Summary of Comments on Consultation Paper 71 - CEIOPS-CP-71/09 CP No. 71 - L2 Advice on Calibration of the Non-life Underwriting Risk	CEIOPS-SEC-173/09 08.04.2010

CEIOPS would like to thank UNESPA , ABI , ACA , AGERE AON ECIROA FERMA MARSH MIMA, AMICE, ARC , ASSURALIA , CEA, CRO Forum, Deloitte , DIMA , EMB Consultancy LLP, FFSA, GDV, GROUPAMA, Groupe Consultatif, ICISA, Institut des actuaires , IUA, KPMG ELLP, Lloyds, Munich Re, RBS Insurance, ROAM, RSA Insurance Group, and XL Capital Ltd

The numbering of the paragraphs refers to Consultation Paper No. 71 (CEIOPS-CP-71/09)

No.	Name	Reference	Comment	Resolution
1.	UNESPA	General Comment	The data comes from 6 countries only. This fact may be a problem when trying to generalise the conclusions obtained to the rest of the European insurance market	1. Noted. CEIOPS has been collecting more data and a revised calibration will be ready for QIS 5, incorporating the additional information. We also recognise that for non proportional lines of business data was only provided by UK. However this is the only data available.
			1. UNESPA (Association of Spanish Insurers and Reinsurers) appreciates the opportunity to analyze and comment on Consultation Paper 71 on the non-life underwriting risk	2. Noted
			UNESPA is the representative body of more than 250 private insurers and reinsurers that stand for approximately the 96% of Spanish insurance market. Spanish Insurers and reinsurers generate premium income of more than € 55 bn, directly employ 60.000 people and invest more than € 400 bn in the economy.	3. Noted
			The comments expresed in this response represent the UNESPA´s views	4. Noted

			at this stage of the project. As our develops, these views may evolve depending in particular, on other elements of the framework which are not yet fixed.	
			The Spanish market is not part of the sample and has a specific casuistry. Therefore conclusions derived from the calibration could not reflect our risk profile properly.	5. We agree. Data was not provided.
			The factors proposed in the consultation paper are very onerous for insurance undertakings. We are concerned with the significant increases in the calibration, in particular since in QIS4 many undertakings had already found the parameters to be inappropriately high.	6. Not agreed. CEIOPS has carried out the calibration exercise based on the information available at the time and in accordance with the assumptions and criteria that CEIOPS supports for the Non life standard formula. Indeed if such criteria and assumptions were to change, so would the results of the calibration. The calibration has been carried on a technical basis and selecting an approach which was considered the most approapriate. Despite the shortmconings that have been mentioned in the paper, the calibration has also been based on a number a factors that would result in a lower calibration. For example the selection of factors using a volume weighted average, no adjustments for inflation, the use of posted estimates which will be smoothed, etc….

				The QIS 4 calibration should not be used as a benchmark in this respect. This exercise did not include the same level of analysis and data that has been included in CP71. Only 3 countries provided data, and there is no evidence to suggest that such calibration is more in line or more appropriate for undertakings.
			The recommendations in the consultation paper will lead to a considerable increase in capital due to an increase in premium and reserve factors from QIS 4. In order to arrive at an appropriate calibration for this very important risk module, UNESPA asks for a significant review and extension of the consultation paper on Undertaking Specific Parameters. The use of USP is the only solution to implementing a real risk sensitive management of non life underwriting risks.	Noted. CEIOPS is certainly reviewing the calibration as far as possible. CEIOPS is hoping to incorporate more data which may have an impact on the results. However, the calibration is also a consequence of the design of the non life standard formula which CEIOPS supports. CEIOPS does not wish to unduly complicate the standard formula (e.g by including expected Losses and profits, Premium as volume measure rather than claims, Volatility by size of portfolio, Geographical diversification, assumption of lognormality). QIS 4 was an initial estimation with no underlying analysis of the same depth supporting it. It was based mainly on the analysis provided for QIS3: http://www.ceiops.eu/media/files/co

				nsultations/QIS/QIS3/QIS3CalibrationPapers.pdf.
			Need to consider explicitly the benefits of geographical diversification CEIOPS keeps the restriction in connection with geographical diversification because considers it has been taken into account in the calibration, but no further information has been given. We believe geographical diversification would give a better approach to the calibration therefore we encourage CEIOPS to take this factor into account. If no allowance for geographical diversification for non-life business will be applied, this will decrease to incentive to spread risk as well over different geographies. Therefore, it is necessary to include geographical diversification in the calculation of the SCR to see its benefits.	We do not agree. We understand the removal of geographical diversification may have a considerable impact for some undertakings. However CEIOPS does not wish to allow for geographical diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence - too complex Furthermore this can be allowed for via USP
			The non-proportional reinsurance should be explicitly allowed within the standard formula The non-proportional reinsurance is an important tool used by companies in several areas of its activities, either as an element of risk mitigation,	Noted. CEIOPS has considered proposals regarding non prop reinsurance from industry and a proposal has been made in the final advice. Undertakings can also consider the use of USP or PIM.

			strategic element in the determination of prices, etc, and therefore should be properly calibrated in the standard formula.	
			CEIOPS considers that an average level of risk mitigation through non prop reinsurance has been taken into account, but no further info has been given either. So, if it is not considered in the calculation of the solvency capital requirement, this would not pick the real risk borne by the entity, in addition can influence the decision of insurance entities on the level of reinsurance programs depending on the final figure of required capital. It is necessary to encourage the most risk sensitive calibration as possible	7. Noted. This is taken into account via CAT risk advice, see final advice on the design of non-life U/W risk module (CEIOPS-DOC-41-09, former CP48).
			Other risk mitigating instruments for CAT risk We believe some risk mitigating must be taken into account to better represent for example the Spanish insurance market as CCS (Consorcio de Compensación de Seguros).. The CCS takes charge of an important amount of the final claim cost for all insurers involved.	8. Noted. However CEIOPS does not support the recognition of profits and losses under the standard formula.
			The Volume parameter (V) is not risk sensitive if profits and losses one year period are not recognized.	9. We agree. This is a consequence of the design of the standard formula which CEIOPS has proposed under CEIOPS-DOC-41-09. A more explicit allowance would require a change in the standard formula, for example change V as a premium measure for a claims measure. Industry suggestions as to how this can specifically be dealt with have
			The proposed method (Factor*Volume) does not encourage the risk	

			management and is not risk sensitive since penalizes undertakings with a greater volume of premiums and reserves. For example, 2 undertaking with the same risk profile but with different level of premiums will have different capital charge since the SCR will depend on the Volume parameter. Oddly, the best covered entity with a higher volume of premiums will be penalized with a higher capital charge For this reason it seems necessary to include in the standard formula the relevant mechanisms to collect the benefits and / or losses to one year period and their implications on the final capital requirements.. Data concerns Although in the data request (annex 4.1) there is a template that data must comply with, it is not specified whether Loss Ratio series include events that could be considered in CAT risk sub-module In the same way, CEIOPS approach does not allow to estimate relevant variables in underlying risk volatility calibration as underwriting cycle, changes in portfolio mix, changes in reinsurance policy, regulatory changes, etc.	been invited in the past with little success. 10. Noted. CEIOPS has asked for data to be supplied net of cat, (see Annex 4.1 of CP 71). There are some member states for which the data included cat because the net of cat data was not available. However CEIOPS is currently collecting Cat data to strip this out this effect where possible 11. Noted. A more explicit allowance would require a change in the standard formula. As it stands CEIOPS do not support this. What CEIOPS can do is also limited by the nature of the exercise which is to result in an EU calibration. The data covers more than one market, and different markets may exhibit cycles to different degrees and with different timing. It is hard to see how any reasonable adjustment could be made without using some form of premium rating strength index – and these are not widely available and have dubious

				credibility at present. We would need to decide at which point we are in the cycle, and always have enough capital. How could we decide that, is highly judgemental. Industry suggestions as to how this can specifically be dealt with have been invited in the past with little success. Furthermore, if we are aiming to measure the variation of loss ratio from "expected" levels, then knowing where you are in the cycle is important. An analysis of change in loss ratio from previous year would undoubtedly result in a lower standard deviation than simply treating each year's observed loss ratio as a random sample from the distribution. However, since the SF does not allow for expected profits (or losses) or underwriting cycles, it is arguably more appropriate to look at where the result for next year is relative to (assumed) break even, as we do not care about (know about?) where we were last year. This would seem to lend some support to the approach adopted. 12. Noted. CEIOPS has tried to base the calibration on what data

				is available. Ideally the data should all be net. But this information is not always available. Therefore CEIOPs has worked on the basis of the data provided by member states. Where data was available net and was still representative, the factors where selected from net. However, where the gross data was significantly more representative the calibration was based on gross.
			There are some sections where the paper talks about net information and some others where it talks about gross reinsurance information, giving the calibration process information with an additional dose of heterogeneity.	13. We do not agree. The European Commission has explicitly stated that national parameters are not allowed under the standard formula. The standard formula aims for maximum harmonisation
			National parameters should be allowed when is possible	14. We agree. The standard formula tries to fit all risk profiles into one set of parameters and the likelihood is that this will result inappropriate for most firms. However the directive provides undertakings with tools to be more risk specific (USP and PIM). Undertaking specific parameters is a very useful tool to apply when undertakings feel their profile

			We believe that a more granular approach should be released, in order to "force" the companies to follow a underwriting risk management in a more active way, in a better way than the one derived from the application of a certain factor over which there is not possibility to act. General factors application gives a lower goodness of fit compared to the specific factors approach, so CEIOPS should allow the application of factor based on specific experience of each market. Regarding factor calibration UNESPA has carried out a specific calibration for Spanish insurance industry during 2006-2007. For example for Motor insurance we obtained en Premium risk factor and a Reserve Risk Factor notably lower that CEIOPS proposal (5.43% and 6.13% respectively)	deviates from that assumed under the standard formula. CEIOPS would encourage firms to test the methodology under USP and use their own data. This should provide result more in line with undertakings expectations. 15. Noted. We would welcome UNESPA to share the analysis and data so CEIOPS can understand why there are such differences. We would also welcome UNESPA to carry out the exercise under the assumptions of the Non life standard formula. Company specific standard deviations are not comparable to the NL standard formula, because undertakings will do their estimations using their own data and feeding in their own assumptions. Undertakings must realise that the CEIOPS analysis has been carried out under certain constraints.
2.	ABI	General Comment	Compared to QIS4 we appreciate CEIOPS' effort to provide more background on the method used to set the calibration for non-life underwriting risk. We are disappointed that overall the rates chosen appear significantly	Noted. Noted. See corresponding points to

			higher than in QIS4: 35% increases in SCR across both life and non-life industries as per CEIOPS own estimate.	comment 1.
			For UK non-life companies, the indicative results from a market study carried out by non-life consultancy EMB shows an average increase of around 65% in SCR. At the time of writing the survey had finalised results for 40 firms; however there were a number of late entrants into the study so further analysis is being carried out and results will be available in the near future on www.emb.com.	Noted. Before making further comments we would need more details of this analysis. Also, the CEIOPS analysis is based on more than 40 firms. Furthermore we assume the fimrs EMB is currently analsyis are firms which take into account a large number of factors that are not captured by the standard formula. For example geographical diversification.
			As per CEIOPS own admission in paragraph 3.29 the restricted sample of seven countries, used implies some acute limitations. We have some doubt over the data appropriateness of the given sample which may not be representative of the overall European market.	Noted. See corresponding points to comment 1
			Cat data have not been split out for premium / reserving risk. This is a serious flaw that has resulted in excessively high calibrations.	Noted. CEIOPS has asked for data to be supplied net of cat, (see Annex 4.1 of CP 71). There are some member states for which the data included cat because it the net of cat data was not available. However those regulators are now collecting the data from the industry and this will be included in the revised calibration. Nevertheless the use of net data may have mitigated any impact to some extent.

			The net effect is to increase the values of the calibrations which in turn will increase standard formula capital requirements. This will increase incentives to seek internal model approval. In practice we think such approval will inevitably be benchmarked against the standard formula so it is disappointing to see the calibration increase from already high values (per our QIS 4 analysis).	Noted. See corresponding points to comment 1.
			Regarding the methodology itself we are anticipating the following difficulties: (a) Historic loss ratio variability for many classes is, in part, driven by rating levels. These are reasonably well known for the next year, so we suggest reducing volatility for that year.	(a) We agree. An analysis of change in loss ratio from previous year would undoubtedly result in a lower standard deviation than simply treating each year's observed loss ratio as a random sample from the distribution. However, since the SF does not allow for expected profits (or losses) or underwriting cycles, it is arguably more appropriate to look at where the result for next year is relative to (assumed) break even, as we do not care about (know about?) where we were last year. This would seem to lend some support to the approach adopted.
			(b) At a class level published data will often have significant distortions due to the inconsistencies of methods used and the booking policies of management both within years and over time. These distortions have not been material historically. The actuarial function requirements will	We agree. Indeed booked estimates will be smoothed and this will most likely give rise to lower volatilities. Undertakings should take this into consideration when suggesting the

			reduce those distortions, at line of business level, in the future. We would expect "reported" volatility to reduce accordingly. The assumption that historic provisions are at best estimate is unlikely to be valid.	calibration is high.
			(c) There is no allowance for the expected profitability of the business.	We agree. Expected losses and profits are not to be recognised under the standard formula. This has also been confirmed by the European commission.
			(d) Treatment of non-proportionate reinsurance is too approximate. In our view this combination of factors will tend to cause the proposed model to systematically over-estimate the parameters.	Noted. See corresponding points to comment 1.
			In addition we are concerned that the proposed method results in a double counting between "cat risk" and "premium risk" arising from the fact that: (a) Premium risk factors are applied to the whole premium, which will incorporate a cat load. (b) The calibration of the volatilities for premium risk has incorporated data with catastrophes in it, and thus exhibits excessive volatility. However, catastrophes are separately and explicitly allowed for elsewhere. This constitutes a double/triple count of catastrophes, which is extremely penal to companies writing catastrophe-exposed business	Noted. CEIOPS has asked for data to be supplied net of cat. The factor is applied to net premium rather than gross premium. Thus this should mitigate the impact to some extent. However we agree that some member states have provided data including CAT, where material CEIOPS will aim to take this out.

			and particularly catastrophe reinsurance, for which the only exposures are in respect of catastrophes. Neither the geographical diversification nor the effect of underwriting cycle has been sufficiently taken into account.	Noted. See response to 1. A more explicit allowance would require a change in the standard formula. As it stands the standard formula and CEIOPS do not support this. What we can do is also limited by the nature of the exercise which should result in an EU calibration. The data covers more than one market, and different markets may exhibit cycles to different degrees and with different timing. It is hard to see how any reasonable adjustment could be made without using some form of premium rating strength index – and these are not widely available and have dubious credibility at present. We would need to decide at which point we are in the cycle, and always have enough capital. How could we decide that, is highly judgemental. Industry suggestions as to how this can specifically be dealt with have been invited in the past with little success. Furthermore, if we are aiming to measure the variation of loss ratio

				from "expected" levels, then knowing where you are in the cycle is important. An analysis of change in loss ratio from previous year would undoubtedly result in a lower standard deviation than simply treating each year's observed loss ratio as a random sample from the distribution. However, since the SF does not allow for expected profits (or losses) or underwriting cycles – political decision – it is arguably more appropriate to look at where the result for next year is relative to (assumed) break even, as we do not care about (know about?) where we were last year . This would seem to lend some support to the approach adopted. We agree. Indeed this is an issue; however the European Commission has explicitly stated that a size factor cannot be incorporated into the standard formula. The analysis highlights this critical issue and how this will lead to a calibration that will often overestimate for large firms and underestimate for medium and smaller firms.
			We defend the view that different rates should be set based on the portfolio (not necessarily company) size since it is clearly demonstrated in the CP that most lines of business benefit from a significant degree of diversification by volume. We suggest the creation of three categories: Small, medium and large with a different set of rate for each category.	
3.	ACA	General	At first sight: The proposed methodolgies can seem correct. But in fact, no factor is mathematically justified	We do not agree. CEIOPS has provided stakeholders with a

		Comment	Some proposed methods are not consistent with SII (for example: method 1 based on an assumption of normality). However, we are happy to use the claim Developpement Result over the one year.	description of how we have arrived at each factor by LoB for each of the methods. The difficulty was arriving to a fitted factor per method when there is a clear difference by size of portfolio. Furthermore, once we have found a fitted factor by method, how to select the final factor. For the former, CEIOPS has taken a volume weighted average approach. This is explained in the executive summary and also throughout the paper. This approach will result in fitted volatilities which are heavily biased toward the volatilities of the larger portfolios (and hence significantly lower). As an example for "Motor other", the fitted factor for method 2 is 9%. This is a clear underestimation for medium and small portfolios. However it is too high for larger portfolios. The selection of the final factor was based considering the overall information available to CEIOPS. We considered the lowest fitted factors, the QIS 4 analysis in the Annex 4.4 and judgement around the assumptions. CEIOPS analysis was purely based on technical analysis with the data available at the time. Factors have

				not been inflated on the contrary CEIOPS took the view of selecting an average of the lowest factors.
4.	AGERE AON ECIROA FERMA MARSH MIMA	General Comment	When considering the following comments, it is important to recognise the particular nature of captive companies which differ from commercial insurance and reinsurance undertakings in that:- 1. They write a restricted number of lines of insurance business (e.g. property damage & liability) and normally issue a small number of policies (e.g. global programmes with only one policy per insurance class) 2. They insure or reinsure a restricted number of risk units (e.g. sites, premises, vehicles) 3. They have a restricted number of insureds / clients 4. the purpose of the captive is to add flexibility to the tools available to the group risk manager in managing and mitigating the risk of the parent group in a cost efficient manner.	Noted. CEIOPS has considered Captives in line with the requirements of the Directive. However captives are no different to other firms in the sense that they have may have a different risk profile to that implied by the standard formula. Stakeholders can use undertaking specific parameters or PIM.
5.	AMICE	General Comment	These are AMICE´s views at the current stage of the project. As our work develops, these views may evolve depending in particular on other elements of the framework which are not yet fixed. AMICE members' welcome CEIOPS initiative to disclose the methods used to obtain the calibration for the premium and reserve risk for the different lines of business. AMICE members reiterate the need to ensure that the assessment of the standard deviation for calculating the reserve risk should be based on the one-year horizon (as defined in the Solvency II Framework) and not on a full-run approach CEIOPS states the only 6 countries provided data for the calibration exercise. Additionally for some branches, the proposed calibration has been done with only one country. The calibration only included some jurisdictions and thus is not representative of the European market.	Noted. Noted. Indeed CEIOPS has taken the one year time horizon approach as explained in CP71 and as implied by the methods. See corresponding points to comment 1 .

			The new calibration proposed by CEIOPS is significantly higher than the defined calibration in QIS4 which was already considered as extremely conservative by AMICE members.	See corresponding points to comment 1 .
			Some of the methods used are based on gross claims data and not on data net of reinsurance. Additionally we have some remarks regarding some of the methods used in the calibration and some of the assumptions defined for its application.	See corresponding points to comment 1.
			We agree with the CEA that more transparency is needed to understand the criteria followed by CEIOPS when choosing the final factors.	See corresponding points to comment 3.
			AMICE Position on the Methods to calculate Premium and Reserve Risk	
			☐ Premium Risk	Noted.
			AMICE members believe that the most coherent methods to estimate the factors for the premium risk are Method 1 and Method 2.	
			☐ Reserve Risk	Noted.
			Based on the volatility calculated by LOB, we believe that the most suitable methods are Method 1 and Method 4.	
			Indeed, our preferred method is Method 4 since it is based on paid claims and is consistent with the size effect, To reach this conclusion we have analyzed the results of the other methods proposed by CEIOPS and we have derived a volatility which is comparable with the results derived by CEIOPS (see paragraph 3.183).	
			CEIOPS should recalculate the factors with the methods indicated above and with the appropriate data.	Noted.
			CEIOPS proposes risk margin to change in stressed situations. The risk margin of an insurance portfolio is defined as the hypothetical cost of regulatory capital necessary to run-off all liabilities following the financial distress of the company. So we believe that risk margin is already calculated under a stressed situation.	We do not agree. It is the hypothetical cost of the capital that would be lost in a distress situation. Following the distress there would be no capital and the firm would need to

				find more capital. It is not clear from the comment but the stakeholder seems to suggest that following adverse developments, there cannot be further adverse developments. Just because things have gone badly, it does not mean that things cannot get worse (consider the experience of asbestos development). Once it became clear that asbestos was a disaster, capital needs for asbestos exposed undertakings increased significantly. Another way of seeing this is for example, an undertaking may decide to buy a stop loss arrangement after one year (t=1) under normal circumstances and the arrangement will have an implicit margin attached to it. However, if at t=0 the undertaking is subject to a 1 in 200 situation, at t=1, when they try to purchase the stop loss, the risk margin implicit in the price of this arrangement would have increased dramatically due to the change in circumstances. This additional risk is not captured by the risk margin at t=0. The cost of transferring your liabilities is not the same before the stress than after the stress. The SCR is the change in the economic balance sheet over one year, this includes the change in liabilities and

				the risk margin. The SCR Non-life includes the change in discounted liabilities but not the change in the risk margin, therefore this would need to be added.
6.	ARC	General Comment	The factors derived in CP71 are based on a number of submissions from (typically) active insurers and reinsurers and will therefore not be representative of the volatility for reserves held by runoff companies. It could be argued that these factors unfairly penalise runoffs as they are based on the volatility of very immature reserves subject to a high degree of uncertainty, and are then applied to very mature runoff portfolios. There are approaches in this CP that we feel need additional quantitative assessment for run-off portfolios. Paul Corver, the Chairman of the Association of Run-off Companies, wrote to Karel Van Hulle on 17 November 2009 and introduced these concerns. In 2010 we are prepared to work with CEIOPS to assist with the development of run-off specific guidance.	Noted. We agree that the standard formula will not be a perfect fit for most undertakings. The reason for this is that it tries to be representative of the EU market. However where undertakings consider it to be inappropriate the directive provides useful tools to be applied by undertakings in such circumstances: undertaking specific parameters or PIM.
7.				
8.				
9.	CEA	General Comment	The CEA welcomes the opportunity to comment on the Consultation Paper (CP) No. CP 71 on Calibration of the non-life underwriting risk. It should be noted that the comments in this document should be considered in the context of other publications by the CEA. Also, the comments in this document should be considered as a whole, i.e. they constitute a coherent package and as such, the rejection of elements of our positions may affect the remainder of our comments.	Noted. Noted. Noted.

			These are CEA's views at the current stage of the project. As our work develops, these views may evolve depending in particular, on other elements of the framework which are not yet fixed.	Noted.
			Moreover, it should be noted that this consultation has been carried on an extremely short time frame which has not allowed a complete analysis of all the advice. Therefore, the following comments focus only on the main aspects of Ceiops' advice and are likely to be subject to further elaboration in the future.	Noted. The deadlines are proposed by the European Commission.
			The factors proposed in the consultation paper if maintained will prove to be very onerous for European insurance undertakings. We are concerned with the significant increases in the calibration, in particular since in QIS4 many undertakings had already found the parameters to be inappropriately high. While we agree in general with Ceiops that lessons should be drawn from the recent crisis, we do not understand how these may have motivated such an important increase of the Non-Life underwriting risk calibration. Introducing implicit layers of conservatism in the calibration will result in a cumulative level of capital requirements which is neither in line with the Framework Directive required 99.5% VaR level nor sustainable by the industry and its policyholders. We understand the need to maintain the simplicity of the standard formula but we think that the current approach overdoes this simplicity and fails to achieve the required risk sensitivity. We therefore strongly believe that the following point should be taken on board: ☐ Geographical Diversification and Non Proportional Reinsurance should be explicitly allowed for within the Standard Approach. It is not clear how the recognition of these key risk mitigation techniques has been allowed for implicitly in the proposed calibration. The standard formula should not fall short of incentivizing sound risk management	See corresponding points to comment 1. See corresponding points to comment 1.

			techniques. ☐ A more granular approach to the premium and reserve risk whereby separate factors are applied depending on whether the buisness concerned is large, medium and small. Such an approach would reflect better conceptually the law of large numbers and in practice the fact that volatility varies depending on the size of the business which is looked at. ☐ As per our comments on CP 75, the CEA asks for a significant review and extension of the scope of application of Undertaking Specific Parameters. Undertaking specific parameters should by defintion better reflect the profile of an undertaking where the standard formula fails to produce sufficiently risk sensitive results and encourage sound underwriting risk maangement. In general, we found that the data and the methods used by Ceiops in coming up with the proposed calibration for the Non-Life underwriting risk present a number of important drawbacks: ☐ The data comes from 6 countries only, with data from major markets missing and as such fails to be representative of the EU market. For certain lines of business where data is very scarce and is only based on a very limited number of undertakings, we have major concerns about the validity of the results. This is also the case for the data basis for CAT risk which is too small for a calibration of Europe-wide factors as it is constrained to very few markets. Furthermore, Ceiops has not provided any evidence at all in this paper to substantiate the use of the proposed 50% correlation between premium and reserve risk between all LoBs. We believe that it is essential that the calibration is based on a sufficient and representative sample of the insurance market. The	See corresponding points to comment 2. Noted. Noted – The collection of more data from a wider range of countries for our recalibration exercise, should go someway to meet these concerns. CEIOPS has only done limited analysis on correlations for Non life. However we also consider this is an area where it is difficult to carry out any robust analysis. We would welcome any supporting analysis or

			standards on the appropriateness, completeness and accuracy of data, set by Ceiops itself in CP43, are not met.	evidence from the industry proving the contrary.
			☐ In addition to our concerns related to the scarcity of data, we have strong concerns about the quality of the data used. Indeed, in many instances the data used appears to be of very little quality. Many sources of heterogeneity have been ignored in the analysis including changes in reinsurance programmes, and many differences between countries such as claims environment, accounting basis and regulation. Also gross and net of reinsurance data are inconsistently used making the results incomparable.	We partially agree. However this is a consequence of the objectives of the standard formula. CEIOPS has to work fulfilling the requirements of the directive and European Commission. One set of factors for all defines this calibration. However we agree that making the standard formula more complex and more risk sensitive could improve the final results. However, CEIOPS does not support adding further layers of complexity and also awaits industry feedback on some areas. Furthermore the level of segmentation will also have an impact. Further segmentation by LOB and factors by size of portfolio could improve the calibration further. However CEIOPS is limited to what it can do in the limited amount of time.
			☐ A transparent, reproducible and consistent approach is lacking in using the different methodologies for the calibration of the reserve and	Noted. All methodologies have pros and cons. CEA lists the downsides but they do not provide alternatives menthods we could use. CEIOPS has tested a wide range of methods in order to show the industry that we have considered a number of paths and the final result is not just based

			premium risks. The assumptions behind the different methods have not been given sufficient consideration. For example, Ceiops has taken an assumption of lognormal distribution which may not be appropriate for all lines of business. Furthermore, the selection of the ultimately applied method is not always sufficiently substantiated. It seems that Ceiops is very often choosing the methods which produce the highest results. Furthermore, some methods like the Merz-Wuthrich method are new and up to now insufficiently tested. Also, methods 1 to 3 for the reserve risk, take into consideration early development years which is clearly overestimating in most cases the volatility of reserves in the most recent development years.	on one methodology but considers a variety of them. We believe this is something that is done in practice in the actuarial industry. We do not believe actuaries rely purely just on one method. Regarding the lognormal assumptions, we agree that other assumptions could be made, but in CEIOPs considers this the most appropriate for the task we have: providing one set of factors for the EEA market See corresponding points to comment 1.
			☐ Throughout the paper, the analysis carried out by Ceiops fails to make any allowance for the underwriting cycle which will leads to results which are significantly overstated in terms of variability. This is a broader topic which has several interdependencies with other CPs, like CP75 and CP48. We believe that in many cases much of the volatility of loss ratios can be exaplained by changes in premium rates.	See corresponding points to comment 1 and 2
			☐ There is no indication that the data series used in the calibration of premium and reserve risks have been adjusted for CAT risks. We believe this means there may be double counting of risks between the CAT risk module and the premium and reserve risk modules. This effect is particularly evident for CAT exposed lines such as MAT and non-	We agree. Indeed catastrophe is by far the most challenging risk to calibrate under the non life sub module. Hopefully the work of the CEIOPS CAT Task Force will provide a more robust analysis of the risk we

			proportional lines of business. The industry believes that the concerns expressed in this paper are of the outmost importance and as such stands ready to contribute in achieving more adequate and sustainable results. We also invite Ceiops to wait until the CAT Task Force has completed its work which will provide insight into more markets and to consider the results of this working in the calibration of the CAT factors. Also, we find it useful to foresee a procedure whereby the calibration parameters retained at the entry into force of Solvency II are regularly reviewed. Taking into account that the results and methods presented here are deficient in many aspects, a specified procedure in back-testing would be helpful in any case.	are trying to capture. However unless a personalised approach is adopted, the estimation of any factor will not be exact under the standard formula. CEIOPS has improved the the method compeared to QIS 4: the calculation is gross and stakeholders can apply their respective risk mitigants to estimate the net impact. Also, there may be circumstances when the standardised scenarios may not be approapriate, for example these will only cover EU exposures. Therefore, stakeholders will need to consider alternatives such as the factor method (if appropriate) or otherwise a Partial internal model. See also corresponding points to comment 1.
10.	CRO Forum	General Comment	A Premium and Reserve Risk – selections seem to have additional layers of prudence and the results differ significantly to our studies (priority: very high) In comparison to QIS4, CEIOPS proposes to increase all volatility factors for the individual lines of premium and reserving risk. The CRO Forum believes this is wholly inappropriate. The CRO Forum QIS4 Benchmarking Study (October 2008) indicates that already the QIS4 calibration is conservative compared to internal model. Although we acknowledge that a considerable amount of judgement has to be present when selecting the factors it seems that the argumentation in general leads to higher factors than supported by the majority of the	See corresponding points to comment 1. See corresponding points to comment 1. We disagree. CEIOPS analysis was purely based on technical analysis with the data available at the time.

			analysis. We feel that this over-prudence is also exhibited in the fact that too much weight has been given to outcomes of inappropriate methods for: ☐ Premium Risk - From the methods to assess premium risk method 2 seems to be most suited for the purpose at hand, i.e. the calibration of an industry-wide volatility factor. Consequently, this method should receive a rather high weight when determining the factors. However, this principle seems to be violated in most lines of business. The basic assumptions behind methods 3 (industry-wide expected loss ratio) and 4 (industry-wide variance of the loss being proportional to the square of the earned premium) lead to an exaggeration of loss volatility.; and ☐ Reserve Risk - The results from method 1 will be heavily influenced by companies posting large reserves, i.e. especially reinsurers, making this method less suited for the calibration of industry-wide volatility factors. From the methods to assess reserve risk method 4 seems to be most suited for the purpose at hand, i.e. the calibration of an industry-wide volatility factor. Consequently, this method should receive a rather high weight when determining the factors. However, this principle seems to be violated in most lines of business. The simple average used in method 6 will put more weight on small undertakings which will in general show a larger variability in claims and thus this method will lead to an overestimation of loss volatility. In summary, our impression is that additional layers of conservatism are present in the selection of the factors, due to the limited data and also due to outcomes of several unstable methods. B Premium and Reserve Risk – data supporting the analysis has limitations (priority: very high) The analysis carried out has the following limitations: ☐ Lack of geographic diversification of data, as data is limited to a small number of markets: In some cases the database is restricted to a	Noted. See response to comment: 1, 2, 3 and 9 Why is method 2 considered most suited? But methods 3 and 4 is what the standard formula is trying to achieve Noted. Noted – can you explain why? We disagree. We have carried out a volume weighted average, so the effect is the opposite from what you describe. See corresponding points to comment 1. See corresponding points to comment 1.

			small number of markets and thus not sufficient to calibrate EEA-wide factors. In particular UK is a very volatile market.	
			☐ Historical data has not been adjusted for changes in reinsurance structure over time: The majority of the analysis for premium risk was carried out using data net of reinsurance (§3.41). Changing reinsurance structures over time may create extra volatility in a time series. This aspect should be further studied. The CRO Forum is in favor of using gross data to estimate gross volatility and to approximate net volatility by taking account of the individual actual reinsurance structure. Ideas how this can be achieved for NP reinsurance have been presented to CEIOPS by a working group consisting of representatives from Munich Re, Swiss Re and Hannover Re.	See corresponding points to comment 1
			☐ There is a potential double count with CAT risk: There is no indication that the data series have been adjusted for CAT risks. We believe this means there is double counting of losses which should be included in the cat risk module.	See corresponding points to comment 1.
			☐ The data used is not based on best estimate data: The valuation principles underlying the analysis are not based on best estimate data and hence not economic. Thus, for instance, the reserving policy of the various companies will lead to additional noise in the data which makes the results less reliable.	Noted. Data was used on a best effort basis. Indeed a lot of data on SII basis will not be around as SII does not start until end 2012.
			☐ Data for non-proportional reinsurance is too limited: In the case of non-proportional reinsurance the data basis is not sufficient to draw meaningful conclusions. This holds true for the analysis on premium as well as on reserving risk. The CRO Forum believes the high volatilities observed by CEIOPS indicate that the data included a significant amount of CAT losses. We would be happy to further contribute to an enhancement of the standard formula regarding non-proportional reinsurance. We also encourage the use of (partial) internal models for non-proportional reinsurance.	See corresponding points to comment 1.
			C We encourage CEIOPS to wait until the CAT Task Force has	

			completed its work (priority: high)	
			We note that the data basis is too small for a calibration of Europe-wide factors as it is constrained to a single market (UK in case of analysis 1, Germany in case of analysis 2).	Noted.
			As a result, we encourage CEIOPS to wait until the CAT Task Force has completed its work which will provide insight into more markets and to consider the results of this working in the calibration of the factors.	See corresponding points to comment 9.
			As minimum requirement we consider it necessary to adopt a factor approach with factors tailored on each country	Noted.
			After the final calibration of the CAT risk module for QIS5 has been accomplished, CEIOPS should reconsider the calibration of the base premium and reserve risk module to avoid double counting of losses.	
			D A Correlation of 50% between premium risk and reserve risk should be justified (priority: high)	CEIOPS has only done limited analysis on correlations for Non life. However we also consider this is an area where it is difficult to carry out any robust analysis. We would welcome any supporting analysis or evidence from the industry proving the contrary.
			We think that a general 50% correlation between premium and reserve risk should be justified. This correlation percentage has been used since QIS2 but has not been justified. QIS2 / QIS3 / QIS4 is not a justification for applying this correlation factor.	
				Noted. Double counting will hopefully be eliminated.
			E The correlation of 25% between CAT risk and premium & reserve risk needs to be reconsidered as there is potential double counting (priority: high)	Noted. We would agree that there should be low correlation between CAT and reserving risk but would expect a quite high correlation

			16. Compared to previous calibrations the correlation between CAT and pricing / reserving risk is now 0,25 instead of 0 which we think is too prudent especially when taking the issue of double-counting of CAT-events into account due to data reasons (cf. above and also our response to CP74).	between CAT and premium risk - when premiums are soft, weak terms and conditions are likely to increase CAT exposure; when disasters happen, everything else tends to go wrong. 0.25 might be a reasonable compromise between the two.
11.	Deloitte	General Comment	In general we feel that too many different methods are being used to come up with conclusions, and that the selection of the ultimately applied method is not always sound or sufficiently substantiated. Ideally, we would prefer if one method would be applied consistently to all lines of businesses (LOBs), or, if that is not possible, that solid arguments are given as to why a certain method is more appropriate. We feel that a lot of the stated recommendations for the resulting risk factors haven't been sufficiently explained and in some cases feel that the analysis was used to attempt to justify a pre-stated factor, a feeling that can be avoided by giving more insight into how the final factor was arrived at. Given that the recommendations in the consultation paper will lead to a considerable increase in capital due to an increase in premium and reserve factors from QIS4, we feel that it would be best to paint a clearer picture of how the factors were arrived at, or what judgement was used in arriving at the final factors.	See corresponding points to comment 1, 2 and 3. All methodologies have pros and cons. CEIOPS has tested a wide range of methods in order to show the industry that we have considered a number of paths and the final result is not just based on one methodology but considers a variety of them. We believe this is something that is done in practice in the actuarial industry. We do not believe actuaries rely purely on the results of one method. Furthermore choosing the results based on one method will be further controversial because not everybody agrees on what method is best. All methods have pros and cons.
			The small number of undertakings that provided data (sometimes fewer than 10), as well as the limited number of countries that provided data, concern us when it comes to the adequacy of the data and the validity of	See corresponding points to comment 1

			the results obtained from the data. We urge CEIOPS to address the data issues as soon as possible. In our opinion, the same data requirements should apply to the calculation of standard parameters of the SCR as to calculations by insurance undertakings under Solvency II. The requirements for use of data for firms adopting partial models to determine the volatility factors appears to be more onerous than those set out for the standard formula calibration. It would be more appropriate for the requirements for calibration of the standard formula be more precise.	Noted.
12.	DIMA	General Comment	DIMA welcomes the opportunity to comment on this paper. Comments on this paper may not necessarily have been made in conjunction with other consultation papers issued by CEIOPS. The doubling of the reinsurance premium and risk reserve factors will have a particularly profound impact on reinsurers. These are very conservative when compared to industry benchmarks and historical experience, and will increase the aggregate capital needed when non-proportional reinsurance is used.	Noted. Noted. See corresponding points to comment 1
13.	EMB Consultancy LLP	General Comment	Overall, we have found it difficult to review the appropriateness of the recommended parameters in this paper. Key difficulties have included: ☐ The low level of data available for some classes, which reduces the credibility of the selected factors ☐ The fact that the volatility of risk including expenses is considered similar to the risk excluding expenses	Noted. Noted. We have used a particular large database of information. This may not be representative of all countries but it is certainly more representative than what was used for QIS 4. Noted. Do you have any proposal as to how we can get round this problem?

			☐ The fact that gross data was sometimes used	Noted.
			☐ The fact that earned loss ratio data were used to parameterise the premium risk	Noted. Can you be more specific?
			☐ The fact that accident year data were used to parameterise the reserve risk	Noted. Can you be more specific?
			☐ The fact that the risk-margin was not included	Noted. CEIOPS asked for stakeholder feedback. This is an area where not all stakeholders agree this is why we wanted more information. However it would help if EMB explain why they support this option
			☐ The assumptions of the Merz/Wuthrich formula	Noted. Can you please provide some examples or expand on what you mean exactly?
			☐ The assumption of no reserve surplus (on average)	Noted can you expand what mean
				Noted. The calibration was not based

			☐ The difficulty in assessing the reasonableness of the CAT factor method parameters	on a great deal of data. Further information needs to be provided.
			The recommended parameters documented in this paper are materially different from those used at QIS4 levels, with consequent material changes in the proposed capital requirement for firms. In some places it is difficult to see sufficient credible information to validate these changes.	Noted. Can EMB provide specific examples? Noted.
			We note the importance of the undertaking specific parameters, however these should not diminish the importance of establishing the most appropriate and credible base factors for the standard formula.	Noted. Can you be more specific?
			While we have specific comments, below, we would not consider that the calibration work carried out has been fundamentally flawed in approach, however in our experience it is very important to apply "sense-checks" to any such calibration work, and this has not been covered in the paper.	What kind of sense checks? Noted.
			We recognise that a parameterisation exercise such as this is likely to be particularly challenging, and open to various interpretations. We applaud CEIOPS for the detailed work they have carried out. As such our comments should be taken as an alternative view, and the issues we would consider if doing such an analysis only.	Noted.
			We understand that some of the data used was gross of reinsurance, and some included catastrophe losses. We believe it would be helpful to identify the data from different territories, perhaps by colour-coding the "Method 1" graphs. This would aid our understanding of the significance of the data issues, and form valuable evidence in understanding and peer-reviewing Undertaking Specific Parameters and Internal Models.	Noted. The timescales are set by the European Commission
			Finally, we would comment that this paper is large and detailed, and we have found attempting to review it, without reference to the underlying	

			data and in particular in the timescales available, to be a significant challenge.	
14.	FFSA	General Comment	FFSA has identified the following issues regarding non-life underwriting risk as described in the CP: - The scope of the study is insufficiently representative of the European community,	See corresponding points to comment 1
			- CEIOPS did not let enough time to companies to produce adequate data, therefore, this lead to a partial or truncated vision of the situation,	Noted. We appreciate that deadlines are tight however these have been set by the EC.
			- Some of the calibrations seem to have been made on a gross of reinsurance basis for the reserve risk calibrations, and Motor TPL for the premium risk,	See corresponding points to comment 1
			- FFSA is not in favour of the introduction of a risk in change of risk margin,	See corresponding points to comment 5
			- Calibrations have been increased compared to QIS 4. These calibrations were already too high in QIS 4, FFSA therefore is against this increase	See corresponding points to comment 1
			- For premium risk, FFSA considers that method 3 is not appropriate as CEIOPS applies an industry wide expected loss ratio. As a result, volatilities will yield results which are significantly higher. Regarding method 4, FFSA considers that it does not take into account the undertaking's size. Hence, FFSA rejects methods 3 and 4.	See corresponding points to comments 2 and 13.
			- For reserving risk, FFSA disagrees with CEIOPS recommendation for third party liability lob factor (20%) as large companies are	See corresponding points to comment 2.

			penalised. More specifically, FFSA is in favour of method 4 by taking into account the undertaking's size.	
15.				
16.	GDV	General Comment	GDV recognises CEIOPS' effort regarding the implementing measures and likes to comment on this consultation paper. In general, GDV supports the detailed comment of CEA. Nevertheless, the GDV highlights the most important issues for the German market based on CEIOPS' advice in the blue boxes. It should be noted that our comments might change as our work develops. Based on our experience during the previous two consultation waves we also want to express our concerns with regard to CEIOPS decisions: 1. restricting the consultation period of the 3rd wave to less than 6 six weeks 2. splitting the advice to the EU-commission in two parts ((1) first+second wave and (2) third wave) although both parts are highly interdependent 3. not taking into account many comments from the industry due to the high time pressure (first+second wave) These decisions could reduce the quality of the outcome of this consultation process. Therefore we might deliver further comments after we fully reviewed the documents. From our point of view, it could be foreseen that especially the calibration of the QIS5 will not be appropriate nor finalised when	Noted. See corresponding points to comment 14. We disagree. CEIOPS does consider the comments from the industry very carefully but sometimes cannot accept them because CEIOPS does not agree. Noted We disagree. The calibration will be ready for march 2010.

			beginning in August 2010. Especially parameters have been strongly increased and do not reflect the economical view. The factors proposed in the consultation paper if maintained will prove to be very onerous. We are concerned with the significant increases in the calibration.	Noted. CEIOPS has been revising the calibration with further data. CEIOPS has carried out the calibration exercise based on the information available at the time and in accordance with the assumptions and criteria that CEIOPS supports for the Non life standard formula. Indeed if such criteria and assumptions where to change, so would the results of the calibration. The calibration has been carried out from a purely technical perspective and selecting an approach which was considered the most approapriate. Despite the shortmconings that have been mentioned in the paper, the calibration has also been based on a number a factors that would result in a lower calibration. For example the selection of factors using a volume weighted average, no adjustments for inflation, the use of posted estimates which will be smoothed, etc…. Furthermore the calibration is a consequence of the design. Therefore to improve this further we would not only have to incorporate more data but also change the design and assumptions.

				Noted.
			We understand the need to maintain the simplicity of the standard formula but we think that the current approach goes too much in this direction and fails to achieve the required risk sensitiveness.	
			In order to arrive at an appropriate calibration for this very important risk module:	Noted
			1. A more granular approach to the premium and reserve risk factors should be discussed, which would be significantly more appropriate.	Noted.
			2. We ask for a significant review and extension of the consultation paper on Undertaking Specific Parameters CP 75. The use of USP is the only solution to implementing a real risk sensitive management of non life underwriting risks.	We partially agree. We agree that the calibrations will need to be revised, given that they are based on assumptions and data that may change with time. Furthermore their may be developments we want to incorporate. However we disagree with the comment regarding the analysis being deficient. All methodologies have pros and cons. CEIOPS has tested a wide range of methods in order to show the industry that we have considered a number of paths and the final result is not just based on one methodology but considers a variety of them. We believe this is something that is done in practice in the actuarial industry.
			3. We ask for a procedure of constant recalibration of all parameters in forthcoming years. Taking into account that the results and methods presented here are deficient concerning representativeness and appropriateness, a specified procedure in backtesting would be helpful even if the calibration of parameters is well founded.	

