and associated rating volatilities on capital requirements. The need to re-rate to obtain regulatory 'dispensation' solely because of criteria changes would be eliminated
- The CMA would improve transparency by providing market participants with a simple, transparent and interpretable measure of unexpected loss risk for securitisation tranches, as a marginal contribution to the Value-at-Risk
- The CMA would reduce the incidence of forced sales in crisis periods not driven by changes in collateral quality, but driven by sudden changes in capital requirements

Reducing Regulatory Reliance on Agency Ratings (3/3)

The CMA and HQS in tandem:

- The CMA and an HQS definition are complementary in supplying a substitute for agency ratings in some regulatory applications
- Note the CMA gives a measure of UL+EL rather than EL which is what ratings aim to identify (at least Moody's style ratings, S&P/Fitch ratings focus on PD)
- One might argue that UL is more important for regulation than EL and so might serve as a basis for haircuts in central repos, LCR eligibility and insurer and bank capital.
- Agency ratings embody
  1. Quantitative analysis of the degree of conservatism in the tranching of the deal given the nature of risks in the underlying securities
  2. Qualitative analysis of the deal
- Correspondingly, the CMA and an HQS definition would cover, respectively, quantitative and qualitative aspects of securitisation evaluation
- An active area of work for us is building on this observation to provide principles-based views on how HQS should be devised (what criteria? etc) and to demonstrate the discriminatory power of the two approaches combined

Assessing Seniority for HQS: What is a 'High' Attachment Point?



Using the CMA for HQS

$$A_{Target} = W \times K_W + LGD \times \mathrm{N}\left(\frac{\mathrm{N}^{-1}\left(\frac{K_P}{LGD} \times CSSF_M\right) - \mathrm{N}^{-1}\left(K_{Target}\right) \times \sqrt{{\rho^*}_M}}{\sqrt{1 - {\rho^*}_M}}\right)$$

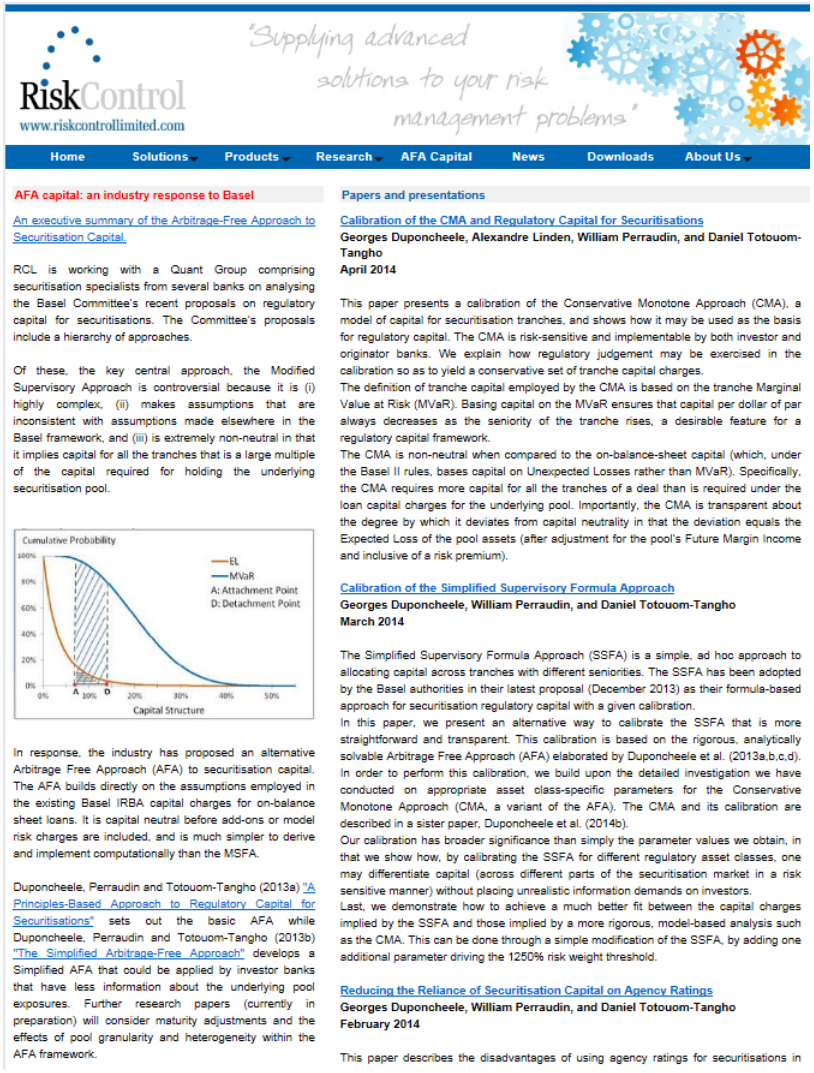
- The above formula gives the target attachment point A_{Target} that a senior tranche should at least have to be 'sufficiently senior'
- The formula does not rely on ratings. It requires regulatory control, with the parameter $CSSF_M$ (capital surcharge scaling factor) and ${\rho^*}_M$ (conditional pool correlation)
- In Europe, regulatory control could be exercised in the different jurisdictions by the national central banks who are best equipped to assess the risks of their national assets. (eg. Banque de France is best equipped to assess French mortgages, Banco de España is best equipped to assess Spanish SMEs…)
- A central supervisory process (European Central Bank) would then validate the proposed numerical values $CSSF_M$ and ${\rho^*}_M$

W is the delinquency ratio, K_W is the capital for the pool's delinquent assets, LGD is the pool's performing assets, K_P is the capital for the pool's performing assets, $\mathrm{N}^{-1}(\ )$ is the normal standard function, $\mathrm{N}^{-1}(\ )$ is the inverse normal distribution, K_{Target} is the minimum capital level of the thin tranche's attachment point A_{Target}. This formula enables the structure to adapt over time to deteriorating economic conditions (increase in capital requirement or increase in delinquent assets or both).

