



Comments on the “Standardised Measurement Approach for operational risk – Consultative Document “

June 3rd, 2016

Basel Committee on Banking Supervision
Bank for International Settlements
Centralbahnplatz 2
CH-4002 Basel, Switzerland

Re: Standardised Measurement Approach for Operational Risk

Dear Sirs,

Chappuis Halder & Co welcomes the opportunity to provide comments on the consultative document covering the Standardised Measurement Approach for Operational Risk.

CH&Co is a consulting firm which specializes in supporting clients within the financial services sector. We have developed a strong Risk Management practice, and through our missions and mandates, we have had the chance to build specific expertise in Operational Risk. We are pleased to be able to leverage our experience and contribute our thoughts on such an important issue.

First of all, please note that we fully support the positions expressed by the BCBS on the review of the Standard Measurement Approach (SMA), to balance simplicity and risk sensitivity and to promote consistency and comparability in operational risk capital measurement. We have though suggested some areas for improvement, based on our research and simulations, which are presented in the exhibits.

In this regard, please find in the following document our comments on what we consider as important points for discussion. Please consider these as a humble contribution to open and foster the debate on the Standardization of Operational Risk Capital Measurement.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Benoît Genest', is written over a light blue circular stamp that contains the word 'Genest'.

Benoît Genest

Chappuis Halder & Co | Partner | Global Research & Analytics
bgenest@chappushalder.com
50 Great Portland Street
W1W 7ND LONDON

Table of Contents

Introduction	1
I. Inclusion of internal data considering the SMA methodology.....	1
1. Definition of a prevailing reference date	1
2. Internal data collection: period of observation and data homogeneity.....	2
3. Definition of the <i>de-minimis gross loss threshold</i>	5
4. Discount factor & data comparability over time.....	6
II. SMA Components Review of the LC computation	8
1. Weighting methodology applied to internal loss data.....	8
2. Loss Classes definition	9
III. Review of the SMA Capital formula	11
IV. Alternative method Proposal of a calibration for the <i>m factor</i>.....	17
1. Presentation of the alternative method	17
2. Calibration Methodology	18
V. Outstanding issues.....	21
1. Recognition of the risk-mitigation effect of insurance and hedging instruments in the assessment of Operational Risk Capital Requirement.....	21
2. Double accounting of the provisions.....	21
Appendix 1 Drivers of the SMA capital variations over time for a given loss profile.....	22
1. Impact of BI variations assuming various theoretical scenarios	22
2. Impact of loss distribution: stresses applied to loss frequency and severity.....	23
Appendix 2 Risk sensitivity of the SMA methodology through 4 theoretical profiles	23
1. Description of the simulated cases	23
2. Evolution of the SMA capital	24
Appendix 3 Presentation of the alternative ILM function	24

Introduction

CH&Co provides a response to the Basel Committee on Banking Supervision's consultative document based on the public data communicated by the Bank for International Settlements.

Our comments represent an open response including different lines of thought. However, the proposals should not be considered as final solutions but as a strong willingness on the part of CH&Co to open the debate about the Standardised Measurement Approach and to challenge the topics that seem relevant to us. We aim at identifying potential limits and weaknesses, providing alternatives and possible area for improvements. The proposals presented in this document are complementary, as they provide different visions and area for improvements within the SMA methodology.

Our comments relate to 3 areas:

- SMA method inputs : specific analysis of the internal losses data
- SMA method components : specific analysis of the LC
- Capital calculation methodology : specific analysis of the SMA formula

Our comments are based on the market practices we have observed over several years concerning the measurement and management of operational risk. They also reflect constructive ongoing discussions with banking actors on this subject.

I. Inclusion of internal data considering the SMA methodology

The present section summarizes our comments, not on the formula itself, but on its inputs, the data losses.

1. Definition of a prevailing reference date

Findings & general comments

Our analysis of the Standardised Measurement Approach has allowed us to identify limits and weaknesses of the methodology, and we have tried to provide potential alternatives. However, a question about the losses reference date remains unanswered and we welcome this opportunity to seek clarity.

As described in the Consultative Document, the Loss Component (LC) is defined as the weighted sum of average losses registered by a given bank in its loss data history.

Following our understanding of the LC description, two types of loss events are collected to build up the loss data history: provisions on expected loss generating events and observed losses on Operational Risk incidents. The Committee indicates each loss – whether observed or provisioned – shall be registered with occurrence, accounting and reporting dates as a data quality standard.

When computing the LC, the Committee specifies the date of accounting is the reference date for provisions on expected losses. Though, when integrating observed losses to calculate the LC, banks are free to choose either the reporting or accounting date as a reference date.

Solutions & proposed alternatives

This open-ended choice skews the LC computation. Indeed, the chosen reference date will necessarily vary across banks. Yet, the Basel Committee specifically signalled its willingness to promote transparency through a standardised and homogenous framework for Operational Risk Measurement across European financial institutions.

Therefore the prevailing type of reference date should be clearly specified and applicable to all banks for any type of loss events.

As the accounting date is mentioned as relevant for provisions, this could be prevailing for all eligible loss events to the LC computation registered in the data history.

To be consistent with this suggestion, CH&Co suggests the reference date should be the accounting date for any type of loss events in the following suggestions and analysis.

2. Internal data collection: period of observation and data homogeneity

The SMA methodology uses internal data to compute two key components of the operational risk capital requirement for a given bank. The Loss Component (LC) uses a 5- to 10-year history (depending on the available collected data) of provisioned and observed losses; the Business Indicator Component (BIC) is an accounting index considered as a modified version of the bank's Gross Income on a 5-year observation period.

First of all, CH&Co wishes to underline the relevance of the inclusion of internal data to the SMA Capital methodology. The use of internal loss and revenues data history helps to properly define the risk profile of a given bank from its past experience. This is greatly beneficial when estimating and calculating a fair amount of capital requirements since the SMA Capital computation is based on the BI to LC ratio. Furthermore, it forces financial institutions to set high quality collection standards that are in everyone's best interest.

Nevertheless, from CH&Co's understanding of BCBS' consultative document (CD), there is still room for adjustment and improvement of internal data treatment and inclusion in the SMA methodology.

Our comments and suggestions are detailed below. These aim at enhancing the Committee's SMA methodology, considering its willingness to provide for a more risk-sensitive and comparable Operational Risk measurement approach.

Findings & general comments

a) Qualitative heterogeneity (considering a 10-year loss data history)

In principle, the reported loss profile gets more precise over time. Indeed, banks should get to benefit from a "learning effect" over time, enhancing their data collection and treatment standards. This should enable them to fine-tune their internal data quality over time, meaning data collected in year 10 should be more qualified and of a higher qualitative standard than data collected in year 1.

This means that when computing loss and provision amounts across a 10-year history, the LC aggregates amounts of varying quality. This will particularly be the case for banks starting to collect loss events following the application of the new SMA. Indeed, they are likely to be less mature in their data collection and treatment practices.

On this specific point, it is crucial to mention the detrimental side-effects of the integration of such a long period of observation in the SMA Capital computation. Indeed, this can lead to the inclusion and aggregation of data with a heterogeneous level of quality and uncomparable losses. Also, the evolution of the OR framework may render collected data from the remote past obsolete or irrelevant.

The representativeness issue mentioned above questions the relevancy of the inclusion of loss events from the remote past (> 5 years) to support the estimation and computation of OR Capital Requirements. As an illustration, should we consider that a severe loss happening 5 years ago is still representative of the bank's risk profile? If we consider that the business organization has changed or perhaps, the activity where the event occurred does not exist anymore (e.g. in case of a major fraud), then this would be irrelevant.

Yet, CH&Co considers that, in theory, the longer the observation period, the more precise and accurate the definition of the bank's risk profile.

Indeed, it seems to CH&Co that the major bias when considering data heterogeneity lies with the restriction of using internal data only. There are alternatives to overcome this limitation and complete the loss data history with external data, especially for loss events dating back more than 5 years.

b) Risk of arbitrage in data loss collection

Moreover, limiting the observation period to 5 years (under specific circumstances, though not specified in the CD) could possibly give banks the opportunity to decide upon the exclusion of part of their loss data history (i.e. losses > 5 years). This would be all the more detrimental as banks could be particularly tempted to arbitrage loss events that occurred during the financial crisis.

