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FOR PUBLICATION

**UniCredit reply to the BCBS Consultative document on
“Standardised Measurement Approach for operational risk”**

UniCredit is a major international financial institution with strong roots in 17 European countries, active in approximately 50 markets, with more than 7,800 branches and over 143,000 employees. UniCredit is among the top market players in Italy, Austria, Poland, CEE and Germany.

Executive summary

In the aftermath of the financial crisis, a general lack of confidence has hit the internal models that banks use to calculate risk weighted assets (RWA) and minimum capital requirements. This increasing criticism, which blames the internal models to be overly complex and to produce unreliable and incomparable outcomes across banks, has not exempted the Advanced Measurement Approach (AMA), the internal model for operational risk. In March 2016 the Basel Committee has issued the second and last consultation paper, announcing the withdrawal of the AMA and its replacement with the Standardized Measurement Approach (SMA).

UniCredit appreciated that the Basel Committee has involved the industry in the consultative process and would take this **opportunity to raise its concerns on the SMA**.

UniCredit strongly believes that, although **in principle the AMA models have deficiencies** that should be addressed, there are two overarching considerations to put forward: first, **the abolishment of the AMA** seems to be the most **simplistic way to remedy** to its shortcomings, but it is **not necessarily the most risk sensitive** and effective and, second, but not less important, the **SMA**, conceived precisely to overcome AMA weaknesses, **fails in its objective** and even **creates further distortions**.

In fact, the balance sheet **items** included **in the Business Indicator (BI)** component **do not represent the operational risk profile** of the bank and the **Loss component (LC)**, introduced to enhance the risk sensitivity of the approach, **does not weigh enough in the formula to effectively adjust RWA to the underlying operational risk**.

In addition, in spite of the Basel Committee's declared objective not to significantly increase capital requirements, a survey¹ conducted by the Operational Risk Data Exchange Association (ORX) in March 2016 demonstrates that 75% of banks surveyed (54 banks replied to the survey, including 16 GSIBs) would see **a meaningful increase in capital under the SMA, with an average +61% for 2015 and a high variability across jurisdictions**: most of the US banks will not be significantly impacted (or will be even favoured) whereas European banks would experience the most relevant increase. Moreover, impact would augment together with size: the largest banks are the most affected by the reform (e.g. banks in bucket n.4 and n.5 would respectively experience a +96% and +91% increase in capital). This **disproportionate impact** is **due to the global calibration of the approach**: the most virtuous institutions/countries (i.e. the ones with lower risk profile) will be penalized since they will be charged with capital requirements as they would absorb riskier institutions' exposure (i.e. the ones that have suffered the highest losses in the last years).

In light of these considerations, we have acknowledged that, **by adopting the SMA, the framework would largely lose its risk sensitivity**, achieved through the continuous refinement of the AMA models, and **this reduced risk sensitivity**, a detrimental consequence already per se in our opinion, **would not be even offset by an enhanced comparability**. Indeed, being a standardized measurement, the SMA produces outcomes which are more comparable across banks by definition, because they are computed in the same

¹ For more details: <http://www.orx.org/Pages/ORXResearch.aspx>

way, but being actually unreflective of the level of operational risk of a bank, it *de facto* eases the comparison among pointless numbers.

Proved that the SMA would be neither capital neutral, nor more risk sensitive nor would it even foster a meaningful RWA comparability across banks, **the only apparently achieved Basel's goal seems to be the framework enhanced simplicity**. However, without risk sensitivity, **simplicity risks being a mere simplification**, which would frustrate any effort made by banks to implement, maintain and fine-tune over time sound and sophisticated risk management practices which have played a fundamental role in spreading risk culture across institutions. Nevertheless, the SMA is still excessively complex, because the BI is calculated through an aggregation of not-uniquely defined P&L items.

In conclusion, if the SMA aims at minimizing AMA deficiencies without losing the positive achievements of the internal modelling framework, **UniCredit urges the Basel Committee to improve the approach risk sensitivity working on some key aspects:**

- **Banks which have suffered the greatest losses** in the past should be relatively more **penalized, by introducing higher coefficients to weigh their losses and increasing the weight of the Loss component into the framework**. This would allow **reducing consistently the multiplying factors of the other buckets** and the overall impact for the most virtuous banks.
- **Group consolidated requirements should not be higher than the sum of the local legal entities requirements** not to penalize financial groups (so called **super-additivity clause**).
- The new standardized approach disallows the possibility for banks to gain capital reductions when they take out an insurance policy against operational risk events. **The inclusion of mitigating factors like risk transfer through insurance should be permitted**. An accurate due diligence conducted by the insurance company could guarantee the adequacy of the risk management process implemented by banks.

UniCredit hence **exhorts the regulator to keep into consideration the unintended consequences** that this revision might have both on banks' capital and indirectly, through its significant increase, on the real economy as banks will have less capacity for lending. Once the QIS results are available, UniCredit will be willing to be further involved by the Committee in order to discuss the most theoretical as well as the technical aspects of the approach in an open and, we think, fruitful dialogue.

General comments

According to the Basel Committee the AMA models have failed as a valid, reliable and risk sensitive measure to calculate RWA for operational risk. However, in UniCredit's opinion, if conceived and calibrated as reported in the consultation, the SMA does not address most of the Basel's issues and even creates further distortions.

1) It is not able to encourage the level playing field

In order to come up with an easily comparable measure, the SMA is calibrated without taking sufficiently into account the high variability of operational losses in banks' portfolios, since the dispersion among banks and jurisdictions in terms of loss experience is high.

In fact it apparently creates a level playing field because numbers are computed in the same way, but it basically smooths out any differences across banks, negatively impacting the most virtuous credit institutions in favor of those which historically have incurred higher losses due to last years' litigations (e.g. Libor scandal, subprime mortgages, sanctions for violations of international regulations, and other misconducts).

2) It is not neutral in terms of capital increase

According to the Basel's declared objective, the revision of the standardized approach should not automatically trigger an increase in capital requirements, which could only rise if the current level of capital was not commensurate to the underlying risk.

However, preliminary analyses clearly show that the reform would have a significant impact in terms of additional RWA at global as well as at European level. Hence, the lack of risk sensitivity of the approach,

together with the overall increase in capital requirements, would cause a perverse effect of an excessive capital burden which does not properly reflect the risk profile of the bank and penalizes relatively more sound banks.

Indeed, neutrality at system level seems contradicted by first benchmarking exercises carried out at European level as of year-end 2015 (source: public and ORX consortium data):

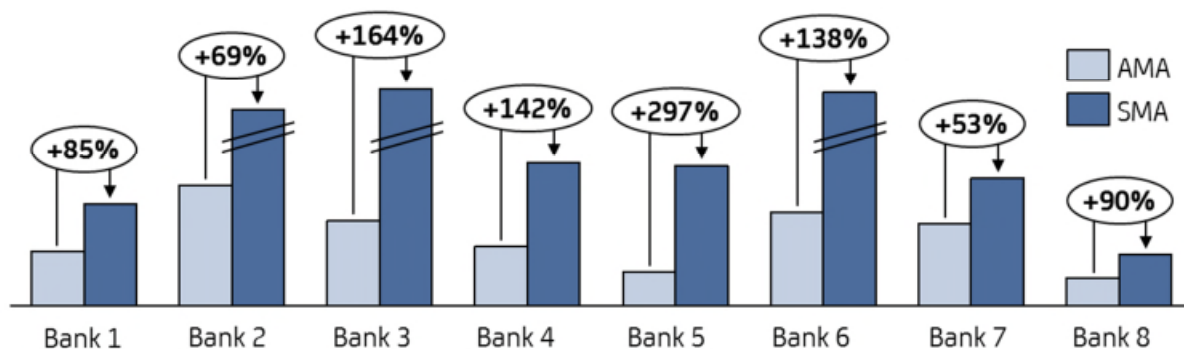


Figure 1: SMA vs AMA – Benchmark exercise among European peers

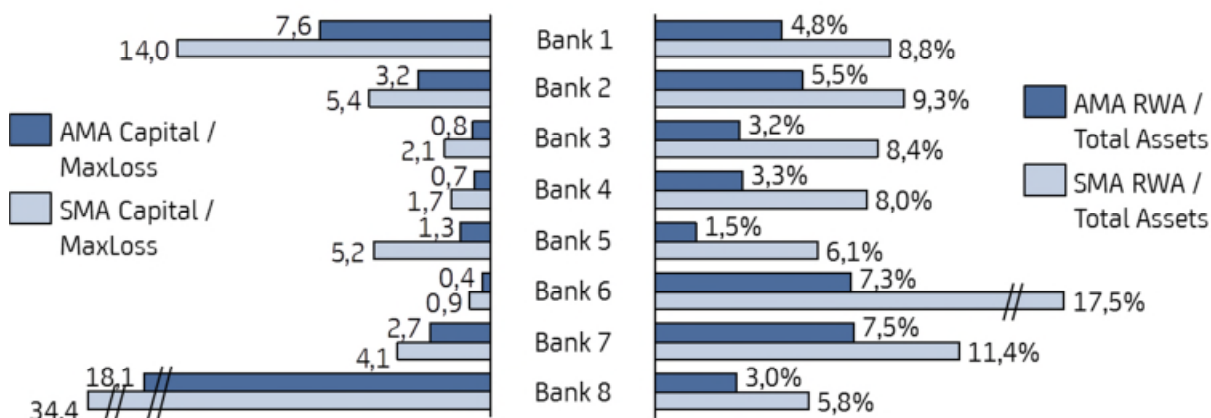


Figure 2: SMA and AMA vs maximum loss and total assets

The RWA impact seems disproportionate compared to the risk (loss) experience.