				We do not believe actuaries rely purely just on one method. Regarding the lognormal assumptions, we agree that other assumptions could be made, but CEIOPS consideres this the most appropriate for the task we have: providing one set of factors for the EEA market
			CAT risk - We encourage CEIOPS to wait until the CAT Task Force has completed its work which will provide insight into more markets and to consider the results of this working in the calibration of the factors. As minimum requirement we consider to adopt a factor approach in line with the proposal of 3.376. We would be happy to assist CEIOPS in finding a more appropriate default approach and a homogeneous scenario approach, which allows for consideration of specific circumstances in countries, regions, LoBs or portfolios. - A simple multiplication with a proportion of net premiums is not appropriate nor necessary. In particular when a standardised scenario is not appropriate, a full or partial internal model is adequate. There may be simplifications concerning the process of approval in line with proportionality. - After the final calibration of the cat risk module for QIS5 has been accomplished, CEIOPS should keep in mind a procedure to avoid double counting of losses in the basic and cat risk module. GDV proposes the deduction of the expected value from the cat gross loss.	Noted. See corresponding points of comment 10

			Correlations We think that a general 50% correlation between premium and reserve risk for all LoBs is not warranted and seems rather high: Thus, neither premium nor reserve risk seem to justify a high correlation of 50%. This is a result of the fact, that premium and reserve risk has been already aggregated within each LoB by a "political" correlation 50% and the subsequent aggregation across LoBs. To solve all these shortcomings we propose a fundamentally different way to calculate the non-life basic risk NL-SCR: 1. a. Determine σ separate for reserve risk with formula from 3.23 b. Determine σ separate for premium risk with formula from 3.23 2. Determine the SCRres and SCRprem for each LoB using the formula in 3.21 and 3.19 to calculate an overall SCRres and SCRprem. 3. Aggregate the two SCRs with a politically fixed correlation of proposed 0.5 instead of the approach in 3.20 The identical data (and random variables) to calibrate the premium and reserve risk in CP 71 can be (and must be) used to calibrate the correlations. For the German market we estimate correlations nearby 0 for the aggregation of the reserve risks across LoBs and correlations nearby CEIOPS matrix (or smaller) for the aggregation of the premium risks across LoBs (cf. CP 74). Additionally we are concerned about the treatment of the LoB "accident" both in the health and in the nonlife-modul. We once more reiterate our	See corresponding points to comment 10. We disagree.We think that there is likely to be closer correlation between premium and reserve risk in a line of business than between premium or reserve risks in different lines of business. Thus we prefer to maintain our current approach. Noted. Noted. Based on the current proposal can GDV provide estimations or analysis that justifies the lower correlations and that we may be able to incorporate as part of our paper. Noted. This is an issue regarding segmentation.

			request to shift "accident" completely from the "health"-modul into the nonlife-modul. We refer to our comments in CP 48, CP 50, CP 72 and CP 74.	
17.	GROUPAMA	General Comment	CEIOPS: An average level of the risk-mitigation effect of non-proportional reinsurance is implicitly allowed for in the calibration because the volatility of the undertaking's time series reflects the risk-mitigating effect of the non-proportional reinsurance of their business GROUPAMA: The proposed method cannot be applied because non-proportional reinsurance treaties are very different between companies and countries.	We agree. CEIOPS has discussed this further with industry response and has proposed a method in its final paper.
18.	Groupe Consultatif	General Comment	In general, in many cases the data base and data quality appears to be very small and insufficient in order to fix EEA-wide premium and reserve risk factors for all Lobs. In comparison to QIS4, CEIOPS proposes to increase all volatility factors for the individual lines of premium and reserving risk. Although we acknowledge that a considerable amount of judgement has to be present when selecting the factors it seems that the argumentation in general leads to higher factors than supported by the majority of the analysis. The statistical challenge to question the evidence of the mathematical assumptions underlying the various methods taken into account in the study was very much reduced to only two heuristic techniques: 1. the evaluation of the appropriateness of a selected method by	Noted. See corresponding points to comment 1. The database is significantly larger than that used under QIS4. Noted. CEIOPS is not sure what GC means by this. What does the analysis support then? Noted. What other techniques should be included. CEIOPS has shown significant evidence of the difficulty in selecting a factor. Indeed for some

			showing the results of a goodness of fit test through a PP-plot (ultimately, only the 99.5%-percentile derived "counts"), and 2. a plot of company's specific variance embedded in loss data vs its underlying volume. The statistical analysis provided does not really qualify for a sound and solid mathematical analysis, in particular not in an environment where the heterogeneity of the various data samples seems to suggest that the stochastic structure of the underlying data does not fully match the far reaching mathematical assumptions made (e.g. the characteristics of a Markov process). In particular, it is not always clearly stated in the analysis which mathematical assumptions have to be fulfilled to link the different "weighting methods" to a well-defined mathematical framework. The methods presented seem to be rather derived from an intuitively based understanding of the problem space making use of elements of explorative data analysis, not from a strictly defined mathematical concept.	firms the factors should be much lower, but for other much higher. We partially agree. However this is a consequence of the objectives of the standard formula. CEIOPS has to work fulfilling the requirements of the directive and European Commission. One set of factors for all defines this calibration. However we agree that making the standard formula more complex and more risk sensitive could improve the final results. However, CEIOPS either disagrees with adding further layers of complexity or is waiting for industry feedback on some areas. Furthermore the level of segmentation will also have an impact. Further segmentation by LOB and factors by size of portfolio could improve the calibration further. We would welcome GC suggestion on how this could be improved. All methodologies have pros and cons. CEIOPS has tested a wide range of methods in order to show the industry that we have considered a number of paths and the final result is not just based on one methodology but considers a variety of them. We

				believe this is something that is done in practice in the actuarial industry. We do not believe actuaries rely purely on the results of one method. Furthermore choosing the results based on one method will be further controversial because not everybody agrees on what method is best. All methods have pros and cons.
				See corresponding response above
			It is very much questionable, at least it is not evident at all, that the derived estimates for the standard deviation will ultimately produce more reliable estimates for the 99.5%-percentiles per "cell" (cell= LoB, both for premium and reserve risk) than the former parameter picks (or other picks within certain ranges). Statistical analysis based on more homogeneous sets of data (country specific, company specific, specific to a particular scale of company…) is promising more reliable results.	Noted.
			The conceptual dilemma underlying the study presented seems to be based on a very much fundamental concern on the appropriateness of the aggregation technique applied across LoB, risk categories, etc. Whilst the problem to prudently evaluate the tail risk has been properly addressed at the lowest level of the statistical analysis, carefully taking into account the potential diversification benefits in the aggregation process with regard to certain dependency structures, there is a lack of a concise, mathematically well-defined concept to tackle the problem with an integrated view. The current approach does not prudently balance the	

			need for proper evaluation of tail risk at all levels and benefits from diversification. There is a clear tendency in the empirical study to simultaneously - increase the modeling of tail risk per cell, - to increase the tail risk after aggregation by increasing the underlying correlation coefficients, - and last but not least to overstate the tail risk of the non-life underwriting risk module by producing significant overlap in the measurement of tail risk derived from aggregating the sub-modules "basic premium risk", "nat-cat risk", and "man-made cat risk".	
			There is no evidence given that the current empirical analysis eliminated such overlap-effects from the underlying empirical data to avoid double counting of tail risk across certain sub-modules.	See corresponding points to comments 3 and 10.
			Furthermore, as the analysis was performed on samples net of historic and individualized reinsurance structures there is some impact on the analysis from both the heterogeneity and from changes of underlying reinsurance structures. Therefore, the far more appropriate approach would be based on gross data providing a parameterization of the non-life underwriting risk which ultimately can be adjusted by the individual design of a company's specific reinsurance program.	Noted. See response to comment 16.
			For the catastrophe risk calibration, the explanation of the derivation of the factors needs to be enhanced. The pure factor approach seems not to be adequate for man made cat risks. The proposed approach of GDV should be taken into account without translation into a premium factor approach.	Noted.
			We believe that harmonisation between the methods for USP (CP75) and the methods for calibration (CP71) can be valuable, since many undertakings will produce estimates according to CP75 and the results could be used for improved calibration if methods are harmonized.	Noted. We understand the removal of geographical diversification may have a considerable impact for some undertakings. However CEIOPS does
			The new calibration has been realized using data provided by several	

			countries (Luxemburg, UK, Germany, Slovenia, Poland, Portugal). Some of the larger insurance industries are missing. This implies a certain geographical diversification. However, the culture linked to pricing and prudency concerning provisioning and risk selection can be very different from one country to another, leading to penalizing steady countries which are less volatile.	not wish to allow for geographical diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence - too complex Furthermore this can be allowed for via USP
			No allowance has been made for the underwriting cycle, which could bring bias.	Noted see response to comment 2 Noted see response to comment 1.
			Data is not homogeneous (gross/net of reinsurance) and process of treatment of data is not explained.	Noted.
			The new calibration that has been proposed leads to a significant rising of proper fund needs which are necessary when dealing with underwriting risks, in particularly: non-proportional accepted reinsurance, Third part liability, Transport, Fire and other damage, Miscellaneous. Example: - The proper funds level required for the Fire and other damage LoB seems to have an important impact on a branch that has a short duration. - The financial loss branch ("pertes pécunières"), which includes	

			products that are not very risky in at least some markets, seems to be strongly penalized by its classification in the miscellaneous branch. In this case, the proper funds level seems to be excessive. The different actuarial and statistical methods proposed to assess the risk factors should be tested on a larger sample of data more representative of the European insurance market. We have some concerns about the robustness and reliability of the methods proposed for premium and reserve risk. In addition, in several instances, there is a lack of rationale between the final choice of risk factors and the factors given by the different methods. Captives The way of dealing with captives mentioned in the CP 71 is penalizing: such a proper funds level would lead captives to withdraw themselves from Europe. This situation is harmful because: 1. Captives keep traditionally low intensity risks: there are not exposed to severity risks which can strongly generate a need for proper funds. 2. Captives cover professional risks (industry/insurance). Captives do not cover risks linked to individual customers. We can ask ourselves if the calibration required by the CP 71, which is very demanding, has a real sense when third parties that are most likely to suffer from an eventual default event affecting the captive, are only professionals.	Noted. See points to comment 1, 2 and 10. Noted. Captives will need to consider carefully the use of USP or partial internal models, if they consider their risk profile to be different to that of a more standard insurance firm.
19.	ICISA	General Comment	We acknowledge the difficulties in producing calibrations that are meant to apply to a broad population of undertakings – and producing those calibrations under severe constraints (time and data). However, the results of such calibrations can have a fundamental impact on lines of business – both on the (re)insurers but also on the prices that customers pay. Since customers of the Credit & Suretyship line of business (companies – not private individuals) have the option to self-insure	Noted. See corresponding points to comment 1. Stakeholders can use PIM/USPs where necessary.

			(unlike, say motor vehicle liability), overly conservative capital requirements (resulting in unwarranted price increases) could have a significant negative impact on the future of the line of business. Thus it is of utmost importance to be careful in making simplifying assumptions to overcome limitations in methodology (e.g. risk-mitigating impact of non-proportional reinsurance) or data (calibrations based on data from 2-3 member states). We recommend that further work be carried out to address: ☐ Limited data availability ☐ Application of best fit line that take into account differences in volume and effects of diversification. ☐ Risk mitigating and threshold effects of non-proportional reinsurance ☐ Catastrophe risk. Credit & Suretyship is affected by economic cycles. We are currently experiencing the effects of an economic downturn which could be considered to be a 1- in-50 event or worse. If calibrations are based on a relatively short history (say 10 years) which may include a 1-in-50 event, this should be taken into account so as not to be overly conservative on a through-the-cycle basis.	See corresponding points to comment 1. See corresponding points to comment 1 and 2. Noted. This may be considered as part of the CEIOPS CAT task force.
20.	Institut des actuaires	General Comment	The new calibration has been realized using data provided by several countries (Luxemburg, UK, Germany, Slovenia, Poland, Portugal). Some of the larger insurance industries are missing. This implies a certain geographical diversification. However, the culture linked to pricing and prudency concerning provisioning and risk selection can be very different from one country to another, leading to penalizing steady countries which are less volatile. No allowance has been made for the underwriting cycle, which could	See corresponding points to comment 18 Noted see response to comment 2.

			bring bias. Data is not homogeneous (gross/net of reinsurance) and process of treatment of data is not explained. The new calibration that has been proposed leads to a significant rising of proper fund needs which are necessary when dealing with underwriting risks, in particularly: non-proportional accepted reinsurance, Third part liability, Transport, Fire and other damage, Miscellaneous. Example: - The proper funds level required for the Fire and other damage LoB seems to have an important impact on a branch that has a short duration. - The financial loss branch ("pertes pécunières"), which includes products that are not very risky on the French market, seems to be strongly penalized by its classification in the miscellaneous branch. In this case, the proper funds level seems to be excessive. The different actuarial and statistical methods proposed to assess the risk factors should be tested on a larger sample of data more representative of the European insurance market. We have some concerns about the robustness and reliability of the methods proposed for premium and reserve risk. In addition, in several instances, there is a lack of rationale between the final choice of risk factors and the factors given by the different methods. Captives The way of dealing with captives mentioned in the CP 71 is penalizing: such a proper funds level would lead captives to withdraw themselves from Europe. This situation is harmful because:		

			1. Captives keep traditionally low intensity risks: there are not exposed to severity risks which can strongly generate a need for proper funds. 2. Captives cover professional risks (industry/insurance). Captives do not cover risks linked to individual customers. We can ask ourselves if the calibration required by the CP 71, which is very demanding, has a real sense when third parties that are most likely to suffer from an eventual default event affecting the captive, are only professionals. CEIOPS doesn't give here a good example of practice of risk management by using partial datasas a base for a whole model.	
21.	IUA	General Comment	As we have noted elsewhere, it is essential that the calibration of the SCR standard formula is considered as a whole unit and not solely on an individual basis. We understand the impact of all the revised calibrations on the London Market could range from anything between 20% to 120% increase in the SCR on QIS 4 levels, according to work undertaken by EMB the actuarial consultants. Feedback we have received from our members is consistent with that. We accept QIS 4 was not rigorous in its calibration, but since QIS 4 was considered to be capital neutral across industry, we are concerned this is excessively prudent. Furthermore, all calibrations by their very nature have technical underpinnings and derivations, and whilst we appreciate that CEIOPS has provided us with its methodology, the length of the consultation period means a robust analysis and critique of the CEIOPS methodology is impossible to achieve. We have however tried to identify issues as best as we can within the allotted time. According to work undertaken by EMB the actuarial consultants, the average impact of third wave on the London Market is to lead to a 54% increase on QIS 4 capital requirements on average. Notably that does	Noted. Noted. We would welcome such analysis. Furthermore, CEIOPS is also revising the calibrations as well as carrying our impact assessments

			not include the changes to the catastrophe risk factors, market risk or equity risk changes. That could amount to a significant increase in capital requirements. We are further concerned about the aggregate impact of all the CEIOPS advice in aggregate, and we would strongly urge CEIOPS to consider the impact of their proposals on industry, the macro economy, and insurance purchasers. A significant part of that 54% increase is driven by the revised calibrations in this module. We would also comment that Solvency II is supposed to broadly relate to a credit rating of BBB, by virtue of the 99.5% VaR required by the Level 1 text. We believe CEIOPS should compare the aggregate impact of its requirements to a broadly equivalent credit rating. We believe the current proposals are far in excess of a BBB rating. It was also disappointing that an "unlocked" version of the QIS 4 spreadsheet (or undertakings provided with the password to unlock such parameters, or provided with a revised spreadsheet at the time of consultation) so that members could easily test the revised parameters compared to the QIS 4 exercise. This has made it difficult for many companies to accurately assess the impact of the proposals. In order to support an open and transparent discussion on this module, industry would welcome the opportunity to discuss CEIOPS' methodology in order to better understand the methodology, and how these results have been derived, even if such discussions have to use "dummy" data. The data, the treatment of the data, and the methodology need to be considered together in order to appropriately critique the results.	based on our interpretation of the advice. We appreciate that the increases may be high, as the EMB will be comparing against company specific volatilities that have not been estimated under the constraints of the standard formula. Stakeholders need to understand that the calibration is a product and result based on a set of underlying assumptions and specificities that CEIOPs need to follow. Unless those specificities are changed, the calibration may not improve much. We disagree. CEIOPS has provided undertakings with the maths and methodology that has been used to estimate the volatilities by undertaking. CEIOPS has also explained how it has estimated the fitted volatilities and the final volatility. This methodology has also been incorporated as part of USP. We would urge stakeholders carry out the analysis. Noted. CEIOPS will be working to improve the exercise where possible.

				However stakeholders should also be working on alternatives provided by the directive.
			The FSA QIS 4 Country Report identifies that 85% of the SCR is attributable to the non-life underwriting risk module. Given the significant increase in the calibrations we would urge CEIOPS consider the potential implications on the industry in aggregate. We would also caution that the revised calibrations could make certain classes of business much less attractive, and could consequently impact the cost and availability of those insurance products. Whilst the final calibration must be sure that it provides an economic valuation of the risks, and should not introduce an excessive level of prudence in the valuations. CEIOPS has provided its analysis based upon this new data, and has based its revised calibrations accordingly. However, we believe that CEIOPS has given an insufficiently robust reasoning as to why they believe the QIS 4 calibrations are not representative of a 99.5% VaR.	Noted. CEIOPS cannot prove that QIS 4 is correct or incorrect. There is no underlying analysis that supports that QIS 4 is a better calibration. For example data from only 3 countries was used. We agree. The time is very short. However CEIOPS also has to work under the tight deadlines provided by the European Commission.
			We understand that CEIOPS would like comments on the validity of the methodology that has been applied in addition to comments on the overall result. However, in the consultation period offered, and by not having the data CEIOPS used available so that consultees can replicate	Noted. The data points from the graphs have been derived through the application of the methods

			CEIOPS' results, the validation of the methodology and the results is extremely difficult to achieve. Furthermore , the methods used seem to rely on very few data points of a sample that may be unrepresentative and could include catastrophes. This is a potential serious flaw that could be apparent in the factors, and has not been stripped out. This is something that is difficult to look at without being able to replicate CEIOPS methodology, in the context of the data used to derive these results. In order to provide a view on the methodology, John Charles of Towers Perrin kindly provided the following comments: 1. It would be helpful to have clarification of how the data points shown in the various graphs have been derived. In particular, using an anonymised or made-up example to demonstrate the different bases used would be helpful. 2. We also note that some data is provided on a gross basis and some on a net basis. Clarification on how this has been dealt with would be useful.	described in the calibration paper. We would encourage the industry to test these methods in a spreadsheet and use their own data. This is also part of the work that the industry should be carrying out for undertaking specific parameters Noted. Indeed, as reflected in the data request in the Annex 4.1, CEIOPS had to make use of both gross and net data. The reason is quite simple: lack of data. Annex 4.2 shows clearly by LoB the countries that were able to provide net data. In particular for reserve risk lack of net data was an issue. CEIOPS only used the result from the gross analysis in the cases where there was a clear lack of net data. It all boiled down to Quantity of data vs. appropriateness of using gross data. Where we have used gross information, we have implicitly assumed that gross and net distributions have the same standard deviations. Clearly this is not correct – as we would expect net data to show lower volatility than gross.

				However there is no way to adjust our gross data to be 'net' in anything other than a totally arbitrary way. Nevertheless, the possible overestimation was taken into consideration when selecting the final factors. The only obvious solution to improve this is to have more net data or do the exercise gross and introduce some kind of netting methodology. CEIOPS has carried out further work on this.
			How have the results been rationalised in comparison to the data from companies' internal models?	Noted. It hasn't explicitly, as internal models are not generally available outside UK. The calibration is supposed to represent an EU calibration. We would expect to find some difficulties in looking at internal model results based on the Standard

			4. Whilst some companies might be able to utilise Undertaking Specific Parameters to mitigate their concerns regarding these parameters, if this were to be extensively the case, we fear this could undermine the Standard Formula and could lead to divergent practice in different territories. Furthermore, CP75 3.130 requires companies to	formula LoBs, as internal models are usually at a more granular level. Furthermore, results from internal models are not constrained to the assumptions and design of the standard formula. The calibration was carried out in line with those restrictions. Furthermore some of the methods applied in the calibration are in line with the methods and assumptions used under QIS 4 and QIS 3. Internal models are supposed to fit the risk profile of the firm. Standard formula fits the risk profile of a firm that fulfils the assumptions and design explicitly mentioned and explained in both CP48 and CP71. The solution is for firms to use USP and / or Partial internal models. We disagree. Undertakings have to ask themselves whether they think the risk profile they have is well represented by the standard formula. If not they should be looking at the alternatives available, such as USP. Firms need to show that the SF parameters do not fit, not that they are different from the population on which the parameters were based nor

			"demonstrate as best as possible and subject to proportionality that, the standard formula parameters do not appropriately reflect their risk profile and that the USP leads to a more appropriate result." There would also data adequacy requirements. This all suggests that there is an underlying assumption that the Standard Formula calibration is a reasonable starting point and that companies will need to understand how it has been calibrated so that they can make the requested demonstration.	that the calibration procedure for the SF would give a different result based on their data. The use of USP should help firms to get around most of the issues that affect the Standard formula. USP allows firms to use their own data as well as pooled data which is relevant to the operations of the undertaking. Firms should be testing the methods and alternatives presented in this paper and making sure that this tool works properly for them and can be widely used. We are expecting that some of the firms that do not go down a PIM or do not get approval would be doing USP.
			5. Premium Risk: In examining the loss ratio profiles how was consideration taken of catastrophe events when data on those events was not explicitly provided? We consider the possible inclusion of catastrophe events to be one of the more significant shortcomings of the CEIOPS methodology.	Noted. CEIOPS asked for data to be supplied net of cat data, (see annex 4.1) so we have not made any further adjustments – because there does not seem to be any rational way to make any realistic adjustment. There are some cases where the regulator was not able to exclude this information, for example the UK (as the data came from the FSA

				returns); however this is not the case for all the data. However, the use of net data will have mitigated any impact to some extent.
			6. Premium Risk: Was consideration given to eliminating the effect of underlying underwriting year loss ratio variability from the variances? The volatility parameters, if selected from the experience over a period that includes underwriting cycle variability, could lead to the over-statement of volatility.	Noted. A more explicit allowance would require a change in the standard formula. As it stands the standard formula and CEIOPS do not support this. What we can do is also limited by the nature of the exercise itsel, which should result in an EU calibration. The data covers more than one market, and different markets may exhibit cycles to different degrees and with different timing. It is hard to see how any reasonable adjustment could be made without using some form of premium rating strength index – and these are not widely available and have dubious credibility at present. We would need to decide at which point we are in the cycle, and always have enough capital. How could we decide that, is highly judgemental. Industry suggestions as to how this can specifically be dealt with have

				been invited in the past with little success. Furthermore, if we are aiming to measure the variation of loss ratio from "expected" levels, then knowing where you are in the cycle is important. An analysis of change in loss ratio from previous year would undoubtedly result in a lower standard deviation than simply treating each year's observed loss ratio as a random sample from the distribution. However, since the SF does not allow for expected profits (or losses) or underwriting cycles – political decision – it is arguably more appropriate to look at where the result for next year is relative to (assumed) break even, as we do not care about (know about?) where we were last year . This would seem to lend some support to the approach adopted. We agree, that simply measuring the variability of individual accident years from one development period to the next is likely to overestimate the impact on a whole portfolio because there will be some diversification between accident years.

			8. Reserve Risk: The factors will apply at an aggregate level to entire portfolios of claims in each designated class. The variances appear to derived from variations in segments of claims (i.e. particular accident years) at varying durations. For example from 1999 u/w year at end 2000 and 1999 and 2000 u/w year at end 2001. The resulting variance factors are likely to be significantly over-stated because the volatility of individual accident years will naturally be higher than the overall volatility of the total booked reserves for a continuing business. We also consider this to be one of the more significant shortcomings of the CEIOPS methodology.	However the methods presented in CP71 allow for diversification between accident years. The Merz Method allows for this explicitly within the methodology and the other methods allow for this by allowing the volume measure to change (squared root volume in the formulas). This may need to be explained in a more clear way and we can certainly do this in the final version. Noted. This is why you should consider USP or Partial internal models.
			We believe that the calibrations of this module are unlikely to be representative of most business written in the London Market	We agree that the calibrations will need to be revised as data becomes available, but that does not mean they will go down.
			We think there should be a robust procedure outlined for the updating of these parameters. We would anticipate that post-Solvency II, a greater wealth of premium and reserve data will become available which can be utilised to refine these calibrations. We would be strongly supportive of a commitment to revisit these parameters after a specified period of time and take advantage of the data made available by Solvency II.	

22.	KPMG ELLP	General Comment	Overall we feel that the statistical methods used to calculate the non-life underwriting risk capital charges gave a very wide and unstable range of results, mostly due to the relatively small samples of data available, and the selected factors were largely the results of subjective judgement. In many cases the data base and data quality appears to be very small and insufficient in order to fit EEA-wide premium and reserve risk factors for all lines of business. In comparison to QIS4, CEIOPS propose to increase all volatility factors for the individual lines of premium and reserving risk. Although we acknowledge that a considerable amount of judgement has to be present when selecting the factors it seems that the argumentation in general leads to higher factors than supported by the majority of the analysis. It is likely to affect some (re)insurance undertakings that use the standard formula unfairly by overestimating the capital requirement. Having said that, we appreciate the difficulty in arriving at a one size fits all calibration when attempting to design a risk sensitive framework. The statistical challenge to question the evidence of the mathematical assumptions underlying the various methods taken into account in the study was very much reduced to only two empirical techniques: 1. the evaluation of the appropriateness of a selected method by showing the results of a goodness of fit test through a PP-plot (ultimately, only the 99.5%-percentile derived matters), and 2. a plot of company's specific variance embedded in loss data versus its underlying volume. The statistical analysis provided does not really qualify for a sound and solid mathematical analysis, in particular not in an environment where the heterogeneity of the various data samples seems to suggest that the stochastic structure of the underlying data does not fully match the far reaching mathematical assumptions made (e.g. the characteristics of a Markov process). In particular, it is not always clearly stated in the	See corresponding points to comments 1, 2 and 3 and 10. See corresponding points to comment 18.

			analysis which mathematical assumptions have to be fulfilled to link the different "weighting methods" to a well-defined mathematical framework. It is very much questionable, at least it is not at all evident, that the derived estimates for the standard deviation will ultimately produce more reliable estimates for the 99.5%-percentiles per "cell" (cell= line of business (LOB), both for premium and reserve risk) than the former parameter picks (or other picks within certain ranges). Statistical analysis based on more homogeneous sets of data (country specific, company specific, etc.) would provide more reliable results. Furthermore, as the analysis was performed on samples net of historic and individualized reinsurance structures there is some impact on the analysis from both the heterogeneity and from changes of underlying reinsurance structures. Therefore, the far more appropriate approach would be based on gross data providing a parameterization of the non-life underwriting risk which ultimately can be adjusted by the individual design of a company's specific reinsurance program. For the catastrophe risk calibration, the explanation of the derivation of the factors needs to be enhanced. The pure factor approach does not seem to be adequate for man made cat risks. We believe that the proposed approach of GDV should be taken into account without translation into a premium factor approach.	
23.	Lloyds	General Comment	The calibration has significantly increased the premium, reserve and catastrophe risk factors over those used for QIS4 for many lines of business. This gives a considerable increase to an already prudent non-life underwriting risk figure. We understand that limited time and data were available, but it is still necessary to select method and factors that are appropriate. There are a number of approaches that could be easily implemented that would improve the quality of the results – these are discussed below.	See corresponding points to comment 1, 2 , 3 and 10. Noted. CEIOPs welcomes suggestions from the industry.

			The analysis shows there is a significant difference between small, medium and large undertakings (or portfolios). As noted, this is to be expected but the difference does highlight that the selected factors are inappropriate for most undertakings. The standard factors selected will be systematically too high for large undertakings and systematically too low for small / medium undertakings.	See corresponding points to comment 2.
			The standard formula factors for premium and reserving risk factors should be selected depending on size of portfolio and would be available from CEIOPS work to date (split small/medium/large). This would improve the appropriateness of the factors.	See corresponding points to comment 2.
			There are 2 areas of the analysis that lead to systematic over-estimation of the volatilities and this should be accounted for in the final selections:	
			a) Though the data request stated a preference for data net of the effects of catastrophe events, it is not clear to what extent the data received did actually exclude these (For example, this would be difficult for UK data). Inclusion of catastrophe events (such as 9/11 and Hurricane Katrina) within the data used to calibrate factors will lead to a double-count and will – incorrectly - significantly increase the volatilities of results of affected classes. This is particularly the case for factors relating to some non-proportional reinsurance business lines, which have increased significantly. The premium and reserving risk module of the SCR is not intended to allow for catastrophe losses that are accounted for elsewhere.	See corresponding points to comments 1 and 2.
			b) There is no allowance for movements in premium rates in the assessment. The underwriting cycle is a well known phenomenon in the insurance industry and in most cases there are known premium rate indices available. The historic losses ratios used in the analyses should be normalised to a base premium rate period (e.g. all at 2008 rates). Not to do so will unnecessarily increase the historic volatilities.	See corresponding points to comment 1 and 2
			Finally, we note that CEIOPS have used 10 years of data to calibrate the	Noted. But the CEIOPS factors are

			1 in 200 year event model. Under CP75 (para 3.151) this amount of data would only warrant a credibility factor between 50% and 60%.	based on considerably more data than a single entity could use under a undertaking specific parameter.
24.	Munich Re	General Comment	We fully support all of the GDV statements and would like to add the following points: Key Messages: A. Premium and Reserve Risk – selections seem to have additional layers of prudence and the results differ significantly to our studies (priority: very high) In comparison to QIS4, CEIOPS proposes to increase all volatility factors for the individual lines of premium and reserving risk. Munich Re believes this is not adequate. The CRO forum QIS4 Benchmarking Study (October 2008) indicates that already the QIS4 calibration is conservative compared to internal model. Although we acknowledge that a considerable amount of judgement has to be present when selecting the factors it seems that the argumentation in general leads to higher factors than supported by the majority of the analysis. In the selection of factors for both premium risk and reserve risk, the data used has been limited. For premium risk, relative high weight has been given to unstable methods (in case of premium risk methods 3 and 4 in particular). For reserve risk, the methods yield unstable results, due to its mechanical nature which does not reflect the way reserves are set. In summary, our impression is that additional layers of conservatism is present in the selection of the factors, due to the limited data and also due to outcomes of several unstable methods. B. Premium and Reserve Risk – data supporting the analysis has limitations (priority: very high)	Noted. See responses to GDV comments i.e. comment 16 Noted. However we do not consider QIS 4 calibration to be a more robust calibration than CP71. See comment 10. See also responses to comment 1, 2 , 3 and 10.

			10. The analysis carried out has the following limitations: • Data is limited to a small number of markets: In some cases the database is restricted to a small number of markets and thus not sufficient to calibrate EEA-wide factors. In particular UK is a very volatile market. • Historical data has not been adjusted for changes in reinsurance structure over time: The majority of the analysis for premium risk was carried out using data net of reinsurance (§3.41). Changing reinsurance structures over time may create extra volatility in a time series. This aspect should be further studied. Munich Re is in favour of using gross data to estimate gross volatility and to approximate net volatility by taking account of the individual actual reinsurance structure. Ideas how this can be achieved for NP reinsurance have been presented to CEIOPS by a working group consisting of representatives from Munich Re, Swiss Re and Hannover Re. • There is a potential double count with CAT risk: There is no indication that the data series have been adjusted for CAT risks. We believe this means there is double counting of losses which should be included in the cat risk module. • The data used is not based on best estimate data: The valuation principles underlying the analysis are not based on best estimate data and hence not economic. Thus, for instance, the reserving policy of the various companies will lead to additional noise in the data which makes the results less reliable. • Data for non-proportional reinsurance is too limited: In the case of non-proportional reinsurance the data basis is not sufficient to draw meaningful conclusions. This holds true for the analysis on premium as well as on reserving risk. Munich Re believes the high volatilities observed by CEIOPS indicate that the data included a significant amount of CAT losses. We would be happy to further contribute to an enhancement of the standard formula regarding non-proportional	Noted. Can MR provide some data as we have no other data than UK data.

			reinsurance. We also suggest to encourage the use of (partial) internal models for non-proportional reinsurance. C. Premium Risk – too much weight has been given to outcomes of inappropriate methods (priority: high) • From the methods to assess premium risk method 2 seems to be most suited for the purpose at hand, i.e. the calibration of an industry-wide volatility factor. Consequently, this method should receive a rather high weight when determining the factors. However, this principle seems to be violated in most lines of business. • The basic assumptions behind methods 3 (industry-wide expected loss ratio) and 4 (industry-wide variance of the loss being proportional to the square of the earned premium) lead to an exaggeration of loss volatility. The table below illustrates that the selections are generally higher than the outcomes of methods 1 and 2.	We disagree. The various methods have pros and cons and we have considered all the results equally with more emphasis on the LOWER results. See response to comments 16 and 21. Noted. However this is exactly what the standard formula aims for: an industry wide factor. We agree. But why is method 1 and 2 better than 3 or 4? It's a good compromise. Furthermore MR des not comment on the differences between factors accorss portfolio size. For method 2, MAT, the factors range from 12% to 67%. 20% seems a reasonable compromise.

LoB	Selected factor	Results of Method 1	Results of Method 2	Results of Method 3	Results of Method 4	Comments
Motor vehicle liability	10%	11%	10%	24%	20%	
Motor Other	10%	10%	9%	15%	20%	
MAT	20%	16%	15%	49%	25%	Selection too high
Fire and Other damage	12.5%	10%	10%	28%	28%	Selection too high
Third part liability	17.5%	12%	14%	25%	31%	Selection too high
Credit and suretyship	20%	12%	6%	23%	36%	Selection too high
Legal expenses	7.5%	7%	6%	48%	18%	
Assistance	10%	9%	7%	26%	42%	Selection too high
Miscellaneous	20%	7%	2%	N.A	96%	
NPL property	30%	43.9%	69%	90%	250.6%	Lack of data
NPL MAT	30%	24%	17.3%	18.6%	36%	Lack of data
NPL Casualty	30%	28%	35%	46%	117%	Lack of data

D. Reserve Risk – too much weight has been given to outcomes of inappropriate methods (priority: high)

- The results from method 1 will be heavily influenced by companies posting large reserves, i.e. especially reinsurers, making this method less suited for the calibration of industry-wide volatility factors.
- An analogous comment as in case of method 3 for premium risk applies.
- From the methods to assess reserve risk method 4 seems to be most suited for the purpose at hand, i.e. the calibration of an industry-wide volatility factor. Consequently, this method should receive a rather high weight when determining the factors. However, this principle seems to be violated in most lines of business.

See responses to premium risk comments.

			• The simple average used in method 6 will put more weight on small undertakings which will in general show a larger claims variability and thus this method will lead to an overestimation of loss volatility.	
			E. We encourage CEIOPS to wait until the CAT Task Force has completed its work (priority: high)	
			• We note that the data basis is too small for a calibration of Europe-wide factors as it is constrained to a single market (UK in case of analysis 1, Germany in case of analysis 2).	Noted. See corresponding points in comment 10.
			• As a result, we encourage CEIOPS to wait until the CAT Task Force has completed its work which will provide insight into more markets and to consider the results of this working in the calibration of the factors.	
			• As minimum requirement we consider it necessary to adopt a factor approach with factors tailored on each country	
			• After the final calibration of the CAT risk module for QIS5 has been accomplished, CEIOPS should reconsider the calibration of the base premium and reserve risk module to avoid double counting of losses.	
			F. A Correlation of 50% between premium risk and reserve risk should be justified (priority: high)	
			We think that a general 50% correlation between premium and reserve risk should be justified. This correlation percentage has been used since QIS2 but has not been justified. QIS2 / QIS3 / QIS4 is not a justification for applying this correlation factor.	For issues here and below, see corresponding points to comment 10.
			G. The correlation of 25% between CAT risk and premium & reserve risk needs to be reconsidered as there is potential double counting (priority: high)	
			Compared to previous calibrations the correlation between CAT and	

			pricing / reserving risk is now 0,25 instead of 0 which we think is too prudent especially when taking the issue of double-counting of CAT-events into account due to data reasons (cf. above). General comments We appreciate the information CEIOPS has provided on the calibration of the factors. The following items are of particular importance: Premium and reserve risk ☐ In comparison to QIS4, CEIOPS proposes to increase all volatility factors for the individual lines of premium and reserving risk. Munich Re believes this is not adequate. The CRO forum QIS4 Benchmarking Study (October 2008) indicates that already the QIS4 calibration is conservative compared to internal model. ☐ As already commented in our response to CP48 there is no indication on the use of undertaking-specific parameters for non-life underwriting risk. We understand that this topic is taken up exclusively within CP75. Thus, we will not pursue this issue further in our comments to CP71. ☐ Although we acknowledge that a considerable amount of judgement has to be present when selecting the factors it seems that the argumentation in general leads to higher factors than supported by the majority of the analysis. In other words: It is our impression that an additional layer of conservatism is present in the selection of the factors. ☐ We observe the following shortcomings of the analysis carried out by CEIOPS: o The effect of the price cycle on historical loss-ratio's is not removed in the study and therefore variability calculated from historical loss-ratio's should be adjusted in order to remove the price cycle effects	Noted. For all comments below see responses to comments 1, 2, 3, 9, 10, 18, and 21. Noted. For all comments below see

			that distort the 1-year risk calculation. Since the price cycle also induces a reserving cycle (in profitable years, reserves are "cushioned" whereas in unprofitable years reserve surplus is released) a likewise adjustment would have to be done in reserve calculations that are based on historical accounting data. As those effects lead to additional variability in the data the factor selection should consider those. o In some cases the database is restricted to a small number of markets and thus not sufficient to calibrate EEA-wide factors. o The majority of the analysis for premium risk was carried out using data net of reinsurance (§3.41). Changing reinsurance structures over time may create extra volatility in a time series. This aspect should be further studied. Munich Re is in favour of using gross data to estimate gross volatility and to approximate net volatility by taking account of the individual actual reinsurance structure. Ideas how this can be achieved for NP reinsurance have been presented to CEIOPS by a working group consisting of representatives from Munich Re, Swiss Re and Hannover Re. o There is no indication that the data series have been adjusted for cat risks. We believe this means there is double counting of losses which should be included in the cat risk module. This effect is particularly evident for cat exposed lines such as MAT and non-proportional lines of business. o The valuation principles underlying the analysis is not a best estimate and economic basis. Thus, for instance, the reserving policy of the various companies will lead to additional noise in the data which makes the results less reliable. o In the case of non-proportional reinsurance the data basis is not sufficient to draw meaningful conclusions. This holds true for CEIOPS's analysis on premium as well as on reserving risk. We believe the high volatilities observed by CEIOPS indicate that the data included a significant amount of cat losses. We would be happy to further contribute	responses to comments 1, 2, 3, 9, 10, 18, and 21.

			to an enhancement of the standard formula regarding non-proportional reinsurance. We also suggest to encourage the use of (partial) internal models for non-proportional reinsurance. ☐ Our comments with respect to the methods used by CEIOPS to assess premium risk are as follows: o As already said above the data basis is too small in case of non-proportional reinsurance. The comments below are thus restricted to the primary / proportional lines only. o From the methods to assess premium risk method 2 seems to be most suited for the purpose at hand, i.e. the calibration of an industry-wide volatility factor. Consequently, this method should receive a rather high weight when determining the factors. However, this principle seems to be violated in most lines of business. o The basic assumptions behind methods 3 (industry-wide expected loss ratio) and 4 (industry-wide variance of the loss being proportional to the square of the earned premium) lead to an exaggeration of loss volatility. ☐ Our comments with respect to the methods used by CEIOPS to assess reserve risk are as follows: o As already said above the data basis is too small in case of non-proportional reinsurance. The comments below are thus restricted to the primary / proportional lines only. o The results from method 1 will be heavily influenced by companies posting large reserves, i.e. especially reinsurers making this method less suited for the calibration of industry-wide volatility factors. o An analogous comment as in case of method 3 for premium risk applies. o From the methods to assess reserve risk method 4 seems to be most suited for the purpose at hand, i.e. the calibration of an industry-	Noted. For all comments below see responses to comments 1, 2, 3, 9, 10, 18, and 21.

			wide volatility factor. Consequently, this method should receive a rather high weight when determining the factors. However, this principle seems to be violated in most lines of business. o The simple average used in method 6 will put more weight on small undertakings which will in general show a larger claims variability and thus this method will lead to an overestimation of loss volatility. ☐ For each line of business the suggested factors for reserve risk are at least as high as the factor for premium risk. Identical factors would mean that the uncertainty inherent in € 1 of reserve equal to the uncertainty inherent in € 1 of premium. However, the uncertainty in the reserves will in general be monotonically decreasing when moving towards the older years (as more information about the claims and their development in known). In addition, the first year reserve risk is already captured within the premium risk factors and reserve risk only captures the risk of adverse reserve developments from year 2 on. Moreover, the first year reserve should have the highest uncertainty. Thus, reserve risk factors should (in general) be lower than the corresponding premium risk factors for each line of business which is not the case with the suggested factors. CAT risk ☐ We note that the data basis is too small for a calibration of Europe-wide factors as it is constrained to a single market (UK in case of analysis 1, Germany in case of analysis 2). Thus, we encourage CEIOPS to wait until the CAT Task Force has completed its work which will provide insight into more markets and to consider the results of this working in the calibration of the factors. As minimum requirement we consider necessary to adopt a factor approach with factors tailored on each country ☐ After the final calibration of the cat risk module for QIS5 has been accomplished, CEIOPS should reconsider the calibration of the base	Noted. For all comments below see responses to comments 1, 2, 3, 9, 10, 18, and 21. Noted. See corresponding points to comment 10.

			premium and reserve risk module to avoid double counting of losses. Correlations We think that a general 50% correlation between premium and reserve risk is not warranted and seems rather high. ☐ In principle, the dependencies between premium and reserve risk should reflect the fact that the claim development result (reserving risk) and the first loss ratio pick (premium risk) may or may not rely on the same type of information depending on the line of business. ☐ Generally and due to the time lag of information, the claim development result for long tail lines such as liability will determine to some extend the first loss ratio pick of the current year. By contrast, in short tail lines the first loss ratio is usually based on more reliable information about the actual incidents. ☐ Thus, it might be argued that dependencies between premium and reserve risk should be higher for long-tail lines compared to short-tail lines. Further, the dependency between premium and reserve risk may differ between the lines of business considered in the standard formula, especially for non-proportional reinsurance. More work is required to calibrate the standard model in this respect. ☐ This assumes a correlation of 50% between prior year reserves and future UW years which could and should vary by line of business. A generic correlation of 50% between one of the non-proportional lines and its "normal" counterpart(s) (i.e. proportional segments) is not justified in our view.	Noted. See corresponding points to comment 10.

			☐ The determination of premium for non-proportional reinsurance is independent of the premium calculation of the underlying business. ☐ As non-proportional reinsurance covers large losses, different considerations compared to primary / proportional will be performed when setting IBNR reserves. Thus, neither premium nor reserve risk seem to justify a high correlation of 50%. The uniform 50% correlation of misc. with all other lines seems unjustified from our view. This LoB will consist of various different kinds of products which cannot be grouped under the other LoBs and thus a low degree of dependency is to be expected. Compared to previous calibrations the correlation between CAT and pricing / reserving risk is now 0,25 instead of 0 which we think is too prudent especially when taking the issue of double-counting of CAT-events into account due to data reasons (cf. above).	
25.	RBS Insurance	General Comment	The judgemental nature of the way a lot of the factors for the non-life underwriting risk module have been selected from the results of the various methods means that it can be quite difficult to provide useful feedback. With regard to these factors, we observe that in all instances across the 12 lines of business, that the Premium factors and the Reserve factors suggested are significantly higher than their QIS4 counterparts. For NPL Property, MAT & Casualty the relevant factors have doubled. We note that judgement has been used in the derivation of a lot of the factors for the non-life underwriting risk module. We also note the data	Noted. See corresponding points to comment 3. Noted. See corresponding points to

			limitations in performing this exercise; the limited number of countries' data used and the heterogeneity of the data. We recognise that this makes it difficult for CEIOPS to set a realistic calibration and understand that CEIOPS feels a need to include prudence. We do believe that a prudent stance has been taken by CEIOPS when setting these factors. This stance could have significant capital implications for the insurance industry, particularly when considered in conjunction with the increases applied to the correlations, equity calibrations, and accounting treatment for Groups for the standard formula SCR. We believe that an impact assessment of the overall changes should be performed by CEIOPS as soon as possible, particularly given the work needed by the industry across Europe in raising extra capital in the current economic environment should the proposed level of increases go through (in the MCR paper this was quoted as 65% increase to the SCR although the derivation was very unclear).	comments 1, 2, 3 and 18, 21. We strongly do not agree. See responses to comment 1, 2, 3, and 10.
26.	ROAM	General Comment	ROAM wants to thank the effort realized by the CEIOPS to clarify the methods and the results used for the calibration of this module. ROAM totally disagrees with the calibration proposed in the CP. Concerning the data: ☐ ROAM considers that the sample of data used to calibrate this risk is not representative of the European market because only 6 countries on 27 participated in the study. ☐ A part of the calibration seems to be made on gross data and not on net data. Consequently, ROAM in these comments will not make reference to the results because it considers them as being not representative and without any meaning in the sense of the European market. Concerning the methods: Certain methods used for the calibration are very open to criticism as far	Noted. See corresponding points to comment 1, 2, 3 and 18. Noted. We would like ROAM to explain why this is the case.

			as their foundation and chosen hypotheses are concerned. ROAM supports the methods 1 and 2 for the premium risk, the methods 1 and 4 for the reserve risk. ROAM agrees with the remark of the CEA on the fact that none of the final choices are justified, and that CEIOPS has to supply more elements on the final choice of the calibration. Should the final methods be in line with reality but the data not, reiterations of the data runs remain necessary till the calibrations are stable. As long as this is not the case, a transition should be considered. ROAM is against the addition of a risk connected to the variations of the margin of risk	Why? See corresponding points to comment 3. We agree that data needs to be incorporated when available. See response to comment 5. Why?
27.	RSA Insurance Group	General Comment	We are very disappointed to see the increased levels of the parameters following this re-calibration despite our assertion in response to QIS4 that the standard formula calibration was too high. Coupled with increases in calibration for most of the other SF modules, the standard formula may expose apparent capital shortfalls for many undertakings. In determining the appropriate level of calibration CEIOPS needs to be mindful of the potential need to raise capital, the willingness of capital markets to supply such capital, and the potential market distortions if insurance undertakings seek to withdraw capacity for some of the more capital intensive lines of business. In our view the data used by CEIOPS is inappropriate and leads to a conservative calibration. CEIOPS list the limitations to which we would	See in general responses to comment 1, 2 and 3.

			add: ☐ There is no allowance for the expected profitability of business, a major component of capital requirements in our experience	See corresponding points to comment 1.
			☐ At line of business level historic accounts will have been prepared on a variety of bases, many of which will lack the rigour of the Solvency 2 approach, particularly relating to Technical Provision calculation. This will introduce volatility into the data which we would not expect to see after Solvency 2's introduction.	See corresponding points to comment 1.
			☐ Historic data contains premium rating volatility which will be much reduced when considering only next year's business.	See corresponding points to comment 1.
			☐ Catastrophe losses will be included in the published historic data but should be removed for this purpose	See corresponding points to comments 1 and 2.
			☐ The use of gross data will not make appropriate allowance for non-proportional reinsurance	See corresponding points to comment 1.
			We would urge CEIOPS to engage with industry to obtain more appropriate data to overcome these limitations. This exercise needs appropriate time and resource to enable a thorough analysis to be completed which has the confidence of all stakeholders.	Noted. Furthermore most of the issues listed below cannot be fixed with data, but we would have to change the standard formula and add further layers of complexity, which CEIOPS does not always agree too.
			It is difficult to comment on the appropriateness of the changes to the catastrophe module without knowing how the components will aggregate	Noted.

			together. For example the Property class has five perils, each with a factor relating to premium. We think a pure additive approach would be extremely conservative. We would urge CEIOPS to give some indication on this issue in their final advice.	
28.				
29.	XL Capital Ltd	General Comment	We believe that the calibrations introduced in CP71 are excessively prudent and, in our opinion the analysis provided by CEIOPS in support of these calibrations is insufficiently robust reasoning as to why they believe the QIS 4 calibrations are not representative of a 99.5% VaR. In the short consultation period and without the data CEIOPS used it is difficult to validate CEIOPS methodology, hence our comments focus on the areas as follows: ☐ The applicability and credibility of data used in this analysis ☐ Simplifying assumptions with regard to geographic diversification and non-proportional reinsurance ☐ Stressing that these factors will be inappropriate for many companies	See corresponding points to comment 1, 2 and 3 and 9. See corresponding points to comment 1. See corresponding points to comment 1. Noted. Stakeholders can use undertaking specific parameters or PIM.
30.	KPMG ELLP	1.4.	It would have been useful if the advice on the new calibration of factor for the catastrophe risk sub-module and the new calibration of the standardised scenarios for catastrophe risks had been made available simultaneously instead of with 8 months interval so that a direct comparison of the changes could be made and commented upon.	Noted.
31.	ICISA	1.5.	The advice on Standard Formula Non-Life Underwriting Risk (former CP 48) published on 10 November contains the statement: "Some types of business, such as for example credit insurance, did not benefit from geographical diversification during the current crisis..." While there was indeed correlation between different geographies, large credit insurers, with exposures around the globe, did benefit from geographical	Noted. . We understand the removal of geographical diversification may have a considerable impact for some undertakings. However CEIOPS does not wish to allow for geographical diversification on the following

			diversification; it is more a question of the amount of benefit. Thus we disagree with taking this statement as a given and using it in further analysis.	grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence - too complicated Furthermore this can be allowed for via USP
32.	RBS Insurance	2.3.	"The processes used in the conduct of the business" could be interpreted as suggesting that the non-life underwriting module should also allow for operational risks. Is this intentional? More accurate wording here could avoid confusion.	Noted. We agree further clarification is required. However we do not know how this could be incorportated into the NLuwr module. We assume this should be captured through the op risk module.
33.	Groupe Consultatif	3.2.	Our main comments are broad in nature and relate to the overall impact of CP71 however we are here allocating them for convenience to paragraph 3.2. We similarly make broad comments about catastrophe risk calibration at 3.368. We are concerned that CP71 leads to a Solvency II standard formula approach that will be regarded as arbitrary and, in more cases than not, inappropriate for a specific insurer. We welcome CEIOPS's transparency on the approaches it has used, but unfortunately the calculations and methods tend to confirm the arbitrary outcomes. For example the calculations show that the most appropriate chosen method and most appropriate calibration for insurer A, may not imply that same method is appropriate for insurer B. Or, even if the chosen method is appropriate for insurer B it will likely produce an incorrect calibration for that insurer B. The extent to which the standard formula will not "fit" for most insurers	Noted. Noted. Stakeholders can use undertaking specific parameters or PIM. See corresponding points to comment 3. We partially agree. Whilst we need to

			is clear from CP71, although CP71 in its sampling of insurers has only covered relatively small portions of European markets in each line of business. If further calculations were performed with wider data this would demonstrate still more forcibly the typical poorness of "fit". It is clear that the number of countries represented across each line of business could be extended and CP71 acknowledges that.	keep adding more data and improving our calculations, we agree that adding more data will not necessarily improve the results. The level of heterogeneity introduced by the data will have an impact on the results. Furthermore, the design of the standard formula, assumptions will also have a significant impact.
			In practice meaningful European market-wide parameters simply do not exist in a framework of classifying into as few as 12 defined lines of business.	We agree. The more granular segmentation the more appropriate the results would be. However CEIOPS has decided previously on the final segmentation.
			A further difficulty is that management and actuaries of insurers, in more cases than not, will be unfamiliar with the techniques and parameters set out in CP71 – these do not currently form the 'common parlance' of current management methods, calculations and reporting. It will therefore be difficult for management to regard what CP71 proposes as being practical, intuitive or credible.	Noted.
			We observe that taking averages (between samples and between methods) is a line of reasoning applied to arrive at the arbitrary outcome in CP71. This does not seem to overcome the basic difficulty of poorness of fit, it only serves to make unders and overs compensate each other. Given that data does not span the complete European market – it does not seem that 'averaging' can be said to achieve the 'correct' level of capital in aggregate for the entire market.	We agree.
			Although we are here commenting of CP71 – the same "typical poorness of fit" argument applies to the lines of business correlations in CP74.	Noted.