These decisions would therefore be driven by capital optimization considerations. Such practices appear to conflict with the terms and intent of the Committee. From CH&Co's point of view, this is not promoting a more risk-sensitive and comparable approach. Furthermore, there is no specific rule to incentivize banks to use a 10-year over a 5-year loss observation period, opening the way for possible arbitrage of part of the internal data history.

c) "History mismatch" within the LC/BIC ratio

As described in the CD, the Internal Loss Multiplier (ILM factor) is a core component of the SMA Capital Requirements¹ computation. The ILM factor basically relies on the LC/BIC ratio².

Yet the observation period of both LC and BIC indicators are not aligned. It is respectively defined as 5 to 10 years for the LC and 3 years for the BIC. Thus, the ratio is skewed, biasing the ILM computation, as it does not capture the same observed period at the numerator and denominator.

From CH&Co's view, these 3 major limits illustrate there is still room for improvement in internal data inclusion requirements to provide for a more comparative and risk-sensitive approach of Operational Risk quantification and monitoring.

Solutions & proposed alternatives

a) Align both BI and LC observation periods

The alignment of the depth of data history seems important to ensure the soundness and robustness of this standard on the long-term. Whatever the chosen observation period, the standard should be the same for both BIC and LC data history.

Furthermore, the definition of a long-term and sound standard should prevail. CH&Co understands there are clear discrepancies between banks in terms of maturity in operational risk data collection

¹ For banks belonging to BI buckets 2 to 5 (see Consultative Document, §35 p. 7)

² From BCBS Consultative Document, §31 pp. 6-7

and treatment. AMA banks should be particularly advanced in terms of data history compared to non-AMA.

CH&Co understands the definition of common and realistic standards in data collection and treatment practices across all European financial institutions is a real challenge for the Committee. Indeed, as mentioned above, banks will not start with the same maturity and quality of internal data.

In terms of the BIC data history, the reviewed definition of the BIC computation will necessarily force banks to recalculate the BI pre-2016 to comply with the mandatory BIC observation period. In practice, this can burden banks with additional computations.

In terms of the loss data history, some banks do not hold a 10-year internal data history (loss events), which also requires a significant effort in the long-term in terms of both completeness and quality of the data collection.

To complete the latter proposal, CH&Co suggests the following complementary remarks. These aim at providing for a realistic balance between the soundness of internal data history and realism considering the different maturity degree of the banking industry in terms of loss collection and BIC calculation.

b) Define clear calendar and guidelines to build up the internal data history

Define a calendar with intermediary milestones to build up a sound and qualitative internal data history. Considering the implementation of the reviewed SMA methodology in 2018,

- Require a minimum of a 5-year observation period for both LC and BIC data.
- From 2018 on, each bank using less than 10-year of data history will have to incrementally complete its history each year.

This means that every bank should have a 10-year internal data base from 2023 on.

c) Complete the internal database with additional data

Considering the alignment of both LC and BI observation periods to 5 years is a viable alternative, but there would still be a major condition to guarantee the robustness of the methodology. Indeed, each bank would have to ensure its 5-year internal loss history is representative of its loss distribution profile.

To tackle this specific requirement, CH&Co would recommend to complete the data loss history, in particular, considering loss events, the probability of occurrence of which is comprised between 5 and 10 years.

To this end, CH&Co suggests to capitalize on AMA banks current practices and complete the internal loss data history with 2 types of data:

- Simulated data obtained via internal scenarios based on internal expertise (following the example of the EBA stress-test exercises) or projections of expected losses and revenues. The parameters and guidelines supporting the scenarios and/or projections methodology could be defined or at least validated by the Committee.
- External data sourced from external database (only to complete the loss data history).

Finally, CH&Co specifies that the inclusion of low-frequency loss scenario would only be possible upon definition of a standardized methodology, applicable for all European banks. This could ensure both comparability of the resulting simulations across banks and viability of these scenarios over time.

3. Definition of the *de-minimis gross loss threshold*

The Basel Committee assumes that a threshold shall be applied and properly calibrated when collecting loss data to ensure the comprehensive capture of Operational Risk. This *de-minimis gross loss threshold* cannot exceed 10 K€ for banks with an existing loss data history.

CH&Co supports this suggestion and understands the Committee is willing to promote an efficient data collection approach, where banks should properly calibrate their reporting threshold to optimise data collection and treatment.

Findings & general comments

However, the current definition is open-ended and does not specify methodological guidelines to set this threshold. This open-ended *de-minimis gross loss threshold* could possibly lead to unintended consequences. Indeed, the inappropriate calibration of the threshold might affect the quality of data collection. On the one hand, an exceedingly low threshold might involve the collection of every single incident and consequently limit the OR system efficiency (time-consuming collection). On the other hand, an exceedingly high threshold can prejudice the efficiency of the OR framework in neglecting important risk situations and/or area.

Solutions & proposed alternatives

From CH&Co's understanding of the Committee's proposal and objectives, there should be 3 major guidelines to define properly this *de-minimis gross loss threshold*.

The threshold should be defined as a materiality or risk tolerance threshold. This means that it should basically be illustrative of the loss distribution profile of each bank and to its risk appetite. This is also consistent with the Committee's proposal where each bank needs to define its specific threshold. CH&Co believes it could also be an opportunity to align these limits on the Risk Appetite Framework to promote consistency and soundness in the definition of the *de-minimis gross loss thresholds*.

CH&Co suggests the definition and implementation of two types of thresholds:

- A reporting threshold per type of activity for local risk monitoring and management. This should be calibrated according to the bank's risk appetite, possibly aligning the calibration on the Risk Appetite Framework indicators.
- A central threshold, specifically useful for the monitoring of banks with a diversified business portfolio or for large banking groups, with a large array of business activities.

The central threshold should be used for the computation of the LC.

Following the latter point, each bank should define their own threshold(s) considering their type of business/activity. Indeed, the operational risk tolerance of a given bank depends on its type of activity and business portfolio.

Beyond the mere optimisation of the process of data collection, the definition of the *de-minimis threshold* should ensure proper monitoring of operational risk at both local and aggregated level.

4. Discount factor & data comparability over time

Even though it improves the overall risk-sensitivity of the SMA methodology, the inclusion of internal loss data to assess OR capital requirements may cause major difficulties (and even bias) in terms of data homogeneity and comparability (see below § 2. *Internal data collection*).

Findings & general comments

According to CH&Co, when aggregating losses or provisions from various period of occurrence and type, it is crucial to consider a discounting methodology to adjust loss amounts. Especially in the case of the LC computation, where a 10-year loss data history is considered.

CH&Co considered the following limitations:

- **No discount effect or consideration of the FX impacts on loss amounts over time.** Indeed, loss amounts are computed in the SMA Capital formula regardless of their type (the underlying of the loss amount) or economical context (especially considering non-euro loss amounts). Yet, these can have a strong impact on the value to be considered when computing the losses amount in the LC formula.
- **No consideration of the type of losses or underlying of the loss amount.** A loss amount, the underlying of which is a cost of replacement of computers (or any asset that depreciates quickly over time), will not have the same rate and speed of depreciation as a P&L loss or rogue trading incident (cash amounts).

This is all the more detrimental and impacting when aggregating loss amounts over extensive period of time. CH&Co suggests the Committee pays particular attention to the following points.

- The methodology for loss amounts depreciation/capitalization shall be precisely defined.
- Loss amounts expressed in different currency shall be comparable.
- The nature and underlying of the loss shall be considered to define the depreciation of the loss amount over time. Indeed, the speed of depreciation for a given loss depends on its nature and underlying, and may impact differently loss amounts over time.

CH&Co also supports the suggestion shared by the banking industry pertaining the necessary adjustment of loss and provision amounts considering the original jurisdiction and business line.

At the end of the day, the major objective of these suggestions is to enhance the accuracy of the amounts computed in the LC over time and ensure a fair and comparable ground in the data loss history.

Solutions & proposed alternatives

a) *Include loss data considering a discount factor over time*

CH&Co's premises

Each loss amount should be considered as an opportunity cost. That is as the benefit that could have been gained in the present time (t_0) from using the lost or provisioned amount caused by a given remote incident or forecasted incident occurring in date t (where $t < t_0$). This opportunity cost should be expressed as a cash amount.

To estimate the equivalent cash amount to a given loss amount, we considered the loss or provision amount should be discounted considering its economical context and reference date.