3) It does not achieve the objective of comparability

The bank-specific loss data has been introduced in the formula in order to enhance the risk sensitivity of the previous standardized approach. However, we have observed that if calibrated in this way, the SMA does not achieve this goal because the weight of the business component is disproportionately higher than the 'risk-sensitive adjustment', preventing the achievement of the objective to have a capital absorption which is fairly fitted to the bank's idiosyncratic risk profile. Namely, being a more standardized number, it is more comparable across banks because it is computed in the same way, but being actually unreflective of the level of operational risk of a bank, as abovementioned, it *de facto* eases the comparison among pointless numbers.

4) It does not fulfil the objective of more consistency

As far as banking groups are concerned, the Business Indicator marginal coefficient applied to the business component is calculated at consolidated level and then applied to all the group's legal entities regardless of their size.

Hence, banks in federative groups would be penalized, being the group marginal coefficient to be applied to the Business Component higher by construction than the individual one. This would result in having, at individual level, a capital requirement lower than the contribution of each legal entity at consolidated level.

This approach penalizes:

- smallest banks (with Business Indicator lower than 1 €/bn) with respect to their biggest counterparts, since at individual level their BI is not adjusted by the loss component, but at consolidated level they take charge of losses experienced by the other group legal entities;
- small banks which are part of a group if compared with stand-alone ones, since an implicit BI marginal coefficient lower than the group one is applied.

5) It is not even simple to calculate

SMA is still excessively complex, as it is mainly driven by the Business Indicator, a complex aggregation of P&L items. In addition, given that simplicity is a precondition to achieve transparency for the market, the new approach also misses this important goal. Not only the formula is complicated, but also in absence of a full convergence between accounting principles applied worldwide and a planned harmonization process, the BI would be barely comparable across banks. In fact, depending upon the accounting principles used (e.g.: IAS/IFRS rather than US-GAAP), credit institutions account differently for operating/fee income and expenses.

Moreover, the BCBS does not provide any disclosure on the background analyses performed and the underlying methodology used to calibrate the proposed framework. Information on SMA calibration is essential to better understand the risk sensitivity of the proposed methodology, as well as to challenge the structure and definition of the SMA.

6) It jeopardizes the use test

Internal models are widely used across banks and play an important role in the institutions' risk-management system, their decision-making processes and their capital assessment and allocation processes. The new framework will frustrate the efforts and investments made to maintain a sound risk management and use test, since the strengths of developed internal models from a managerial point of view will be discarded.

For instance, SMA reduces the incentives to keep under control the risk profile through mitigation actions, since the forward looking component is not considered and each operational loss will have a direct impact on the capital requirement for 10 years.

It is worth to mention that there is no reference to the role of Pillar 2 in the BCBS consultation paper. In any case, if the Pillar 2 capital requirements are floored by the Pillar 1, the proposed SMA calibration will make the Pillar 2 ineffective and will reduce banks' incentives to improve internal models and risk management processes. Finally, the new framework does not consider any positive effect due to risk transfer by insurance.

The removal of internal models will undoubtedly damage the management and measurement of operational risk, with potentially dramatic consequences for the economy as a whole.

Answers to specific questions

Q1. What are respondents' views on the revised structure and definition of the BI?

The construction of the Business Indicator has been explained in the BCBS consultation paper issued in October 2014. In order to find the indicator which better captures a bank's risk exposure, several statistical analyses have been performed by the BCBS, comparing the explanatory power of 20 candidate indicators built on balance sheets and/or income statement items. From the analyses, the Business Indicator was found to be overwhelmingly superior in capturing a bank's operational risk exposure. However, analyses have been performed considering only a limited sample of banks. Outlier observations have been excluded from the data set obtained with the OpCaR calculator, in order to avoid that the estimates were affected by very few extreme observations (mainly representing AMA banks) rather than by the bulk of the data, which typically identifies banks using the Basic Indicator Approach (BIA) or the Standardized Approach (TSA) with its variant, the Alternative Standardized Approach (ASA). Hence, the banks with extremely large values for BI (e.g. BI > 30 €/bn) or very high OpCaR/BI ratios (e.g. above 50%) were removed from the sample.

In this way, the selection and construction of the better proxy indicator have been done considering not all banks, but including mainly non-AMA ones which were about three quarters in the sample.

Back in October 2014, the Basel Committee selected the SMA as the best proxy indicator for bank's operational risk exposure when the aim was to review the simplest approaches to model operational risk

(i.e. TSA and BIA). However, in UniCredit's view, in March 2016 the Basel Committee should have updated their considerations when the SMA was chosen to replace the AMA, because if compared to the AMA, the SMA is far from being the best proxy of operational risk. Moreover, the fact that the SMA would replace the AMA models without having been calibrated and tested on the majority of the AMA banks reduces the validity of the conclusions drawn by Basel.

In particular, UniCredit is sceptical about the BI ability to capture the operational risk profile of a bank.

It is indeed an aggregation of P&L items which represents systemic risk profile at a certain point in time, but neither it is a meaningful financial indicator (i.e. it sums up several budget items without resulting in a single value-adding financial number, making difficult for an outside market participant to estimate it) nor does it actually represent the level of operational risk of a bank. Operational Risk is by nature mainly "behavioural" (with main trigger being conduct risk) and its exposure cannot be captured by financial statement items that do not embed any information on the control system in place in each bank. **As a consequence, banks with similar BI have huge differences in their loss experience with the loss component weighing not enough in the formula to make the approach risk sensitive.**

Moreover, **in absence of a full convergence between accounting principles** applied worldwide and of a planned harmonization process, the **BI would be barely comparable** across banks, as long as credit institutions, applying IAS/IFRS rather than US-GAAP (just to mention two well-known examples), account differently for operating/fee income and expenses.

Some internal analyses have been performed in order to investigate whether a relation exists between the Business Indicator and a risk measure, either the Pillar 1 calculated with the AMA models or the total loss accounted for (as illustrated in the following graphs). In particular, the Business Indicator Component computed at individual level for 12 small legal entities in the UniCredit Group has been compared with two measures, somehow related to the risk exposure of each Legal Entity: the Pillar 1 allocated capital and the 2015 P&L impact of operational risk losses.

The results in Figure 1 and Figure 2 show that there is a weak relation between the Business Indicator Component and the risk exposure (the R^2 values are far from 1).

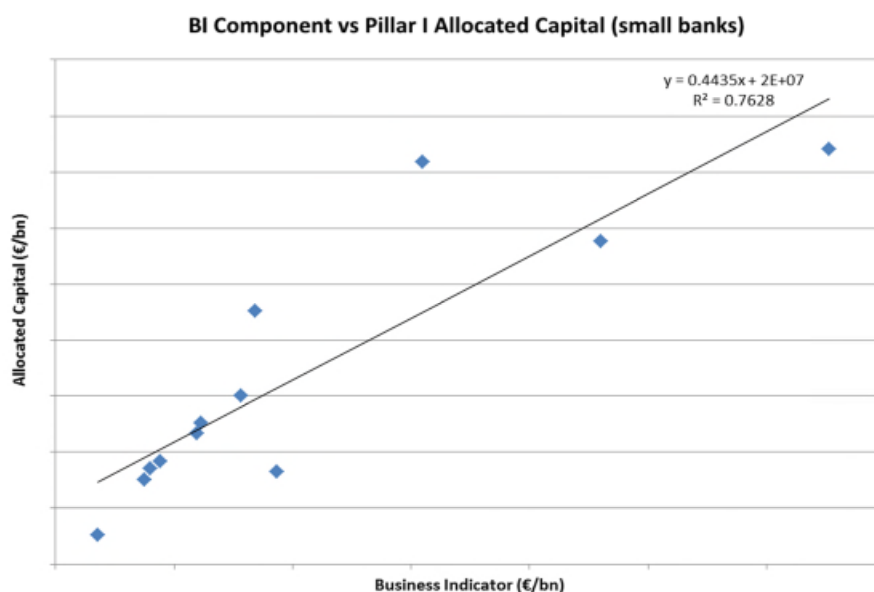
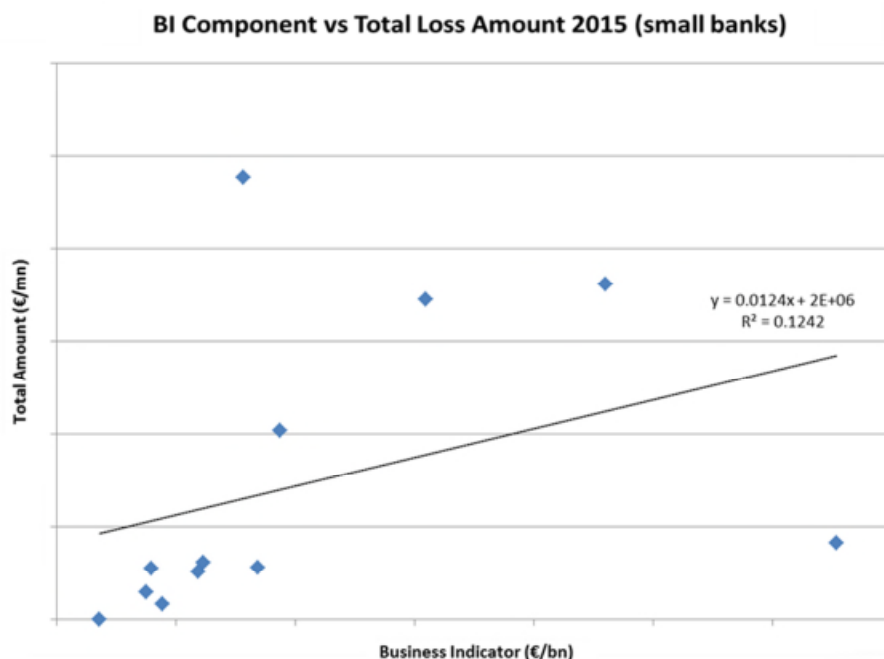


