General Insurance Risk Margins

Industry Review Report as at 30 September 2013

Issued 17 February 2015

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Introduction

The valuation of insurance liabilities is an important aspect of the general insurance regulatory framework. The reserves held as a result of these valuations have a direct impact on the financial soundness of the insurer, and the insurer's ability to protect the interests of policy holders who have put their trust in it. It is therefore important that insurance liabilities, including risk margins and diversification benefits, are valued in an appropriate manner.

The risk margin allows for the risk that outcomes will differ from the central estimate of the insurance liabilities, both because of the inherent uncertainty of the distribution of possible outcomes, and because of the randomness of future outcomes. It will usually include an allowance for the variability of claims experience within a class of business (stand-alone risk margin) and also a deduction for any diversification between classes of business (diversification benefit). Together the central estimate and the risk margin are intended to produce a provision for insurance liabilities that will prove to be sufficient to pay claims as they fall due 75 per cent of the time. This 75 per cent probability of sufficiency level is the sufficiency level required by APRA.

This report provides a detailed summary of the risk margins adopted by insurers for varying classes of business. Previous versions of this report were released in 2005 and 2008. We have also examined the approaches actuaries have used to set risk margins, and have examined the drivers of the diversification benefit adopted.

The role of the report is not to prescribe particular risk margins, but rather to give some insight into the range of risk margins currently adopted by industry. APRA uses the information provided here for benchmarking and for checking on the risk margins adopted by individual insurers. Actuaries may similarly find this information useful.

Key findings

The results show risk margins that are in line with general expectations. The relativities between risk margins for different classes of business appear reasonable; those adopted for short tail classes are lower than those for long tail classes, and risk margins for outstanding claims liabilities (OCL) are usually lower than those for premium liabilities (PL).

In general, actuaries assessing risk margins tend to use approaches based on the insurer's own experience with allowance for sources of uncertainty not captured within the data. The Actuaries Institute's "A Framework for Assessing Risk Margins" paper[1] is often cited as the basis adopted by actuaries in their assessment. Actuaries have relied less on standard formulaic approaches outlined in the earlier actuarial research papers and which were in common use in prior risk margin reports.

Diversification benefits continue to be based heavily on judgment and general reasoning. The actual diversification benefits adopted by companies appeared broadly reasonable and in line with expectations. Larger insurers with many classes and lower portfolio concentration tended to adopt higher diversification benefits.

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[1] www.actuaries.asn.au/Library/Framework for assessing risk margins.pdf

Methodology

Data as at September 2013 was extracted from the quarterly data forms *GRF115.0 Outstanding Claims Liabilities* and *GRF115.1 Premiums Liabilities*, which are submitted to APRA by regulated general insurers. We have used data from the September quarter as it is typically less volatile for property insurers compared to December and March quarters. June and September 2014 quarterly data was not available at the time of analysis.

As with previous reports, all results are net of reinsurance and non-reinsurance recoveries.

Prior to 2013, only diversified risk margins were submitted to APRA for each class of business. Therefore analysis in previous reports included an allocation of diversification benefits in class of business results. Reporting forms were revised effective from January 2013 to collect both stand-alone and diversified risk margins for each class of business. Class of business risk margins before diversification are dependent only on the class of business being assessed rather than the other classes the insurer writes and therefore are a preferable basis for analysis at the class level. Therefore this report is the first to focus mainly on stand-alone risk margins. The exception is when comparing against 2008 results in Appendix E and F.

In prior reports, we presented weighted and unweighted mean and standard deviation of risk margins with anomalous data removed.

In this report we have continued to present weighted mean and standard deviation of risk margins. In addition, we also present risk margin median and quartiles rather than unweighted means and standard deviations, as we believe this is approach is more informative and more resilient to unusual data. We have therefore included all insurer data in the analysis and have re-cast the 2008 report on this same basis to enable comparison.

We have supplemented the statistical analysis with information from the risk margin section of various insurance liability valuation reports (ILVRs). The ILVRs were sampled from a wide range of insurers of differing sizes and types. The insurers were chosen such that a significant proportion (generally above 90 per cent) of the market's net insurance liability for each class of business was covered. The review covered the approaches used for determining risk margins and diversification benefits and the discussion surrounding the adopted risk margins and diversification benefits.

As part of our review, we have also completed some quantitative analysis on the actual diversification benefits adopted by 55 insurers. The diversification benefits were then assessed for general trends and broad relativities between different types of companies.