A good proxy for assessing the latter could be to apply discounting rates, respectively taking into account on the reference date³ of the loss amount:

- A composite discount factor of the risk free rate (that is the bank's spread) and the internal rate of return of the bank, considering a loss or provision as a missed opportunity to invest in the bank's activities.
- The exchange rate, when considering non-euro amounts.

Formula

Where,

t is the date of accounting

t_0 is the date of actualization (considered as the latest quarterly closing date⁴)

$t > t_0$

IRR stands for the Internal rate of return

OIS stands for the risk free rate

DF stands for discount factor

$$Loss(t_0) = Loss(t) * FX_r(t_0) * DF(t_0, t)$$

And where,

$$DF(t_0, t) = e^{R(t_0, t) * (t_0 - t)}, \quad t_0 > t$$

$$R(t_0, t) = OIS(t_0, t) + IRR(t_0, t)$$

$$FX_r(t_0) = \begin{cases} 1, & \text{if euro amounts} \\ r(t_0) = \text{Exchange rate}(t_0), & \text{if not} \end{cases}$$

The main objective here is to avoid any volatility effect due to FX (in the case of non-euro loss amounts) or interest rates variations. These should not affect the valuation of LC and therefore of the SMA Capital as it is illustrative of a past time. Furthermore, CH&Co believes this would be consistent with BCBS' willingness to promote comparability between banks and stability of SMA Capital over time.

b) Consider the nature or underlying of each loss amount

The latter proposal does not take into account the nature of the loss amount. CH&Co suggests each loss amount would be associated to a specific annual depreciation rate, adapted to its underlying and taking into account the period of time between the reference date (t) and present date (t_0) when the loss is actualized.

CH&Co therefore suggests loss amounts from the data history to be depreciated over time; and then to adjust the associated average total annual losses used in the LC computation. The idea is to consider that a value of loss arithmetically decreases over time. It corresponds to weighting the losses by their occurrence date (with a greater weight for the recent losses). An arithmetic or geometric average calibrated on historical data losses could be considered or tested.

³ Date of accounting according to CH&Co starting assumption (cf. 1.)

⁴ CH&Co considers the SMA Capital is calculated quarterly, for each accounting closing period

This methodology should be applied to each loss or provision amount, eligible to the computation of the LC and composing the internal loss data history.

The main benefit of this method is the stabilization of the LC to avoid any jump in the formula due to the 10-year rolling history, knowing that the older losses are less weighted over time.

II. SMA Components | Review of the LC computation

In the following paragraphs, we will refer to the 3 following loss classes, defined in the CD:

- *Loss Class 1*, where loss amount < 10 M€
- *Loss Class 2*, where $10 \text{ M€} \leq \text{loss amount} < 100 \text{ M€}$
- *Loss Class 3*, where $100 \text{ M€} \leq \text{loss amount}$

1. Weighting methodology applied to internal loss data

CH&Co understand the LC as a weighted sum of the empirical averages of losses on observed events. The 3 weighting coefficients are applied to each average amount depending on each defined Loss Class.

The Consultative Document specifies these weighting coefficients are calibrated from banks' data collected by the Committee for the purpose of the QIS exercise in 2015. These are therefore illustrative of the banking industry situation as of 2015.

Findings & general comments

First of all, this specific point might be difficult to discuss as the weighting's calibration is not explicit in the consultative document.

However, the objective is to make sure that the calibration proposed by the Committee is sustainable over time even if the depth's history is increasing. In other words, the weighting methodology applied to internal loss data should not be depended on the date of calibration. If so, the BCBS's approach might be point-in-time and subject to volatility's impacts (a periodically recalibration of the coefficients could be an acceptable solution).

Our statement is based on the assumption that losses' amounts for operational risks are positively associated with the economic circumstances (volatility on the financial markets for example). Even if it remains to be proven, this hypothesis is essential to minimize capital charges' volatility for a stabilized financial market.

From CH&Co's understanding, this *point-in-time approach* could be a bias in the LC computation. Indeed, each bank's operational risk exposure is directly impacted by the evolution and variations of the economic environment and systemic risk over time (e.g. volatility on financial market).

Yet, the evolution of these key external factors will not be captured over time through a point-in-time approach. The major detrimental effect would be an inconsistent weighting of the average loss amounts per Loss Class, biasing the LC computation. This SMA Capital would in turn be irrelevant since it would not be accurately reflecting the economic and financial reality.

Solutions & proposed alternatives

CH&Co believes the Committee should pay particular attention to the evolution of the external factors mentioned above, and to their potential impact on the distortion of banks' loss distribution profiles compared to 2015.

As a consequence, the proposed *through-the-cycle* approach consists of a periodic review of the weighting coefficients by the Basel Committee, to ensure these are representative of the banking industry context and environment. The frequency of the review should be determined by BCBS.

The periodic review is illustrated in the formula by δ_i factors (in orange), representing the adjustment applied to the corresponding weighting coefficient on the latest date of review for a given Loss Class i.

These adjustments could be negative or positive, depending on:

- The variation of the systemic and idiosyncratic risks.
- The evolution of the loss distribution profiles of banks, observed from the collected data by the Basel Committee for this purpose.

These variations must be considered in view of the period of time since the latest review.

The below formula illustrates both current point-in-time (in black) and suggested through-the-cycle approach (in black and orange).

$$\begin{aligned} \text{Loss Component}(t_0) = & (7 + \delta_1) * \text{Average total Annual Loss from Loss Class 1} \\ & + (7 + \delta_2) * \text{Average total Annual Loss from Loss Class 2} \\ & + (5 + \delta_3) * \text{Average total Annual Loss from Loss Class 3} \end{aligned}$$

Where $\delta_1, \delta_2, \delta_3$ are positive or negative coefficients depending on the shape of the variations observed by the Basel Committee in the data collected.

2. Loss Classes definition

Findings & General comments

From its simulation and analysis of the LC per simulated profile and scenario (see exhibits), CH&Co believes the Loss Classes defined in the CD are lacking in granularity, especially considering Loss Classes 1 and 2, which basically contain the loss amounts composing the heart of a banks' distribution profiles. Intermediary Loss Classes should be defined between Loss Class 1 and 2 to improve the risk sensitivity of the overall formula.

Indeed, gaps between the loss classes are significant as they put at a same stage different levels of losses. The BCBS should set, according to the risk sensitivity and the data available in the previous QIS, an optimum number of classes with more levels for lower amounts.

Solutions & proposed alternatives

The 3 Loss Classes defined in the CD (in orange) should be complemented with intermediary Loss Classes (in grey) to be defined by the Committee according to the risk sensitivity and available data from banks (QIS 2015). The Committee should pay particular attention to the following points.

Correlate the loss classes' range with the loss amounts, meaning intervals between each Loss Class would exponentially increase in line with loss amounts.

Define an optimum number of classes with more levels for lower amounts, especially in Loss classes 1 and 2 between 0M€ and 10 M€ and 10M€ and 100 M€ (as theoretically illustrated in the below figure 1).

This should promote a more risk-sensitive model considering specifically loss amounts above 10 M€ (that is to say, the heart of the distribution profile).

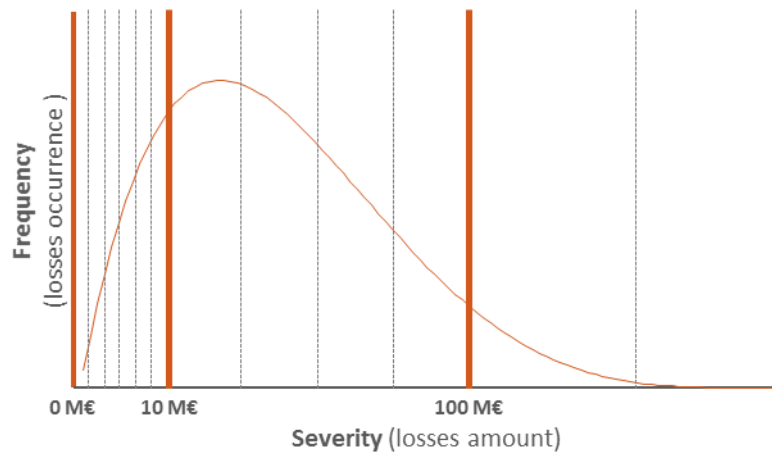


Figure 1 | Illustration of the adjunction of intermediary Loss Classes to the existing loss discretization

Our understanding of the LC formula makes us believe that increasing the number of classes and the regular revision of the weighting coefficients are crucial considerations in order to add more risk sensitivity to the SMA methodology, by taking into account external elements and variations of different risk profiles over time.