Figure 1: BI Component vs Pillar 1 Capital



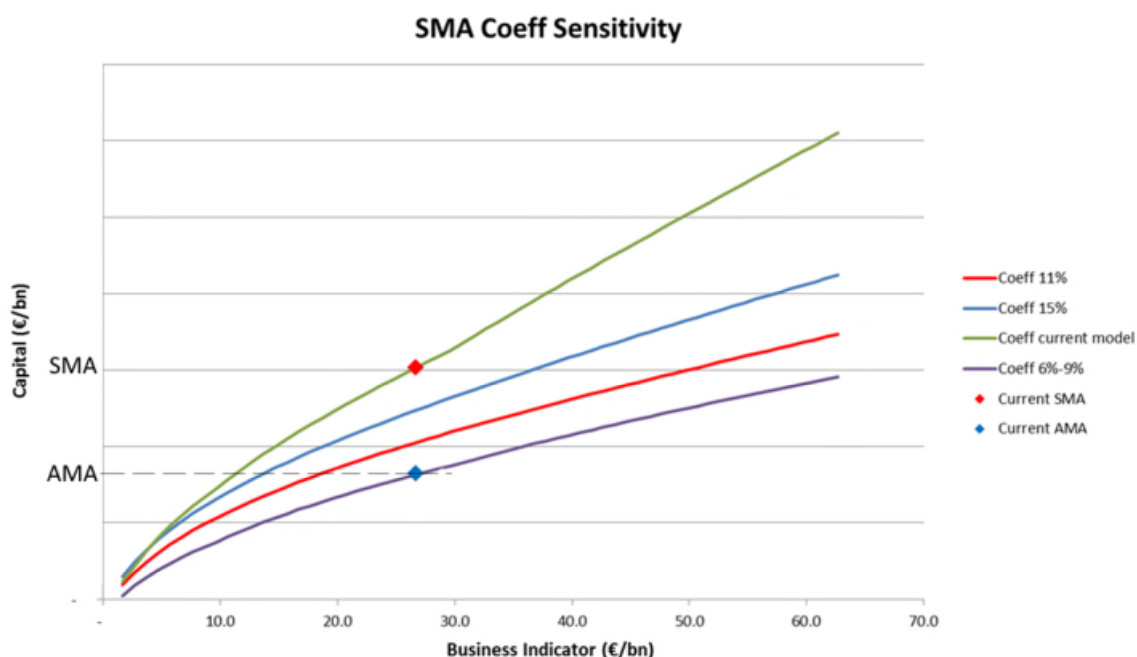
Calibration of the Business Indicator component

The BCBS does not provide any disclosure on the background analyses performed and the underlying methodology used to calibrate the SMA.

In particular, in the consultation paper issued in October 2014, the previous model calibration was explained, using the OpCar statistical model. The OpCar model was also detailed, in this way sensitivity analyses on the BI buckets and the coefficients definition have been performed.

The information on SMA calibration is essential to better understand the risk sensitivity of the proposed methodology, as well as to challenge the structure and definition of the SMA.

Analyses have been carried out on the coefficients assigned to the Business Indicator buckets in order to compute the Business Indicator component.



Considering the same BI buckets structure and varying the coefficients, it can be observed that, in order to reach the current regulatory capital computed through the AMA model, the coefficients should be decreased to values even lower than the minimum current coefficient (range 6% to 9%):

BI		Coefficient
-	1,000,000	6%
1,000,000	3,000,000	7%
3,000,000	10,000,000	7%
10,000,000	30,000,000	8%
30,000,000	-	9%

Figure 4: BI reviewed coefficients

The buckets coefficients proposed in the SMA consultation are aligned with those considered in the first consultation document published in October 2014. As abovementioned, coefficients have been calibrated considering a data set composed mainly of non-AMA banks. This suggests that a downward recalibration of coefficients would be needed in order to take into account also the disproportionally negative effect of the new approach for AMA banks.

Figure 3 shows the comparison between the SMA (green line) and the capital requirement obtained by setting the coefficients in order to reach AMA capital level (purple line). In blue and red respectively, the capital setting fixed coefficients, 11% (lowest BI coefficient considered) and 15% (strictly related to BIA approach) are also reported. In all cases, the capital would be higher than under the current AMA model, highlighting the weak relation between the Business Indicator and the bank risk exposure.

Q2. What are respondents' views on the inclusion of loss data into the SMA? Are there any modifications that the Committee should consider that would improve the methodology?

The bank-specific loss data has been introduced in the formula in order to enhance the risk sensitivity of the previous standardized approach. However, we have observed that if calibrated in this way, the SMA does not achieve this goal because the weight of the business component is disproportionally higher than the 'risk-sensitive adjustment', frustrating the aim of having a capital absorption which is fairly fitted to the bank's idiosyncratic risk profile. Namely, being a more standardized number, it is more comparable across banks because it is computed in the same way, but being actually unreflective of the level of operational risk of a bank, as mentioned above, it eases the comparison among pointless numbers.

Risk sensitivity

Through sensitivity analysis performed, it is clear that the capital is mainly driven by the business indicator which is overweighed in the formula, frustrating the loss component "risk sensitive adjustment", thus making banks not comparable by risk exposure. In Figure 5 the trend of capital considering the variation of both components is reported. A small shift of the business indicator could lead to a capital variation higher than the one observed for the Loss Component, since the gradient of the curve is higher for the Business Indicator.

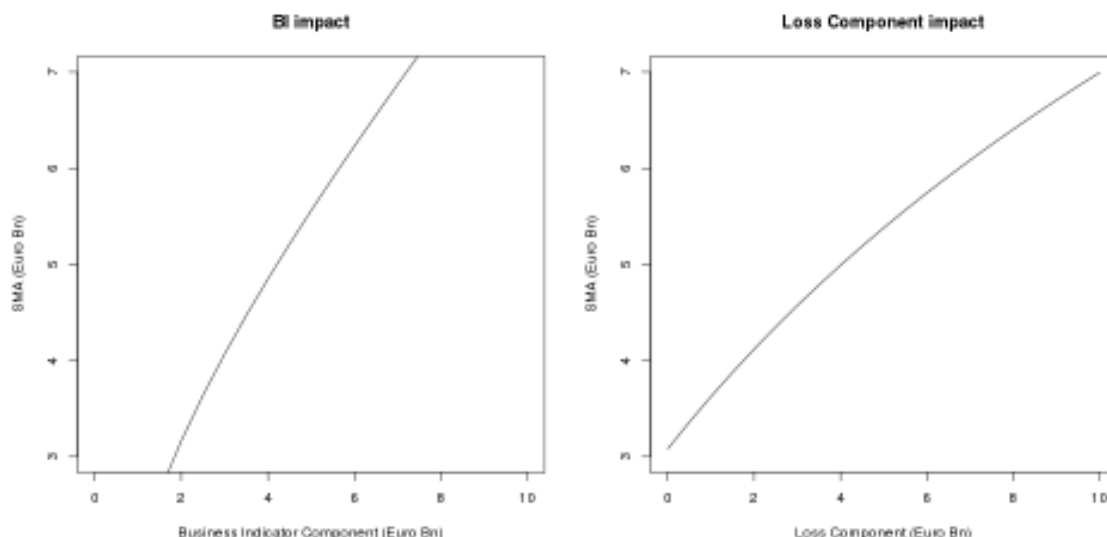


Figure 5: SMA dependence on BI Component and Loss Component

As far as UniCredit is concerned, if no losses above 100 €/mn (10 €/mn) occurred, the decrease of the capital would be limited, about -5%/-15% and the capital would be floored at 54,1% of the Business Indicator component. Moreover, only if UniCredit did not incur in any loss, the SMA framework would approach the current level of capital requirement computed through the AMA model.

The loss component is defined as a step function, dependent on the average annual loss over specific thresholds. This definition could lead to some inconsistencies. For instance, one loss of 1 €/bn is counted 19 times, in the same way as losses of 100 €/mn, regardless of their absolute magnitude and in contrast with the Basel's intention to penalize banks which suffered the greatest losses.

Moreover, since the time window of the events considered is fixed to the last 10 years, potential volatility could be observed due to the time window shift, causing cliff effects on the results.

In order to enhance the framework capability to effectively reflect underlying operational risk, UniCredit would hence suggest some changes to the current methodology, detailed below:

1. Increase of the granularity of BI Component and Loss Component definition

In order to increase risk sensitivity, UniCredit would suggest **a more granular approach** that would allow **to better distinguish banks based on their level of BI and historical losses**.

More buckets should be added both to the BI and to the loss component:

- in the BI component, the current bucket n. 4, with BI between 10 €/bn and 30 €/bn would be split in two, respectively with BI between 10 €/bn and 20 €/bn and between 20 €/bn and 30 €/bn. The new bucket n. 6 would be rearranged introducing the upper bound of 50 €/bn and a seventh bucket for BI above 50 €/bn would be set up. In the Loss Component, in addition to the three existing addends, the Average Total Annual Loss only including loss events above 1 €/mn and above 1 €/bn should be envisaged.

Buckets		
BI (€'000)		Coefficient
-	1,000,000	β_1
1,000,000	3,000,000	β_2
3,000,000	10,000,000	β_3
10,000,000	20,000,000	β_4
20,000,000	30,000,000	β_5
30,000,000	50,000,000	β_6
50,000,000	-	β_7

Av. Annual Loss	Coefficient
Total	α_1
$\geq 1 \text{ €/mn}$	α_2
$\geq 10 \text{ €/mn}$	α_3
$\geq 100 \text{ €/mn}$	α_4
$\geq 1 \text{ €/bn}$	α_5

This would allow to **recalibrate consistently downwards the multiplying factors** used in the formulas reducing the overall impact for the most virtuous banks and penalizing relatively more very large banks which have suffered the highest historical losses (i.e. ≥ 1 €/bn), in line also with Basel's intention. In particular UniCredit would propose the coefficients $(\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5) = (5, 4, 4, 4, 3)$ for the Loss Component calculation (see Figure 6 reporting current and proposed cumulative coefficients).

