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27 May 2016

Mr. Mitsutoshi Adachi
Chair, Working Group on Operational Risk
Basel Committee on Banking Supervision
Centralbahnplatz 2
Basel, Switzerland

Re: Proposed Standardised Measurement Approach for operational risk

Dear Mr Adachi,

ORX¹ values the opportunity to respond to the Basel Committee on Banking Supervision's (BCBS's) proposed Standardised Measurement Approach (SMA) for operational risk.

In this response we offer some practical solutions to potential inconsistent and unwanted behaviour of the SMA, specifically to reduce volatility and improve the stability of capital outcomes. We have not proposed extensions of the SMA framework to improve risk sensitivity as we believe none are possible within the time and simplicity constraints set by BCBS.

Our response is divided into the three areas in which the consultation proposes change:

1. a summary of the capital impact and variability of the SMA, based on findings from a benchmark study we conducted March 2016;
2. a methodological analysis of the SMA evaluated against the principles of simplicity, comparability and risk sensitivity, which includes some practical implementation issues;
3. a comment on the value capital methods offer to risk management with reference to an industry opinion study we conducted January 2016.

¹ The Operational Riskdata eXchange Association (ORX) is a not-for-profit industry association dedicated to advancing the measurement and management of operational risk in the global financial services industry. Please see <http://www.orx.org/Pages/AboutORX.aspx> for more detail.

We provide responses to specific questions raised in the consultation in Appendix D:
Responses to individual questions.

We hope the Committee finds our response constructive and relevant. We are of course available to follow-up on any questions you may have.

1 Summary of the capital impact and variability of the SMA

In March 2016 we performed a benchmark study of 54 banks to investigate the capital impact of the SMA (see Appendix A: Summary of the impact and variability of the SMA). Banks submitted their current regulatory approved Pillar I capital for operational risk for 2013-15 and their estimated SMA capital requirements for 2013-15.

Within the sample of banks surveyed we saw:

- the SMA is not capital neutral in comparison to current regulatory approved capital;
- 75% of banks would see an increase in Pillar I operational risk capital under the SMA compared to current regulatory approved capital for 2013-15, equating to an additional €115bn Pillar I capital;
- all jurisdictions would see a net increase in capital: Europe €75.7bn, USA €20.4bn, rest of world €13.8bn, Canada €2.4bn, Australia €2.2bn, and South Africa €0.6bn;
- European banks would see the biggest increase under the SMA, experiencing on average a 63% higher capital charge in comparison with current regulatory approved Pillar I capital;
- in relation to gross revenue, US banks would hold higher capital than other jurisdictions, at around 32% of gross revenue compared to 20% for their European counterparts;
- larger banks hold proportionally more capital under the SMA, face the biggest increase beyond current regulatory approved capital, and experience the largest impact from the Loss Component of the SMA. Overall this would indicate a skewed calibration;
- for the smallest banks the SMA can be below the current standardised approach level.

Given an unknown timeframe to implementation, a clear plan for ongoing assessment and potential recalibration is needed. This is especially important as precise details on how the SMA was calibrated were not provided in the consultation document.

We would strongly recommend that the BCBS reviews the basis of its calibration as proposed in the consultation document.

2 Proposed methodological changes to the SMA

In this section we identify some issues with the SMA methodology and propose methods to reduce volatility and increase stability of capital outcomes. In Appendix B: Methodological analysis of the SMA we provide more detail, identifying each issue and providing an evidenced solution if possible.

Loss Component

Feedback is provided on four areas of the SMA methodology below. The first proposes a change to the Loss Component which will reduce potential volatility and remove cliff effects, the second assesses the impact on stability of the Loss Component due to different periods and weightings of loss data used, the third discusses the treatment of multi-year losses, and the fourth comments on the observed variability in outcome under the SMA.

1. **Progressive Loss Component.** A graduated progressive Loss Component (see Appendix B 4.1), in which averages are calculated using the portion of loss above each threshold, is significantly more stable than the existing approach. Analysis based on member loss data shows that under the current proposal an additional €1 of loss can induce changes of up to 10% in the Loss Component.
2. **Time window and weighting of losses.** The consultation proposes that a uniformly weighted 10-year loss history is used to calculate the Loss Component. Our members have voiced considerable concern that older data is intuitively less relevant to their risk exposure but is given equal weighting to the most recent data. Here we present some findings based on alternative observation windows and weighting schemes:
 - a. Our analysis suggests reducing the observation window from 10 years increases the Loss Component's variability over time, but the variability for windows of between 7 and 10 years long is similar. The volatility increases rapidly for observation windows of 6 years and fewer.
 - b. Increasing the influence of more recent loss data in the Loss Component can increase sensitivity to losses but adds slightly to the complexity of calculation.

The choice of time window and weighting scheme may increase the Loss Component's sensitivity to losses. A combination must be chosen which appropriately balances how relevant historical losses are to an institution's current risk exposure, and the desire for stability in the Loss Component.

3. **Multi-year losses.** Many, but not all, members support an alternative approach to the treatment of losses which span multiple years. Loss amounts could be allocated according to the years they impact a bank's profit and loss account, rather than concentrated within the earliest data of recognition. This will smooth capital calculations and reduce the cliff effect when losses fall outside of the time window. Conversely, this may extend the impact of losses significantly beyond the point at which the risk materialised.
4. **Comparability.** Finally, we would like to raise a concern around the comparability of outcomes. As demonstrated in Appendix B: Methodological analysis of the SMA, the capital outcome of the SMA appears more dispersed than existing approaches.

We would encourage the BCBS to consider the analysis showing the impact of changes to the loss component, and to assess if the SMA has achieved the objective of capital comparability between institutions.

Structural Changes

In this section two modifications to the SMA structure are suggested. They both focus on better aligning the SMA to the business models employed by banks. The first focuses on the absence of business lines from the SMA, and the second discusses the super additivity of the SMA.

1. **Lack of Business Lines.** Some ORX members observe a substantive and consistent risk profile difference between business lines. Analysis provided to the Working Group on Operational Risk and BCBS January 2015² demonstrated that across the banking industry there are differences in the loss per income rates between business lines, but also suggested that a smaller number of more general business lines may capture these differences adequately. To better capture these differences the Loss Component could be modified to assess loss histories according to business unit. If complexity is a concern, then this approach could be restricted to the higher Business Indicator (BI) buckets.
2. **Super additivity.** SMA capital at a consolidated level can be much higher than the sum of subsidiary level capital. This directly follows from the SMA's assumption that larger banks are proportionally riskier, as seen via the percentage of the BI increasing from 11% to 29%. This behaviour may inadvertently create unintended capital incentives for

² www.orx.org/Pages/ORXResearch.aspx

different business models, and raises the question of comparability. A number of institutions have highlighted this as a particularly significant issue. Simple solutions are to allow calculation by legal entity, or recalibrate the BI component to have a more linear proportional capital effect with respect to size.

The consultation document suggests differences in business model are adequately captured within the BI and Loss Components. Industry feedback suggests this may not be the case.