III. Review of the SMA Capital formula

The SMA capital formula introduced in the CD is a function of the BIC (BI Component as an increasing linear function of the BI) and the LC/BIC ratio through the ILM⁵. CH&Co thinks that some improvements can be made in order to make the model more robust to a substantial loss.

Findings & general comments

a) Pure backward-looking approach

As specified earlier, the calculation of SMA capital is solely relying on internal loss & revenues data history. The SMA methodology is therefore purely backward-looking, as it does not include any future-oriented data, in terms of both BIC (e.g. projections of revenues) and the LC (e.g. projections of operational risk exposure and impact on the loss distribution profile).

CH&Co believes the inclusion of projected losses and revenues could be a valuable adjunct to the current methodology, in terms of both estimation of OR capital requirements and OR monitoring.

b) No consideration of the efficiency of the OR framework

Furthermore, the estimation of SMA Capital requirements relies only on a static approach, meaning there is no dynamic consideration of the evolution of the LC compared to the BIC over time. There is also no consideration of the efficiency of the OR framework in terms of risk mitigation and hedging. Banks' risk mitigation actions and continuity plans can be extremely costly and time-consuming, but their efforts to mitigate their risk over time are not considered in this static approach, which only considers a point-in-time estimation of SMA Capital requirements.

In theory and as stated in the consultation, the OR exposure (loss and provision amounts) shall increase when the revenues increase and vice versa. As such, a constant decrease of the OR exposure when the revenues are increasing should be illustrative of the efficiency of the OR framework.

The comparison of both year-on-year variations over a 3-year period of LC (as a proxy of losses and provisions that is OR exposure) and BIC (as a proxy of revenues) could provide for a fair basis to reward banks' efforts to improve the efficiency of their OR framework.

c) Weak considerations of the evolution of systemic risk

The model considers only the idiosyncratic part of the risk as it is solely based on internal data.

The lack of external data inclusion and stress-tests based on specific scenarios is an issue for an optimal understanding of the variations of the systemic risk over time.

We suggest different ways to improve the SMA formula by including indicators of the efficiency of the OR system and projections of the expected losses and their suitability (particularly based on external and economic data).

The following proposals are based on rewarding coefficients, to be calibrated and added to the BCBS SMA Capital formula.

⁵ where the ILM is expressed as a logarithmic function (see BCBS Consultative Document, §32 p.6)

Solutions & proposed alternatives

a) Introduce a rewarding factor, indexed on the efficiency of the OR framework

This proposal aims at offering a reward (reducing the overall SMA Capital amount) for banks demonstrating the efficiency of their OR framework.

In this method, the objective is to incentivize banks to master the evolution and variations of their LC and BI over time. CH&Co considers a 3-year period should be sufficiently robust to illustrate the evolution of the efficiency of the OR framework and estimate the quality of the projection. Though, the projection used to estimate the reward should be the projection over the next year (i.e. expected losses estimated for year $y+1$ in year y).

Theoretically, the efficiency of the OR framework is demonstrated by the capability of the bank to manage their OR exposure (losses) in view of its volume of business (revenues).

This may be demonstrated in the 3 following situations, considering the comparison of year-on-year variations of the BI (proxy for the revenues/volume of activity) and the OL¹ (Observed Losses from Loss Class 1 proxy for the heart of the loss distribution profile, that is to say any loss amount < 10 M€).

In the following part, CH&Co considers the use of a ratio based on low-severity (< 10 M€). This choice is supported by the following key findings:

The quality of the daily operational risk management directly impacts the bank's Expected Loss (EL) over the period. Indeed, the robustness of the bank's processes and framework controls enables them to mitigate the overall frequency or the average total loss amount usually observed within the business perimeter of the bank.

In the following part, CH&Co considers the use of a ratio based on low-severity (< 10 M€). This choice is supported by the following key findings:

- The quality of the daily operational risk management directly impacts the bank's Expected Loss (EL) over the period. Indeed, the efficiency of processes and controls enable to attenuate the overall frequency or the average total loss amount usually observed within the business perimeter of the bank.
- The occurrence and severity of exceptional unexpected losses (UL) is considered independent to the quality and efficiency of the OR framework.

From our understanding, a constant decrease of EL over time (related to the BI) is a proof of improvements in the bank's OR management and its risk profile. Thus, the estimation of capital charges should include this idea if it is verified.

Premise

The total amounts of losses (OL¹, that is to say the sum of any loss amount < 10M€) are *naturally* growing in line with the volume of activity or revenues (BI). Any situation where this relation is not observed demonstrates the efficiency of the OR framework.

- *Situation 1:* The revenues (BI) grew faster than losses (OL₁) over the year.
- *Situation 2:* Losses decreased while the volume of activity stagnated or grew.
- *Situation 3:* In case of loss stagnation, a decreasing variation of the ratio is fully explained by a strong stimulation of the business revenues and volume.

Methodology

To properly define the rewarding factor considering the above premise:

- At the end of a given year y_0 , each bank would consider the year-on-year variations of the $\frac{OL_y^1}{BI_y}$ ratio over the past 3 years (i.e. from y_0 to y_{-3}).
- Then the bank would identify the year-on-year trends of each variation over the past 3 years.

From CH&Co's premises, if all these variations are strictly negative over the past 3 years, then the bank should be rewarded on the SMA Capital at the end of y_0 .

That is to say, if:
$$\begin{cases} \frac{OL_{y_0}^1}{BI_{y_0}} - \frac{OL_{y_{-1}}^1}{BI_{y_{-1}}} < 0 \\ \frac{OL_{y_{-1}}^1}{BI_{y_{-1}}} - \frac{OL_{y_{-2}}^1}{BI_{y_{-2}}} < 0 \\ \frac{OL_{y_{-2}}^1}{BI_{y_{-2}}} - \frac{OL_{y_{-3}}^1}{BI_{y_{-3}}} < 0 \end{cases}$$

Definition of the first rewarding factor

CH&Co suggests the reward to be affected to **SMA Capital** (t_0) should be proportional to $1 + CAR_{[y_{-3};y_0]}(t_0)$, the compound annual rate of the ratio over the past 3 years.

This rewarding factor would then take into account the speed of the $\frac{OL_y^1}{BI_y}$ ratio over the past 3 years and proportionally reward the bank.

Assuming:

$$CAR_{[y_{-3};y_0]}(t_0) = \left(\frac{\frac{OL_{y_0}^1}{BI_{y_0}}}{\frac{OL_{y_{-3}}^1}{BI_{y_{-3}}}} \right)^{\left(\frac{1}{3}\right)} - 1$$

Where $CAR_{[y_{-3};y_0]}(t_0)$ is a negative rate.

And,

y_0, t_0 respectively represent the year and corresponding date of computation (**t_0 should correspond to the end-of-year account closing date**).

y_{-1}, y_{-2}, y_{-3} respectively represent the considered 3-year observation period.

Finally, the SMA Capital formula affected by the first rewarding factor could be defined as follows:

$$SMA\ capital\ (t_0) = 110 + (BIC - 110) * ILM * (1 + CAR_{[y_{-3};y_0]}(t_0))$$

As suggested later in this document⁶, the Committee could consider to cap the effect of the rewarding factor at its convenience.

b) Introduce a rewarding factor, indexed on the quality of the BI and LC projections

⁶ see § c. Introduce both rewarding factors

The SMA formula can be completed by a second rewarding factor to encourage the banks providing robust projections in terms of their risk profile (forecasting quality process).

Premises

To be more precise, CH&Co believes the quality of OR projections for a given bank has a beneficial effect upon its risk appetite. In other words, it is crucial that OR capital charges take into account the quality of the projections and then of operational risk management (risk/capital adequacy).

CH&Co believes this should contribute to support the following points:

- Ensure the quality of the operational risk appetite framework is sufficiently precise and efficient (predictive accuracy).
- Ensure the management of the bank is capable of integrating external factors in its projections (adequacy of the strategic vision to the systemic environment).
- Ensure the management of the bank is capable of properly anticipating its level of risk over time (prospective efficiency).

