6.12 Market risk

Q165

Q165 Section 6.12.1.4 Are there any calibration methodologies for stressed yield curves that work in both the current negative and low interest rate environment in developed countries and where base yield curves are as they have been in the past with higher rates observed at all maturities? If “yes”, please provide details.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	No	
China Insurance Regulatory Commission	China	IAIS Member	No	No	
EIOPA	EIOPA	IAIS Member	No		At this stage we cannot pronounce ourselves on such methodology but believe investigations should continue. If such a model were not to exist, we would suggest a pragmatic approach to the low interest rates and negative interest rates. For instance, a combination of relative and absolute stresses and a minimum stress downwards and upwards.

Financial Supervisory Service	Korea	IAIS Member	No	Yes	Instead of ln{(1+r(t+1))/(1+r(t))}, ln{(-a+r(t+1))/(-a+r(t))} with lower bound a which is calibrated by supervisor in each country would be more appropriate for both the current negative and low interest rate environment in developed countries and where base yield curves are as they have been in the past with higher rates observed at all maturities. Each country will have own economic circumstance and fiscal policy, thus interest rate lower bound will be different to each other like LTFR.
Ageas	Belgium	Other	No	Yes	Issue could be tackled via a combination of relative (In case of high interest rate levels) and absolute (in case of low/negative interest rate levels) stresses.
Canadian Institute of Actuaries	Canada	Other	No	Yes	In Canada, interest rate calibration uses information from as many years as possible while still being credible. This includes past data for periods of high interest rates as well more current years of low, or negative, interest rates. (See, for example, the CIA research paper on interest rate calibration: http://www.cia-ica.ca/docs/default-source/2013/213107e.pdf?sfvrsn=0.)
CLHIA	Canada	Other	No	Yes	We encourage the IAIS to incorporate credible data from as many years as possible, from both from high interest rate and low interest rate eras.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
Munich Re	Germany	Other	No	Yes	The calibration method should work in both interest rate environments (e.g. via normal models, regime switching, etc.)
AIA Group	Hong Kong	Other	No	No	

International Actuarial Association	International	Other	No	Yes	Arguably yes. The use of stressed yield curves is presumably seeking to identify the potential variation that might arise in Net Assets over the relevant time horizon. If we decompose Net Assets into cash flows at different times (i.e. different durations) then we can argue that use of stressed yield curves is simply a means to constructing coherent stresses to apply to zero coupon bond prices rather than an end in itself. Potential variability in zero coupon bond prices should be partly driven by its current duration (which for a zero coupon bond of a specified time to maturity does not change in different interest rate environments) and by economic uncertainties present over the period of time to maturity, which will always be present and a priori may not differ hugely through time for longer durations. So we would suggest calibrating primarily to observed zero coupon bond variability and then backing out corresponding stressed yield curves rather than vice versa. We suggest placing a floor on the size of the assumed downward movement in the zero coupon bond price to avoid the risk that the resulting yield curve stress is too modest. We would also suggest placing a floor on the size of the assumed upward movement, since economic theories some previously proposed (before interest rates went negative) to justify a practical floor of zero on interest rates now seem doubtful. To test whether this logic is sound you could perhaps refer to interest rate implied volatilities derived from swaps with embedded caps or floors. If these volatilities are not too different now to what they have been in the past (for a given duration) then this would support the above calibration approach.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	Yes	・The lower limit od negative spread should be considered in the stressed yield curve. ・If the spread became deeply negative beyond the certain threshold, the IAIS would prefer to hold money from the viewpoint of economic rationality.
General Insurance Association of Japan	Japan	Other	No	No	

The Life Insurance Association of Japan	Japan	Other	No	Yes	・We believe the floor of negative interest rate should be considered in calibrating stressed yield curves. If the negative interest rate falls below a certain threshold, IAIGs may prefer to have assets in cash in the light of economic rationality.
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	Yes	Yes, we take volatility of historic yield changes in bps into the calibration process. This works well with large positive yields and also negative yields. Using e.g. a 10 year time window gives the best realistic model. This has been tested using out of sample back testing methods.
MetLife	United States	Other	No	Yes	Please see our response to Q. 172 below.
Prudential Financial, Inc.	United States of America	Other	No	Yes	Prudential recommends using proportional (relative) changes in historical data for calibrating interest rate stresses subject to a specified absolute basis point minimum shock level, which will ensure sufficient severity for currencies with low interest rates. The ICS interest rate stresses should represent plausible and permanent changes in rates. While negative rates are currently observed in certain developed economies, we view them to be unsustainable and thus it is overly conservative to assume that rates can remain negative permanently over the life of insurers' long-dated liabilities.
MassMutual Financial Group	USA	Other	No	Yes	Given the low interest rate environment, we agree it is difficult to determine the best approach for calibration. We suggest using a long-term historical basis point increase for the rates up scenario and a long-term historical percentage decrease for the rates down scenario. We also strongly believe the calibration time period must be consistent with how the stress is applied. For example, the current calibration is based on a 1-year horizon, whereas the stress is applied instantaneously.

Q166

Q166 Section 6.12.1.4 Is the IAIS approach to calibrate Interest Rate risk stresses using six years of historical data appropriate? If "no", please comment on the appropriate length of data to calibrate Interest Rate risk stresses to a target level of VaR 99.5% over a one-year time horizon. If a shorter time series is preferred, please comment on how to deal with changing market conditions and the frequency of recalibrating the ICS Interest Rate risk stresses.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	No	Longer time series are necessary and should go as far back in time as they are reflective of the current economic regime. Minimum 15 years for most economies.
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	IAIS Member	No	No	Ideally, the data used should extend as far back as is available. While six years of data may be appropriate to calibrate a trading book VaR, the longer time horizon associated with the ICS necessitates data spanning over a longer time period.
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No	No	Over the past 6 years, one can notice very specific interest rates variations. We believe a longer time horizon should be the basis of the calibration, so that the stress is relevant both today and in a number of years, where potentially interest rates will be different.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	

KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	No	
National Association of Insurance Commissioners	USA	IAIS Member	No	No	The six year period was chosen to eliminate the period of the Great Financial Crisis and to emphasize the current low interest rate environment. It seems reasonable to test this approach against a long term approach (such as 50 years or as long as records are available). If the two give very different results, then there is some thinking to be done.
Ageas	Belgium	Other	No	No	Lessons should be learned from the past. The more history is available, the more observations should be considered for stress calibration. In case a new regime is applicable due to specific events, this would be a much better indicator to determine predefined stresses.
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	No	The use of a near term calibration for a long term model targeting 1 in 200 scenarios is inappropriate and inconsistent. In particular this is apparent in the output of the revised stress test where interest rate stresses are now out of line with the 2014 model which itself is out of line with the SII standard formula. As a minimum the calibration horizon should include a range of cycles and use a minimum of 20-30years being a number of years should encompass a number of economic cycles. (In the US, economic cycles have lasted 5 ½ years on average since 1950.)
Canadian Institute of Actuaries	Canada	Other	No	No	As noted in question 165, credible data for as long a period as possible should be used, so as to encompass the various historical levels of interest rates.
CLHIA	Canada	Other	No	No	Six years seems like an inadequately short period of time. Per our answer to question 165, we encourage the IAIS to incorporate credible data from as many years as possible, from both high interest rate and low interest rate eras.

Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	We think that for China, it is reasonable to use 6 years of historical data as the market data is still at the stage of gradual improvement. We recommend regularly reviewing the reasonableness of the risk factors. If there are no significant changes in the market, risk factors should be kept unchanged; if the market dramatically changes, risk factors should be adjusted to reflect the market change, as well as considering counter-cyclical adjustments.
Insurance Europe	Europe	Other	No	No	The observation period used is too short. Data from only six years are insufficient to calibrate the true 99.5% quantile because there are severe problems with autocorrelation and heteroscedasticity in the data. This means that data patterns in such a short observation period are most likely distorted by periodic fluctuations in the level and volatility of interest rate changes. To avoid interest rate risk being both miscalibrated and fast changing over time, a longer observation period has to be applied. Equally important, there is a fundamental problem with the IAIS approach to calibrate interest rate risk stresses directly using historical data. By this approach it is blindly supposed that volatility observed before the onset of the low interest phase is the same as volatility in a low/negative interest rate environment. This is not a plausible assumption. As a consequence of the methodology used, based on such a short time period for calibration, the interest rate stresses are too high and pro-cyclical, meaning that a recent rapid fall in interest rates would increase the measured standard deviation. For example, the downwards stress 10-year yield for EUR is lower than JPY, despite the base yield being approximately1% higher, and this is due to the fact that the calibration uses the recent falls in EUR interest rates. The above concerns could be addressed by lengthening the time period used to calibrate the stress (ie to cover multiple economic cycles) and introducing mechanisms to reduce the stress in falling or low interest rate environments (eg adjust the size of the stress to reflect current interest rate levels). The IAIS therefore needs to aim for more realistic results by applying an appropriate interest rate model and calibrating its parameters on the basis of the data (estimate the model).

Institut des Actuaires	France	Other	No	No	Six years of historical data seems to be short compared to the duration of economic cycles.
Allianz	Germany	Other	No	No	The length of calibration data should depend on the currency under consideration, we would not advise to impose a pre-defined one fits all number of calibration years. The number of years should be sufficient to guarantee a reasonable stable yield curve in the sense that adding an additional time step or moving the calibration window by one time step does not lead to erratic jumps.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	The used observation period is definitely too short. Data from only six years are insufficient to calibrate the true 99.5% quantile because there are severe problems with autocorrelation and heteroscedasticity in the data. This means that data patterns in such a short observation period are most likely distorted by periodic fluctuations in the level and volatility of interest rate changes. In order to avoid that interest rate risk is both miscalibrated and fast changing over time, a longer observation period has to be applied. Moreover and even more important, there is a fundamental problem with the IAIS approach to calibrate interest rate risk stresses directly using historical data. By this approach it is blindly supposed that volatility observed before the onset of the low interest phase is the same as volatility in a negative interest rate environment. This is not a plausible assumption. The following approach would result in more realistic results: 1) apply an appropriate interest rate model; 2) calibrate its parameters on the basis of the data (estimate the model).
Munich Re	Germany	Other	No	No	We consider a period of at least 15 years as appropriate to calibrate interest rate stresses for the sake of internal models. 15years+ has the advantage that such a calibration period contains severe stresses, such as Lehmann, EUR-Govi crisis, 9/11 etc.

AIA Group	Hong Kong	Other	No	No	We think a six-year period is too short. In our internal economic capital calculations we use more than 20 years of data to calibrate.
International Actuarial Association	International	Other	No	No	6 years doesn't seem a long enough period for this calibration (especially since longer term data should be available). The trend in regulatory approaches elsewhere in the financial services industry seems to us to involve setting stresses by reference to data that includes a minimum proportion of periods deemed to coincide with stressed circumstances. For example, if a 10-year window were adopted and all of the last 10 years corresponded to non-stressed times then the data in the earliest part of that time window, say the first 10% of the period, would be replaced by earlier data that is deemed to correspond to non-stressed times. The 6-year time window proposed by IAIS seems to have been deliberately chosen to miss stressed circumstances (at least those associated with the financial crisis) and so does not seem consistent with this trend.
General Insurance Association of Japan	Japan	Other	No	No	Rather than a short timeline of six years, for objectivity, calibration using a longer timeline (for example, 20 years) of historical data would be preferable.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	
Swiss Re	Switzerland	Other	No	Yes	
Association of British Insurers	United Kingdom	Other	No	No	The interest rate stresses are too high and pro-cyclical given the short time period used to calibrate the stress i.e., a recent rapid fall in interest rates would increase the measured standard deviation. For example, the downwards stress 10-year yield for EUR is lower than JPY, despite the base yield being c.1% higher; given the calibration uses the recent falls in EUR interest rates. Similarly, during periods of

					stable interest rates, the stress would reduce. This could be addressed by lengthening the time period used to calibrate the stress (i.e., cover multiple economic cycles) and introducing mechanisms to reduce the stress in falling or low interest rate environments (e.g., adjust the size of the stress to reflect current interest rate levels).
MetLife	United States	Other	No	No	The relevant data for the current regime should consider data up to and including the Global Credit Crisis. There has been an observable regime change in global interest rates post the crisis driven by policy actions by governments and central banks to stimulate growth. These actions have taken the form of direct intervention in bond market by the major central banks. Including data before the crisis, when rates were much higher, will overstate the level of a downward movement in interest rates because the downward movements in rates are now driven more by policy actions rather than by pure market movements. These policy actions would limit the level of downward movements because they would have counter-productive effects on other policy objectives (e.g., the solvency of the financial services industry), especially, where interest rates are already negative or very close to zero. Further, observed (absolute) levels of volatility have declined with declining rate levels. Using volatility data from a high interest rate regime will overstate the shocks in the current low interest rate regime. In addition, we have the following comments on several elements of the methodology for determining the calibration and interest rate risk charge. Number of Principal Components: Only two Principal Components are currently used to calibrate the Interest rate risk charge. IAIS should consider using at least the third component which measures the effect of a twist in the yield curve.

					Correlations between currencies: There is no recognition of the diversification effect across currencies. Market data suggests that interest rate movements between different currencies are not 100% correlated, even in extreme market conditions. Tenors: The data set used for the calibration ignores the data for the short tenor (1M, 3M & 6M). The volatility of these tenors is important to groups that use derivative instruments in their hedge portfolios. Also, the volatility of these tenors, (and consequently the calibrated shocks) for these tenors is different to the volatility of tenors currently considered in the calibration. Frequency: The calibration uses weekly data to estimate the impact of a shock over one year. Using weekly data introduces too much volatility into the calibration, especially because the weekly shocks are scaled to an annual shock without adjustment. Whilst annual data would be the most appropriate for at the calibration of a one year shock, using an annual data will produce too few data points for a credible calibration. Therefore, using monthly data might provide a better compromise between relevance and credibility. Floor: The IAIS should consider imposing a floor to interest rates to prevent the future down shocks from being too negative (should such a situation arise). Please also see our response to Q. 172 below.
Prudential Financial, Inc.	United States of America	Other	No	No	A 99.5th percentile 1-year shock represents a 1-in-200 year event. Such a shock should be calibrated with data spanning over a sufficiently long period, ideally covering multiple business cycles and potentially different historical regimes. We recommend at least 20 years of historical data to be considered in the stress calibration. In 2016 Field Testing, calibrating the 99.5th percentile stresses by principle component analysis (PCA) based on only six years (or less) of data may not lead to an appropriate level of severity, since the short history would not appropriately capture extreme events.

					A well-calibrated interest rate shock should achieve a proper balance between both absolute (in bps) and relative (proportional) interest rate change observed through-out history. Absolute shock (in bps) derived from a long data history may be too severe in the current low rate environment, and the related relative (proportional) shocks should be assessed against historical data subject to shock minimums (in bps) and 0% floor.
MassMutual Financial Group	USA	Other	No	No	We suggest using a longer time period (possibly back 40+ years) to capture historical data given we are in unprecedented times. We also strongly disagree with the approach of calculating the VaR 99.5% over a one year time horizon, and then applying it as an instantaneous shock. If the interest rate shock is intended to be an instant, overnight shock, the data utilized to develop this shock should be consistent – that would mean utilizing data reflecting changes over one day, as opposed to one year. Conversely, if the one year sample is desired, it should be applied as movement in rates over a one year period, opposed to one day. The current method is effectively misusing the data to yield an interest rate stress that is too severe.

Q167

Q167 Section 6.12.1.4 Should the ICS only assess the principal observed driver in yield curve evolutions (upward and downward movements), or should twists (flattening or steepening) be included in the risk assessment? Specifically, which of the following should be used? Please explain your answer.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	IAIS Member	No	Upward, downward, steepening and flattening	Under a principal components approach, the effects of both steepening and flattening scenarios need to be measured, because otherwise insurers that incur losses under only one of the scenarios will not have the correct amount of capital for the second component.
China Insurance Regulatory Commission	China	IAIS Member	No	Only upward and downward movements	Interest up/down is the major component of interest rate changes in the PCA analysis, so to be more practical, we suggest only consider this component.
EIOPA	EIOPA	IAIS Member	No	Only upward and downward movements	For a standard model we believe those 2 scenarios should be enough. The variety of insurance products can lead to very different extreme scenarios that are relevant at the group/undertaking level: we need to acknowledge that we cannot capture all that variety. Restricting ourselves to upward and downward movements allow us to capture the main drivers of interest rate risk. Other type of movements should be analysed by the CRO of insurers.
BaFin	Germany	IAIS Member	No	Only upward and downward movements	For simplicity reasons in the standard approach.