			Moreover the combined effect of "poorness of fit" - by volatilities and by correlations – serves to compound the arbitrariness of standard formula SCR. There is a risk with fixed parameters such as CP71 proposes – that there will be no disincentive for an insurer's management to accept riskier business (if that riskier profile led to no increase in the standard formula capital). We have concerns that the methods: (a) Did not fully take into account how general inflation impacts on claims inflation; (b) Ignored the impact of well-recognised and demonstrated underwriting cycles; (c) Lacked the complexity necessary to represent the impact of reinsurance.	See corresponding points to comment 1. We agree. And this will lead to underestimation. This is explained in 3.12 and throughout the paper. We agree. However CEIOPS does not wish to add further layers of complexity. We agree. However see response to comment 1.
34.	ABI	3.3.	Cat data have not been split out for premium / reserving risk. This is a serious flaw that has resulted in excessively high calibrations. In addition we are concerned that the proposed method result in a double counting between "cat risk" and "premium risk" arising from the fact that: (a) Premium risk factors are applied to the whole premium, which will incorporate a cat load. (b) The calibration of the volatilities for premium risk has incorporated	See corresponding points to comment 2. See corresponding points to comment 2.

			data with catastrophes in it, and thus exhibits excessive volatility. However, catastrophes are separately and explicitly allowed for elsewhere. This constitutes a double/triple count of catastrophes, which is extremely penal to companies writing catastrophe-exposed business and particularly catastrophe reinsurance, for which the only exposures are in respect of catastrophes.	
35.	ARC	3.3.	We feel that further analysis with the reinsurance sector is required.	See corresponding points to comment 1.
36.	Deloitte	3.3.	The analysis driving the calibration behind CP71 is based on 6 member states and even within the data for these member states the data was sparse for some classes (e.g. reinsurance). Given this calibration is for the standard formula an analysis based on a much larger sample would reflect the wide range of risks insurers write and the resulting calibration would be more suitable. It would be useful to understand what selection criteria used in selecting the 6 member states and why it was appropriate for this sample to represent all risks written throughout Europe.	See corresponding points to comment 1.
37.	IUA	3.3.	Whilst we understand CEIOPS' difficulties with obtaining the necessary data, particularly within the timeframe faced, we note that there were a number of classes where only one or two countries had the necessary data available. Given that the SCR has to be Europe wide, we would question whether this is sufficient to draw adequate conclusions.	Noted. We are collecting more data but adding more data will not necessarily improve the results. The level of heterogeneity in the analysis will always have an impact on the results. Furthermore, the design of the standard formula, assumptions will also have a significant impact.
38.	XL Capital Ltd	3.3.	This paragraph notes that CEIOPS data was sparse for certain classes (e.g. reinsurance) and Annex, section 4.2 identifies lines of business where data from only one or two countries was available. We would question the validity of drawing conclusions from such limited data.	Noted. This is the only data available. However we are collecting more data.
39.	KPMG ELLP	3.5.	Hopefully QIS5 will be consistent with the new recommended factors so	Noted.

			that the discrepancy found between standard formula and QIS 4 are removed.	
40.	CEA	3.6.	In the table comparing the current proposed factors with the QIS4 factors, the reserve risk QIS4 factor for Motor Other is indicated as 12%. The QIS4 spreadsheets and technical specifications use 7%. The proposed factors are not appropriate in view of the vast variety of risk profiles (where size is a major driver) and the non representative data used in calibration. Accident should be added to this list.	Noted. This will be corrected. We agree see 33.
41.	Deloitte	3.6.	The analysis carried out for this CP suggests that some of the volatility factors in QIS4 may have been under-calibrated at least for some lines of business. The analysis was only based on a small sample and the conclusion may have been different if a larger sample size was selected.	Noted. The QIS 4 calibration should not be used as a benchmark. This exercise did not include the same level of analysis and data that has been included in CP71. Only 3 countries provided data, and there is no evidence to suggest that such calibration is more in line or more appropriate for undertakings.
42.	GDV	3.6.	The proposed factors are not appropriate in view of the vast variety of risk profiles and the non representative data used in calibration. Accident should be added to this list.	See corresponding points to comments 1 and 2. See corresponding points to comment 40.
43.	KPMG ELLP	3.6.	The analysis performed in 4.48 suggests that the actual distribution of standard deviations in the EEA is much lower than the QIS 4 factor for Motor Other and Fire and Other Property Damage. Despite that, the re-	Noted. The analysis and methodology adopted in choosing factors are explained throughout the paper;

			calibration of the SCR suggests higher factors for these lines of business.	however, more clarification may be required. The QIS 4 calibration should not be used as a benchmark. This exercise did not include the same level of analysis and data that has been included in CP71. Only 3 countries provided data, and there is no evidence to suggest that such calibration is more in line or more appropriate for undertakings.
44.				
45.	XL Capital Ltd	3.6.	The premium and reserve risk factors have increased most significantly for the non-proportional reinsurance classes. We are concerned about the amount of data utilised for this class, with only one country contributing, especially if that country's data has not had catastrophe data split out. This could inflate the results. Furthermore as this class has the greatest capital charges relative to other classes, it is concerning as it will inevitably make writing those classes more expensive, relative to other classes of business. This in turn could effect the cost and/or availability of those classes. Clearly anything that disproportionately affects those classes is undesirable, as non-proportional reinsurance is an essential risk mitigant for insurance companies. It would be a perverse side effect of the Solvency II proposals if the overall impact on cost and availability of those products dis-incentivises the purchase of such reinsurance. There is an inconsistency between NPL Property and NPL Casualty. It does not pass a reasonability test that these volatilities are the same. Relativities between classes of business should be introduced into the analysis.	Noted. see response to comments 1 and 2. Noted. Where and who will provide us with more data?
46.	ABI	3.7.	The impact of the changes to the volatility parameters used has been to	Noted. See responses to comment 2.

			increase the capital charge on the Premium and Reserve Risk by more than the estimated 35% projected by CEIOPS. For UK non-life companies, the indicative results from a market study carried out by non-life consultancy EMB shows an average increase of around 65% in SCR. At the time of writing the survey had finalised results for 40 firms; however there were a number of late entrants into the study so further analysis is being carried out and results will be available in the near future on www.emb.com.	
47.	CEA	3.7.	The models and methods used are not appropriate for all undertakings operating in the EEA (e.g. Germany).	Noted. Can we have examples? The standard formula has too fit many parameters, it is difficult for CEIOPS to select a factor that will suit every undertaking as well as ensure firms have enough capital.
48.	Deloitte	3.7.	A 35% increase in the underwriting risk sub-module is large and this has a much wider impact. A higher capital requirement would mean more firms are likely to breach the SCR and a greater level of regulatory intervention maybe needed, particularly when there is a economic downturn.	Noted. Ceiops will get a better view after QIS 5. However it is important to consider the impact on available capital to meet the capital requirement – an increase in the capital requirement itself may not lead to a need for an increase in capital.
49.	KPMG ELLP	3.7.	Is the 35% average increase weighted by the relative premium and reserve volumes for each line of business? We reckon that, as the increase has been relatively small on the motor lines, which represent the largest volume of reserves in the EEA, the actual impact will be less than 35%.	See response 48. The percentage increase is on average as mentioned in the paper
50.	Lloyds	3.7.	Many factors have increased significantly over those from QIS4. We appreciate that limited time and data were available, but there is still a	Noted. CEIOPS has provided stakeholders with a description of

			need to select method and factors that are appropriate. There are a number of areas that could be easily implemented that would improve the quality of the result.	how we have arrived at each factor by LoB for each of the methods. The difficulty was arriving to a fitted factor per method when there is a clear difference by size of portfolio. Furthermore, once we have found a fitted factor by method, how to select the final factor. For the former, CEIOPS has taken a volume weighted average approach. This is explained in 3.14 of the executive summary and also throughout the paper. This approach will result in fitted volatilities which are heavily biased toward the volatilities of the larger portfolios (and hence significantly lower). As an example if you see page 24 Motor other, the fitted factor for method 2 is 9%. This is a clear underestimation for medium and small portfolios. However it is too high for larger portfolios. The selection of the final factor was based considering the overall information available to CEIOPS. We considered the lowest fitted factors, the QIS 4 analysis in the Annex 4.4 and judgement around the assumptions. CEIOPS analysis was purely based on technical analysis with the data

				available at the time. Factors have not been inflated; on the contrary CEIOPS took the view of selecting an average of the lowest factors.
			There are 2 areas of the analysis that lead to systematic over-estimation of the volatilities and this should be accounted for in the final selections:	
			a) Though the data request stated a preference for data net of the effects of catastrophe events, it is not clear to what extent the data received did actually exclude these (For example, this would be difficult for UK data). Inclusion of catastrophe events (such as 9/11 and Hurricane Katrina) within the data used to calibrate factors will lead to a double-count and will – incorrectly - significantly increase the volatilities of results of affected classes. This is particularly the case for factors relating to some non-proportional reinsurance business lines, which have increased significantly. The premium and reserving risk module of the SCR is not intended to allow for catastrophe losses that are accounted for elsewhere.	Noted. More has been collected to allow for these issues.
			b) There is no allowance for movements in premium rates in the assessment. The underwriting cycle is a well known phenomenon in the insurance industry and in most cases there are known premium rate indices available. The historic losses ratios used in the analyses should be normalised to a base premium rate period (e.g. all at 2008 rates). Not to do so will unnecessarily increase the historic volatilities. For example, if an undertaking wrote one risk for the last 10 years and: o each year that risk generated 80 in claims; and o the annual premium for the risk varied between 80 and 120 over the period;	See corresponding response to general comments 1, 2, and 3. We agree this is an issue. A more explicit allowance would require a change in the standard formula. As it stands the standard formula and CEIOPS do not support this. What we can do is also limited by the

			- then the observed loss ratios would vary between 67% and 100%. This would imply an incorrect degree of volatility, as claims would have actually remained constant. As the expected level of profitability in prospective business is not included in the assessment of the standard formula SCR then the volatilities should be assessed, allowing for estimated rate changes to ensure the volatilities are not systematically overstated.	nature of the exercise itself, which should result in an EU calibration. The data covers more than one market, and different markets may exhibit cycles to different degrees and with different timing. It is hard to see how any reasonable adjustment could be made without using some form of premium rating strength index – and these are not widely available and have dubious credibility at present. We would need to decide at which point we are in the cycle, and always have enough capital. How could we decide that, is highly judgemental. Industry suggestions as to how this can specifically be dealt with have been invited in the past with little success. Furthermore, if we are aiming to measure the variation of loss ratio from "expected" levels, then knowing where you are in the cycle is important. An analysis of change in loss ratio from previous year would undoubtedly result in a lower standard deviation than simply treating each year's observed loss ratio as a random sample from the

				distribution. However, since the SF does not allow for expected profits (or losses) or underwriting cycles – political decision – it is arguably more appropriate to look at where the result for next year is relative to (assumed) break even, as we do not care about (know about?) where we were last year . This would seem to lend some support to the approach adopted.
51.	XL Capital Ltd	3.7.	CEIOPS impact assessment based on QIS 4 indicates an average increase of 35% on the premium and reserve risk sub module. The potential consequences of this for the industry should be viewed in light of the fact that the FSA QIS 4 country report showed that 85% of the SCR is attributable to the non-life underwriting risk module. The revised calibrations could make certain lines of business much less attractive with a knock on effect to the cost of those insurance products.	See response to comment 48
52.	CEA	3.8.	The analysis may be more comprehensive, but no allowance has been made for the numerous issues relating to data adequacy, methodology & assumptions, and interpreting the results of the analysis.	We disagree.there are sections throughout the paper that deal with these issues.
53.	Deloitte	3.8.	The premium and reserve factors for reinsurance classes has increased the most. The relatively sparse data it was based maybe the reason why this is the case. Further clarification is needed on the quality of reinsurance data that was used is required. Standard deviation factors for liability classes (e.g. motor vehicle) have not increased much and the current calibrations may not be large enough.	We agree. However the data is not available.
54.	UNESPA	3.9.	In our opinion, the Premium factors obtained by the calibration (aim of	Noted. We can only work with the

			this report) applied to all companies that operate in the European markets could not be the most appropriate because of the lack of information used or because of the several factors not included on it and that had been included on the general comments.	data that has been made available.
55.	CEA	3.9.	Some of the key issues affecting the choice of an appropriate factor for an individual entity are the volume of business, the level of diversity (e.g. geographical) within the portfolio and the reinsurance programme. Due to the rather limited data used in the calibration, not enough allowance is made for these issues, so it will indeed be difficult to select appropriate pan-European standard factors.	We agree. There are areas in the design of the standard formula that CEIOPS does not allow for and other for which no concrete proposals have been made.
56.	Deloitte	3.9.	There is recognition that although the factors are intended to be pan European a single factor may not be appropriate for all undertakings. It maybe more suitable for factors to be provided at a more granular level (e.g. by size of entity) as this would capture the obvious differences in volatility.	We partially agree. Factors need to be harmonized across countries. Ie we cannot allow for national specificities. However factors could be more granular if segmentation was more granular or if we allowed for factors by size - but this would add further layers of complexity that CEIOPS does not wish to add.
57.	IUA	3.9.	We do not believe this point should be underestimated. The proposed calibration will not fit all undertakings' operations, and therefore these calibrations should not be taken as industry benchmarks.	Noted. The standard formula is not a benchmark. It is a method for calculating capital requirments. Internal models and USP are other options.
58.	Lloyds	3.9.	The analysis shows there is a significant difference between small, medium and large undertakings (or portfolios). As noted, this is to be expected but the difference does highlight that the selected factors are inappropriate for most undertakings. Further, it shows that the standard	We agree. This is concerning.

			factors selected will be systematically too high for large undertakings and systematically too low for small / medium undertakings. The standard formula factors for premium and reserving risk factors should be selected depending on size of portfolio and would be available from CEIOPS work to date. This would improve the appropriateness of the factors.	Noted. This indeed would be a solution however the EC does not wish to allow for factors by size. However the exercise highlights the significance of this issue
59.	UNESPA	3.10.	It would be recommendable to contrast the application of the conclusions obtained in the calibration process on the Spanish insurance sector. The information used for the calibration of the premium and reserve are based on six countries, which only two of them have a significant volume in terms of premiums.	We agree. We would welcome this so much. Can we have the analysis and data please?
60.	AMICE	3.10.	To obtain a correct calibration that best reflects the European market it is necessary to have a representative sample of the market. Considering data from 6 countries as representative is an error of CEIOPS, which clearly has a significant impact on the final calibration.	We disagree. CEIOPS has worked with the data available at that stage and in revising the analysis has included further data. We would urge stakeholders to provide us more data. Furthermore, incorporating more data will not necessarily reduce factors.
61.				
62.	CEA	3.10.	It is not clear to us why the data provided is so limited. The lack of time to carry out the analysis is also a concern. Using such simplifications only because of lack of time and data is not acceptable and contradicts the principles undertakings have to fulfil in view of the solvency requirements. Especially the principles of	We agree and have been working on collecting further data. We disagree. We have not made simplifications. We have provided a robust analysis based on the data

			appropriateness, completeness and accuracy are significantly not respected. We think that using a proxy on a European level is a too rough level of aggregated calibration and therefore too conservative. We would prefer the final standard factors to be based on a more complete study of a wider set of data. We suggest testing alternative calibrations for different markets e. g. in QIS5.	available. We disagree. National parameters are not allowed by the European commission.
63.	CRO Forum	3.10.	We appreciate that this methodology simplifies a rather complex matter. However we think that using a proxy on a European level is a too rough level of aggregated calibration and therefore too conservative. We suggest testing alternative calibrations for different markets in QIS5.	We disagree. National parameters are not allowed by the European commission.
64.	Deloitte	3.10.	Use of data from six states seems to be down to lack of time. To calibrate a standard formula more data should be used and an appropriate amount of time should be spent in collating and selecting appropriate data with a focus on likely users of the standard formula.	Noted, see response 60
65.	Groupe Consultatif	3.10.	The rationale "lack of time and data" on which relies the simplification could lead to inappropriate calibration if the sample used is not representative of an average European company.	Noted, see response 60
66.	ICISA	3.10.	The premium / reserve risk module is of fundamental importance. Calibration for the Credit & Suretyship line of business is based primarily on data supplied by UK and Poland. We do not consider this a representative sample on which to base a calibration. Significant industry participants have submitted data to the supervisory authorities in other member states – via QIS exercises and as part of standard supervisory interaction, therefore we would expect that the supervisory authorities utilise this data. We do not consider it appropriate to establish parameters based on simplifications "necessary through lack of time… to do a more complete	Noted, see response 60 Noted. However CEIOPS does not wish to allow for geographical

			study." We consider it especially important to review these parameters in light of the comment cited in 1.5 above and the fact that the Credit and Suretyship line of business was not permitted to test the effects of geographical diversification in QIS4 (even though geographical diversification does affect results).	diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence - too complex Furthermore this can be allowed for via USP
67.	Institut des actuaires	3.10.	The rationale "lack of time and data" on which relies the simplification could lead to inappropriate calibration if the sample used is not representative of an average European company.	Noted see response 60
68.	IUA	3.10.	We are sympathetic of the time and data constraints. However, we would question whether it is acceptable to base the calibrations on data which might not be sufficient for such conclusions to be drawn.	noted see response 60
69.	KPMG ELLP	3.10.	Lack of time is quoted as a reason for not being able to provide a more accurate representation of EEA's undertakings' risk profiles. However, if the text in this consultation paper is adopted, it will have long-lasting effects on undertakings' solvency for many years to come, unless it is planned to change the factors again on a regular basis in the future to allow for the changing landscape of the insurance industry in the EEA. We would advise that regular revisions are planned since factors are likely to lose their accuracy with time as the underwriting cycle and changes in types of insurance and terms in conditions come into effect.	Noted see response 60
70.	Lloyds	3.10.	The use of only six States is unlikely to give a good proxy for a European representative undertaking, particularly given lack of data from some major States (such as Italy and France).	Noted. see response 60
71.	Munich Re	3.10.	We appreciate that this methodology simplifies a rather complex matter.	See corresponding points to

			However we think that using a proxy on a European level is a too rough level of aggregated calibration and therefore too conservative. We suggest to test alternative calibrations for different markets in QIS5.	comment 63.
72.	ROAM	3.10.	To obtain a correct calibration which best reflects the European market it is necessary to have a representative sample of this market. ROAM considers that the hypothesis to consider the data of 6 countries as being representative is an error of CEIOPS which leads to a very significant bias in the results	Noted. see response 60
73.				
74.	XL Capital Ltd	3.10.	We are very concerned that calibrations will be inappropriately set based on scarce data and simplified proxies due to CEIOPS "lack of time to do a more complete study"	Noted. see response 60
75.	CEA	3.11.	We would like to know how Ceiops proposes this is done. Is there additional data available which could be incorporated into the analysis, or does a further data request need to be made? The latter suggestion however has the disadvantage that it may not leave room for further impact analysis after a new calibration.	Noted. CEIOPS has received additional data and will re run the exercise before March 2010. The impact analysis is provided by QIS 5.
76.	ICISA	3.11.	We note from Annex 4 that there was limited participation in providing data (2-3 member states). Industry participants have submitted data to the supervisory authorities in other member states – via QIS exercises and as part of standard supervisory interaction, therefore we would expect that the supervisory authorities utilise this data. Also, it is important to investigate whether or not supervisors have consistent definitions for data supplied.	Noted. This may be the case but the data was not provided. We have provided supervisors with an excel template so they can incorporate the data. There are also issues with data being confidential or only being able to provide one whole market triangle which is not useful Furthermore the data is not available net of reinsurance.

77.	Lloyds	3.11.	It would be useful to incorporate any extra data prior to setting parameters for the QIS5 exercise.	We agree.
78.	UNESPA	3.12.	It is not specified how it has been implicitly considered the Geographic level of diversification and a mitigation level of risk through non proportional reinsurance. We consider that geographical diversification must be considered in calibration.	Noted. This has been done through the data.
79.	ABI	3.12.	We do not believe that allowing for implicit non proportional reinsurance, geographical diversification and inflation is the right response. This will result in advantaging undertakings with no diversification and disadvantaging diversified undertakings. We are in favour of a solution where the factors would be different according to the degree of diversification. We suggest the creation of three categories: Small, medium and large with a different set of rate for each category.	We agree. However if we cannot allow for this explicitly this is all we can do. We agree. Factors by size could be a way forward by the European commission does not like that.
80.	ARC	3.12.	Why have these simplifying assumptions been used?	Noted. Due to the design of the standard formula. CP48
81.	CEA	3.12.	It is not specified how the Geographic level of diversification and the mitigation level of risk through non proportional reinsurance have been implicitly considered. We believe that geographical diversification and non proportional reinsurance must be explicitly allowed for in the calibration.	see response 78,79 We understand the removal of geographical diversification may have a considerable impact for some undertakings. However CEIOPS does not wish to allow for geographical diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence

				- too compex Furthermore this can be allowed for via USP
82.	Deloitte	3.12.	The limitations listed could have a large impact on the standard factors. A scenario based approach may have been appropriate to capture the widely different levels of geographical diversification and level of risk mitigation techniques used. Inflation should be considered in more detail has this would obviously have a large impact on the standard deviation factors and without appropriate inclusion the factors maybe under-calibrated as noted by CEIOPS. Further clarification on how these maybe allowed for in the future is needed.	see response 78,79
83.	Groupe Consultatif	3.12.	We have some concerns about the assertion that the period 1999 to 2008 was a relatively benign period with low inflation. Indeed, some of the countries in the sample have registered double-digit annual inflation rates during that period.	Noted. We believe this is only one year for one country for the data used in the analysis. It does not seem inappropriate to allow for some degree of higher inflation happening again in future.
84.	ICISA	3.12.	For Credit & Suretyship, the lack of a structural representation of non-proportional reinsurance is a significant shortcoming of the standard formula	We agree.However this is a consequence of the design of the standard formula. CEIOPs will try to incorporate any proposals made by the industry on this issue.
85.	Institut des actuaires	3.12.	We have some concerns about the assertion that the period 1999 to 2008 was a relatively benign period with low inflation. Indeed, some of the countries in the sample have registered double-digit annual inflation rates during that period.	see response to 83

86.	IUA	3.12.	As we have previously identified, we believe some form of explicit geographical diversification should be allowed for in the standard formula. For instances where it is inappropriate, or disproportionate to apply, simplifications should be permitted. It is not clear how any meaningful geographical diversification can be allowed for implicitly in the currently proposed calibration of this module.	We disagree. see response to 81
87.	KPMG ELLP	3.12.	Smaller businesses who are more likely to rely on the standard formula to calculate the SCR won't necessarily have an average level of geographical diversification. The first assumption removes a level of conservatism. However, small undertakings will usually buy more reinsurance so the second assumption is conservative for most users of the SCR formula.	Noted.
88.	Lloyds	3.12.	Geographical diversification is allowed for in the factors only to the extent that it exists within data provided by the 6 States. The level of geographical diversification within this data is likely to vary considerably between the States. As some lines of business were parameterised using data from very few (or even only one) of the States, different lines of business will incorporate different levels of geographical diversification. For example, NPL Property, NPL MAT and NPL Casualty will only reflect levels of geographical diversification seen in UK data, which may overstate that of other member States.	Noted. . We understand the removal of geographical diversification may have a considerable impact for some undertakings. However CEIOPS does not wish to allow for geographical diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence - too complex Furthermore this can be allowed for via USP
89.	XL Capital Ltd	3.12.	We disagree with having an average level of geographic diversification and an average level of risk mitigation effect of non-proportional	Noted. We understand the removal of geographical diversification may have

			reinsurance. It is not possible to apply an average level for the insurance industry due to such a large diversity between companies. It would be better to explicitly introduce factors to evaluate the impact of these.	a considerable impact for some undertakings. However CEIOPS does not wish to allow for geographical diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence - too complex Furthermore this can be allowed for via USP CEIOPS has discussed the treatment of non-proportional reinsurance and made a proposal in the final advice.
90.	Deloitte	3.13.	The analysis carried out for this CP suggests that some of the volatility factors in QIS4 may have been under-calibrated at least for some lines of business. The analysis was only based on a small sample and the conclusion may have been different if a larger sample size was selected.	Noted. CP71 starting point is QIS 4. ie all the limitations that we have in CP71 are in QIS 4. Furthermore CP71 has tried to improve some of those limitations by providing more data, being more transparent and doing a sound analysis.
91.	KPMG ELLP	3.13.	Accident and sickness are covered under CP 72 and are therefore not in scope of this CP.	Noted.
92.	UNESPA	3.14.	The volume weighted standard deviation implies considering the particular feature of each country. In our opinion the calibration process of the volatilities must be done with a significant volume of information in which is contained every caseload of each case.	Noted
93.	ASSURALIA	3.14.	As explicitly written in this paragraph, the factors should be different depending on the size of the portfolio; we recommend taking into	Noted.

			account the size of the portfolio to determine the factors.	
94.	Deloitte	3.14.	The analysis conducted by CEOPIS was based on data provided by 6 member states which are assumed to be a proxy for a European representative undertaking. The standard deviations are weighted by volume placing more weight on the undertakings writing larger volumes of specific lines of business. This means the calibration is more appropriate for larger portfolios. The concern is that the standard calibration is more likely to be used by undertakings writing smaller portfolios and so the volatility may not be large enough to reflect their risk profiles. Smaller undertakings are less likely to be able to build an approved partial model to reflect the volatility more realistically	Noted. We agree this is a concern.
95.	EMB Consultancy LLP	3.14.	While larger portfolios will be given proportionally higher weight, it is important to consider that there are significantly more smaller portfolios in most lines, and as such the total volume may well be higher for smaller portfolios, largely mitigating this risk.	We disagree. Having seen the results we can assure EMB that is certainly not the case. CP71 also shows this very clearly. Selected factors are much closer to the factors of larger size portfolios than to that of medium or smaller size.
96.	Groupe Consultatif	3.14.	Although we would agree that the factor should be higher for smaller portfolios, it should be noted that this is less the case when allowance is made for reinsurance.	Noted.
97.	ICISA	3.14.	It s apparent that the calibration is likely to be favourable for smaller undertakings and unfavourable to larger undertakings; it depends on what fit is used. When applying the calibrations in practice, supervisors should be conscious of the limitations of the calibrations.	Noted.
98.	KPMG ELLP	3.14.	The calibration of standard deviation is driven by larger portfolios when smaller businesses are more likely to rely on the standard formula to calculate the SCR. This assumption removes a level of conservatism.	Noted. Not just a level of conservatism. This is critical.
99.	UNESPA	3.15.		No comment available.
100.	ARC	3.15.	How are these undertaking specific parameters set or approved?	Refer to the USP CP.

101.				
102.	CEA	3.15.	We note that USP suffer from some similar drawbacks and limitations, for example none of the permitted methods make an allowance for the underwriting cycle. The use of credibility weighting, with 15 years data needed before 100% weight is given to own data, means the standard factors are still very important for entities using USP. For companies using (partial) internal models, our concern is that the increase in standard factors may place upward pressure on internal assessments. We feel that divergence between internal model assessments and standard parameters will be increased by the high level of prudence in the standard parameters.	We agree. But the methodology and the assumptions are consistent with CP71. The CP71 calibration will be based on more data. We disagree. PIMs/IMs will be approved if they are considered appropriate for the undertakings risk profile, the SCR standard formula should not be regarded as a benchmark.
103.	CRO Forum	3.15.	Due to the issue mentioned in 3.14 very small companies should use undertaking-specific parameters.	See response to 101
104.	Deloitte	3.15.	See 3.14.	See response to 94.
105.	Groupe Consultatif	3.15.	Especially small undertakings should use their own parameters (because of 3.14)	See corresponding points to comment 101.
106.	ICISA	3.15.	While undertakings may consider parameters to be inappropriate and apply for approval of (partial) internal models or make use of undertaking specific parameters, it is unclear how individual supervisors might use the parameters cited in this CP as benchmarks. As mentioned in our comment on 3.14, when using the calibrations in practice, supervisors should be conscious of the limitations of the calibrations.	Noted. See corresponding points to comment 102.
107.	IUA	3.15.	The ability for undertakings to obtain a partial or full internal model should not preclude CEIOPS deriving SCR parameters which provide for an economic valuation of capital, or to devising a standard formula SCR that provide a reasonable proxy for most businesses.	Noted.

108.	KPMG ELLP	3.15.	This will select against companies who don't have an internal model for proportionality reasons. Especially small undertakings should be able to use their own parameters (because of 3.14)	We disagree. Other options (ie PIM or USP) can be used.
109.	Munich Re	3.15.	Due to the issue mentioned in 3.14 very small companies should use undertaking-specific parameters.	See corresponding points to comment 108.
110.	XL Capital Ltd	3.15.	The ability for undertakings to obtain a partial or full internal model should not preclude CEIOPS deriving SCR parameters which provide for an economic valuation of capital. The inclusion of the two year period where standard formula SCR is reported alongside the internal model SCR is so that a meaningful comparison between the two can be made.	See corresponding points to comment 107.
111.	ASSURALIA	3.16.	The risk margin normally decreases in absolute value during a one year development of existing claims.	We disagree. May increase or decrease. It is the hypothetical cost of the capital that would be lost in a distress situation. Following thee distress there would be no capital and the firm would need to find more capital. It is not clear from the comment but the stakeholder seems to suggest that following adverse developments, there cannot be further adverse developments. Just because things have gone badly, it does not mean that things cannot get worse (consider the experience of asbestos development). Once it became clear that asbestos was a disaster, capital needs for asbestos exposed undertakings increased significantly. Another way of seeing this is for

				example, an undertaking may decide to buy a stop loss arrangement after one year (t=1) under normal circumstances and the arrangement will have an implicit margin attached to it. However, if at t=0 the undertaking is subject to a 1 in 200 situation, at t=1, when they try to purchase the stop loss, the risk margin implicit in the price of this arrangement would have increased dramatically due to the change in circumstances. This additional risk is not captured by the risk margin at t=0. The cost of transferring your liabilities is not the same before the stress than after the stress. The SCR is the change in the economic balance sheet over one year, this includes the change in liabilities and the risk margin. The SCR Non-life includes the change in discounted liabilities but not the change in the risk margin, therefore this would need to be added.
112.	Deloitte	3.16.	Risk margins will change under stress and should be incorporated into the calibration levels. The QIS4 calibrations were not considered high enough so any future work that propagates and increase will mean that this issue is even more important.	Noted
113.	EMB Consultancy	3.16.	We would agree with the concept of including changes in the risk margin within the standard formula, as described in annex 4.3	Noted

	LLP			
114.	Groupe Consultatif	3.16.	It is unclear which stress that is being referred too, as there does not exist only one stressed risk margin	see response 111
115.	CEA	3.19.	The use of the volume parameter (V) is not sufficiently risk sensitive and produces counter intuitive results. The proposed method (Factor*Volume) does not encourage the risk management and is not risk sensitive since it penalizes undertakings with a greater volume of premiums and reserves. For example, 2 undertaking with the same risk profile but with different level of premiums will have different capital charge since the SCR will depend on the Volume parameter. Oddly, the best covered entity with a higher volume of premiums will be penalized with a higher capital charge.	Noted. We understand that this is an issue. However this is a consequence of the design that was presented as part of CP48. We have made a note on this but we are finding difficult to find a better solution. Nevertheless while using expected claims increases the reliance on the assessment of the profitability of current premium rates, CEIOPS considers it does so only marginally. The slightly higher reliance on accuracy of expected claims would also increase the need for supervisors to monitor the accuracy of undertakings' provisions.
116.	Groupe Consultatif	3.19.	As per previous feedback which Groupe Consultatif made during previous waves of consultation, we do not believe it is appropriate to be basing the capital requirement on a mixed volume measure and a formula which combines premium and reserving risk so that an intuitive appreciation of the process is difficult	We disagree. We feel that the proposed approach better reflects the closer correlations between premium and reserving risks within a line of business than considering correlations between lines of business with premium risk and reserving risk separately and then aggregating at a combined level. Additionally, the proposed approach may lead more naturally to a determination of capital requirements for individual lines of business – and

				firms probably operationally manage lines of business rather than premium risks and reserving risks separately.
117.	CEA	3.21.	We suggest to Ceiops to use the following methodology to calculate basic risk by aggregating premium and reserve risk. ☐ Determine σ separate for reserve risk with formula from 3.23. ☐ Determine σ separate for premium risk with formula from 3.23. ☐ Determine the SCRres and SCRprem for each LoB using the formula in 3.21 and 3.19. ☐ Aggregate the two SCRs with a politically fixed correlation of proposed 0.5 instead of the approach in 3.20.	We disagree. Regarding the methodology proposed, CEIOPS wishes to keep the current proposal. We do think that there is likely to be closer correlation between premium and reserve risk in a line of business than between premium or reserve risks in different lines of business, which suggests maintaining our current approach. See also response to comment 116 and response on correlations on comments 10
118.	CEA	3.23.	Terminology is unclear: is sigma a standard deviation or a coefficient of variation (i.e. standard deviation in percent of the corresponding volume measure)? Last interpretation makes sense. This ambiguity produces misleading formulas, see 3.70 and 3.72.	Sigma is the overall standard deviation.
119.	RBS Insurance	3.24.	Typo in CEIOIPS.	Noted.
120.	ASSURALIA	3.25.	We are convinced that the Professional TPL has an other payment pattern and a different volatility than the private life TPL; therefore we suggest giving the opportunity to an undertaking to separate the TPL in sub-LOB's	We do not agree. The segmentation of LoBs has already been agreed. However we agree that this would provide a more appropriate answer.
121.	ABI	3.26.	The sample used by CEIOPS was limited to seven countries. In practice for most of the risk it had to be even further restricted due to the lack of good quality/relevant data.	We disagree strongly. No calibration was inflated. See response to comments 1 and 2.

			We have concern that the calibration may have been inflated as a consequence.	
122.	ACA	3.26.	These Countries are representative of all European countries? (Jurisprudence, Social Security systems…)	Noted. CEIOPS has worked with the data available. See response to comment 60.
123.	AMICE	3.26.	General observations	Noted.
124.	CEA	3.26.	This list of countries is clearly very limited and does not many important markets (France, Spain and Italy) or any Scandinavian countries. Results derived from this data could not be considered to be representative of the EU as a whole.	We agree. However we have received further data from IT and Scandinavian countries which we will incorporate.
125.	DIMA	3.26.	DIMA assumes that CEIOPS has used publicly disclosed information (triangles) to support the calibration for reinsurers.	We disagree. CEIOPS has used a set of considencial information provided by member states. This information is totally confidencial.
126.				
127.	ICISA	3.26.	For the Credit Insurance & Suretyship line of business, the mentioned member states should not be considered as representative, therefore we would welcome more participation from member states.	Noted
128.	IUA	3.26.	Utilising a wider pool of data is welcome, although there are a number of classes, that have data from only one or two countries. We would broadly observe that those Lines of Business which have the greatest calibration increases over QIS 4 (with the possible exception of MAT), are those that had fewer countries contributing data. Furthermore, a number of countries with a sizable share of the European non-life industry that are not included in the dataset; France, Italy, Netherlands, and Spain are particularly obvious omissions.	We agree. Further data has been collected to the extent possible.

129.	KPMG ELLP	3.26.	We note that significant countries in terms of share of EEA insurance premiums were not represented such as France, Italy, Spain, Netherlands or any of the Scandinavian countries.	See response to 124.
130.	Lloyds	3.26.	See our comments under 3.10.	See corresponding points to 3.10.
131.	XL Capital Ltd	3.26.	Having six member states data may at first seem like a credible amount of data, however we would like to understand this information better as to its makeup of size, location of risk and types of insurance companies. Also it would be useful to know which books are causing such large increases. We suggest refraining from implementing such large increases until this type of analysis can be done.	Noted
132.	UNESPA	3.27.	Data specifications The annex document specifies the information features to be supply. It would be convenient to state that the information used in order to apply the calibration process and considering its scarcy has followed the criteria explained in the annex document. To be more precise, it would be recommended to have the certainty that the data series do not included any of the events that could be incorporate in the CAT submodule. Likewise, the payment recovery treatment is very important in order to include the casuistic of some specific LOB.	Noted
133.	ICISA	3.27.	Calibration for the Credit & Suretyship line of business is based primarily on the UK and Poland. We do not consider this a representative sample on which to base a calibration. Significant industry participants have submitted data to the supervisory authorities in other member states – via QIS exercises and as part of standard supervisory interaction, therefore we would expect that the supervisory authorities utilise this data.	Noted
134.	UNESPA	3.28.	In our opinion, the volume of the range of years selected is scarce. On the other hand, taking 2008 into account could distort the final results	We disagree. We consider this a good representation. The further back you

			due to the extraordinary financial situation.	go the poorer the quality of the data. Why should we exclude information from bad years? On the contrary the data has to be representative of what has happened and 2008 is just another year like any other one. We cannot just calibrate on data where there is no volatility so that the factors are lower. We are trying to capture the 1 in 200 scenario!
135.	CEA	3.28.	The period of 10 years is considered too short for many lines of business. Besides taking 2008 into account could distort the final results due to extraordinary financial situation.	See corresponding points to comment 134.
136.	Deloitte	3.28.	For certain longer tail lines of business 10 years of data may not capture the volatility appropriately. We recommend a larger data set for such classes.	See corresponding points to comment 134.
137.	GDV	3.28.	The period of 10 years is considered too short for many lines of business.	See corresponding points to comment 134.
138.	Groupe Consultatif	3.28.	Ten years of data is not enough for proper statistical calibration (and given that the calibration is of a 1:200 tail) – linking to a reading of CP75 it is noted that this amount of data points would only attach a credibility factor between 50-60%.	See corresponding points to comments 23 and 134.
139.	IUA	3.28.	We would question whether ten years of data is sufficient, particularly as this is only likely to contain one insurance cycle (it has been suggested that previously observed insurance cycles tend to last around seven years).	See corresponding points to comment 134.
140.	UNESPA	3.29.	This report contains certain problems regarding with the information	See corresponding points to

			treatment and with the limitations of this information. In our opinion it would be necessary a calibration study with a large volume of information, with a lower heterogeneity level in the crucial aspects, as could be the treatment of reinsurance, regulatory effects by different countries. The heterogeneity, in our opinion, makes the volatility, which is the aim of our analysis, to be increased.	comments 1 and 9.
141.	ARC	3.29.	What plans are in place to resolve these limitations?	Noted. On some issues we are waiting for industry proposals on others CEIOPS does not wish to add layers of complexity into the standard formula.
142.	ASSURALIA	3.29.	As the factors have been calculated gross of reinsurance, we would give the possibility to the undertaking to apply a correction factor to take into account the reinsurance; either this factor is a standard parameter (included in the standard model) or it's estimated by the undertaking.	We disagree. The factors selected have been selected considering both net and gross data. However as the data we are receiving for th revised calibration is all gross, we may have to consider some intermediary steps. Further advice on this has been included in the final paper
143.	CEA	3.29.	One of our main concerns is the high level of heterogeneity in the data that has been analysed. No allowance has been made for this in the analysis, and in our opinion this is likely to materially overstate the actual level of variability of results. A major cause of heterogeneity is between countries, due to the different regulatory and accounting regimes, claims environments and types of products. We believe that an additional analysis should have been carried out considering data from each territory separately. This would go some way to reducing the scale of heterogeneity.	See corresponding points to comment 9. See responses to comment 9.

			Further, for the lines of business where data was particularly scarce, the analysis will lead to a truncated vision of the situation. This will lead to significant inconsistencies in the results. Using gross of reinsurance data where net is not available will clearly overstate variability of results. It is not obvious by how much the variability might have been overstated due to this issue, and this will vary by line of business. We would request that an attempt is made to quantify this impact, possibly by looking at the differences between gross and net variability for classes where both gross and net data are available. More appropriately, the CEA propose for the calibration of the premium risk to: ☐ start with earned premium data gross of reinsurance transactions and then to allow undertakings to ☐ approximate the volatility net of reinsurance transactions by taking into account the undertaking specific actual reinsurance structure. Workable solutions how this can be achieved have been presented to Ceiops by a joint working group consisting of representatives from SwissRe, MunichRe and HannoverRe and AMICE. Posted reserves are unlikely to be on a best estimate basis, particularly for Germany. Differences in reserve strength between insurers are another cause of heterogeneity.	See corresponding points to comment 9. Noted. We agree this is a good point. We will do this. Noted. We agree this would be a good way forward. However we had some issues on the proposals. We are wainting for responses. See response to comment 47.
144.	Deloitte	3.29.	We urge CEIOPS to address the data issues as soon as possible. This analysis should be based on data that is adequate, complete and	Noted. CEIOPS is doing everything on a best efforts basis. The

			accurate. Suggestions could be for example to draw data from CEA databases, or to include a data request in QIS 5. The latter suggestion however has the disadvantage that this does not leave room for further impact analysis after a new calibration.	specifications are clear and where data has been provided we understand the data meets the requirements.
145.	EMB Consultancy LLP	3.29.	The first of this paragraph comments on the difficulty CEIOPS suffered in obtaining sufficient data. We would expect that further data would become available over time as Solvency II is fully implemented. It is not clear to us what the review and update process for these parameters will be going forward. The second of this paragraph states "The historic posted reserves are on an undiscounted best estimate basis rather than discounted best estimate basis." We would expect that such reserves would show lower volatility, but that this would be appropriate, since the volatility relating to changes in the discount rates applied should be captured within the market risk module.	Noted. Noted.
146.	FFSA	3.29.	CEIOPS: "There were significant limitations in the data available to perform this exercise. (…) Data was not readily available and there was not sufficient time to wait for member states to prepare the data in the format" FFSA: This analysis seems to have not been prepared enough by CEIOPS and leads to a partial or truncated vision of the situation. It leads also to lack of reliable data for the study. That will lead to major inconsistencies in the results provided by CEIOPS. CEIOPS: "Data was not necessarily available net of reinsurance. Where gross of reinsurance data was more abundant, the analysis was carried out of gross of reinsurance" FFSA: Half of the reserve risk and Motor TPL for premium risk (3.116)	See corresponding points to comment 144 as well as responses to general comments.

			seems to have been calibrated based on gross of reinsurance data. Nevertheless, it is not completely clear if gross or net data has been used (e.g paragraph 3.184 states that data for all lines of business is net of reinsurance, paragraph 3.270 states that data used for Motor TPL is gross of reinsurance). This should be clarified. The results could not be based on gross of reinsurance data as the reinsurance program has a very important mitigation effect on the risk. This will lead to highly increase the requirements of the non life underwriting risk, in particular in the long term and most risky business.	Noted. We can clarify further.
147.	Groupe Consultatif	3.29.	We appreciate that carrying out this analysis on a European wide level is an onerous task and that due to time constraints, the level of depth of the current analysis was limited. We therefore recommend that a more comprehensive analysis be carried out in due course, and in particular that more validations be performed on the data used. We will provide further comments with regard to data issues in sections 3.101 and 3.3.2. We have some concerns about the reliability and quality of data used due to the significant limitations listed. The fact that some data are gross of reinsurance may introduce additional volatility in the calibration.	Noted. Noted. See response to comment 1, 2 and 3 and CEIOPS is doing everything on a best efforts basis. The specifications are clear and where data has been provided we understand the data meets the requirements.
148.	Institut des actuaires	3.29.	We have some concerns about the reliability and quality of data used due to the significant limitations listed. The fact that some data are gross of reinsurance may introduce additional volatility in the calibration.	Noted. CEIOPS is doing everything on a best efforts basis. The specifications are clear and where data has been provided we understand the data meets the requirements.

149.	IUA	3.29.	We do not think these limitations should be overlooked. These limitations could have a material impact on the results.	Noted.
150.	XL Capital Ltd	3.29.	This paragraph notes numerous significant limitations in the data used by CEIOPS for this exercise. Taking these into account we suggest refraining from implementing such large increases until further analysis can be performed.	We do not agree. The calibration has its limitations just like any other analysis. However what factors would you think more appropriate?
151.	ABI	3.30.	One of our main concerns is the high level of heterogeneity in the data that has been analysed. No allowance has been made for this in the analysis, and in our opinion this is likely to materially overstate the actual level of variability of results.	Noted
152.	UNESPA	3.31.	After the first development year, for each LOB, CEIOPS set out four calibration methods of the LR standard deviation. The following table shows the factors in each LOB and the applied methods: LOB / Method 1 / Method 2 / Method 3 / Method 4 / QIS4*_Median / QIS4*_Mean / QIS4 / Ceiops Sug Motor, third party L. / 11,00% / 10,00% / 24,00% / 20,00% / 8,40% / 7,90% / 9,00% / 10% Motor, other / 10,00% / 9,00% / 15,00% / 20,00% / 4,60% / 4,80% / 9,00% / 10% MAT / 16,00% / 15,00% / 49,00% / 25,00% / 14,00% / 14,00% / 12,50% / 20% Fire & Damage / 10,00% / 10,00% / 28,00% / 28,00% / 6,60% / 7,40% / 10,00% / 13% Third Party L / 12,00% / 14,00% / 25,00% / 31,00% / 11,80% / 11,90% / 12,50% / 18% C&S / 12,00% / 6,00% / 23,00% / 36,00% / 22,70% / 16,80% / 15,00% / 20% Legal Expenses / 7,00% / 6,00% / 48,00% / 18,00% / 5,40% / 6,40% / 5,00% / 8% Assistance / 9,00% / 7,00% / 26,00% / 42,00% / 8,00% / 7,60% / 7,50% / 10% Miscellaneous / 7,00% / 2,00% / / 96,00% / 13,10% / 15,50% / 11,00% / 20% NP Reins Prpo / 43,90% / 69,00% / 90,00% / 250,60% / 32,20% / 28,00% / 15,00% / 30% NP Reins Cas / 28,00% / 35,00% / 46,00% / 117,00% / 18,90% / 20,70% / 15,00% / 30% NP Reins MAT / 24,00% / 17,30% / 18,60% / 36,00% / 26,10% / 27,90% / 15,00% / 30% As it is shown in the table, the factors from the method third and fourth	

			are significantly greater that those factors from methods first and second and the analysis result from QIS4. In our opinion, factors proposed by CEIOPS are extremely high being required a calibration analysis based on the first and second method and in the analyzed information from QIS4. This analysis would be obtain through a greater volume of information and will be more representative. Additionally, we proposed CEIOPS to indicate the method used in order to select the definitive factor (there are cases as MAT, in which there is not relation between the suggest factor with the rest of the factors of the application in the proposed methods). According to the data in the Annex of CP 71 (table 4.48), selected factor largely exceeds the median taken from the Qis4 analysis, specially in the case of Motor, Fire&Damage, Third Party Liability. We believe Qis4 analysis results are more reliable than the results derived from the new data sample. We consider more appropriate the results obtained from the Qis4 results analysis (i.e. median for Motor Other is 4,6%, the 90th percentile is 11%, and the factor selected is 10%). Besides, in the proposed models the consequences of the cyclical effects regarding the underwriting process have not been included. The volatility presented on the LR for all companies, might be explained because of the large set of variables that have not been included into the calibration process (aim of this paper), such as change in premium rates, change in regulatory requirements regarding claim size, change on claim managements.	We do not agree. See response to comment 24.
153.	AMICE	3.31.	Premium Risk We believe that the proposed factors for the premium risk are very high, much higher than those our members come to. We encourage CEIOPS to do deeper analysis before definitive factors are proposed. This deeper analysis should include the method of election, but above all a more comprehensive data. It is doubtful whether the data set is representative and of sufficient good quality.	See corresponding response to comment 24 and 3.

154.	CEA	3.31.	Premium risk The objective here is to estimate a standard deviation (of the one-year loss ratio for each LoB. Methods 1-4 are all based on a sample of samples, i.e. a sample of undertakings each of which provides a sample of years from which a (could be estimated, cf. a one-way ANOVA. Method 1 does the estimation in the most straightforward way. This method is non-parametric and hence more robust than the following methods based on a LogNormal distribution (LogN). Method 2 can be seen as a parametric counterpart of Method 1, assuming a LogN distribution with an individual mean per company. However, it is not obvious that this model fits the data and the maximum likelihood approach taken here might be sensitive to the choice of distribution. Method 3 have the same draw-back as Method 2 of being based on the LogN. More seriously, Method 3 fits a mean μ across all undertakings. This means that (no longer necessarily measures an undertakings one-year risk. Speaking in ANOVA terms, it estimates the total variation rather than the within sample variation over the years. It is the latter that is relevant for the risk of undertakings. Hence Method 3 is not fully justified and can be expected to over-estimate the volatility. This is reflected in the results where Methods 3 is consistently much higher than Methods 1 and 2; the latter are in most cases more consistent with the QIS4 analysis. Method 3 should be dropped. Method 4 is like Method 2, but with another variance assumption, in which all companies have the same variance of the loss ratio, i.e. we have no "diversification credit" for large companies, which seems a little bit unrealistic. Like Method 3, it often produces very high estimated(. As such it should be dropped. The following table shows the factors in each LOB and the applied	Noted. We welcome this feedback. However all methodologies have pros and cons. CEIOPS has tested a wide range of methods in order to show the industry that we have considered a number of paths and the final result is not just based on one methodology but considers a variety of them. We believe this is something that is done in practice in the actuarial industry. We do not believe actuaries rely purely on the results of one method. Furthermore choosing the results based on one method will be further controversial because not everybody agrees on what method is best. All methods have pros and cons.

methods.