Since CH&Co assumes that the accuracy of the projections⁷ is negatively correlated to the OR capital requirements to cover the associated risks, then it seems necessary to include this aspect in the SMA methodology.

Methodology

At the end of each year y , each bank would provide projections of their expected loss amounts belonging to Loss Class 1 for the year to come $y+1$ (EL_{y+1}^1). This projection would then be compared at the end of $y+1$ to the observed losses from Loss Class 1 (OL_{y+1}^1).

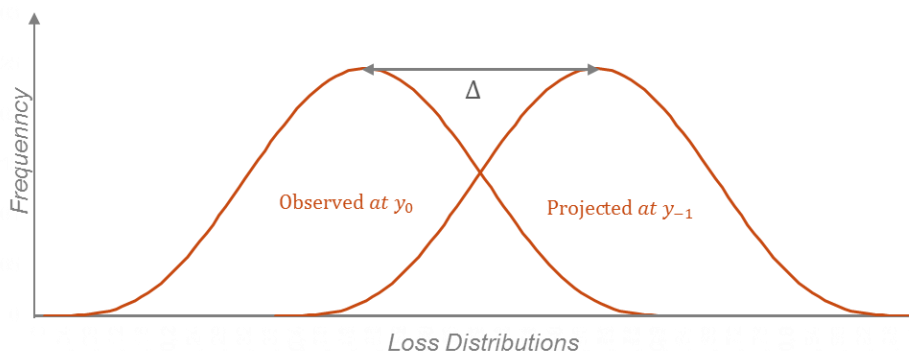


Figure 2 | Compared distribution profile of observed vs. projected Loss Class 1 loss events

CH&Co suggests the Committee would define the second rewarding factor, using the data detailed above, given by each bank, to estimate annually the difference between the expected losses from Loss Class 1 to occur during year 0 (EL_{y-1}^1) and the observed losses from Loss Class 1 during year 0 ($OL_{y_0}^1$).

The difference between the projection and the observed losses would serve as an illustration of the quality of each bank's projections for a given year. As a matter of fact:

- The rewarding factor should be calibrated annually by the Committee and be indexed on the calculated delta for each year.
- The reward should only be activated if the delta for a given year is included in a confidence interval where the bounds depend on the standard deviation of the projected losses.

⁷ Estimated future evolutions of the operational risk exposure over time, that is to say the distortion of the loss distribution profile in the future

- The coefficient for the confidence interval's bounds (equals to 2 in the below illustration) should be calibrated depending on the level of confidence required.
- CH&Co suggests to use a confidence interval of more or less 2 standard-deviations, as defined below.
- The Committee should define a maximum reward to limit the effect of the rewarding factor.

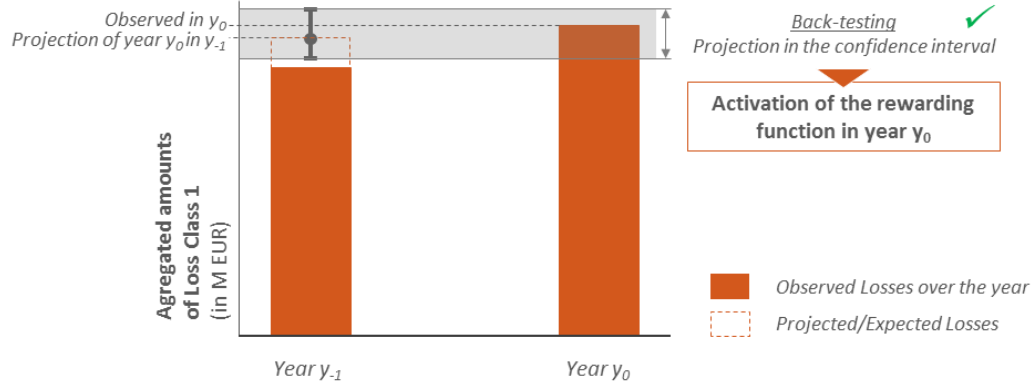


Figure 3 | Description of the methodology and activation of the f rewarding function

Definition of the second rewarding factor

Finally, the SMA Capital formula affected by the second rewarding factor could be defined as follows:

$$SMA\ capital\ (t_0) = 110 + (BIC - 110) * ILM * g\left(OL_{y_0}^1 - EL_{y_{-1}}^1\right)$$

Where g is the rewarding function following the characteristics described in the latter methodology.

The g rewarding function can take 3 values depending on the quality of the projection, that is the absolute value of the difference between $OL_{y_0}^1$ and $EL_{y_{-1}}^1$.

- Case (1): the delta is comprised in the confidence interval. The bank should be rewarded proportionally to the quality of the projection/
- Case (2): the delta is not comprised in the confidence interval. The bank should not be rewarded.

$$\left\{ \begin{array}{ll} (1) & \frac{|OL_{y_0}^1 - EL_{y_{-1}}^1|}{2\sigma} \text{ if } \frac{|OL_{y_0}^1 - EL_{y_{-1}}^1|}{2\sigma} < 1 \\ (2) & 1 \text{ if } \frac{|OL_{y_0}^1 - EL_{y_{-1}}^1|}{2\sigma} > 1 \end{array} \right.$$

Where,

σ Standard Deviation of $EL_{y_{-1}}^1$

This alternative would use projections as a part of the EBA Stress Test (over a 3-year horizon, considering the base case scenario) including internal and external data and scenarios, systemic risks and GNP (Gross National Product) projections in order to have a global vision of the bank inside a macroeconomic system.

The back-testing of the parameters is essential in order to validate the models by taking into account the external risks. CH&Co then suggests considering a one-year scope as the aim of the bank is to calibrate each year its capital requirement in order to hedge potential losses for the upcoming year.

However, some restrictions have to be made about this proposal: a strong ability to project a loss profile is not an indicator of good hedging and mitigating of operational risk, but it gives an overview of the bank's ability of estimating its risk appetite through global considerations (internal, external data and systemic risks are considered).

c) Introduce both rewarding factors

Regarding this diagnosis of the SMA formula, the CH&Co proposals remain independent, however it is possible to combine them as long as the indicators' impacts on the calculus are limited. The purpose of our analysis is to consider other aspects like the OR system efficiency and to include it in the formula by rewarding the banks which fill the criteria mentioned above, but under no circumstances do we envisage a decreasing of the capital requirements that might prejudice the overall stability of the bank.

$$SMA\ capital(t_0) = 110 + (BIC - 110) * ILM * \underbrace{\gamma_1 * (1 + CAR_{[y-3;y_0]}(t_0))}_{1^{st}\ rewarding\ factor} * \underbrace{\gamma_2 * g(OL_{y_0}^1 - EL_{y-1}^1)}_{2^{nd}\ rewarding\ factor}$$

Where,

γ_1, γ_2 , are weighting coefficients to be calibrated by the Committee in view of the impacts and sensitivity of each rewarding factor on the SMA capital.

And,

y_0, t_0 is the year and corresponding date⁸ of SMA capital computation

$OL_{y_0}^1$ are the observed losses from Loss Class 1 at the end of the year

EL_{y-1}^1 are the expected losses from Loss Class 1, estimated in y_{-1} for the next year y_0

$CAR_{[y-3;y_0]}(t_0)$, is the compound annual rate of the ratio over the past 3 years

⁸ Here, t_0 correspond to the end-of-year account closing date

IV. Alternative method | Proposal of a calibration for the *m factor*

This part aims at bringing proposals to answer BCBS' question 3, cited below.

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?

1. Presentation of the alternative method

In the consultative document, the Committee suggests to calculate the *Internal Loss Multiplier* through an alternative method:

$$ILM = \frac{mLC + (m-1)BIC}{LC + (2m-2)BIC} \xrightarrow{LC \rightarrow +\infty} m$$

Where *m* is a factor to be calibrated.

The alternative method aims at replacing the SMA methodology in case of severe and low occurrence probability losses (especially for the Loss class 3: amounts above 100M€). The Standardized approach, described in the previous parts of this document, increases capital requirements for banks which had extreme and infrequent losses in the past, via the weighting of the Loss Component. However, the alternative mentioned restrains the evolution of the capital requirements by delimiting the ILM to an *m level*.