Implementing the SMA

For the SMA to be simply and comparably implemented further guidance is needed in a number of areas:

- **Currency conversion.** Guidance is needed on how the SMA is intended to operate in non-Euro currencies. Both the BI and Loss Components have Euro based thresholds that final SMA capital requirements are sensitive to. If BCBS plans to provide fixed non-Euro thresholds, a clear strategy on regular assessment is required so the thresholds do not drift apart as exchange rates fluctuate.
- **BI clarity.** In order to achieve the stated goal of comparability between institutions more guidance is needed on some aspects of the BI calculation. In particular, elements which differ from, or are dependent on, specific accounting standards should be clarified.
- **Loss definition clarity.** To achieve comparability in the Loss Component further guidance will be required on standards for loss data. This includes the aggregation of losses into single events, the definition of timing losses and clarification on the inclusion of recoveries. Any differences between this clarification and data collected during the Quantitative Impact Study should be carefully considered as they have the potential to impact the calibration.
- **Role of Pillar II.** Our capital impact study suggests the SMA appears to work by providing an “average”, rather than minimum, level of Pillar I capital. Clarification is therefore needed on the role of Pillar II. An average Pillar I capital requirement suggests Pillar II would allow reductions as well as increases, enabling the overall capital framework to more directly differentiate changes in risk management practice.

If each of these points is addressed, we believe the consistency with which the SMA is applied will increase.

3 Supporting operational risk management

A number of the established risk measurement tools that support risk management are absent from the SMA. In a recent ORX study (see Appendix C: Supporting operational risk management) banks reported significant value and subsidiary benefits from many of the capital framework processes (e.g. scenario analysis) which may now be undermined.

Here we highlight missing risk management elements and potential ways in which they could be compatible with the SMA. Each suggestion is a potential direction for research which could be introduced in any future iterations of the SMA.

- **Forward looking elements.** Scenario analysis provides a process for quantifying the views on a bank's risk exposure from senior management and subject matter experts. Within the SMA construct, a forecast BI element or a forecast Loss Component are possible alternatives. Each has its own challenges, but forecasting BI will be consistent with forthcoming IFRS 9 accounting practice, and a forecast expected loss is consistent with other regulatory requirements. In each case the appetite for such an extension is mixed within the ORX membership.
- **External data.** An explicit external view of risk is absent from the SMA. Peer benchmarking of SMA capital levels would incorporate information about risk from the wider industry. Benchmarking with external data could limit how far a bank's individual capital requirement is able to deviate above or below its peers.
- **BEICF.** Business Environment factors allow for corrections to be made to capital so that the current environment is best reflected. Within the SMA, post calculation adjustments for divested business on enhanced controls could be made. Operational risk is dominated by low frequency high impact events, so capital incentives are particularly useful tools for encouraging investment and improved management practices for which the material impact on loss may take a long time to materialise.
- **Insurance.** The Committee has previously stated the benefits of incorporating insurance into the operational risk capital frame work:³ "Independent of any capital reduction resulting from insurance mitigation... banks have realised benefits in risk management, understanding and culture". Two ideas have been proposed by members which would allow insurance to be reflected in the SMA framework:

³ <http://www.bis.org/publ/bcbs181.pdf>

- modify the Loss Component to use losses net of insurance recovery
- introduce “ex-post” adjustments to SMA capital. In order to be compatible with the simplicity of the SMA a suitable standardised insurance contract would need to be developed. By pricing the contract in relation to the quality of operational risk management and risk profile of the institution, the use of insurance could offer a further dimension to the framework which would encourage innovation in risk management.
- **Loss data relevancy.** Some members have suggested that transparent criteria should be developed to allow the removal of certain historical losses which would ensure the relevancy of historical loss data to a bank’s current risk profile. This could be based on divested businesses or other principles.

ORX believes the development of changes based on each of the areas presented above would offer substantive improvements to the SMA framework.

4 Conclusion

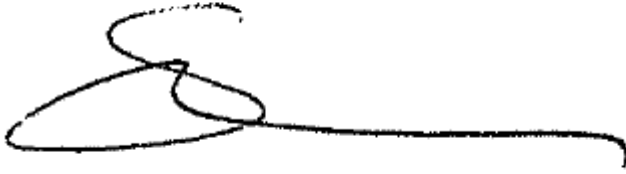
We have limited our comments toward improving the functioning of the proposed SMA. In closing we would make the following key observations:

- **Calibration.** We are concerned that the proposal results in a substantial additional capital impact and recommend that the calibration is reviewed now and on an ongoing basis;
- **Methodology.** We are concerned that the SMA may be volatile and inconsistent in application and make some proposals to address these issues;
- **Structure.** We highlight the concern of some members who feel the SMA does not adequately capture differences in business models, and due to super additivity may inadvertently offer a capital incentive to different business models.
- **Implementation.** We highlight a number of key issues that would, if not addressed, undermine the implementation of the new regime.

Additionally, we have suggested features that could, in the future, improve the risk sensitivity of the SMA.

We hope our comments have been constructive and that the BCBS considers our points before finalising its recommendations. ORX will be happy to provide any greater detail or perform additional analysis on request.

Yours sincerely,

A handwritten signature in black ink, consisting of a large, stylized 'S' followed by a horizontal line.

Simon Wills

ORX

Appendix A: Summary of the impact and variability of the SMA

This note summarises the ORX benchmark of the SMA capital requirements based on data submitted by 54 banks during March 2016.

To download the public summary of our ORX SMA capital impact benchmark please visit www.orx.org/Pages/ORXResearch.aspx

Capital impact

For the majority of banks capital will increase under the SMA.

Of the banks surveyed 75% would see an increase in Pillar I operational risk capital under the SMA compared to current regulatory approved⁴ capital for 2013-15. The median change is a capital increase of 33%, the mean change is an increase of 61%, and a quarter of banks would see an increase of 70% or more.

Taken together the surveyed banks would have been required to hold 55% more capital in 2015, equivalent to **€115 BN** additional capital or 20% of total annual income.

Materially, due to the 10-year loss data requirement we were unable to assess the behaviour of the SMA over a time of crisis.

Regional differences

The average increase in capital under the SMA from current approved levels differs by region.

Banks headquartered in different regions face different implied increases when calculating capital under the SMA. Figure 1 shows the ratio of SMA capital to current approved regulatory capital, where 100% on the Y axis equates to no capital change needed to meet SMA requirements. We see the median bank in all regions experiences a capital increase with **European median bank experiencing the highest increase of 63%**. The mean increase for European banks is 79% with a quarter of European banks facing an increase of 88% or more.