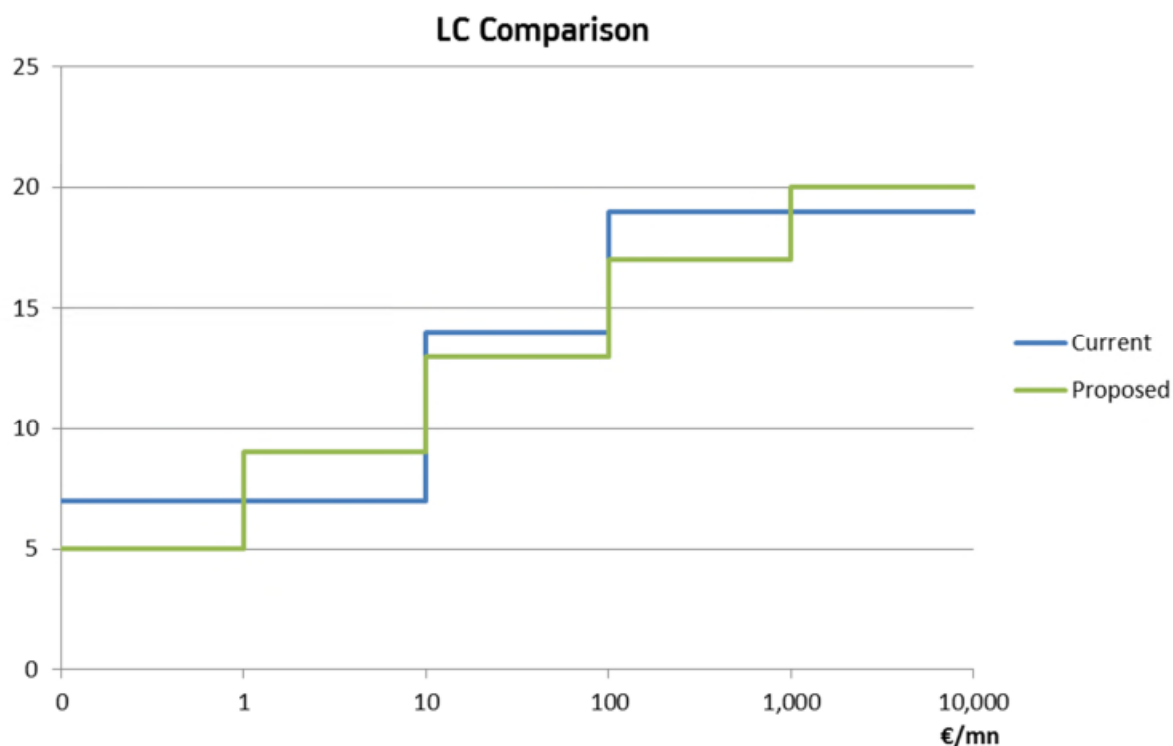


Figure 6: LC recalibration comparison

2. Differentiation of BI coefficients by Business Lines

Not all activities expose banks to the same level of operational risk. However, the proposed approach does not discriminate banks for instance on their business model. UniCredit would hence recommend to **apply higher coefficients to banks which have investment banking as core activity or with trading intensive business models** (as those business lines generated the highest systemic losses i.e. LIBOR rigging, embargo fines). This adjustment would not increase complexity of the approach (formulas would remain highly standardized), but it would have the merit to significantly enhance the risk sensitivity.

3. New interpretation of the Loss Component

The proposed interpretation of the Loss Component could lead to relevant cliff effects if one loss exceeds the 10 €/mn or 100 €/mn thresholds. For example, the formula of the Internal Loss Multiplier would lead to a cliff effect if one loss amounting at 99 €/mn (counted 14 times) increases to 101 €/mn loss (counted 19 times).

In order to make the approach less unduly penalizing and reduce the cliff effects, the loss component can be reengineered in such a way that **only the amount exceeding the thresholds should be multiplied by the relative coefficient**:

Loss Component

$$\begin{aligned}
 & \alpha_1 \cdot \text{Average Total Annual Loss} \\
 & + \alpha_2 \cdot \text{Average Total Annual Loss only including loss events above €10 million} \\
 = & \quad \quad \quad (\text{only including the loss amount above €10 million}) \\
 & + \alpha_3 \cdot \text{Average Total Annual Loss only including loss events above €100 million} \\
 & \quad \quad \quad (\text{only including the loss amount above €100 million})
 \end{aligned}$$

where $\alpha_1 = 7$, $\alpha_2 = 7$ and $\alpha_3 = 5$ are the coefficients.

Figure 7 shows the increase of the Loss Component as a function of an additional single loss amount for both interpretations:

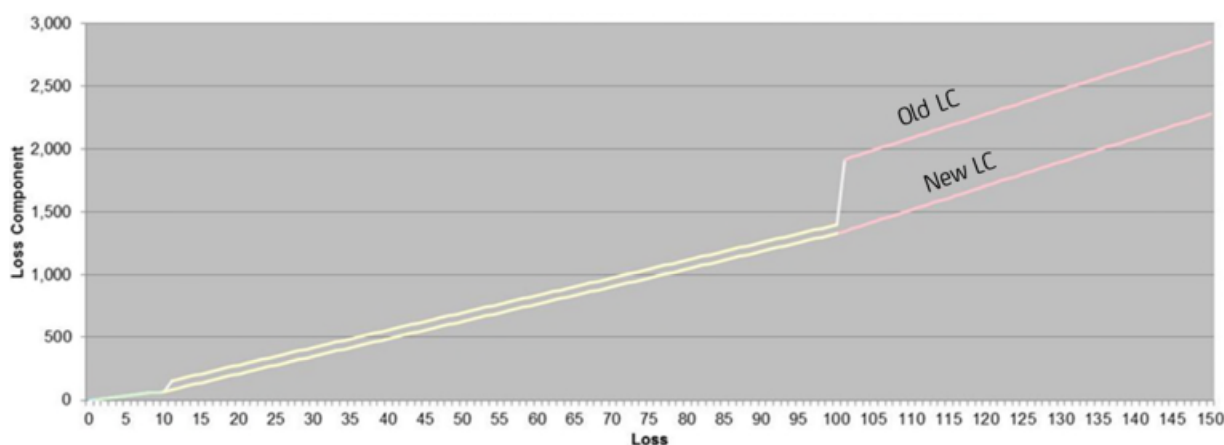


Figure 7: Loss Component - New Interpretation

It is worth to mention that such approach can be calibrated by regulators using the current QIS data. For each threshold (either 10 €/mn or 100 €/mn), the total annual loss amount above the threshold can be calculated as the difference between the total annual loss only including loss events above the threshold and the annual number of events above the threshold multiplied by the threshold itself.

4. Inclusion of the number of losses information in the Loss Component

The calibration of the Loss Component should be improved considering also the number of losses experienced by banks, instead of the mere amount which leads to some inconsistencies. As reported in the previous paragraphs, one loss of 1 €/bn is counted 19 times, the same as 10 losses of 100 €/mn. The Loss Component contribution for losses above 10 €/mn and 100 €/mn could be **calibrated considering the number of losses above 10 €/mn and 100 €/mn**. The rationale is that, considering banks with the same average annual loss for buckets ≥ 10 €/mn and ≥ 100 €/mn, the risk profile is higher for banks with the total loss amount concentrated in fewer events, since the severity distribution would present a heavier tail. It is worth mentioning that the number of losses is already reported in the current QIS exercise. Following these considerations, the loss component could be rewritten in the following way:

Loss Component

$$\begin{aligned}
 & \alpha_1 \cdot \text{Average Total Annual Loss} \\
 & + \alpha_2 \cdot \frac{\text{Average Total Annual Loss only including loss events above €10 million}}{\text{Total Number of Loss events} \geq \text{€10 million}} \\
 = & \frac{\alpha_1 \cdot \text{Average Total Annual Loss} + \alpha_2 \cdot \frac{\text{Average Total Annual Loss only including loss events above €10 million}}{\text{Total Number of Loss events} \geq \text{€10 million}}}{1} \\
 & + \alpha_3 \cdot \frac{\text{Average Total Annual Loss only including loss events above €100 million}}{\text{Total Number of Loss events} \geq \text{€100 million}}
 \end{aligned}$$

where $\alpha_1 = 7$, $\alpha_2 = 7$ and $\alpha_3 = 5$ are the coefficients.

The new proposed approach collapses to the original one, when there is no more than one loss higher than or equal to 10 €/mn.

Examples (with fictitious numbers):

1. Comparison between current and new approach which would include the number of losses:

Current Approach	Average Annual Loss		Coeff	Number of losses	Loss Comp	
total	500,000	x	7	30,000	=	3,500,000 +
≥ 10 mn	300,000	x	7	60	=	2,100,000 +
≥ 100 mn	200,000	x	5	10	=	1,000,000 =
						6,600,000

New Approach	Average Annual Loss		Coeff	Number of losses	Loss Comp	
total	500,000	x	7	30,000.0	=	3,500,000 +
≥ 10 mn	300,000	x	7	60	=	35,000 +
≥ 100 mn	200,000	x	5	10	=	100,000 =
						3,635,000

2. Comparison between current and new approach when there is only one loss of 2 €/bn above 100 €/mn. The approach collapse to the original situation:

Current Approach	Average Annual Loss		Coeff	Number of losses	Loss Comp	
total	500,000	x	7	30,000	=	3,500,000 +
≥ 10 mn	200,000	x	7	1	=	1,400,000 +
≥ 100 mn	200,000	x	5	1	=	1,000,000 =
						5,900,000

New Approach	Average Annual Loss		Coeff	Number of losses	Loss Comp	
total	500,000	x	7	30,000.0	=	3,500,000 +
≥ 10 mn	200,000	x	7	1	=	1,400,000 +
≥ 100 mn	200,000	x	5	1	=	1,000,000 =
						5,900,000

The two proposals for the recalibration of the loss component (i.e. the so called new interpretation and inclusion of the number of losses) could be applied together.