Through our analysis and comparison of the alternatives, we distinguished two main issues at different stages where the proposal of a different ILM function presents significant advantages:

The alternative method enables the stabilization of the impact of capital requirements in case of a severe loss stress for a given bank. At the same time, it ensures an efficient risk-sensitivity by combining a calibrated multiple of the BIC and LC (*m factor*).

In terms of the financial market, the new ILM calculus aims at minimizing the variations between similar banks in case of an extreme loss shock.

However, the SMA methodology through this alternative is more conservative than the classic SMA for a bank profile where the $\frac{LC}{BIC}$ ratio is less than 1.

In view of this diagnosis, we believe that the *m factor* has to be calibrated according to:

- The ability of the SMA formula to cover all the potential operational risks to which the bank might be exposed.
- The insurance of a stable financial market by decreasing the variability across banks in case of extreme losses.

2. Calibration Methodology

a) Stand-alone calibration | Considering a given bank

Similar to the reviewed Standardized Measurement Approach defined by the Committee, the proposed alternative method has to estimate precisely the capital requirements in terms of the Operational risk for the upcoming year.

The main purpose of the Committee's suggestion is to consider an alternative ILM function that might limit the variability of the SMA capital in case of severe events.

To highlight this proposal, we consider two theoretical banks, Bank A and Bank B, respectively described below in terms of BIC and LC:

- $BI_A = 5\,000\text{ M€}$
- $LC_A = 1\,000\text{ M€}$
- $BI_B = 9\,500\text{ M€}$
- $LC_B = 2\,000\text{ M€}$

We simulate an extreme loss shock: LC is doubled between times t and $t+1$. This stress aims at estimating the variations of the SMA capital related to the m factor equalizing both BCBS methodologies (the reviewed SMA and the m factor alternative). The stressed scenario then indicates the level of m to be considered by each bank in order to hedge this shock and to ensure the stability of the SMA methodology.

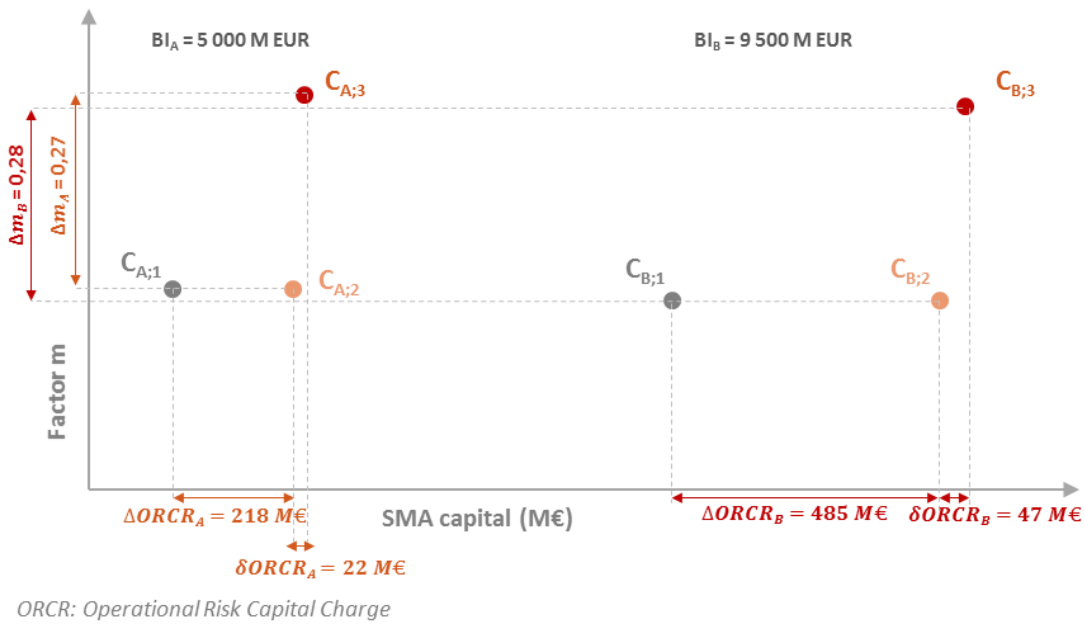


Figure 4 | CH&Co's calibration of the m factor applied to 2 theoretical banks (Bank A and Bank B)

For a given bank i (where $i = A$ or B), the following points are considered:

- **Point $C_{i,1}$:** Projection of the factor m related to the SMA capital considering the loss distribution profile in time
- **Point $C_{i,2}$:** Estimation of the capital requirements post-shock for the same m level as in time t
- **Point $C_{i,3}$:** Projection of the SMA capital post-shock with an adjustment of the m factor in order to equalize the initial and alternative ILM functions

The projections below suggest that an adjustment of the *m factor* is essential in order to better estimate the future losses that the bank will handle. In fact, if we consider that Bank B has calibrated its factor *m* at an initial level in time *t* (point $C_{B;1}$), but has witnessed an extreme shock with no readjustment of its model between *t* and *t*+1 (point $C_{B;2}$) the capital requirements will be underestimated by 47M€.

To provide a consistent calculus of the capital requirements, we recommend that banks adjust their factor *m* each year based on the simulations of losses with high severity and low frequency. CH&Co considers it sufficiently accurate to use external data and extreme scenarios to simulate these cases (consideration of events defined by the *Robustesse Group* for the French banks for example). Thus, the variation of the factor *m* between $C_{i;1}$ and $C_{i;3}$ is the adjustment that has to be considered regarding this specific scenario.

b) Global calibration | Considering banks across the European financial market

The previous calibration methodology should be standardized by the Committee to homogenize for similar banks' profiles, the variations of OR capital requirements in case of an extreme shock. The idea is to allow banks to adjust their *m factor* in a certain range given by the BCBS for a stable financial market.

3-step methodology

Step 1: Our proposal is based on the classification of banks per group considering their SMA capital sensitivity for a similar scenario (LC is doubled in this case). This means that – in our proposal – the Committee would analyse, for each bank, the distance between *m factor* before and after shock. The greater the distance, the higher the sensitivity, and vice versa.

Step 2: Then, the projections of the cloud of points (level of the *m factor* related to the SMA capital) before and after the shock will indicate the level of adjustment for each group.

Step 3: The Committee calibrates the *m factor* and defines a confidence interval (maximum and minimum value of the *m factor* for a given group of banks). Each bank from the same group will have to respect the interval and provide their data to calculate the *m factor*, so that the Committee can ensure they stick to the required confidence interval.

We suggest that the Committee communicates each year the interval for the *m factor* per type of bank in order to help banks in their operational risk management.

Calibration of the *m factor* for a given group of banks

CH&Co believes group of banks, classified in the first step, should be assigned with a *m factor*.

- This *m factor* would be calibrated by the Committee for each group of bank, so as to be suitable under any circumstances and to provide for a stable and risk representative amount of SMA Capital for each and every bank.
- In particular, if the financial market experiences an extreme shock, the *m factor* for a given group of bank should be calibrated:
 - to minimize the distortion effect on SMA Capital for each bank after shock
 - but also to be representative of the shock and its impacts on each and every bank

From our understanding of BCBS's objectives, CH&Co strongly believes the *m factor* should not simply limit the maximization of SMA Capital in case of extreme shock. Yet, it should ensure the stability of the SMA Capital for each group of bank on the long term and in any circumstances; in particular when observed loss amounts are extremely high and spread throughout the financial market.

As illustrated below, the aim of this methodology is to find the proper *m factor*, the level of which will ensure the allocation of the proper amount of capital requirement in case of extreme shock or not.