Financial Supervisory Service	Korea	IAIS Member	No	Upward, downward, steepening and flattening	The actual NAV will change according to the yield curve movements including Upward, downward, steepening and flattening, so all of them should be included when evaluating interest rate risk. In case of auto insurance company, asset duration is longer than liability duration in most cases and hence the risk could be underestimated if the steepening is ignored.
KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	Upward, downward, steepening and flattening	
Ageas	Belgium	Other	No	Upward, downward and flattening	
Canadian Institute of Actuaries	Canada	Other	No	Only upward and downward movements	Experience in Canada has shown that in practice, the scenarios at the extremes (i.e., low or high interest rate for a length of time) show the most adverse results. Scenarios that fluctuate up and down have not been as adverse. In the interest of simplicity and practicality, we suggest that keeping the number of scenarios minimalized is preferable.
CLHIA	Canada	Other	No	Only upward and downward movements	We believe that twist scenarios would not have nearly the adverse impact that yield curve evolutions have, so we recommend for simplicity that the IAIS concentrate on the latter.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Only upward and downward movements	The PCA analysis shows that the first main component accounts for over 90% of the yield curve. We suggest only use this scenario for reasons of easy implementation and its limited impact on the results.

Insurance Europe	Europe	Other	No	Only upward and downward movements	Changing interest rates constitute a single risk. This risk may be modelled in a more simple and robust way with only one risk factor or in a more sophisticated way with two risk factors (1st and 2nd principal component if PCA is applied) within the same scenario. However, in both cases, there should be only one downward scenario (resp. one combined downward and flattening scenario). The use of two uncorrelated scenarios both calibrated at the 99.5% VaR level would lead to double-counting.
Institut des Actuaires	France	Other	No	Only upward and downward movements	For simplicity as it is the main driver
Allianz	Germany	Other	No	Only upward and downward movements	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Only upward and downward movements	Changing interest rates constitute a single risk. This risk may be modelled in a more simple and robust way with only one risk factor or in a more sophisticated way with two risk factors (1st and 2nd principal component if PCA is applied) within the same scenario. However, in both cases, there should be only one downward scenario (resp. one combined downward and flattening scenario). The use of two uncorrelated scenarios both calibrated at the 99.5% VaR level would lead to double-counting.
Munich Re	Germany	Other	No	Upward, downward, steepening and flattening	Considering twists also accounts for more complex mismatch positions in the portfolio (and, hence does not underestimates risk).

AIA Group	Hong Kong	Other	No	Upward, downward and flattening	We believe that flattening is a risk, whereas steepening is not.
International Actuarial Association	International	Other	No	Only upward and downward movements	Upward and downward stresses should be included, since some insurers may have net long and others net short duration positions. Including twists adds complexity to the computation. The table in 6.1.1 suggests that the largest single contributor to risk may be interest rate risk, suggesting that seeking to capture effects linked to the second principal component as well as the first principal component is probably justified. However, if twists are to be included then it would be helpful to see more explicit justification for why this extra complexity is desirable, e.g. showing that based on earlier field tests there were some insurers where the exposure to twists rather than to merely up / down movements was a substantial fraction of total interest rate exposure.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	Only upward and downward movements	・ Interest rate risk structure of many life insurance companies isn´t so complicated and it isn´t necessary to reflect the impact of the interest rate change other than parallel shift to the standard model.
General Insurance Association of Japan	Japan	Other	No	Upward, downward and flattening	Upward, downward and flattening should be used.
The Life Insurance Association of Japan	Japan	Other	No	Only upward and downward movements	・We believe many insurers´ interest rate risk structures are not very complex to require them to reflect the impact other than a parallel shift. Thus, we think it would be enough to reflect a parallel shift in considering a standard model.

Great Eastern Holdings Ltd	Singapore	Other	No	Upward, downward and flattening	Insurers are generally most affected by these 3 scenarios.
Swiss Re	Switzerland	Other	No	Upward, downward, steepening and flattening	All possible perceivable combinations should be taken. The different tenors of the curve can behave differently.
Prudential Financial, Inc.	United States of America	Other	No	Only upward and downward movements	Given the long-term nature of life insurance products, insurers tend to be exposed to rate declines in longer tenors and losses from such exposure would manifest gradually over time to the extent the rate decline was permanent. Both downward and flattening stresses address this risk, and thus combining the rate decline and flattener stress impacts (assuming no correlation between the two) exposes the tail to rate declines twice in both stresses. Since down and flattening stresses beyond the investable tenors are extrapolated to the same LTFR, the tail stresses do not represent independent principal components as in a typical PCA analysis. Therefore, the flattening curve shape derived from curves dynamics in the PCA analysis is not relevant beyond the investable horizon. Prudential believes the flattening stress is not relevant and should be excluded to avoid such a double count of risk. If the flattening stress Is included, the stress should apply to the “investable” part of the curve only.
MassMutual Financial Group	USA	Other	No	Upward, downward, steepening and flattening	It would be appropriate to consider all four trajectories; all are arguably potential outcomes. Utilizing a broad range of stresses will aid in capturing risk resulting from duration mismatch.

Q168

Q168 Section 6.12.1.4 Is the methodology used by the IAIS to determine Interest Rate risk post-diversification appropriate? If “no”, please suggest an alternative methodology.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	As answered in Q167, we suggest only consider interest up/down, and take the maximum NAV changes of the two scenarios. ICS now aggregate NAV changes of interest up/down and flattening by assuming they are independent. However we view that: 1) the independency is assumed on interest rates in PCA, not on NAV, they are not exactly equivalent and it may not be appropriate to assume the same on NAV changes; 2) the interest up/down can explain the majority of the interst rate changes as from PCA, and only consider the major component can be a better balance between the accurancy and efficiency.
EIOPA	EIOPA	IAIS Member	No	Yes	
BaFin	Germany	IAIS Member	No	No	The focus should only be on the up and down scenario. It is suggested to remove the flattening scenario.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
Ageas	Belgium	Other	No	Yes	Yes, but it seems not in line with the correlation of 100% between parallel shift and flattening indicated in table 17.

Canadian Institute of Actuaries	Canada	Other	No	No	As noted in question 167 above, we have found the greatest risk in almost all cases occurs for the continuous high or low interest rate scenarios. The use of a flattening interest scenario is not as adverse. It is suggested that only the 1st PC be used in this formula.
CLHIA	Canada	Other	No	No	Consistent with our answer to question 167, we suggest the flattening scenarios have a relatively lower impact, therefore we recommend only the “1st PC” be used in the formula.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	We suggest using the maximum of the two scenarios as the capital requirements of interest rate risk. Although the calibration factors of interest rate risk are determined based on PCA method, which reflect the independence among the risk factors, the relationship between the change of NAV and the change of interest rate curve is not linear. As a result, the correlation coefficient of NAV under the two interest rate scenarios can’t be proved to be 0, and so the current diversification method is not appropriate. Additionally, when the 1-200 interest rate curve shock happens, the two scenarios can’t happen at the same time. Therefore, we believe that using the maximum of the two scenarios is consistent with the theoretical basis, and is a more reasonable method.
Institut des Actuaires	France	Other	No	No	Cf. Q167
Allianz	Germany	Other	No	No	Currently the aggregation of the interest rate risk is adding the effects of the different scenarios. This is not appropriate since upward/downward and flattening scenarios do not happen at the same time. Also a correlation assumption of 100% is not reflecting the independence assumption of the principal components stemming from the PCA. Also the impact of these shocks does not represent a 1 in 200 loss event.

GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	Diversification effects should be recognised on individual mismatch positions.
Munich Re	Germany	Other	No	No	Diversification effects should be recognised on individual mismatch positions.
AIA Group	Hong Kong	Other	No	Yes	
International Actuarial Association	International	Other	No	No	If a twist component is to be included then it would be desirable for it to involve the greater of a steeping and a flattening scenario rather than just one of the two, since it is not a priori clear whether insurers will typically all be exposed in the same direction.
General Insurance Association of Japan	Japan	Other	No	Yes	
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	
Swiss Re	Switzerland	Other	No	No	The methodology may be appropriate for a standard method. However, Swiss Re does not make use of Principle Component Analysis its internal model but rather considers all possible combinations of the rate curve to calculate an overall distribution of the interest rate risk. This approach is best suited for use in internal models.
New York Life	United States	Other	No	No	While it may make sense to evaluate the impact of a steepening or flattening curve in certain environments, more consideration needs to be given as to how such scenarios are combined with the max of the up and down scenarios. As we evaluated the current flat interest rate scenario, we observed that it is very similar to the low interest rate scenario, particularly with respect to application to long-duration

					products. As such, it would appear that combining the max of the up and down scenario with the flat scenario, creates some level of double-counting in the current environment. This may not be the case in other environments, but further consideration should be given to whether the flattening or steepening should be included as part of the max calculation. In other words, interest rate risk charge would equal the maximum of the down, up, flat and steep scenarios.
Prudential Financial, Inc.	United States of America	Other	No	No	In addition to our responses to question 167, appropriate design of tail stresses is necessary. The interest rate stresses in Segment 2 and 3 (“tail stresses”) should appropriately reflect the long-term, unhedgeable nature of interest rate risk exposure. + Life insurance product cash flows tend to extend well beyond the investable horizon and are ALM matched gradually over time, as the cash flows reach the investable space. For these “tail” cash flow exposures, near term rate shocks are less relevant in determining the expected cost of future ALM matching. + Therefore, tail stresses should be modulated to reflect the reduced relevance of short term interest rate movements on future reinvestment rates:
MassMutual Financial Group	USA	Other	No	Yes	

Q169

Q169 Section 6.12.1.4 Should the IAIS recognise diversification of Interest Rate risk between currencies? Please explain and provide details of how this could be done.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	Yes	
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	The global financial trading and transactions are becoming more and more frequent and correlated, we therefore suggest consider the correlation of interest rates between currencies.
EIOPA	EIOPA	IAIS Member	No	No	We believe this would overly complicate the standard model considering the benefits.
BaFin	Germany	IAIS Member	No	Yes	
Financial Supervisory Service	Korea	IAIS Member	No	Yes	Correlation between currencies may be used to calculate the diversification of interest rate risk between currencies. If interest rate of one currency falls down by 1%, interest rate of another currency will fall down by 0.5% instead of 1% because there is correlation between the currencies.

KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	No	
Ageas	Belgium	Other	No	Yes	In case diversification has been proven realistic in the past observations, this should be reflected in the calibration.
Canadian Institute of Actuaries	Canada	Other	No	Yes	While in practice a large divergence of interest rates across developed countries is not anticipated, there may be an effect for companies that operate in several different currency jurisdictions. For this reason, diversification of interest rate risk between currencies should be allowed, but for practical reasons not be mandated.
CLHIA	Canada	Other	No	Yes	We believe that multi-national insurance groups will recognize Interest Rate Risk diversification by currency, so the IAIS should permit diversification credits.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	As the trading of international bond market has become increasingly frequent in recent years, we recommend determining the correlations between yield curves of different currencies based on the same period of data for calibration of the interest rate risk factors.
Institut des Actuaires	France	Other	No	Yes	Solvency II framework recognises diversification of Interest Rate risk between currencies and the standard method should be aligned on this position. In particular, in the recent past, the level of Interest Rate depends largely of the interventions of central banks which are generally not correlated.
Allianz	Germany	Other	No	Yes	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	The experience shows that interest rates do not move in the same way over all currencies. Hence, diversification needs to be considered. The standard approach,

					for example, would be using correlations between risk drivers alike within other risk categories.
Munich Re	Germany	Other	No	Yes	The experience shows that interest rates do not move in the same way over all currencies. Hence, diversification needs to be considered. The standard approach would, for example, would be using correlations between risk drivers alike within other risk categories.
AIA Group	Hong Kong	Other	No	Yes	Calibrations can be done based on historical studies. We do this for our internal economic capital.
International Actuarial Association	International	Other	No	Yes	In principle, diversification applies to all risks, so should apply to interest rate risk. In practice, interest rates in most developed economies seem to have moved reasonably in tandem over longer time periods, so the actual diversification that can be justified may be too small to justify the extra complexity involved.
General Insurance Association of Japan	Japan	Other	No	No	
Great Eastern Holdings Ltd	Singapore	Other	No	No	NA
Swiss Re	Switzerland	Other	No	Yes	We use historic correlations to calibrate the multivariate framework. While some correlations are large, they are not 100%.
MetLife	United States	Other	No	Yes	Please see our response to Q. 172 and Q. 216 below.
Prudential Financial, Inc.	United States of America	Other	No	No	We support the “global up” and “global down” stress approach, as opposed to aggregating binding stresses by currency. Interest rates in different economies tend to move in the same direction, but it is highly unlikely that all economies

					simultaneously experience extreme rate moves. From this perspective, a modest amount diversification benefit may need to be recognized through an aggregation process.
MassMutual Financial Group	USA	Other	No	No	

Q170

Q170 Section 6.12.1.4 Which of the alternative methods for GAAP Plus (1 or 2) is a better measure of Interest Rate risk? Please explain. If neither are considered suitable, please suggest an alternative method or refinements to the current method.

Organisation	Jurisdiction	Role	Confidential	Answer
EIOPA	EIOPA	IAIS Member	No	We believe method 1 is more appropriate from a technical perspective. It also has the advantage of reducing potential regulatory arbitrages.
Financial Supervisory Service	Korea	IAIS Member	No	Both methods for GAAP Plus are not considered suitable because asset value changes a lot but liability value barely changes, so interest rate is minimal to zero.
National Association of Insurance Commissioners	USA	IAIS Member	No	Method 2 is a better measure of interest rate risk. Where assets are intended to be held to maturity to back insurance liabilities, rate shocks should be measured through changes in cash flows rather than changes in market values. Method 1 requires the use of market-based discount rates whereas insurance liabilities and capital resources are based on a book value basis. Compared to Method 1, Method 2 is more aligned to GAAP principles.
Ageas	Belgium	Other	No	If purpose is to provide a fair market value impact, alternative method 1 should be selected. If assets are held up to maturity, adjustment can be foreseen but only to the extent assets can be held up to maturity.
Allianz	Germany	Other	No	Since the GAAP+ approach for IAIG subject to Solvency II is based on the market value balance sheet (MVBS) according to Solvency II, GAAP+ already reflects a market valuation of assets and liabilities. Therefore there is no difference between method 1 and method 2. In

				general we see a market valuation approach as the most reasonable, both in providing insights into the economic risk as well as the comparability of results. Introducing artificial intermediate steps between various local GAAP and a full market based version does not make sense from a comparability point of view and does not create a level playing field.
AIA Group	Hong Kong	Other	No	For GAAP Plus we favour an approach to use market yields as the liability discount rates, therefore Method 1 is better as it is more consistent with the way the MAV stresses are applied.
International Actuarial Association	International	Other	No	Method 1 is arguably a better measure of interest rate risk if there is a material risk that assets cannot be held to maturity as intended, e.g. due to regulatory distress in the meantime. Conversely, Method 1 may not incentivise insurers as much as Method 2 to invest in less liquid fixed income assets, e.g. some types of infrastructure, which may be considered socially desirable. We suggest that the political dynamics thus raised by this question be explicitly addressed when answering it.
Great Eastern Holdings Ltd	Singapore	Other	No	Both methods are similar for us.
Swiss Re	Switzerland	Other	No	Swiss Re does not make use of the GAAP+ methodology.
MetLife	United States	Other	No	We suggest method 2 is a better measure and closer to company practice.
Prudential Financial, Inc.	United States of America	Other	No	Method 2 is the better approach for measuring Interest Rate risk. GAAP Plus Method 1 is not an appropriate stress design for a book value liability approach because it forces a market value stress impact on book value liabilities by directly stressing discount rates instead of the underlying reinvestment yield curve used to derive the discount rate. While incorporation of the AOCI adjustment is a meaningful improvement for GAAP Plus Method 2 interest rate risk and ICS available capital symmetry, the base Balance Sheet and

				other stresses should also hold assets at book value to achieve symmetry of available capital and required capital.
MassMutual Financial Group	USA	Other	No	We strongly favor Method 2 due to the AOCI adjustment and alignment with the GAAP Plus methodology, as it allows a "buy and hold' asset liability management strategy to be fairly reflected. We also believe the Method 2 approach of utilizing the portfolio earned rate for liability valuation is appropriate.