5. Application of the Internal Loss Multiplier to the first BI bucket banks

Not requiring the calculation of the internal loss multiplier for banks with BI below 1 €/bn the proposed approach implicitly assumes that they do not have high quality data on historical operational risk losses which is not true in many cases. There are many small banks that have good quality operational loss databases. As a result, UniCredit believes that the **internal loss multiplier should be always accounted for when a bank can prove adequate quality of its loss data**, namely those which have implemented sound internal validation processes and which have been subject to close supervision of competent authorities. This would also make SMA more risk sensitive for smaller banks where the current calibration does not assure that properly.

6. Inclusion of a time decay factor

The inclusion of a **time decay factor in order to assign lower weights to older operational events**, could address the problem of potential cliff effects when the time window shifts. In particular the following weight should be applied, for each annual loss x :

$$w(x) = \frac{e^{-\alpha \cdot t(x)}}{\sum_{t=0}^9 e^{-\alpha \cdot t}}$$

where $t(x)$ is the integer number of years which have passed since the first booking date of the loss x (i.e. for the calculation referred to end of 2015, $t(x) = 0$ for losses with first booking date in 2015, $t(x) = 1$

for losses with first booking date in 2014, etc.) and α is a parameter which could be set between 0,1 and 0,2.

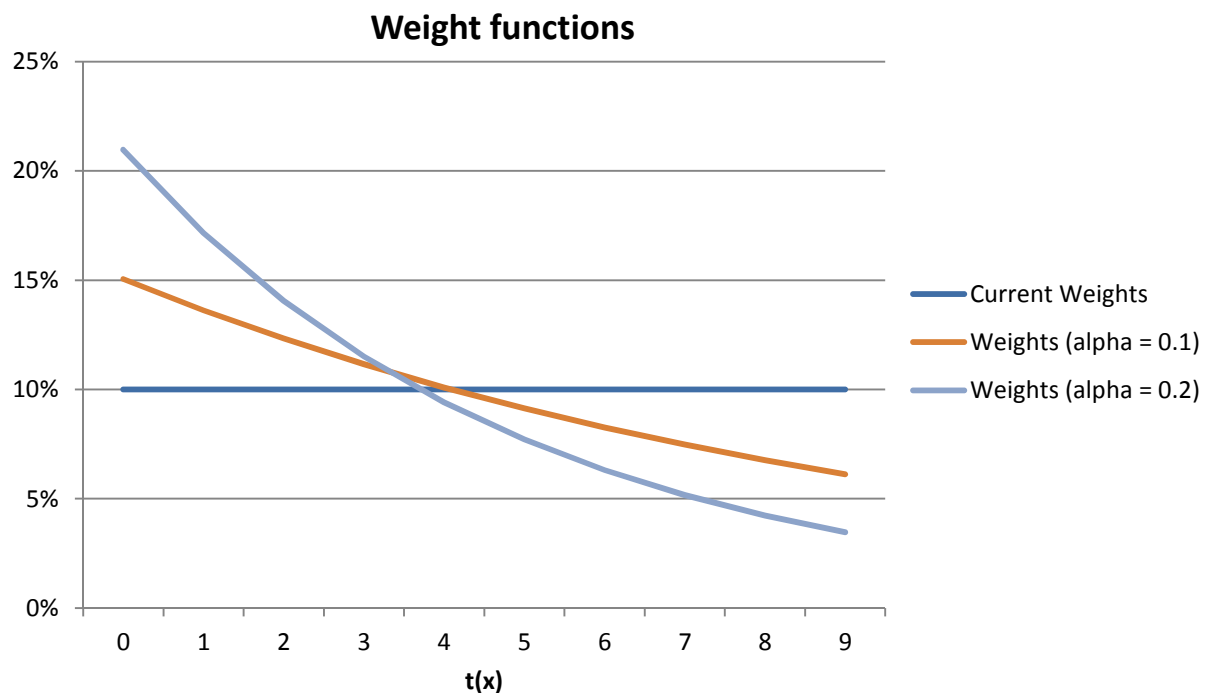


Figure 8: Weight functions

The proposed weight function shows:

- smooth decay across years;
- flexibility due to the tuning parameter.

7. Provisions

In principle, provisions and capital requirements are well distinct reserves that banks have to absorb losses: the expected portion of them is dealt with under appropriate provisioning practices, while only the risk of incurring in unexpected losses is mitigated through regulatory capital.

However, in the SMA approach the level of provisions is computed for calculating capital requirements. While theoretically the level of suffered losses could be an indication of the unexpected losses a bank might incur in, **provisions should be deducted in bank's modelling for operational risk**, being a representation of expected losses. In the AMA models provisions are taken into account, however then deducted from the capital charge measurement, in order not to distort the final outcome.

Moreover, this approach penalizes relatively more the banks which have more conservative provisioning.

It is worth to mention that there is no uniform provision treatment among jurisdictions, further challenging the comparability of measures.

The application of an ex-post deduction of the total amount of provisions could lead to a better representation of the risk exposure.

UniCredit would propose to deduct all the available provisions booked over the considered time window.

8. Super-additivity

As far as banking groups are concerned, the marginal coefficient applied to the business component is calculated at consolidated level and then used for all the group legal entities regardless of their size.

Hence, banks in federative groups will be penalized, being the group marginal coefficient to be applied to the Business Component higher than the ones they would likely be assigned with if not belonging to a banking group. In particular, smaller legal entities would be charged with a capital requirement on average higher than their actual operational risk profile. This approach penalizes smallest banks (with Business Indicator lower than 1 €/bn) as well as banking groups.

Being a financial group formed by banks of large, medium as well as smaller sizes, UniCredit is particularly concerned by this 'super-additivity' issue. From some preliminary analysis, UniCredit has recognized that while for bigger banks (letter "A" in the graph) there is a negligible difference between the requirement calculated at either consolidated or individual level, the lower the size of the legal entity is, the more such a divergence tends to enlarge (in the graph, B stands for Medium and C for smallest).

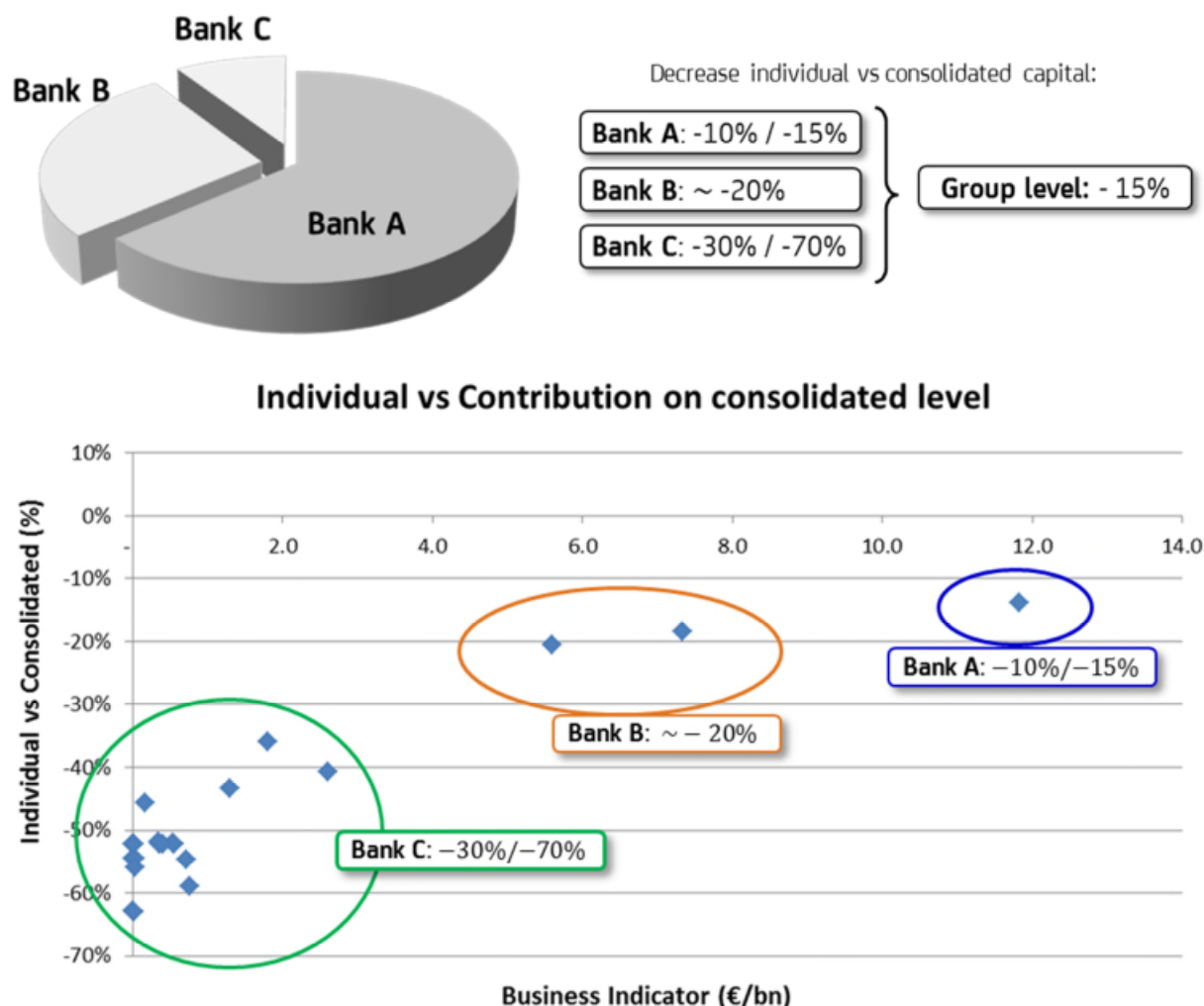


Figure 9: Allocation discrepancies by bank size

The following solutions are suggested:

1. To approach this inconsistency, a **deduction at consolidated level** on the basis of a diversification effect up to 18%² **should be applied, as losses do not occur at the same time in every legal entity.** The diversification can be based on the difference between the coefficient of the Group bucket and the median coefficient of the subsidiaries buckets. For example, if most banks belong to the smallest bucket while the group belongs to the highest bucket, the diversification effect is 18%.
2. In order to limit the discrepancies between the capital charges of individual firms versus those parts of consolidated groups, a **linear relationship between BI and SMA capital can be considered**, reducing the differences among the coefficients of different buckets.