⁴ Banks supplied their capital according to their regulatory approved method of calculation: the AMA, TSA or BIA

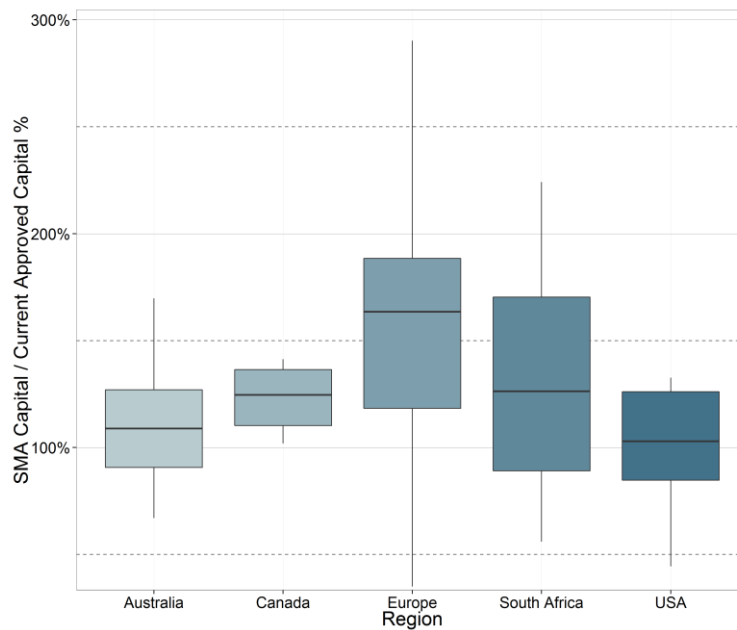


Figure 1: SMA as a % of 2015 regulatory approved capital by region

Table 1: Median and mean increases from current regulatory approved capital to the SMA by region

% capital increase to SMA	All	Australia	Canada	Europe	South Africa	USA
Median	33.2	8.9	24.6	63.5	26.3	2.9
Mean	61.3	12	22.9	79.6	33.2	1.3

Whilst the relative increase is highest for European banks (+63.5% Table 1), those banks headquartered in the USA still hold the greatest proportion of income as operational risk capital (Figure 2). Under the SMA the median proportion of gross income US institutions would hold in capital is 31%, compared to 20% for European banks (Table 2). Figure 2 also shows **the spread of capital outcomes to income is broader for the SMA** than for 2015 regulatory approved capital in all jurisdictions except Australia.

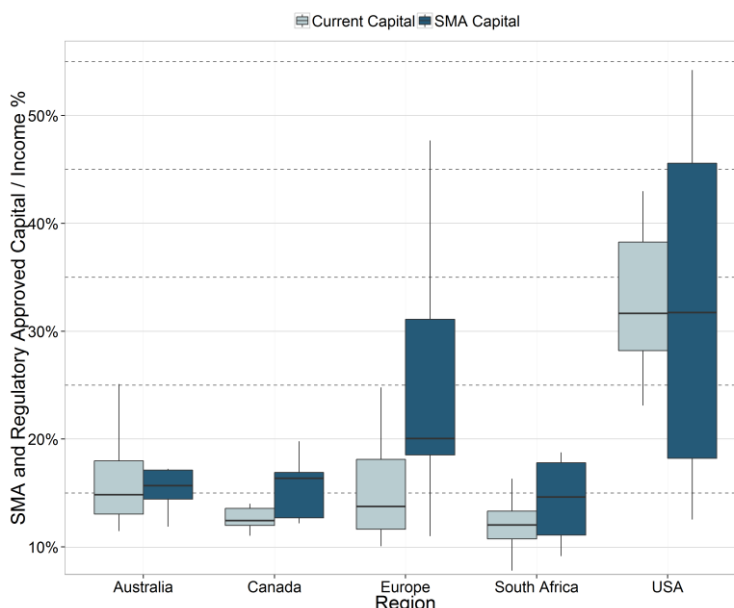


Figure 2: Regional comparisons of SMA and 2015 regulatory approved capital as a % of income

Table 2: Capital to Income % for regulatory approved and SMA levels

Capital / income %	All	Australia	Canada	Europe	South Africa	USA
2015 regulatory approved	20.7	14.8	12.5	13.7	12	31.7
SMA	32.2	15.7	16.4	20	14.6	31.7

Our sample of US banks are on average larger than the sample of European banks (Annex 1, Table 5), so naturally have a larger BI component and SMA requirement. We explore the effect of size in more detail in the next section.

Size impacts

Under the SMA larger banks receive proportionally higher capital charges.

Larger institutions receive a proportionally higher capital charge under the SMA compared to their smaller peers. As illustrated by the medians in Figure 3, the largest banks by assets will hold more than 36% of gross revenues in Pillar I capital, compared to 15% for the smallest banks.

Accordingly, to achieve higher SMA capital levels **larger banks will on average face a larger increase in capital requirements** than smaller banks. Figure 4 shows that for the largest

banks the median increase in capital is more than 100%, whilst for the smallest the SMA appears capital neutral.

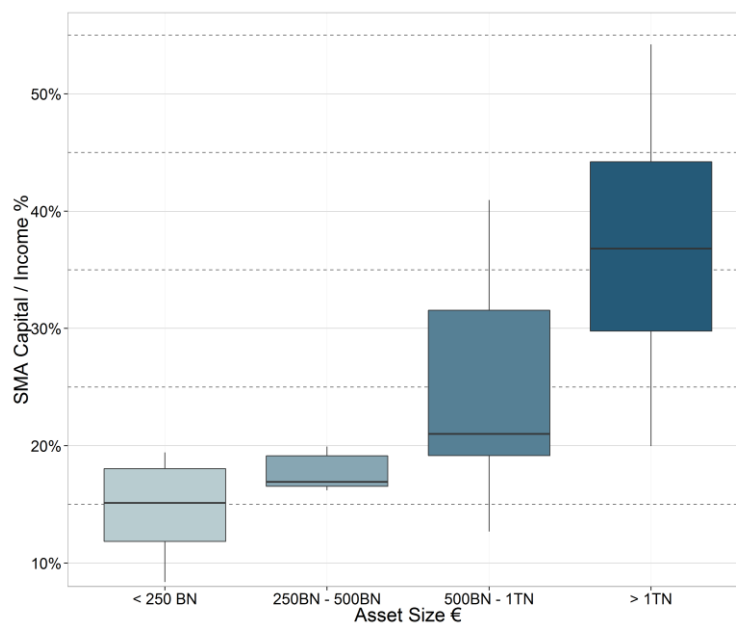


Figure 3: SMA to income ratio for increasing bank size grouped by assets:

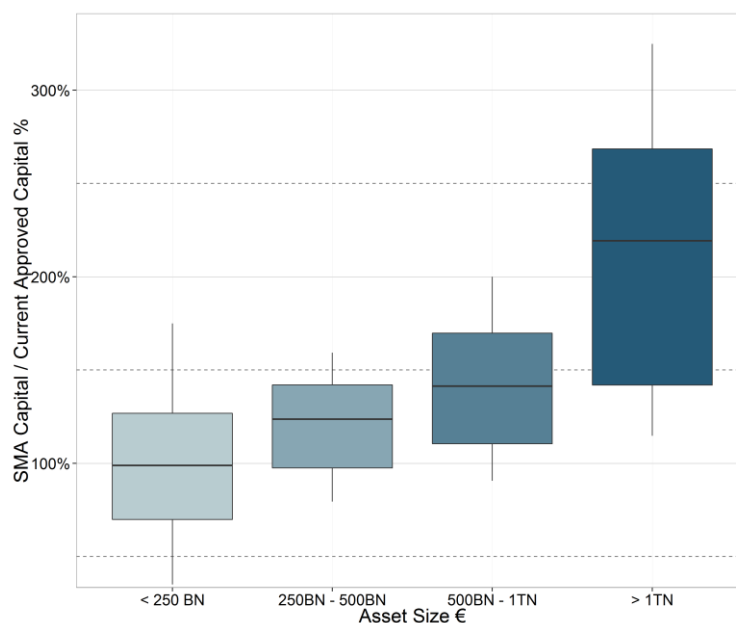


Figure 4: SMA to current approved capital ratio for banks grouped by assets.