LOB	Method 1	Method 2	Method 3	Method 4	QIS4*_Median	QIS4*_Mean	QIS4	Ceiops Sug
Motor, third party L.	11,00%	10,00%	24,00%	20,00%	8,40%	7,90%	9,00%	10%
Motor, other	10,00%	9,00%	15,00%	20,00%	4,60%	4,80%	9,00%	10%
MAT	16,00%	15,00%	49,00%	25,00%	14,00%	14,00%	12,50%	20%
Fire & Damage	10,00%	10,00%	28,00%	28,00%	6,60%	7,40%	10,00%	13%
Third Party L	12,00%	14,00%	25,00%	31,00%	11,80%	11,90%	12,50%	18%
C&S	12,00%	6,00%	23,00%	36,00%	22,70%	16,80%	15,00%	20%
Legal Expenses	7,00%	6,00%	48,00%	18,00%	5,40%	6,40%	5,00%	8%
Assistance	9,00%	7,00%	26,00%	42,00%	8,00%	7,60%	7,50%	10%
Miscellaneous	7,00%	2,00%		96,00%	13,10%	15,50%	11,00%	20%
NP Reins Prpo	43,90%	69,00%	90,00%	250,60%	32,20%	28,00%	15,00%	30%
NP Reins Cas	28,00%	35,00%	46,00%	117,00%	18,90%	20,70%	15,00%	30%
NP Reins MAT	24,00%	17,30%	18,60%	36,00%	26,10%	27,90%	15,00%	30%

According to the data in the Annex of CP 71 (table 4.48), the factors selected largely exceed the median taken from the Qis4 analysis specially in the case of Motor, Fire & Damage, Third Party Liability. For such cases we believe QIS4 results may more reliable than the results derived from the new data sample (i.e. median for Motor Other is 4,6%, the 90th percentile is 11%, and the factor selected is 10%).

Besides, in the proposed models the consequences of the cyclical effects regarding the underwriting process have not been included. The volatility present in the loss ratios for all companies might be explained because of the large set of variables that have not been included into the calibration process such as change in premium rates, change in regulatory requirements regarding claim size, change in claim managements.

To conclude, we think that factors should be chosen by primarily considering the results from Method 1, Method 2 and the QIS4 analysis. The QIS 4 data for non-life should be retained unless there is clear evidence showing that a change is needed.

See response to comment 24 and 3.

155.	Groupe Consultatif	3.31.	Premium risk. The object here is to estimate a standard deviation (of the one-year loss ratio for each LoB. Methods 1-4 are all based on a sample of samples, i.e. a sample of undertakings each of which provides a sample of years from which a (could be estimated, cf. a one-way ANOVA. Method 1 does the estimation in the most straightforward way. This method is non-parametric and hence more robust than the following methods based on a LogNormal distribution (LogN). Method 2 can be seen as a parametric counterpart of Method 1, assuming a LogN distribution with an individual mean per company. However, it is not obvious that this model fits the data and the maximum likelihood approach taken here might be sensitive to the choice of distribution. Method 3 have the same draw-back as Method 2 of being based on the LogN. More seriously, Method 3 fit a mean μ across all undertakings. This means that (no longer necessarily measures an undertakings one-year risk. Speaking in ANOVA terms, it estimates the total variation rather than the within sample variation over the years. It is the latter that is relevant for the risk of undertakings. Hence Method 3 is not fully justified and can be expected to over-estimate the volatility. This is reflected in the results where Methods 3 is consistently much higher than Methods 1 and 2; the latter are in most cases more consistent with the QIS4 analysis. Method 4 is like Method 2, but with another variance assumption, in which all companies have the same variance of the loss ratio, i.e. we have no "diversification credit" for large companies, which seems a little bit unrealistic. Like Method 3, it often produces very high estimated (. To conclude, we think that factors should be chosen considering by primarily considering the results from Method 1 and the QIS4 analysis.	See corresponding points to comment 154.

			The next-best alternative is Method 2.	
156.	RBS Insurance	3.31.	"In this section describes the premium risk calibration and results" – improve the wording to make more sense grammatically.	Noted.
157.	ROAM	3.31.	ROAM considers that, for the calculation of the premium risk, only the methods 1 and 2 are correct, on condition however, to take into account the evolution of the cycles of the market, pricing conditions, conditions of reinsurance and the evolutions of the insured risk. CEIOPS could for it lean on the evolution of the rates of premiums of every insurance company. ROAM suggests to CEIOPS to lead these studies in a more detailed way also by taking into account disparities of the risks insured between countries. All this can indeed provoke important bias in the assessment. ROAM rejects the methods 3 and 4. (see comment 3.74 and 3.89)	Noted. See response to 154 Noted, however this is difficult considering a set of factors for all EU needs to be calibrated. Noted.
158.	ARC	3.32.	There are a number of issues for runoff companies around the premium calculations: 1. How will RITCs at Lloyds be dealt with in the standard formula? 2. How will any new reinsurance contracts be dealt with that don't have a corresponding gross contract (e.g. Whole account stop loss contracts purchased many years into runoff)?	The entity is Lloyds and it is an internal arrangement. Reinsuring members would be expected to provide capital to cover the risk of the contract reinsured. Noted. Indeed this has not yet been dealt with. Where premium is negative there should be a floor which is zero
159.	ASSURALIA	3.32.	1st : Historic net earned premium are historic and consequently relevant to describe the past but not necessarily relevant for the future and particularly to estimate the premium risk because reinsurance	We disagree. It would be incorrect to reduced a gross "volatility" using the ratio of net to gross premiums as

programmes change over years. Most undertakings tend to analyse gross loss ratios and consider reinsurance risk transfer as a cost on the long term. We suggest a better methodology that consists to use historical loss ratios gross of reinsurance and to reduce the observed volatility of them mechanically following the next year proportion between the volume of ceded premium and the gross earned premium.

2nd : Posted outstanding claim provision posted after one year are usually prudent (because undervaluation led to distribute unrealised gains, see for instance the table below) and consequently in contradiction with the general methodology of solvency II which tends to consider best estimate and economical value. Following the Belgian experience (data are available since 1993 on the market level) the overestimation of the posted provision after one year (at the end of the accident year) is quite important. For instance, the data below shows an average overestimation of 36% for the period 1993-2007 for the lob Third-party liability.

suggested – eg for a 50% quota share, this would result in a halving of the volatility, but a simple quota share would not alter underlying volatility

We disagree.. This may or may not be the case. We are also aware that posted estimates will be smoothed and this may well reduce the observed volatility.

Third-paty liability

Accident year	first developpment year payment	posted provision at the end of the first development year	posted ultimate claim cost at the end of the first development year	chain ladder best estimate of the ultimate claim cost	chain ladder best estimate of the provision at the end of the first development year	% overestimation
1993	50.843.606	264.819.472	315.663.078	255.641.730	204.798.124	29,3%
1994	52.216.416	297.423.419	349.639.835	267.399.733	215.183.317	38,2%
1995	54.842.253	299.857.635	354.699.888	276.117.526	221.275.273	35,5%
1996	53.351.495	314.576.139	367.927.634	293.216.586	239.865.091	31,1%
1997	58.291.221	310.881.138	369.172.359	297.359.956	239.068.735	30,0%

			1998	54.513.267	303.204.420	357.717.687	283.891.139	229.377.872	32,2%
			1999	57.366.166	328.817.151	386.183.317	308.471.794	251.105.628	30,9%
			2000	60.704.785	317.311.511	378.016.296	311.106.842	250.402.057	26,7%
			2001	54.588.799	316.390.277	370.979.076	318.516.637	263.927.838	19,9%
			2002	58.539.073	331.099.872	389.638.945	322.690.993	264.151.920	25,3%
			2003	55.749.523	340.619.696	396.369.219	290.860.990	235.111.467	44,9%
			2004	55.896.030	399.018.677	454.914.707	306.174.371	250.278.341	59,4%
			2005	56.649.166	373.422.175	430.071.341	302.128.995	245.479.829	52,1%
			2006	55.728.697	374.865.670	430.594.367	310.352.367	254.623.670	47,2%
			2007	65.235.003	389.698.805	454.933.808	346.509.314	281.274.311	38,5%
			1993-2007	**844.515.500**	**4.962.006.057**	**5.806.521.557**	**4.490.438.974**	**3.645.923.474**	**36,1%**
			This systematic but highly variable overestimation of the posted outstanding claims provision at the end of the first development year disqualify this data for any use in the standard formula as it's clearly noted that the posted provisions after one year are not best estimate. Furthermore, the posted provisions are undiscounted. Using of outstanding claim provision posted after one year will lead to overestimate loss ratio and consequently overestimate the premium risk. The general methodology of Solvency II requires establishing the discounted best estimate of the outstanding claim provision (on the basis of estimated ultimate claim cost minus payments already made); we suggest using them to estimate ultimate loss ratios. To do this is natural and in line with the spirit of the directive. Remark: it is true that in principle the risk margin should be added to the discounted best estimate loss ratios, but this currently compensated by the fact that CEIOPS currently neglects the (positive) impact of the release of the risk margin on the existing claims, as well.					The analysis did make allowance for discounting of outstanding claims provisions, as outlined in 3.43	

			For long time business, the expected reinsurance recoveries after one year (we understand the end of the first development year) are underestimated because the big claims which will give rise to recoveries are usually not yet identified as big claim. At the same time (after one year) the volume of reinsurance charges are well-known. Thus this is a second source of overestimation of the net loss ratios and consequently the premium risk. See above (1st) for an alternative methodology.	Noted
160.	CEA	3.32.	The fact that companies have not calculated the end year 1 result on a Solvency II basis in the past is an important consideration. This introduces further heterogeneity between companies as they will be using different accounting bases and assumptions.	Noted. See corresponding points to comment 9.
161.	Groupe Consultatif	3.32.	'Posted ultimate claims' – we assume this is the booked number, but it is unclear	We agree. We will clarify this.
162.	Lloyds	3.32.	There is no discussion of whether adjustments were required to ensure datasets were comparable across undertakings and States, differences in which could include different claims characteristics, reporting requirements or bases on which data was provided (for example, levels of prudence). There is also no discussion of adjustments for the position in the market cycle, which could lead to extra volatility. It would be useful to have more information about the data used for the calibration, on what basis it was provided and how the datasets were adjusted to ensure comparability.	Noted. CEIOPS has done everything on a best efforts basis. The specifications are clear and where data has been provided we understand the data meets the requirements.
163.	ABI	3.33.	Not clear what the impact of the judgement has been or is it an acknowledgement of the quality of the data.	Noted; CEIOPS is doing everything on a best efforts basis. The specifications are clear and where data has been provided we understand the data meets the requirements.

164.	CEA	3.33.	It is not clear if the correction for massive implied ultimate loss ratios was done purely to improve the usability of the data or also to correct for catastrophe risk, which should not be included in premium and reserve risk. We would ask Ceiops to make explicit whether a systematic correction for catastrophe risk has been applied to the data.	Noted; yes corrections were made. We can clarify this further.
165.	Deloitte	3.33.	CEIOPS has attempted to remove some problematic data points such as large loss ratios because they distort some methods. This exercise of cleaning up the data would lead to reduced volatility factors. It is not clear if the correction for massive implied ultimate loss ratios was done purely to improve the usability of the data or also to correct for catastrophe risk, which should not be included in premium and reserve risk. We would like to ask CEIOPS to make explicit whether a systematic correction for catastrophe risk has been applied to the data.	Noted; yes corrections were made. We can clarify this further.
166.	Groupe Consultatif	3.33.	It would be good for the judgement to be explained further in order for companies to be able to understand the reasoning	Noted.
167.	RBS Insurance	3.33.	Extra point - remove.	Noted.
168.	IUA	3.34.	We note that this has been done for practical reasons, but premium cannot be assumed to be an accurate indicator of volume, particularly over time, where premiums will be influenced by the market premium cycle. An increase or decrease in premium will not necessarily signal an increase or decrease in business volume.	See corresponding points to comment 1.
169.	RBS Insurance	3.34.	Recommend inserting "net" in front of the first earned premium, for avoidance of any doubt.	Noted.
170.	XL Capital Ltd	3.34.	We question the validity of this assumption using earned premium as the volume measure (as opposed to the maximum of net earned premium,	See corresponding points to comment 1.

			net written premium, etc as in the standards formula)	
171.	Deloitte	3.35.	The combined effect of incorporating the assumptions may have some impact that is not insignificant. Expenses are assumed to be deterministic and not have an impact on volatility however in stressed scenarios there may be factors that change the volatility. Similarly inflation cannot be ignored and some explicit allowances may have to be made that are not reflected in past data.	Noted. We agree.
172.	EMB Consultancy LLP	3.35.	This appears a prudent assumption, since in general we would expect expense payments over a one-year horizon to be less volatile than claims uncertainty, since many large unallocated expenses are known, or very likely (e.g. salaries, accommodation costs).	Noted. However under stressed circumstances that may not be the case.
173.	Groupe Consultatif	3.35.	Expenses appear to be generally related to premiums whereas they are often linked equally to reserves	Noted. We have not linked them to premiums, but to claims.
174.	ASSURALIA	3.36.	We would like to know the justification of such a proposal? (Correlation with potential impact on asset side (crash of existing bond portfolios in case of increase of market interest rate) neglected?	Noted. We agree this is concerning as it is missing an important factor,and the inpact will be underestimation.
175.				
176.	CEA	3.36.	Most companies will include inflation assumptions in their pricing and reserving approach. Thus, as risk is measured over a one year time horizon also the risk of the change in inflation assumptions should be measured over one year. We take this risk to be rather small compared to the other risks.	We disagree. Whilst this may be common practice for some firms this is not the case across EU. Thus we consider this to be a considerable element of uncertainty.
177.	CRO Forum	3.36.	Most companies will include inflation assumptions in their pricing and reserving approach. Thus, as risk is measured over a one year time horizon also the risk of the change in inflation assumptions should be measured over one year. We take this risk to be rather small compared to the other risks.	See corresponding points to comment 176.
178.	Deloitte	3.36.	Similarly inflation cannot be ignored and some explicit allowances may	We agree.

			have to be made that are not reflected in past data.	
179.	Groupe Consultatif	3.36.	We have some concerns about the assertion that the period 1999 to 2008 was a relatively benign period with low inflation. Indeed, some of the countries in the sample have registered double-digit annual inflation rates during that period. Hence, assuming the inflationary experience in that period is representative of the inflation that might occur could be a conservative assumption. All in all, it is not possible to say that the calibration may understate the uncertainty in the provisions as this should be confirmed by a more thorough analysis.	Noted, Looking at the data used, double digit inflation only affected one country for one year, so we do not consider this to be a significant issue.
180.	Institut des actuaires	3.36.	We have some concerns about the assertion that the period 1999 to 2008 was a relatively benign period with low inflation. Indeed, some of the countries in the sample have registered double-digit annual inflation rates during that period. Hence, assuming the inflationary experience in that period is representative of the inflation that might occur could be a conservative assumption. All in all, it is not possible to say that the calibration may understate the uncertainty in the provisions as this should be confirmed by a more thorough analysis.	See corresponding points to comment 179.
181.	Munich Re	3.36.	Most companies will include inflation assumptions in their pricing and reserving approach. Thus, as risk is measured over a one year time horizon also the risk of the change in inflation assumptions should be measured over one year. We take this risk to be rather small compared to the other risks.	See corresponding points to comment 176.
182.	ASSURALIA	3.37.	Most of the undertakings are working locally; therefore the data used for the calculations do not really include any effect of diversification. Therefore we think it's necessary to maintain a geographical diversification effect for undertakings having an international business. Secondly, instead of giving country's names in the formula, we would leave the flexibility to the undertaking to define itself the different areas of the world depending on the size of the risks in each area.	Noted. . We understand the removal of geographical diversification may have a considerable impact for some undertakings. However CEIOPS does not wish to allow for geographical diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense,

				- no technical evidence - too complex Furthermore this can be allowed for via USP .
183.	Lloyds	3.37.	Geographical diversification is only allowed for in the factors to the extent that it exists within data provided by the 6 States. The level of geographical diversification within this data is likely to vary considerably between the States. As some lines of business were parameterised using data from very few (or even only one) of the States, different lines of business will incorporate different levels of geographical diversification. For example, NPL Property, NPL MAT and NPL Casualty will only reflect levels of geographical diversification seen in UK data, which may overstate that of other member States.	see response to 182
184.	XL Capital Ltd	3.37.	We question the validity of this assumption that an average level of geographical diversification is implicitly allowed for in the calibration because the volatility of the undertaking's time series reflects the geographical diversification of the business.	See corresponding points to comment 182.
185.	CEA	3.38.	As already proposed in 3.29 we suggest considering the undertaking specific actual reinsurance structure instead of the proposed implicit consideration of the average level of the risk mitigating effect of non prop transactions.	Agreed. The treatment of non-proportional reinsurance has been discussed with industry and CEIOPS has included a proposal in the final advice. Alternatively it could be included via USP.
186.	Deloitte	3.38.	It is assumed that the risk mitigating affect of non-proportional reinsurance is implicitly allowed for. The structure of the non proportional reinsurance contracts and typical features of claims varies greatly so implicit allowance may not be appropriate.	Noted.
187.	ICISA	3.38.	For Credit Insurance & Suretyship, the lack of a structural representation of non-proportional reinsurance is a significant shortcoming of the	Noted

			standard formula	
188.	UNESPA	3.39.	Volatility Increase As a consequence of the heterogeneity in the information used in the calibration process, there is an artificial increase in volatility levels. Also, volatility increase results from the use of information gross of reinsurance.	See corresponding points to comments 1 and 9.
189.	ASSURALIA	3.39.	This assumption is effectively conservative and consequently lead to overestimate the premium risk.	Noted.
190.	CEA	3.39.	It would be preferable not to rely on gross data only, as this may lead to significantly overstated variability of net risk factors.	Noted
191.	EMB Consultancy LLP	3.39.	This appears a prudent assumption, and the results based on using gross data should be regarded as less credible. We would appreciate a comparison of the resulting volatilities calculated under each method based on using gross or net data only - particularly if gross and net data were available from the same territory.	Noted
192.	ICISA	3.39.	The implicit assumption does not take into account threshold effects for non-quota share reinsurance. This should be investigated.	Noted
193.	Lloyds	3.39.	This assumption significantly overstates the factors for lines of business where excess of loss reinsurance is used, and even more so for data where the effects of catastrophe events have not been removed. It is not clear that any such consideration has been taken into account when selecting factors.	Noted
194.	UNESPA	3.40.	Margin Risk In our opinion, before including a risk margin into the model, we would consider necessary a deeper analysis based on more representative information.	Noted
195.	ABI	3.40.	The risk margin is likely to change after stressed conditions, and hence	Noted. We agree.

			this assumption might not be valid.	
196.	AMICE	3.40.	CEIOPS proposes risk margin to change in stressed situations. .The risk margin of an insurance portfolio is defined as the hypothetical cost of regulatory capital necessary to run-off all liabilities following the financial distress of the company. For that reason, AMICE members believe there is no need to introduce an impact due to changes in the risk margin. If such an impact is considered, a circularity problem would arise in the non-life underwriting risk module.	Noted
197.	CEA	3.40.	It may be preferable to address some of the limitations in the existing analysis (especially lack of data) before extending the analysis to include risk margin variability. Nevertheless the industry appreciates that the issue of the risk margin is an extremely difficult one to solve. The thinking and the practice around how RM should be modelled is still evolving. One aspect would be for example the interaction between the volatility of the risk margin and the cost of capital approach, which could under certain conditions lead to circularity. For the time being we are happy with the assumption taken by Ceiops.	Noted
198.	FFSA	3.40.	CEIOPS: "The SCR is the difference between the economic balance sheets over the one year horizon in the distressed scenario. This implicitly suggests we should analyse the difference between all component parts which includes the risk margins" FFSA believes that introducing a risk on the change in risk margin is realistic in theory. But due to the methodology applied for calculating the risk margin (i.e. cost of capital), FFSA questions the circularity of considering such risk, and if a cost of capital risk margin has additional volatility by itself compared to the volatility already considered in the different risks of the SCR. FFSA, considering the cost of capital methodology, thinks that the volatility of the risk margin is a second	Noted

			order risk and should not be considered.	
199.	IUA	3.40.	The risk margin may change after stressed conditions. We would therefore question the validity of this assumption.	Noted
200.	ROAM	3.40.	ROAM is of the opinion that the impact on the risk margin in a stressed scenario should not be considered. If such an impact is to consider, ROAM thinks that there will be a problem of circularity in the module of non-life underwriting risk.	Noted. See response to comment 5
201.				
202.	ASSURALIA	3.41.	Net earned premium : see our comments on 3.32	See corresponding points to comment 159.
203.	EMB Consultancy LLP	3.41.	This would suggest that earned loss ratios were used to parameterised premium risk. These may cover earnings on writing periods up to a year in difference, and may not respond quickly to changes in risk factors or underwriting strategy. Under Solvency II the premium risk is designed to reflect one-year development in the balance sheet. At the end of that year we would expect that those policies would be, on average, only 50% earned. It is likely that the unearned component will be reserved based on application of the pricing loss ratio. The unearned claims best estimate reserves would be expected to be materially less volatile than earned claims over the year. As the later has formed the basis for the parameterisation, the parameterised values may overstate the volatility, and potentially materially so. In an extreme case, assuming the reserves as above and low rate uncertainty, there could be a factor of 2 overstatement of the volatility. As an example, consider a line which is planned, and technically rated, to a loss ratio of 80%. The premium written during the future year is 50% earned as at the end of the year. The reserving approach may well be to set the best estimate claims on the unearned	Noted.

			premium to the loss ratio of 80%, while the volatility of the business both written and earned in the year may have a standard deviation (of loss ratio) of 10%, say. Thus the volatility for the total written business over the year will only be the 10% on the earned component, which when averaged with the unearned component results in an overall standard deviation (of loss ratio) of 5%. It appears that the data used was earned volatility only, and hence would result in parameters calibrated to the 10% level. This example is extreme, since in practice rate uncertainty, exposure mix, and changes in sentiment to the business will all add volatility to the unearned component, however there may still be an overstatement of the premium risk volatilities.	
204.	RBS Insurance	3.41.	Not clear how the standard deviation is derived from the net earned premium and the net posted ultimate claims – more clarification would be welcome.	Noted. This is explained through methods 1 to 4. All the maths are included.
205.	ARC	3.43.	How was the 4% discount rate set? Is it fixed – should it be linked to some index?	Noted. This is fixed.
206.	ASSURALIA	3.43.	For long term business, the tail factor after 10 years may be important (see also comment on 3.184 below); for discounting purpose, it is significant to spread the tail factor over (maybe) 10 others development years. If not, the adjustment for discounting is underestimated and consequently the premium risk is overestimated. We also recommend using the QIS4 (or analogous up to date) term structure to calculate the adjustment for discounting.	Noted
207.	ASSURALIA	3.45.	For the calculation of the Best Estimate, are you going to work with one rate for all development years?	Noted.yes that is the case.
208.	Deloitte	3.45.	CEIOPS has used a constant discount rate rather than the term structure of interest rates. This will have an impact on the discounted volume measures and the volatility calibration levels.	Noted. However since much non-life business has relatively short run-offs, this probably does not have a significant impact. There is likely to

				be a more significant impact from the simplifying assumption of a constant discount rate structure over the whole period 1999 to 2008, and also assumptions about average claims payment patterns.
209.	Lloyds	3.45.	It is not clear how sensitive the calibration is to the choice of a 4% discount rate. The sensitivity of the results to this assumption should be stated.	see response to 208
210.	ABI	3.46.	Regarding the methodology itself we are anticipating the following difficulties: (a) Historic loss ratio variability for many classes is, in part, driven by rating levels. These are reasonably well known for the next year, so we suggest reducing volatility for that year. (b) At a class level published data will often have significant distortions due to the inconsistencies of methods used and the booking policies of management both within years and over time. These distortions have not been material historically. The actuarial function requirements will reduce those distortions, at line of business level, in the future. We would expect "reported" volatility to reduce accordingly. The assumption that historic provisions are at best estimate is unlikely to be valid. (c) There is no allowance for the expected profitability of the business. (d) Treatment of non-proportionate reinsurance is too approximate. In our view this combination of factors will tend to cause the proposed model to systematically over-estimate the parameters.	See corresponding points to comments 1 and 3.
211.	AMICE	3.46.	Methodology	Noted.
212.	EMB Consultancy LLP	3.46.	This is a general comment referring to all premium risk methodologies. The lack of standardisation for rate changes appears to be a prudent assumption – since in general firms will prepare their business plans and Solvency II balance sheets based on the current level of the rating	Noted.

			environment.	
213.	ACA	3.47.	Although this method is easy to implement, it isn't consistent with the standard model	Noted. We agree method 1 has flaws.It follows QIS 3 and QIS 4, and unfortunately the method and the calibrations are not consistent with the standard formula assumptions.
214.	AMICE	3.47.	Method 1	Noted.
215.	EMB Consultancy LLP	3.47.	This comment covers paragraphs 3.47 to 3.58 Paragraph 3.50 comments that the approach is optimal when the underlying distributions are normal. Since the distributions covered are likely to be positively skewed, this could affect the credibility of the parameterisation. The bias adjustment applied of sqrt(N/(N-1)) is not optimal, since it does not take account the differing relative weights. We have tested the combined impact of these effects, and our tests suggest that the expected value of the estimator of the standard deviation for any undertaking would be understated (biased below), given perfect data. However the distribution of the estimation error would be positively skewed, with a small chance of material overstatement. This should be considered when reviewing graphical output.	Noted.
216.				
217.	ROAM	3.47.	ROAM considers that the method 1 can lead to a good estimation of the premium risk. The data have nevertheless to be reassessed to take into account the evolution of the insured risk, pricing modifications and evolutions of the programs of reinsurance in the time. ROAM thus supports this method if analyses are led on data "as if ",	Noted. See also corresponding points to comment 213.

			resuming the conditions of underwriting of the year N+1.	
218.	UNESPA	3.48.	This does not make any allowance for the underwriting cycle which will lead to results which are significantly overstated in terms of variability	We agree. However CEIOPs does not wish to add allowance for the underwriting cycle. Noted. A more explicit allowance would require a change in the standard formula. As it stands the standard formula and CEIOPS do not support this. What we can do is also limited by the nature of the exercise itself, which should result in an EU calibration. The data covers more than one market, and different markets may exhibit cycles to different degrees and with different timing. It is hard to see how any reasonable adjustment could be made without using some form of premium rating strength index – and these are not widely available and have dubious credibility at present. We would need to decide at which point we are in the cycle, and always have enough capital. How could we decide that, is highly judgemental. Industry suggestions as to how this can specifically be dealt with have been invited in the past with little success.

				Furthermore, if we are aiming to measure the variation of loss ratio from "expected" levels, then knowing where you are in the cycle is important. An analysis of change in loss ratio from previous year would undoubtedly result in a lower standard deviation than simply treating each year's observed loss ratio as a random sample from the distribution. However, since the SF does not allow for expected profits (or losses) or underwriting cycles – political decision – it is arguably more appropriate to look at where the result for next year is relative to (assumed) break even, as we do not care about (know about?) where we were last year . This would seem to lend some support to the approach adopted.
219.	AMICE	3.48.	We agree with the CEA that this method does not allow for the underwriting cycle.	see response to 218.
220.	RBS Insurance	3.48.	"This involves by firm" – does not read well. Suggest re-wording.	Noted.
221.	ABI	3.49.	We regret the fact that the premium cycle is not taken into account.	Noted
222.	ASSURALIA	3.49.	We do not understand the advantage to fit a separate model of each undertaking mean and standard deviation. We advise to use directly the observed mean and the standard deviation (with an adequate correction for underestimation) of the sample of loss ratios and fit a lognormal with	Noted. We do this in method 3.

			these two moments. This comment concern 3.49 to 3.52.	
223.	CEA	3.49.	This does not make any allowance for the underwriting cycle which will lead to results which are significantly overstated in terms of variability. It may be possible to explain much of the volatility of loss ratios by considering changes in premium rates, not due to claims variability. One way of allowing for the underwriting cycle would be to consider the overall market loss ratio, possibly looking at each country separately. Movements in market loss ratios could be considered a proxy for the underwriting cycle. Alternatively, input could be requested from undertakings on their premium rate movements. The data have not been adjusted in any way to allow for changes in reinsurance programmes. Also applies to 3.60, 3.74 and 3.89.	See corresponding points to comment 218. See corresponding points to comments 1. See responses to 3.60, 3.74 and 3.89
224.	UNESPA	3.50.	The assumption that the underlying risk follows a Normal distribution. We welcome this new approach in terms of introducing new probability distributions. Focusing on the results of all methods and given the scarce information on the calibration, we prefer this method rather than third and fourth.	Noted. See response 218.
225.	CEA	3.50.	The Normal distribution assumption is not valid for the standard formula. However, we prefer method 1 to some of the other methods as the results are not distorted by the impact of data heterogeneity.	Noted. Why is method 1 not distorted? It is based on the same data set. We still have to come up with a final factor, and this will be impacted by the range of company specific volatilities.
226.	CEA	3.52.	Method 1 estimates a single (in each company. These are weighted together to a global estimate of (. This does not mean that we fit a large number of ('s but only that we base our estimate of a single (on a large number of individual estimates. Hence, there appear to be no risk of	Over-fitting risk present due to the large number of parameters that need to be calibrated. We are not just fitting μ's,but also sigmas

			over-fitting. (There are indeed a large number of μ's, but since μ is not the object of the analysis here, this should not be a problem from the view of over-fitting.) Furthermore, in the large number of estimates, a vast variety of insurance products, business models and strategies are reflected. Hence the large number of parameters only reflects reality and should not be considered as leading to an underestimation of risk.	(volatilities)
227.	Deloitte	3.52.	We acknowledge the over-fitting risk present due to the large number of parameters that need to be calibrated.	Noted.
228.	Groupe Consultatif	3.52.	Method 1 estimates a single (in each company. These are weighted together to a global estimate of (. This does not mean that we fit a large number of ('s but only that we base our estimate of a single (on a large number of individual estimates. (Again, this is tantamount to an ANOVA.) Hence, there should be no risk of over-fitting. (There are indeed a large number of μ's, but since μ is not the object of the analysis here, this should not be a problem from the view of over-fitting.)	See corresponding points to comment 226.
229.	UNESPA	3.53.	Premium Weighting Attaining a general factor for risk premium through the weightered average by the volume of premiums of each entity implies that the factor will be more affected by entities which have greater volume of underwriting for any of its LOB's.	Noted. Indeed and those with lower volatilities.
230.	CEA	3.53.	We acknowledge the fact that the second stage will place significantly more weight to the undertakings that write larger volumes of a specific line of business.	Noted. Indeed and those with lower volatilities.
231.	Deloitte	3.53.	We acknowledge the fact that the second stage will place significantly more weight to the undertakings that write larger volumes of a specific line of business.	Noted. Indeed and those with lower volatilities.
232.	ABI	3.54.	Calibration for lines of business such as Accident, Sickness and Workers'	We agree, but it is included in CP72

			Compensation were not carried out for this paper.	
233.	UNESPA	3.55.	It's not clear how this formula was derived. We would ask CEIOPS to be more transparent about the various methods used throughout.	Noted. There is a mistake, and will be corrected.
234.	AMICE	3.55.	There is a small error in the formula in the 2nd term of the square it should write the following: $V_{C,Y,lob}\sum_{Y}\frac{U_{C,Y,lob}}{V_{C,Y,lob}}$ should be written as follows	Noted. There is a mistake, and will be corrected.
235.				
236.	CEA	3.55.	It's not clear how this formula was derived. We would ask Ceiops to be more transparent about the various methods used throughout.	Noted. There is a mistake, and will be corrected.
237.	CRO Forum	3.55.	In our view the formula should read: "... (∑UC,Y,lob) / (∑VC,Y,lob) ..." instead of "... ∑(UC,Y,lob / VC,Y,lob) ..." .	Noted. There is a mistake, and will be corrected.
238.	Groupe Consultatif	3.55.	Error in the formula. The formula should be replaced by : $\sigma_{C,lob}=\sqrt{\frac{1}{\mathrm{V_{C,lob}}}}\sqrt{\frac{1}{N_{c,lob}-1}\left(\sum_{Y}\frac{1}{V_{C,Y,lob}}\left(U_{C,Y,lob}-V_{C,Y,lob}\left(\frac{1}{N_{C,lob}}\sum_{Z}\frac{U_{C,Z,lob}}{V_{C,Z,lob}}\right)\right)^2\right)}$, where Z plays the same role as Y.	Noted. There is a mistake, and will be corrected.
239.	Institut des actuaires	3.55.	Error in the formula. The formula should be replaced by : $\sigma_{C,lob}=\sqrt{\frac{1}{\mathrm{V_{C,lob}}}}\sqrt{\frac{1}{N_{c,lob}-1}\left(\sum_{Y}\frac{1}{V_{C,Y,lob}}\left(U_{C,Y,lob}-V_{C,Y,lob}\left(\frac{1}{N_{C,lob}}\sum_{Z}\frac{U_{C,Z,lob}}{V_{C,Z,lob}}\right)\right)^2\right)}$	Noted. There is a mistake, and will be corrected.

			, where Z plays the same role as Y.	
240.	Munich Re	3.55.	In our view the formula should read: "... (ΣUC,Y,lob) / (ΣVC,Y,lob) ..." instead of "... Σ(UC,Y,lob / VC,Y,lob) ..." .	Noted. There is a mistake, and will be corrected.
241.	ROAM	3.55.	It seems that there is a small error in the formula: in the 2nd term of the square, it would be necessary to write: $V_{C,Y,lob}\frac{\sum_Y U_{C,Y,lob}}{\sum_Y V_{C,Y,lob}}$ rather than $V_{C,Y,lob}\sum_Y \frac{U_{C,Y,lob}}{V_{C,Y,lob}}$	Noted. There is a mistake, and will be corrected.
242.	RSA Insurance Group	3.55.	We think that the second expression in the round bracket should contain the divisor N(c,lob). We assume that this is a typographical error and hasn't been carried into the analysis.	Noted. There is a mistake, and will be corrected.
243.	UNESPA	3.58.	Attaining a general factor for risk premium through the weightered average by the volume of premiums of each entity, implies that the factor will be more affected by entities which have greater volume of underwriting for any of its LOB's.	See corresponding points to comment 229.
244.	AMICE	3.59.	Method 2	Noted.
245.	EMB Consultancy LLP	3.59.	This comment covers paragraphs 3.59-3.72 It seems intuitively unreasonable to assume that each undertaking has significantly different characteristics to warrant a different average loss ratio, but not to warrant a different volatility parameter. The Standard Formula assumes that the variance is proportional to the square of the premium volume measure. We have not been able to ascertain whether this parameterisation, based on different assumptions, would introduce bias into the process.	We agree. However the standard formula requires the same volatility factor per lob for all firms. What you are suggesting is covered by Undertaking specific parameters. Noted. The size factor is not allowed under the standard formula. Indeed volatilities will vary significantly by size of portfolio.

			Given the differing volatility assumptions, it may be more reasonable to apply an adjustment for the volume in the calculation of the Standard Formula (e.g. calibrate a factor per unit volume). Overall, we do anticipate material bias in this methodology, given perfect data.	Noted.
246.	ROAM	3.59.	ROAM considers that the method 2 is appropriate for the calculation of the premium risk, but with the same reserves as on the method 1 (treatment of data "as if ").(see comments on 3.47)	Noted.
247.	UNESPA	3.60.	This does not make any allowance for the underwriting cycle which will lead to results which are significantly overstated in terms of variability	See corresponding points to comment 218.
248.	AMICE	3.60.	We agree with the CEA that this method does not allow for the underwriting cycle.	See corresponding points to comment 218.
249.	ASSURALIA	3.60.	These assumptions ignore insurance (and reinsurance) cycles. For instance, when investment revenues are high, premiums rate tends to lower, loss ratio tends to raise ; when reinsurance covers are expensive (for instance after an important catastrophe) undertakings buy less reinsurance cover, net loss ratio tends to raise, etc. Consequently, the gross expected loss ratio is not constant and, as reinsurance covers change in time; net expected loss ratios fluctuate even more. What we gain in robustness with a long historical time series of loss ratios is lost in their ability to describe the current (up to date) situation. This comment is worth also for 3.74 and 3.89. To determine the average loss ratio, we suggest applying more weight to the most recent years.	See corresponding points to comment 1 and 218. We do not agree. What we are trying to do is estimate volatilities, not means.
250.				
251.	CEA	3.60.	Same comment as in 3.49 for the non allowance for the UW cycle.	See corresponding points to comment 218. See corresponding points to

			The assumption that variance is the same proportion of earned premiums for all companies is unlikely to be appropriate and so not very realistic, due to heterogeneity in the data including differences in policies written and reinsurance protection. This may lead to under-fitting of parameters and overstatement of variability. The assumption of lognormal distribution may not be appropriate for all lines of business. We urge Ceiops to justify the appropriateness of such an assumption when applying the method at line of business level.	comment 9. We partially agree. This may be true but we have not received any alternative constructive suggestions. The standard formula cannot cope with every possible variation. The advantages of the lognormal distribution are that it is easy to use for calculation purposes and does not understate the tail as other distributions might otherwise do. Firms can use an IM if they can demonstrate that another distribution is more suitable.
252.	CRO Forum	3.60.	In order to calculate premium risk from a 1-year risk approach based on historical reported loss-ratio's, the historical ratio's first need to be adjusted to reflect rate changes. Certainly for markets where there is a price cycle (eg UK Motor market loss-ratio can change up to 30bp between the top and the bottom of the cycle) the loss-ratio's before or after rate adjusting have a different behaviour. International studies (AONBenfield Risk analysis) have concluded that in the US market, 50% of the observed CoV is implied by the rate cycle. The rate-adjusted loss-ratio's therefore provide a better basis for historical analysis as suggested in method 2. In order to introduce the 1-year risk approach not only from a loss-perspective but also from a	See corresponding points to comment 1, 218.

			premium perspective, a 1-year rate adjustment could be introduced in order to obtain realistic 1-year movements.	
253.	Munich Re	3.60.	In order to calculate premium risk from a 1-year risk approach based on historical reported loss-ratio's, the historical ratio's first need to be adjusted to reflect rate changes. Certainly for markets where there is a price cycle (eg UK Motor market loss-ratio can change up to 30bp between the top and the bottom of the cycle) the loss-ratio's before or after rate adjusting have a different behaviour. International studies (AONBenfield Risk analysis) have concluded that in the US market, 50% of the observed CoV is implied by the rate cycle. The rate-adjusted loss-ratio's therefore provide a better basis for historical analysis as suggested in method 2. In order to introduce the 1-year risk approach not only from a loss-perspective but also from a premium perspective, a 1-year rate adjustment could be introduced in order to obtain realistic 1-year movements.	See corresponding points to comment 1, 218.
254.	ASSURALIA	3.61.	About your comment: "… take into account the experience of all the other undertakings...", we want to remark that you take also into account the inexperience of all the small portfolios and you mix data probably not comparable coming from different member states. This comment applies also for 3.214.	Noted but in the scheme of things we do not consider this a major issue.
255.	CEA	3.70.	It is not clear from the definitions in paragraphs 3.70 and 3.72 if sigma is the standard deviation of company's loss ratio or the coefficient of variation. We ask Ceiops to provide more transparency in the derivation of the two formulae in 3.70 and 3.72.	Noted. This is a standard deviation which allows for diversification by volume.
256.	UNESPA	3.72.	Attaining a general factor for risk premium through the weightered average by the volume of premiums of each entity, implies that the factor will be more affected by entities which have greater volume of underwriting for any of its LOB's.	Noted. Indeed this is an issue. It will lead to underestimation.
257.	AMICE	3.73.	Method 3	Noted.
258.	CEA	3.73.	The assumptions of method 3 include the differences between the	See 256

			undertakings (between variance) into the premium risk. This leads to high factors, which do not give the average-company premium risk (within variance).	
259.	EMB Consultancy LLP	3.73.	This comment covers paragraphs 3.73 to 3.87 We generally find that undertakings (especially smaller undertakings) have portfolios which exhibit different market characteristics. The key assumption of a market expected loss ratio would therefore lead to an overstatement of volatility, even given perfect data.	Noted. This is method is a close reflection of what the standard formula is trying to achieve, one factor for one market. The factors are derived by fitting a statistical model to the industry data.
260.	UNESPA	3.74.	Neither considers the possibility of modeling the cyclical underwriting effect. It fits a model that determines the mean and standard deviation for all entities. It would be desirable to consider a goodness-of-fit test because of the heterogeneity of the information and the general approach.	See corresponding points to comment 218.
261.	AMICE	3.74.	AMICE members believe that the assumption stating that each undertaking within a single LoB has the same constant expected loss ratio is unrealistic and therefore it should be deleted. The assumption that considers the variance of loss should be	Noted. This is method is a close reflection of what the standard formula is trying to achieve, one factor for one market. The factors are derived by fitting a statistical model to the industry data. We do not agree. This method does

			proportional to the square of premikum volume is not consistent since it ignores size effects.	take into account size.
262.	CEA	3.74.	Same comment as in 3.49 for non allowance for the UW cycle. The assumption that all companies have the same loss ratio is likely to lead to significant under-fitting of parameters and hence overstatement of variability. We would expect loss ratios to differ between countries, and between individual insurers. The model therefore seems highly inappropriate. The assumption of lognormal distribution may not be appropriate for all lines of business. We urge Ceiops to justify the appropriateness of such an assumption when applying the method at line of business level.	See corresponding points to comment 218. See corresponding points to comment 261. Noted. This method is trying to fit a statistical model that fits the industry data. The standard formula is trying to find a factor for all, not a factor that allows for differences between countries, and between individual insurers. See response 251
263.	ROAM	3.74.	ROAM contests the assumption of an identical and constant loss ratio by LOB for all the companies. This assumption is unrealistic and leads to an overestimation of the volatility. ROAM considers that the method 3 is inappropriate.	See corresponding points to comment 259.
264.				
265.	CEA	3.76.	This point refers to a method 6, which does not exist for the premium	Noted.

			risk calculations. We presume this should be method 2 instead. As for method 1, method 3 estimates a single (in each company. These are weighted together to a global estimate of (. This does not mean that we fit a large number of (‘s but only that we base our estimate of a single (on a large number of individual estimates. Hence, there should be no risk of over-fitting. (There are indeed a large number of μ’s, but since μ is not the object of the analysis here, this should not be a problem from the view of over-fitting).	See corresponding points to comment 262.
266.	Deloitte	3.76.	This point refers to a method 6, which does not exist for the premium risk calculations. We presume this should be method 2 instead.	Noted.
267.	Groupe Consultatif	3.76.	There is no method 6 described for premium risk! See 3.52	Noted.
268.	KPMG ELLP	3.76.	There is no method 6 described for premium risk!	Noted.
269.	UNESPA	3.87.	Attaining a general risk factor premium through the weightered average by the volume of premiums of each entity, implies that the factor will be more affected by entities which have greater volume of underwriting for any of its LOB’s.	We agree.
270.	AMICE	3.88.	Method 4	Noted.
271.	CEA	3.88.	Method 4 (similar to method 3) results in overestimating the average-company premium risk.	Noted. We would like to ask the CEA to explain why this is the case. CEIOPS welcomes suggestions from the industry.
272.	EMB Consultancy LLP	3.88.	This comment covers paragraphs 3.88 to 3.98 It seems intuitively unreasonable to assume that each undertaking has significantly different characteristics to warrant a different average loss	Noted. This method is trying to fit a statistical model that fits the industry

			ratio, but not to warrant a different volatility parameter.	data. The standard formula is trying to find a factor for all, not a factor that allows for differences between countries, and between individual insurers.
			It is not clear how the weight given to larger firms in this method would compare to method 2.	Noted. We do not understand. There is no allowance for weight.
			We would generally agree with a parameterisation method which uses the same assumptions as the Standard Formula it is parameterising.	Noted.
			Given the differing volatility assumptions, it may be more reasonable to apply an adjustment for the volume in the calculation of the Standard Formula (e.g. calibrate a factor per unit volume).	Noted. We agree that the size factor plays an important role, but the Standard formula does not allow for this.
			Overall, we do anticipate material bias in this methodology, given perfect data.	Noted.
273.	UNESPA	3.89.	Neither considers the possibility of modeling the cyclical underwriting effect. It fits a model that determines the mean and standard deviation for all entities. It would be desirable to consider a goodness-of-fit test because of the heterogeneity of the information and the general approach.	See corresponding points to comment 218 There is a goodness of fit test, the PP plot.
274.	ABI	3.89.	Same comment as in 3.49 for non allowance for UW cycle.	See corresponding points to comment 218.
275.	AMICE	3.89.	AMICE members believe that the assumption stating that each	See corresponding points to

			undertaking within a single LoB has the same constant expected loss ratio is unrealistic and therefore it should be deleted. The assumption that considers the variance of loss is proportional to the square of the premium volume is not consistent since it leads to ignore size effects.	comment 272. We agree. Indeed this is concerning. Allowing a size factor would provide more appropriate results for large, medium and small portfolios.
276.	ASSURALIA	3.89.	…"The variance of the loss is proportional to the square of the earned premium". Where is the theoretical justification of that assumption? Intuitively, we think that the variance increases slower than the premium volume.	Noted. That is what we are assuming. 3.89 says squared premium.
277.	CEA	3.89.	Same comment as in 3.49 for non allowance for UW cycle. The assumption that standard deviation of loss is the same proportion of earned premiums for all companies is unlikely to be appropriate due to heterogeneity in the data including differences in policies written and reinsurance protection. The variance of loss being proportional to the square of the earned premium is usually far from reality. This may lead to under-fitting of parameters and overstatement of variability. This also ignores diversification benefits from larger portfolios which are generally observed in the data and theoretically to be expected. The model should therefore not be applied. The assumption of lognormal distribution may not be appropriate for all lines of business. We urge Ceiops to justify the appropriateness of such an assumption when applying the method at line of business level.	See corresponding points to comment 218. Noted. However in order to capture this we would need to change the standard formula completely. Noted. However this method is supported by the standard formula, as it does not require factors by size. See corresponding points to comment 251.
278.	ROAM	3.89.	ROAM contests the assumption which considers that the variance of the	Noted. See corresponding points to

			losses is proportional of the square of the premium volume. This assumption results in not taking into account effects of sizes. ROAM considers that the method 4 is inappropriate.	comment 277.
279.				
280.	CEA	3.91.	This paragraph refers to method 6 and 7, which are nonexistent under premium risk.	Noted.
281.	Deloitte	3.91.	This paragraph refers to methods 6 and 7, which are nonexistent.	Noted.
282.	Groupe Consultatif	3.91.	There are no methods 6 and 7 described for premium risk!	Noted.
283.	KPMG ELLP	3.91.	There are no methods 6 and 7 described for premium risk!	Noted.
284.	CEA	3.94.	Could Ceiops give more insight into the formula for SC,Y;lob and the method more in general?	Noted. .
285.	CEA	3.98.	If the sigma is coefficient of variation then company's beta/mueC may need to be averaged.	We do not agree. The sigma is standard deviation.
286.	UNESPA	3.99.	It is shown a descriptive table that shows the number of companies that have supplied information for QIS4 and for the calibration process (aim of this paper). ☐ As can be observe , the volume of information/entities in QIS4 is extremely higher than the information for the calibration process for this CP, therefore, in our opinion it is reasonable to grant a greater level of reliability to that information and therefore to its conclusions. CEIOPS approached a calibration analysis of σ through four methods based on insufficient information. As a consequence it was impossible to develop goodness fit test, neither the method followed in order to select the premium factor (in some cases, the selection do not corresponds with the result given by any of the proposed methods. Therefore it would	Noted We do not agree. This benchmark analysis is not a calibration. The only reason we included this is because the information was available and we thought it would be interesting as a benchmark. However this analysis does not follow in any detail the assumtions underlying the standard formula. It is not a calibration.

			be recommendable to give a greater weightered to the results of the QIS4.	We do not know the extent to which companies have adjusted their data for QIS 4 or the suitability of that data.
287.	ABI	3.99.	The QIS4 data is much more extensive than that collected for the main analysis of this paper, and hence the QIS4 results would be expected to be the more reliable. We therefore feel more weight should be given to the results derived from the QIS4 data.	See corresponding points to comment 286.
288.	ASSURALIA	3.99.	The net loss ratios were not systematically available during the QIS4 and often the undertakings use gross loss ratios; therefore the benchmark analysis can be biased.	Noted
289.	CEA	3.99.	**The QIS4 data is much more extensive than that collected for the main analysis of this paper, and hence the QIS4 results would be expected to be the more reliable.** We therefore feel more weight should be given to the results derived from the QIS4 data. Below there is a descriptive table that shows the number of companies that have supplied information for QIS4 and for the calibration process (aim of this paper).	See corresponding points to comment 286.