Linear regression was used to assess the main driver of variability in the diversification benefits adopted by different insurers. In this case, the dependent variable was taken as the adopted diversification benefit expressed as a percentage of the net risk margin. Explanatory variables such as insurer size, number of classes and various measures of portfolio concentration were tested individually.

Stand-alone Risk Margin Analysis

This section provides summaries of the average risk margins and the variability of these risk margins by class. Results are separated into direct and reinsurance business, as well as between OCL and PL. The risk margins presented below are net of reinsurance and non-reinsurance recoveries and before diversification benefits. The number of insurers in each class is shown after the class name.

For some classes, there are too few insurers to allow the quartile range to be shown.

Direct Business

For direct business, the general relativities between risk margins for different classes appear reasonable; commercial classes tend to have higher and more dispersed risk margins than personal classes. The same is also generally true between long tail classes and short tail business. For OCL, the highest risk margins tended to be associated with liability classes where there is generally a significant delay between claim incidence and claim payment. The exception is CTP which is a well-defined and relatively homogenous class.

In general, the distributions of risk margins were right skewed and the weighted average risk margins were somewhat below the median risk margins. This is due to larger insurers in a particular class adopting lower risk margins than smaller insurers. The range in the chart therefore in part reflects the varying sizes of insurers in a class, and not just differing perceptions of the risk of that class. Analysis of risk margins by size of insurer is included in Appendix C.

Figure 1: OCL Risk Margin for Direct Business
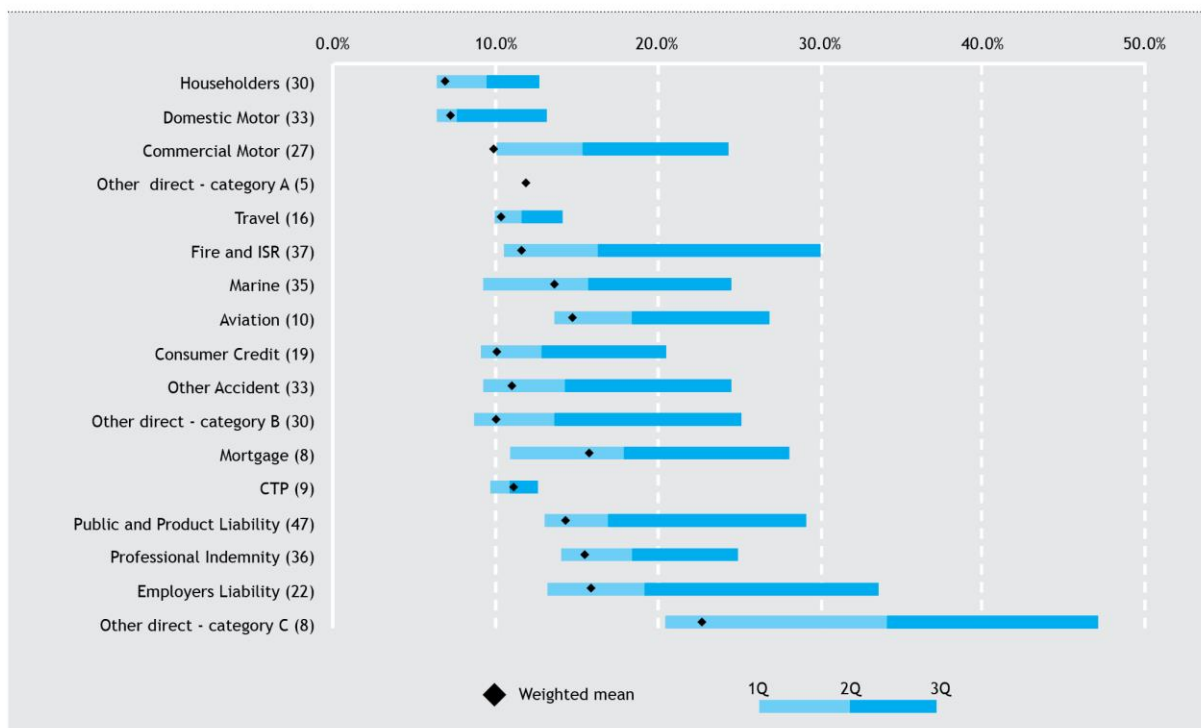
In comparison to OCL risk margins, the PL risk margins for direct business tend to be higher and more dispersed. This seems reasonable given PL represents future risk and the circumstances under which PL claims will be incurred are therefore unknown. Contrast this with the OCL where at least the economic and geophysical environment is known, and a portion of the claims have been lodged.

The differences between OCL and PL risk margins are most pronounced in consumer credit, mortgage and other direct – category B (e.g. trade credit, surety). These insurance products often cover multiple years leading to more uncertainty compared to the generally short tail claims.