Additionally, **larger banks experience the largest impact from the Loss Component**. Figure 5 demonstrates the median multiplier increases steadily from 0.75 in BI bucket 2 to 1.35 in bucket 5.

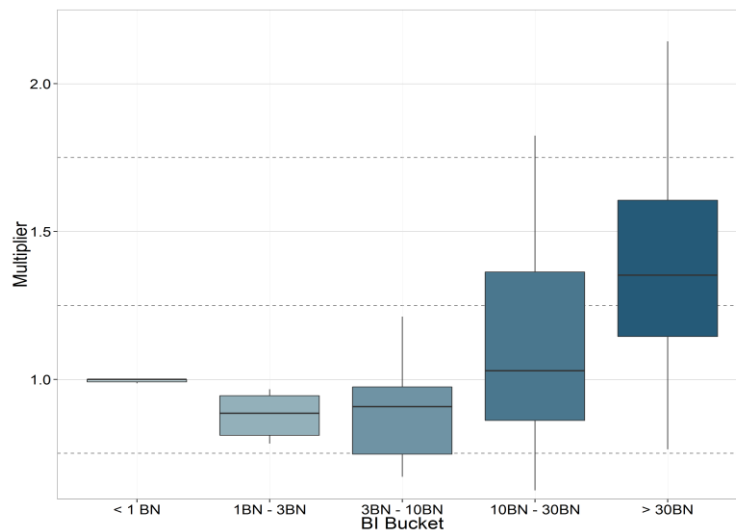


Figure 5: Implied multiplier by BI bucket. BI bucket 1 does not include losses to calculate the SMA

Taken together, bank size appears the biggest determinant of capital levels under the SMA.

Larger banks hold proportionally more SMA capital, have the biggest increase beyond current regulatory approved capital, and experience the largest impact from the Loss Component.

The Business Indicator

During 2013-15 the Business Indicator performs very similarly to gross income.

To compare the behaviour of gross income and the Business Indicator a scatter plot is given in Figure 6, showing that within this period they highly correlated. Statistical analysis implies gross income determines 96% of the BI's behaviour in our sample, indicating a strong relationship.⁵

This suggests that **the business indicator and gross income have a similar capacity to capture the risk profile of an institution** in these years.

⁵ A least squares linear best fit gives an $R^2 = 0.9604$

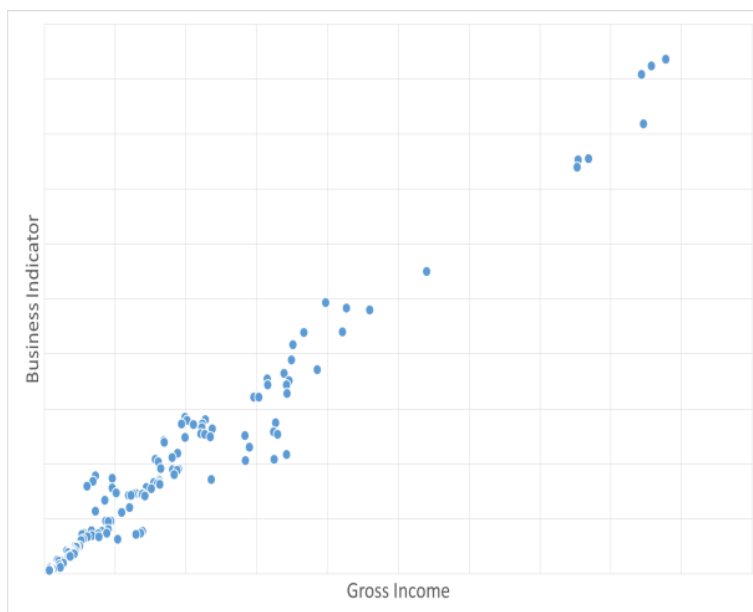


Figure 6: Relationship between the business indicator and gross income

The loss multiplier

On average the loss multiplier increases SMA capital requirements by 11% from the BI Component

Loss experience adjusts a bank's BI Component to determine its SMA capital requirement. Looking at the loss multiplier shows differences in SMA capital requirements independently of bank size. Figure 7 provides a comparison of the loss multiplier by region. The median effect on SMA capital requirements due to internal losses differs by region. It reduces SMA requirements from the baseline BI capital for the median bank in Australia, Canada and South Africa, and increases it in Europe and the US (Table 3). The average increase in SMA capital requirements determined by the loss multiplier is an increase of 11% from the BI component.

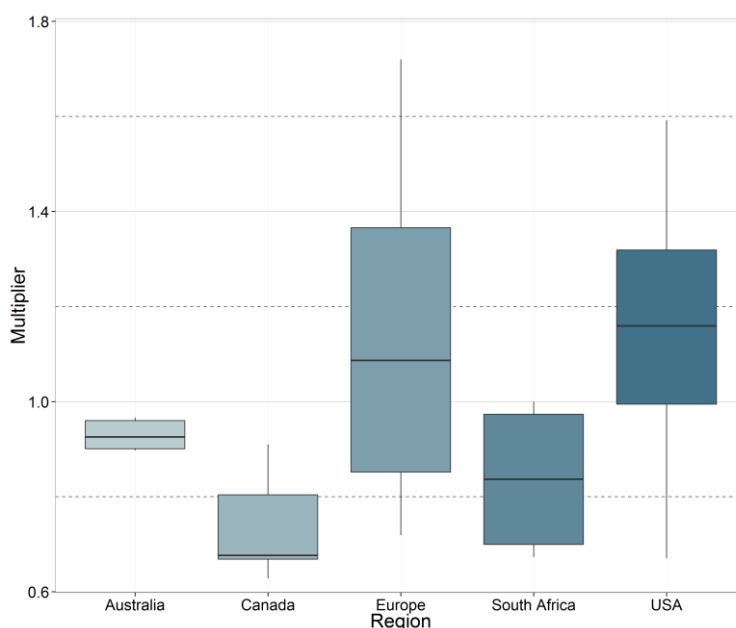


Figure 7: Loss Component adjustment (the multiplier) by region for 2015. A multiplier of 0.9 equates to a 10% reduction in SMA capital requirements from the BI baseline

Table 3: Average Loss Component adjustment by region

Loss multiplier	All	Australia	Canada	Europe	South Africa	USA
Median	1.00	0.93	0.67	1.09	0.83	1.16
Mean	1.11	0.98	0.73	1.19	0.84	1.21

Differences in the reported loss multiplier exist between regions and within BI buckets (Annex 1, Table 6), particularly for European and US banks. For example, US banks in BI bucket 5 reported a mean impact of the Loss Component of 1.54, compared to 1.35 for banks headquartered in Europe. This difference contributes to the higher SMA requirement in the US.

Annex 1: Survey inputs

54 internationally active banks, including 16 of the world's G-SIBs, submitted their current regulatory approved Pillar I operational risk capital requirements and their estimated SMA capital requirement. The location of the participants is given in Figure 8, showing a strong representation by European (44%) and US (22%) banks.