			LOB / Nb Firms Calib / Nb Firms qis4* / Dif_% Motor, third party L. 78 373 378,2% Motor, other 191 348 82,2% MAT 138 255 84,8% Fire & Damage 296 460 55,4% Third Party L 242 428 76,9% C&S 108 142 31,5% Legal Expenses 65 164 152,3% Assistance 76 127 67,1% Miscellaneous 260 266 2,3% NP Reins Prpo 8 52 550,0% NP Reins Cas 5 41 720,0% NP Reins MAT 9 27 200,0% TOTAL 1.476 2.683 81,8% As can be observe, the volume of information/entities in QIS4 is significantly higher than the information for the calibration process of this CP, therefore, in our opinion it is reasonable to grant a greater level of reliability to the QIS4 information and therefore to its conclusions. Ceiops approached a calibration analysis of σ through four methods based on insufficient information. As a consequence it was impossible to develop goodness fit test, neither the method followed in order to select the premium factor (in some cases, the selection do not corresponds with the result given by any of the proposed methods). More transparency with regard to the methods used would be useful.	See corresponding points to comment 286. We do not agree. We do not know the extent to which companies have adjusted their data for QIS 4 or the suitability of that data.
290.	UNESPA	3.101.	CEIOPS developed a detailed list of reasons regarding why it is possible to be underestimating σ. In our opinion, we should consider appropriate to develop a deeper analysis introducing a database that avoid or at	Noted.

			least try to correct the deficiencies or gaps on it.	
291.	ASSURALIA	3.101.	About the comment: "The distribution of loss ratios is likely to be skewed. In this case, the estimator is biased and underestimates the real standard deviation." Indeed but the comparative error is roughly +6% for time series of 5 loss ratios, roughly +3% for samples of 10 and roughly +1% for samples of 20 to 30 (see for instance DIXON J. and MASSEY F.J. Introduction to statistical analysis. Mc Graw Hill, New York, 1957). The next shortcoming mentions rightly the "change in reinsurance programme". For that reason we recommend to use a statistic of gross loss ratios and to reduce the observed volatility mechanically (to be fixed by the standard formula) to take into account the reinsurance, for instance following the comparative volume of premiums really ceded for the next year (see our comment on 3.32). As changes in reinsurance programme really occur, it is nonsense to consider a time series of net loss ratios! The next shortcoming discloses the very intuitive idea that the volatility of the loss ratio will be higher for smaller portfolios. This idea is so intuitive that we do not understand why the standard formula does not take into account the size of the undertaking. Concerning catastrophic losses, for methodological reasons and in order to avoid redundancy with the catastrophic risk, their impact have to be removed from the loss ratio.	Noted Noted. See comment 1 We agree. However the EC does not wish to allow for factors by size. However the exercise highlights the significance of this issue Noted.
292.	CEA	3.101.	The QIS4 data suffers from fewer data shortcomings that the data collected for the main analysis of this paper. Again this would suggest placing greater weight on the results derived from the QIS4 data. More sophisticated methods are needed that meet the requirements of	See corresponding points to comments 1 and 286. Noted. PIM/USP tools are available

			each individual undertaking. This means that it has to be possible for undertakings to establish and use methods which are able to reflect their specific characteristics respectively the characteristics of the individual line of business. This would be possible though the use of USP.	for use by undertakings where appropriate.
293.	Deloitte	3.101.	Premium standard deviations are based on loss ratios and cover volatility of claims but not expenses. Combined ratios should be used instead.	We agree – unfortunately data including expenses has not proved to be widely available. See 3.35
294.	EMB Consultancy LLP	3.101.	The first states that "[the parameterised standard deviation]…need to be scaled up to take the extra volatility of expenses into account." This appears contrary to 3.35, and, in our opinion the current approach of assuming equal (proportional) volatility of expenses to that parameterised for claims, and 100% correlation between these entities, is likely to be prudent. The second states that "The distribution of loss ratios is likely to be skewed. In this case, the estimator is biased and underestimates the standard deviation." In methods 2, 3, and 4 a skewed distribution (lognormal) was assumed, so this comment would not seem to apply. Even for method 1 it would be fairer to say that the estimator is likely to be biased and underestimate the standard deviation. There is also the possibility that rare events from the skew distribution have occurred which are positively biasing the selection in particular cases. The third states that "the time series provided in QIS4 may not reflect the risk of the undertaking." We would note that CAT risk is captured elsewhere in the Standard Formula, and that changes of reinsurance programmes are at least as likely (and probably more likely) to lead to an overstatement of the volatility (as they could imply a change in the mean net loss ratio which would not be considered in the parameterisation process).	Noted Noted Noted
295.	Groupe	3.101.	It is stated that time series of loss ratios only cover the volatility of	See corresponding points to

	Consultatif		claims. However, loss ratio volatility also covers so-called 'pricing margin' risk, the risk that premium rates are forced down by market pressures, giving rise to higher loss ratios. In particular for long-tail lines of business, pricing margin risk can give rise to cyclicality and/or autocorrelation. This type of risk is commonly modelled using autocorrelation of loss ratios. However, from the CP we conclude that loss ratios in different years were assumed independent in this analysis, and that the assumed independence was not tested. In addition, the overall level of loss ratios can vary significantly from year year due to volatility of claims as well as premium levels. As a result, loss ratios dating back many years may not be representative of the market at present or in the near future. From the CP, we understand that no statisticial testing was performed to establish whether all of the ten year data history was still representative of current market conditions. Finally, we understand that no test was performed to determine whether there were significant differences between experience data from different countries. This might well be the case, as different countries within the European Union have very different economies, legislation and culture. As a result, experience data from any particular line of business in one country may not be representative of the risk profile in another, and not all the countries were represented in the sample.	comment 218. Noted See corresponding points to comment 9.We agree. But we have to use some data. Firms can use USp to be more risk sensitive. We agree. Only one set of parameters for all countries
296.	UNESPA	3.102.	Shortcomings Considering the argument, besides the reasons supported by CEIOPS based on the fact that the analysis results from QIS4 must be considered as a lower boundary, there are many reasons that may argue that the	We do not agree. See response 286

			analysis is overestimating the claims volatility (it is not considering the UW cycle, regulatory changes, change in premiums rates…). As we have seen so far, in our opinion, the conclusions that are extracted QIS4 analysis should not be regarded as a minimum in any case, primarily because the basis of information that are derived.	Noted
297.	AMICE	3.102.	We agree with the CEA that many sources of heterogeneity have been ignored in the analysis such as the underwriting cycle, different reinsurance programmes, and differences in the way of provisioning which may lead to distortions in the accounting	See corresponding points to comment 218.
298.	ASSURALIA	3.102.	We do not approve this conclusion: shortcomings gives rise to errors, not necessarily to lower boundaries, in this case, certainly not for large or medium undertakings.	See corresponding points to comments 286.
299.				
300.	CEA	3.102.	There are also many reasons why a simple analysis of the QIS4 data is likely to overstate variability. For example, many sources of heterogeneity have been ignored in the analysis including the underwriting cycle, changes in reinsurance programmes, and many differences between countries such as claims environment, accounting basis and regulation. Ignoring these features is likely to significantly overstate the true level of variability of results for an individual undertaking. We do not therefore consider the factors derived from the QIS4 data to be a minimum. Moreover there are studies in important markets, reaching a different conclusion to the one of Ceiops.	See corresponding points to comments 219, 1 and 9.
301.	CRO Forum	3.102.	Various arguments are always given why the calculations provide results	Noted.

			which are probably too optimistic (because certain effects that would increase risk where not measured). Arguments why these calculated results are probably too conservative are never given. It seems that the effect of identifying unmodelled risk drivers (e.g. inflation – however, cf. our comments to 3.36) has caused CEIOPS to be overly conservative. One suggestion could be that in a new (QIS5) study all risk drivers are modelled and proper data is used (filtered from outliers) for one LOB for which the available data is optimal and that the results are compared with the results calculated in this study. This would give insight in the probably unnecessary prudence which is used in this study. The CRO Forum would be happy to support CEIOPS in this respect.	
302.	Deloitte	3.102.	We acknowledge the fact that the results of the QIS4 benchmarking analysis will reflect lower standard deviations than would be observed in the market as a whole.	Noted.
303.	Munich Re	3.102.	Various arguments are always given why the calculations provide results which are probably too optimistic (because certain effects that would increase risk where not measured). Arguments why these calculated results are probably too conservative are never given. It seems that the effect of identifying unmodelled risk drivers (e.g. inflation – however, cf. our comments to 3.36) has caused CEIOPS to be overly conservative. One suggestion could be that in a new (QIS5) study all risk drivers are modelled and proper data is used (filtered from outliers) for one LOB for which the available data is optimal and that the results are compared with the results calculated in this study. This would give insight in the probably unnecessary prudence which is used in this study. We would be happy to support CEIOPS in this respect.	See corresponding points to comment 299.
304.	UNESPA	3.103.	Premium Risk Results Regarding the introduced results arising from the four methods mention above and the QIS4 result: - It would have been recommendable that CEIOPS had published	Noted.

			the methodology to be applied for the final factor selection for each LOB. - There are inconsistencies regarding the resulting factor analysis QIS4 contained in paragraph 4.4 of Annex and the value is shown in the tables from 3111 detailing the line of business behavior. In some cases the values from the factor tables QIS4 correspond to the median, in other cases to the mean, and in other to the original value of QIS4. It could occur that these values do not correspond to any of the above.	
305.	CEA	3.103.	We do not comment extensively of the individual class analyses due to the significant reservations we have already noted in respect of data and methodologies.	Noted.
306.	CEA	3.106.	What purpose has the sentence "As there is no explicit allowance for diversification in the SCR" at the end of the second point have?	Noted. This will be reviewed.
307.	ASSURALIA	3.107.	We understand the criteria you use to classify the undertakings in small, medium and large as the 25th undertaking (classification according to the premium volume) is the small one, the 50th the medium one and the 90th the large one; why don't you collect separately results for small undertakings, medium ones and large ones to define an average factor by size.	Noted. This indeed would be a solution however the EC does not wish to allow for factors by size. However the exercise highlights the significance of this issue.
308.	XL Capital Ltd	3.107.	Instead of presenting results for small, medium and large firms and then selecting one factor, it would make sense to have three factors that will adjust depending on the amount of business written by the undertaking. Otherwise it may be appropriate to clearly indicate that these factors are geared towards a specific type of undertakings (e.g. smaller or personal insurance).	Noted. see also 307
309.	EMB Consultancy LLP	3.108.	Our interpretation of this graph is that the percentage of firms with a lower actual volatility than the predicted nth percentile of the set of parameterised volatilise from the model may be read off on the y-axis.	Noted.

			That is, if when the x-value is 50%, the y-value for a method is 60%, this means that the model predicted 50% of firms would have a volatility lower than k, say, but in fact 60% of firms had a volatility lower than k. Assuming this interpretation is true, we would comment that the general fit over all firms is the most important aspect of this graph, and that undue attention should not be paid to the tail.	
310.	UNESPA	3.109.	CEIOPS recognize that the factors selection includes certain level of prudency but it does not detail how this prudency is included, if it is included by an specific methodology.	Noted. More clarification may be required. See corresponding points to comment 3.
311.	ACA	3.110.	The choice of the factor for premium risk is arbitrary: method 1 : 10% method 3 : 15% and recommendation : 10%. The use of a measure of the error would mathematically have been more correct.	Noted. See comment 315.
312.	AMICE	3.110.	Motor, other classes	Noted.
313.	EMB Consultancy LLP	3.110.	This comment refers to paragraphs 3.110-3.114. It is not clear what units the volume measure is in. It is difficult to tell from the graph supplied, but there may be weak evidence for diversification credit, however there does appears to be more range in the appropriate volatility for smaller firms than larger firms. This may be supported by the differing shapes of the PP plots for methods 2 and 3, which make the same volume diversification assumption. The selected parameter does appears credible given the data and methods applied. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	Noted, This will be clarified. Noted . we agree
314.				

315.	ROAM	3.110.	ROAM asks CEIOPS how, on each LOB, it determined the final volatility, from the results on 4 methods.	The selection was generally made using judgement based on the methods that seemed most appropriate for each LOB, taking into account the features of the data used. This also included a degree of "pragmatism". This will be clarified for the recalibration exercise.
316.	ABI	3.111.	Judging by the differences between the results for the three segments, it seems a granular segmentation in small, medium and large is more appropriate.	see comment 307
317.	CEA	3.111.	The classification into small, medium and large should be made clearer. Notwithstanding the comment above, judging by the differences between the results for the three segments, it seems a granular segmentation in small, medium and large is more appropriate.	See comment 307
318.	AMICE	3.112.	AMICE will provide the results of the calibration studies which are currently carried out by the end of January 2009.	Noted.
319.	ABI	3.113.	The plot clearly shows that none of the methods is really adequate.	Noted. Unfortunately the standard formula has to be one factor. CEIOPS has continued work on the calibration exercise, using more data.
320.	CEA	3.113.	The plot clearly shows that none of the methods is really adequate to reflect reality. The standard deviation of the individual companies shows a large variety that is not at all captured by the results of one of the methods.	See comment 319

321.	UNESPA	3.114.	It would be desirable to know the methodology applied. The entities that include information on QIS4 are 82% higher than those who supplied information for the calibration process of the factor, so it is reasonable to consider the QIS4. It would be recommendable to know the reasons of the final selection. As stated in 3.31, we encourage CEIOPS to make allowance for the Qis4 analysis results given that the factor selected doubles the median derived from it.	See comment 315
322.	CEA	3.114.	We acknowledge the fact that the final factor was chosen considering the results from the QIS4 analysis, method 3 and method 1, but it is not clear how the final 10% premium risk factor is arrived at.	See comment 315
323.	Deloitte	3.114.	We acknowledge the fact that the final factor was chosen considering the results from the QIS4 analysis, method 3 results and method 1, but it is not clear how the final 10% premium risk factor is arrived at.	See comment 315
324.	Groupe Consultatif	3.114.	Why isn´t the result of method 4 taken into account? (3.112 mentions that method 3 and 4 fit the best)	This will be clarified for the recalibration exercise.
325.	KPMG ELLP	3.114.	We do not understand why the result of method 4 is not taken into account? (3.112 mentions that method 3 and 4 fit the best)	See corresponding points to comment 324.
326.	AMICE	3.115.	Motor, vehicle liability	Noted.
327.	EMB Consultancy LLP	3.115.	This comment refers to paragraphs 3.115-3.119. As gross data were used we may expect the resulting estimator to be overstated, assuming no other biases. It is not clear what units the volume measure is in. There does appear to be some evidence for diversification credit, but only for very small companies (Volume<~10,000). There appears to be more range in the appropriate volatility for smaller firms than larger firms. Given the spread of results, it may be that the methods which appear to fit better are those which best match the high volatility	Noted

			observed for small firms. The selected parameter appears credible for firms with volume >25,000, but may be understated for the very smallest firms. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	
328.	UNESPA	3.116.	Greater volatility in the calibration process will be the consequence of using information gross of Reinsurance for the process. A proxy to take data to a net approach would we welcome.	Noted. CEIOPS has been discussing the treatment of non-proportional reinsurance with industry and has included a proposal in its final advice.
329.	AMICE	3.116.	AMICE will provide the results of the calibration studies which are currently carried out by the end of January 2009.	Noted
330.	ASSURALIA	3.116.	Data sample was gross of reinsurance thus the resulting volatility overestimates the volatility of net loss ratios. We observe extremely scattered fitted results among the different methods (for this lob from 1 (10%) to 2.4 (24%) but the range is larger for other lob). In our opinion this discredits deeply the methodological aspects of that calibration. As a result of that poor methodology, the premium factors are too high certainly for medium and large undertakings. Once again, we recommend using a statistic of gross loss ratios and taking into account the size of the undertaking in the standard formula. This comment is worth also for 3.121, 3.127, 3.134, 3.140, 3.147, 3.153, 3.159, 3.166, 3.171 and 3.177.	See comment 328
331.	CEA	3.116.	Use of gross data likely to overstate variability significantly for this class.	Noted. CEIOPS has been discussing the treatment of non-proportional reinsurance with industry and has included a proposal in its final advice. Also CEIOPS has been performing a recalibration exercise using more data.

			The table shows that the methods are not really appropriate. The range of results presented is very large. At least a more granular segmentation in large, medium and small undertakings is needed.	The EC does not wish to allow for factors by size.
332.	CEA	3.117.	The standard deviation of the individual companies shows a large variety that is not really captured by the results of one of the methods. Given that method 3 fits the data well, it is unclear why the final risk factor was determined just on method 1 and QIS 4.	See comment 315
333.	Deloitte	3.117.	Given that method 3 fits the data well, it is unclear why the final risk factor was determined just on method 1 and QIS4.	Noted. This will be clarified as part of the recalibration exercise.
334.	UNESPA	3.119.	Once again, it would be recommendable to know the applied methodology for the final factor selection. Considering the current LOB, we think that results obtained from the calibration process are not too reliable, taking into consideration that the database only represents a 20% of the entities that were analyzed for the QIS4.. To sum up, our opinion regarding the selected factor by CEIOPS is overestimated. We encourage CEIOPS to make allowance for the Qis4 analysis results given that the factor selected is higher than the median derived from it.	See comment 315
335.	CEA	3.119.	Once again, it would be recommendable to know the applied methodology for the final factor selection. Considering the current LOB, we think that results obtained from the calibration process are not too reliable, taking into consideration that the database only represents a 20% of the entities that were analyzed for the QIS4. To sum up, in our opinion the factor selected by Ceiops is overestimated. As stated in 3.31, we encourage Ceiops to make more allowance for the Qis4 analysis results.	See comment 315.

336.	Groupe Consultatif	3.119.	Why aren't the results of method 3 and 4 taken into account? (3.117 mentions that method 3 and 4 fit the best)	See comment 333.
337.	KPMG ELLP	3.119.	We do not understand why the results of method 3 and 4 are not taken into account. (3.117 mentions that method 3 and 4 fit the best)	See comment 333.
338.	AMICE	3.120.	Marine, aviation, transport (MAT)	Noted
339.	EMB Consultancy LLP	3.120.	This comment refers to paragraphs 3.120-3.125. It is not clear what units the volume measure is in. Method 3 appears to be a poor fit to the range of volatilities observed, methods 2 and 4 appear to give the best fit. There does appear to be some evidence for diversification credit. There appears to be material range in the appropriate volatility for undertakings, even standardising for size. Evidence from the method 1 graph suggests that the selection may be prudent for firms with volume > 10,000. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	Noted.
340.	ABI	3.121.	The table shows that the methods are not really appropriate. The range of results presented is much too large a more granular segmentation in large, medium and small undertakings is needed.	See comment 331
341.	AMICE	3.121.	AMICE will provide the results of the calibration studies which are currently carried out by the end of January 2009.	Noted.
342.	CEA	3.121.	The table shows that the methods are not really appropriate. The range of results presented is much too large and absolutely not reliable. At least a more granular segmentation in large, medium and	See comment 331

			small undertakings is needed.	
343.	ACA	3.122.	It is clear that methods 2 and 4 (and not 3) are the best fits to the model…	Noted – this will be corrected
344.	CEA	3.122.	It's not clear from the graph that any methods are adequate enough.	See comment 319
345.	Deloitte	3.122.	Going by the pp-plot given, methods 2 and 4 provide the best fit and not 2 and 3 as stated.	See comment 343.
346.				
347.	ABI	3.123.	The standard deviation of the individual companies shows a large variety that is not at all captured by the results of one of the methods.	See comment 319.
348.	CEA	3.123.	The standard deviation of the individual companies shows a large variety that is not at all captured by the results of one of the methods.	See comment 319.
349.	UNESPA	3.124.	The volume of information supplied (Number of entities) is a 54% of the volume supplied by QIS4. The factor determinate by QIS4 is selected by CEIOPS as a lower bound; in our opinion this fact is extremely conservative. The methodology applied by CEIOPS was to approach a simple mean of the factor from methods 2 and 4. Due to the different approaches, it would be better a deeper analysis in order to get reliable results.	Noted. See comment 319.
350.	ACA	3.126.	Method 1: 10%, QIS4: 7,5% recommendation 12,5%???????????	This will be clarified in the recalibration exercise.
351.	AMICE	3.126.	Fire and other property damage	Noted.
352.	EMB Consultancy	3.126.	This comment refers to paragraphs 3.126-3.132. It is not clear what units the volume measure is in.	Noted

	LLP		We would agree method 2 appears to provide the best fit. There does appear to be some evidence for diversification credit, but this is driven by the smaller firms. There is little evidence of diversification credit for firms with volume >125,000. For the smaller companies it is difficult to tell whether there is true diversification credit or whether there is just more range in the appropriate volatility per firm. The selected parameter appears credible given the range of results. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	
353.				
354.	AMICE	3.127.	AMICE will provide the results of the calibration studies which are currently carried out by the end of January 2009.	Noted.
355.	CEA	3.127.	The table shows that the methods are not really appropriate. The range of results presented is much too large and absolutely not reliable. At least a more granular segmentation in large, medium and small undertakings is needed.	See comment 319.
356.	CEA	3.128.	The standard deviation of the individual companies shows a large variety that is not at all captured by the results of one of the methods.	See comment 319.
357.	UNESPA	3.130.	The volume of information supplied (Express in number of entities) regarding the effects of the calibration process implies a 64% of the volume supplied in QIS4.	Noted.
358.	UNESPA	3.132.	Ceoips indicates that its recommendation regarding the proposed factor was about the result obtained in method 1 and in the analysis of QIS4.	This will be clarified in the recalibration exercise.

			We understand that the last one corresponds to the mean and not to the median as detailed in paragraph 4.4 of the annex. It is not explained the reason why CEIOPS suggest a 12,5% when it is supposed to be based on a factor of 10% (method 1) and a 7,5%.	
359.	ABI	3.132.	It is unclear how the final recommended factor is arrived at, since method 1 gives 10% and the QIS 4 result gives 7.5%. Would it be possible to give a clearer picture of how the 12.5% factor was calculated or reached?	See comment 358.
360.	CEA	3.132.	It is unclear how the final recommended factor is arrived at, since method 1 gives 10% and the QIS 4 result gives 7.5%. Would it be possible to give a clearer picture of how the 12.5% factor was calculated or reached?	See comment 358.
361.	Deloitte	3.132.	It is unclear how the final recommended factor is arrived at, since method 1 gives 10% and the QIS 4 result gives 7.5%. Would it be possible to give a clearer picture of how the 12.5% factor was calculated or reached?	See comment 358.
362.	UNESPA	3.133.	The volume of the given data (expressed in terms of number of entities) in order to run the calibration process is about a 56% of the volume given data for QIS4.	Noted.
363.	AMICE	3.133.	Third-party liability	Noted.
364.	EMB Consultancy LLP	3.133.	This comment refers to paragraphs 3.133-3.138. It is not clear what units the volume measure is in. None of the methods appear to fit particularly well. There may be some evidence for diversification credit, but this is driven by the smaller firms. There is little evidence of diversification credit for firms with volume >40,000. For the smaller companies it is difficult to tell whether there is true diversification credit or whether there is just	Noted.

			more range in the appropriate volatility per firm. Evidence from the method 1 graph suggests that the selection may be prudent for firms with volume > 10,000. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	
365.	ABI	3.134.	The table shows that the methods are not really appropriate. The range of results presented is much too large and absolutely not reliable. At least a more granular segmentation in large, medium and small undertakings is needed.	See comment 331
366.	AMICE	3.134.	AMICE will provide the results of the calibration studies which are currently carried out by the end of January 2009.	Noted.
367.	CEA	3.134.	The table shows that the methods are not really appropriate. The range of results presented is much too large and absolutely not reliable. At least a more granular segmentation in large, medium and small undertakings is needed. The plot shows that none of the methods is really adequate.	See comment 331
368.	CEA	3.135.	The standard deviation of the individual companies shows a large variety that is not at all captured by the results of one of the methods.	Noted.
369.	ABI	3.136.	The standard deviation of the individual companies shows a large variety that is not at all captured by the results of one of the methods.	Noted.
370.	ABI	3.137.	A stated method of how the recommended factor was arrived at is not given.	Noted.
371.	CEA	3.137.	A stated method of how the recommended factor was arrived at is not given. Would it be possible to shed more light on this?	Noted. This will be clarified.

372.	Deloitte	3.137.	A stated method of how the recommended factor was arrived at is not given. Would it be possible to shed more light on this?	Noted. This will be clarified.
373.	UNESPA	3.138.	Considering the volume of information that CEIOPS have included for calibrating the factor and its final selection, it would recommendable running a goodness of fit test of both chosen methods (see method number 2 and number 4) due to the remarkable increase of the factor.	Noted. Stakeholders are reminded calibration was based on data available at the time. A recalibration exercise has been carried out.
374.				
375.	CEA	3.138.	We do understand this comment which seems to imply that the factor selected is not calibrated towards a one year time horizon as required by the FD but towards a longer time horizon. We encourage Ceiops to reconsider the factor with a view towards a one year time horizon.	We will clarify our comment. We are not suggesting that we are moving from a one year time horizon. We are merely saying that with a limited number of years experience, the data may not fully represent the range of potential adverse experience that may exist – eg from the emergence of a new source of latent claims.
376.	CRO Forum	3.138.	We do understand the comment to imply that the factor selected is not calibrated towards a one year time horizon as required by the FD but towards a longer time horizon. We encourage CEIOPS to reconsider the factor with a view towards a one year time horizon. For long term business where most claims are reported with a significant time lag, the information available at the end of the 12 months is not much. Therefore these lines will probably have a required capital which is relatively low. This will be countered with the MVM which will be comparably high for these lines. It is therefore correct that results from TPL show a lower calculated premium risk factor then one would assume in an ultimate view but this is due to 1-year risk approach underlying	See comment 375

			Solvency II.	
377.	Munich Re	3.138.	We do understand the comment to imply that the factor selected is not calibrated towards a one year time horizon as required by the FD but towards a longer time horizon. We encourage CEIOPS to reconsider the factor with a view towards a one year time horizon. For long term business where most claims are reported with a significant time lag, the information available at the end of the 12 months is not much. Therefore these lines will probably have a required capital which is relatively low. This will be countered with the MVM which will be comparably high for these lines. It is therefore correct that results from TPL show a lower calculated premium risk factor then one would assume in an ultimate view but this is due to 1-year risk approach underlying Solvency II.	See comment 375
378.	ROAM	3.138.	The solvency must be seen on a horizon of one year, this is the basic principle of the Solvency2 directive. ROAM does not understand why CEIOPS wants to take into account risks beyond the one year horizon. It goes against the framework directive.	See comment 375
379.				
380.	ABI	3.139.	Given that there is some evidence of diversification (even though it may not be clear) and method 2 provides a good fit, there is no sign that method 2 was used at all in coming up with the final 20% recommended factor.	Noted. This will be clarified. But if method 2 is chosen, a decision needs to be made about the appropriate size.
381.	AMICE	3.139.	Credit and suretyship	Noted.
382.	CEA	3.139.	Given that there is some evidence of diversification (even though it may not be clear) and method 2 provides a good fit, there is no sign that method 2 was used at all in coming up with the final 20% recommended factor. Would it be possible to explain how the final recommended factor was arrived at?	See comment 380.

383.	Deloitte	3.139.	Given that there is some evidence of diversification (even though it may not be clear) and method 2 provides a good fit, there is no sign that method 2 was used at all in coming up with the final 20% recommended factor. Would it be possible to explain how the final recommended factor was arrived at?	See comment 380.
384.	EMB Consultancy LLP	3.139.	This comment refers to paragraphs 3.139-3.145. It is not clear what units the volume measure is in. We agree method 2 appears to fit best, however none of the methods appear to fit particularly well. It is difficult to determine strong evidence for diversification credit. It is difficult to tell whether there is true diversification credit or whether there is just more range in the appropriate volatility per firm. Evidence from the method 1 graph suggests that the selection may be prudent for firms with volume > 50,000. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	Noted
385.	AMICE	3.140.	AMICE will provide the results of the calibration studies which are currently carried out by the end of January 2009.	Noted.
386.	ICISA	3.142.	It is acknowledged that the graph shows some evidence for the effect of diversification for volume. It could be appropriate to try to discriminate the parameters to reflect volume. Otherwise the standard deviation may be overstated for larger undertakings and understated for smaller undertakings. We note the objective is to produce a single standard deviation per line of business – and therefore it is not possible to produce two or more parameters to reflect volume and diversification effects. Therefore, in practice, if a supervisor is comparing the standard formula parameters to undertaking specific parameters or a (partial) internal model, the	Noted. See comment 331 Noted. However, the standard formula is not considered a benchmark for a PIM.

			supervisor should be conscious of this apparent limitation and take it into account.	
387.	ABI	3.143.	Given that 3.142 states that the graph under method 1 shows evidence of diversification, we find it contradictory that 3.143 states that signs of diversification are not clear.	Noted. This will be clarified in the recalibration exercise.
388.	CEA	3.143.	Given that 3.142 states that the graph under method 1 shows evidence of diversification, we find it contradictory that 3.143 states that signs of diversification are not clear.	Noted. See comment 387.
389.	Deloitte	3.143.	Given that 3.142 states that the graph under method 1 shows evidence of diversification, we find it contradictory that 3.143 states that signs of diversification are not clear.	Noted. See comment 387.
390.	UNESPA	3.145.		No comment available.
391.	Deloitte	3.145.	No justification is given for the premium risk factor of 20%. Would it be possible to get a better explanation of this?	This will be clarified in the recalibration exercise
392.	AMICE	3.146.	Legal expenses premium risk	Noted.
393.	EMB Consultancy LLP	3.146.	This comment refers to paragraphs 3.139-3.145. It is not clear what units the volume measure is in. We note that there are no entities with volumes between 20,000 and 60,000. This affects the credibility of the result, and hence there remains significant uncertainty on the validity of this parameter for mid-sized firms. Method 2 appears to fit best. There appears to be weak evidence for diversification credit. It is difficult to tell whether there is true diversification credit or whether there is just more range in the appropriate volatility per firm at different	Noted.

			volume ranges. Evidence from the method 1 graph suggests that the selection is generally reasonable, but may be optimistic for firms with volume < 7,500. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	
394.	AMICE	3.147.	AMICE will provide the results of the calibration studies which are currently carried out by the end of January 2009.	Noted.
395.	UNESPA	3.151.	The volume of the given data (expressed in terms of number of entities) for the calibration process purposes is about a 40% of the volume of the given data for QIS4. CEIOPS have not detailed the used methodology where selecting the final factor.	Noted.
396.	AMICE	3.152.	Assistance	Noted.
397.	EMB Consultancy LLP	3.152.	This comment refers to paragraphs 3.152-3.156. It is not clear what units the volume measure is in. We agree method 2 and method 4 appear to fit best, though the credibility throughout the range, rather than just the tail, would seem appropriate for a parameter designed to be used for all firms. It is difficult to determine strong evidence for diversification credit. There is little data, and significant range of results. It is difficult to tell whether there is true diversification credit or whether there is just more range in the appropriate volatility per firm. Method 2 predicts a volatility of 69% for small firms which seems unreasonable from the Method 1 graph. This questions the credibility of this method. However we note this method was used in the final selection. However the selected parameter appears credible compared to method 1. Evidence from the method 1 graph suggests that the selection may be	Noted.

			optimistic. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	
398.	ABI	3.153.	The table shows that the methods are not really appropriate. The range of results presented is much too large and absolutely not reliable. At least a more granular segmentation in large, medium and small undertakings is needed.	See comment 331.
399.	AMICE	3.153.	AMICE will provide the results of the calibration studies which are currently carried out by the end of January 2009.	Noted.
400.	CEA	3.153.	The table shows that the methods are not appropriate. The range of results presented is very large. At least a more granular segmentation in large, medium and small undertakings is needed.	See comment 331.
401.	ABI	3.155.	The standard deviation of the individual companies shows a large variety that is not at all captured by the results of one of the methods.	See comment 319.
402.	CEA	3.155.	The plot clearly shows that none of the methods is adequate enough to reflect reality. The standard deviation of the individual companies shows a large variety that is not at all captured by the results of one of the methods.	See comment 319.
403.	UNESPA	3.156.	The volume of the given data (expressed in terms of number of entities) for the calibration process purposes is about a 60% of the given data for QIS4. We do not know how the resulting factor equivalent to 5,5% from QIS4 has been derived (see table 3.153). This factor is not logical in respect of the values introduced in the second table (see section 4.48 in annex 4.4) According to the issues mentioned in this report, the CEIOPS factor	Noted. This will be clarified as part of the recalibration exercise.

			selection is based on QIS4 results (7,5%) and the method number 2 (7%). So, the proposed factor equivalent to 10% is not in line with that selection pattern.	
404.	CEA	3.156.	The selection of the large portfolio result for method 2 instead of the fitted factor is not justified properly. In addition, this seems to be inconsistent with other LoB's where fitted factors are used under apparently similar circumstances.	Noted. This will be clarified as part of the recalibration exercise.
405.	Deloitte	3.156.	The selection of the large portfolio result for method 2 instead of the fitted factor is not justified properly. In addition, this seems to be inconsistent with other LOBs where fitted factors are used under apparently similar circumstances.	Noted. This will be clarified as part of the recalibration exercise.
406.	ACA	3.157.	We think that for this lob no method is applicable (heterogeneousness), In these conditions 20 % is an acceptable factor.	Noted.
407.	AMICE	3.157.	Miscellaneous	Noted.
408.	EMB Consultancy LLP	3.157.	This comment refers to paragraphs 3.157-3.164. It is not clear what units the volume measure is in. There appears to be significant skew in the size profiles of the undertakings. Given the class definition it is likely that there are material portfolio differences between small and large portfolios. We agree method 2 and method 4 appear to fit best, though the credibility throughout the range, rather than just the tail would seem appropriate for a parameter designed to be used for all firms. Method 2 is a significantly better overall fit. It is difficult to determine strong evidence for diversification credit. It is difficult to tell whether there is true diversification credit or whether	Noted.

			there is just more range in the appropriate volatility per firm. Evidence from the method 1 graph suggests that the selection may be materially overstated. However the range of results suggests that undertaking specific parameters could credibly diverge materially from the selected result.	
409.				
410.	AMICE	3.158.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
411.	UNESPA	3.164.	The volume of the given data (expressed in terms of number of entities) for the calibration process purposes is about a 98% of the given data for QIS4. The proposed factor by CEIOPS is based on the QIS4 results (15,5%) and the results arising from method number 2 (2%). So, the proposed factor equivalent to 20% is not enough justified. It requires a higher level of analysis.	Noted. This will be clarified as part of the recalibration exercise.
412.	ABI	3.164.	It is unclear how the 20% recommended factor arrived at by taking the results of QIS4 (13.5%) and method 2 (2%) into account.	Noted. This will be clarified as part of the recalibration exercise.
413.				
414.	CEA	3.164.	It is unclear how the 20% recommended factor arrived at by taking the results of QIS4 (13.5%) and method 2 (2%) into account.	Noted. This will be clarified as part of the recalibration exercise.
415.	CRO Forum	3.164.	According to our reading the factor from QIS4 is 15.5% and from Method 2 just 2%. We do not see how these results justify a selection of 20%.	Noted. This will be clarified as part of the recalibration exercise.
416.	Deloitte	3.164.	It is unclear how the 20% recommended factor arrived at by taking the results of QIS4 (13.5%) and method 2 (2%) into account.	Noted. This will be clarified as part of the recalibration exercise.
417.	Munich Re	3.164.	According to our reading the factor from QIS4 is 15.5% and from Method 2 just 2%. We do not see how these results justify a selection of 20%.	Noted. This will be clarified as part of the recalibration exercise.

418.	AMICE	3.165.	Non-proportional reinsurance-property	Noted.
419.	Deloitte	3.165.	In our opinion, not enough data is available to draw any conclusion for this LOB.	Noted. CEIOPS has been collecting more data for the recalibration exercise.
420.	EMB Consultancy LLP	3.165.	This comment refers to paragraphs 3.165-3.169. It is not clear what units the volume measure is in. There is very little data for this class to justify a material increase in the volatility since QIS4. We would appreciate further analysis being performed for this class.	Noted. This will be addressed as part of the recalibration exercise.
421.	Lloyds	3.165.	It is not clear whether the effects of catastrophe events remain within the data used for calibration of this line of business; if they do, the factors would be overstated and result in a double-count of catastrophe risk. Because of the limited data available and volatility of results, it appears that more weight has been placed on the results of the analysis of data provided for QIS4. Given this, it is unclear why the selected factor of 30% has been chosen rather than a figure closer to the QIS4 analysis figure of 22%.	Noted. Data was requested net of CAT, but this may not have been the case. CEIOPS has been collecting more data for the recalibration exercise. We do not accept that QIS4 necessarily represented a better original result. This will be investigated further as part of the recalibration exercise.
422.	ABI	3.166.	Very limited data. The risk assessment is not sufficient to support the doubling of the factor.	See comment 421
423.	ACA	3.166.	8 UK undertakings are representative of the market? We think that this evaluation is not correct.	Noted. CEIOPS has been collecting more data for the recalibration exercise.
424.	AMICE	3.166.	AMICE will provide additional calibration studies by the end of January	Noted.

			2009.	
425.				
426.	CEA	3.166.	Very limited data. The risk assessment is not sufficient to motivate the doubling of the factor.	See comment 419
427.	CRO Forum	3.166.	In our view the sample size is too small to draw meaningful conclusions.	See comment 419
428.				
429.	Groupe Consultatif	3.166.	This analysis is based on only 8 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	Noted. CEIOPS has been collecting more data for the recalibration exercise..
430.	Munich Re	3.166.	In our view the sample size is too small to draw meaningful conclusions.	See comment 419
431.	UNESPA	3.168.	The volume of the given data (expressed in terms of number of entities) for the calibration process purposes is about a 15% of the given data for QIS4. This provided information represents 8 entities of the same country. Very limited data. In our opinion, not enough data is available to draw any conclusion for this LoB.	See comment 419
432.	AMICE	3.170.	Non-proportional reinsurance-casualty	Noted.
433.				
434.	CRO Forum	3.170.	In our view the sample size is too small to draw meaningful conclusions.	See comment 419
435.	EMB Consultancy LLP	3.170.	This comment refers to paragraphs 3.165-3.169. It is not clear what units the volume measure is in. There is very little data for this class to justify a change in the volatility since QIS4. We would appreciate further analysis being performed for this class. The results appear to be materially influenced by one undertaking which shows volatility approximately six times higher than the next largest.	Noted

			The risk exists that this undertaking is an outlier. We note that the QIS4 results in Annex 4 do not appear to support the selected parameter.	
436.	Lloyds	3.170.	It is not clear whether the effects of catastrophe events remain within the data used for calibration of this line of business; if they do, the factors would be overstated and result in a double-count of catastrophe risk.	Noted. Data was requested net of CAT, but this may not have been the case. Data for the recalibration exercise will address this point.
437.	Munich Re	3.170.	In our view the sample size is too small to draw meaningful conclusions.	See comment 419
438.	ABI	3.171.	Very limited data. In our opinion, not enough data is available to draw any conclusion for this LoB.	See comment 419
439.	ACA	3.171.	5 UK undertakings are representative of the market? We think that this evaluation is not correct.	See comment 419
440.	AMICE	3.171.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
441.	CEA	3.171.	Very limited data. In our opinion, not enough data is available to draw any conclusion for this LoB.	See comment 419
442.	Deloitte	3.171.	In our opinion, not enough data is available to draw any conclusion for this LOB.	See comment 419
443.				
444.	Groupe Consultatif	3.171.	This analysis is based on only 5 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 419
445.	UNESPA	3.175.	The volume of the given data (expressed in terms of number of entities)	See comment 419

			for the calibration process purposes is about a 12% of the given data for QIS4. This provided information represents 5 entities of the same country. Very limited data. In our opinion, not enough data is available to draw any conclusion for this LoB.	
446.	ACA	3.176.	9 UK undertakings are representative of the market? We think that this evaluation is not correct.	See comment 419
447.	AMICE	3.176.	Non-proportional reinsurance-MAT	Noted.
448.	Deloitte	3.176.	In our opinion, not enough data is available to draw any conclusion for this LOB.	See comment 419
449.	EMB Consultancy LLP	3.176.	This comment refers to paragraphs 3.165-3.169. It is not clear what units the volume measure is in. There is very little data for this class to justify a change in the volatility since QIS4. We would appreciate further analysis being performed for this class. The results appear to be materially influenced by one undertaking which shows volatility approximately twice the next largest. The risk exists that this undertaking is an outlier. We note that the QIS4 results in Annex 4, though apparently strongly influenced by large volatilities in the UK, may not support the selected parameter.	Noted
450.				
451.	Lloyds	3.176.	It is not clear whether the effects of catastrophe events remain within the data used for calibration of this line of business; if they do, the factors would be overstated and result in a double-count of catastrophe risk.	Noted. Data was requested net of CAT, but this may not have been the case. CEIOPS has been collecting more data for the recalibration exercise.
452.	ABI	3.177.	Very limited data. This analysis is based on only 9 undertakings from one	See comment 419

			member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not justified.	
453.	AMICE	3.177.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
454.				
455.	CEA	3.177.	Very limited data. This analysis is based on only 9 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 419
456.	CRO Forum	3.177.	In our view the sample size is too small to draw meaningful conclusions.	See comment 419
457.	Groupe Consultatif	3.177.	This analysis is based on only 9 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 419
458.	Lloyds	3.177.	Methods 1, 2 and 3 all give fitted factors lower than that of the analysis of QIS4 data, yet this is still considered a lower boundary. There does not seem to be a good reason for increasing the selected factor further beyond the QIS4 analysis figure.	Noted. But method 4, which appears to be a reasonable fit, gives a higher figure. This will be reassessed as part of the recalibration exercise.
459.	Munich Re	3.177.	In our view the sample size is too small to draw meaningful conclusions.	See comment 419
460.	UNESPA	3.182.	The volume of the reported data (expressed on number of entities) for the calibration purposes means a 33% of the volume reported for the QIS 4, representing the reported information 9 companies of the same country. Very limited data. In our opinion, not enough data is available to draw any conclusion for this LoB.	See comment 419
461.	UNESPA	3.183.	Despite of the fact of the topics mentioned above and based on the results shown in the following table, we have observed a notable difference between the obtained results through the use of different methods.	

LOB	Meth 1	Meth 2	Meth 3	Meth 4	Meth 5	Meth 6	FACTOR QIS 4	CEIOPS Sug	Nº Und	Net / Gross		
Motor, vehicle liability	13.2%	12.8%	34.5%	4.9%	78.7%	12.8%	12.0%	12.5%	309	Gross	5	Pl
					18.2%	11.9%						
Motor, other classes	37.9%	162.8%	64.4%	7.0%	113.3%	45.1%	12.0%	12.5%	55	Gross	4	Pl
	26.4%	31.1%	34.9%	7.6%	19.2%	34.7%						
Marine, aviation, transport (MAT)	28.0%	36.0%	81.0%	15.0%	100.0%	102.0%	10.0%	17.5%	49	Net	3	LL
Fire and other property damage	20.0%	24.0%	63.0%	11.0%	16.0%	62.0%	10.0%	15.0%	106	Net	3	UI
Third-party liability	18.1%	19.3%	45.9%	2.0%	12.4%	21.6%	15.0%	20.0%	187	Gross	4	UI
Credit and suretyship	50.4%	88.3%	123.0%	27.2%	39.5%	42.9%	15.0%	20.0%	27	Gross	2	UI
	34.0%	42.0%	89.0%									
Legal expensses	17.1%	16.9%	51.8%	13.7%	4.3%	19.5%	10.0%	12.5%	35	Gross	2	Pl
Assitance	20.0%	22.0%	102.0%	3.0%	41.0%	72.0%	10.0%	15.0%	6	Gross	2	Pl
Miscellaneous	25.0%	23.0%	45.0%				10.0%	20.0%	35	Gross	3	UI
NP reinsurance - property	39.0%	61.0%	47.0%				15.0%	30.0%	6	Net	1	UI
NP reinsurance - casualty	39.0%	44.0%	50.0%				15.0%	30.0%	4	Net	1	UI
NP reinsurance - MAT	22.8%	26.0%	56.4%				15.0%	30.0%	7	Net	1	UI

In our point of view, the proposed factors are high. The data that has beed used used for the calibration process, is limited in volume, and it shows some signals of heterogeneity, it is not sensitive to each countries' features (ie regulatory requirements) or each companies' features (ie change on the regulatory requirements, change on the claim management)

It is recommendable to run a deep analysis in order to calibrate definitely the appropriated reserve factos, based on data with more statistic

			possibilities compared to the one used for this current calibration.	Noted. CEIOPS has been collecting more data for the recalibration exercise.
462.	AMICE	3.183.	**Reserve Risk** The following table summarizes the results obtained by CEIOPS for each of the methods described in the paper: (1)Defined in CP72-Calibration Health Risk We observe that the highest results are obtained with the Method 3, and with the Method 4 the lowest outcomes are achieved. The following calculations has been performed (see results in the table below):	

	TPL	Worker compensation(1)	Motor TPL	Fire	Motor Other	Accident(1)	Sickness(1)
Method 1	18,1%	34,5%	13,2%	20,0%	37,9%	43,2%	25,0%
Method 2	19,3%	11,2%	12,8%	24,0%	162,8%	66,9%	41,0%
Method 3	45,9%	66,8%	34,5%	63,0%	64,4%	63,9%	80,3%
Method 4	2,0%	1,8%	4,9%	11,0%	7,0%	7,6%	9,4%
Method 5	12,4%	19,6%	78,7%	16,0%	113,3%	19,0%	21,2%
Method 6	21,6%	13,5%	12,8%	62,0%	45,1%	22,0%	53,1%

<table>
<tr>
<td></td>
<td></td>
<td></td>
<td>
- Calculation of the average of Methods 1 and 2: These 2 methods have quite similar results.
- Method 3 and Method 4.
- Calculation of the average of Methods 5 and 6, which show similar results.

<table>
<tr><th></th><th>TPL</th><th>Worker compensation(1)</th><th>Motor TPL</th><th>Fire</th><th>Motor Other</th><th>Accident(1)</th><th>Sickness(1)</th></tr>
<tr><td>Average M1 and M2</td><td>18,7%</td><td>22,9%</td><td>13,0%</td><td>22,0%</td><td>100,4%</td><td>55,1%</td><td>33,0%</td></tr>
<tr><td>M3</td><td>45,9%</td><td>66,8%</td><td>34,5%</td><td>56,4%</td><td>34,9%</td><td>63,9%</td><td>80,3%</td></tr>
<tr><td>M4</td><td>2,0%</td><td>1,8%</td><td>4,9%</td><td>11,0%</td><td>7,0%</td><td>7,6%</td><td>9,4%</td></tr>
<tr><td>Average M5 and M6</td><td>17,0%</td><td>16,6%</td><td>45,8%</td><td>39,0%</td><td>79,2%</td><td>20,5%</td><td>37,2%</td></tr>
<tr><td>CEIOPS Factor</td><td>20,0%</td><td>15,0%</td><td>15,0%</td><td>15,0%</td><td>12,5%</td><td>17,5%</td><td>15,0%</td></tr>
</table>
(1)Defined in CP72-Calibration Health Risk

As a general remark, we believe that the factors proposed by CEIOPS are very high; In reading this table, we can observe that the calculated factors (based on an average of different methods) and the factors adopted by CEIOPS are very different. This leads us to believe that consideration of this analysis was not consistent from one LOB to another when establishing the level of the coefficients.

Additionally, we note that the figures used for the short –tail lines of business (such as Motor, Fire, Accident) are lower than the volatilities obtained for long-tail business (i.e TPL, Worker Compensation); CEIOPS should provide the reasoning for that.
</td>
<td>Noted. When selecting factors we have not necessarily used the results from the various methods in the same way. We have used judgement and taken into account the features of the data / results.

This was the result from the data analysis. We will have to see what differences the new data makes.</td>
</tr>
<tr>
<td>463.</td>
<td>CEA</td>
<td>3.183.</td>
<td>Reserve risk

The object here is to estimate a standard deviation (of the one-year claims development result (CDR) for each LoB.