9. Inclusion of other risk mitigants: Insurance

The insurance industry provides banks with valid cover against large unexpected operational risks. Insurance performs a crucial function within the financial system, ensuring material risks are transferred

² Computed as the difference between the lowest and the highest BI coefficients.

and diversified efficiently across the industry, contributing to the system's resilience.

Maintaining insurance as a recognized Pillar 1 capital mitigant in the new regulatory framework is a sound way to enhance risk-sensitivity and promote good behaviour.

During the underwriting process, the insurance firm performs an independent review of the bank's risk profile, risk framework and risk management processes. The output of an insurer peer-review process proves valuable and is closely aligned to the goals of supervision.

This would also provide significant risk mitigation benefits and would encourage banks to carry out a deeper and more effective risk management. The possibility to include insurance as a capital reduction has so far proved its ability in influencing bank management to understand and proactively handle their risk profiles, improve their risk governance, and implement the best controls possible to minimize the potentially material losses.

UniCredit would recommend that insurance is included in the standardized measurement approach by incorporating a new optional insurance component, as an ex-post percentage correction:

$$SMA\ Capital_{net} = SMA\ Capital \times (1 - Insurance\ Component)$$

The Insurance Component represents the percentage of capital that can be offset by implementing an eligible insurance policy. It is calculated using the same regulatory cap of 20% as per the AMA models:

$$Insurance\ component = \min(20\%, \delta)$$

The δ parameter could be calibrated considering an "admissible insurance contract" which could be standardized to the extent possible, with the following features:

- Material risk retention;
- Disclosure requirements to the insurance market and regulator;
- Insurance counterparties must have a minimum credit rating of "A" or equivalent;
- Claims protocol to facilitate timeliness of payment within the insurance contract;
- Clarity of coverage:
 - Based on traditional insurance solutions enhanced to provide clarity of cover and payment certainty
 - Clear contract wording with a coverage clause considering all Operational Risk above a threshold arising out of any Operational Risk event subject to a pre-agreed set of exclusions:
 - Credit/Market/Strategic/Reputational risk events
 - Deliberate corporate acts
 - Regulatory fines and penalties
 - Known prior acts
 - Claims arising out of liquidation/bankruptcy/insolvency/schemes of arrangement
 - Seepage, pollution or contamination
 - War/Nuclear

The important factors to consider for computing the insurance benefit are the policy limit L , deductible D , and a standard haircut H covering the theoretical impact of the limit on capital, any mismatch in cover, counterparty default or delay in payment:

$$\delta = \frac{H \cdot L}{SMA\ Capital} \cdot f(D)$$

where $f(D)$ is an adjustment depending on the chosen deductible, ensuring that the benefit decreases as the deductible increases (see Figure 12 below).

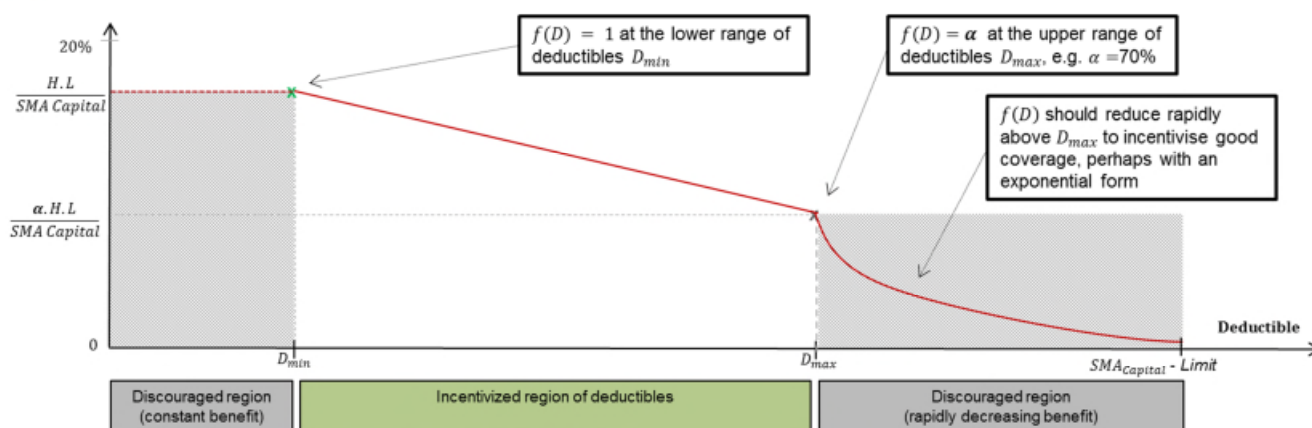


Figure 12

The underlying assumption is that there is a range of acceptable attachment for the contract, that we propose to base on the SMA capital of the bank under consideration, $D_{min} = d_{min} \cdot SMA$, and $D_{max} = d_{max} \cdot SMA$ (e.g. $d_{min} = 10\%$, $d_{max} = 30\%$). The coefficients d_{min} and d_{max} can be calibrated using a simulation-based approach, considering a reasonable range of probabilities to exceed the deductible. The factor α (which represents the slope of our proposed insurance benefit function) can be calibrated using a simulation-based approach.

The haircut H can be calculated by the Basel Committee with the QIS data as part of the SMA final calibration.

The haircut factor H is the portion of the limit which effectively offsets capital. It is indeed driven by two different independent factors that can be decoupled ($H = H_0 \cdot H_1$) and calibrated separately:

1. H_0 : the theoretical portion of the limit offsetting capital, assuming full coverage, recovery and payment above the minimum deductible. It can be calibrated following a simulation-based approach.
2. H_1 : an additional discount factor to take into consideration mismatch in cover and uncertainty of payment.

The calculation of H_1 can be supported by statistics on insurance performance and knowledge of insurance experts. As the BCBS's paper n.181 "Recognising the risk mitigating impact of insurance in operational risk modelling" is exhaustive in its list of haircuts to be applied, UniCredit would propose that the total haircut, H incorporates all these elements as such:

$$H_1 = (1 - H_{PD}) \cdot (1 - H_{TD}) \cdot h_{POIR}$$

where:

- H_{PD} = a *fixed haircut* to recognize the insurer's ability to pay based on the probability of default of an A-rated insurer, e.g. $H_{PD} = 1\%$
- H_{TD} = a *fixed haircut* for average time delay to payment, e.g. $H_{TD} = 3\%$
- h_{POIR} = a *calculated haircut* for the probability of a loss event above the deductible being covered by the policy, including consideration of the recovery rate in the case of a successful claim. It can be calibrated through benchmark data from QIS 2016.

The methodology is simple and transparent, relying on a number of logical and standard factors that can be easily estimated for banks which would take advantage of the mitigating benefits of the insurance. The methodology should provide for the integration of catastrophic loss insurance solutions which could be purchased in addition to current working layers (i.e. day-to-day policies) that are purchased to mitigate more specific and expected loss events.

UniCredit strongly believes that considering the insurance for prudential purposes, a sound option from a methodological standpoint, would also have the merit to free up resources which could be allocated to finance real economy.

10. Inclusion of forward looking information

UniCredit would recommend the **inclusion of the forward looking information** (i.e. scenarios, business environment and internal control factors) as a correction to be applied to the loss component.

Q3. What are respondents' views on this example of an alternative method to enhance the stability of the SMA methodology? Are there other alternatives that the Committee should consider?

Sensitivity analyses have been performed in Annex 2 which proposes an alternative to the internal loss multiplier. The setting of the m parameter drives the impact on the results. Indeed, once the m parameter is fixed, the internal loss multiplier is defined as a hyperbola dependent on the ratio between loss component and business indicator component. The multiplier increases as the ratio increases, but with a cap defined by the m parameter (see Figure 13). A cap on the internal loss multiplier would lead to a further decrease of the risk sensitivity, which is already constrained by the logarithmic function, smoothing the loss component effect.

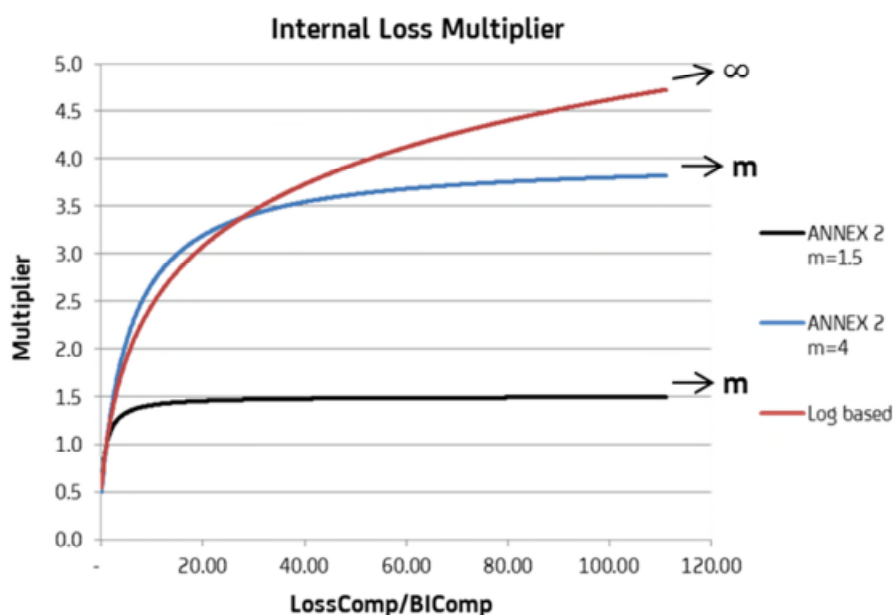


Figure 13: Internal Loss Multiplier Comparison

The m parameter should be prevented from being higher than 1 in order to avoid inconsistencies. For instance, see Figure 14 where m is set equal to 0.6.