Q171

Q171 Section 6.12.1.4 Method 2 is based on the assumption that certain assets backing liabilities are intended to be held to maturity, and consequently are only exposed to reinvestment risk. Should the IAIS consider developing criteria to identify such assets? If "yes" please explain and provide suggestions for such criteria.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
EIOPA	EIOPA	IAIS Member	No	No	The classification "hold to maturity" (HtM) exists already in the IFRS framework. However, a very little share of the assets is in practice classified HtM by insurance groups: they prefer to classify most of their assets in the "available for sale" category. We should acknowledge this reality: for ensuring proper risk management, insurance groups cannot classify a material share of their assets as HtM. Considering this materiality threshold it makes no sense to develop criteria.
BaFin	Germany	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	No	
KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	Yes	1) Bonds and loans are classified as hold-to-maturity and are valued by amortised cost, 2) Expected cash-flows from technical provisions and from bonds and loans are matched (within narrow range)

Ageas	Belgium	Other	No	No	If both assets and liabilities move in the same way and are well matched, this does not add a lot of value. On the other hand, this would be useful to reflect the fundamental spread risk in which the short term volatility might be ignored as long as the company is able to hold these investments up to maturity. A good ALM is key for an insurer, as such insurers matching assets and liabilities should be able to benefit via the determination of the criteria. Of course, criteria should be developed to show that assets can be held up to maturity & default risk should still be considered for these assets.
Allianz	Germany	Other	No	No	
AIA Group	Hong Kong	Other	No	No	
International Actuarial Association	International	Other	No	Yes	If Method 2 is to be adopted then the IAIS would need to develop criteria to identify such assets (perhaps adopting criteria from accounting frameworks such as IFRS or regulatory frameworks such as Solvency II that already include such approaches).
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	Yes	Swiss Re prefers not to make use of a matching adjustment. Nonetheless, we welcome efforts by the IAIS to develop criteria to identify such assets.
Prudential Financial, Inc.	United States of America	Other	No	No	Holding assets to maturity is a fundamental driver of insurer ALM. Similar to our recommended approach to the AOCI adjustment in the GAAP Plus valuation basis, the interest rate stresses should recognize the buy and hold nature of the invested assets by stressing the reinvestment rates. Since GAAP Plus utilizes an earned rate valuation approach, to stress the earned rate portion of the discount rate would be equivalent to implying that the insurer would sell all of its invested assets and repurchase them at current rates. Assuming such is unrealistic and would

					produce significant artificial volatility in the ICS. The appropriate approach for the stress which is coherent with the GAAP Plus valuation basis is to apply the stress to the reinvestment rate component of the discount curve and exclude AOCI. Such an approach could be complemented by confidential disclosure of information such as asset and liability durations to the group-wide supervisor.
MassMutual Financial Group	USA	Other	No	Yes	We believe identification of such assets could be derived from the respective balance sheet categories.

Q171.1

Q171.1 Alternatively, should method 2 make allowance for the fact that some of these assets may in fact not be held to maturity? If "yes", please explain and suggest how this may be done.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	No	In case assets match liabilities, valuing at cost does not add value, moreover this could lead to an inconsistency between asset and liability valuation. Such allowance should be made for credit risk via the application of relevant liability stresses in which can be determined how much assets can be held up to maturity under such events.
Allianz	Germany	Other	No	No	
AIA Group	Hong Kong	Other	No	No	
International Actuarial Association	International	Other	No	Yes	See answer to main part of Q171.
Great Eastern Holdings Ltd	Singapore	Other	No	No	

Swiss Re	Switzerland	Other	No	Yes	Herein lies the challenge, also with regards to Q171 above. We are sceptical whether robust criteria exist to identify such assets, given that insurers may sell assets at any time (e.g. in times of stress), despite their intentions to hold to maturity.
Prudential Financial, Inc.	United States of America	Other	No	No	
MassMutual Financial Group	USA	Other	No	No	

Q172

Q172 Section 6.12.1.5 Are there any further comments on Interest Rate risk that the IAIS should consider in the development of ICS Version 1.0? If “yes”, please explain with sufficient detail and rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	We view that LTFR reflect the long term equilibrium interest rate and no stress is required. C-ROSS does not assume interest rate stresses on LTFR.
EIOPA	EIOPA	IAIS Member	No	Yes	We would like to stress again that if a model cannot quickly be found to be appropriate for low and negative interest rates, we should adopt a pragmatic solution (floors and caps). This pragmatic solution could then be temporary, for ICS version 1.0 only. We would continue investigating different models for version 2.0.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	LTFR should not be changed for Upward, downward, steepening and flattening scenarios because of two reasons. The first is that the interest rate shock is for 1-year and LTFR is estimated based on long-term view, eg for 60-years, so there is no reason to change LTFR. The second is that the actual NAV change is different from the interest rate risk if LTFR is changed. When interest rate risk is measured for down shock, LTFR will be 4.5% * 0.85 = 3.825%, for example. If the actual interest rate falls down and NAV is measured one-year later, LTFR will be assumed to be 4.5% not 3.825%. So the actual NAV change will be different from the interest rate risk, which is not appropriate. PCA approach is to analyze the interest rate movement as follows : $\Delta r=\mu+\sqrt{\lambda 1}*v1*Z1+\sqrt{\lambda 2}*v2*Z2$ where v1 is the first component and v2 is the second component. The up/down shock is $\mu\pm 2.58*\sqrt{\lambda 1}*v1$ and the flattening shock is $\mu+2.58*\sqrt{\lambda 2}*v2$. μ, however, is heavily related to each country’s

					economic condition and fiscal policy, so it is inappropriate to include μ in the up/down shock or in the flattening shock. Moreover, μ changes dramatically depending on time frame of historical data, which decreases the credibility of interest rate risk.
Ageas	Belgium	Other	No	No	
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	Yes	Interest Rate Risk is not typically a significant risk for Non-Life (re)insurers, yet the ICS capital requirement requires a high degree of operational complexity to calculate (particularly when considering multiple valuation bases). We would support a more simplified approach to the calculation of this risk for Non-Life IAIGs.
CLHIA	Canada	Other	No	Yes	From our experience over many years, in analyzing the developments of the new capital framework for 2018 for Canada, we offer the following comments 1. We believe the ICS calibration of the Interest Rate Risk requirement is very conservative. 2. The calibration level for the stress to the LTFR should be at a lower level than for short term rates recognizing the former and latter are respectively based on observable and unobservable rates. The 15% downward shocks applied to LTRF seem overly conservative. 3. Non fixed-income assets (a portion of dividend cash flows deemed not sensitive to interest rates) should be recognized in the asset cash flow projection as insurers need to invest in these assets to back longer term liabilities due to fixed income assets not having long enough durations. 4. Asset cash flow projections should include all assets which generate contractually fixed cash flows, for example infrastructure, and contractual cash flows in real estate leases.

Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
Insurance Europe	Europe	Other	No	Yes	The IAIS should improve its approach to calibrating the stress by, for example, lengthening the period based on which historical data is extracted for the calibration and introducing mechanisms to reduce the stress in falling or low interest rate environments. There is a fundamental problem with the IAIS approach to calibrate interest rate risk stresses directly using historical data. By using this approach, it is blindly supposed that volatility observed before the onset of the low interest phase is the same as volatility in a negative interest rate environment. This is not a plausible assumption. (see answer to Q 166)
Actuarial Association of Europe	European Union	Other	No	Yes	For better comparability, where more than one interest rate scenario areis used to assess interest rate risk, we suggest IAIG's individual capital requirement to be based on the respective scenario that shows the maximum impact rather than correlating impacts of more than one stress.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	There is a fundamental problem with the IAIS approach to calibrate interest rate risk stresses directly using historical data (see answer to Q 166). By this approach it is blindly supposed that volatility observed before the onset of the low interest phase is the same as volatility in a negative interest rate environment. This is not a plausible assumption. The following approach would result in more realistic results: 1) apply an appropriate interest rate model; 2) calibrate its parameters on the basis of the data (estimate the model).
Munich Re	Germany	Other	No	Yes	Within internal models & standard formulas stresses beyond the last observed liquid point should be considered. Only via this approach, a proper asset liability management can be safeguarded. If there was no fluctuation beyond the last observed calibration point uneconomic asset allocations might arise.

Global Federation of Insurance Associations	Global	Other	No	Yes	The time period used to calibrate the interest rate stress is very short, and would result in procyclicality. This could be addressed by lengthening the time period used to calibrate the stress i.e., cover multiple economic cycles, and introducing mechanisms to reduce the stress in falling or low interest rate environments.
AIA Group	Hong Kong	Other	No	Yes	By definition the long term forward rate is where we believe interest rates will converge to over the long term. We think the long term rates should not be stressed in the interest rate risk calculations.
International Actuarial Association	International	Other	No	Yes	Some consideration should be given to interest rate risk on inflation-linked instruments (or at least some justification given as to why they can be treated in the same manner as fixed interest securities). Nominal yields have different economic drivers to real yields so a priori may not exhibit similar levels of volatility. The following IAA comments relating to market risk/ but also involving AOCI, /GAAP+ and MAV have been placed here in Q 172 as a more suitable home within the CD could not be found. 1. It is not clear to the IAA that the GAAP+ and MAV versions of market risk provisioning are similar. For cases where liabilities are carried at fair (market consistent) value and an AOCI is appropriately applied to translate the assets to fair value then one would expect them to align. However, this assumes that the AOCI is appropriately calculated and the IAA review suggests that this will not necessarily be trivial to arrange. Further, for cases where liabilities are at non-market consistent value and an AOCI adjustment is applied to align assets and liabilities better, it is less clear whether the two will be similar, as the IAA struggled to understand how the AOCI adjustment would in practice be identified and applied. 2. It is also not clear to the IAA that the GAAP+ and MAV versions of market risk usefully capture ALM risk resulting from different cash flow patterns in the assets and liabilities. Given just the material in the ICS consultative document, it is not clear that the market and credit risk sections capture all aspects of own credit risk (see detailed

					response). Further, they may also not handle credit spread risk in as complete a fashion as might be desirable (again see detailed response for specifics). 3. Finally, the IAA found the explanation of the AOCI adjustment given in the ICS consultative document confusing and so we are unsure whether GAAP+ versions that include an AOCI adjustment will handle interest rate ALM risks effectively. In particular, we suggest exploring whether it seems to work in situations where insurers have leeway to select how assets and/or liabilities are to be treated under the relevant GAAP. Recent related BCBS material suggests that in a Pillar 1 context, robust handling of ALM risks if assets and liabilities are not in effect fair valued, may be tricky.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	Yes	・The IAIS should consider not to give LTFR a shock. It is difficult to intuitively understand what stressed LTFR means and we are afraid that the model would get complex.
General Insurance Association of Japan	Japan	Other	No	No	
The Life Insurance Association of Japan	Japan	Other	No	Yes	・For example, we think a further approach that mitigates volatility in interest rate risk which would not shock the LTFR should be considered.
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	No	
Aegon NV	The Netherlands	Other	No	Yes	Aegon has two additional comments. First, based on Field Testing we believe that the approach to interest rate risk produces excessive capital charges. We believe that a primary cause of this is the use of negative interest rates without a floor. In effect, it requires capital to be held under the assumption that very low or negative

					interest rates will continue indefinitely. Second, we believe that if dynamic hedging cannot be reflected, no volatility shock be included either. Including one, but not the other would lead to significantly skewed results. This would impact some companies, but not others, and therefore it would negatively impact comparability.
MetLife	United States	Other	No	Yes	We welcome the use of the Principal Component Analysis (PCA) approach for deriving the interest rate shocks under the ICS standard method. The PCA approach is tractable, easy to implement and widely used in the industry. However, we have concerns with a few key aspects of the calibration in the 2016 Field Testing exercise. First, the shocks (in particular the down shock) are too onerous for a 1-in-200 year event over a 1-year time horizon. For example, the shock size for USD under the interest rate down scenario is more than twice that for Solvency II. This is clearly excessive and unreasonable. A contributing factor could be the use of weekly data to estimate the impact of a shock over one year. Using weekly data introduces too much volatility into the calibration, especially because the weekly shocks need to be scaled to an annual shock. Whilst annual data would be the most appropriate for the calibration of a 1-year shock, using annual data will produce too few data points for a credible calibration. Therefore, using monthly data might provide a better compromise between relevance and credibility. We also note that the shocked interest rate curve for certain currencies are allowed to go very negative, notably Hungary Forint (-3% at the 7-year maturity) and Romania New Lei (-5% at the 1-year maturity). We urge the IAIS to consider imposing a floor to interest rates to prevent future down shocks from being too excessive and unrealistic. Second, there is no recognition for diversification effect across currencies. Assuming all currencies suffer a downward shock concurrently is unrealistic as market data

					suggests that interest rate movements between different currencies are not 100% correlated even in extreme market conditions. IAIGs operating across different markets benefit from geographical diversification. This is an important feature that needs to be taken into consideration when designing and calibrating the interest rate risk module.
National Association of Mutual Insurance Companies	United States	Other	No	Yes	Non-life insurers do not suffer as significantly from interest rate pressures as life insurers, due to the short term nature of the liabilities and the ability to change premium levels to address low investment returns. Over the decades property-casualty insurers have had two forms of income from their business – underwriting income and investment income. Because of the ability of property-casualty insurers to change premium rates annually or more frequently, they are able to address low investment returns with premium increases in a way that is not available to life companies. Property/casualty insurers are also likely to be more invested in equities than life insurers to reflect the differences in their variable claim obligations. Verification of the recognition of these differences in the formula should be provided.
RAA	United States and many other jurisdicitons	Other	No	Yes	We are concerned about the operational complexity of the interest rate risk approach since it is rarely a significant risk for non-life IAIG's. We would support a simplified approach to calculating interest rate risk for non-life insurance groups.
MassMutual Financial Group	USA	Other	No	Yes	While it is likely that insurers do not hold all assets to maturity, sales of assets are done opportunistically when it is economically beneficial to do so. As the AOCI adjustment is quantified under a stress scenario, it is not reasonable to assume that insurers would sell rather than hold their assets when they are in a loss position. Therefore, we do not believe a conservative assumption for sales should be applied the AOCI adjustment.

Q173

Q173 6.12.2.1 Is the four-bucket approach to the segmentation of equities appropriate? Please explain. If “no”, please provide an alternative suggestion and rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	No	At least two additional buckets should be added: strategic participations and infrastructure finance. The other equity bucket should be further split into hedge funds and private equity.
China Insurance Regulatory Commission	China	IAIS Member	No	No	1. Our volunteers have reported majority of their equity investments in “Other” in the equity risk calculation, using a high risk charge of 49%. We view that this high charge may not well reflect the risks of each underlying asset. The “Other” for China includes investment funds (impractical to look-through at the moment), equity trust, asset management products and long term equity investment etc., they can be significantly varied in terms holding purpose and embedded risks, so C-ROSS provides different risk factors for each asset classes. We view that using a single risk factor in ICS is not appropriate and suggest ICS consider reference C-ROSS in terms asset categories and risk factors. 2. ICS include sub debts in equity risk calculation while C-ROSS include them in interest rate and credit risks. We would view interst and credit risk being more appropriate because: 1) insurers in China hold sub-debts mainly for regular fixed incomes, the common practice of company’s risk management for these bonds are, same as other bond investments, interst risks and credit risks. 2) the yields and risks of sub debts are also similar to other bonds, with asset values affected by market interest rates and defaults, it’s less like the equity investments; 3) the issuer and the issuance of sub-debts in China is highly regulated and the quality of issurers are often high. The subordination

					feature therefore is less a concern and it's common for insurers to treat them as common bond investments.
EIOPA	EIOPA	IAIS Member	No	Yes	We think that the segmentation of equities is appropriate. Increasing the number of buckets would add complexity in the global design of the framework with no obvious added value in terms of risk sensitivity. Moreover, it is quite difficult to find some representative data for some potential other equity classes, such as private equity, as it covers a large spectrum of realities.
BaFin	Germany	IAIS Member	No	Yes	
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	No	There should be 5th bucket for participations which were not consolidated.
Ageas	Belgium	Other	No	No	If capital charge between 'listed emerging markets ' and 'other equities' is only 1%, what is added value of this split? On the other hand, adding a bucket to reflect infrastructure equity would be more useful.
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	No	The higher single charge for "other equities" may be too severe given the range of risk that different fund strategies could employ. At a minimum, distinguishing between hedge fund, private equity, and others would be useful. We would expect the losses for hedge funds to be lower than public equities and the economic losses (if not reported fund NAVs) for many types of private equity to be higher.