Method 1 does the estimation in the most straightforward way. This method is non-parametric and hence more robust than Methods 2-3 that</td>
<td>Noted

Noted. However the standard formula assume lognormal, so we are just following the standard formula</td>
</tr>
</table>

			are based on a LogNormal distribution (LogN). For the first 3 methods the following comments apply. The calculations of the standard deviations by line of business should be based on actual run-off statistics, and not entirely on six different versions of chain ladder methods. For the three first models (model 1-3) we look at the reserves at a certain reporting year (Y). The first reporting year will consist of just one accident year. The second reporting year of two accident years and so on. It is a major weakness for the three models that most weight is put on the reporting year with the smallest reserve volume (3.208). For companies with a high deviation for the very first accident year the standard deviation will be high and opposite if the deviation is small. The contribution to the overall standard deviation seems to be out of proportion especially if the experience material is of some volume (number of accounting years). It is our impression that the high standard deviations according to model 1-3 are a result of the methods applied and do not reflect the reality in the insurance companies. Model 1-3 may be amended by removing the 1-3 first reporting/accounting years from the estimation of the standard deviations in order to stabilize the results. Even better if the calculations may be based on run-off statistics by lob and not different types of chain ladder techniques. Methods 4-6 are all based on the Merz-Wütrich method of analytically calculating the variance of the one-year CDR. This result is based on the Chain-ladder method and is valid in the situation where we use a plain Chain-ladder of paid claims for our best estimate. However, in many cases the actuary would improve on the Chain-ladder by adjusting it by Bornhuetter-Ferguson, Cape cod or a similar technique; furthermore, the development factors of the Chain-ladder might be smoothed by exponential regression, a tail might be estimated by special techniques, etc. etc. Therefore, while Merz-Wütrich might be a first approximation, it is seldom the whole story, at least not for long-tailed LoBs.	assumptions. Fitting a statistical model provides a robust alternative method to method 1. We do not agree. The first 3 methods are not CL. We are fitting statistical models. See also 468. CP71 explicitly explains that we allow for diversification between accident years; Merz Method allows for this within the methodology and the other methods allow for this by allowing the volume measure to change (squared root volume in the formulas). We agree that simply

			Methods 4-6 differ only in the way to combine the company specific MSEP that Merz-Wütrich estimates. The models behind the three ways of doing this are not specified. The results are so different that an analysis is almost impossible. To conclude, we think that factors should be chosen considering the results from a modified Method 1. A modified method 2 might be used, too, if a LogNormal can be motivated, Method 3 might have a weighting problem (see 3.239 below). While Methods 4-6 could give interesting information, they are not necessarily appropriate for all LoBs and the best way to combine the undertaking-specific estimates is not obvious. Modified methods 4-6 could nevertheless produce usable results. We believe that the proposed factors for the reserve risk are very high. We encourage Ceiops to do deeper analysis before definitive factors are proposed. This deeper analysis should include the method of election, but above all a more comprehensive data. It is doubtful if the data set is representative and of sufficient good quality.	measuring the variability of individual accident years from one development period to the next is likely to overestimate the impact on a whole portfolio because there will be some diversification between accident years, and this is why we have applied the methodology in the way we have. See corresponding points to comment 1.
464.	Groupe Consultatif	3.183.	Reserve risk. The object here is to estimate a standard deviation (of the one-year claims development result (CDR) for each LoB. Method 1 does the estimation in the most straightforward way. This method is non-parametric and hence more robust than Methods 2-3 that are based on a LogNormal distribution (LogN). Method 2 and 3 use a likelihood approach based on a LogN assumption for CDR. It is not obvious that this model fits the data, since the CDR could be expected to be two-tailed, while the LogN is one-tailed. Hence, to use a likelihood approach based on the LogN here is not a robust procedure. Note: The use of a LogN percentile in the SCR calculation can still be motivated, since there we are only interested in one tail.	Noted. Noted. Noted. However the standard formula assume lognormal, so we are just following the standard formula assumptions. Fitting a statistical model provides a robust alternative method to method 1.

			Methods 4-6 are all based on the Merz-Wütrich method of analytically calculating the variance of the one-year CDR. This result is based on the Chain-ladder method and is valid in the situation where we use a plain Chain-ladder of paid claims for our best estimate. However, in many cases the actuary would improve on the Chain-ladder by adjusting it by Bornhuetter-Ferguson, Cape cod or a similar technique; furthermore, the development factors of the Chain-ladder might smoothed by exponential regression, a tail might be estimated by special techniques, etc. etc. Therefore, while Merz-Wütrich might be a first approximation, it is seldom the whole story, at least not for long-tailed LoBs.	We agree. This is why CEIOPS has considered a variety of methods and this is why we do not support just selecting the results from one method only.
			Methods 4-6 differ only in the way to combine the company specific MSEP that Merz-Wütrich estimates. The models behind the three ways of doing this should are not specified. The results are so different that an analysis is almost impossible.	Noted
			To conclude, we think that factors should be chosen considering the results from Method 1. Method 2 might be used, too, if a LogNormal can be motivated, Method 3 might have a weighting problem (see 3.239 below). While Methods 4-6 could give interesting information, they are not necessarily proper for all LoBs and the best way to combine the undertaking-specific estimates is not obvious.	Noted
465.	ROAM	3.183.	ROAM considers that the methods 1 and 4 are the most adapted to the calculation of the reserve risk.	Noted.
466.	AMICE	3.184.	The data used by CEIOPS for deriving the calibration using method 1, method 2 and method 3 contains the posted reserves claims triangle net of reinsurance recoveries (including case estimates, IBNR and IBNER. Since these methods are based on accounting data, the calibration results might be biased due to divergences in the accounting criteria applied in different jurisdictions.	Noted. The data used are posted ultimates, ie accounting data, which will normally be smoothed compared to actuarial best estimates. Because they are smoothed it may result in lower volatility
467.	ASSURALIA	3.184.	Data on 10 accident years seem us a little short for long term business. Following the Belgian experience, after 10 development years the	Noted. We are looking at what reserves are year after year.

			cumulative paid percentage of the expected ultimate cost are +/- 89% for Motor, vehicle liability, +/-72% for third-party liability (and even only +/-46% for professional third-party liability) and +/- 88% for legal expenses.	
468.	EMB Consultancy LLP	3.184.	Accident year data were used, and the result is applied to technical provisions, which includes claim provisions on unearned premium. Using accident year data may understate the true volatility, as new claim emergences may be more volatile than claim development for some lines. On the other hand, for shorter lines outstanding reserves may be low after the first year, leading to a high proportional volatility which is being carried over to the larger reserves for claims on unearned premium. For long tailed lines there may be little practical difference between reserve volatility on an accident or written cohort basis.	We do not agree. We understand that simply measuring the variability of individual accident years from one development period to the next is likely to overestimate the impact on a whole portfolio because there will be some diversification between accident years. However the methods presented in CP71 allow for diversification between accident years. The Merz Method allows for this explicitly within the methodology and the other methods allow for this by allowing the volume measure to change (squared root volume in the formulas). This may need to be explained in a more clear way and we can certainly do this in the final version.
469.	Lloyds	3.184.	There is no discussion of whether adjustments were required to ensure datasets were comparable across undertakings and States, differences which could include different claims characteristics, reporting requirements or bases on which data was provided (for example, levels of prudence). It would be useful to have more information about the data used for the calibration, on what basis it was provided and how the datasets were adjusted to ensure comparability.	Noted. This is the standard formula and needs to represent a broad range of experience across the EEA.

470.				
471.	ARC	3.187.	The assumption on expenses is reasonable for a business with steady premium income or modest growth, but less valid for a runoff. In runoff, expenses are not 100% correlated to claims and include amounts that may reduce more quickly than claims runoff.	Noted. Undertaking specific parameters may be more suitable for Run Off firms
472.	Deloitte	3.187.	The combined effect of incorporating the assumptions may have some impact that is not insignificant. Expenses are assumed to be deterministic and not have an impact on volatility however in stressed scenarios there may be factors that change the volatility. Similarly inflation cannot be ignored and some explicit allowances may have to be made that are not reflected in past data.	Noted. However it is not clear how we could allow for such matters (given the data available). CEIOPS would welcome any practical suggestions.
473.	EMB Consultancy LLP	3.187.	This appears a prudent assumption, since in general we would expect expense payments over a one-year horizon to be less volatile than claims uncertainty, since many large expenses are known, or very likely (e.g. salaries, accommodation costs).	See corresponding points to comment 472.
474.	Deloitte	3.188.	The discount rate is also expected to change under stressed conditions. This together with other factors may in aggregate have a significant impact on the calibration of the reserve risk standard deviation.	See also comment 472
475.	ABI	3.189.	Using gross data is likely to overstate variability.	Noted. We are looking to get more data for a recalibration, and have been looking at industry suggestions to deal with reinsurance more appropriately. A proposal has been included in the final advice.
476.	CEA	3.189.	Using gross data is likely to overstate variability.	See comment 475
477.	Deloitte	3.189.	In stressed conditions counterparty risk default becomes even more important and to assume that it does not change under stressed conditions would be optimistic.	Noted. However it is difficult to allow for this in the standard formula.

478.	EMB Consultancy LLP	3.189.	This may be a prudent assumption, and the results based on using gross data should be regarded as less credible. This is less clear than in the premium risk case, since the reserve risk also encompasses the risk of over-projection of reinsurance recoveries. We would appreciate a comparison of the resulting volatilities calculated under each method based on using gross or net data only - particularly if gross and net data were available from the same territory.	Noted. If sufficient actual data is available for the recalibration, we will consider this analysis.
479.	Lloyds	3.189.	This assumption is likely to significantly overstate the factors for lines of business where excess of loss reinsurance is used, and even more so for data where the effects of catastrophe events have not been removed. It is not clear that any such consideration has been taken into account when selecting factors.	See comment 475.
480.				
481.	CEA	3.190.	Most companies will include inflation assumptions in their pricing and reserving approach. Thus, as risk is measured over a one year time horizon also the risk of the change in inflation assumptions should be measured over one year. We take this risk to be rather small compared to the other risks.	See corresponding points to comment 175.
482.	CRO Forum	3.190.	Most companies will include inflation assumptions in their pricing and reserving approach. Thus, as risk is measured over a one year time horizon also the risk of the change in inflation assumptions should be measured over one year. We take this risk to be rather small compared to the other risks.	See corresponding points to comment 175.
483.	Deloitte	3.190.	Similarly inflation cannot be ignored and some explicit allowances may have to be made that are not reflected in past data.	See corresponding points to comment 33.
484.	Groupe Consultatif	3.190.	Same comment as 3.36	See corresponding points to comment 179.
485.	Institut des	3.190.	Same comment as 3.36	See corresponding points to

	actuaires			comment 180.
486.	Munich Re	3.190.	Most companies will include inflation assumptions in their pricing and reserving approach. Thus, as risk is measured over a one year time horizon also the risk of the change in inflation assumptions should be measured over one year. We take this risk to be rather small compared to the other risks.	See corresponding points to comment 175.
487.	ICISA	3.191.	The average level of geographical diversification will be affected by whether respondents divide their business into solo undertakings with a low level of geographical diversification or use a branch structure across member states, resulting in fewer solo undertakings with a higher level of geographical diversification.	We agree that the removal of geographical diversification will have a considerable impact for some undertakings. Furthermore as the factors have increased this will further increase the burden. However CEIOPS does not wish to allow for geographical diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence - too complex
488.	AMICE	3.192.	CEIOPS states that an average level of risk mitigation effect of non proportional reinsurance is implicitly allowed for in the calibration because the volatility of the undertaking's time series reflects the risk mitigating effect of non proportional reinsurance of their business. The proposed method cannot be applied because the non-proportional reinsurance treaties are very different between companies and countries.	See comment 475.
489.	Deloitte	3.192.	It is assumed that the risk mitigating affect of non-proportional reinsurance is implicitly allowed for. The structure of the non proportional reinsurance contracts and typical features of claims varies greatly so implicit allowance may not be appropriate.	See comment 475.

490.	ICISA	3.192.	If the undertaking's time series does not include losses which are large enough to reach the threshold for usage of the non-proportional reinsurance, the volatility of the time series will not reflect the risk mitigating effect of the non-proportional reinsurance.	See comment 475.
491.				
492.	AMICE	3.193.	CEIOPS proposes risk margin to change in stressed situations. The risk margin of an insurance portfolio is defined as the hypothetical cost of regulatory capital necessary to run-off all liabilities following the financial distress of the company. So we believe that risk margin is already calculated under a stressed situation.	See corresponding points to comment 5.
493.	ABI	3.195.	The methods used seem appropriate only for accident years where the Chain Ladder method is applied, but does not seem appropriate when the Bornhuetter-Ferguson approach is used.	We disagree. Methods 1-3 are based on actual reserves and do not rely on any particular projection method.
494.	IUA	3.195.	It has been suggested that the methods used only seem appropriate for accident years where the Chain Ladder method is applied, but does not seem appropriate when the Bornhuetter-Ferguson approach is used.	See corresponding points to comment 493.
495.	AMICE	3.196.	Method 1	Noted.
496.	CEA	3.196.	We urge Ceiops to make this method more transparent.	Noted
497.	EMB Consultancy LLP	3.196.	This comment covers paragraphs 3.196 to 3.211. Our experience suggests that the variance per unit of reserve depends crucially on the development age of the reserve, as well as the line of business. There does not appear to be any consideration of the average age, or the profile of reserves by age, in the calibration approach. Paragraph 3.207 assumes that there is no reserve surplus or deterioration on average. Evidence of an expected level of reserve	We do not agree. See 468 Noted

			surplus would hence be represented in this analysis as volatility. We would appreciate comment on whether there is any such evidence in the data CEIOPS used, and whether this biased the result. It seems reasonable for average reserve deterioration to result in a further capital load, however this seems unreasonable for average reserve surpluses. Paragraph 3.201 comments that the approach is optimal when the underlying distributions are normal. Since the distributions covered are likely to be positively skewed, this could affect the credibility of the parameterisation. The bias adjustment applied of sqrt(N/(N-1)) is not optimal, since it does not take account the differing relative weights. Overall we would expect this estimator to be understated, assuming perfect data, and assuming that the zero expected reserve surplus assumption is true.	Noted Noted
498.	AMICE	3.197.	We consider that this method is questionable since the data used is accounting data. This generates a significant bias in the results due to differing levels of provisioning from one country to another.	We disagree. This may be the case but it is also the case that companies do not normally post the reserves that have been estimated by the actuary but a set of smoothed reserves. Reserves will have been smoothed.
499.	ROAM	3.197.	ROAM considers that this method is open to criticism if the used data are accounting data. It leads a non insignificant bias due to the disparity of the levels of accounting of the provisions between different countries.	See corresponding points to comment 498.
500.				
501.	UNESPA	3.198.	This approach could be the most direct of the ones proposed and it does not require the estimation of any parameter but unclear to us. We urge	Noted.

			CEIOPS to make the method more transparent.	
502.	ASSURALIA	3.200.	We do not understand the advantage to fit a separate model of each undertaking's standard deviation. We advise to use directly the observed mean and the standard deviation (with an adequate correction for underestimation) of the sample.	See corresponding points to comment 222.
503.	UNESPA	3.201.	The assumption that the underlying risk follows a Normal distribution. We welcome this new approach in terms of introducing new probability distributions. .Considering the results obtained by all the methods and due to the lack of information for the calibration, we prefer this method rather than the rest of the proposed methods for this process	Noted. However this is inconsistent with the assumption underlying the standard formula.
504.	ABI	3.201.	Normal distribution assumption is not consistent with the standard formula specification. However, we prefer method 1 to some of the other methods as the results are not distorted by the impact of data heterogeneity.	Noted.
505.	ACA	3.201.	As for the method 1 of the underwriting risk, this method is easy to implement, but the assumption of normality is not consistent with the standard model, and thus it should not be used to calibrate the standard model.	Noted. We agree
506.	CEA	3.201.	Normal distribution assumption is not consistent with the standard formula specification. However, we prefer method 1 to some of the other methods as the results are not distorted by the impact of data heterogeneity.	See corresponding points to comment 505.
507.				
508.	CEA	3.203.	As with premium risk, Method 1 estimates a single (in each company. These are weighted together to a global estimate of (. This does not	Noted. We are fitting parameters to every single undertaking and then we

			mean that we fit a large number of ('s but only that we base our estimate of a single (on a large number of individual estimates. Hence, there should be no risk of over-fitting.	take a volume weighted average.
509.	Groupe Consultatif	3.203.	Cf 3.52. As with premium risk, Method 1 estimates a single (in each company. These are weighted together to a global estimate of (. This does not mean that we fit a large number of ('s but only that we base our estimate of a single (on a large number of individual estimates. Hence, there should be no risk of over-fitting.	See corresponding points to comment 508.
510.	CEA	3.208.	Calculations on long tail business (workers comp – accidents) confirms that company specific standard deviations are extremely sensitive to the calculated run-off for the first and second accounting year. Given the fact that the given chain ladder model hardly would have been used in the first and second accounting year the result seems dubious and of little relevance for the standard deviation in question.	Noted. Firms with this different risk profiles should consider using PIM or USP.
511.	UNESPA	3.211.	Obtaining the general factor for the reserve risk through the use of a premium volume weighted average of each entity will mean that it will be more influenced by the weight of companies with high underwriting volume in some LOB.	Noted. We agree and will therefore underestimate volatility.
512.	AMICE	3.212.	Method 2	Noted.
513.	ASSURALIA	3.212.	We presume the end of this sentence is 'for reserve risk' rather than 'for premium risk'.	Noted. This will be corrected.
514.	CEA	3.212.	Practical experience has shown that this method does not yield good results in some cases.	Noted. Why?.
515.	EMB Consultancy	3.212.	This comment covers paragraphs 3.212 to 3.229	See response to 468.

	LLP		Our experience suggests that the variance per unit of reserve depends crucially on the development age of the reserve, as well as the line of business. There does not appear to be any consideration of the average age, or the profile of reserves by age, in the calibration approach. The method assumes that there is no reserve surplus or deterioration on average. Evidence of an expected level of reserve surplus would hence be represented in this analysis as volatility. We would appreciate comment on whether there is any such evidence in the data CEIOPS used, and whether this biased the result. It seems reasonable for average reserve deterioration to result in a further capital load, however this seems unreasonable for average reserve surpluses. We generally find that undertakings (especially smaller undertakings) have portfolios which exhibit different market characteristics. The key assumption of a single market volatility would therefore lead to an overstatement of volatility, even given perfect data. Hence we would expect this estimator to be overstated in general, even given perfect data, and even more so for lines where the assumption of zero average reserve surplus is false.	Noted. Noted.
516.	ABI	3.213.	Assuming the same variance parameter for all companies may lead to under-fitting of parameters and hence overstating variability.	Noted. This method is a close reflection of what the standard formula is trying to achieve, one factor for one market. The factors are derived by fitting a statistical model to the industry data.
517.	AMICE	3.213.	The estimation of the standard deviation is based on the following assumption: the variance of the best estimate for claims outstanding in one year plus the incremental claims paid over the one year is proportional to the volume measure: $S = (\log (1 + \beta^2 / V))1/2$.	Noted

			This method is consistent with the principle of proportionality (i.e tail effect) since S is function of the volume measure V which in turn is equal to the sum of the Best Estimate for Claims Outstanding. However, we consider that this method is questionable since the data used is accounting data. This generates a significant bias in the results due to differing levels of provisioning from one country to another.	See corresponding points to comment 498.
518.				
519.	CEA	3.213.	Assuming the same variance parameter for all companies may lead to under-fitting of parameters and hence overstating variability.	See corresponding points to comment 516.
520.	CRO Forum	3.213.	The calculations were based on accounting data but if the LOB is affected by a rate cycle, the provisions are also impacted by this rate cycle: In profitable years, the accounting provisions are buffered and in less profitable years, previously build-up surplus is released. This causes a natural increase and decrease of accounting provisions which has got nothing to do with the implicit risk. Methods based on surplus/release are always biased by management actions which is difficult to filter out at the level of this study.	Noted. This is method is a close reflection of what the standard formula is trying to achieve, one factor for one market. The factors are derived by fitting a statistical model to the industry data.
521.	Munich Re	3.213.	The calculations were based on accounting data but if the LOB is effected by a rate cycle, the provisions are also impacted by this rate cycle: In profitable years, the accounting provisions are buffered and in less profitable years, previously build-up surplus is released. This causes a natural increase and decrease of accounting provisions which has got nothing to do with the implicit risk. Methods based on surplus/release are always biased by management actions which is difficult to filter out at the level of this study.	See corresponding points to comment 520.
522.	ROAM	3.213.	ROAM considers that this method is open to criticism if the used data are	See corresponding points to

			accounting data. It leads a non insignificant bias due to the disparity of the levels of accounting of the provisions between different countries.	comment 498.
523.				
524.	ASSURALIA	3.214.	About your comment: "… take into account the experience of all the other undertakings...", we want to remark that you take also into account the inexperience of all the small portfolios and you mix data probably not comparable coming from different member states.	Noted. The standard formula aims for maximum standardisation.Stakeholders are able to use USP/PIM as tools if the standard formula is considered inappropriate for their business.
525.	UNESPA	3.217.		No comment available.
526.	XL Capital Ltd	3.228.	We have noted elsewhere our concerns regarding the robustness of the analysis upon which the calibrations will be set. As an example, the range of results in the table in paragraph 3.228 (see Method 2) is vast. Is it really appropriate to select one point from this range and apply to all?	Noted.
527.	UNESPA	3.229.	Obtaining the general factor for the premium risk through the use of a premium volume weighted average of each entity will mean that it will be more influenced by the weight of companies with high underwriting volume in some LOB.	Noted.
528.	AMICE	3.230.	Method 3	Noted.
529.	EMB Consultancy LLP	3.230.	This comment covers paragraphs 3.230 to 3.241 Our experience suggests that the variance per unit of reserve depends crucially on the development age of the reserve, as well as the line of business. There does not appear to be any consideration of the average age, or the profile of reserves by age, in the calibration approach. The method assumes that there is no reserve surplus or deterioration on	Noted. See response to 497

			average. Evidence of an expected level of reserve surplus would hence be represented in this analysis as volatility. We would appreciate comment on whether there is any such evidence in the data CEIOPS used, and whether this biased the result. It seems reasonable for average reserve deterioration to result in a further capital load, however this seems unreasonable for average reserve surpluses. We generally find that undertakings (especially smaller undertakings) have portfolios which exhibit different market characteristics. The key assumption of a single market volatility would therefore lead to an overstatement of volatility, even given perfect data. Hence we would expect this estimator to be overstated in general, even given perfect data, and even more so for lines where the assumption of zero average reserve surplus is false.	
530.	ABI	3.231.	This method again may suffer from under-fitting of parameters, and also ignores the diversification benefits of larger portfolios when this is generally observed in the data.	We agree.
531.	AMICE	3.231.	The estimation of the standard deviation is based on the following assumption: the variance of the risk volume of the reserve is proportional to the squared volume V: $S = (\log (1 + \beta^2 V2 / V^2)) 1 / 2 = (\log (1 + \beta^2)) 1 / 2$. To be consistent with the hypothesis of this method, the standard deviation of the risk reserve should be β (as in the Method 4 for premium risk) and not $\beta / V 1/2$ (3.183). This method eliminates the "tail effect" existing in Method 1 and Method 2. However, we consider that this method is questionable since the data used is accounting data. This generates a significant bias in the results due to differing levels of provisioning from one country to another.	Noted. See corresponding points to comment 498.
532.	CEA	3.231.	This method again may suffer from under-fitting of parameters, and also	See corresponding points to

			ignores the diversification benefits of larger portfolios when this is generally observed in the data.	comment 530.
533.	ROAM	3.231.	ROAM considers that this method is open to criticism if the used data are accounting data. It leads a non insignificant bias due to the disparity of the levels of accounting of the provisions between different countries.	See corresponding points to comment 498.
534.				
535.	CEA	3.235.	The formula for SC,Y,lob may be wrong.	Noted
536.	AMICE	3.239.	This formula is not consistent with the assumptions used in this method. The formula should be writeen as follows: σres,lob β and not to β/ V1/2	See corresponding points to comment 531.
537.	CEA	3.239.	(is the standard deviation in CDF = R – V when it is divided by V. Hence, while 3.227 is perfectly consistent with 3.222, the present 3.239 assumption of (being inversely proportional to the square root of V is not consistent with 3.234 where it is proportional to V itself. (Cf. also Method 4 for premium risk, where a similar variance assumption is handled in a correct way.)	Noted. any typos will be corrected.
538.	Groupe Consultatif	3.239.	(is the standard deviation in CDF = R – V when it is divided by V. Hence, while 3.227 is perfectly consistent with 3.222, the present 3.239 assumption of (being inversely proportional to the square root of V is not consistent with 3.234 where it is proportional to V itself. (Cf. also Method 4 for premium risk, where a similar variance assumption is handled in a correct way.)	Noted. typos will be corrected.
539.	ROAM	3.239.	ROAM proposes a correction of the standard deviation to be coherent with the assumptions of this method. The standard deviation of the reserve risk should be β and not β/ V1/2	See corresponding points to comment 538.
540.	XL Capital Ltd	3.239.	Same comments as given in 3.228 above	See corresponding points to comment 526.

541.	UNESPA	3.241.	Obtaining the general factor for the premium risk through the use of a premium volume weighted average of each entity will mean that it will be more influenced by the weight of companies with high underwriting volume in some LOB.	Noted.
542.	ABI	3.242.	Methods 4, 5 and 6 seem inappropriate as they are based on the Merz Method which assumes that best estimate reserves are calculated using a pure chain ladder approach.	See corresponding points to comment 463.
543.	AMICE	3.242.	Method 4:	Noted.
544.	ASSURALIA	3.242.	We presume the end of this sentence is 'for reserve risk' rather than 'for premium risk'.	This will be corrected.
545.	CEA	3.242.	The methods of Merz/Wüthrich might be used. But in order to obtain reliable results, in practice several adjustments are necessary. Calculating the MSEP like Merz/Wuethrich (this is also possible under chain ladder assumptions) for one company-triangle of sufficient size gives a nice estimator for the variance of the claim development result CDR of one company. It remains to take an appropriate average of the ratios CDR/company-best-estimate in order to get an average reserve-risk factor. The results of German development data show a strong dependence of the reserve-risk factor on the companies' volume measure (best estimate). Advising one European reserve-risk factor cannot be appropriate. For an average of the ratios CDR/company-best-estimate, we suggest a simple average and not sophisticated methods like 4 or 5 or 6, because the resulting value is not informative for the majority of companies. Finally method seems unclear; we ask Ceiops to explain why step b is necessary.	Noted. See comments 463/464
546.	EMB Consultancy LLP	3.242.	This comment covers paragraphs 3.242 – 3.249 Utilising the Merz-Wuthrich formula requires an assumption that the	See comments 463/464

			chain-ladder method is an appropriate, or even the best, reserving method for the undertaking. In many places this will not be true, and we would anticipate that actuarial reviewed reserves, taking account of many methods and expert judgement, should prove more stable than an automatic process of applying a chain-ladder. This may lead to distortions in the projected volatility estimators. Overall we would expect this method to overstate the volatility.	
547.	IUA	3.242.	It has also been suggested that Methods 4, 5 and 6 seem inappropriate as they are based on the Merz method, which assumes that the best estimate reserves are calculated using a pure Chain Ladder approach.	See comments 463/464
548.	UNESPA	3.243.	This method is based on some assumptions that introduce and additional rigid factor and in some cases they are not sensitive to the common benchmark practices that affect to the underlying risk evolution as time elapses. Moreover, it is based on the estimation of the BE through a Chain Ladder analysis, and we consider this fact an important simplification to the process. Additionally, it would be recommendable to test the appliance of this method for those lines of business with particular features	See comments 463/464
549.	AMICE	3.243.	CEIOPS refers to the Merz and Wuthrich approach for calculating the "mean squared error of prediction of the claims development result over the one year". Method 4 is based on the historical triangle of cumulative payments. The methods based on historical payments are more suitable for calibration purposes than the methods base on accounting provisions. Method 4 is based on the mean square error of prediction of the "Claim Development Results (CDR)" for the coming year. The CDRI (I+1) is for	See comments 463/464

			accident year i the difference between the final payment at I and the final payment at I+1. More precisely, it is the difference in assessment of the ultimate load charges between I and I +1.	
550.	CEA	3.243.	This method is sensitive to small or large claims payments, and these may distort the results of the analysis. The method also assumes the Chain Ladder result is the best estimate of future claims, which is unlikely to be the case. Assuming the same variance parameter for all companies may lead to under-fitting of parameters and hence overstating variability.	See comments 463/464
551.	GDV	3.243.	We would like to ask CEIOPS to clarify the described method: why is step b necessary? Calculating the MSEP like Merz/Wuethrich (this is possible also under chain ladder assumptions) for one company-triangle of sufficient size gives a nice estimator for the variance of the claim development result CDR of one company. It remains to take an appropriate average of the quotients CDR/company-best-estimate in order to get an average reserve-risk factor. The results of German development data show a strong dependence of the reserve-risk factor on the companys volume measure (best estimate). Advising one European reserve-risk factor cannot be appropriate. To take an average of the quotients CDR/company-best-estimate we suggest a simple average and not sophisticated methods like 4 or 5 or 6, because the resulting value is not informative for the majority of companys.	See comments 463/464
552.	Groupe Consultatif	3.243.	See 3.183 on the limitations of the Merz-Wütrich procedure.	See corresponding responses to 3.183
553.	ROAM	3.243.	This method is based on the historical accumulated payments. The data are more adapted to the calibration because the payments are not contestable data.	Noted

			ROAM appreciates the consideration of the principle of proportionality in the variance of the CDR and the use of the method of Wüthrich publicly recognized.	
554.	Deloitte	3.244.	Given that this method is dependent on the chain ladder method, we would like to ask CEIOPS to specify if consideration has been given to the instability of the method due to the varying claims handling procedures at different undertakings.	Noted. yes we have.
555.	AMICE	3.247.	The variance of the "Claims Development Results" (CRD) is proportional to the volume measure. This assumption is consistent with the proportionality principle.	Noted.
556.	AMICE	3.250.	Method 5	Noted.
557.	CEA	3.250.	The methods of Merz/Wüthrich might be used. But in order to obtain reliable results, in practice several adjustments are necessary. Model 5 could give more stable results than models 1-3 because the analysis gives the standard deviation for the sum of reserves over several accident years and therefore does not have the same dependency of the very first reporting years as model 1-3. But again an insurance company should never just apply one model in order to derive the loss reserve.	Noted. CEIOPS welcomes suggestions from the industry and will incorporate these where appropriate.
558.	EMB Consultancy LLP	3.250.	This comment covers paragraphs 3.250 – 3.255 Utilising the Merz-Wuthrich formula requires an assumption that the chain-ladder method is an appropriate, or even the best, reserving method for the undertaking. In many places this will not be true, and we would anticipate that actuarial reviewed reserves, taking account of many methods and expert judgement, should prove more stable than an automatic process of applying a chain-ladder. This may lead to distortions in the projected volatility estimators. We would generally agree with the calibration method using the same assumptions as the formula in which the parameters will be used.	See corresponding points to comment 13. Noted.

			The assumption that the variance of the claims development result is proportional to the square of the current best estimate for claims outstanding would appear to conflict with the assumptions of the Merz-Wuthrich method. Overall we would expect this method to overstate the volatility.	See corresponding points to comment 13.
559.	UNESPA	3.251.	This method is based on a set of assumptions that introduce an additional rigid factor and in some cases the assumptions are not sensitive to the common benchmark practices that affect to the underlying risk evolution as times elapses. Moreover, it is based on the estimation of the BE through a Chain Ladder analysis, and we consider this fact an important simplification to the process. Additionally, it would be recommendable to test the appliance of this method for those lines of business with particular features	See comments 463/464
560.	AMICE	3.251.	CEIOPS refers to the Merz and Wuthrich approach for calculating the "mean squared error of prediction of the claims development result over the one year". Method 5 is based on the historical triangle of cumulative payments. The methods based on historical payments are more suitable for calibration purposes than the methods base on accounting provisions. Method 5 is based on the mean square error of prediction of the "Claim Development Results (CDR)" for the coming year. The CDRI (I+1) is for accident year i the difference between the final payment at I and the final payment at I+1. More precisely, it is the difference in assessment of the ultimate load charges between I and I +1.	See comments 463/464
561.	ASSURALIA	3.251.	b. …"The variance of the claims development result is proportional to the square of the current best estimate for claim outstanding". Where is the theoretical justification of that assumption? The power ten of the current	See comments 463/464

			best estimate would lead to bigger volatility and bigger reserve risk.	
562.	CEA	3.251.	This method is sensitive to small or large claims payments, and these may distort the results of the analysis. The method also assumes the Chain Ladder result is the best estimate of future claims, which is unlikely to be the case. Assuming the same variance parameter for all companies may lead to under-fitting of parameters and hence overstating variability.	See comments 463/464
563.	Groupe Consultatif	3.251.	See 3.183 on the limitations of the Merz-Wütrich procedure.	See comments 463/464
564.	ROAM	3.251.	This method is based on the historical accumulated payments. The data are more adapted to the calibration because the payments are not contestable data. The assumption made on the variance of the CDR does not take into account any more the principle of proportionality and furthermore it is inconsistent with the properties of the model of Mack where Var(Ci,j|Ci,j-1)=sj2Ci,j-1.	See comments 463/464
565.	AMICE	3.255.	The variance of the "Claims Development Results" (CRD) is proportional to the squared volume measure. This assumption is not consistent with the proportionality principle. Additionally this assumption is not coherent with the following property of the Mack Model where Var(Ci,j|Ci,j-1)=s²Ci,j-1	Noted
566.	AMICE	3.256.	Method 6 CEIOPS refers to the Merz and Wuthrich approach for calculating the "mean squared error of prediction of the claims development result over the one year".	Noted

			Method 6 is based on the historical triangle of cumulative payments. The methods based on historical payments are more suitable for calibration purposes than the methods base on accounting provisions. Method 6 is based on the mean square error of prediction of the "Claim Development Results (CDR)" for the coming year. The CDRI (I+1) is for accident year i the difference between the final payment at I and the final payment at I+1. More precisely, it is the difference in assessment of the ultimate load charges between I and I +1.	
567.	ASSURALIA	3.256.	b. …"The variance of the claims development result is proportional to the square of the current best estimate for claim outstanding". Where is the theoretical justification of that assumption?	Noted. this is one assumption for one method. see 463/464
568.	CEA	3.256.	This method is sensitive to small or large claims payments, and these may distort the results of the analysis. The method also assumes the Chain Ladder result is the best estimate of future claims, which is unlikely to be the case. Assuming the same variance parameter for all companies may lead to under-fitting of parameters and hence overstating variability. Compared to method 5, this method seems to bring a poorer weighting. Claiming the variance to be proportional to the square of the current best estimate is an arbitrary assumption which has to be justified carefully and therefore can only be applied on an undertaking individual basis. Such an assumption overestimates the variance.	See comments 463/464
569.	EMB Consultancy LLP	3.256.	This comment covers paragraphs 3.256 – 3.260 Utilising the Merz-Wuthrich formula requires an assumption that the chain-ladder method is an appropriate, or even the best, reserving method for the undertaking. In many places this will not be true, and we would anticipate that actuarial reviewed reserves, taking account of many methods and expert judgement, should prove more stable than an	See comments 463/464

			automatic process of applying a chain-ladder. This may lead to distortions in the projected volatility estimators. We would generally agree with the calibration method using the same assumptions as the formula in which the parameters will be used. We note the similarity of this approach with Method 5. The underlying assumptions are the same, and the difference appears to be the weight given to each undertaking in minimising the squared error. An assumption of the variance of the claims development result being proportional to the square of the current best estimate for claims outstanding would imply lower parameter uncertainty for the MSEP calculated from larger portfolios, and hence these should be given more weight in the calculation. Method 5 appears to achieve this, while method 6 does not. We have not calculated whether the appropriate weight is given in method 5. The assumption that the variance of the claims development result is proportional to the square of the current best estimate for claims outstanding would appear to conflict with the assumptions of the Merz-Wuthrich method. Overall we would expect this method to overstate the volatility.	noted
570.	Groupe Consultatif	3.256.	See 3.183 on the limitations of the Merz-Wütrich procedure.	See comments 463/464
571.	ROAM	3.256.	This method is based on the historical accumulated payments. The data are more adapted to the calibration because the payments are not contestable data. The assumption made on the variance of the CDR does not take into account any more the principle of proportionality and furthermore it is inconsistent with the properties of the model of Mack where Var(Ci,j|Ci,j-1)=sj2Ci,j-1.	Noted
572.	UNESPA	3.257.	This method is based on a set of assumptions that introduce an	See comments 463/464

			additional rigid factor and in some cases the assumptions are not sensitive to the common benchmark practices that affect to the underlying risk evolution as times elapses. Moreover, it is based on the estimation of the BE through a Chain Ladder analysis, and we consider this fact an important simplification to the process. Additionally, it would be recommendable to test the appliance of this method for those lines of business with particular features	
573.	AMICE	3.260.	In Method 6, as happens with Method 5, the variance of the "Claims Development Results" (CRD) is proportional to the squared volume measure. This assumption is not consistent with the proportionality principle. Additionally this assumption is not coherent with the following property of the Mack Model where $Var(C_{i,j}\|C_{i,j-1})=s^2C_{i,j-1}$	Noted
574.	CEA	3.264.	What purpose has the sentence "As there is no explicit allowance for diversification in the SCR" at the end of the second point?	Noted. Yes will be corrected.
575.	ABI	3.269.	It's not clear how the value of 12.5% was derived.	Noted. We selected a figure between 18.2% and 11.9%. We will expand on this.
576.	AMICE	3.269.	Motor, vehicle liability	Noted.
577.	CEA	3.269.	It's not clear how the value of 12.5% was derived.	See comment 575.
578.	EMB Consultancy LLP	3.269.	This comment covers paragraphs 3.269-3.277 The use of gross data is likely to affect the volatility parameterisation, though as we stated earlier, it is not clear what bias this would give. Nevertheless this reduces the credibility of this parameter. It is not clear what units the volume is in. Neither method 2 nor method 3 appears a very good fit, but we would observe that method 2 appears to fit better overall.	Noted.

			There appears to be weak evidence for diversification credit for size, however this only appears to apply for the smallest of firms (volume <25,000). Even for the smallest firms it is not clear if there is evidence for diversification credit, or more range of undertaking specific volatilities for smaller firms. We note that the volume of some firms are very different between method 1, and methods 4,5, and 6. This would seem to imply that the chain ladder reserves were very different from the reserves held which may reduce the credibility of the Merz-Wuthrich results. Given the data and parameterisation methods applied, this parameter selection appears reasonable.	
579.	ABI	3.270.	Using gross data is likely to overstate variability. A more granular segmentation is needed; this can be seen by considering the given segmentation into small, medium and large undertakings.	See comment 331
580.	AMICE	3.270.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
581.	ASSURALIA	3.270.	We observe extremely scattered fitted results among the different methods (for this lob from 1 (4.9%for method 4) to 16 (78% for method 5) but the range is larger for other lob). In our opinion this discredits deeply the methodological aspects of that calibration. As a result of that poor methodology, the reserve factors are too high certainly for medium and large undertakings. This comment is worth also for 3.2791, 3.281, 3.288, 3.293, 3.299, 3.308, 3.311, 3.317, 3.325 and 3.332. Method 4 in witch we trust quite well give often the lower fitted result.	Noted. However this is what the data is showing. Noted.
582.	CEA	3.270.	Using gross data is likely to overstate variability. A more granular segmentation is needed. This can be seen by	See comment 331.

			considering the given segmentation into small, medium and large undertakings.	
583.	ABI	3.271.	Plot shows that results / methods are not really appropriate.	Noted. However this is what the data is showing. Hopefully, the additional data for the recalibration exercise will improve the situation.
584.	CEA	3.271.	Plot shows that results / methods are not really appropriate.	See comment 583.
585.	Groupe Consultatif	3.276.	Results show little evidence of robustness in the methods used as the fitted factor from Method 5 drops from 78.7% to 18.2% by only removing 2 undertakings from the sample.	Noted. However this is what the data is showing. Note that the data had outliers which we removed (3.274). It is only to be expected that the removal of extreme outliers would have an impact on the results. This will be expanded on for the recalibration exercise (if it is still appropriate.
586.	Institut des actuaires	3.276.	Results show little evidence of robustness in the methods used as the fitted factor from Method 5 drops from 78.7% to 18.2% by only removing 2 undertakings from the sample.	See comment 585.
587.	UNESPA	3.277.	The information used for the calibration process is gross of Reinsurance. This fact could imply an increase of the volatility of the calibration. Once again, the sample not seems enough.	Noted. See comment 475.
588.	ABI	3.277.	We find the term "roughly the average of methods 5 and 6" not appropriate to be used in a quantitative study. We would like to ask for a specification on how the average is determined precisely.	Noted. We will expand on this as part of the recalibration exercise.

589.	CEA	3.277.	We find the term "roughly the average of methods 5 and 6" not appropriate to be used in a quantitative study. We would like to ask for a specification on how the average is determined precisely.	See comment 588.
590.	Deloitte	3.277.	We find the term "roughly the average of methods 5 and 6" not appropriate to be used in a quantitative study. We request clarification on how the average is determined precisely.	See comment 588.
591.	Groupe Consultatif	3.277.	The slides are showing that one should use undertaking's specific factors.	We do not agree. Undertakings are able to use USPs if they feel it is appropriate.
592.	KPMG ELLP	3.277.	The slides are showing that one should use a (re)insurance undertaking's specific factors.	See comment 591.
593.	AMICE	3.278.	Motor, other classes	Noted.
594.	EMB Consultancy LLP	3.278.	This comment covers paragraphs 3.278-3.286 The use of gross data is likely to affect the volatility parameterisation, though as we stated earlier, it is not clear what bias this would give. Nevertheless this reduces the credibility of this parameter. It is not clear what units the volume is in. Neither method 2 nor method 3 appears a very good fit, but we would observe that method 3 appears to fit better overall. The method 1 graph appears to suggest that the results may be being materially influenced by one firm with a volatility 70% higher than the next largest (and more than five times larger than the next largest at a similar volume). As this firm has a relatively large volume it may have a correspondingly larger effect on methods 2 and 3 than on method 1. It is not clear if there is evidence for diversification credit for size, any evidence only appears to apply for the smallest of firms (volume <5,000). Even for the smallest firms it is not clear if there is evidence for diversification credit, or more range of undertaking specific volatilities	Noted

			for smaller firms. Given the data and parameterisation methods applied, this parameter selection appears reasonable.	
595.	ABI	3.279.	Using gross data is likely to overstate variability. Results cover a very broad range, namely they are between 7% and 163%. Picking a number out of this range can become an arbitrary act. More analysis, is needed in order to obtain a result which can really be justified.	Noted. We are awaiting industry suggestions for dealing more appropriately with non proportional reinsurance. Also we will be performaing a recalibration exercise using more data. Noted. Hopefully the addional data for the recalibration exercise will improve the position. We will clarify the selections as part of the recalibration.
596.	AMICE	3.279.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
597.	CEA	3.279.	Using gross data is likely to overstate variability. Results cover a very broad range, namely they are between 7% and 163%. Picking a number out of this range can become an arbitrary act. Much more effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 595
598.	ACA	3.281.	In spite of the remove of these undertakings we are very surprised by the volatility calculate by the various methods. Given the nature of this Lob, the volatility must be small (short duration, not risk of IBNER).	Noted. The calibration was based on data available as explained in the paper.
599.	Foyer			
600.	UNESPA	3.286.	The information used for the calibration process is gross of Reinsurance.	See comment 475

			This fact could imply an increase of the volatility of the calibration. Once again, the sample not seems enough.	
601.	ABI	3.286.	Given that method 4 has been deemed an appropriate benchmark in 3.285 why has the fitted average been calculated as an average of method 4 and method 5 instead of just using method 4?	Noted. We felt it was appropriate to take account of the higher results produced by other methods. We will clarify this as part of the recalibration exercise.
602.	CEA	3.286.	Given that method 4 has been deemed an appropriate benchmark in 3.285 why has the fitted average been calculated as an average of method 4 and method 5 instead of just using method 4?	See corresponding points to comment 601.
603.	Deloitte	3.286.	Given that method 4 has been deemed an appropriate benchmark in 3.285 why has the fitted average been calculated as an average of method 4 and method 5 instead of just using method 4?	See corresponding points to comment 601.
604.	AMICE	3.287.	Marine, aviation, transport (MAT)	Noted.
605.	EMB Consultancy LLP	3.287.	This comment covers paragraphs 3.287-3.291 It is not clear what units the volume is in. We would comment that method 3 appears to be the best fit overall to the data. There appears to be evidence for diversification credit for size, however this appears to be driven by a few observations for larger firms. Given the data and parameterisation methods applied, this parameter selection appears reasonable.	Noted
606.	ABI	3.288.	Results cover a very broad range, namely they are between 28% and 102%. Picking a number out of this range can become an arbitrary act. Much more effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	Noted. Hopefully the addional data for the recalibration exercise will improve the position. We will clarify the selections as part of the recalibration.
607.	AMICE	3.288.	AMICE will provide additional calibration studies by the end of January	Noted.

			2009.	
608.				
609.	CEA	3.288.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors. Results cover a very broad range, namely they are between 28% and 102%. Picking a number out of this range can become an arbitrary act. Much more effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 606
610.	CRO Forum	3.288.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors.	See comment 606
611.	Munich Re	3.288.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors.	See comment 606
612.	UNESPA	3.291.	The calibration process has been based on 49 participant entities data. Once again, the sample not seems enough.	Noted. We are collecting more data for the recalibration exercise which will hopefully help to address this point.
613.	ABI	3.291.	Why is the recommended factor consistent with method 4 for a large to medium sized portfolio been used when the fitted factor from method 4 seems to be adequate? Given that the large to medium sized factors were used how was the recommended 17.5% factor reached?	Noted. We will clarify the selection in the recalibration exercise. We were simply observing here that our selection seemed reasonable.
614.	CEA	3.291.	Why is the recommended factor consistent with method 4 for a large to medium sized portfolio been used when the fitted factor from method 4 seems to be adequate? Given that the large to medium sized factors were used how was the recommended 17.5% factor reached?	See comment 614.

615.	Deloitte	3.291.	Why is the recommended factor consistent with method 4 for a large to medium sized portfolio been used when the fitted factor from method 4 seems to be adequate? Given that the large to medium sized factors were used how was the recommended 17.5% factor reached?	See comment 614.
616.	EMB Consultancy LLP	3.292.	This comment covers paragraphs 3.292-3.297 It is not clear what units the volume is in. Neither method 2 nor method 3 appears a very good fit, but we would observe that method 2 appears to fit better overall. There appears to be evidence for diversification credit for size, however this appears to only apply for firms with volume <75,000. The assumption of continuing diversification credit may lead to an overstatement of the level of volatility. Even for the smallest firms it is not perfectly clear if there is evidence for diversification credit, or more range of undertaking specific volatilities for smaller firms. We note that the volume of some firms are very different between method 1, and methods 4,5, and 6. This would seem to imply that the chain ladder reserves were very different from the reserves held which may reduce the credibility of the Merz-Wuthrich results. Given the data and parameterisation methods applied, this parameter selection appears potentially understated for firms with volume <50,000.	Noted
617.	ABI	3.293.	Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 606
618.				
619.	CEA	3.293.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors. Results cover a very broad range. Picking a number out of this range can	Noted. More data for the recalibration exercise has been collected.

			become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 606
620.	CRO Forum	3.293.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors.	Noted. More data for the recalibration exercise has been collected.
621.	Munich Re	3.293.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors.	See comment 620
622.	KPMG ELLP	3.297.	The factor is selected based on the methods that gave the lowest results.	Noted. Judgement has been used in making the selections.
623.	AMICE	3.298.	Third-party liability	Noted.
624.	EMB Consultancy LLP	3.298.	This comment covers paragraphs 3.298-3.306 The use of gross data is likely to affect the volatility parameterisation, though as we stated earlier, it is not clear what bias this would give. Nevertheless this reduces the credibility of this parameter. It is not clear what units the volume is in. We would agree that method 3 appears to provide the best fit. There may be weak evidence for diversification credit for size. It is not clear if there is evidence for diversification credit, or more range of undertaking specific volatilities for smaller firms. We note that the volume of some firms are very different between method 1, and methods 4,5, and 6. This would seem to imply that the chain ladder reserves were very different from the reserves held which may reduce the credibility of the Merz-Wuthrich results. With reference to the method 1 graph, the selected parameter of 20% appears overstated for any firm with volume > 50,000, and may be	Noted

			overstated for all firms.	
625.	ABI	3.299.	Using gross data is likely to overstate variability. Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 595
626.	AMICE	3.299.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
627.	CEA	3.299.	Using gross data is likely to overstate variability. Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 595
628.	AMICE	3.305.	CEIOPS mentions that Method 4 produces results that are clearly too small. The reliability of a method and not larger or smaller results should be the factor to take into account.	Noted. We will clarify as part of the recalibration exercise.
629.	UNESPA	3.306.	The information used for the calibration process is gross of Reinsurance. This fact could imply an increase of the volatility of the calibration. It is not clear which methods have been used for obtaining the final selection (method number 3 has not been used considering its adjustment in the pp-plot; method number 4 has been rejected because of its results were quite low). Methods number 1 and 2 are the only ones that have been considered. How come could be justified a factor equivalent to 20?	Noted. We will clarify as part of the recalibration exercise.
630.	ABI	3.306.	Given that method 3 seems to fit the data best, going by the pp-plot, and method 4 allows for diversification why haven't they been factored into the recommended factor. The statement that method 1 and 2 both give results consistent with the recommendation of 20% makes it seem like the recommendations are determined first and the analysis performed to fit the decided recommendation.	Noted. We will clarify as part of the recalibration exercise.