In addition, outcomes for these products are strongly linked to the economic environment; the higher level of economic uncertainty is reflected in higher PL risk margins.

The differences between OCL and PL risk margins were less pronounced in employers' liability and public and product liability classes. This is not unexpected as the long tail nature of claims and the relatively high level of incurred but not reported (IBNR) claims means that there is significant overlap in the periods in which both OCL and PL are paid; both are subject to similar factors driving outcomes. The exposure to asbestos claims within these portfolios also adds to the uncertainty of the OCL relative to PL for which asbestos has been excluded.

Figure 2: PL Risk Margins for Direct Business
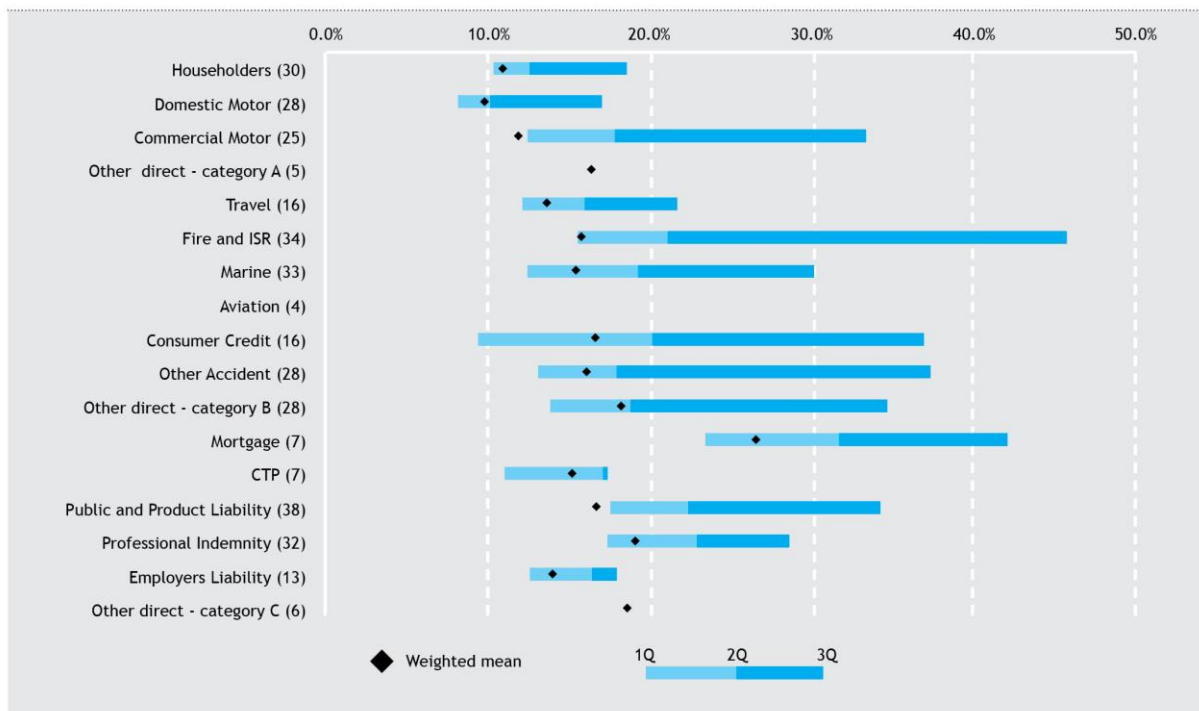
Reinsurance Business

In this analysis, the weighted mean for both 'category A' reinsurance risk margins is not shown. Each is distorted by results from large captive reinsurers that are atypical of reinsurers generally.

For reinsurance business, as well as the standard proportional and non-proportional groupings for each category, we have also included the average direct insurance risk margins for the same categories to enable comparison.

For risk category B, adopted OCL risk margins for proportional reinsurance business were largely in line with those adopted for direct business. For risk categories A and C, higher OCL risk margins were adopted by proportional reinsurance business than direct classes possibly driven by differences in size of OCL and mix of direct insurers being reinsured.

Outstanding claims liability risk margins for non-proportional reinsurance tended to be higher than those adopted for proportional reinsurance and their direct counterparts. This is consistent with the increased volatility inherent in both large and event losses to which non-proportional reinsurance is exposed.

Relativities observed between direct, proportional and non-proportional reinsurance business for PL risk margins were broadly similar to those observed for OCL.

Risk margins adopted for PL were generally higher than those adopted for OCL with some quite large differences particularly for non-proportional reinsurance.