Canadian Institute of Actuaries	Canada	Other	No	No	The “other equity” should also be divided into developed markets and emerging markets.
CLHIA	Canada	Other	No	No	The “Other Equity” category should be split into develop and emerging markets.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	We suggest further segmenting the other equity assets. There are various types of other equity assets in China, including investment funds, equity trust plan, asset management plan, non-listed equity, long-term equity investment, etc. As the implied risk and the company´s holding purpose are quite different, we think it is not appropriate to classify them as one single segment and use the unified parameter for risk measurement. Therefore, we suggest further segmenting the other equity assets and determine the parameters according to the volatility of the corresponding assets. Segmentation can be determined by local regulators according to the main equity asset types hold by the industry and then reviewed by IAIS. For instance, in China, the segmentation method can be determined by referring to C-ROSS implemented recently. In addition, subordinated debts are included in equity risk measurement and the parameters are set according to the rating. We believe that subordinated debts are purchased mainly for the fixed investment income and cash flow they generate based on the company’s holding purpose. Therefore, in terms of risk management, subordinated debts are mainly classified into bond assets for management. At the same time, the subordinated debts issued in China market are also more similar to bond assets rather than equity assets in terms of their yields and the risk characteristics. Consequently, we propose to classify the subordinated debts into bond assets and measure their interest rate risk and credit risk similar to other bond investments.
Institut des Actuaires	France	Other	No	No	The investements in direct equity infrastructure should be separated from other equity investments to reflect the lower risk. A large study has been lead by EIOPA in 2015 which conclude in lower stress calibration for equity infrastrure:

					https://eiopa.europa.eu/Publications/Consultations/EIOPA-BoS-15-223%20Final%20Report%20Advice%20infrastructure.pdf
Allianz	Germany	Other	No	Yes	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	As diversification in equity markets is present even under very unfavourable market conditions, we think that this feature should be captured in the model. This especially applies to very well diversified portfolios, i.e. over different countries, different segments etc. The consideration of a diversification benefit fosters a proper allocation.
Munich Re	Germany	Other	No	No	As diversification in equity markets is present even under very unfavourable market conditions, we think that this feature should be captured in the model. This especially applies to very well diversified portfolios, i.e. over different countries, different segments etc. The consideration of a diversification benefit fosters a proper allocation.
AIA Group	Hong Kong	Other	No	Yes	
International Actuarial Association	International	Other	No	Yes	It seems reasonable to us, although we would note that the extent of 'equity-ness' of a hybrid debt / preference instrument may vary considerably.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	No	• For example, investment to infrastructure and hedge funds have different risk profile and diversification effect with traditional bonds and equities. Such new investment product need additional buckets for them to reflect the risk profile and diversification benefit of them appropriately. We are ready to submit data about this proposal.
General Insurance Association of Japan	Japan	Other	No	Yes	

The Life Insurance Association of Japan	Japan	Other	No	No	・We would like the IAIS to introduce separated buckets for investments such as infrastructure and hedge funds, which have different risk characteristics from those of traditional bonds and equities, and have diversification effects.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	No	This may be appropriate for a standard approach. A more precise approach would be to make use of regulatory approved internal models.
MetLife	United States	Other	No	No	The segment “other equity” is too wide, as it classes diverse equity exposures such as hedge funds and infrastructure investments into one category. Infrastructure investments should be considered a separate asset sub-class as they have the potential to generate low volatility and are generally uncorrelated with other asset classes.
RAA	United States and many other jurisdicitons	Other	No	No	We believe the ICS standard formula should capture the concept that diversification is present even under very unfavourable market conditions. This especially applies to well diversified portfolios such as those held by many potential IAIG’s, which include diversification across many countries and industry segments. Appropriate consideration of equity risk diversification benefits will foster a proper equity allocation by IAIG’s.
Prudential Financial, Inc.	United States of America	Other	No	No	The “Other Equity” bucket is currently too broad. It would be a meaningful improvement to break this category into several buckets, identify the historical volatility of the sub-buckets, and calibrate the sub-bucket shocks based on this more granular level of detail. Further, the alternative categories could include hedge funds and private equity funds, which exhibit different risk profiles, especially within the context of a well-diversified portfolio.

MassMutual Financial Group	USA	Other	No	Yes	We find the four categories (listed developed, listed emerging, hybrid debt/preference shares and other equity) to be generally suitable. A potential enhancement would be to recognize that hybrid debt, preference shares, and other equity have inherent differences amongst developed and emerging countries, and further segregate on that basis.

Q174

Q174 Section 6.12.2.3	Should an equity volatility stress be included in the ICS standard method? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	IAIS Member	No	Yes	At the very least, insurers that write substantial amounts of variable annuity business or that deal with substantial amounts of equity options should determine the effects of an equity volatility stress.
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No		Volatility risk may be material for some insurance companies: as a consequence, we think that it might be useful to continue analysing the impact of such a risk on the total amount of the equity risk charge. If this risk proves to be material in some cases, the IAIS could consider including it in the ICS.
BaFin	Germany	IAIS Member	No	No	For simplicity reasons in the standard approach a stress should only be conducted on the level and not on the volatility component.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	Equity volatility stress should be included in order to capture the impact on asset and liability caused by value changes in equity derivative and embedded option in VA products and etc.

Ageas	Belgium	Other	No	No	Materiality would be low.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	We have no disagreement as the equity volatility is one of the main risk factors.
Insurance Europe	Europe	Other	No	No	Insurance Europe does not support an equity volatility stress. The stress on equity prices should already reflect the impact of volatility. In addition, the current multiplicative approach between the two stresses is very procyclical, as a low stress will arise when volatility is low and an unreasonably high stress will emerge when volatility is high.
Institut des Actuaires	France	Other	No	No	The inclusion of volatility stresses was already tested during the elaboration of Solvency II standard formula. The volatility stresses were removed to avoid inconsistency with the treatment of other assets. https://eiopa.europa.eu/Publications/QIS/EC-letter-to-CEIOPS-QIS5-CfA-20100706.pdf
Allianz	Germany	Other	No	Yes	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	
Munich Re	Germany	Other	No	Yes	To properly reflect the risk of hedging instruments / derivatives a volatility shock should be used.

Global Federation of Insurance Associations	Global	Other	No	No	Calibration levels used for equity prices stress are supposed to take into account also the volatility stress, or they should do so. This is the case in other prudential regimes like solvency II in Europe with the same calibrations which had tested the option to distinguish between prices and volatility and proved limits of this method. Indeed, requiring for the ICS calculation in the equity module 2 different stresses making a distinction between prices and volatility is not founded an could lead to exaggerated capital requirement by double counting the targeted risk to be covered in this risk module.
AIA Group	Hong Kong	Other	No	Yes	This is a real risk for certain types of business that is not captured in the current version of the ICS.
International Actuarial Association	International	Other	No	Yes	Some insurers have business models that use equities (and a variety of other non-fixed income – NFI – assets, such as derivatives, real estate, timber, oil and gas, etc.) to support their life and annuity obligations. The challenge in designing a stress is that for the risk exposure to be material it has to be a sustained high equity volatility which, in the long run would raise the cost of the hedges and thus becomes a question about long run mean reversion of equity volatility. Under a market value framework, this leads to pro-cyclical capital charges as today's volatility (and the applied shock) is maintained throughout the future valuations and will often be either too high or too low from an actual realized point of view. If only a one time shock is applied, then the risk would not be material. This same issue applies to the more commonly understood challenge of what to do with long term interest rates and if there is a mean reversion for long term rates. So conceptually, a similar discussion of whether to assume long run means reversions and if so, how to adjust them needs to be part of the discussion before choosing how to set the stress(es). We agree that the risk exposure is as is being proposed (where the stress looks at both a fall in value and a rise in volatility). However, the challenge is in setting stresses that would realistically reflect the actual longer term risks.

Dai-ichi Life Holdings, Inc.	Japan	Other	No	No	・If the contract does not have a significant optionality, there is no need to introduce volatility stress. The introduction of an equity volatility stress increases the complexity of the calculation, computation load, and processing time dramatically even if IAIG introduce new IT system.
General Insurance Association of Japan	Japan	Other	No	Yes	We support the approach used for the 2016 Field Testing. As for cash equity, a factor-based approach should be taken which does not explicitly consider volatility stress. For risk measurement of liabilities that require assessment of options such as variable annuities, equity volatility stress should be considered.
The Life Insurance Association of Japan	Japan	Other	No	No	・We believe a stress on volatilities should be considered if material optionality is inherent in contracts, but it is not needed in the absence of material optionality. ・Implementation of a volatility stress would result in a significant increase in implementation complexity, IT set up tools, and calculation time.
Swiss Re	Switzerland	Other	No	Yes	Equity volatility impacts the valuation of real and embedded derivatives (e.g. options). Therefore it is reasonable to consider an equity volatility stress.
Aegon NV	The Netherlands	Other	No	No	Aegon suggests that if dynamic hedging cannot be reflected, no volatility shock should be included either as the two are closely related. Including one, but not the other would lead to significantly skewed results and a severe misrepresentation of the risks on an insurer's balance sheet. This would impact some companies, but not others, and therefore it would negatively impact comparability. If the IAIS believes a simplification on the disallowance for dynamic hedging is justified, it should do so similarly for volatility risk. Inclusion of both could be considered for future versions of the ICS. Considering the IAIS has clearly indicated credit for dynamic hedging is not in scope for ICS 1.0, such a decision should equally be made for volatility risk (both for equity and interest rate).

Prudential Financial, Inc.	United States of America	Other	No	Yes	An equity volatility stress is an appropriate stress for determining Variable Annuity required capital. Prudential's primary concern with the equity volatility stress is with regards to design and calibration. It is not appropriate to prescribe the use of implied volatility for the valuation of Variable Annuity liabilities. Variable Annuity liabilities do not exhibit the liquidity or relatively short-term tenor of the market traded assets used to calculate implied volatility. Historical volatility is therefore a more appropriate measure for determining liability valuations and equity volatility shocks for Variable Annuities. Furthermore, the IAIS currently prescribes equity volatility shocks that are excessive and impact too long of a period. A shock of approximately 50% to a single short-term tenor or one year or less would appropriately capture the equity volatility exhibited in the recent financial crisis, which we consider an appropriate basis for calibration.
MassMutual Financial Group	USA	Other	No	Yes	We are generally supportive of an equity volatility stress. Equity volatility is a real risk in the market that is relevant to many if not all firms. While we are supportive of the concept of an equity volatility stress, we also advocate that it is calibrated appropriately. We did not feel this was the case for 2015 field testing, but commend the change in the equity volatility stress utilized for 2016 field testing.

Q175

Q175 Section 6.12.2.3 Is the design of the equity volatility stress in 2016 Field Testing appropriate? If “no”, please provide specific suggestions, as well as supporting rationale and evidence.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	IAIS Member	No	No	The stress could be further reduced at longer durations.
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No	Yes	The equity volatility stress design is appropriate. The design has been refined for the 2016 Field Testing to differentiate volatility shocks at different tenors, and the total capital charge held for the volatility risk has thus been reduced, as the shocks calculated for longer tenors are lower than the former unique one calculated for a short-term tenor. Some further refinements could of course be made but they could induce some useless complexity to the global framework without adding any obvious risk sensitivity benefit.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
Ageas	Belgium	Other	No	No	Materiality would be low compared to operational complexity.

Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	
Insurance Europe	Europe	Other	No	No	The volatility stress should be removed.
Institut des Actuaires	France	Other	No	No	Cf. Q174
Allianz	Germany	Other	No	Yes	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	Volatility stresses should be based on a high granularity (similar Q172).
Munich Re	Germany	Other	No	No	Volatility stresses should be based on a high granularity (similar Q172).
Global Federation of Insurance Associations	Global	Other	No	No	Volatility stress should be removed. Beyond economic side, that would lead to unintended complex implementation.
AIA Group	Hong Kong	Other	No	Yes	
International Actuarial Association	International	Other	No	Yes	
General Insurance Association of Japan	Japan	Other	No	Yes	

Swiss Re	Switzerland	Other	No	Yes	
MetLife	United States	Other	No	No	In 2016 field testing, the shock for tenors above 48 months is the same as the shock for the four year tenor. This results in excessive shocks for longer tenors, which should have lower volatility than shorter tenors. The lower volatility for shorter tenors is supported by supported by observable market data and theory. Our proposed alternative shocks are given below (shocks based on the S&P 500) 60 months: 66%, 72 months : 59%, 120 months: 42%, 180+ month: 0% What is more, the equity volatility shocks do not differentiate between different equity indices. A more granular segmentation of the equity volatility shocks would lead to a more appropriate calibration of the shocks and capital. Lastly, it is assumed that the equity level shock and equity volatility shock is 100% correlated. However, these two shocks are likely to be only 60%-75% correlated.
Prudential Financial, Inc.	United States of America	Other	No	No	We do not believe an instantaneous shock is appropriate for determining the capital impact. Regulatory equity market circuit breakers limit one-day losses to 20% for any exchange traded security, making an instantaneous 35% loss impossible. To achieve the equivalent of a 35% instantaneous shocks, the shock should be spread over multiple days (e.g. a -20% price shock in day one and a -18.75% price shock in day two).
MassMutual Financial Group	USA	Other	No	Yes	

Q176

Q176 Section 6.12.2.3 Is the multiplicative approach suitable for the ICS standard method? Please explain. If “no”, please highlight the key design and data considerations for developing an alternative approach (eg additive volatility stress).

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No	Yes	The multiplicative approach has the advantage of simplicity. Ideally, one should replicate the way the volatility surface changes after stress. The volatility surface indeed flattens out and sometimes even inverts in times of stress. As a consequence, using a simple multiplicative or additive approach will not capture perfectly those features. The new multiplicative approach used enables to replicate the fact that different tenors have different change magnitudes. Moreover, the changes for the volatility surface stemming from the multiplicative approach proposed this year are quite reasonable when compared to historical data. As a consequence, we think that the multiplicative approach is a good compromise between simplicity and the goal to provide the ICS framework with quite realistic scenarios.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
Ageas	Belgium	Other	No	Yes	

Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	We have no disagreement with this approach but we recommend doing the calibration based on the market data of each country.
Institut des Actuaires	France	Other	No	No	Cf. Q174
Allianz	Germany	Other	No	Yes	Applicable since the relative stress is multiplied by the respective base volatility and not creating distortions (as a fixed one-fits-all absolute shock would do).
Munich Re	Germany	Other	No	No	A factor based multiplicative approach does not take account for different volatility curves.
Global Federation of Insurance Associations	Global	Other	No	No	The equity volatility stress in the field testing (72% multiplicative) is too high, and an additive approach should be used instead to reduce procyclicality.
AIA Group	Hong Kong	Other	No	Yes	We believe a multiplicative approach is superior because it automatically adjusts for the level of the market.
International Actuarial Association	International	Other	No	Yes	Volatility tends to exhibit noticeable autocorrelation and tends to change more in times of stress (which are typically associated with high volatility) than in times of calm. Therefore, a multiplicative approach seems sensible, perhaps with a floor to avoid being too optimistic when volatility is particularly calm.
General Insurance Association of Japan	Japan	Other	No	Yes	
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA

Swiss Re	Switzerland	Other	No	Yes	This may be appropriate for a standard approach. A more precise approach would be to make use of regulatory approved internal models
Association of British Insurers	United Kingdom	Other	No	No	The equity volatility stress in the field testing (72% multiplicative) is too high. An additive approach should be used instead of the current multiplicative approach as the multiplicative approach is highly pro-cyclical (i.e., very low stresses will arise when volatilities are low and unrealistically high shocks will arise when volatilities are high).
RAA	United States and many other jurisdicitons	Other	No	No	A factor based multiplicative approach does not consider different volatility curves. The equity volatility stress of 72% multiplicative in the field testing specifications appears too high.
Prudential Financial, Inc.	United States of America	Other	No	No	Prudential believes that shocking a single short-term volatility tenor to a level exhibited during the financial crisis will result in a stress design that is easy to implement with appropriate calibration.
MassMutual Financial Group	USA	Other	No	Yes	

Q177

Q177 Section 6.12.2.3 Is the treatment of long-term equity investments appropriate? Please explain. If “no”, how should they be treated differently and what criteria should be used to define long-term equity investments? Please highlight key design features and provide supporting evidence (including data).