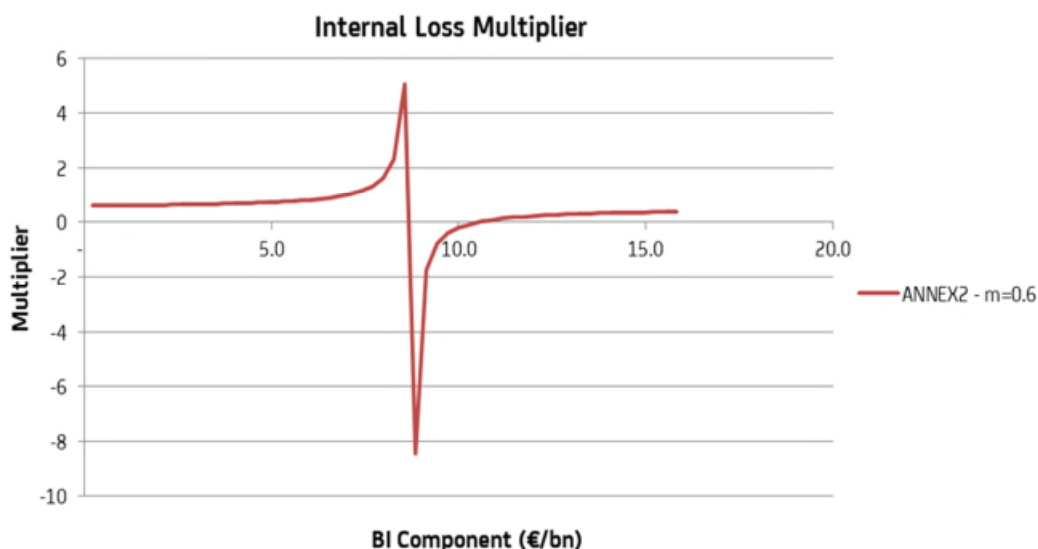


Figure 14: Internal Loss Multiplier - ANNEX 2 $m=0,6$

This approach would favour only banks with high ratios between Loss Component and Business Indicator Component, due to the presence of a cap on the BI Component adjustment. Instead, in UniCredit's case, regardless of the level of the m coefficient, capital requirements are systematically higher than the current AMA levels:

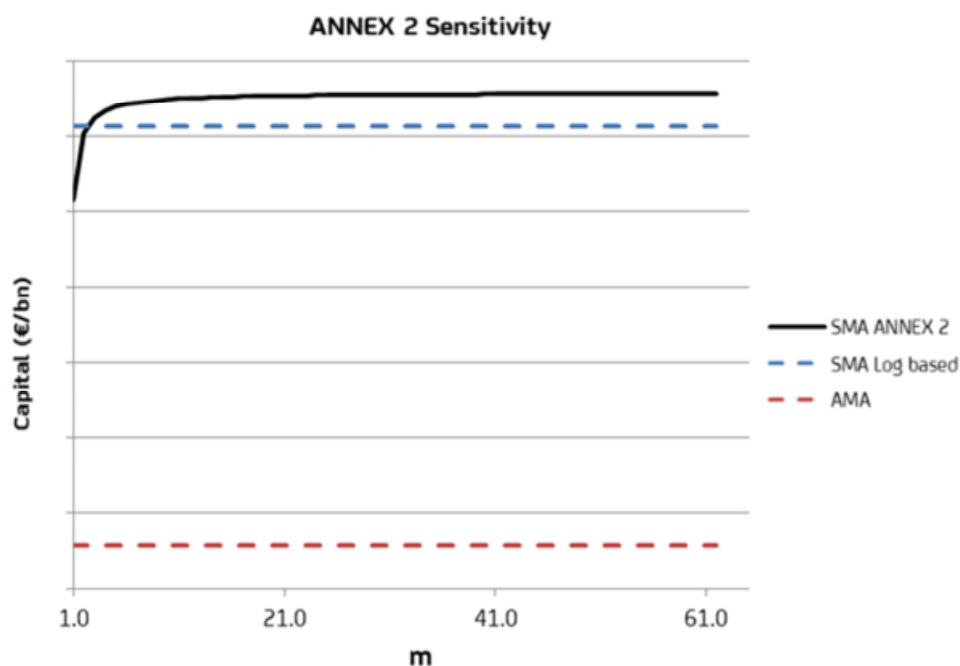


Figure 105: Internal loss multiplier - Capital comparison on m coefficient

Proposal of an alternative internal loss multiplier

Both internal loss multipliers proposed in the BCBS consultative documents challenge the risk sensitivity of the approach:

- a logarithm function mitigates by construction the effect of the Loss Component on the results;
- the ANNEX 2 method allows to put a cap on the multiplier to be applied to the BI Component.

Another multiplier should be defined in order to increase the effect of the Loss Component on the SMA

capital.

Our proposal is to **consider an internal loss multiplier defined by a n -th root of the ratio between Loss Component and BI Component**, $n \in \mathbb{R}^+$ and $n \geq 1$:

$$\text{Internal Loss Multiplier} = \sqrt[n]{\frac{LC}{BIC}}$$

Supposing that the Loss Component is applied also at Bucket 1:

$$\text{SMA Capital} = BIC \cdot \sqrt[n]{\frac{LC}{BIC}} = BIC \cdot (LC)^{\frac{1}{n}} \cdot (BIC)^{-\frac{1}{n}} = (BIC)^{1-\frac{1}{n}} \cdot (LC)^{\frac{1}{n}} = (BIC)^{\frac{n-1}{n}} \cdot (LC)^{\frac{1}{n}}$$

In the theoretical case of a Loss Component equal to zero, a floor to 1 should be applied on the component.

In this case the SMA capital will be floored to $(BIC)^{1-\frac{1}{n}}$.

This internal loss multiplier function shows the following features:

1. The n -th root function grows faster than the logarithmic one, in this way risk sensitivity of the approach is enhanced;
2. No cap on the internal loss multiplier for high ratios;
3. The effect of this internal loss multiplier can be calibrated through the n parameter:

$$\text{SMA Capital} = \begin{cases} LC & n \rightarrow 1 \\ BIC & n \rightarrow +\infty \end{cases}$$

Figure 116 compares the internal loss multipliers considered:

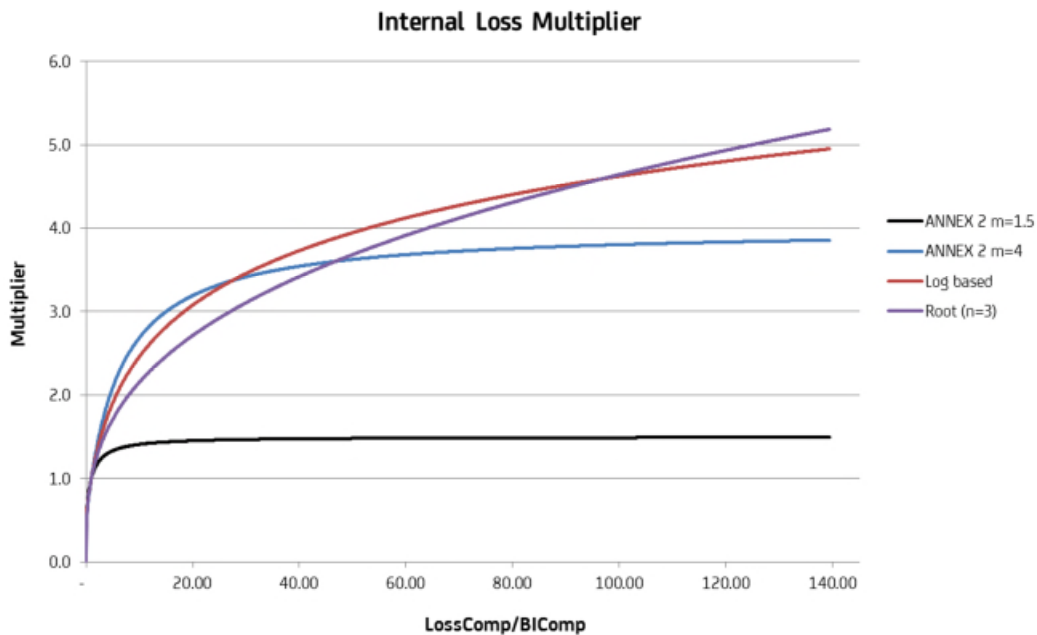


Figure 127 and Figure 138 show the behaviour of the SMA capital varying the n parameter for the cases LC higher than BI Component and vice versa.

In particular it can be observed that when SMA capital is closer to the Loss Component, the lower n is, the higher the weight of the Loss Component on the final result is. In case LC is higher than the BI component, the SMA capital will decrease as n increases. In case LC is lower than the BI component, the SMA capital will decrease as n decreases.