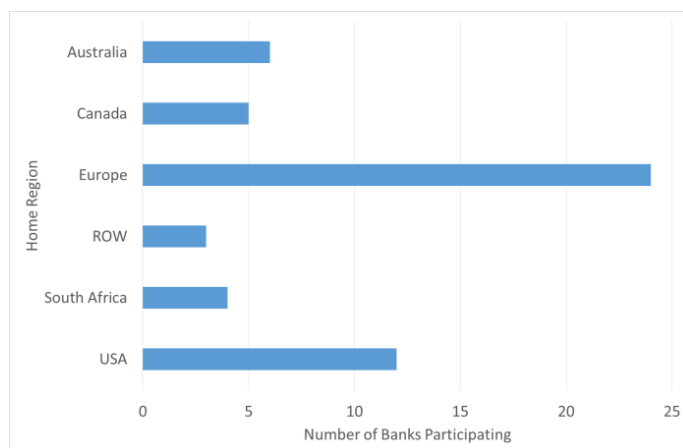


Figure 8: Location of participating institutions

Table 4: Number of banks participating within each BI bucket

BI Bucket	Number of banks
< 1BN	2
1 – 3BN	4
3 – 10 BN	17
10 – 30 BN	21
> 30 BN	10

Given the concentration of banks within BI buckets 3-5 (Table 4) there is potential for the results of our survey to be more representative of larger banks as they make up the majority of participants. Furthermore a breakdown of the banks in BI buckets by region demonstrates the distribution of larger banks.

Table 5: Survey participants by BI Bucket and Region

Participant region and BI Bucket	One	Two	Three	Four	Five
Australia		33%	33%	33%	
Canada			20%	80%	
Europe	4%	4%	33%	33%	25%
ROW		33%		67%	
South Africa	25%		75%		
USA			25%	42%	33%

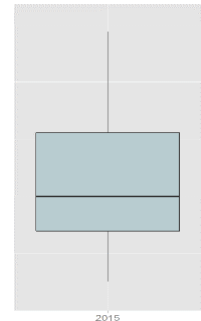
Table 6: Mean loss multiplier of participants by BI Bucket and Region

Loss multiplier in BI Bucket	One	Two	Three	Four	Five
Europe	-	-	1.00	1.33	1.35
USA			1.00	1.46	1.54

There are a number of outstanding questions concerning the calculation of the SMA. All data reported here is based on submitting banks' current understanding of BCBS' proposal 4 March 2016.

Annex 2: Reading the box plots

This report uses box plots to summarise the range of participant responses. The central horizontal line indicates the median response, and the box indicates the spread of answers for the central half the number of respondents known as the inter quartile range (IQR). The top of the box shows the upper 75% point of all respondents and the bottom of the box the lower 25% point. The whiskers indicate the min and max observations within 1.5 of the IQR of the top and bottom of the box.



Information is only presented where four or more responses are available.

Appendix B: Methodological analysis of the SMA

This section provides a methodological analysis of the SMA, focusing on the stability and comparability of the calculation.

4.1 Changes to the Loss Component

In this section we assess the impact of changes to the Loss Component by evaluating the relative volatility of it over time with respect to different calculations. To remove the bias introduced when comparing changes which may result in different absolute levels of the Loss Component the Coefficient of Variation is used. This is defined as the standard deviation divided by the mean (σ/μ) and offers a scale independent way to assess variability.

The data used is a subset of the ORX global database⁶, selecting the 28 institutions with at least 10 years of data. Observations were shifted quarterly leading to a total number of 369 realisations of a 10-year window. For comparability it was important to ensure the number of observations was constant for all calculations.

Recalibrate loss multiplier as a progressive graduated multiplier

Issue: Potential cliff effects caused by thresholds in the Loss Component

Within the Loss Component calculation different weights are assigned to annual averages (weight 7), averages of losses above €10M (weight 14) and averages of losses above €100M (weight 19). This approach has the potential to give very different results when losses fall just below and just above the thresholds.

Solution: A progressive Loss Component

The BI Component is constructed in a progressive way which allows a smooth transition between BI buckets. An analogous approach to the Loss Component could be adopted. Under this the average of the component of a loss above each threshold (€10m and €100m) is used rather than the *average* of the whole loss. For example rather than taking the average of all losses above €10M (n losses L_i) $\frac{\sum_{i=1}^n L_i}{n}$ the calculation is modified to be $\frac{\sum_{i=1}^n L_i - 10,000,000}{n}$. In order

⁶ The ORX global dataset contains operational risk losses above €20,000. For more details on our global loss dataset please visit <http://www.orx.org/Pages/ORXData.aspx>

to achieve the Loss Components of an equal magnitude the current factors (7, 7, and 5) may require recalibration.

Evidence: Sensitivity with respect to new losses, stability over time

To assess the impact of this proposal two experiments were done:

- An evaluation the sensitivity of the Loss Components with respect to new losses
- An evaluation of the stability of the Loss Components over time

To assess the relative sensitivity of each approach real loss data was used and was supplemented with synthetic losses on each boundary (€10M, €100M) and just above each boundary (€10M + 1, €100M + 1). The analysis was completed using a sample of banks taken from the ORX Global database, each at least 10 years of loss data, and in each case having at least 1 existing loss above the chosen boundary. This was to ensure the additional of a new loss of €10M or €100M was a realistic addition to the loss data.

A comparison of the relative impact of a loss above each threshold (€10M + 1, €100M + 1) and on each threshold (€10M, €100M) is given in Figure 10. This is in effect showing the percentage increase in the Loss Component due to an additional €1 of loss. In each case the progressive Loss Component shows a near identical value, while a typical impact under the existing approach can increase the Loss Component by as much as 1% (Figure 10), and in some cases much higher.

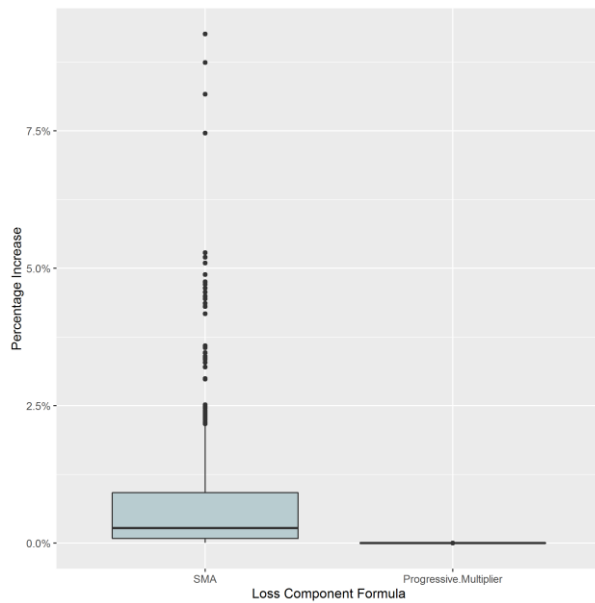


Figure 9: Percentage difference of single loss on and just above the €10M boundary, under the existing and proposed approach for the Loss Component. The chart is based 352 observations.