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	No	Two additional buckets should be added: strategic participations and infrastructure finance.
China Insurance Regulatory Commission	China	IAIS Member	No	No	The main purpose of holding long term equity investments for insurers in China is to have regular and stable longer term cash flows to manage the long term liabilities, rather than equity growth. So the risk charge should be at least smaller than listed equities. In addition, as answered in Q173, we suggest ICS consider more detailed categoriations for equity investments in China.
EIOPA	EIOPA	IAIS Member	No		It is very complex to identify and clearly define some categories of long-term investments for which a specific treatment within the ICS could be prudentially justified based on evidence. Some further studies should be conducted on that issue. For example, a specific capital charge for infrastructure corporates equities would not lead to any obvious differentiated treatment. Some EIOPA studies have indeed shown that the empirical value-at-risk (VaR) 99.5% based on 12-month returns between 2000 and 2015 for a portfolio of selected European infrastructure corporates equities

					(both listed and unlisted) is close to 36%. Given that: - the equity downward stress for listed shares in developed markets is 35% in the ICS and thus really close to the 36% stress ; - it would be very difficult to find some infrastructure corporates unlisted equities data in emerging markets ; - the criteria to be met to benefit from any specific infrastructure corporates unlisted equities stress would be quite strict and require some important analysis for companies and supervisory authorities it doesn't seem necessary to introduce a different treatment for this specific class of (long-term) assets.
BaFin	Germany	IAIS Member	No	Yes	For simplicity reasons this is appropriate. A specific stress for infrastructure investments would probably result in a comparable stress factor.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	No	Long term equity investment could be identified by strategic nature – it is subsidiary or participation, holding equity in this subsidiary/participation is in strategy of (re)insurer, (re)insurer has its members in supervisory board or in management board.
Ageas	Belgium	Other	No	No	If purpose is to reflect the potential market value change over a 1 year horizon, no difference should be made between short or long term equity investments.
Canadian Institute of Actuaries	Canada	Other	No	Yes	

Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	The purpose of holding long-term equity investments is different from holding stocks and investment funds, it is focused more on long term stable returns or annual dividend income. The volatility of long-term equity investment returns is less compared to stocks, so we suggest set a separate risk factor for these assets. For China, we recommend referring to C-ROSS for the segmentation of equity investments as well as the parameter calibrated.
AMICE, Association of Mutuals and CooperativesinEurope/ICMIF,International Cooperative and Mutual Insurance Federation.	Europe	Other	No	No	For the insurer the ability to adopt and maintain a long-term view in the management of assets is provided by the duration of the liabilities at large, in a sort of weighted average, including free surplus with long durations. Insurers managing their assets with a long term view are not exposed to forced sales on a one-year basis and the short-term volatility of assets is" hedged" by the duration of the holdings through the percentage of target asset allocation (common stocks). Such asset management strategies permit enhanced diversification of the asset portfolio improving key indicators such as profitability, liquidity and solvency. They also lead to a countercyclical investment behaviour whereby insurers not only avoid forced sales but actively manage their assets on the underlying risk factors of the assets usually leading to investment phases where markets are undervalued and disinvestment phases where markets are overvalued. Therefore, the calibration of capital requirements should reflect the true level of risks for insurers with long term holdings. Typically, the volatility of common stocks decreases in proportion to the length of the term. This represents very significant different levels of risks, roughly halving the capital requirement.
Insurance Europe	Europe	Other	No	No	Long-term equity investments should have a more tailored capital treatment, reflecting the cases where insurers have the ability to hold these assets for a long term. An insurer's ability to adopt and maintain a long-term view in the

					management of assets is a direct consequence of the long duration of liabilities. Insurers managing their assets with a long term view are not exposed to forced sales on a one-year basis and the short-term volatility of assets is" hedged" by the duration of the holdings, including in the case of common stocks. Such asset management strategies allow for an enhanced diversification of the asset portfolio improving key indicators such as profitability, liquidity and solvency. They also lead to a countercyclical investment behaviour whereby insurers have the ability to buy when everyone else is selling. Therefore, the calibration of capital requirements should reflect the true level of risks for insurers with long term holdings. Typically, the volatility of common stocks is much lower if assessed in a long-term perspective. Such an approach would in fact lead to a much lower calibration of equity held long-term.
Institut des Actuaires	France	Other	No	No	Long-term investments shoud have a specific calibration of the stress. The study was already done for the calibration of Solvency II standard formula: https://eiopa.europa.eu/Publications/QIS/CEIOPS-Calibration-paper-Solvency-II.pdf
Allianz	Germany	Other	No	No	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	There should be a special treatment of long-term investments, e.g. investments in infrastructure. Such assets are less risky than other equities. Moreover, as a long-term investor the insurance undertaking is not subject to short-term fluctuations.
Munich Re	Germany	Other	No	No	There should be a special treatment of long-term investments, e.g. investments in infrastructure. Such assets are less risky than other

					equities. Moreover, as a long-term investor the insurance undertaking is not subject to short-term fluctuations.
Global Federation of Insurance Associations	Global	Other	No	No	Long-term equity investments should have appropriate treatment with adapted calibration. The long term holding of these assets and the liabilities should be considered with a more specific calibration depending on the duration and the minor volatility of these assets. The standard equity calibration cannot be adapted to long-term investments with specific characteristics (higher quality, lower volatility, long term holding and strategic feature) that should be recognised and taken into account.
AIA Group	Hong Kong	Other	No	Yes	
International Actuarial Association	International	Other	No	Yes	As per our answer to Q170, the most suitable answer to this question depends on the extent to which it is considered socially desirable to promote insurer investment in such assets and we do not express an opinion on this matter.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	No	・Risk reduction of long-term investment should be considered to promote long-term investment and stabilization of financial systems. We recommend that ICS adopt an approach like Duration-based approach in Solvency II. When it is adopted, the approach should be applied not only to the group annuity segmentation but also other sections with stocks for long-term holdings corresponding to the long-term liability duration. In Japan, insurance companies have stocks for long-term holdings not only in the group annuity segmentation but also in the individual insurance segmentation. The average duration for which Japanese life and non-life insurance companies have stocks is about 16 years.

					・Similarly, we recommend that ICS adopt the risk reduction of infrastructure investment in Solvency II.
General Insurance Association of Japan	Japan	Other	No	Yes	It is unnecessary to make adjustments to the treatment of long-term equity investments.
The Life Insurance Association of Japan	Japan	Other	No	No	・We believe the IAIS should consider the introduction of measures to lower the risk charges for long-term investment assets in order to promote long-term investment and stabilisation of the financial system. ・The application of measures that are equivalent to the duration-based approach under the preceding EU Solvency II could be considered for the ICS as well. Such measures should cover not only the group pension segment, but also segments for which equities are held on a long-term basis to match the long-term duration of liabilities. In Japan, equities are held on a long-term basis to match the long-term duration of liabilities associated with the individual insurance segment as well as the group pension segment. Life and non-life insurance sectors in Japan hold equities for sixteen years on average. ・Additionally, we would like the IAIS to consider the introduction of measures to lower the risk charges applicable to infrastructure investments by insurers, as the EU Solvency II has already adopted such measures.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	Yes	There should be no differentiation in the treatment of "long-term" and "short-term" equity investments. In particular with equities, we are convinced that no methodology can provide reliable insights into the

					future development of equity prices – regardless of the intended holding period of the equity investment. Therefore, all price movements should be fully recognized for all equity investments.
RAA	United States and many other jurisdicitons	Other	No	No	Strategic investments should receive separate risk factors since they would typically be of higher quality, have lower volatility and because they intended as very long term holdings of the IAIG.
Prudential Financial, Inc.	United States of America	Other	No	No	To reflect the long-term buy and hold nature of insurer investments, we believe long-term equity investments should not be shocked under the GAAP Plus approach. The AOCI adjustment as currently defined will capture a significant portion of non-economic volatility given the high proportion of bonds in insurers' invested asset portfolios. However, there are other components of AOCI which, similar to unrealized gains/losses on AFS bonds, contribute non-economic volatility to GAAP equity. For instance, insurers often invest in equities to support "tail" liability cash flows beyond the hedgeable space (beyond the last liquid, observable point on the yield curve) and roll these investments into bonds as the cash flows move into the hedgeable space. As such, the unrealized gains/losses on equity investments are a form of non-economic volatility on the balance sheet. In general, unrealized gains/losses are non-economic – the "economic" impact occurs when the gain/loss is realized, i.e., when the asset is sold. As such, we believe a simple and transparent approach would be to exclude all AOCI in the GAAP Plus basis and leverage other supervisory tools such as stress testing, liquidity risk management standards, ORSA and other tools to provide transparency into asset-liability management and any timing and/or liquidity mismatches on the insurer's balance sheet. Reflecting the GAAP Plus AOCI Adjustment in the base balance

					sheet instead of as an adjustment to available capital will result in a better measurement of economic risk on an insurer's balance sheet.
MassMutual Financial Group	USA	Other	No	Yes	We do not believe equity investments that may be held as a 'long term' investment should be handled differently. While we are supportive of the concept of the 'AOCI Adjustment' as it relates to bonds being held to maturity for GAAP+, equity investments have different features which make the concept less applicable. There is no maturity date, and future cash flows are generally unknown.

Q178

Q178 Section 6.12.2.3 Is there evidence that supports the application of a correlation matrix for determining the Equity risk charge? If "yes", please provide evidence supporting suggested correlations.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	Yes	
China Insurance Regulatory Commission	China	IAIS Member	No	No	
EIOPA	EIOPA	IAIS Member	No		Research on this topic points to the existence of high correlations between equity classes and geographical markets. Therefore this is an area where the additional complexity stemming from the introduction of a correlation matrix needs to be carefully considered against the increased accuracy which it would introduce. EIOPA believes that some diversification between assets classes may be more justifiable than across geographical markets.
BaFin	Germany	IAIS Member	No	Yes	
Financial Supervisory Service	Korea	IAIS Member	No	No	

Ageas	Belgium	Other	No	Yes	Based on historic data, a correlation could be deduced.
Canadian Institute of Actuaries	Canada	Other	No	No	
CLHIA	Canada	Other	No	No	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	Equity assets include subordinated debts and alternative investments, whose volatilities are not similar to those of stock index, so a certain level of correlation should be considered. Especially, subordinated debts mainly depend on the solvency status of the issuers and the bond market, while long-term equity investments rely on the individual company's performance and is not directly correlated with the entire equity market. Therefore, these two types of assets cannot be aggregated through simple addition.
Allianz	Germany	Other	No	Yes	In general based on historic time series significant diversification for traded equities is only visible for geographically diverse regions, e.g. Asia and Europe, so the buckets for listed equity should show a higher correlation within the respective buckets but should provide some diversification effect between them. For the "other"-bucket it depends on the nature of investments contained. Infrastructure investments with no exposure to the financial markets and especially those that show a low risk profile should in contrast provide a visible diversification benefit to other equity buckets.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	The Equity risk charge should not reflect the simultaneous application of equity stresses across all segments. This would not penalize portfolios with high concentrations.
Munich Re	Germany	Other	No	Yes	The Equity risk charge should not reflect the simultaneous application of equity stresses across all segments. This would not penalize portfolios with high concentrations.

AIA Group	Hong Kong	Other	No	Yes	We have no hard data we can point to but believe these are not 100% correlated.
International Actuarial Association	International	Other	No	Yes	As per our answer to Q169 we believe that diversification is generally applicable and therefore some correlation matrix style approach may be justifiable. However, in times of stress correlations may become high, so the justified amount of diversification offset may not be particularly high.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	Yes	・Correlation coefficients among the four different equity buckets seem to be around 0.5 - 0.8. We are ready to submit data about this proposal.
General Insurance Association of Japan	Japan	Other	No	No	
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	Yes	Under highly adverse scenarios generally high correlations are possible – e.g the financial crisis of 2007/2008. A more sophisticated approach than a simple correlation matrix would be to allow the use of regulatory approved internal models. This would make possible the use of more sophisticated correlation modelling approaches, for instance copulas.
MassMutual Financial Group	USA	Other	No	Yes	In a 99.5% equity stress scenario, we believe it is fair to assume there is unequal stress across all four buckets, meaning there is a diversification benefit. Citing 2008-2009 as an example, when developed equity markets were stressed, the stress impact in emerging markets was benign.

Q179

Q179 Section 6.12.2.3 Should the Equity risk charge include a countercyclical measure to reduce pro-cyclical behaviour? Please explain. If “yes”, how should such a measure be designed and calibrated? Please highlight key data considerations where relevant.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	The cyclyical impact generated by short term market voaltilies can lead to signifincat and continuous market downfalls, we strongly recommend use countercyclical management measures in ICS. C-ROSS uses countercyclical adjustment for equity risks as following: when an equity has significant gains, the standard risk factor is increased by x%, in contrast when the equity has significant losses, the standard risk factor is decresed by x%.
EIOPA	EIOPA	IAIS Member	No	Yes	For each equity stress, an equity “dampener” could be used in order to mitigate any pro-cyclical effect. In order to specify such a dampener, a formula based on the difference between the level of the equity index used for the calibration of the stress and the weighted average of the daily levels of this index over the last x months (with x equals e.g. 36 to 60) could be used. In the case the index used for stress calibration cannot be used for calculating the dampener for confidentiality reasons (the dampener being potentially a publicly available indicator), another index could be created. This index could for example measure the market price of a diversified portfolio of equities representative of the nature of equities held by insurance and reinsurance undertakings subject to the ICS.
BaFin	Germany	IAIS Member	No	Yes	