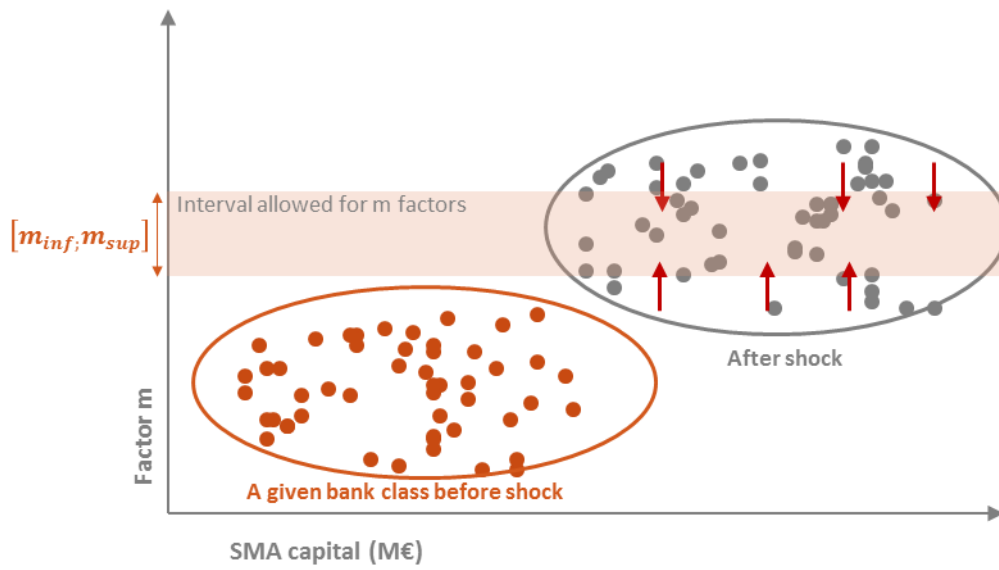


Figure 5 | CH&Co's calibration of the *m* factor considering a confidence interval per group of banks

V. Outstanding issues

The following points are not directly related to the review of the SMA methodology. Yet, CH&Co seeks to introduce fresh ideas when considering overall enhancements to operational risk management. The following points illustrate the view of CH&Co, derived by engagement with experts and stakeholders from within the financial services industry. They are considered relevant since the standardization of the OR measurement approach should also involve the discussion of related topics.

1. Recognition of the risk-mitigation effect of insurance and hedging instruments in the assessment of Operational Risk Capital Requirement

Why does the Committee systematically exclude the hedging effects of insurance/reinsurance policies from the SMA capital requirements?

CH&Co proposals will only consider high-severity and low-frequency events, such as massive flood and natural disaster or terrorist attacks. These specific events are part of the Unexpected Losses that can badly hit a bank, and unfortunately there are few actions that can be taken to mitigate such risks. Banks are already required to be prepared and define Business Continuity Plans to minimize the side-effects (and not the original effects) of such events on their activity.

As the possibility to mitigate these specific risks are very limited, the Committee should enable banks to take into account the hedging effect of instruments, such as insurance and reinsurance policies or even cat-bonds. These hedging solutions are highly-regulated and have the benefit to cover loss amounts when the insured risk occur. As a matter of fact, the risk exposure is already covered and should not be integrated to the estimation of capital charge.

This suggestion is also based on the current opportunity for AMA banks to reduce their OR capital charge to up to 20%⁹. BCBS considered such policies had beneficial effects on the risk exposure, but also and most importantly, on the quality of the OR framework and risk assessment.

Though it is interesting to note that, following BCBS' decision to recognize the risk-mitigation effect of insurance policies, even AMA banks have found it hard to get capital reductions from this in practice. Furthermore, in insurance broking circles, AMA banks felt there is wide variation in the national regulators acceptance of this.

2. Double accounting of the provisions

Why do both BI and LC include provision loss amounts?

In the CD, provisioned loss amounts are taken into account in both BI and LC computations. Furthermore, provisioned amounts are weighted when computing the LC, whereas they are not in the BI. Indeed, on the one hand, provisions are weighted according to severity (amount) and integrated to the LC computation, whilst on the other, provisions are integrated to the BI as part of the *other*

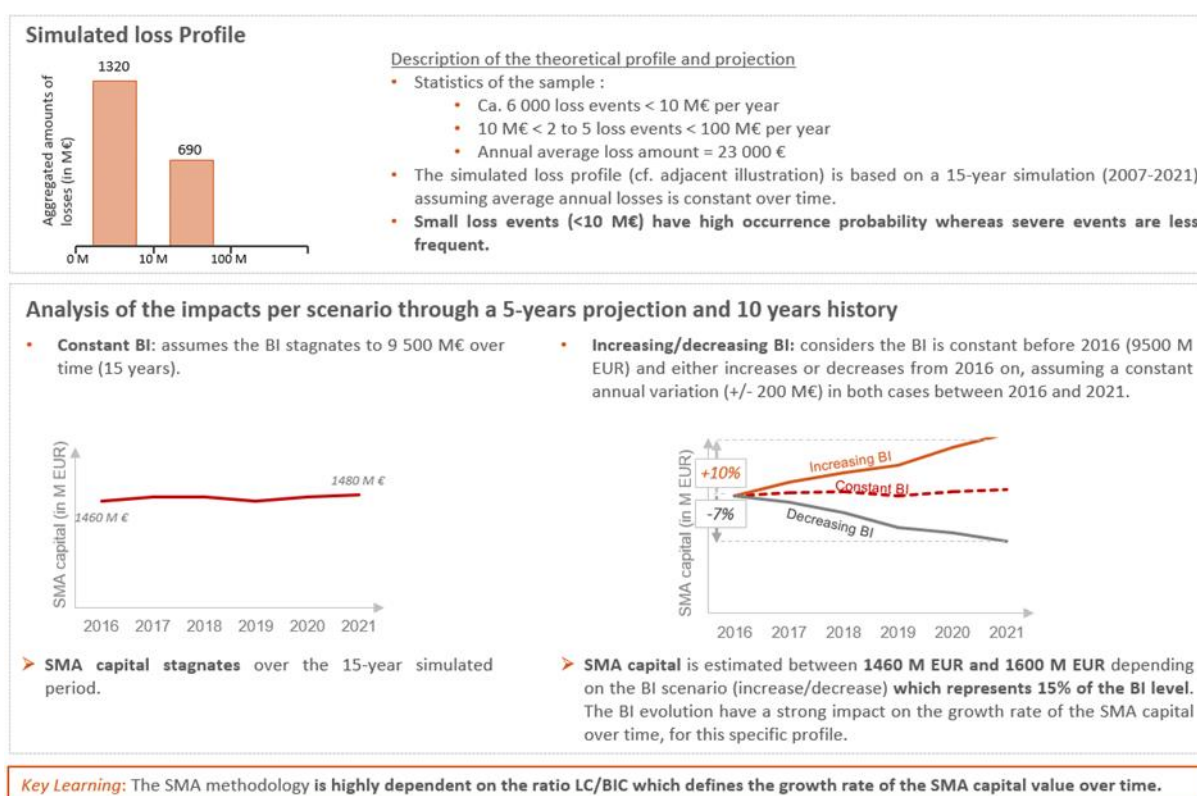
⁹ See BCBS 181, *Recognising the risk mitigating impact of insurance in operational risk modelling*, October 2010

operating expenses (OOE) in the *Service Component*. The most illustrative examples are the HR and legal provisions.

The Committee should decide whether provisions should be considered as a component of the revenues of the bank (and then included in the BI) or considered as part of the loss data history (and then included in the LC).

Appendix 1 | Drivers of the SMA capital variations over time for a given loss profile

1. Impact of BI variations assuming various theoretical scenarios

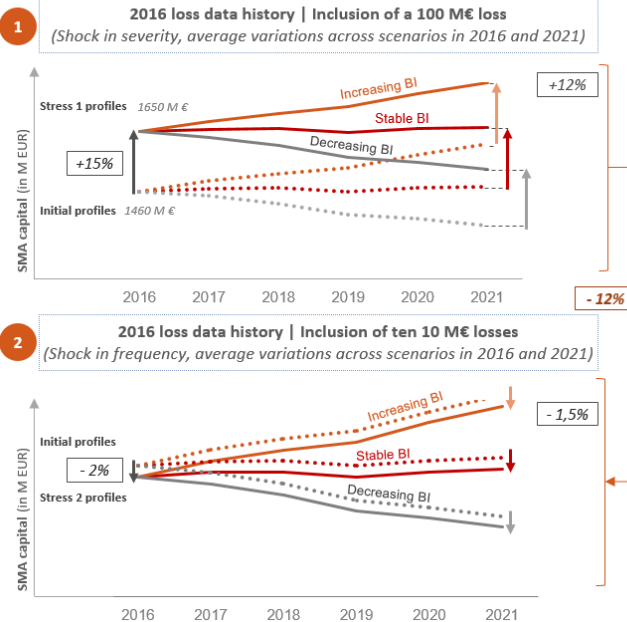


2. Impact of loss distribution: stresses applied to loss frequency and severity

Compared effects | Inclusion of a 100 M€ loss vs. inclusion of ten 10 M€ losses in 2016 loss data history

In addition to the above described profiles, the adjacent illustration compares the effect of two stresses applied in the 2016 loss data history

- ✓ One shock in severity (stress 1)
- ✓ One shock in frequency (stress 2)



- SMA Capital variations depends on: a shock in severity increases SMA Capital on 2016 by 15% and 12% in 2021 (average variations between and profiles across the 3 BI scenarios). Whereas, a shock in frequency keeps on the SMA capital at a similar level (-2% on average).
- SMA Capital growth rate is significantly attenuated when BI decreases or stagnates over time.