631.	CEA	3.306.	Given that method 3 seems to fit the data best, going by the pp-plot, and method 4 allows for diversification why haven't they been factored into the recommended factor. The statement that method 1 and 2 both give results consistent with the recommendation of 20% makes it seem like the recommendations are determined first and the analysis performed to fit the decided recommendation.	See comment 630
632.	Deloitte	3.306.	Given that method 3 seems to fit the data best, going by the pp-plot, and method 4 allows for diversification why haven't they been factored into the recommended factor. The statement that method 1 and 2 both give results consistent with the recommendation of 20% appear inconsistent with the analysis of methods 3 and 4.	See comment 630
633.	AMICE	3.307.	Credit and suretyship	Noted.
634.	EMB Consultancy LLP	3.307.	This comment covers paragraphs 3.307-3.315 The use of gross data is likely to affect the volatility parameterisation, though as we stated earlier, it is not clear what bias this would give. Nevertheless this reduces the credibility of this parameter. The use of only 27 undertakings data suggests that there may be material uncertainty over the credibility of the selected parameter. It is not clear what units the volume is in. We would agree that method 3 appears to show the best fit. We would comment that the overall fit should be regarded as important, rather than just the tail. It is difficult to see evidence for diversification credit, given the range of volatilities applied. Evidence for diversification credit is highly reliant on the two largest entities. As such, methods which assume diversification credit may be overstating the volatility. The data is too volatile, and the sample size too small to be able to say whether the recommended factor is reasonable, however given the data	Noted

			presented, it may be that the selected parameter of 20% is understated, especially for smaller firms.	
635.	KPMG ELLP	3.307.	The factor selected has little bearing with the results of the statistical analysis which would suggest more conservative factors.	Noted
636.	ABI	3.308.	Using gross data is likely to overstate variability. Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 595
637.	AMICE	3.308.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
638.				
639.	CEA	3.308.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors. Using gross data is likely to overstate variability. Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 620 See comment 595
640.	CRO Forum	3.308.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors.	See comment 620
641.	Munich Re	3.308.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors.	See comment 620
642.	Groupe Consultatif	3.309.	The negative incremental paid coming in the later stages of the triangles raises the following question: how the direct receivables (to differentiate	We agree. However data as specified was not available to us for the

			from reinsurance recoveries) have been treated in the triangles? Those negatives incremental could be explained by direct receivables registered by undertakings in the last development years of a claim which is not surprising. Ideally, for LOB where direct receivables can represent a significant percentage of ultimate claim, we recommend to perform an analysis gross of direct receivables and to separately assess ultimate receivables in order to deduct them from ultimate claims (gross of direct receivables).	calibration analysis, and we do not believe it is widely available from published sources. Is GC aware of any suitable data for our analysis?
643.	Institut des actuaires	3.309.	The negative incremental paid coming in the later stages of the triangles raises the following question: how the direct receivables (to differentiate from reinsurance recoveries) have been treated in the triangles? Those negatives incremental could be explained by direct receivables registered by undertakings in the last development years of a claim which is not surprising. Ideally, for LOB where direct receivables can represent a significant percentage of ultimate claim, we recommend to perform an analysis gross of direct receivables and to separately assess ultimate receivables in order to deduct them from ultimate claims (gross of direct receivables).	See comment 642.
644.	ICISA	3.314.	CEIOPS acknowledges that the graph shows some evidence for the effect of diversification for volume. It could be appropriate to try to discriminate the parameter to reflect volume. Otherwise the standard deviation may be overstated for larger undertakings and understated for smaller undertakings. We note the objective is to produce a single standard deviation per line of business – and therefore it is not possible to produce two or more parameters to reflect volume and diversification effects. Therefore, in practice, if a supervisor is comparing the standard formula parameters to undertaking specific parameters or a (partial) internal model, the supervisor should be conscious of this apparent limitation and take it into account.	See comment 386
645.	UNESPA	3.315.	The information used for the calibration process is gross of Reinsurance.	See comment 595

			This fact could imply an increase of the volatility of the calibration. The calibration process has only been based on 27 participant entities. None of them belong of the German insurance market. The selected factor will be notably influenced by the UK insurance market. It is not specified how the selected factor has been derived. The selection of this factor seems to be arbitrary.	
646.	ABI	3.315.	No mention of how the final recommended factor was achieved. Given the highly unstable data, we doubt if a recommendation can be given based on this data.	Noted. We will clarify selections as part of the recalibration exercise. We have been collecting more data for the recalibration exercise.
647.	CEA	3.315.	No mention of how the final recommended factor was achieved. Given the highly unstable data, we doubt if a recommendation can be given based on this data.	See comment 646.
648.	Deloitte	3.315.	No mention of how the final recommended factor was achieved. Given the highly unstable data, we doubt if a recommendation can be given based on this data.	See comment 646.
649.	Groupe Consultatif	3.315.	How is the factor of 20% motivated given the results of the methods which are much higher? A greater data sample may help.	See comment 646.
650.	KPMG ELLP	3.315.	It is not clear how the factor of 20% was determined given the results of the methods indicate a much higher number. We believe that a greater data sample may help.	See comment 646.
651.	AMICE	3.316.	Legal expenses	Noted.
652.	EMB Consultancy LLP	3.316.	This comment covers paragraphs 3.316-3.323. The use of gross data is likely to affect the volatility parameterisation, though as we stated earlier, it is not clear what bias this would give. Nevertheless this reduces the credibility of this parameter.	Noted.

			The use of only 35 undertakings data suggests that there may be material uncertainty over the credibility of the selected parameter. It is not clear what units the volume is in. We would agree that methods 2 and 3 appear to show the fit in the tail, however there would appear to be material overstatement of the volatility for many firms who do not have the highest result. We would comment that the overall fit should be regarded as important, rather than just the tail. It is difficult to see evidence for diversification credit, given the range of volatilities applied. We note that the volume of many firms are very different between method 1, and methods 4,5, and 6. This would seem to imply that the chain ladder reserves were very different from the reserves held which may reduce the credibility of the Merz-Wuthrich results. The data is too volatile, and the sample size too small to be able to say whether the recommended factor is reasonable, however given the data presented, it may be that the selected parameter of 12.5% is understated, especially for smaller firms. However the data observed is weighted towards the smaller end, so the selection could be reasonable overall if diversification credit does exist. There would appear to be weak evidence to justify a change from QIS4 levels however.	
653.	ABI	3.317.	Using gross data is likely to overstate variability. Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 595
654.	AMICE	3.317.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
655.				

656.	CEA	3.317.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors. Using gross data is likely to overstate variability. Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 639.
657.	CRO Forum	3.317.	Due to the volume weightings used we suspect that the analysis is dominated by DE data and thus not suitable to calibrate EEA-wide factors.	See corresponding points to comment 620.
658.	Munich Re	3.317.	Due to the volume weightings used we suspect that the analysis is dominated by DE data and thus not suitable to calibrate EEA-wide factors.	See corresponding points to comment 638.
659.	ABI	3.318.	Fit appears to be very poor overall.	We agree. The fit may be poor for some methods.
660.	CEA	3.318.	Fit appears to be very poor overall.	See comment 659.
661.	Groupe Consultatif	3.322.	For my understanding, the results of method 4 and 2 imply a factor of 15%.	Noted.
662.	UNESPA	3.323.	The information used for the calibration process is gross of Reinsurance. This fact could imply an increase of the volatility of the calibration. The calibration process has only been based on 35 participant entities. None of them belong to the UK insurance market. The selected factor will be outstandingly influenced by the German insurance market. In section 3.320 it has been commented some evidences of volume diversification. In section 3.322 it has been commented that method number 5 does not allow taking into consideration that fact. On the contrary, that method belongs to the set of factors that are used for the final selection of the	Noted. This will be clarified following the recalibration exercise.

			factor. It is not specified which weighted averages have been used for obtaining the proposed factor.	
663.	ABI	3.323.	Given that 3.322 states that method 4 and 2 provide a good fit, and since method 5 "ignores some important observations", why has the final factor been based off method 5 and method 1? Shouldn't 4 be factored into the final recommendation? Given that the analysis has been conducted based on the data of only 35 undertakings, we question if it is adequate enough.	Noted. This will be clarified following the recalibration exercise.
664.	CEA	3.323.	Given that 3.322 states that method 4 and 2 provide a good fit, and since method 5 "ignores some important observations", why has the final factor been based off method 5 and method 1? Shouldn't 4 be factored into the final recommendation? Given that the analysis has been conducted based on the data of only 35 undertakings, we question if it is adequate enough.	See comment 663.
665.	Deloitte	3.323.	Given that 3.322 states that method 4 and 2 provide a good fit, and since method 5 "ignores some important observations", why has the final factor been derived from method 5 and method 1? Shouldn't 4 be factored into the final recommendation? Given that the analysis has been conducted based on the data of only 35 undertakings, we question if it is adequate enough.	See comment 663.
666.	Groupe Consultatif	3.323.	3.322 mentions that method 4 and 2 provide good fits whereas method 5 seems to ignore important observations. Why is then the choice of the factor based on methods 5 and 1?	See comment 663.
667.	KPMG ELLP	3.323.	3.322 mentions that method 4 and 2 provide good fits whereas method 5 seems to ignore important observations. It is therefore not clear to us why the choice of the factor is based on methods 5 and 1	See comment 663.
668.	AMICE	3.324.	Assistance	Noted.
669.	EMB Consultancy LLP	3.324.	This comment covers paragraphs 3.324-3.329. The use of gross data is likely to affect the volatility parameterisation,	Noted.

			though as we stated earlier, it is not clear what bias this would give. Nevertheless this reduces the credibility of this parameter. The use of only 6 undertakings data suggests that there may be material uncertainty over the credibility of the selected parameter. It is not clear what units the volume is in. We would agree that methods 2 and 3 appear to show the fit in the tail, however there would appear to be material overstatement of the volatility for many firms who do not have the highest result, especially for method 2. We would comment that the overall fit should be regarded as important, rather than just the tail. It is difficult to see evidence for diversification credit, given the range of volatilities applied. We note that the volume of many firms are different between method 1, and methods 4,5, and 6. This would seem to imply that the chain ladder reserves were very different from the reserves held which may reduce the credibility of the Merz-Wuthrich results. The data is too volatile, and the sample size too small to be able to say whether the recommended factor is reasonable, however given the data presented, it may be that the selected parameter of 15% is understated, especially for smaller firms. However the data observed is weighted towards the smaller end, so the selection could be reasonable overall if diversification credit does exist. There would appear to be weak evidence to justify a change from QIS4 levels however.	
670.	ABI	3.325.	Using gross data is likely to overstate variability. This is based on very limited data. Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 595.
671.	AMICE	3.325.	AMICE will provide additional calibration studies by the end of January	Noted.

			2009.	
672.				
673.	CEA	3.325.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors. In addition, the sample size of 6 companies is too small to draw reasonable conclusions. Using gross data is likely to overstate variability. Results cover a very broad range. Picking a number out of this range can become a purely arbitrary act. More effort is needed, that is much more analysis, in order to obtain a result which can really be justified.	See comment 639.
674.	CRO Forum	3.325.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors. In addition, the sample size of 6 companies is too small to draw reasonable conclusions.	See comment 620.
675.	Groupe Consultatif	3.325.	Very small data sample. Should be increased to fix the factor.	See comment 620.
676.	KPMG ELLP	3.325.	We note that this is a very small data sample, and we believe this should be increased to fix the factor.	See comment 620.
677.	Munich Re	3.325.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors. In addition, the sample size of 6 companies is too small to draw reasonable conclusions.	See comment 620.
678.	ABI	3.326.	Fit appears to be very poor overall.	See comment 659.
679.	CEA	3.326.	Fit appears to be very poor overall.	See comment 659.

680.	UNESPA	3.329.	The information used for the calibration process is gross of Reinsurance. This fact could imply an increase of the volatility of the calibration. The calibration process has only been based on 6 participant entities. None of them belong to the German insurance market. The selected factor will be notably influenced by the UK insurance market. The methods introduce absolutely different results from each other. This fact could be explained by the volume of the data that has been performed. In our opinion there is lack of data on the process.	See comment 662
681.	ABI	3.329.	Given that the final recommendation is based from the analysis of 6 undertakings, can it be considered adequate?	See comment 620
682.	CEA	3.329.	Given that the final recommendation is based from the analysis of 6 undertakings, can it be considered adequate enough?	See comment 620
683.	Deloitte	3.329.	Given that the final recommendation is based from the analysis of 6 undertakings, can it be considered adequate enough?	See comment 620
684.	AMICE	3.330.	Miscellanous	Noted.
685.	EMB Consultancy LLP	3.330.	This comment covers paragraphs 3.330-3.337. The use of gross data is likely to affect the volatility parameterisation, though as we stated earlier, it is not clear what bias this would give. Nevertheless this reduces the credibility of this parameter. The use of only 35 undertakings data suggests that there may be material uncertainty over the credibility of the selected parameter. It is not clear what units the volume is in. We would agree that methods 2 and 3 appear to show the fit in the tail, however there would appear to be material overstatement of the	Noted

			volatility for many firms who do not have the highest result. We would comment that the overall fit should be regarded as important, rather than just the tail. There may be weak evidence for diversification credit for size. It is not clear if there is evidence for diversification credit, or more range of undertaking specific volatilities for smaller firms. We note that the volume of many firms are very different between method 1, and methods 4,5, and 6. This would seem to imply that the chain ladder reserves were very different from the reserves held which may reduce the credibility of the Merz-Wuthrich results. The data is too volatile, and the sample size too small to be able to say whether the recommended factor is reasonable, however given the data presented, it may be that the selected parameter of 20% is generally reasonable, but may prudent for firms with volume > 40,000. There would appear to be weak evidence to justify a change from QIS4 levels however.	
686.	ABI	3.331.	Using gross data is likely to overstate variability.	Noted. CEIOPS has been discussing with industry and a proposal has been included in the final advice. Also a recalibration exercise using more data has been carried.
687.	AMICE	3.331.	AMICE will provide additional calibration studies by the end of January 2009.	Noted.
688.				
689.	CEA	3.331.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors. Using gross data is likely to overstate variability.	See comment 595

690.	CRO Forum	3.331.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors.	See comment 620
691.	Munich Re	3.331.	Due to the volume weightings used we suspect that the analysis is dominated by UK data and thus not suitable to calibrate EEA-wide factors.	See comment 620
692.	KPMG ELLP	3.332.	We have the contradiction here that the methods used for the calibration of the "Factor Method" are either based on data from large countries (UK and Germany) or on outputs from cat models for perils which are captured in the cat modelling softwares, ie most common perils in key territories with good exposure and loss data available. However, the scope of application of the "Factor Method" is very different: it will be applied to companies with risk profile not well represented by standardised scenarios, miscellaneous cat business, non material business outside of the EEA, etc…	Noted. Also see corresponding points to comment 757.
693.	ABI	3.337.	Given that Method 2 and 3 provide a good fit and imply that a factor above 20% should be used and Method 1 suggests that half of the observations do indeed lie above the fitted factor of 25% how was the conclusion of factor of 20% reached. Given that the data used for the analysis was from 35 undertaking can the data be considered adequate?	Noted. Additional data for the recalibration exercise has been gathered to improve the analysis.
694.	CEA	3.337.	Given that Method 2 and 3 provide a good fit and imply that a factor above 20% should be used and Method 1 suggests that half of the observations do indeed lie above the fitted factor of 25% how was the conclusion of factor of 20% reached. Given that the data used for the analysis was from 35 undertaking can the data be considered adequate?	See comment 693.
695.	Deloitte	3.337.	Given that Method 2 and 3 provide a good fit and imply that a factor above 20% should be used and Method 1 suggests that half of the observations do indeed lie above the fitted factor of 25% how was the conclusion of factor of 20% reached. Given that the data used for the analysis was from 35 undertakings can the data be considered adequate?	See comment 693.

696.	Groupe Consultatif	3.337.	3.335 mentions that a factor above 20% is implied by method 2 and 3. 3.336 describes that half of the observations lie above and below a factor of 25%. Why a factor of 20% is chosen?	See comment 693.
697.	KPMG ELLP	3.337.	Given that 3.335 mentions that a factor above 20% is implied by method 2 and 3 and 3.336 describes that half of the observations lie above and below a factor of 25%, it is unclear to us why a factor of 20% has been chosen.	See comment 693.
698.	ABI	3.338.	This analysis is based on only 6 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well justified.	See comment 620.
699.	CEA	3.338.	This analysis is based on only 6 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 620.
700.	DIMA	3.338.	Reserve risk: We have rarely seen in practice reserve levels being 30% deficient except in cases where there is an emergence of latent claims such as asbestos. For such cases, we believe that they should be considered in the best estimates of the reserves rather than in the standard deviation of the reserves since when they do occur, they occur unexpectedly and are unlikely to be measurable from existing data triangles. This point should be considered in the analysis and the calibration.	We disagree. The fact that you have seen such levels of deterioration in the past would suggest that the suggested factor is not overstated.
701.	EMB Consultancy LLP	3.338.	This comment covers paragraphs 3.338-3.342. The use of only 6 undertakings data suggests that there may be material uncertainty over the credibility of the selected parameter. It is not clear what units the volume is in. The data is too volatile, and the sample size too small to be able to say whether the recommended factor is reasonable. There would appear to	Noted

			be weak evidence to justify a change from QIS4 levels however.	
702.	Groupe Consultatif	3.338.	This analysis is based on only 6 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 620
703.	Lloyds	3.338.	It is not clear whether the effects of catastrophe events remain within the data used for calibration of this line of business; if they do, the factors would be overstated and result in a double-count of catastrophe risk.	Noted. We have been collecting additional data, excluding catastrophes, to address this point.
704.	ABI	3.339.	This is based on very limited data.	Noted. We have been collecting additional data.
705.				
706.	CEA	3.339.	This is based on very limited data.	See comment 704
707.	CRO Forum	3.339.	In our view the sample size is too small to draw meaningful conclusions.	See comment 704
708.	Munich Re	3.339.	In our view the sample size is too small to draw meaningful conclusions.	See comment 704
709.	ABI	3.340.	Fit appears to be very poor overall.	See comment 659.
710.	CEA	3.340.	Fit appears to be very poor overall.	See comment 659.
711.	UNESPA	3.342.	Due to the data deficiency (six entities) the information is only based on the UK insurance market. It is not possible to define the factor based on that information. Results coming from the adjustment methods are notably different.	See comment 620
712.	ACA	3.342.	Conclusions unacceptable, unless a paper on the calibration of the reinsurance will be given later?	See comment 704
713.				
714.	Lloyds	3.342.	If the lack of data means it is not possible to draw definite conclusions, it is not clear why the factors selected have been doubled from those used	Noted. It was felt appropriate to reflect the results that were

			for QIS4.	available. See also comment 704
715.	DIMA	3.343.	See 3.338	See comment 700.
716.	EMB Consultancy LLP	3.343.	This comment covers paragraphs 3.338-3.347. The use of only 4 undertakings data suggests that there may be material uncertainty over the credibility of the selected parameter. It is not clear what units the volume is in. The data is too volatile, and the sample size too small to be able to say whether the recommended factor is reasonable. There would appear to be weak evidence to justify a change from QIS4 levels however.	Noted
717.	Lloyds	3.343.	It is not clear whether the effects of catastrophe events remain within the data used for calibration of this line of business; if they do, the factors would be overstated and result in a double-count of catastrophe risk.	See comment 703.
718.	ABI	3.344.	This is based on very limited data. This analysis is based on only 4 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	Noted. It was felt appropriate to reflect the results that were available. See also comment 704
719.				
720.	CEA	3.344.	This is based on very limited data. This analysis is based on only 4 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 718
721.	CRO Forum	3.344.	In our view the sample size is too small to draw meaningful conclusions.	See comment 704
722.	Groupe Consultatif	3.344.	This analysis is based on only 4 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 718
723.	Munich Re	3.344.	In our view the sample size is too small to draw meaningful conclusions.	See comment 704

724.	UNESPA	3.347.	Due to the data deficiency (four entities) the information is only based on the UK insurance market. It is not possible to define the factor based on that information. Results coming from the adjustment methods are notably different.	See comment 718
725.	ABI	3.347.	Given that it was not possible to draw definite conclusions due to the lack of information, how was the 30% arrived at?	Noted. More clarification may be provided.
726.	CEA	3.347.	Given that it was not possible to draw definite conclusions due to the lack of information, how was the 30% arrived at?	See comment 725.
727.	Deloitte	3.347.	Given that it was not possible to draw definite conclusions due to the lack of information, how was the 30% arrived at?	See comment 725.
728.	Lloyds	3.347.	If the lack of data means it is not possible to draw definite conclusions, it is not clear why the factors selected have been doubled from those used for QIS4.	See comment 714
729.	DIMA	3.348.	See 3.338	See corresponding points to comment 700.
730.	EMB Consultancy LLP	3.348.	This comment covers paragraphs 3.338-3.353. The use of only 7 undertakings data suggests that there may be material uncertainty over the credibility of the selected parameter. It is not clear what units the volume is in. The data is too volatile, and the sample size too small to be able to say whether the recommended factor is reasonable. However the results do appear to be strongly influenced by one firm with a standard deviation approximately 90% higher than the next largest. A risk must exist that this firm is an outlier. There would appear to be weak evidence to justify a change from QIS4 levels.	Noted
731.	Lloyds	3.348.	It is not clear whether the effects of catastrophe events remain within the data used for calibration of this line of business; if they do, the factors would be overstated and result in a double-count of catastrophe	See comment 703.

			risk.	
732.	ABI	3.349.	This is based on very limited data. This analysis is based on only 7 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well justified.	See comment 718
733.				
734.	CEA	3.349.	This is based on very limited data. This analysis is based on only 7 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 718
735.	CRO Forum	3.349.	In our view the sample size is too small to draw meaningful conclusions.	See comment 704
736.	Groupe Consultatif	3.349.	This analysis is based on only 7 undertakings from one member state. This is not enough for an accurate assessment of risk and hence the doubling of the risk factor is not well motivated.	See comment 718
737.	Munich Re	3.349.	In our view the sample size is too small to draw meaningful conclusions.	See comment 704
738.	ABI	3.351.	Fit appears to be very poor overall.	See comment 659.
739.	CEA	3.351.	Fit appears to be very poor overall.	See comment 659.
740.	UNESPA	3.353.	Due to the data deficiency (seven entities) the information is only based on the UK insurance market. It is not possible to define the factor based on that information.	See comment 704
741.	ABI	3.353.	Given that it was not possible to draw definite conclusions due to the lack of information, how was the 30% arrived at?	See comment 725.
742.	CEA	3.353.	Given that it was not possible to draw definite conclusions due to the lack of information, how was the 30% arrived at?	See comment 725.
743.	Deloitte	3.353.	Given that it was not possible to draw definite conclusions due to the lack of information, how was the 30% arrived at?	See comment 725.
744.	Lloyds	3.353.	If the lack of data means it is not possible to draw definite conclusions, it	See comment 718

			is not clear why the factors selected have been doubled from those used for QIS4.	
745.	Lloyds	3.354.	Many factors have increased significantly over those from QIS4. For classes with limited data where it is difficult to draw definite conclusions, there is no justification for a change from the QIS4 factors. Though the data request stated a preference for data net of the effects of catastrophe events, it is not clear to what extent the data received did actually exclude these. Any inclusion of catastrophe events within the data used to calibrate factors will lead to a double-count. This is particularly the case for factors relating to some of the non-proportional reinsurance business lines, which have increased significantly.	We do not agree. The revised calibration has been based on much analysis. However, CEIOPS welcomes stakeholders to provide sound evidence proving that a move from QIS4 is not justified. See also corresponding points to comment 1. See corresponding points to comments 1 and 2.
746.	Groupe Consultatif	3.355.	We are surprised that CEIOPS feel able to assert that this correlation calibration is still appropriate given the amount of changes to the volatility factors and lines of business definitions that have taken place since QIS3.	Noted. See corresponding points to comment 750.
747.	ABI	3.356.	The text is a bit confusing. The headline talks about correlations, but the text about the fact that the calibration presented in QIS 3 is appropriate. This could be interpreted as if CEIOPS considers the correlations used for the 12 Non-life LOBs in QIS 3 and QIS 4 as appropriate (Note: these correlations are the same). However, in CP 74, Annex B, CEIOPS discuss a changed correlation matrix. Finally, we note that according to Annex B of CP 74, the calibration of the correlation matrix is part of an impact assessment, and therefore not concluded.	Noted. This will be revised to clarify Noted.

748.	CEA	3.356.	The text is a bit confusing. The headline talks about correlations, but the text about the fact that the calibration presented in QIS 3 is appropriate. This could be interpreted as if Ceiops considers the correlations used for the 12 Non-life LOBs in QIS 3 and QIS 4 as appropriate (Note: these correlations are the same). However, in CP 74, Annex B, Ceiops discuss a changed correlation matrix. Finally, we note that according to Annex B of CP 74, the calibration of the correlation matrix is part of an impact assessment, and therefore not concluded.	See comment 747.
749.	Deloitte	3.356.	We note that according to Annex B of CP74, the calibration of the correlation matrix is part of an impact assessment, and therefore not concluded.	Noted.
750.	KPMG ELLP	3.356.	We are left with the feeling that CEIOPS did not have time or resources to carry out an analysis of correlations and therefore did not go through a validation exercise of the assumptions made for QIS3 to underpin their statement that "they consider the calibration to be appropriate".	We agree. CEIOPS has not done much analysis on correlations for Non life. However we also consider this an area where it is difficult to carry out any robust analysis, due to the difficulty and lack of data as well as the time pressures we are under. We would welcome any supporting analysis or evidence from the industry proving the contrary. CEIOPS will try to revise this.
751.	RBS Insurance	3.356.	Given the importance of this document as a future reference, we believe that it would be more appropriate to include the details in text rather than using a hyperlink to reference another document. This would seem important enough to be repeated.	We agree. This will be considered and clarified.
752.	ABI	3.357.	The correlation factor of 50% between premium and reserve risk may lead to an overestimation of risk capital. Analyses of individual insurance data showed that a correlation factor of less than 25% is appropriate.	Noted. See comment 750. We would welcome ABI input and analysis which suggests 25% or less is more appropriate.

753.	AMICE	3.357.	CEIOPS states that for the correlation between premium and reserve risk, the QIS4 of 50% should be kept. AMICE members believe that the correlation between premium and reserve risks should not be the same for short and long tail branches.	Noted. See comments 747 and 750.
754.	CEA	3.357.	The correlation factor of 50% between premium and reserve risk may lead to an overestimation of risk capital. Analyses of individual insurance data showed that a correlation factor of less than 25% is appropriate. ☐ In principle, the dependencies between premium and reserve risk should reflect the fact that the claim development result (reserving risk) and the first loss ratio pick (premium risk) may or may not rely on the same type of information depending on the line of business. ☐ Generally and due to the time lag of information, the claim development result for long tail lines such as liability will determine to some extent the first loss ratio pick of the current year. By contrast, in short tail lines the first loss ratio is usually based on more reliable information about the actual incidents.	Noted. See comment 750. We disagree. Leaving aside the point for multi-year contracts, first loss ratio pick is not the whole of premium risk, this is not a complete statement. Some information is common. Premiums are set having regard to the latest information on claims. If that information proves inaccurate (which is what reserve risk is picking up) then the premiums and premium provisions will be similarly inaccurate. So we should expect greater correlation between premium and reserve risk for one line of business than between lines of business. Noted.

			☐ Thus, it might be argued that dependencies between premium and reserve risk should be higher for long-tail lines compared to short-tail lines.	Noted.
			☐ Further, the dependency between premium and reserve risk may differ between the lines of business considered in the standard formula, especially for non-proportional reinsurance.	
			☐ A generic correlation of 50% between one of the non-proportional lines and its "normal" counterpart(s) (i.e. proportional segments) is not justified in our view.	Noted. In an ideal world yes, but in view of the practical difficulties, it is not obvious what should replace it
			☐ The determination of premium for non-proportional reinsurance is independent of the premium calculation of the underlying business.	We disagree. How do you calculate non-proportional reinsurance of motor? X% of original premium? This is directly dependent. Further work has been carried out on non-proportional reinsurers and has included a proposal in the final advice.
			☐ As non-proportional reinsurance covers large losses, different considerations compared to primary / proportional will be performed when setting IBNR reserves.	
			☐ The uniform 50% correlation of misc. with all other lines seems unjustified from our view. This LoB will consist of various different kinds of products which cannot be grouped under the other LoBs and thus a low degree of dependency is to be expected	We agree. Which is why correlation < 100%.
			☐ Compared to previous calibrations the correlation between CAT and pricing / reserving risk is now 0,25 instead of 0 which we think is too prudent especially when taking the issue of double-counting of CAT-	Noted

			events into account due to data reasons. Thus, neither premium nor reserve risk seem to justify a high correlation of 50%. This is a result of the fact, that premium and reserve risk has been already aggregated within each LoB by a "political" correlation 50% and the subsequent aggregation across LoBs. To solve all these shortcomings we propose a fundamentally different way to calculate the non-life basic risk NL-SCR: ☐ Determine σ separate for reserve risk with formula from 3.23. ☐ Determine σ separate for premium risk with formula from 3.23. ☐ Determine the SCRres and SCRprem for each LoB using the formula in 3.21 and 3.19. ☐ Aggregate the two SCRs with a politically fixed correlation of proposed 0.5 instead of the approach in 3.20. The German market estimated correlations nearby 0 for the aggregation of the reserve risks across LoBs and correlations nearby Ceiops matrix (or smaller) for the aggregation of the premium risks across LoBs (cf. CP 74).	Noted. We would agree that there should be low correlation between CAT and reserving risk but would expect a quite high correlation between CAT and premium risk - when premiums are soft, weak terms and conditions are likely to increase CAT exposure; when disasters happen, everything else tends to go wrong. 0.25 might be a reasonable compromise between the two. We disagree.We think that there is likely to be closer correlation between premium and reserve risk in a line of business than between premium or reserve risks in different lines of business. Thus we prefer to maintain our current approach. Noted.

755.	AMICE	3.358.	Catastrophe risk calibration	Noted.
756.	EMB Consultancy LLP	3.358.	This comment covers paragraphs 3.358-3.394. It is difficult to comment on the catastrophe calibration exercise. In general the methods applied appear reasonable, though we would comment that an analysis of the results of firms' internal models may add further credibility to the results. We find it difficult to comment on the appropriateness of the catastrophe risk factors, due to the change in basis since QIS4. We would expect that QIS5 will resolve this issue further, and would request that the factors are reviewed at that point.	Noted. We would welcome EMB to share this information with CEIOPS. Noted. See corresponding points to comments 3, 7 and 16.
757.	CEA	3.359.	Although the need of a factor approach is described in Ceiops-DOC-41/09 and repeated in this CP, many reasons why a factor approach is not appropriate are mentioned in 3.362. A factor-based approach can be used in those cases only, where one catastrophic event will affect a great number of risks (e.g. natural catastrophes); so the market loss is generated by the accumulation of many losses and can be allocated in a linear way to the undertakings according to their market share. Those cases, where the catastrophic loss is one single outstanding claim (man-made catastrophes), require a non-linear approach as the risk for small undertakings will otherwise be severely underestimated. Therefore we think that the factor approach is not appropriate. The reasons for the refusal are laid down in the following reference points. There is also a proposal for an alternative approach, which could be calculated if a scenario approach is not applicable.	We agree. The factor approach is by no means a default method. And we are aware of its limitations. CEIOPS CAT Task Force is currently working on the standardised scenarios which will provide for a more robust alternative. However their may be circumstances when the standardised scenarios may not be approapriate, for example these will only cover EU exposures. Therefore, stakeholders will need to consider alternatives such as the factor method (if appropriate) or otherwise a PIM or capital add-on.
758.	GDV	3.359.	Allthough the need of a factor approach is discribed in CEIOPS-DOC-	Noted. See comment 757.

			41/09 and repeated in this CP, many reasons why a factor approach is not appropriate are mentioned in 3.362. A factor-based approach can be used in those cases only, where one catastrophic event will affect a great number of risks (e.g. natural catastrophes); so the market loss is generated by the accumulation of many losses and can be allocated in a linear way to the undertakings according to their market share. Those cases, where the catastrophic loss is one single outstanding claim (man-made catastrophes), require a non-linear approach as the risk for small undertakings will otherwise be severely underestimated. Therefore we think that the described factor appoach is not appropriate. The reasons for the refusal are laid down in the following reference points. There is also a proposal for an alternative approach, which could be calculated if a scenario approach is not applicable.	
759.	ABI	3.360.		No comment available.
760.	CEA	3.360.	Ceiops has refined the calibration provided in QIS 4. That is in line with the intention that Ceiops has mentioned earlier. One problem is that neither in this CP, nor in CP 48 on Non-life UW risk is it explained how the factor method should be calculated. Should it be as in the "standard approach" in QIS 4 (TS.XIII.C) or in accordance to the German approach described in QIS 4 TS.XVII.E?c	Noted. Calculation should be as in the "standard approach" in QIS 4 (TS.XIII.C). CEIOPS notes it is necessary to clarify this in the revised paper and QIS5 technical specifications. Once the standardised scenarios have been defined the whole risk module should be clearer.
761.	CEA	3.361.	In the table of events and lines of business affected only the main line of business should be mentioned. For example "motor, other classes" is rarely affected by storm, flood and earthquake. It should be deleted related to these events.	Noted

			If it is supposed, that "miscellaneous" events are all events not mentioned in the other classes, these events should be allocated to the relevant line of business and not to the "miscellaneous" line of business.	We do not agree. There is a line of business called Miscellaneaous. This LOB will include all exposures that do not fall into the other LOB. The CAT factor for miscellaneaous should only refer to those exposures. We may need to make it clearer.
762.	GDV	3.361.	In the table of events and lines of business affected only the main line of business should be mentioned. For example "motor, other classes" is rarely affected of Storm, flood and earthquake It should be deleted related to these events. If it is supposed, that "miscellaneous" events are all events not mentioned in the other classes, these events should be allocated to the relevant line of business and not to the "miscellaneous" line of business.	See corresponding points to comment 761.
763.	Groupe Consultatif	3.361.	A major fire or explosion could affect the Motor line of business (eg. AZF explosion in 2001 in France). The inclusion of Motor could be considered in the lines of business affected by events such as "major fire, explosions". Moreover, the list of events affecting the LOBs NPL Property, NPL Mat and NPL Casualty should be revised as no event is defined in the current CP.	Noted. We may revise the wording to make this clearer.
764.	Institut des actuaires	3.361.	A major fire or explosion could affect the Motor line of business (eg. AZF explosion in 2001 in France). The inclusion of Motor could be considered in the lines of business affected by events such as "major fire, explosions". Moreover, the list of events affecting the LOBs NPL Property, NPL Mat and NPL Casualty should be revised as no event is defined in the current CP.	See corresponding points to comment 763.
765.	Lloyds	3.361.	It is not clear why Fire and Property is affected by cat factors that are	Noted. More clarification will be

			separated by peril, but NPL Property is not. This may distort the results of the calculation for undertakings with NPL Property business with exposure focussed on one particular peril.	provided.
766.	UNESPA	3.362.	Our principal concern is, again, the available information in order to carry out the correspondent calibration process. Due to the special casuistic of the risk to be modeled, the available information should comply certain requirements and it seems that CEIOS deny. On the one hand, it seems that CEIOPS states that the information volume is not enough in order to obtain a representative factor assuming that CAT event happen once each and every 200 years (1-0,995). On the other hand, the particular countries' features have not been included into the model, such as regulatory requirements, covers topics, the existence of corporations involved in the CAT events (ie. In the Spanish Market taking the example of a CAT that involves the intervention of the Spanish CCS: Hurricane, CCS takes charge of an important amount of the final claim cost for all insurers involved. Such an event could not be declared as CAT by some states and could be supported in more restrictive limits.) It would be recommendable that CEIOPS would run a deeper test taking into consideration the issues explained above.	We agree. Indeed catastrophe is by far the most challenging risk to calibrate under the non life sub module. CEIOPS CAT Task Force is currently working on the standardised scenarios which will be part of the cat risk framework. Hopefully this will provide a more robust analysis of the risk we are trying to capture. However stakeholders need to be realistic that unless a personalised approach is adopted, the estimation of any factor will not be exact under the standard formula. CEIOPS has improved the the method compared to QIS 4: the calculation is gross and stakeholders can apply their respective risk mitigants to estimate the net impact.
767.	CEA	3.362.	We agree to all points mentioned. This may easily lead to the conclusion that the calibration of a factor by event is not sufficiently appropriate. The differences in the risk situation of different Lobs e.g. in household and building is not considered. In household the risk situation is much lower than in building which is not taken into account.	Noted. Indeed this is the case. But the level of granularity at which we carry out the analysis is constrained by the segmentation CEIOPS has proposed and the level of detail at which we can collect data.
768.	Deloitte	3.362.	The factors are based on limited data which is a problem that CEIOPS has highlighted. Since the analysis is based on limited data it will underestimate the factors used for the calibration. These should be given	We agree. However unless a personalised approach is adopted, the estimation of any factor will not

			more thought and further validation of results is necessary.	be exact under the standard formula. CEIOPS has improved the the method compeared to QIS 4: the calculation is gross and stakeholders can apply their respective risk mitigants to estimate the net cat charge. CEIOPS has tried to estimate factors using the data available and consulting with experts. If stakeholders would like to share further analysis with CEIOPS, this would be welcomed.
769.	GDV	3.362.	We agree to all points mentioned. This may easily lead to the conclusion that the calibration of a factor by event is not sufficiently appropriate. The differences in the risk situation of different Lobs e.g. in household and building is not considered. In household the risk situation is much lower than in building which is not taken into account.	See corresponding points to comment 767 and 768.
770.	XL Capital Ltd	3.362.	We appreciate that estimating a factor by event across all EU Countries and for valid undertakings is a difficult task due to lack of data and the nature of cat business. Again we are concerned that CEIOPS has arrived at factors which may not be appropriate.	See corresponding points to comment 767 and 768.
771.	UNESPA	3.363.	According to the issues mentioned above and considering the lack of sensitivity of the selected factor, this option seems to be only recommendable in case that no other option is applicable.	We agree. This is CEIOPS intention.
772.	CEA	3.365.	A simple multiplication with a proportion of net premiums (factor approach) is not appropriate and nor necessary under the standard formula. In particular when a standardised scenario is not appropriate, a full or partial internal model is adequate and necessary. There may be simplifications concerning the process of approval in line with	We do not agree. The calculation is gross and stakeholders are expected to apply their respective risk mitigants to estimate the net cat charge. This is explained in CP48.

			proportionality. Typo: "non" in the last two points should perhaps be deleted? After the final calibration of the cat risk module for QIS5 has been accomplished, Ceiops should keep in mind a procedure to avoid double counting of losses in the basic and cat risk module. Our German member proposes the deduction of the expected value from the cat gross loss.	If the standardised scenarios are not appropriate, CEIOPS would expect firms to apply a Partial internal model, however there may be a few circumstances where this is not possible in which case stakeholders can use the factor method or as a last resort supervisors can request a capital add on. Noted. Noted. CEIOPS will avoid double counting where possible and we wil consider the German proposal.
773.	GDV	3.365.	A simple multiplication with a proportion of net premiums (factor approach) is not appropriate nor necessary under the standard formula. In particular when a standardised scenario is not appropriate, a full or partial internal model is adequate and necessary. There may be simplifications concernig the process of approval in line with proportionality. (delete "non" in the last two points)	See corresponding points to comment 772.
774.	Deloitte	3.366.	We agree.	Noted.
775.	UNESPA	3.368.	The calibration process subject of this paper it is limited exclusively to the factor method.	We do not agree. There is no overestimation. The calibration is gross and undertakings have to

			In order to carry out the calibration process for the correspondent factor, the information that has been considered is gross of Reinsurance. This fact will imply a overestimation of σ due to the volatility.	estimate the net cat charge as described under CEIOPS-DOC-41-09 (design of the non-life underwriting risk). CEIOPS has improved the the method considerably compared to QIS 4: the calculation is gross and stakeholders can apply their respective risk mitigants to estimate the net cat charge.
776.	ABI	3.368.	We welcome the use of entity-specific reinsurance programmes in determining net risk in respect of catastrophe events. Cat risk: it is not clear how the capital required on a net basis is estimated from the gross basis for non proportional reinsurance treaties.	Noted. Noted. More clarification may be provided as part of the QIS 5 technical specifications.
777.	CEA	3.368.	We welcome the use of entity-specific reinsurance programmes in determining net risk in respect of catastrophe events.	Noted.
778.	Deloitte	3.368.	We acknowledge the fact that the parameters in this paper are given gross of reinsurance, while the QIS4 numbers were net of reinsurance. It is important to note that this means that the numbers are not directly comparable.	Noted. We agree
779.	Groupe Consultatif	3.368.	Our main comments are broad in nature and relate to the overall impact of CP71 in its treat of catastrophe risk calibration and we are here allocating them for convenience to this paragraph 3.368. Catastrophe risk in some cases is systemic in nature and therefore it is not appropriate for the EU to assess scenario based approaches on the proposed factor based approach. We have concerns that:	Noted. Noted. See points to 767, 768 and 773.

			(a) there is double-counting of capital between the catastrophe risk and the underwriting risk modules; (b) the effect of excess of loss reinsurance is not appropriately taken into account.	
780.	IUA	3.368.	We are supportive of these changes, as the further segmentation, and allowing undertakings to apply their own reinsurance programmes, improves the risk-sensitivity of the Catastrophe Risk sub-module. That is welcomed. We would however note that reinsurance programmes may change throughout the prospective year, and thus a judgement on what the undertaking expects its reinsurance programme to be over the coming year to be will be necessary. Some principles on how firms can apply reasoned judgements in this regard might be helpful. Furthermore, it is not clear how the capital required on a net basis is estimated from the gross basis, for non proportional reinsurance treaties.	Noted. More clarification will be provided.
781.	ABI	3.369.	We are concerned about the limited geographical diversity of the data used for the analysis.	We agree that the removal of geographical diversification will have a considerable impact for some undertakings. However CEIOPS does not wish to allow for geographical diversification on the following grounds: - how to draw the areas where geographical diversification makes actually sense, - no technical evidence - too complex
782.	CEA	3.369.	We are concerned about the limited geographical diversity of the data used for the analysis.	See corresponding points to comment 781.
783.	Deloitte	3.369.	We are concerned about the limited geographical diversity of the data	See corresponding points to

			used for the analysis.	comment 781.
784.	UNESPA	3.370.	The conclusions extracted from the UK insurance market data will include the particular features of that market. It is necessary to check if those particular features are applicable to other EU insurance markets. Anyway, taking into consideration the calibration process results and according to our point of view, the proposed factors are excessively conservative.	We partially agree. Indeed the calibration has been carried out with limited data. However, the analysis has not been based purely on UK data. We would ask stakeholders to look at CP71. There are two analysis and the final selected factors where based on the results of both of those analysis. Furthermore we would welcome if UNESPA could provide us with an anlaysis of what gross factors would be appropriate for the Spanish market.
785.	Groupe Consultatif	3.373.	There appear to be too few data points to estimate a distribution on the 75th and 99.5th percentile	We agree. See reponse to 768.
786.	Lloyds	3.373.	It is not clear how distributions were fitted at the 75th and 99.5th percentiles using data consisting of only 5-6 points. The results could therefore be considered spurious.	Noted, see points to 785
787.	CEA	3.375.	We urge Ceiops to make this analysis more transparent.	Noted.
788.	Lloyds	3.375.	Not all of the increase from the mean to the 99.5th percentile would be due to catastrophe events alone; some would be due to an increased volume of attritional claims in extreme scenarios. Deducting the mean from the 99.5th percentile is therefore likely to overstate the effects of catastrophe claims.	Noted. However the distributions we used were skewed, so the mean does not represent the 50th percentile, more likely to be closer to the 60th. Also, which percentile ought we to use if we don't use the mean? It's not an easy question to answer.
789.	UNESPA	3.376.	The conclusions extracted from the German insurance market data will include the particular features of that market It is necessary to check if	Noted. Can Unespa provide Spanish factors?

			those particular features are applicable to other EU insurance markets. Anyway, taking into consideration the calibration process results and according to our point of view, the proposed factors are excessively conservative.	
790.	AMICE	3.376.	AMICE members support CEA proposal to calculate the company-gross loss based on the calculation of the market gross loss for each country and LoB first and in a second step the company calculates its "company-gross loss" based on its market share.	Noted. See points to 789.
791.	CEA	3.376.	Our members could not understand the calculation of the gross loss. Such calculations could not be replicated within the GDV model. The idea of the model for man-made catastrophes, especially the non-linear relation between size of the undertaking and risk exposure (lobs: MTPL, TPL, fire) is not met. For this LoBs the factor approach (linear relation!) does not hold. The risk of small undertakings will be extremely underrated, of big ones it will be overrated. If the factor is high enough to fit small undertakings, the capital requirements will be inappropriately high (because of the non-linear relation) for most of the rest. Instead of using one factor for all undertakings (in percent of premiums) to calculate the company-gross loss, we propose an approach consisting of two steps: 1. The calibration of the market gross loss for each country. For example the market gross loss can be calculated using one fixed factor (or percentage) multiplied with the market premium (or sum insured) of a respective country and line of business (for instance 200% for storm). 2. The market gross loss (in EURO) should be used to calculate the company-gross loss taking into account the market share in a linear way (for natural catastrophes) resp. non-linear way (for man-made catastrophes) (cf. formula in 3.382).	Noted. See points to 789.