Financial Supervisory Service	Korea	IAIS Member	No	No	
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	Equity is valued at fair value under ICS and so the adjustments would need to be made to the risk charge to address pro-cyclicality.
Ageas	Belgium	Other	No	Yes	Although this countercyclical measure might historically not been confirmed and as such not lead to the exact capital loss that might be realised over the horizon of 1 year, this is a policy decision which allows to avoid or at least mitigate pro-cyclical behaviour.
Canadian Institute of Actuaries	Canada	Other	No	No	The purpose of required capital is to provide a margin in all instances, including any stage of an economic cycle.
CLHIA	Canada	Other	No	Yes	Depending on the final design of the ICS, (all) countercyclical measures should be considered to the extent needed to mitigate any otherwise sources of inappropriate volatility in the ICS.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	We should consider the counter-cyclical adjustments to reflect the volatilities of different equity markets. For instance, if the market index falls to a certain level compared to the average of past few years, the probability of its further falling will decline significantly. Therefore, we recommend ICS reference to the C-ROSS counter-cyclical adjustment approach, which consider the historical performance of equity assets on top of the risk factors. For example, if the stock index falls to a certain level, the risk factor will decrease by X%; if the stock index rises significantly compared to the average level, the risk factor will increase accordingly.
Insurance Europe	Europe	Other	No	Yes	A symmetric adjustment taking into account the market volatility under the equity cycle should be introduced as a countercyclical measure to reduce pro-cyclical behaviour during stressed periods. This adjustment should be based on a function of

					the current level of an appropriate equity index and a weighted average level of that index.
Institut des Actuaires	France	Other	No	Yes	The inclusion of countercyclical measure to reduce pro-cyclical behavior should be considered and established considering the following objectives (CEIOPS analysis during Solvency II calibration): - allow sufficient time for undertakings to rebalance their profile in a stressed scenario; - avoid unintended pro-cyclical effects (in particular a rise in the equity charge in the middle of a crisis); - ensure that the equity charge remains sufficiently risk sensitive; - prevent fire sales of assets; - avoid undertakings having to adjust their risk profile frequently solely as a result of movements in the equity capital charge; - avoid any incentive to invest in one or the other asset class; - allow the adjustment to be set independently of the standard equity stress.
Allianz	Germany	Other	No	Yes	Stresses should be calibrated on a through the cycle view and depending on the equity market situation an adjustment to the stress factor should be made in order to limit pro-cyclical behaviour. For details see the calibration of the symmetric adjustment in Solvency II.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	
Munich Re	Germany	Other	No	No	
Global Federation of Insurance Associations	Global	Other	No	Yes	A symmetric adjustment taking into account the market volatility under the equity cycle should be introduced as a countercyclical measure to reduce pro-cyclical

					behaviour during stressed periods. Methodologies from Solvency II could be taken as examples to build this adjustment.
AIA Group	Hong Kong	Other	No	Yes	Yes, we believe that such an approach makes sense.
International Actuarial Association	International	Other	No	Yes	As per our answer to Q170 and Q177, the most suitable answer to this question depends on the extent to which it is considered socially desirable to promote insurer investment in such assets or in this case to avoid fire-sales in times of equity market stress. We recommend that IAIS take soundings from bodies specifically charged with responsibility for financial stability before reaching a firm conclusion on the merits of such adjustments and (if they are present) how they might best be structured.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	Yes	・Like symmetric adjustment in Solvency II, a countercyclical measure to reduce pro-cyclical behavior should be implemented to avoid huge wave of risk-off trend in an economic recession.
The Life Insurance Association of Japan	Japan	Other	No	Yes	・We believe the IAIS should introduce a measure that enables Equity risk charge to be compressed when the level of equity prices decline, in order to avoid sharp risk-off situation during a stressed period. Similar method was introduced under the EU Solvency II called “the symmetric adjustment”.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	IAIS could reduce the risk charge by a derived percentage change of a recognised index. Such countercyclical measure should be applied to equities that are not held for trading only.
Swiss Re	Switzerland	Other	No	No	In particular with equities, we are convinced that no methodology can provide reliable insights into the future development of equity prices – and this would be

					necessary for such a measure to work effectively. Therefore all price movements should be fully recognized for all equity investments.
Prudential Financial, Inc.	United States of America	Other	No	No	Consistent with our response to question 177, insurers typically hold long-term equity investments over the course of a risk cycle because they support long-term liabilities. As such, it would be inappropriate to apply a risk charge since insurers do not actively trade their long-term equity investments. Equities which insurers trade more actively are largely limited to derivatives used to hedge market risk associated with certain liabilities. To the extent that an insurer's risk profile may change over the course of the risk cycle, incorporating appropriate guidance on how to determine hedge instrument prices in the future would be a more effective and easily implemented modification to the ICS than an addition of a countercyclical capital construct.
CNA	USA	Other	No	Yes	
MassMutual Financial Group	USA	Other	No	No	
Northwestern Mutual Life	USA	Other	No	Yes	Yes. It has been recognized for some time in the US that asset exposure measured at market value (like equities in the US system) can present a risk of pro-cyclical behavior. Equities are a good example when unrealized appreciation in favorable economic times can lead to higher ICS – type ratios and an attendant desire to increase policy or shareholder dividends, or risk-taking behavior that may not be sustainable if the unrealized appreciation reverses. Ideally, one would want to conserve a portion of available capital during favorable economic times for use during stress conditions. To avoid adding needless complexity you could use a simple approach applicable for any asset or liability that presents the risk of pro-cyclical behavior arising from its periodic valuation and impact on capital resources as follows:

					• A portion of capital resources could be earmarked exclusively for loss absorption on the ICS balance sheet (call it a “loss absorption reserve”). • A target level would be established and periodically updated by applying factors calibrated to the historic volatility of the carrying values of the assets or liabilities. • The loss absorption reserve would be funded from un-earmarked capital resources in increments (20% is used in the US) each period in favorable economic times thus increasing the reserve. • When losses arise, the target level declines and the funding reverses automatically in increments with earmarked reserve amounts returned to un-earmarked capital resources. A functioning example of this is called the Asset Valuation Reserve in the US. The approach is counter-cyclical; reserving capital during favorable economic conditions for loss absorption during stress conditions. It is funded from existing capital resources which reduces the risk of insurers paying excessive dividends or taking excessive risks as balance sheet amounts change in favorable economic times. We believe that this encourages responsible financial management and dividend policy through economic cycles.

Q180

Q180 Section 6.12.2.3	Are the current approaches in the ICS appropriate for products with path dependent valuations? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	IAIS Member	No	Yes	Instantaneous shocks do not capture path dependence, especially if a feature is triggered due to an equity increase (e.g. resets within variable annuities). However, there is less likelihood of a reset-triggering equity increase followed by a sharp decrease over a one year time horizon than over a contract's lifetime, and the fact that an increase has occurred will temper the amount of a decrease at the solvency confidence level. The current ICS approach is therefore acceptable, as it captures the most significant risk of an equity downturn, even if it fails to capture the lesser risk of an equity increase followed by a downturn.
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No		The current ICS approach doesn't in theory allow for a perfect recognition of path dependencies. However, developing a new approach for path dependent products would require a full specification of scenario paths. In our view, this would excessively increase the complexity of the standard formula, with a benefit in terms of accuracy that is not obvious.

BaFin	Germany	IAIS Member	No	Yes	From a simplicity perspective they are.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	Stress shock is applied on both asset and liability in the risk calculation measured by changes in NAV(or BOF); hence the valuation is already path dependent. However, it is difficult to tell how asset and liability will interact each other for all companies, and therefore, it is suggested that each company should come up with their own way of interacting asset and liability in their projection model.
Ageas	Belgium	Other	No	Yes	On a 1 year horizon, this should be appropriate.
Canadian Institute of Actuaries	Canada	Other	No	No	For products such as variable annuities, the effects of, for example, policyholder lapse rates or management actions where these are allowed, should be included.
CLHIA	Canada	Other	No	No	Where relevant, the impact of policyholder lapse rates and management actions should be incorporated.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	We have no disagreement from the perspective of implementation.
Allianz	Germany	Other	No	No	Complex path dependent products by nature require stochastic simulations for determining the outcome. Simple parametric stresses can only capture such behaviour if they are applied to sensitivities that are derived from stochastic models reflecting the path dependency.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	

Munich Re	Germany	Other	No	Yes	
International Actuarial Association	International	Other	No	Yes	We agree with the theory set out in paragraph 523 but would caution that trying to capture all such effects may lead to an excessively complicated ICS. It may be that the only practical way of addressing such risks in a fairly robust fashion is via an internal model type of approach.
General Insurance Association of Japan	Japan	Other	No	Yes	When management actions are specified according to market movements, it is necessary to conduct path dependent valuations. In order not to make calculation too complex, the current approaches may be acceptable, though they are not always appropriate.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	No	The instantaneous stresses applied in the standard method is inherently incapable of accounting for path-dependent valuations. Regulatory-approved internal models are better suited for this.
Aegon NV	The Netherlands	Other	No	Yes	Consistent with our belief that the ICS should prioritize simplicity, Aegon supports the current stress approach over path-dependent approaches. We acknowledge that a stochastic approach might lead to more refined risk analysis of certain products. However, the practical advantages of the current stress approach are valuable and, in our view, outweigh the theoretical benefits of a stochastic approach. Because the current stress approach is straightforward to understand, describe, and model, it promotes consistency and comparability. In our experience, stochastic approaches tend to overemphasize the risks—such as market risks—that lend themselves to stochastic modelling and underemphasize other risks. If there are circumstances under which a stress approach produces unrealistically low capital requirements for products that have significant tail risk, we could support work to develop a factor to ensure that the resulting ICS capital is not unrealistically

					low. Furthermore, such situations can be addressed under the ORSA or other forms of stress testing as part of the wider ComFrame set up.
Prudential Financial, Inc.	United States of America	Other	No	No	Looking through the ICS consultation to the Field Test specifications we note that they are contradictory with regards to the assumptions used to determine MAV liabilities that rely on path-dependent valuation methodologies. The Field Test specifications state that GAAP methodologies that generally align with MAV methodology are sufficient for determining MAV liabilities, but in the same section state that MAV prescribed discount rates and implied volatility need to be used to determine the liability. Prudential believes fair value GAAP methodologies with adjustments are appropriate for use in both MAV and GAAP Plus, and the ICS should clearly state this.
MassMutual Financial Group	USA	Other	No	Yes	

Q181

Q181 Section 6.12.2.3	Does the ICS capture all of the material risks for these types of contracts? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
EIOPA	EIOPA	IAIS Member	No		Further analysis on that issue should be conducted.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
Ageas	Belgium	Other	No	Yes	First order impact should be sufficient on a 1 year horizon given the low materiality of such contracts.
Canadian Institute of Actuaries	Canada	Other	No	No	For products such as variable annuities, the effects of, for example, policyholder lapse rates or management actions where these are allowed, should be included.
CLHIA	Canada	Other	No	No	
Allianz	Germany	Other	No	Yes	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	

Munich Re	Germany	Other	No	Yes	
International Actuarial Association	International	Other	No	Yes	See answer to Q180.
General Insurance Association of Japan	Japan	Other	No	No	Because risks vary depending on each insurer's product features and management actions, it is impossible to capture all of the material risks for these types of contracts.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	No	See the response for question 180 above.
Prudential Financial, Inc.	United States of America	Other	No	Yes	
MassMutual Financial Group	USA	Other	No	Yes	

Q182

Q182 Section 6.12.2.3 Are there alternative approaches that would capture path dependent Equity and Interest Rate risk? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	IAIS Member	No	No	While using stochastic scenarios over the ICS time horizon would capture variable annuity resets, such scenarios would only be applicable to specific assets and products that have significant path dependencies, and would be too onerous to apply to the entire balance sheet. The use of multiple scenarios fits better within an internal models approach rather than a standardized approach.
EIOPA	EIOPA	IAIS Member	No	No	In our view, there is no simple alternative to capture path dependent equity and interest rate risk that could be potentially included in a standard formula.
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	No	
Canadian Institute of Actuaries	Canada	Other	No	Yes	All material assumptions should be included.
CLHIA	Canada	Other	No	Yes	

Allianz	Germany	Other	No	No	Given the diverse business profiles of participating companies, other than running a full stochastic simulation there are no simplified ways of providing a comparable measure capturing the path dependency stemming from policyholder behaviour and management actions under multiple market movements for the huge variety of products.
International Actuarial Association	International	Other	No	Yes	See answer to Q180.
General Insurance Association of Japan	Japan	Other	No	No	
Great Eastern Holdings Ltd	Singapore	Other	No	No	NA
Swiss Re	Switzerland	Other	No	Yes	See the response for question 180 above.
MassMutual Financial Group	USA	Other	No	No	

Q183

Q183 Section 6.12.2.4 Are there any further comments on Equity risk that the IAIS should consider in the development of ICS Version 1.0? If “yes”, please explain with sufficient detail and rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	No	
Insurance Bureau of Canada	Canada	Other	No	Yes	We believe that that a factor-based approach is more appropriate for ICS Version 1.0. Equity investments are typically not matched with policy liabilities in the property and casualty insurance industry.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
Insurance Europe	Europe	Other	No	Yes	The IAIS should investigate a more tailored capital treatment for infrastructure assets and strategic investments.

Allianz	Germany	Other	No	No	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	The applied stresses should depend on the specific portfolio of an insurer. For well diversified portfolios the calibration of the field test is considered as too conservative.
Munich Re	Germany	Other	No	Yes	The applied stresses should depend on the specific portfolio of an insurer. However, for well diversified portfolios we consider the calibration of the field test as too conservative.
AIA Group	Hong Kong	Other	No	No	
Dai-ichi Life Holdings, Inc.	Japan	Other	No	Yes	・Infrastructure investment and hedge funds have risk profiles and diversification benefits, which are different from those of traditional investment such as bonds and equity. For infrastructure investment, hedge funds and the like, please set separate segments and reflect those risk profiles and diversification benefits.
General Insurance Association of Japan	Japan	Other	No	No	
The Life Insurance Association of Japan	Japan	Other	No	Yes	・We would like the IAIS to introduce separated buckets for investments such as infrastructure and hedge funds, which have different risk characteristics from those of traditional bonds and equities, and have diversification effects.
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	No	

MassMutual Financial Group	USA	Other	No	No	

Q184

Q184 Section 6.12.3.2 Is the approach adopted for Real Estate risk in 2016 Field Testing appropriate for the ICS standard method under MAV? Please explain. If “no”, please provide specific proposals to amend the approach as well as supporting rationale and evidence.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No	Yes	An instantaneous direct stress on the value on property exposures seems to be a good approach. Moreover, our view is that the magnitude of the stress is reasonable, considering that it applies to various types of property investments (different categories, geographical zones…).
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	
Ageas	Belgium	Other	No	No	
Canadian Institute of Actuaries	Canada	Other	No	Yes	The current approach states “the valuation of property held for own use is adjusted to fair value”. This is appropriate if the company is a going concern and makes economic use of the property and accounts for own use rents in the determination of market value. However, an issue arises if the property is not usable by any other

					entity other than the company itself. The value of the property would be impaired to below its previous imputed market value.
CLHIA	Canada	Other	No	Yes	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	We have no disagreement with the current approach.
Insurance Europe	Europe	Other	No	No	The proposed shock level of 30% is extremely conservative and does not reflect the often very low market volatility of this asset class. The IAIS should consider a more tailored geographical approach, with different stresses for different areas. Such an approach would be in line with the comparability objective.
Institut des Actuaires	France	Other	No	Yes	n/c
Allianz	Germany	Other	No	No	The stress factor of 30% applied to all real estate is too high. There should be further differentiation in terms of the riskiness of the respective investment, e.g., high/medium/low risk charges in order to reflect the inherent risk. This might be highly dependent on the geographical area where the property is located and less dependent on whether it is residential or commercial. For example, in the German market, real estate investments in Munich are significantly less risky than those in eastern Germany, where certain regions are struggling with high unemployment and experience movement of people to western cities. The down stress of 30% should then be more attached to the high risk segment. A 30% down shock for all real estate investments including strong economic regions is deemed as too conservative.

GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	Real estate markets are local markets. The realised volatility of real estate is very different in different countries. Thus, it seems not possible to find an adequate universal calibration for real estate risk. For the German market the proposed risk factor of 30% is clearly too high. There should be regional risk factors instead.
Munich Re	Germany	Other	No	Yes	
AIA Group	Hong Kong	Other	No	Yes	
General Insurance Association of Japan	Japan	Other	No	Yes	
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	No	The approach seems to slightly overestimate potential real estate risk. The range of potential price fluctuations for a given confidence level may vary significantly depending on geography. For instance Swiss real estate valuations tend to be significantly less volatile than in the US or UK. A bucketing approach would be more appropriate. Most appropriate would be to allow for the use of regulatory approved internal models.
Prudential Financial, Inc.	United States of America	Other	No	Yes	Prudential believes the Real Estate stress is reasonable – however, we disagree with the inclusion of own use property in the stress. True own use property, that is to say home office buildings which are primarily occupied by the employees of the insurance company, should be excluded from the real estate stress entirely as it would continue to be used under stress conditions and does not warrant a risk charge.

MassMutual Financial Group	USA	Other	No	Yes	We find the real estate stress appropriate. However, we continue to believe the approach for encumbered real estate is overly punitive. Such approach impacts the amount of real estate that is 'in scope' for the ICS stress – if real estate is encumbered, and thus does not yield capital credit from the unencumbered portion – we have not stressed the respective amount. We would advocate a change in approach which would allow capital credit for the unencumbered portion of the respective properties, and that amount would also be subject to the ICS stress.