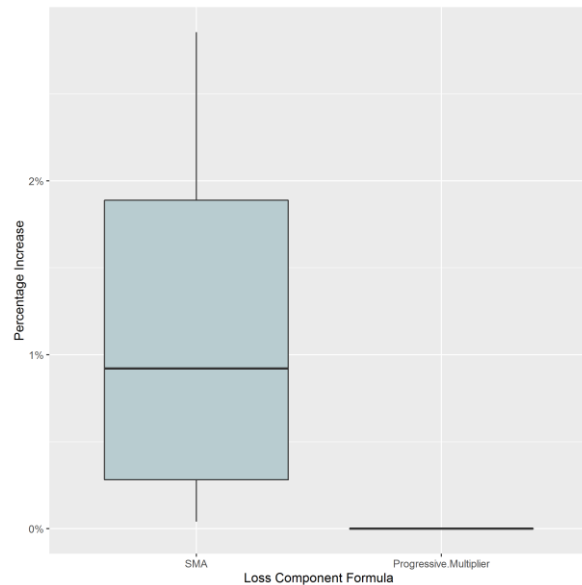


Figure 10: Percentage difference of single loss on and just above the €100M boundary, under the existing and proposed approach for the Loss Component. The chart is based on 243 observations.

This extreme sensitivity could have profound impact on the stability of the Loss Component, particularly for losses where changes in individual amounts are commonplace or as a result of other factors such fluctuations in exchange rates.

To assess the stability of the proposed and existing Loss Components over time each was applied to the data set of 28 banks as discussed above. A summary of the coefficient of variation is given in Figure 11. This shows that the progressive multiplier is as stable the current method, providing similar variability over time.

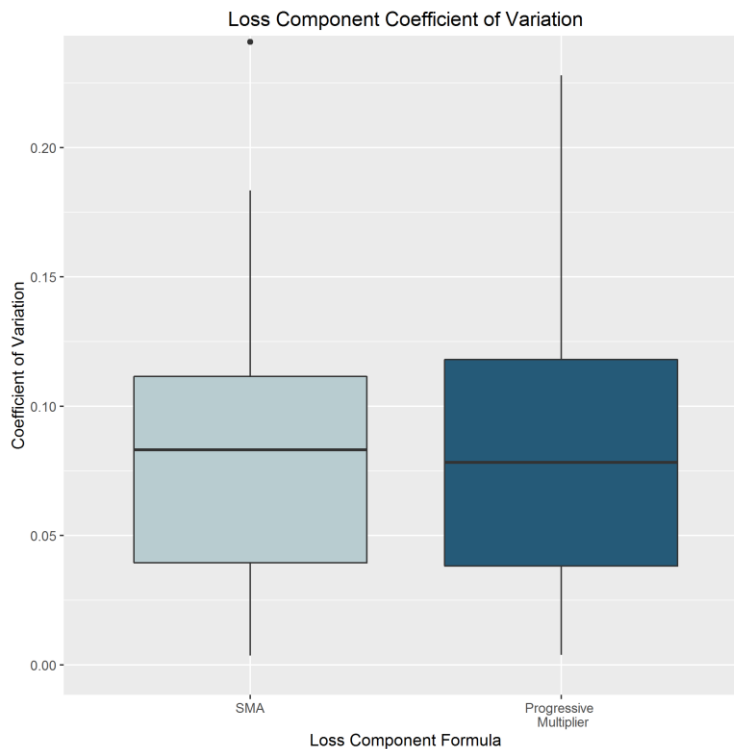


Figure 11: Volatility of the Loss Component over time under the existing and progressive calculation

Summary

A progressive Loss Component greatly reduces the cliff effect caused by the thresholds in the SMA Loss Component. Additionally, this reduced sensitivity would remove any incentive for losses to be recorded improperly under these thresholds.

Time weighting

Issue: Assumption that all loss data in historical window is equally relevant

Within the SMA Loss Component each year in the 10-year window is assumed to carry equal relevance to the current risk profile of an institution.

Solution: Time weighting historical loss data

A weighting scheme which gives a variable weight to each year within the 10-year window would allow different portions of the loss history to contribute more to the Loss Component.

Evidence: Assess the stability over time of different weighting schemes

To assess the impact of time weighting historical loss data three weighting schemes were used (see Figure 12):

- The existing SMA Loss Component which is an equal weight for all years
- Weight #1. An equal weight for the most recent 5 years, with a straight line decrease for older losses. This weighting is based on the suggestion in [1] that a 5 year history of the loss data is the absolute minimum allowable.
- Weight #2. A decay in the form $w(t) = \lambda t^{\frac{1}{10}} + C$ such that the weight for the oldest data is 10%.
- Weight #3. A straight line decrease for all years

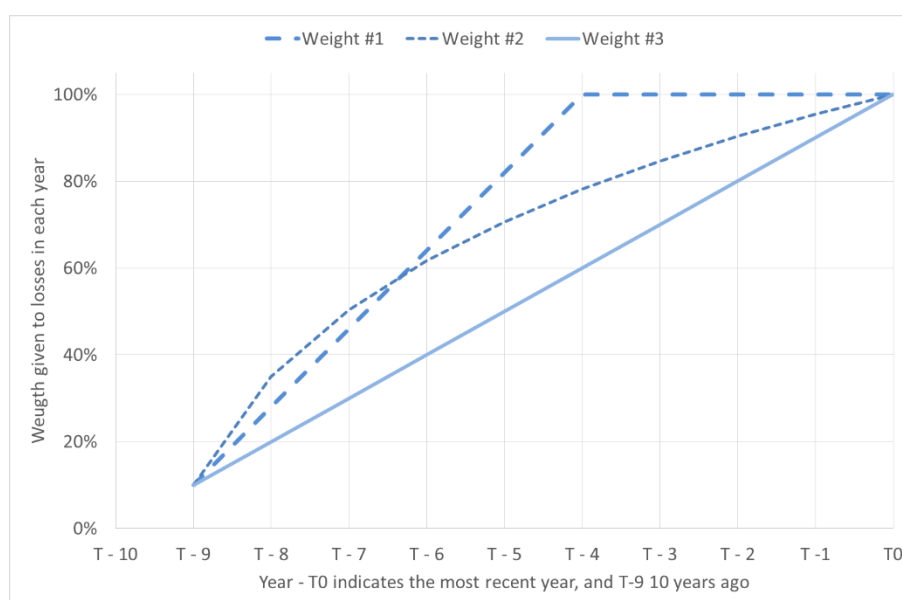


Figure 12: Weighting schemes #1 and #2. Under #1 losses in the most recent 5 years are given equal weight, and then a straight-line decrease in weight is applied. In weighting #2 losses decay smoothly over the period. In weighting #3 a straight-line decrease is applied across the 10 year period. Losses > 10 years ($T - 10$) are given zero weight. The current SMA treats all years equally so would correspond to a straight line on the chart above.

To assess the stability of the Loss Component over time each weighting scheme was applied to the data set of 28 banks as used above. Under every weighting scheme the variability increases in comparison to the existing SMA Loss Component. For weighting #1 this is $(0.103 - 0.083) / 0.083 = 24\%$, for weighting #2 this is $(0.102 - 0.083) = 23\%$ and for weighting #3 this is $(0.122 - 0.083) / 0.083 = 47\%$.

It is therefore important to balance the variability that a weighting scheme introduces against its ability to increase the relevance that the Loss Component has to the current loss profile of a bank.