			As a first approximation, we propose to take into account the German parameters for u, t and a, unless the insurance market in the respective country is far different from the German market. In this case adjustments are needed.	
792.	GDV	3.376.	The idea of the GDV-model for man-made catastrophes is especially the non-linear relation between size of the undertaking and risk exposure (lobs: MTPL, TPL, fire) .For this LoBs the factor approach (linear relation!) does not hold. The risk of small undertakings will be extremely underrated, of big ones it will be overrated. Instead of using one factor for all undertakings (in percent of premiums) to calculate the company-gross loss, we propose an approach consisting of two steps: 1. The calibration of the market gross loss for each country. For example the market gross loss can be calculated using one fixed factor (or percentage) multiplied with the market premium (or sum insured) of a respective country and line of business (for instance 200% for storm). 2. The market gross loss (in EURO) should be used to calculate the company-gross loss taking into account the market share in a linear way (for natural catastrophes) resp. non-linear way (for man-made catastrophes) (cf. formula in 3.382). As a first approximation, we propose to take into account the German parameters for u, t and a, unless the insurance market in the respective country is far different from the German market. In this case adjustments are needed.	Noted. See points to 789.
793.	Groupe Consultatif	3.376.	A pure premium factor approach doesn´t seem to be reasonable at least for man-made cat risks. The GDV approach as described in 3.381-3.383 should be taken into account without translation into a premium factor approach. The man-made cat risk is not adequate described by the	Noted. See points to 789

			premium or the sum insured but needs a more detailed analysis of the underlying business which is provided by the GDV approach.	
794.	KPMG ELLP	3.376.	A pure premium factor approach does not appear reasonable at least for man-made cat risks. The GDV approach as described in 3.381-3.383 should be taken into account without translation into a premium factor approach. We do not believe that the man-made cat risk is not adequately described by the premium or the sum insured but needs a more detailed analysis of the underlying business which is provided by the GDV approach.	Noted. See points to 789
795.	CEA	3.379.	We agree that the approach should be based on sum insured as the original approach of GDV is based on sum insured (see 3.378). It might be difficult to derive pure nat cat premiums. Usage of overall property premiums is not adequate to model the nat cat risk as the coverage of nat cat risks may be different or excluded.	Noted. See points to 789
796.	Groupe Consultatif	3.379.	We agree that the approach should be based on sum insured as the original approach of GDV is based on sum insured (see 3.378). It might be difficult to derive pure nat cat premiums. Usage of overall property premiums is not adequate to model the nat cat risk as the coverage of nat cat risks may be different or excluded.	Noted. See points to 789
797.	KPMG ELLP	3.379.	We agree that the approach should be based on sum insured as the original approach of GDV is based on sum insured (see 3.378). It might be difficult to derive pure natural cat premiums. We do not believe that usage of overall property premiums is adequate to model the natural cat risk as the coverage of natural cat risks may be different or excluded.	Noted. See points to 789
798.	UNESPA	3.385.	On the other hand, CEIOPS have developed a calibration analysis working together a broker, a CAT modeling agency and considering other industry data. This project has been based on simulating CAT events according to a standard model. After that those CAT events have been related with the premium sector data, in order to obtain the	Noted. CEIOPS is not able to provide such detailed information as CEIOPS does not have control over such information. As mentioned in CP71, the use of external information was

			correspondent Loss Ratio. CEIOPS have not specified the origin and features of the used information. Moreover, it is not specified neither the used methodology for simulating the events nor the technical specification of that methodology. These facts imply running a goodness of fit-test of the used assumptions and evaluate the appliance to each and every national insurance market. According to CEIOPS QIS 4 (TS. XIII.C.22) it is mandatory that the companies explain the way that they have selected their scenarios.	purely informative. Not easy to calibrate due to the lack of information available and due to the particularities of the standard formula. CEIOPS considered necessary to check its own internal analysis with external input in order to get a feel as to whether the factors where roughly in line with what cat models or other company specific models may produce. CEIOPS has not used this external information as the factors, just for comparison. CEIOPS would like to reiterate that we are perfectly aware that this is by no means an exact calculation or appropriate estimation of cat risk for every undertaking. It is the best estimation with the information and tools available at the time for a methodology which we consider necessary under the standard formula.
799.	UNESPA	3.392.	In our opinion and considering the obtained results, it is necessary to validate the proposals made by CEIOPS and its appliance to the Spanish insurance market. According to our point of view, some of the proposals for calibrating the captive insurance companies are not much sensitive to certain common market practices (an increase of the premium rates, maintaining the portfolio would mean a direct increase of the factor)	We agree. UNESPA proposals as to how we may be able to carry this out could not be taken into account in the final advice as was delivered after the revision. The captive factors will be deleted.
800.	Groupe Consultatif	3.393.	The factors for nat cat risks should be expressed in percentage of sum insured and not in percentage of premium. The man made cat risk is not adequately modelled via a percentage of premium as the premium	See corresponding points to comment 789 and 781.

			doesn't reflect the immanent risk. We are not convinced that average will give an appropriate estimator – and in some cases the result is not taken as the average but is conservatively set. This does not reflect the geographical diversity that exists. Nor is there reflected the fact that in a number of countries there exist catastrophe pools. Given the large variations of the factors between countries as shown in 3.393 we feel that more differentation between exposures in different geographical territories is necessary. In particular, risk charges should be included only for those risks to which companies have significant exposures. For example, Coastal Flood is not covered by insurance companies in The Netherlands. Furthermore, it is not clear how the charges for the different perils will be aggregated. If for each individual peril, a separate risk charge is added regardless of the geographical location of a company's portfolio and its exposure to the peril, then the overall risk charge will be far higher than the 1 in 200 year level loss. For captives, the 920% charge for Property is particularly onerous, and it is not clear why it should be so much higher than the charge for other (re)insurance companies.	The factors are gross of reinsurance and any specific pools or arrangements that exist in particular countries. If a particular perils is excluded then the net cat charge will be zero. Nevetherless the application of the cat risk module will be clearer with the introduction of the standardised scenarios. Noted. Further clarification will be provided as part of QIS5. Noted. CEIOPS has decided to delete the relevant factors for captives. Captives will be required to apply the methods available to all undertakings. Furthermore, if regulators find the capital charges inadequate, supervisors may ask for a capital add on.
801.	ICISA	3.393.	The results of CEIOPS' analysis results in a factor of 145% for Credit & Suretyship. The only details given regarding the analysis carried out	Noted.

			refer to a focus on property, and input from major market participants (broker, catastrophe modelling agency, other market data). We acknowledge the difficulty in producing an analysis – and fact that no proposal is made for the Credit & Suretyship LoB is evidence of this difficulty. Consequently we emphasise the need to refrain from using simplifying assumptions that reduce the relevance of a final factor.	
802.	KPMG ELLP	3.393.	We believe the factors for natural cat risks should be expressed in terms of percentage of sum insured and not in percentage of premium. The man made cat risk is not adequately modelled via a percentage of premium as the premium doesn't reflect the underlying risk.	Noted, see points 789.
803.	Lloyds	3.393.	It is unlikely that data provided by only the UK, Germany and the Netherlands would lead to factors that are appropriate for use by all States. Results from UK data and from the benchmarking analysis provided some results for the Credit & Suretyship class of business (as well as the factors previously used for QIS4). There is no explanation of why these have then been ignored in CEIOPS' proposal for catastrophe risk factors.	We agree. See points to comment 798. We agree. The reason why this has been ommited is because it was CEIOPS view that this risk cannot be reflected satisfactorily via a factor, but via a PIM or standardised scenario.
804.	UNESPA	3.394.	On the one hand, CEIOPS have based their calibration analysis on a database that does not comply with the necessary requirements in order to be representative, unbiased, homogeneous, and taking into consideration the appropriated casuistics. It would be recommendable to have an analysis developed by CEIOPS with additional details about the database that considers all the topics that have been mentioned in previous sections. On the other hand, CEIOPS have not specified the used methodology for selecting the final factor between all the available factors. In some cases, it has been selected the simple mean of the available factors for that	See points to 798. UNESPA proposals as to how we may be able to carry this out could not be taken into account in the revision (submitted after final revision) CEIOPS has applied the results from the various analysis and external

			risk. In other cases the maximum factor has been selected. Anyway, in our opinion the proposed factors are extremely conservative. It would be recommendable to run a test for evaluating that all the recommendations explained above have been considered.	consultations as well as expert judgement. CEIOPS will test the impact as part of QIS 5. Stakeholders need to wait for the QIS 5 technical specifications with the standardised scenarios.
805.				
806.	CRO Forum	3.394.	The analysis cited in 3.393 shows that the LOB "Mother, other" is much less affected by Storm, Flood or Earthquake than "Fire and property". Thus, the grouping of both LOBs and not warranted and the factors for the CAT-exposure in case of "Mother, other" are too high in the case of these perils.	See corresponding points to comment 761.
807.	Groupe Consultatif	3.394.	Motor, other is not strongly effected by storm, flood and earthquake! S. 3.393	See corresponding points to comment 761.
808.	Lloyds	3.394.	Factors selected are a significant increase over those used for QIS4. The level of increase is unjustified, given the extremely limited available data and the fact that the non-catastrophe parameters may still include some degree of catastrophe double-count.	See corresponding points to comments 768 and 784.
809.	Munich Re	3.394.	The analysis cited in 3.393 shows that the LOB "Mother, other" is much less affected by Storm, Flood or Earthquake than "Fire and property". Thus, the grouping of both LOBs and not warranted and the factors for the CAT-exposure in case of "Mother, other" are too high in the case of these perils.	See corresponding points to comment 806.
810.	UNESPA	3.395.	CEIOPS has not specified the used methodology for supporting the proposed factors. It would be recommendable knowing the used methodology and the used information for the developed calibration and the used methodology for selecting the final sector.	See corresponding points to comments 804.

811.	AGERE AON ECIROA FERMA MARSH MIMA	3.395.	The Cat model proposed for captive is not acceptable in its present form, since the parameters currently used are not properly estimated. Therefore, the model produces results not in line with the requirements of the 99,5% calibration of the Directive. Indeed, we note that the model is built such that a Pareto tail replaces the Log Normal distribution at the 80th percentile of that LogNormal. The model assumes a combined loss ratio of 75% and a standard deviation of 15%. However: - If we assume a standard mean combined ratio of 75% for all captives, the Pareto tail will not attach anymore to the 80th percentile of the company, and the model is not calibrated anymore to the 99.5th percentile. - On the CP79, §3.18 it is mentioned that "CEIOPS has received guidance from the European Commission saying that the expected profit/loss for new business is not expected to be modelled in the SCR standard formula". Then we understand that a combined ratio of 100% should have been used. If it is the case, this method is not reliable anymore. - Besides, the results are based on a standard deviation of 15%, which is inconsistent with other consultation papers. It's really important to mention that the model is very sensitive to the combined loss ratio used. Therefore, a calibration of the model using a standard 75% combined ratio instead of the expected combined ratio of the companies leads to inadequate results. For example, for the line of business "Fire and Other Damage" a combined ratio of 75% leads to a capital charge of 920% of premiums while a ratio of 100% would lead to a capital charge of 1210% of premiums.	Noted. CEIOPS has decided to delete the relevant factors for captives. Captives will be required to apply the methods available to all undertakings. Furthermore, if regulators find the capital charges inadequate, supervisors may ask for a capital add on.

			In addition, the Pareto distribution is very sensitive to the shape parameter alpha. This parameter would need to be calibrated carefully for aggregate losses on the captive market. However the parameter used for the proposed capital charges seems to be the ones used in the Swiss Solvency Test, where parameters of the Pareto model have been calibrated based on individual losses above an attachment point of CHF 5 million in the Swiss market. This calibration is clearly not applicable to aggregate losses of the European captive market and therefore the proposed capital charges lead to results non-representative of the actual risks of captive market. In case the expected combined ratio of the company can be taken into account, we recommend to calibrate the shape parameter alpha of the Pareto per line of business based on the European captive market aggregate losses and then formulate the attachment point as a function of the expected combined loss ratio. Otherwise, this model cannot be applied because it gives volatile and non-accurate results. For instance, if we were to apply the same model on insurance companies, assuming a combined loss ratio of 100%, that would result in a capital charge of 1334% of premiums for the property LoB calibrated using a standard deviation of 30% (specification for NPL Property: CP71 §3.6). This should be compared to a proposed capital charge of 250% of premiums for the same risk (§3.394).	
812.	IUA	3.395.	We believe that these results for captives are not very transparent, and thus it is hard to assess the reasonableness of the proposed calibrations.	Noted. CEIOPS has decided to delete the relevant factors for captives. Captives will be required to apply the methods available to all undertakings. Furthermore, if regulators find the capital charges inadequate, supervisors may ask for

				a capital add on.
813.	ABI	3.396.	One of our major concerns is the high level of heterogeneity in the data that has been analysed. No allowance has been made for this in the analysis, and in our opinion this is likely to materially overstate the actual level of variability of results.	See corresponding points to comment 815.
814.	AMICE	3.396.	CEIOPS states the following members states provided data for the calibration exercise: Luxembourg, United Kingdom, Germany, Slovenia, Poland and Portugal". Additionally for some branches, the proposed calibration has been done with only one country (UK): Non proportional reinsurance – Property, Casualty and MAT. The calibration only included some jurisdictions and thus is not representative of the European market. Furthermore, this leads to an overrepresentation of the UK in the study where the market is very specific and more volatile than in other countries. Therefore, AMICE thinks that this scope leads to an overstatement of the requirements. AMICE members strongly recommend allowing a "Country Specific" calibration. Therefore, this calibration should be defined in the level 3. We agree with the CEA that for the calibration of the premium risk, companies should start with the Gross Premium and the volatility net of reinsurance should be approximated by taking into account company´s reinsurance structure.	See corresponding points to comment 819 See points to comment 819 We agree. This is a possibility but CEIOPS has discussed this with industry and included a proposal in its final advice.
815.	CEA	3.396.	One of our major concerns is the high level of heterogeneity in the data that has been analysed. No allowance has been made for this in the analysis, and in our opinion this is likely to materially overstate the actual level of variability of results. A major cause of heterogeneity is	We agree. However this is a consequence of the level of segmentation decided by CEIOPS and by the requirements of the European

			between countries, due to the different regulatory and accounting regimes, claims environments and types of products. We believe that an additional analysis should have been carried out considering data from each territory separately. This would go some way to reducing the scale of heterogeneity. Further, for the lines of business where data was particularly scarce, the analysis will lead to a truncated vision of the situation. This will lead to significant inconsistencies in the results. Using gross of reinsurance data where net is not available will clearly overstate variability of results. It is not obvious by how much the variability might have been overstated due to this issue, and this will vary by line of business. We would request that an attempt is made to quantify this impact, possibly by looking at the differences between gross and net variability for classes where both gross and net data are available. More appropriately, the CEA propose for the calibration of the premium risk to: ☐ start with earned premium data gross of reinsurance transactions and then to allow undertakings to ☐ approximate the volatility net of reinsurance transactions by taking into account the undertaking specific actual reinsurance structure. Workable solutions how this can be achieved have been presented to Ceiops by a joint working group consisting of representatives from SwissRe, MunichRe, Hannover Re and AMICE.	commission to provide one set of factors for all in the EU. Further segmentation by LOB could be made or by size of portfolio, but again this is not in line with the European commission. We agree, net data should lead to lower volatilities, however lack of net data has constrained our ability to rely purely on net data. However CEIOPS would like to highlight that stakeholders have not highlighted ares where our selection or assumptions would lead to low answers. CEIOPS has considered the overall picture and this is why we consider our calibration in line with the standard formula. We agree. See points to comment 143.
816.	Deloitte	3.396.	We disagree with this conclusion. CEIOPS has at most given estimations or expert judgements for the risk factors. CEIOPS should acknowledge that the analysis presented in this data is not sufficient for a calibration according to 99.5% VaR and a one year time horizon.	We do not agree. See points to comment 814.

817.	FFSA	3.396.	CEIOPS: "There were significant limitations in the data available to perform this exercise. (…) Data was not readily available and there was not sufficient time to wait for member states to prepare the data in the format"	Noted
			FFSA: This analysis seems to have not been prepared enough by CEIOPS and leads to a partial or truncated vision of the situation. It leads also to lack of reliable data for the study. That will lead to major inconsistencies in the results provided by CEIOPS.	See corresponding points to comment 819.
			CEIOPS: "Data was not necessarily available net of reinsurance. Where gross of reinsurance data was more abundant, the analysis was carried out of gross of reinsurance"	
			FFSA: Half of the reserve risk and Motor TPL for premium risk (3.116) seems to have been calibrated based on gross of reinsurance data. Nevertheless, it is not completely clear if gross or net data has been used (e.g paragraph 3.184 states that data for all lines of business is net of reinsurance, paragraph 3.270 states that data used for Motor TPL is gross of reinsurance). This should be clarified.	Noted. Net data was used where possible otherwise gross data. However we will try to amend this.
			The results could not be based on gross of reinsurance data as the reinsurance program has a very important mitigation effect on the risk. This will lead to highly increase the requirements of the non life underwriting risk, in particular in the long term and most risky business.	See points to comment 815.
			CEIOPS: "The SCR is the difference between the economic balance sheets over the one year horizon in the distressed scenario. This implicitly suggests we should analyse the difference between all component parts which includes the risk margins"	
			FFSA believes that introducing a risk on the change in risk margin is realistic in theory. But due to the methodology applied for calculating the	

			risk margin (i.e. cost of capital), FFSA questions the circularity of considering such risk, and if a cost of capital risk margin has additional volatility by itself compared to the volatility already considered in the different risks of the SCR. FFSA, considering the cost of capital methodology, thinks that the volatility of the risk margin is a second order risk and should not be considered.	Noted.
818.	GDV	3.396.	One of our major concerns is the high level of heterogeneity in the data that has been analysed. No allowance has been made for this in the analysis, and in our opinion this is likely to materially overstate the actual level of variability of results. A major cause of heterogeneity is between countries, due to the different regulatory and accounting regimes, claims environments and types of products. We believe that an additional analysis should have been carried out considering data from each territory separately. This would go some way to reducing the scale of heterogeneity. Further, for the lines of business where data was particularly scarce, the analysis will lead to a truncated vision of the situation. This will lead to significant inconsistencies in the results.	We do not agree. The aim of the standard formula as explained by the European commission is to provide a set of factors by Lob for all countries. Furthermore, the methodology Ceiops has applied is described in CP71. Members States or stakeholders are free to apply such methods to their own data and estimate their own company or country specific calibrations. However this is not required by the European Commission.
819.	GROUPAMA	3.396.	Groupama would like to highlight that the calibration includes too few countries and thus is not representative of the European market. Furthermore, this leads to an overrepresentation of the UK in the study where the market is very specific and more volatile than in other countries. Therefore, Groupama thinks that this scope leads to an overstatement of the requirements.	We disagree. Indeed Groupama data was only included for those countries that provided data. However CEIOPS is collecting further data. But not all member states are able to participate and CEIOS has to work with the data available at the time. Should groupama wish to provide CEIOPs with data we would welcome this. The calibration is representative of a 6 countries and for some LOB the UK has not even provided data. Therefore some lob are calibrated

			We strongly recommend allowing for a "Country Specific" calibration, or at least one that takes national specifics into account.	purely on data other than UK. Something else to note is that the data used are posted ultimates which will normally be smoothed compared to actuarial best estimates. We do not agree. The aim of the standard formula as explained by the European commission is to provide a set of factors by Lob for all countries. Furthermore, the methodology Ceiops has applied is described in CP71. Members States or stakeholders are free to apply such methods to their own data and estimate their own company or country specific calibrations. However this is not required by the European Commission.
820.				
821.				
822.	CEA	3.397.	**The proposed factors are not appropriate. Various studies show results very different from those presented here. In order to obtain adequate factors several things would be needed:** • Appropriate Methods and Models. For example: The assumption of constant loss ratios for a given line of business is not appropriate, premium cycles should be included into the analysis as well as considerations about frequency and severity of claims. • Appropriate Segmentation. Using the "standardized" factors presented here is not adequate in view of the vast variety of different risk profiles. For example: The size of an undertaking is	For issues here and below, see corresponding points to comments 1, 2 and 3. We are interested in seeing results of the various studies.

			crucial for the height of variances. • Appropriate Data. The data used here are not representative: Only data of two large countries are included, data used represent less than 20% of Europe. The data comprise only a history of 10 years which is much too short. • The results are derived using lots of simplifications only because of a lack of time and data (see 3.10). This is not at all acceptable and contradicts the principles undertakings have to fulfil in view of the solvency requirements. Especially the principles of \appropriateness, completeness and accuracy are severely violated. Therefore, the results presented here are not risk sensitive or to capture the risk profile of a given insurance undertaking. But risk sensitivity is one of the main aims of Solvency II. Considering these severe drawbacks of CP 71 shows that two things are necessary: • First of all, the factors presented have to be recalibrated constantly in forthcoming years. This is so, because results presented here are not representative and the methods applied are not appropriate. But even if they were adequate, the principle of back-testing immediately implies that the given calibration has to be checked against experience in the forthcoming periods, which also implies that a recalibration will be necessary after each period. • Undertaking specific factors are necessary in order to make Solvency II really risk sensitive. Such factors are probably the only way out of the dilemma discussed here. Therefore the use of undertaking specific factors should not be seen as an exception (as it is done in CP 75) but as the standard approach in case the standard formula of Solvency II is used.	See corresponding points to comment 16. We partially agree. Stakeholders can use undertaking specific parameters or PIM where they consider appropriate.

			Analysis of German development data: paid triangles of 101 undertakings (gross data, different size, on average about 18 years), earned premium by accident year. **Estimation of premium risk per LoB** Method (for random variable loss ratio): • Chain ladder estimation of ultimate losses including tail estimation up to 25 development years for each triangle. Tail estimation is done with market parameters. • Calculate the ultimate loss ratios (ultimate losses divided by earned premiums) for each undertaking and accident year. • For each undertaking calculate the empirical mean and coefficient of variation of the observed loss ratios. • Average the undertakings coefficiens of variation by weighting with the average earned premiums per year (similar to Ceiops Method 1 in 3.47-3.58). • Results in column GDV below. **Estimation of reserve risk per LoB** Method (for random variable claims development result): • For each triangle calculate the best estimate reserve via chain ladder. • For each triangle calculate the mean squared error of prediction MSEP of the claims development result for the time-horizon of one year (see Merz/ Wüthrich). • The root of MSEP divided by the best estimate serves as undertakings reserve factor. The reserve factors show significant dependence on the undertakings volume. An average value is given in the following table. **Premium factor** **Reserve factor** LOB Ceiops GDV Ceiops GDV	Noted Noted

			Motor 3rd party 10 % 10.0 % 12.5 % 5 % 3rd party liab 17,5 % 15.5 % 20 % 10 % The LOB accident should be treated in the non-life underwriting risk sub-module. The usage of the same approach for deriving premium and reserve risk already implies that LOB accident has the characteristics of non-life insurance.	We do not agree. CEIOPS has already decided on the segmentation between health and non life.
823.	CRO Forum	3.397.	☐ We note an increase of all factors which already seemed to be high. ☐ As already commented in our response to CP48 there is no indication on the use of undertaking-specific parameters for non-life underwriting risk. ☐ Although we acknowledge that a considerable amount of judgement has to be present when selecting the factors it seems that the argumentation in general leads to higher factors than supported by the majority of the analysis. In other words: It is our impression that an additional layer of conservatism is present in the selection of the factors. ☐ In some cases the database is restricted to a small number of markets and thus not sufficient to calibrate EEA-wide factors. ☐ In the case of non-proportional reinsurance the data basis is in no case sufficient to draw meaningful conclusions in our opinion. We reiterate our suggestion from our response to CP48: A working group consisting of representatives from Munich Re, Swiss Re and Hannover Re has developed a proposal to capture non-proportional reinsurance in the standard model. The ideas of proposal have been discussed with the European Commission (Financial Institutions, Insurance and Pensions), CEIOPS (FinReq-EG, SCR subgroup), CEA and AMICE. In all cases we received agreement on the problem and the general approach towards a solution. In some cases further detailed analysis towards a possible implementation were prepared and will be	See corresponding points to comment 821. Refer to the USP paper. See corresponding points to comment 821.

			submitted to CEIOPS. We are happy to further contribute to an enhancement of the standard formula regarding non-proportional reinsurance. We also suggest encouraging the use of (partial) internal models for non-proportional reinsurance.	
824.	DIMA	3.397.	CEIOPS' parameters for the non-life underwriting risk (i.e. premium and reserve standard deviations) appear to be very conservative when compared to the results generated by internal models on both one-year perspective and ultimate basis. This is especially true for the reserving risk component. In some cases, the CEIOPS parameter is greater than not only the one-year risk (i.e. the risk that reserves are inadequate to meet the liabilities over the next year) but also the ultimate reserving risk (i.e. the risk that reserves will ultimately be insufficient to meet claim liabilities until they expire). In theory, we would expect that the one-year risk should be lower than the ultimate risk due to factors such as future inflation, changes in legislation, delays in claims made and future stochastic volatility. This would of course differ by lines of business since loss experience is concentrated either in the short term or in the medium/longer term so the effect of the aforementioned factors may be either material or immaterial depending on the LOB. Nevertheless, our analysis suggests that the one-year reserve risk parameters proposed by CEIOPS are too conservative.	We do not agree. Results under the SCR Standard Formula should not be compared to results under IMs.
825.	FFSA	3.397.	CEIOPS: calibration of the factors FFSA: The new calibration of the factors by CEIOPS is higher than the QIS 4 factors. The QIS 4 factors were already considered by the market as too high compared to the risk it was facing. Therefore, increasing these factors leads to an overestimation of the risks. - For premium risk, FFSA considers that method 3 is not appropriate as CEIOPS applies an industry wide expected loss ratio. As a result, volatilities will yield results which are	See corresponding points to comment 1. See corresponding points to comment 14.

			significantly higher. Regarding method 4, FFSA considers that it does not take into account the undertaking's size. Hence, FFSA rejects methods 3 and 4. - For reserving risk, FFSA disagrees with CEIOPS recommendation for third party liability lob factor (20%) as large companies are penalised. More specifically, FFSA is in favour of method 4 by taking into account the undertaking's size.	See corresponding points to comment 14.
826.	GDV	3.397.	The proposed factors are not appropriate. Various studies show results very different from those presented here. In order to obtain adequate factors several things would be needed: - Appropriate Methods and Models. For example: The assumption of constant loss ratios for a given line of business is not appropriate, premium cycles should be included into the analysis as well as considerations about frequency and severity of claims. - Appropriate Segmentation. Using the "standardized" factors presented here is not adequate in view of the vast variety of different risk profiles. For example: The size of an undertaking is crucial for the height of variances. - Appropriate Data. The data used here are not representative: Only data of two large countries are included, data used represent less than 20% of Europe. The data comprise only a history of 10 years which is much too short. - The results are derived using lots of simplifications only because of a lack of time and data (see 3.10). This is not at all acceptable and contradicts the principles undertakings have to fulfil in view of the solvency requirements. Especially the principles of Appropriateness, Completeness and accuracy are severely violated. Therefore, the results presented here are not risk sensitive or to capture the risk profile of a given insurance undertaking. But risk sensitivity sis	For these issues and below see corresponding points to comment 822.

			one of the main aims of Solvency II. Considering these severe drawbacks of CP 71 shows that two things are necessary: • First of all, the factors presented have to be recalibrated constantly in forthcoming years. This is so, because results presented here are not representative and the methods applied are not appropriate. But even if they were adequate, the principle of back-testing immediately implies that the given calibration has to be checked against experience in the forthcoming periods, which also implies that a recalibration will be necessary after each period. • Undertaking specific factors are necessary in order to make Solvency II really risk sensitive. Such factors are probably the only way out of the dilemma discussed here. Therefore the use of undertaking specific factors should not be seen as an exception (as it is done in CP 75) but as the standard approach in case the standard formula of Solvency II is used.	
			We don't understand, that the calculations of accident are done in CP 72 but the results are shown in CP 71; **accident is not a part of health insurance.**	Noted.
			Analysis of German development data: paid triangles of 101 undertakings (gross data, different size, on average about 18 years), earned premium by accident year. **Estimation of premium risk per LoB**	For these issues and below, see corresponding points to comment 822.

			Method (for random variable loss ratio): 1) Chain ladder estimation of ultimate losses including tail estimation up to 25 development years for each triangle. Tail estimation is done with market parameters. 2) Calculate the ultimate loss ratios (ultimate losses divided by earned premiums) for each undertaking and accident year. 3) For each undertaking calculate the empirical mean and coefficient of variation of the observed loss ratios. 4) Average the undertakings coefficiens of variation by weighting with the average earned premiums per year (similar to CEIOPS Method 1 in 3.47-3.58). Results in column GDV below. **Estimation of reserve risk per LoB** Method (for random variable claims development result): 1) For each triangle calculate the best estimate reserve via chain ladder. 2) For each triangle calculate the mean squared error of prediction MSEP of the claims development result for the time-horizon of one year (see Merz/ Wüthrich).		

			3) The root of MSEP divided by the best estimate serves as undertakings reserve factor. The reserve factors show significant dependence on the undertakings volume. An average value is given in the following table. **Premium factor** **Reserve factor** LOB CEIOPS GDV CEIOPS GDV Motor 3rd party 10 % 10.0 % 12.5 % 5 % 3rd party liab 17,5 % 15.5 % 20 % 10 % The LOB accident should be treated in the non-life underwriting risk sub-module. The usage of the same approach for deriving premium and reserve risk already implies that LOB accident has the characteristics of non-life insurance.	We do not agree. CEIOPS has already decided on the segmentation between health and non life.
827.	Groupe Consultatif	3.397.	The LOB accident should be treated in the non-life underwriting risk submodule. The usage of the same approach for deriving premium and reserve risk already implies that LOB accident has the characteristics of non-life insurance. The factors for premium and reserve risk are reasonable and comprehensibly described for most of the LOBs.	We do not agree. CEIOPS has already decided on the segmentation between health and non life. Noted.
828.	IUA	3.397.	The premium and reserve risk factors have increased most significantly for the non-proportional reinsurance classes. We are concerned about the amount of data utilised for this class, with only the UK country	See corresponding points to comment 45.

			contributing data. Furthermore we understand that that data is unlikely to have catastrophe data split out. This could inflate the results, especially since these are for reinsurance classes (which are most likely to be impacted by catastrophes). These results means that not only is there a "catastrophe double count" but also that there is excessive prudence in the calibration. Furthermore as this class has the greatest capital charges relative to other classes, it is concerning as that could make writing those classes more expensive, relative to other classes of business. This in turn could effect the cost and/or availability of those classes. Clearly anything that disproportionately affects those classes is undesirable, as non-proportional reinsurance is an essential risk mitigant for insurance companies. It would be a perverse side effect of the Solvency II proposals if the overall impact on cost and availability of those products dis-incentivises the purchase of such reinsurance (e.g. because such reinsurance has been made more expensive).	See corresponding points to comment 45.
829.	KPMG ELLP	3.397.	The accident LOB should be treated in the non-life underwriting risk sub-module. The usage of the same approach for deriving premium and reserve risk already implies that accident LOB has the characteristics of non-life insurance. The factors for premium and reserve risk are reasonable and comprehensibly described for most of the LOBs.	We do not agree. CEIOPS has already decided on the segmentation between health and non life. Noted.
830.	Lloyds	3.397.	Many factors have increased significantly over those from QIS4. Whilst we appreciate the limited time and data available there is still a need to select method and factors that are appropriate. There are a number of approaches that could be easily implemented that would improve the quality of the result. There are 2 areas of the analysis that lead to systematic over-estimation of the volatilities and this should be accounted for in the final selections:	For these issues and below see corresponding points to comment 50.

			a) Though the data request stated a preference for data net of the effects of catastrophe events, it is not clear to what extent the data received did actually exclude these (For example, this would be difficult for UK data). Inclusion of catastrophe events (such as 9/11 and Hurricane Katrina) within the data used to calibrate factors will lead to a double-count and will – incorrectly - significantly increase the volatilities of results of affected classes. This is particularly the case for factors relating to some non-proportional reinsurance business lines, which have increased significantly. The premium and reserving risk module of the SCR is not intended to allow for catastrophe losses that are accounted for elsewhere. b) There is no allowance for movements in premium rates in the assessment. The underwriting cycle is a well known phenomenon in the insurance industry and in most cases there are known premium rate indices available. The historic losses ratios used in the analyses should be normalised to a base premium rate period (e.g. all at 2008 rates). Not to do so will unnecessarily increase the historic volatilities. For example, if an undertaking wrote one risk for the last 10 years and: o each year that risk generated 80 in claims; and o the annual premium for the risk varied between 80 and 120 over the period; - then the observed loss ratios would vary between 67% and 100%. This would imply an incorrect degree of volatility, as claims would have actually remained constant. As the expected level of profitability in prospective business is not included in the assessment of the standard formula SCR then the volatilities should be assessed, allowing for estimated rate changes to ensure the volatilities are not systematically overstated.	Noted. See response to 219

831.	Munich Re	3.397.	☐ We note an increase of all factors which already seemed to be high. ☐ As already commented in our response to CP48 there is no indication on the use of undertaking-specific parameters for non-life underwriting risk. ☐ Although we acknowledge that a considerable amount of judgement has to be present when selecting the factors it seems that the argumentation in general leads to higher factors than supported by the majority of the analysis. In other words: It is our impression that an additional layer of conservatism is present in the selection of the factors. ☐ In some cases the database is restricted to a small number of markets and thus not sufficient to calibrate EEA-wide factors. ☐ In the case of non-proportional reinsurance the data basis is in no case sufficient to draw meaningful conclusions in our opinion. We reiterate our suggestion from our response to CP48: A working group consisting of representatives from Munich Re, Swiss Re and Hannover Re has developed a proposal to capture non-proportional reinsurance in the standard model. The ideas of proposal have been discussed with the European Commission (Financial Institutions, Insurance and Pensions), CEIOPS (FinReq-EG, SCR subgroup), CEA and AMICE. In all cases we received agreement on the problem and the general approach towards a solution. In some cases further detailed analysis towards a possible implementation were prepared and will be submitted to CEIOPS. We are happy to further contribute to an enhancement of the standard formula regarding non-proportional reinsurance. We also suggest to encourage the use of (partial) internal models for non-proportional reinsurance.	See corresponding points to comment 823.
832.	ROAM	3.397.	ROAM considers that the sample of data used to calibrate this risk is not representative of the European market because only 6 countries on 27 participated in the study.	See corresponding points to comment 1.

			A part of the calibration seems to be made on gross data and no on net data. That is why ROAM in these comments will not make reference to the results because it considers them as being not representative and without any meaning in the sense of the European market ROAM proposes that the volatility of premiums is calculated by the methods 1 and 2 which are the most consistent. Concerning the volatility of the reserves, ROAM thinks that the methods 1 and 4 are the most adequate to calibrate the volatility. Consequently, it is important that CEIOPS reworks the volatilities with these methods and with adequate data.	See corresponding points to comments 1 and 815. Noted. Noted. Noted. A recalibration exercise is being carried out.
833.				
834.	XL Capital Ltd	3.397.	The premium and reserve risk factors have increased most significantly for the non-proportional reinsurance classes. We are concerned about the amount of data utilised for this class, with only one country contributing, especially if that country's data has not had catastrophe data split out. This could inflate the results. Furthermore as this class has the greatest capital charges relative to other classes, it is concerning as it will inevitably make writing those classes more expensive, relative to other classes of business. This in turn could effect the cost and/or availability of those classes. Clearly anything that disproportionately affects those classes is undesirable, as non-proportional reinsurance is an essential risk mitigant for insurance companies. It would be a perverse side effect of the Solvency II proposals if the overall impact on cost and availability of those products dis-incentivises the purchase of such reinsurance. There is an inconsistency between NPL Property and NPL Casualty. It does not pass a reasonability test that these volatilities are the same.	See corresponding points to comment 45.

			Relativities between classes of business should be introduced into the analysis.	
835.				
836.	CRO Forum	3.401.	A generic correlation of 50% between one of the non-proportional lines and its "normal" counterpart(s) is not justified in our view. ☐ The determination of premium for non-proportional reinsurance is independent of the premium calculation of the underlying business. ☐ As non-proportional reinsurance covers large losses, different considerations compared to primary / proportional business will be performed when setting IBNR reserves. Thus, neither premium nor reserve risk seem to justify a high correlation of 50%. The uniform 50% correlation of misc. with all other lines seems unjustified from our view. This LoB will consist of various different kinds	Noted. CEIOPS has only done limited analysis on correlations for Non life. However we also consider this is an area where it is difficult to carry out any robust analysis, due to the difficulty and lack of data as well as the time pressures we are under. We would welcome any supporting analysis or evidence from the industry proving the contrary. We disagree. How do you calculate non-proportional reinsurance of motor? X% of original premium? This is directly dependent We agree. Which is why correlation < 100%. Noted.

			of products which cannot be grouped under the other LoBs and thus a low degree of dependency is to be expected.	
837.	Munich Re	3.401.	A generic correlation of 50% between one of the non-proportional lines and its "normal" counterpart(s) is not justified in our view. ☐ The determination of premium for non-proportional reinsurance is independent of the premium calculation of the underlying business. ☐ As non-proportional reinsurance covers large losses, different considerations compared to primary / proportional business will be performed when setting IBNR reserves. Thus, neither premium nor reserve risk seem to justify a high correlation of 50%. The uniform 50% correlation of misc. with all other lines seems unjustified from our view. This LoB will consist of various different kinds of products which cannot be grouped under the other LoBs and thus a low degree of dependency is to be expected.	Noted. See points made to comment 836.
838.	RBS Insurance	3.401.	See comment at 3.356, the hyperlink is appropriate here given this is a summary but it would seem more appropriate to refer to paragraph(s) in the same document with the detail.	See corresponding points to comment 751.
839.				
840.	CRO Forum	3.402.	We think that a general 50% correlation between premium and reserve risk is not warranted and sems rather high.	Noted. CEIOPS has only done limited analysis on correlations for Non life. However we also consider this is an area where it is difficult to carry out any robust analysis, due to the difficulty and lack of data as well as

				the time pressures we are under. We would welcome any supporting analysis or evidence from the industry proving the contrary.
			☐ In principle, the dependencies between premium and reserve risk should reflect the fact that the claim development result (reserving risk) and the first loss ratio pick (premium risk) may or may not rely on the same type of information depending on the line of business.	We disagree. Leaving aside the point for multi-year contracts, first loss ratio pick is not the whole of premium risk, this is not a complete statement. Some information is common. Premiums are set having regard to the latest information on claims. If that information proves inaccurate (which is what reserve risk is picking up) then the premiums and premium provisions will be similarly inaccurate. So we should expect greater correlation between premium and reserve risk for one line of business than between lines of business.
				Noted.
			☐ Generally and due to the time lag of information, the claim development result for long tail lines such as liability will determine to some extend the first loss ratio pick of the current year. By contrast, in short tail lines the first loss ratio is usually based on more reliable information about the actual incidents.	Noted.
			☐ Thus, it might be argued that dependencies between premium and reserve risk should be higher for long-tail lines compared to short-tail lines. Further, the dependency between premium and reserve risk may differ between the lines of business considered in the standard	Noted. In view of the practical difficulties, it is not obvious what should replace it

			formula, especially for non-proportional reinsurance. More work is required to calibrate the standard model in this respect. ☐ This assumes a correlation of 50% between prior year reserves and future UW years which could and should vary by line of business.	
841.	FFSA	3.402.	CEIOPS : For the correlation between premium and reserve risk, the QIS4 of 50% should be kept FFSA : The correlation between premium and reserve risks should not be the same for short and long tail branches	See corresponding points to comment 753.
842.	GROUPAMA	3.402.	CEIOPS: For the correlation between premium and reserve risk, the QIS4 of 50% should be kept GROUPAMA: (See our comment for CP 2nd wave) The correlation between premium and reserve risks should not be the same for short and long tail branches	See corresponding points to comment 753.
843.	Munich Re	3.402.	We think that a general 50% correlation between premium and reserve risk is not warranted and sems rather high. ☐ In principle, the dependencies between premium and reserve risk should reflect the fact that the claim development result (reserving risk) and the first loss ratio pick (premium risk) may or may not rely on the same type of information depending on the line of business. ☐ Generally and due to the time lag of information, the claim development result for long tail lines such as liability will determine to some extend the first loss ratio pick of the current year. By contrast, in short tail lines the first loss ratio is usually based on more reliable information about the actual incidents. ☐ Thus, it might be argued that dependencies between premium and reserve risk should be higher for long-tail lines compared to short-tail lines. Further, the dependency between premium and reserve risk may differ between the lines of business considered in the standard formula, especially for non-proportional reinsurance. More work is	See corresponding points to comment 839.

			required to calibrate the standard model in this respect. ☐ This assumes a correlation of 50% between prior year reserves and future UW years which could and should vary by line of business.	
844.	RBS Insurance	3.402.	Extra full stop.	Noted.
845.	ABI	3.403.	Cat data have not been split out for premium / reserving risk. This is a serious flaw that has resulted in excessively high calibrations. In addition we are concerned that the proposed method result in a double counting between "cat risk" and "premium risk" arising from the fact that: (a) Premium risk factors are applied to the whole premium, which will incorporate a cat load. (b) The calibration of the volatilities for premium risk has incorporated data with catastrophes in it, and thus exhibits excessive volatility. However, catastrophes are separately and explicitly allowed for elsewhere. This constitutes a double/triple count of catastrophes, which is extremely penal to companies writing catastrophe-exposed business and particularly catastrophe reinsurance, for which the only exposures are in respect of catastrophes.	See corresponding points to comment 34.
846.	GDV	3.403.	Cf. 3.359 – 3.395	See corresponding points to comment 751.
847.	Groupe Consultatif	3.403.	The pure premium factor approach should be revised. For nat cat risks, the sum insured should be the basis for the factor approach. For man made cat risks, nor a factor of premium neither a factor of sum insured seems to be adequate. The approach of GDV which is modelling the immanent risk more adequate should be considered.	See corresponding points to comment 793.
848.	IUA	3.403.	It is not clear how the capital required on a net basis is estimated from	See corresponding points to

			the gross basis.	comment 775.
849.	KPMG ELLP	3.403.	The pure premium factor approach should be revised. For natural cat risks, the sum insured should be the basis for the factor approach. For man made cat risks, neither a factor of premium nor a factor of sum insured seems to be adequate. The approach of GDV which is modelling the underlying risk more adequately should be considered.	See corresponding points to comment 793.
850.	XL Capital Ltd	3.403.	It is not clear how the capital required on a net basis is estimated from the gross basis.	See corresponding points to comment 775.
851.	Lloyds	3.405.	Text appears to be missing.	Noted. This will be corrected as necessary.
852.	Lloyds	3.406.	The analysis shows there is a significant difference between small, medium and large undertakings (or portfolios). As noted, this is to be expected but the difference does highlight that the selected factors are inappropriate for most undertakings. Further, it shows that the standard factors selected will be systematically too high for large undertakings and systematically too low for small / medium undertakings. The standard formula factors for premium and reserving risk factors should be selected depending on size of portfolio and would be available from CEIOPS work to date. This would improve the appropriateness of the factors.	See corresponding points to comment 2.
853.				
854.	CRO Forum	3.407.	The advice mentions 4 examples where the standardised scenarios are not appropriate. These examples are: ☐ When the risk profile of the undertaking is not well represented by the standardized scenario. ☐ The undertaking writes business in the LoB miscellaneous insurance. ☐ The undertaking writes material non-proportional reinsurance.	See corresponding points to comment 853.

			☐ The undertaking writes material business outside the EEA. We believe that a factor based approach is not suited to capture the examples above.	
855.	KPMG ELLP	3.407.	We believe CEIOPS meant to write "NON material" and not "material" here. (cf 3.365)	Noted. This will be corrected as necessary.
856.	Munich Re	3.407.	The advice mentions 4 examples where the standardised scenarios are not appropriate. These examples are: ☐ When the risk profile of the undertaking is not well represented by the standardized scenario. ☐ The undertaking writes business in the LoB miscellaneous insurance. ☐ The undertaking writes material non-proportional reinsurance. ☐ The undertaking writes material business outside the EEA. We believe that a factor based approach is not suited to capture the examples above.	See corresponding points to comment 853.
857.	Groupe Consultatif	3.408.	The comment appears to be relevant in a much wider context	Noted. More clarification may be provided.
858.	ABI	3.409.	Whilst it is reasonable to use gross of reinsurance data to arrive at net results in the case of quota share reinsurance, it is more problematic in the case of non proportional reinsurance.	Noted.
859.	AMICE	3.409.	CEIOPS has improved the calibration of the factor method for the catastrophe risk by calibrating it gross of reinsurance. This allows applying undertaking´s reinsurance programme to calculate its net	Noted.

			amount. AMICE welcomes this enhancement.	
860.	Deloitte	3.409.	We welcome the idea that firms will apply their individual reinsurance to the calculation for the CAT charge. However we are concerned that this will be a strain on resources and that the "standard" formula becomes a partial internal model. Further clarification is needed on how firms may allow for the reinsurance. Segmentation by peril is welcome. This may be appropriate for all lines of business, not just property and motor.	We do not agree. More clarification may be provided. See corresponding points to comment 775. Noted.
861.	Groupe Consultatif	3.409.	We welcome that the calibration is done gross, but we question how to get to the net position using a factor approach	Noted. More clarification may be required. See corresponding points to comment 775.
862.	IUA	3.409.	Whilst it is reasonable to use data that is gross of reinsurance to arrive at the net results in the case of quota share reinsurance, it is more problematic in the case of non-proportional reinsurance.	Noted.
863.	KPMG ELLP	3.409.	We welcome these changes which represent a significant improvement.	Noted.
864.				
865.	CRO Forum	3.410.	We note that the data basis is too small for a calibration of Europe-wide factors as it is constrained to a single market (UK in case of analysis 1, Germany in case of analysis 2). Thus, we encourage CEIOPS to wait until the CAT Task Force has completed its work which will provide insight into more markets.	See corresponding points to comment 864.
866.	Groupe Consultatif	3.410.	It is appreciated that the calibration is now for gross and that reinsurance is allowed to take into account to arrive at the net amount. As mentioned it is not easy to estimate a factor for all countries but a finer split than using the same factors for all countries are really needed as the risk differs heavily between countries. Further all the perils mentioned are not valid for all countries. Finally the geographical spread of business has to be taken into account as there is a large difference in risk between having the same gross premium in say Northern Germany	See corresponding points to comments 1 and 775.

			compared to say across all Nordic countries	
867.	Munich Re	3.410.	We note that the data basis is too small for a calibration of Europe-wide factors as it is constrained to a single market (UK in case of analysis 1, Germany in case of analysis 2). Thus, we encourage CEIOPS to wait until the CAT Task Force has completed its work which will provide insight into more markets.	See corresponding points to comment 864.
868.				
869.	XL Capital Ltd	3.410.	The factors for catastrophe risk calibration seem disproportionately high, especially those for NPL property, NPL MAT and NPL Casualty, all of which are at 250% See also our comment at 3.362	Noted. The calibration was carried out based on analysis of available data. See corresponding points to comment 770.
870.	Deloitte	3.411.	Separate CAT factors for captives are an excellent addition. However the calibration needs to be validated further as the data available for captives is even less that that available for insurers. So the problems highlighted throughout the paper are exacerbated.	Noted. CEIOPS has decided to delete the relevant factors for captives. Captives will be required to apply the methods available to all undertakings. However if regulators find the capital charges inadequate, supervisors can ask for a capital add on. Undertakings will have to provide an ORSA.
871.	Lloyds	3.411.	The factors selected are a significant increase over those used for QIS4. The level of increase is unjustified given the extremely limited available data and the fact that the non-catastrophe parameters may still include some degree of catastrophe double-count.	We do not agree.. See corresponding points to comments 1 and 768.
872.	Groupe Consultatif	4.	More data will not solve the main problems: The volatility is highly linked to the undertaking (size, business model, products). Therefore more data will not lead to a better calibration.	We partially agree. Indeed by adding data we can try to improve the exercise, but stakeholders need to realise that the data is just one piece of the exercises. There are many

				other factors that are playing a significant role in this exercise as mentioned in comment 1.
873.	IUA	4.	Section 4.2: We are sympathetic with regards to the availability of data, we are concerned so little data for non-proportional reinsurance was utilised. We believe it is essential that any proposals made are backed-up by sound data of both sufficient quality and quantum.	We agree. But this will be difficult given the time constrains. See corresponding points to comment 789.
874.	KPMG ELLP	4.	We do not believe that more data will solve the main problems: The volatility is highly linked to the undertaking (size, business model, products). Therefore more data will not lead to a better calibration.	See corresponding points to comments 872.
875.	Lloyds	4.3.	Point 2 requests that data provided should ideally be net of the effect of CAT events. It is not clear in the calibration sections of the consultation paper to what extent the data was provided in this form.	See corresponding points to comments 1 and 2.
876.	Lloyds	4.5.	This point requests that data provided should be net of the effect of CAT events if possible. It is not clear in the calibration sections of the consultation paper to what extent the data was provided in this form.	See corresponding points to comments 1 and 2.
877.	Lloyds	4.6.	This point requests that data provided should be net of the effect of CAT events if possible. It is not clear in the calibration sections of the consultation paper to what extent the data was provided in this form.	See corresponding points to comments 1 and 2.
878.	Lloyds	4.7.	This point requests that data provided should be net of the effect of CAT events if possible. It is not clear in the calibration sections of the consultation paper to what extent the data was provided in this form.	See corresponding points to comments 1 and 2.
879.	Lloyds	4.8.	This point requests that data provided should be net of the effect of CAT events if possible. It is not clear in the calibration sections of the consultation paper to what extent the data was provided in this form.	See corresponding points to comments 1 and 2.
880.	AMICE	4.13.	Methodology to be used to assess the change in the risk margin	See corresponding points to comment 5.
881.	AMICE	4.14.	CEIOPS defines the adjustment for the risk margin implies taking the fitted standard from the method, estimating the current RM and the	See corresponding points to comment 5.

			associated RM in 1/200 scenario and deducing from this what this implies about an appropriate level for the resultant standard deviation. The risk margin of an insurance portfolio is defined as the hypothetical cost of regulatory capital necessary to run-off all liabilities following the financial distress of the company. For that reason, AMICE members believe there is no need to introduce an impact due to changes in the risk margin. If such an impact is considered, a circularity problem would arise in the non-life underwriting risk module	
882.	AMICE	4.28.	As in paragraph 4.14 for Premium Risk, CEIOPS defines the adjustment for the risk margin taking the fitted standard from the method, estimating the current RM and the associated RM in 1/200 scenario and deducing from this what this implies about an appropriate level for the resultant standard deviation. AMICE members believe there is no need to introduce an impact due to changes in the risk margin. If such an impact is considered, a circularity problem would arise in the non-life underwriting risk module	Note see response to comment 5.
883.	ASSURALIA	4.47.	We do not approve this conclusion: shortcomings gives rise to errors, not necessarily to lower boundaries, in this case, certainly not for large or medium undertakings.	Noted. Yes an error of undercalibration .
884.	ICISA	4.47.	See comments for 3.142 and 3.314. The use of "averages" (for instance in order to avoid any distinction in terms of size of the companies) will penalize some companies and benefit others. So the standard deviation calibration is not necessarily a "lower boundary".	Noted. But because it is volume weighted it will be a very biased average towards lower volatilities.
885.	ASSURALIA	4.48.	All the selected premium factors are higher than these of QIS4 and higher than the mean European sample from QIS4. With all the analysis and calculation you have done, you have all the information to determine a volatility parameter according to the size of the undertaking.	Noted. yes indeed but this is the standard formula. One parameter fits all.