Q185

Q185 Section 6.12.3.2 Is the approach adopted for Real Estate risk in 2016 Field Testing appropriate for the ICS standard method under GAAP Plus? Please explain. If “no”, please provide specific proposals to amend the approach as well as supporting rationale and evidence.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
EIOPA	EIOPA	IAIS Member	No		Given the current specifications for GAAP+ valuations, the approach proposed seems appropriate. However, it should be noted that the difference introduced in some cases between the valuation basis and the stress basis (book value vs. fair value) may lead to a loss in clarity and auditability of the framework.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	
Allianz	Germany	Other	No	No	See Q184
Munich Re	Germany	Other	No	Yes	
AIA Group	Hong Kong	Other	No	Yes	

Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Prudential Financial, Inc.	United States of America	Other	No	Yes	Prudential believes the Real Estate stress is reasonable – however, we disagree with the inclusion of own use property in the stress. True own use property, that is to say home office buildings which are primarily occupied by the employees of the insurance company, should be excluded from the real estate stress entirely as it would continue to be used under stress conditions and does not warrant a risk charge.
MassMutual Financial Group	USA	Other	No	Yes	

Q186

Q186 Section 6.12.3.3 Are there any further comments on Real Estate risk that the IAIS should consider in the development of ICS Version 1.0? If “yes”, please explain with sufficient detail and rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	Yes	Real Estate price stability might diverge strongly between regions. As such, it could add value to apply regional shocks to the real estate exposures.
Canadian Institute of Actuaries	Canada	Other	No	Yes	While real estate is a valuable asset type to back long-term liability cash flows, the determination of the shock should consider liquidity and fire-sale value.
CLHIA	Canada	Other	No	Yes	
Insurance Bureau of Canada	Canada	Other	No	Yes	Although the ICS proposes to use a stress approach to calculate real estate risk, we submit that a factor-based approach would be more appropriate, especially since ICS version 1.0 is intended to be a standard approach. Given that ICS calculations and valuations are subject to the proportionality principle, we believe that requiring a stress approach for real estate risk

					would lead to a significant increase in complexity without material improvement to the quality of estimates produced. A factor-based approach also would facilitate more consistency in capital determination. Further, real estate assets are typically not matched to policy liabilities in the property & casualty industry and thus may have some offsetting impact during a stress event. In addition, real estate for own use should be considered separately from investment real estate properties.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
Insurance Europe	Europe	Other	No	Yes	The IAIS should consider a geographical differentiation of the stress levels.
Allianz	Germany	Other	No	No	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	Regional segmentation is necessary. The quality of real estate investments depends to a large degree on the region. Hence, we recommend classifying real estate into categories reflecting its riskiness via a regional segmentation.
Munich Re	Germany	Other	No	Yes	Regional segmentation seems necessary. We experience that the quality of real estate investments depends to a large degree on the region. Hence, we recommend to classify real estate into categories reflecting its riskiness via a regional segmentation.
AIA Group	Hong Kong	Other	No	No	

General Insurance Association of Japan	Japan	Other	No	No	
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	No	
Bupa	UK	Other	No	Yes	We believe the 30% stress is calibrated at too high a level. The Solvency II stress of 25% for real estate was based on a substantial volume of empirical data and one would expect there to be much more diversification within the property portfolio of an IAIG than within that of a typical Solvency II insurer. For example, our property holdings are primarily in the UK and Australia where we have estimated that there is a modest correlation between them of the order of 30%.
MetLife	United States	Other	No	Yes	Real Estate Investments: The National Council of Real Estate Investment Fiduciaries (NCREIF – www.ncreif.org) is a very good source of empirical evidence about real estate prices in the U.S. Their data covers commercial properties including multifamily properties. Data provided by NCREIF has been used to develop risk factors for commercial real estate debt and real estate equity investments for the U.S. life insurance industry. In our opinion, a single global stress factor is not appropriate. Real estate stress factors should be different by country or geographic region. Such country specific or geographic region (western Europe all of Europe, etc.) be based on historical data from each country or geographic region. For the U.S. a single factor should apply to each state or geographic region within the U.S. Granularity beyond a single factor for U.S. commercial real estate is inappropriate due to 1) a relatively small size of the asset class in U.S. life insurance company portfolios, 2) relative

					alignment of composition between the NCREIF Property Index (proposed to be used to establish capital factors) and the U.S. life industry industry's portfolio, and 3) regulations separate from NAIC RBC factors exist that address concentration risks and assure diversification of life insurance company real estate portfolios. Additionally, data availability and consistency through time can be an issue when trying to establish appropriate factors at a more granular level. Real Estate Investments Stress: In our opinion, the IAIS ICS risk charge factor of 30% is too high. We recommended changing from 30% to 15%, consistent with the recent ACLI Proposal and a IPD Study. -- The ACLI proposal is based on NCREIF NPI Index using stochastic analysis using 10 years of data. This study finding where the worst cumulative loss was 8%, is much less than the 30% used by the IAIS --The IPD Study is based on historical returns on a Pan-European Index. Study concludes that "Based On The Best Evidence Of Tail Values At Risk Currently Available, (The Property Shock Factor) Would Be No Higher Than 15%." The study used 0.5% tail risk. ACLI Proposal can be found at http://www.naic.org/documents/committees_e_capad_investment_rbc_wg_exposure_rbc_proposal.pdf The IPD Study can be found at https://www.msci.com/resources/pdfs/IPD-Solvency-II-Review.pdf
Prudential Financial, Inc.	United States of America	Other	No	No	

MassMutual Financial Group	USA	Other	No	No	

Q187

Q187 Section 6.12.4.2	Is the methodology used to determine the level of the Currency risks stresses appropriate? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	Yes	
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No	Yes	The methodology seems to be globally appropriate. The time period used for calibration (01/01/1999 - 01/01/2016) for all currency pairs is reasonable, as it will cover 20 years of data when the ICS will be implemented. One should however be aware that this time period excludes the Asian crisis, and is thus favorable to Asian countries. The bucketing approach is granular enough to take into account the variety of situations. However, we think that the 75% cap should be removed, even if one could expect that insurance companies do not have large exposures to currencies whose exchange rate with the local currency is very volatile. However, some elements should be kept in mind. For currencies that are/have been subject to exchange rate controls that are/will be stopped, a period of high volatility may follow. In this case, the risk might be underestimated.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	

Ageas	Belgium	Other	No	Yes	
Canadian Institute of Actuaries	Canada	Other	No	Yes	
CLHIA	Canada	Other	No	Yes	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	The risks stresses have been refined in 2016 field testing and we have no disagreement.
Insurance Europe	Europe	Other	No	No	The 2015 FT conclusions indicated that currency risk was overstated for the IAIGs with significant currency exposure. In the 2016 FT the IAIS should avoid this over statement and reflect the real exposure in the expected calibration of this module. The historical volatility between individual currencies should be taken into account to define the level of shocks. The appropriate correlation should also be defined based on historical data where available. In addition, the IAIS should further investigate whether a capital charge is indeed the right policy measure to address currency risk that is generated by currency translations from contributions by subsidiaries. The majority of the currency risk captured in the standard method arises from currency translation risk (i.e. subsidiary contributions). Insurance Europe considers that the capital required to be held for this exposure even after taking into account the exemption is still far too high. This is because currency translation risk does not materially impact an IAIGs ability to meet policyholder obligations and consequently Insurance Europe would question whether capital is the right regulatory tool to address it. Indeed, requiring capital to be held against this risk could incentivise behaviour that would be detrimental to policyholder interests. In addition, if modelled accurately the risk diversifies very significantly

					even from a shareholder perspective, as the currency exposure will reduce when a subsidiary sustains losses and increase when a subsidiary makes gains.
Institut des Actuaires	France	Other	No	No	Should be simplified
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	The applied stress of 60% “world bucket” is overly simplistic and much too high.
Munich Re	Germany	Other	No	No	The applied stress of 60% “world bucket” seems overly simplistic and much too high.
Global Federation of Insurance Associations	Global	Other	No	Yes	The majority of the currency risk currently captured relates to currency translation risk. It is doubtful as to whether this could have a material impact on policyholder protections. Further, this reduces comparability between insurers, which is against ICS Principle 1, which requires that the amount of capital required to be held should be “irrespective of the location of its headquarters”.
AIA Group	Hong Kong	Other	No	Yes	We generally agree with the methodology, although there are refinements that could be made.
International Actuarial Association	International	Other	No	Yes	The more granular approach seems theoretically more justifiable. However, the methodology being proposed seems potentially materially more complicated than is being proposed for other parts of the ICS, when the results quoted in 6.1.1 suggest that this is a relatively less important risk category for the cohort likely to be within the scope of the ICS.
General Insurance Association of Japan	Japan	Other	No	Yes	

Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	No	Currency risk is essentially a form of market risk (market value of the currency). The net open position must be determined based on the consolidated economic balance sheet, i.e. based on market values. Otherwise, the net open position will be misstated, as it will be calculated on the wrong basis.
Aegon NV	The Netherlands	Other	No	Yes	Under the proposed ICS construct, Aegon supports the methodology used to determine the level of the currency risk stresses. It is a relatively simple approach that still avoids the complex difficulties of constructing a more sophisticated currency stress approach.
Association of British Insurers	United Kingdom	Other	No	No	The majority of the currency risk captured in the standard method arises from currency translation risk (i.e. subsidiary contributions). We consider that the capital required to be held for this exposure, even after taking into account the exemption, is still far too high. This is because currency translation risk does not materially impact an IAIGs ability to meet policyholder obligations and consequently we would challenge whether capital is the right regulatory tool to address it. Indeed, requiring capital to be held against this risk could incentivise behaviour that would be detrimental to policyholder interests. Further, capital for translation risk is against ICS Principle 1, which requires for the capital required to be held “irrespective of the location of its headquarter”, given the size of the capital requirement does depend on the IAIG’s reporting currency. In addition, if modelled accurately, the risk diversifies very significantly even from a shareholder perspective, as the currency exposures will reduce when a subsidiary sustains losses and increase when a subsidiary makes gains.

RAA	United States and many other jurisdicitons	Other	No	No	The selected stress level of 60% for the “world bucket” appears too high.
Prudential Financial, Inc.	United States of America	Other	No	No	A 99.5th percentile 1-year shock represents a 1-in-200 year event. Such a shock should be calibrated with data spanning over a sufficiently long period. To this end, for each currency, we recommend that data for the entire period with the current exchange rate regime to be considered for the stress calibration. According to paragraph 539, currency stresses are calibrated with data from January 1999, which Prudential considers insufficient.
MassMutual Financial Group	USA	Other	No	Yes	

Q188

Q188 Section 6.12.4.2 Is the assumption of a single correlation factor of 50% for all currencies appropriate in a time of stress? Please explain. If “no”, what methodology could the IAIS use to determine an appropriate correlation matrix for Currency risk?

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	50% can be very off to the actual correlation of currencies. We suggest to perform a calibration if possible.
EIOPA	EIOPA	IAIS Member	No	No	In our view, the 50% may lead to an underestimation of the currency risk charge. We think further analysis would be necessary.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	No	IAIGs are exposed to international crises which concern vast majority of currencies (so no correlation). Some currencies may not be hit by crisis or may be hit less, that is why high correlation (0.75 or higher) could be also acceptable.
Ageas	Belgium	Other	No	No	Some currencies have much stronger ties while others are not linked at all. This should be reflected in the framework.
Institut des Actuaires	France	Other	No	No	Cf. Q187

Allianz	Germany	Other	No	No	The assumption of a 50% correlation is too conservative as it does not take geographical diversification into account visible in the underlying data. When calculating correlations based on the time series starting in 2000 (EUR vs. FX) in fact there is significant negative correlation visible for various currencies. Even though looking at the pairs showing a positive correlation most of them do exhibit correlations less than 50%. The correlation setting should reflect the underlying economic relationship and be inferred from historical data.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	The correlation matrix should also be based on pair-wise correlations.
Munich Re	Germany	Other	No	No	The correlation matrix should also be based on pair-wise correlations (like the volatility calibration).
AIA Group	Hong Kong	Other	No	Yes	This is a reasonable assumption, although it could be refined based on historical studies.
International Actuarial Association	International	Other	No	No	If a US insurer had net exposure to Euro and separately to a currency currently pegged to the Euro prior to planned entry by that member state into the Eurozone then assuming significant diversification between how the dollar might move versus the Euro and how the dollar might move against the Euro-pegged currency seems potentially rash.
General Insurance Association of Japan	Japan	Other	No	Yes	
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA

Swiss Re	Switzerland	Other	No	Yes	This seems generally appropriate, though it is admittedly a challenge to make assumptions on a forward-looking basis.
RAA	United States and many other jurisdicitons	Other	No	No	The correlation matrix should be based on pair-wise relationships as with the volatility calibration.
Prudential Financial, Inc.	United States of America	Other	No	Yes	While we have seen empirical evidence that tail dependency (exchange rate co-movement in stress) varies by currency pair and over time, we agree that the assumption of a single correlation factor of 50% is reasonable for simplicity and transparency.
MassMutual Financial Group	USA	Other	No	Yes	We recognize that this assumption is the result of supervisory judgement, but don't find it inappropriate.

Q189

Q189	Section 6.12.4.2	Is the treatment of currency pegs appropriate? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No	Yes	We think that the methodology used to calibrate currency risk for pegged currencies is quite appropriate, as we know that: i) it is really difficult to reliably estimate the sustainability and the credibility of currency pegs ii) excluding strictly some ranges of data to calibrate the risk for pegged currencies might not appear very prudent since even the most “stable” currency pegs can be abandoned. We however admit that using the whole range of data and not only the time period of the currency peg may overestimate the volatility for the countries where the peg does in fact turn out to be sustainable / credible. On the contrary, if pegs break, a period of extreme volatility may follow: in this case, the risk might be underestimated.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	The calibrations of stress shock for currency pegs are also in the forms of matrix and therefore applying the correlation factor of 0.5 is deemed appropriate in the same manner.
Ageas	Belgium	Other	No	Yes	A low currency shock is observed for e.g. the peg USD-HKD.
Institut des Actuaires	France	Other	No	Yes	n/c

Allianz	Germany	Other	No	Yes	Applying the same methodology of determining the stress based on historic time series is appropriate, since it captures both the currency peg and potential short term deviations/fluctuations that might occur in times of market stress.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	
Munich Re	Germany	Other	No	Yes	
AIA Group	Hong Kong	Other	No	Yes	We think this is reasonable as there is no basis for a different assumption.
International Actuarial Association	International	Other	No	No	See answer to Q188.
General Insurance Association of Japan	Japan	Other	No	No	A for currencies of which the foreign exchange control system has been changed (for example, from a fixed exchange rate system to a floating system) during the volatility observation period, stress levels should be determined based on data gathered since the relevant change.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	Yes	We agree with the assumption that pegged currencies are treated the same as all other currencies and rely on historical data. Assumptions should not made as to whether or not the peg will continue in the future. Consider the Swiss Franc / EUR.
Prudential Financial, Inc.	United States of America	Other	No	No	We agree that no special treatment is necessary for pegged currencies. However, as noted in our response to question 187, for the purpose of calibrating the stresses,

					historical data from the period only with the same exchange rate regime (e.g., pegged/float/ managed float) as the current one should be used.
MassMutual Financial Group	USA	Other	No	Yes	We believe it is appropriate to treat the pegged currencies in a manner consistent with other currencies.

Q190

Q190 Section 6.12.4.2	Should the IAIS allow for a partial exemption for investments in foreign subsidiaries? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	Yes	An IAIG carrying on risks in many currencies needs to have its assets spread over those currencies – not just at the best estimate level included in the balance sheet, but also to cover adverse experience. This implies the available capital of the IAIG should be held in multiple currencies, and not in any single currency
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	Yes	Partial exemption should also be allowed for some net foreign assets inevitably held for the purpose of risk management for overseas subsidiary.
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	A partial exemption could be allowed to reflect the effective (hedged) exposure to foreign currency risk for the investment in foreign subsidiary.
Ageas	Belgium	Other	No	No	We do not see any good reason.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	The risks of foreign subsidiaries' investments in local markets are different from that of oversea investments, so it should be allowed.
Institut des Actuaires	France	Other	No	Yes	Partial exemption would allow to reflect the real exposition to foreign currency.