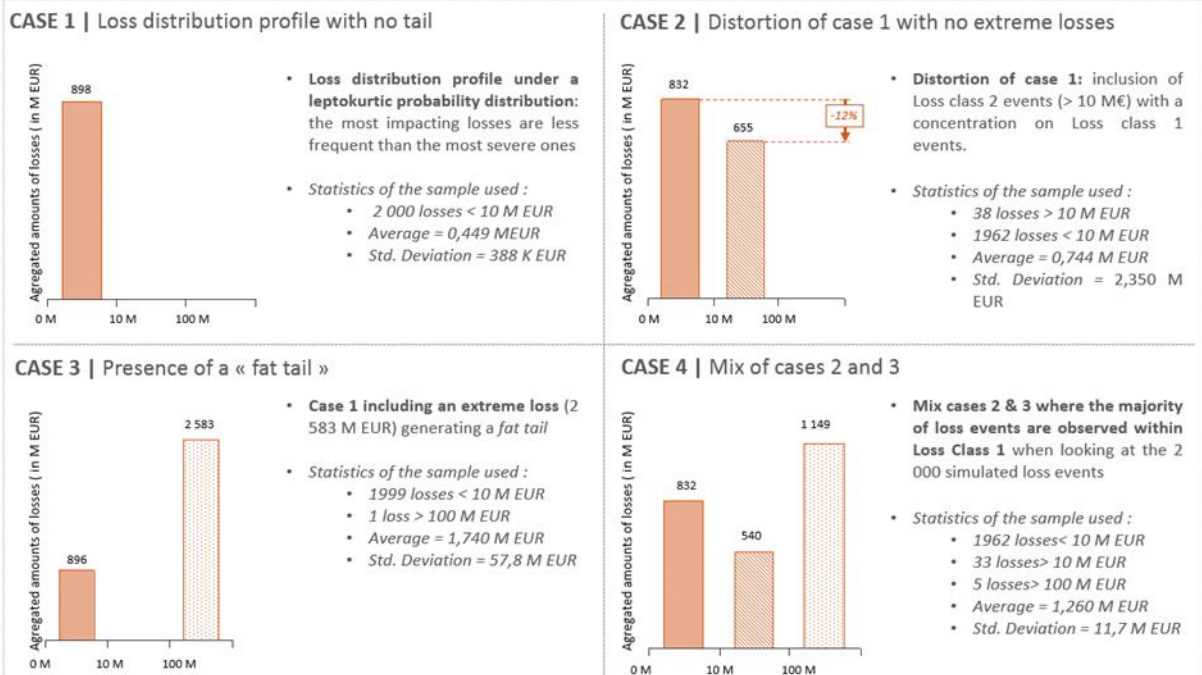
Key Learnings:

- The SMA methodology increases the capital requirements when losses are extreme (> 100 MEUR). Indeed, for the same aggregated amount of loss added to the loss data history (100 M*1 or 10 M*10), the impact on the SMA capital depends on its distribution.
- A severe loss is taken into account in the LC for 10 years and is weighted 19 times in the LC calculus. Thus its impact is amplified and supported over a long time. In the latter case (occurrence of an extreme loss), the only lever to reduce SMA Capital for 10 years is to have a decreasing BI during the same period.

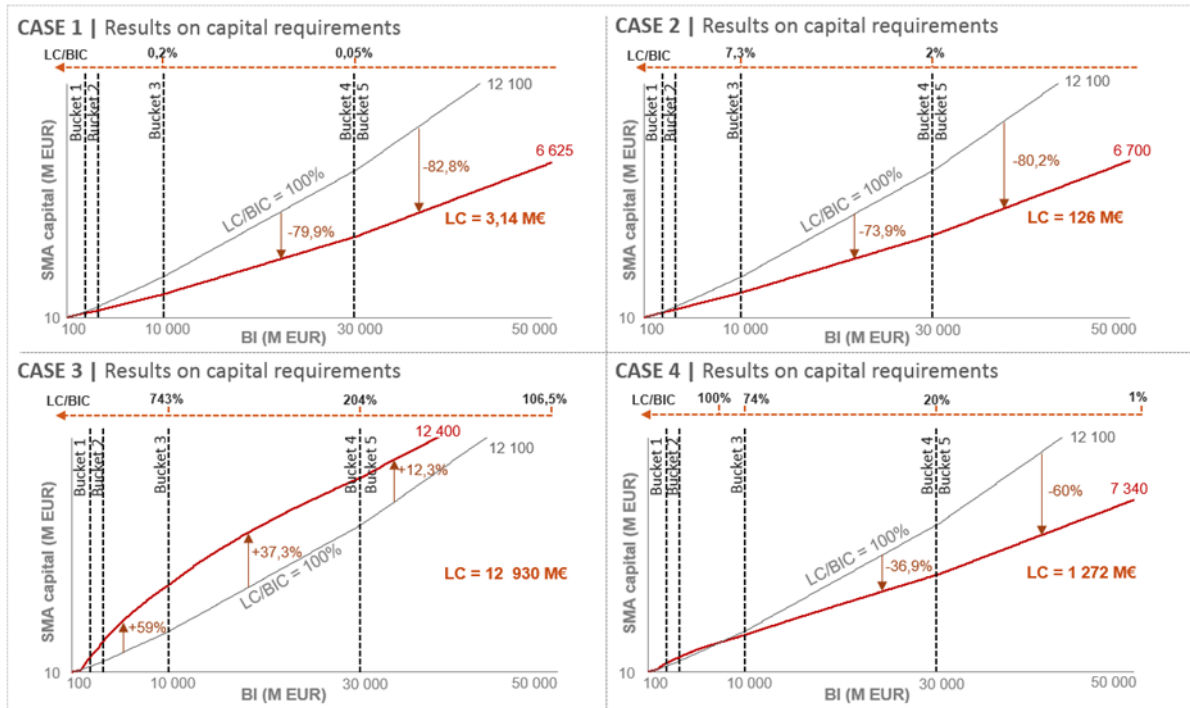
Appendix 2 | Risk sensitivity of the SMA methodology through 4 theoretical profiles

1. Description of the simulated cases

4 cases have been simulated below with different distribution profiles to illustrate the sensitivity of the reviewed SMA to the specificities of distribution profiles (using theoretical hypothesis with extreme losses to illustrate a profile that replicates the same distribution over time)



2. Evolution of the SMA capital

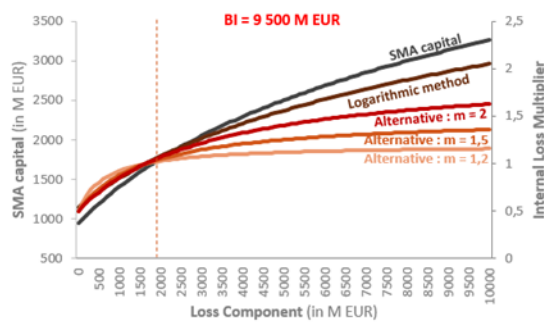


Appendix 3 | Presentation of the alternative ILM function

- The Committee suggests in the consultative document to calculate the *Internal Loss Multiplier* through an alternative method:

$$ILM = \frac{mLC + (m-1)BIC}{LC + (2m-2)BIC} \xrightarrow{LC \rightarrow +\infty} m$$

Where m is a factor to be calibrated



- The ILM is a multiplier illustrating the evolution of internal losses compared to the BI, its variation goes hand-in-hand with the capital requirements evolution over time
- The alternative function presented above has to verify the same properties as the logarithmic function: the growth behaviour for an increasing ratio LC/BIC and the positive values. If we use these conditions for the alternative method, we conclude that the m factor has to be greater than 1.