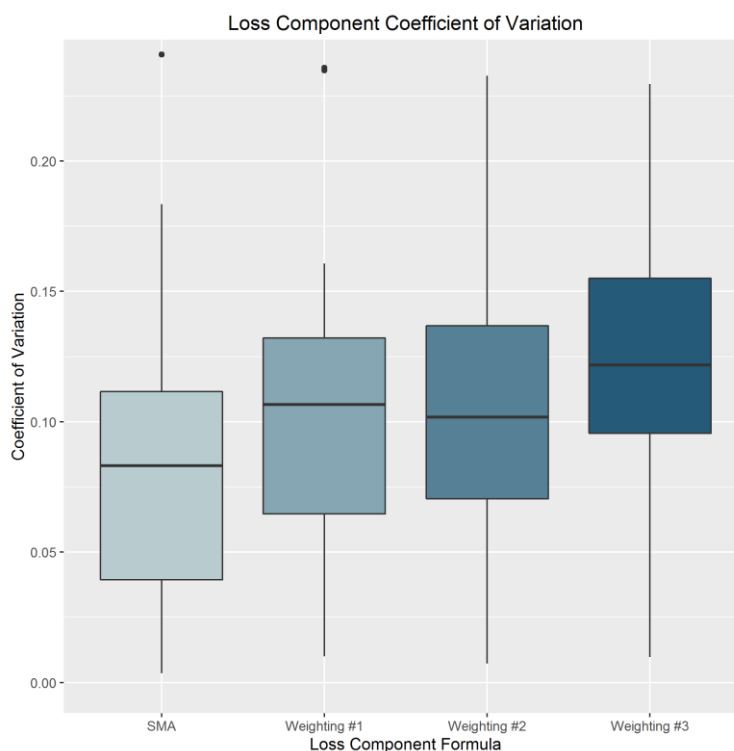


Figure 13: Volatility of the Loss Component using differing weighting schemes

Table 7: Median coefficient of variation of the Loss Component using differing weighting schemes

Median variability	SMA	Weight #1	Weight #2	Weight #3
Proposed Loss Component	0.083	0.103	0.102	0.122

The Loss Component time window

Issue: Assumption that a 10-year loss window is needed

Within the SMA Loss Component each a 10-year window of data is used. This need to include information from such a long period has been questioned by some members.

Solution: Shorten the time window

A shorter time window could be used.

Evidence: Assess the stability of different length time windows

To assess the stability of the Loss Component over different time windows, the calculation was applied to the data set of 28 banks (as discussed above) based on loss data taken from between 1 and 10 years. A summary of the stability within each bank is shown in Figure 14.

This clearly shows that a shorter time window will induce more variability (or alternatively more sensitivity to the loss data) in the Loss Component. A reasonably similar level of variability (within 50%) is seen for time windows of 7-10 years, whereas windows of less than 7 years can see significantly higher variability.

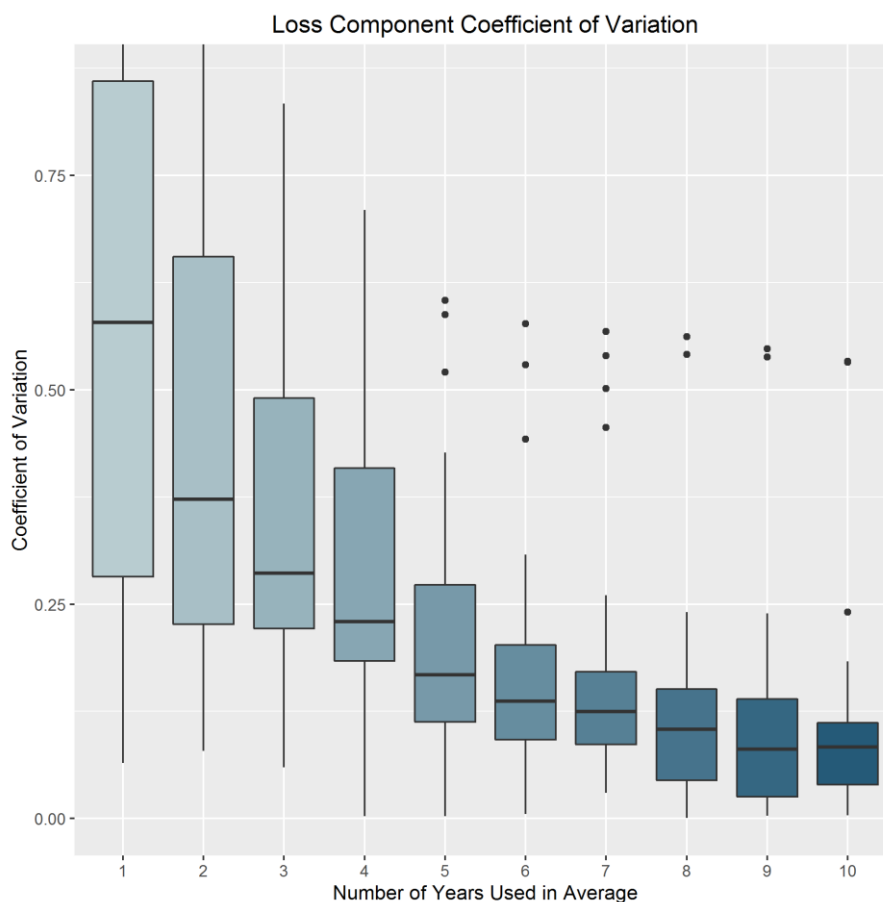


Figure 14: Volatility of the Loss Component within individual institutions when the time window for historical data varies between 1 and 10 years

Table 8: Median Volatility, and difference with 10 year level, of the Loss Component within individual institutions when the time window for historical data varies between 1 and 10 years

	1	2	3	4	5	6	7	8	9	10
Median	.578	.372	.286	.230	.168	.137	.125	.104	.081	.083
Difference with 10 year	596%	348%	245%	177%	102%	65%	51%	25%	-2%	-

Summary

Reducing the time window of 10 years for the Loss Component increases its variability over time. The analysis shows that a time window of 7-10 is broadly similar.

Each of the weighting schemes used here increased the influence that recent loss data has on the Loss Component, this causes more variability within the Loss Component over time and adds slightly to the complexity of calculation.

In both the choice of time window or weighting scheme volatility (or sensitivity to losses) must be balanced against how relevant historical losses are to an institution. Here we are highlighting the issue rather than making a concrete proposal.

4.2 Comparability

Assessing comparability is hard, as to do so perfectly one would need to know what the “true” capital should be. One measure of comparability is the dispersion of capital with respect to income. A measure of the relative dispersion with respect to income, under the SMA and under the existing approaches can be seen in Figure 15.