Allianz	Germany	Other	No	Yes	In case the correlation assumption between currencies is not properly reflecting market diversification effects, an exemption should be applied. In case correlations do properly reflect the underlying economics this can be skipped.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	
Munich Re	Germany	Other	No	No	
AIA Group	Hong Kong	Other	No	Yes	The assets backing liabilities denominated in the foreign currency should likewise be denominated in that currency. There is no currency risk associated with such assets. These assets include assets backing risk capital as well liabilities.
International Actuarial Association	International	Other	No	Yes	The proposed approach seems a little convoluted versus, say, more traditional accounting consolidation approaches, albeit the latter can become complicated for partly owned subsidiaries. Is there any reason not to use the same consolidation approach as might apply to the derivation of group own funds or the currency risk calculation could allow for what is termed a “partial exemption for investments in foreign subsidiaries”, with that exemption based on local capital requirements. Such an approach would be more accurate than the current 10% of liabilities approach.
General Insurance Association of Japan	Japan	Other	No	No	We believe that the proposed partial exemption for investment in foreign subsidiaries is on the premise that part of these subsidiaries´ capital lacks in fungibility. This issue should be further examined during the development of ICS Version 2.0 where fungibility will be discussed.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA

Swiss Re	Switzerland	Other	No	No	Equity which is tied in a foreign subsidiary nonetheless poses real currency risk. For instance in the event of a divestment, currency fluctuations become in this case become relevant and potentially quite material. Therefore the net open position must be determined based on the consolidated economic balance sheet, i.e. based fully on market values without adjustments.
Bupa	UK	Other	No	Yes	The capital requirement should recognise that it is good capital management to maintain surplus assets in the range of currencies to which their businesses are exposed rather than hold all surplus assets in the currency of the parent.
RAA	United States and many other jurisdicitons	Other	No	Yes	A partial exemption should be allowed to reflect the hedged exposure to foreign currency risk for the investment in the foreign subsidiary.
Prudential Financial, Inc.	United States of America	Other	No	Yes	We agree that it is reasonable to allow for a partial exemption. While we support the concept of additional offset in recognition of required capital held in foreign currency, the current amount (up to 10% net insurance liabilities) of offsets may need to be reviewed and supported by a more robust methodology.
MassMutual Financial Group	USA	Other	No	No	Since the ICS is being developed as a group-wide standard, we do not support the concept that the currency charge should be applied to just excess capital. The group balance sheet is valued on a single currency basis and therefore, currency risk of all capital is relevant. Our view on this does not mean that we believe all capital is fungible, but rather that the purpose of the ICS is to look at the group in totality. Fungibility of capital should be considered holistically across the ICS, rather than for this particular risk.

Q191

Q191 Section 6.12.4.2	Is the exemption for investments in foreign subsidiaries appropriate? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
National Association of Insurance Commissioners	USA	IAIS Member	No	No	The exemption of 10% appears rather arbitrary and would need to be objectively supported.
Ageas	Belgium	Other	No	No	We do not understand the logic to provide exemption. The only good reason could be to apply the currency shock of foreign subsidiaries not on the full net asset value but only on that part of the net asset value above the capital requirement, the surplus.
Institut des Actuaires	France	Other	No	No	We do not understand the 10%
Allianz	Germany	Other	No	No	Applying a flat 10% of liabilities of the respective subsidiary certainly does not reflect the real contribution to the ICS capital requirement, since this is highly dependent on the geographical set up of participating groups. Take the extreme example of the holding in one country but nearly all business is written in another country, then the subsidiary would more or less contribute with 100% to the capital requirement not just ten. The threshold should therefore be tied to the underlying volumes. On the other side, in case everything is treated on a fully consolidated basis we

					do not see the point in reducing the net positions since the economic net position is driving the currency risk.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	
Munich Re	Germany	Other	No	Yes	
AIA Group	Hong Kong	Other	No	Yes	We are not clear on the difference between this question and the prior one. Please see our answer to Q190.
International Actuarial Association	International	Other	No	Yes	See answer to Q190
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	No	See the response to 190 above. Swiss Re does not make use of the exemption for this reason.
RAA	United States and many other jurisdicitons	Other	No	Yes	The 10% figure appears to be a reasonable simplifying assumption to measure this.
Prudential Financial, Inc.	United States of America	Other	No	No	Please see our response to question 190.

MassMutual Financial Group	USA	Other	No	No	See our response to question 190.0

Q192

Q192 Section 6.12.4.2	Is there a better proxy of the subsidiary's contribution to the ICS? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	Yes	The local capital requirement (adjusted to VaR 99.5% if necessary).
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	No	No proxy required given we don't support the given exemption.
Allianz	Germany	Other	No	Yes	Base the exemption granted on the underlying exposure.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	
Munich Re	Germany	Other	No	No	

AIA Group	Hong Kong	Other	No	Yes	The IAIG is required to keep assets and required capital in the subsidiary based on local requirements. The currency charge should only apply to assets in excess of those requirements.
International Actuarial Association	International	Other	No	Yes	See answer to Q190
Great Eastern Holdings Ltd	Singapore	Other	No	No	NA
Swiss Re	Switzerland	Other	No	No	See our response to 190 above.
Prudential Financial, Inc.	United States of America	Other	No	Yes	Please see our response to question 190.
MassMutual Financial Group	USA	Other	No	No	

Q193

Q193 Section 6.12.4.2	Are there any further comments on the approach described for 2016 Field Testing? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	No	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	
Munich Re	Germany	Other	No	No	
AIA Group	Hong Kong	Other	No	No	

International Actuarial Association	International	Other	No	Yes	See answer to Q190
General Insurance Association of Japan	Japan	Other	No	No	
Swiss Re	Switzerland	Other	No	No	
Prudential Financial, Inc.	United States of America	Other	No	Yes	As discussed in our response to question 41, the AOCI adjustment should be included in the calculation of currency risk for GAAP Plus. If the AOCI adjustment is not included when determining the net open position, there is a misalignment of available capital and required capital that results in risk charges that are too low or too high.
MassMutual Financial Group	USA	Other	No	No	

Q194

Q194 Section 6.12.4.2	Is the treatment of currency exposures with a maturity of less than one year appropriate? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
Financial Supervisory Service	Korea	IAIS Member	No	No	In conservative approach, capturing one year risk for open currency position with maturity of less than one year is deemed appropriate. If the currency hedge is effective, both the hedge asset and instruments shall be excluded from the net open position assuming the instrument will be rolled over through asset's maturity.
Ageas	Belgium	Other	No	Yes	
Canadian Institute of Actuaries	Canada	Other	No	Yes	
CLHIA	Canada	Other	No	Yes	
Insurance Bureau of Canada	Canada	Other	No	No	We believe that the treatment of currency exposures and hedges should be the same. Where length of time remaining in a contract is considered for one, it should be taken into account for the other. Likewise, the assumption of contract renewal

					should apply to both as long as the IAIG can demonstrate that the dynamic hedging is managed in accordance with the firm's risk management policies and procedures.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	We have no disagreement.
Allianz	Germany	Other	No	Yes	Determining the risk on the full exposure is appropriate for two reasons. First exposure coming from consolidated subsidiaries will under a going concern assumption presumably remain at the same level, since maturing contracts are renewed or new business is written and maturing investments need to be reinvested. Second for FX exposure on the asset side is mostly deliberately taken either due to diversification, yield pick-ups or due to the fact that suitable investments are only available in foreign currency. Ultra-long term government bonds for example are not available in each country and in case needed for duration matching purposes suitable investments need to be bought in other markets. Therefore maturing assets will most likely be reinvested in similar investments.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	
Munich Re	Germany	Other	No	Yes	
AIA Group	Hong Kong	Other	No	Yes	
International Actuarial Association	International	Other	No	No	We do not understand the logic for an approach that gives only partial credit for hedges lasting less than 1 year (particularly if there is some scope to roll the hedge at maturity). To take an extreme example, suppose a firm has its base currency as Dollar and has Net Assets of $100 wholly invested in Euro-denominated assets. Suppose it now takes out a 1-week currency hedge for $2100 from Euro into Dollar.

					According to the proposed formula this would reduce the currency mismatch from 100 to 100 – 2100/52 = c. 60, i.e. reducing the capital charge by 40%. However, the net Euro exposure during that week would change from 100 to -2000 (i.e. a 20-fold rise and in the opposite direction) and if the Euro were to appreciate by 5% during that week the firm's Net Assets would be wiped out.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	No	Please refer to the answer for Q93.
General Insurance Association of Japan	Japan	Other	No	No	Treatment according to contract duration is inappropriate because it is likely to distort the economic reality of currency exposures at that point.
The Life Insurance Association of Japan	Japan	Other	No	No	・Same to the comment(s) on Question 93 above.
Great Eastern Holdings Ltd	Singapore	Other	No	No	NA
Swiss Re	Switzerland	Other	No	Yes	This approach seems adequately conservative.
Prudential Financial, Inc.	United States of America	Other	No	No	FX forward contracts and currency swaps used to hedge investments in foreign subsidiaries should be fully recognized even if they mature within the next 12 months. Currency derivatives used to hedge would be fully effective in mitigating the impact of currency stresses regardless of their maturities. Given the deep liquidity of currency markets (e.g., daily trading volume of $5 trillion), execution risk at the time of roll is minimal. The remaining time to maturity would matter only if a severe stress is followed by another severe stress. In this case, the first stress would disrupt the market so that maturing derivatives cannot be renewed. Then, the second stress would lead to

					losses for the insurer. However, this event (one stress followed by another) would represent higher severity than the IAIS' targeted calibration for the ICS.
MassMutual Financial Group	USA	Other	No	No	We would instead advocate an approach of consistent treatment amongst the underlying currency contracts and the respective hedges. If the assumption is the contract will be renewed, then it would be appropriate to presume the respective hedge is renewed as well. Doing otherwise would likely overstate true currency risk exposure.

Q195

Q195 Section 6.12.4.3 Are there any further comments on Currency risk that the IAIS should consider in the development of ICS Version 1.0? If “yes”, please explain with sufficient detail and rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	No	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
Insurance Europe	Europe	Other	No	Yes	The level of shocks too high, while the application of shocks to currency couples is too complex. Less granular buckets should be considered.
Allianz	Germany	Other	No	No	

GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	
Munich Re	Germany	Other	No	No	
AIA Group	Hong Kong	Other	No	No	
General Insurance Association of Japan	Japan	Other	No	No	
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	No	
Prudential Financial, Inc.	United States of America	Other	No	No	
MassMutual Financial Group	USA	Other	No	No	

Q196

Q196 Section 6.12.5.2 Is the approach adopted for Asset Concentration risk in 2016 Field Testing appropriate for the ICS standard method? Please explain. If “no”, please provide specific proposals to amend the approach as well as supporting rationale and evidence.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	We suggest to increase the threshold of concentration for developing and emerging markets. They are likely to be more concentrated than insurers in the developed markets, due to the limited choices of investments in a less sophisticated financial market. It is more a market characteristic rather than risks to a specific insurer.
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	This approach is reasonable taking into account the materiality of this risk category.
Ageas	Belgium	Other	No	No	Suggest to align the definition of single counterparties with single name exposure under Solvency 2.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	The approach of 2016 field testing only takes total assets as the threshold and no longer considers capital resource, which we think can reduce the volatilities appropriately. So we have no disagreement.
Insurance Europe	Europe	Other	No	No	The diversification benefit should be recognized for all exposures.

Institut des Actuaires	France	Other	No	Yes	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	For a standard formula where risk drivers are relatively coarse this approach seems appropriate. Internal model use a much more granular risk driver universe that does automatically penalize concentrations. For those enterprises, no additional concentration risk charge should be applied.
Munich Re	Germany	Other	No	Yes	For standard formula users where risk drivers are relatively coarse this approach might be appropriate. Internal model use a much more granular risk driver universe that does automatically penalize concentrations. For those enterprises no additional concentration risk charge should be applied.
AIA Group	Hong Kong	Other	No	Yes	
International Actuarial Association	International	Other	No	Yes	If the ICS is seen as partly a response to systemic risk concerns then capture of linkages between G-SIIs and other G-SIFI's is likely to be desirable and is likely to be facilitated by collection of data along the lines of paragraph 545(c). From a systemic risk perspective, disincentivising very large exposures via such an approach is likely to be desirable. However, we would note that within the macroprudential community scepticism is growing over whether exposures to sovereigns should be excluded from such analyses. This seems to be implicit in paragraph 545(b) and we would recommend reconsidering using a 0% risk charge for such exposures (in line with IAIS proposals in paragraph 564).
Dai-ichi Life Holdings, Inc.	Japan	Other	No	No	・As referred in paragraph 554, we recommend the approach like the Basel regime, not the base of calculating required capital in ICS, but consideration in an additional analysis. We agree with not setting the limitation of financial instruments guaranteed by

					government or government agencies. Especially, we agree with excluding local government bond denominated in local currency from asset concentration risk.
General Insurance Association of Japan	Japan	Other	No	Yes	As it is not clear how the threshold and risk factors have been determined, it is impossible to judge whether or not the parameter level is appropriate. However, the approach itself is deemed common.
The Life Insurance Association of Japan	Japan	Other	No	No	・We continue to support the approach as described in paragraph 544 where Asset Concentration risk is taken into consideration in subsequent analysis, which is similar to the Basel II framework rather than charging Asset Concentration risk as a basis for the calculation of the ICS required capital. ・We agree with the approach that does not set exposure limits on assets guaranteed by governments/related agencies. In particular, we support the idea that government bonds issued within a jurisdiction, which is denominated in its local currency, should be excluded from the calculation of asset concentration risk charges. ・Additionally, we are concerned that overly high risk charges imposed on the counterparty concentration risks (e.g. reinsurance arrangements and derivative transactions) might result in unintended consequences, where transactions aimed for achieving most appropriate intra-group allocation of risks are hindered.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	Yes	The approach seems appropriate for a standard method. A more sophisticated approach would be to allow for the use of regulatory approved internal models.
MetLife	United States	Other	No	No	Government Sponsored Entities: We believe the IAIS approach results in an overstated ICS asset concentration risk charge for government sponsored entities. We urge the IAIS to reconsider the approach, considering the following:

					-- Certain US GSE's, such as FNMA, do not have an explicit sovereign guarantee of the US government, accordingly are not excludable from the asset concentration risk evaluation as sovereign exposures. -- Most US GSE securitizations which do not have an explicit sovereign guarantee, such as FNMA, are AAA rated securities. GSE securitizations which have the same or higher credit rating than the sovereign government, in our opinion, should be exempt from the asset concentration risk charge, since the market place considers them sovereign-like. -- In our opinion, the asset concentration risk is looking for concentrations of exposures in single counterparties. It seems appropriate to apply look through only for purposes of the asset concentration risk and not for other views, since it provides a better evaluation of the (lack) of concentration of risk for securitizations.
Prudential Financial, Inc.	United States of America	Other	No	Yes	
MassMutual Financial Group	USA	Other	No	Yes	

Q197

Q197 Section 6.12.5.3 Are there any further comments on Asset Concentration risk that the IAIS should consider in the development of ICS Version 1.0? If “yes”, please explain with sufficient detail and rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	No	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	For developing countries, state-owned enterprises play a vital role in the economy. Especially in China, large amount of the bonds/deposits held by insurance companies are concentrated in the Big 4 state-owned banks or Ministry of Railway. Due to their very close connection with the state, the bonds/deposits are de facto guaranteed by the government. The exposure to the Big 4 banks and MoR should enjoy similar treatment as policy banks such as China Development Bank and Export-Import Bank of China.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	Asset concentration risk is not material. Thus, there is no need for an asset concentration risk module.

Munich Re	Germany	Other	No	Yes	
AIA Group	Hong Kong	Other	No	No	
International Actuarial Association	International	Other	No	Yes	See answer to Q196.
General Insurance Association of Japan	Japan	Other	No	No	
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	No	
MetLife	United States	Other	No	Yes	The seven ICS credit rating categories have been summarized into three weighted-average ICS credit rating categories for purposes of counterparty-related asset concentration charges. This presents A and above credit rated investments in the same risk category and subject to the same risk charge as BBB rated investments and presents BB and B rated investments in the same category and subject to the same risk charge. We recommend that higher rated ICS credit rating categories of category 1, 2, 3 and 4 be presented separately and unique incremental capital charge factors be developed for each rating category.
Prudential Financial, Inc.	United States of America	Other	No	No	

MassMutual Financial Group	USA	Other	No	No	

End of Section 6.12