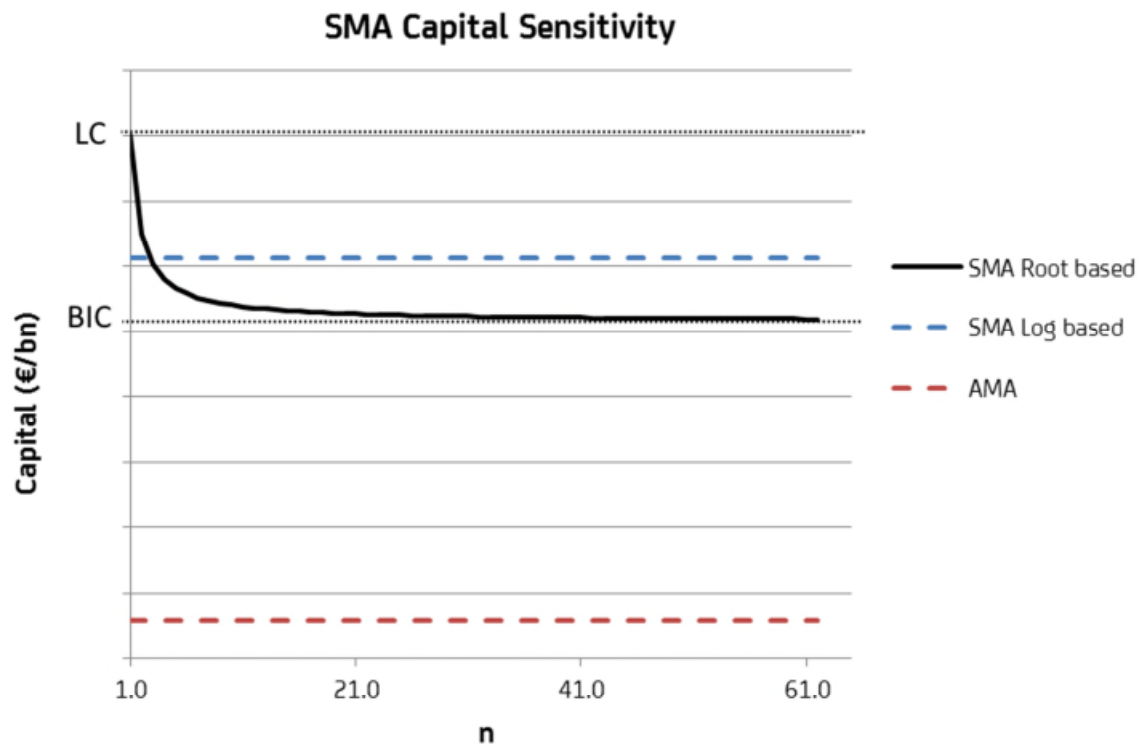


Figure 127: SMA Capital sensitivity - Internal Loss Multiplier Root based [LC>BIC]

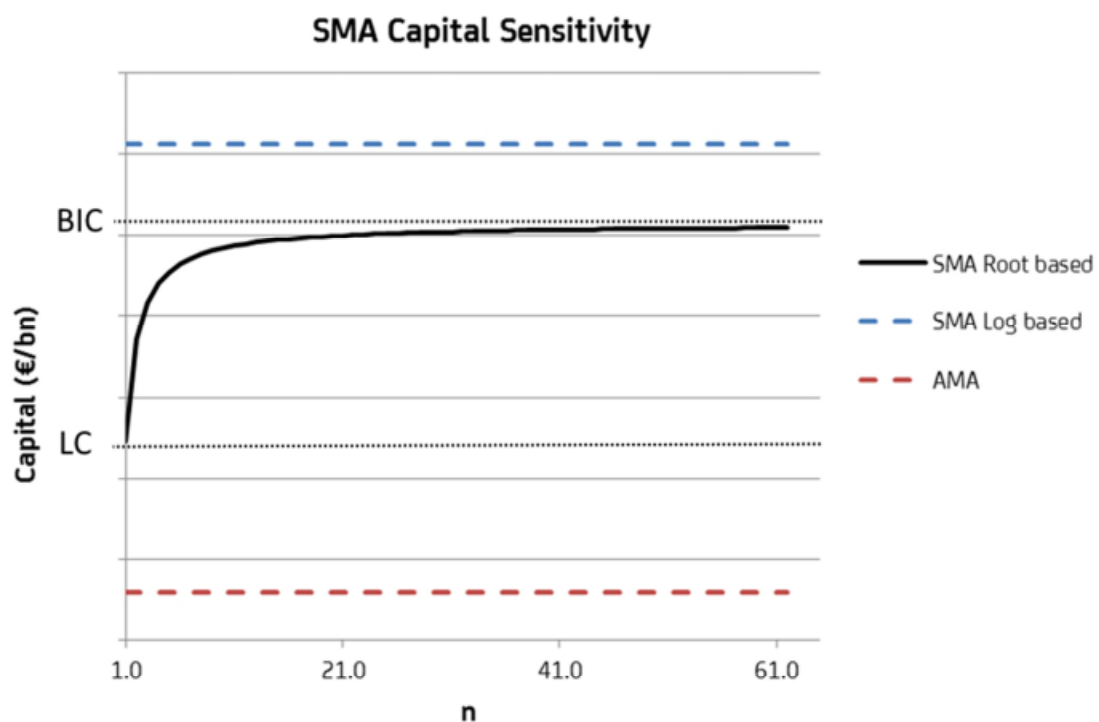


Figure 138: SMA Capital sensitivity - Internal Loss Multiplier Root based [LC<BIC]

Conclusions

According to the Basel Committee, the inherent complexity of the AMA and the lack of comparability of outcomes across banks have undermined the confidence in the internal model framework, which then resulted in its abolishment. UniCredit is well aware that the AMA had room for improvements, and this is the reason why banks were highly committed on fine-tuning the approach over time and on implementing tough internal validation processes. Moreover, the fundamental role of the AMA in spreading risk culture across institutions and in monitoring on an ongoing basis the exposure to operational risk should not be ignored.

The decision to scratch the AMA hence frustrates any effort made so far and basically represents a step back to the past. Moreover, the SMA is absolutely inadequate to replace an internal model as a unique available method for calculating capital requirements for operational risk.

1. **It is not able to encourage the level playing field**, being SMA calibrated without taking into account the high variability of operational losses in banks' portfolios.
2. **It is not even simple to calculate.**
3. **It does not achieve the objective of comparability**: being a more standardized number it is more comparable across banks because it is computed in the same way, but it eases the comparison among pointless numbers.
4. **It implies a significant increase in capital** for the industry, with negative expected consequences on the ability of banks to finance the real economy.
5. **It does not fulfil the objective of more consistency**, since it is more punitive for small banks, even when part of a group, rather than for individual banks.

For the reasons reported above, the SMA does not meet its targets and it does not represent an improvement compared to the AMA framework. Instead of removing the AMA from the framework, we would have recommended that the regulator addressed its shortcomings: a restriction of freedom banks are granted with in setting up the internal approach and/or a decrease of the 99.9% confidence level, which is barely consistent with around 10 years horizon observations, would have significantly improved the comparability among results without undermining the risk sensitivity of the approach. Nonetheless, if there is no margin for maintaining the internal models at this stage and if some sort of standardization is anyway needed, we urge the regulator to reconsider the formulas and the calibration as disclosed in the consultation paper.

In particular, the review should address some features:

- In order to increase risk sensitivity, **we suggest a more granular approach together with a recalibration of the loss component and the introduction of new internal loss multiplier**, that would allow to better distinguish banks based on their level of BI and historical losses. This approach would also have the merit to be aligned with the Basel's intentions to have capital absorption figures proportional to bank size and loss experience.
- Since provisions should cover the expected losses, whereas the capital requirement should represent the unexpected losses, we suggest that all the available **provisions** booked over the considered time window are **deducted from the SMA capital requirement**.
- Showing the allocation mechanism some inconsistencies in the comparison between bottom up and top down capital figures, **we propose either to apply a diversification effect deduction in the consolidated calculation, or to introduce a linear relationship between Business Indicator and SMA capital**, in order to avoid discrepancies.
- We recommend that the **inclusion of mitigating factors like risk transfer through insurance** should be allowed.

A recalibration of the SMA framework, allowing to approach a reasonable level of capital requirement, would also **make really effective Pillar 2 internal models**.

More disclosure is also required regarding the statistical methodology underlying the current calibration of the SMA approach. UniCredit will be willing to keep the dialogue open with the Basel Committee to further discuss the open issues especially as soon as the QIS results are available.

CONTRIBUTORS**CONTACT PEOPLE** (name.surname@UniCredit.eu)**Group Operational & Reputational Risks – Group Risk Management (KEY CONTRIBUTOR)**

Mr Gabriele Maucci – Head of Group Operational & Reputational Risks
Mr Riccardo Chiavolini – Head of Operational & Reputational Risk Analytics
Mr Fabio Piacenza – Operational & Reputational Risk Analytics
Ms Claudia Belloni – Operational & Reputational Risk Analytics
Ms Rossella Galbiati – Operational & Reputational Risk Analytics
Ms Monica Arrighi – Operational & Reputational Risk Analytics

European Institutional & Regulatory Affairs - Group Institutional & Regulatory Affairs (KEY CONTRIBUTOR)

Ms Costanza Bufalini – Head of European Institutional & Regulatory Affairs
Ms Micol Levi – European Institutional & Regulatory Affairs
Ms Maria Alessandra Martini – European Institutional & Regulatory Affairs

Group Regulatory and Supervisory Impact Assessment - Group Institutional & Regulatory Affairs

Mr Giuseppe Rapisarda – Head of Group Regulatory and Supervisory Impact Assessment
Ms Antonietta Volgarino – Group Regulatory and Supervisory Impact Assessment
Mr Huibert Jan Crielaard – Group Regulatory and Supervisory Impact Assessment

Operational, Reputational Risk & Fraud Management Italy

Mr Ennio Menicucci – Head of Operational, Reputational Risk & Fraud Management Italy
Mr Davide Berselli – Operational, Reputational Risk & Fraud Management Italy
Ms Luigia Costanzi – Operational, Reputational Risk & Fraud Management Italy

UniCredit Bank AG (name.surname@unicredit.de)**Operational Risk**

Ms Petra Merl – Head of Operational Risk
Mr Andreas Seibt – Head of Quantitative Operational Risk
Mr Oliver Kühnle – Quantitative Operational Risk
Ms Elena Schüle – Quantitative Operational Risk

UniCredit Bank Austria AG (name.surname@unicreditgroup.at)**Operational & Reputational Risk**

Mr Günther Helbok – Head of Operational and Reputational Risk Unit
Mr Stephan Strasser – Head of Operational Risk Section
Ms Danijela Doko – Senior Operational risk Manager

Bank Pekao SA (name.surname@pekao.com.pl)**Financial and Operational Risk Management**

Mr Krzysztof Nowak – Head of Financial and Operational Risk Management