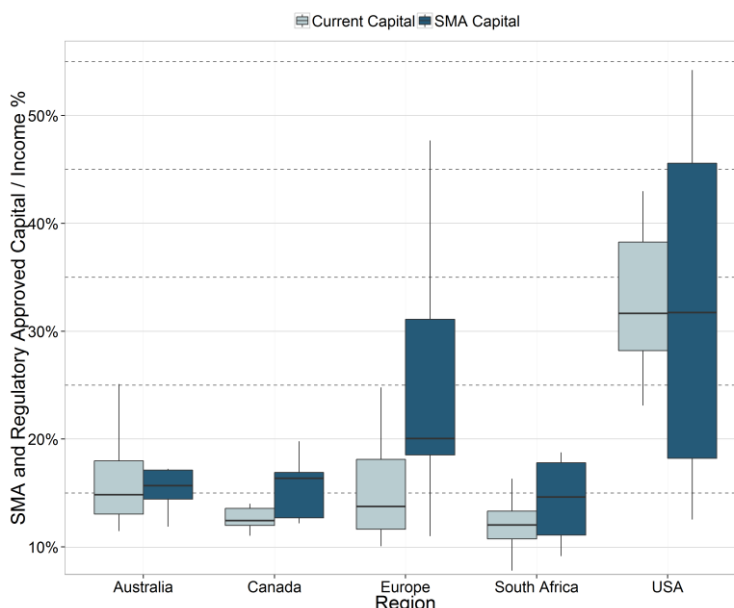


Figure 15: Regional comparisons of SMA and 2015 regulatory approved capital as a % of income. This shows a much wide dispersion of capital within the SMA than within current regulatory approved levels in all but 1 jurisdiction.

This clearly shows that in all but 1 jurisdiction the capital is more dispersed under the SMA. Much of this may be driven by the emphasis that the SMA calculation places on size.

ORX would recommend that the Committee assess to what extent the comparability of outcome has or has not been improved by the SMA.

Appendix C: Supporting operational risk management

Industry opinion on the costs and benefits of using internal models to determine operational risk capital

In January 2016 we surveyed 53 banks on their views of internal methods for determining operational risk capital. Ahead of BCBS's consultation on calculating operational risk capital we wanted to document the industry's views on the advantages and disadvantages of internal models and analysis. A mixture of advanced and standardised approach banks told us they value the process of generating model inputs and outputs so would prefer to keep internal methods for determining operational risk capital.

95% of the banks felt internal capital calculation methods are beneficial in determining operational risk capital and 93% felt they are more effective than using multiples of gross income. The majority of respondents consider internal capital calculation methods to encourage better measurement and management of operational risk as the link to Pillar I capital draws the attention of senior management and staff.

87% of banks felt internal capital calculation methods help better manage operational risk exposures. Banks most frequently cited inputs into capital calculations, notably scenario analysis and internal loss data, as the most significant contributors to better operational risk management. On the other hand, only 32% viewed the outputs, i.e. the final capital numbers, as a driver of improved risk management.

More than half suggested senior management would pay less attention to operational risk without determining Pillar I capital through internal methods. More than half also thought they would spend more time convincing staff of advanced risk management techniques if internal methods were removed from Pillar I capital calculations.

To download a public summary of our report on the cost and benefits of internal models please visit <http://www.orx.org/Pages/ORXResearch.aspx>.

Appendix D: Responses to individual questions

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

A number of minor modifications to the calculation of the BI component have been suggested by members, these include:

- The exclusion of profits/losses from the sale of non-trading book items
- Include a deduction of the expenses used to obtain the rental income from investment properties

2. 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 use of loss data within the SMA is welcome. Although the computational difference when including loss data is small, the resources needed to accurately collect the loss data are potentially significant and complex.

The proposal only encourages banks to focus on collecting loss data amounts and timing as these are the only factors which are needed in the SMA. Currently emphasis is placed on other elements, such as understanding the cause of the loss and the associated control failures where internal loss data is used for Scenario Analysis. Unless these elements are leveraged by the SMA the focus on causes and failures will be lost.

It is unclear where the responsibility for validating and assuring loss data will fall. Event type classification has no role in the SMA which undermines the requirement to invest in data collection by event types.

3. 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?

A chart of current and alternative multipliers calibrated at $m=3$ is given in Figure 16. This shows near identical results for each approach, as confirmed by the linear line of best fit with $R^2 = 99.9\%$. The major difference of the alternative approach is that unlike the unbounded proposed loss multiplier m has a fixed upper limit. This may be considered conceptually undesirable, but this feature could provide a meaningful ceiling to the loss component, thereby reducing capital volatility and potential oversensitivity of the SMA to large losses.

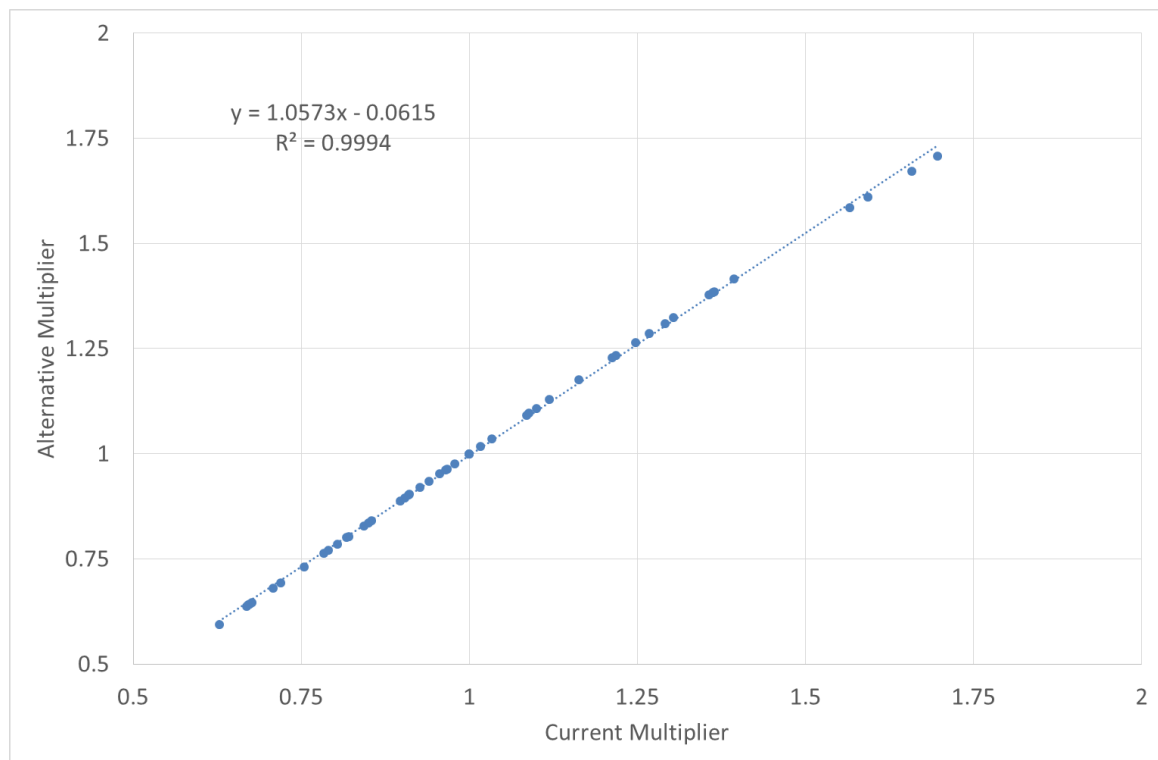


Figure 16: Comparison of current and alternative multiplier function. The top 10% of respondents have been removed for anonymity reasons.