Some Additional Slides

For More Information on the AFA, CMA, SSFA Calibration etc

http://www.riskcontrollimited.com/afa_capital.html



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AFA capital: an industry response to Basel

An executive summary of the Arbitrage-Free Approach to Securitisation Capital.

RCL is working with a Quant Group comprising securitisation specialists from several banks on analysing the Basel Committee's recent proposals on regulatory capital for securitisations. The Committee's proposals include a hierarchy of approaches.

Of these, the key central approach, the Modified Supervisory Approach is controversial because it is (i) highly complex, (ii) makes assumptions that are inconsistent with assumptions made elsewhere in the Basel framework, and (iii) is extremely non-neutral in that it implies capital for all the tranches that is a large multiple of the capital required for holding the underlying securitisation pool.

In response, the industry has proposed an alternative Arbitrage Free Approach (AFA) to securitisation capital. The AFA builds directly on the assumptions employed in the existing Basel IRBA capital charges for on-balance sheet loans. It is capital neutral before add-ons or model risk charges are included, and is much simpler to derive and implement computationally than the MSFA.

Duponcheele, Perraudin and Totouom-Tangho (2013a) "A Principles-Based Approach to Regulatory Capital for Securitisations" sets out the basic AFA while Duponcheele, Perraudin and Totouom-Tangho (2013b) "The Simplified Arbitrage-Free Approach" develops a Simplified AFA that could be applied by investor banks that have less information about the underlying pool exposures. Further research papers (currently in preparation) will consider maturity adjustments and the effects of pool granularity and heterogeneity within the AFA framework.

Papers and presentations

Calibration of the CMA and Regulatory Capital for Securitisations
Georges Duponcheele, Alexandre Linden, William Perraudin, and Daniel Totouom-Tangho
April 2014

This paper presents a calibration of the Conservative Monotone Approach (CMA), a model of capital for securitisation tranches, and shows how it may be used as the basis for regulatory capital. The CMA is risk-sensitive and implementable by both investor and originator banks. We explain how regulatory judgement may be exercised in the calibration so as to yield a conservative set of tranche capital charges.
The definition of tranche capital employed by the CMA is based on the tranche Marginal Value at Risk (MVaR). Basing capital on the MVaR ensures that capital per dollar of par always decreases as the seniority of the tranche rises, a desirable feature for a regulatory capital framework.
The CMA is non-neutral when compared to the on-balance-sheet capital (which, under the Basel II rules, bases capital on Unexpected Losses rather than MVaR). Specifically, the CMA requires more capital for all the tranches of a deal than is required under the loan capital charges for the underlying pool. Importantly, the CMA is transparent about the degree by which it deviates from capital neutrality in that the deviation equals the Expected Loss of the pool assets (after adjustment for the pool's Future Margin Income and inclusive of a risk premium).

Calibration of the Simplified Supervisory Formula Approach
Georges Duponcheele, William Perraudin, and Daniel Totouom-Tangho
March 2014

The Simplified Supervisory Formula Approach (SSFA) is a simple, ad hoc approach to allocating capital across tranches with different seniorities. The SSFA has been adopted by the Basel authorities in their latest proposal (December 2013) as their formula-based approach for securitisation regulatory capital with a given calibration.
In this paper, we present an alternative way to calibrate the SSFA that is more straightforward and transparent. This calibration is based on the rigorous, analytically solvable Arbitrage Free Approach (AFA) elaborated by Duponcheele et al. (2013a,b,c,d). In order to perform this calibration, we build upon the detailed investigation we have conducted on appropriate asset class-specific parameters for the Conservative Monotone Approach (CMA, a variant of the AFA). The CMA and its calibration are described in a sister paper, Duponcheele et al. (2014b).
Our calibration has broader significance than simply the parameter values we obtain, in that we show how, by calibrating the SSFA for different regulatory asset classes, one may differentiate capital (across different parts of the securitisation market in a risk sensitive manner) without placing unrealistic information demands on investors.
Last, we demonstrate how to achieve a much better fit between the capital charges implied by the SSFA and those implied by a more rigorous, model-based analysis such as the CMA. This can be done through a simple modification of the SSFA, by adding one additional parameter driving the 1250% risk weight threshold.

Reducing the Reliance of Securitisation Capital on Agency Ratings
Georges Duponcheele, William Perraudin, and Daniel Totouom-Tangho
February 2014

This paper describes the disadvantages of using agency ratings for securitisations in

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