Figure 3: OCL Risk Margins for Reinsurance Business (with Direct Business Comparison)
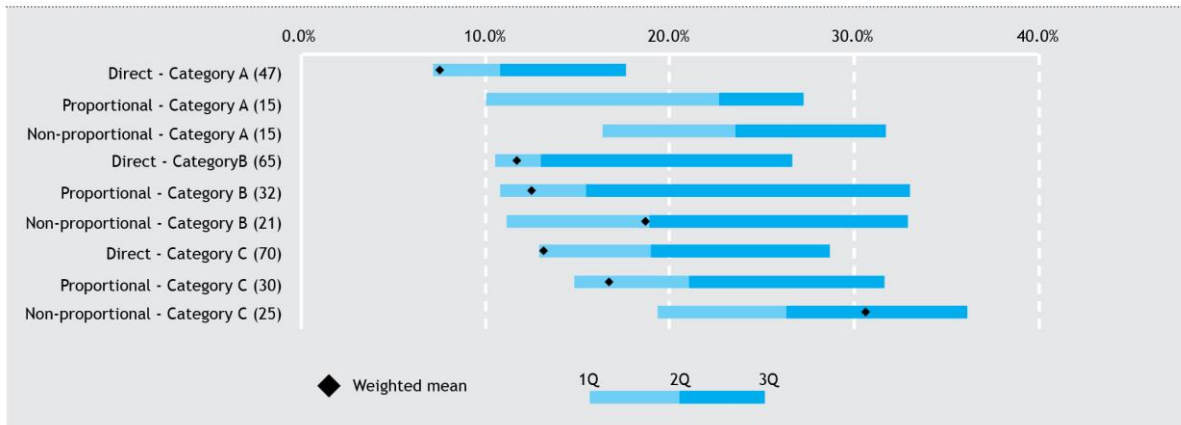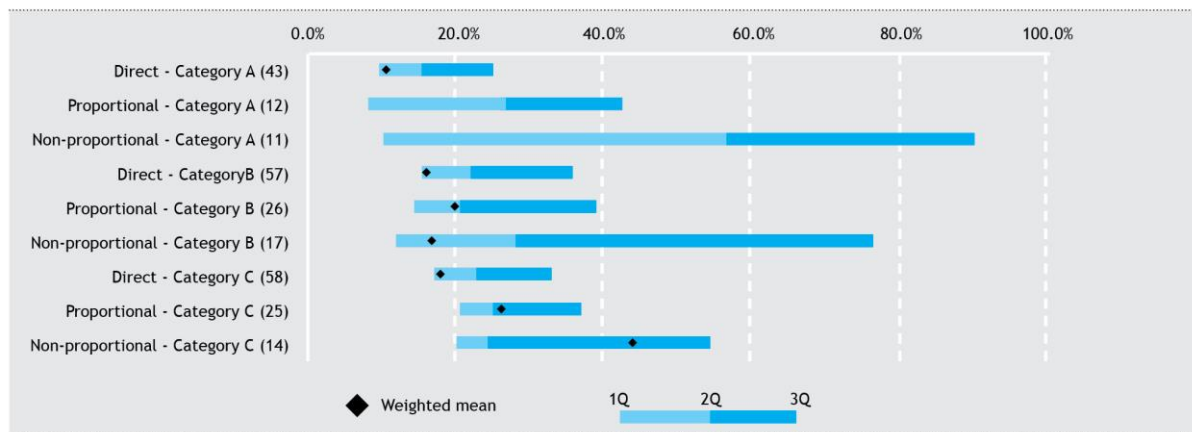

Figure 4: PL Risk Margins for Reinsurance Business (with Direct Business Comparison)

Approaches to Determining Stand-Alone Risk Margins

Our previous risk margin reports indicated that there was a heavy reliance on the Tillinghast[2] and Trowbridge[3] papers in setting risk margins for most insurers. Since that time a more sophisticated approach has been published in a paper entitled 'A Framework for Assessing Risk Margins'. This Actuaries Institute paper was presented to the Institute's 16th General Insurance Seminar in 2008.

Our review of recent ILVRs showed that for more than half of insurers, actuaries have adopted approaches consistent with the framework discussed in the Institute paper. The approaches are now more structured and robust compared to previous years, which is a pleasing development.

Analysis of internal data was used quite extensively by most insurers for estimating risk margins for OCL. From our sample, the most common methodology used was the stochastic chain ladder method. Other common methods used included bootstrapping on both paid and incurred claim cost triangles and the Mack method. In most cases, a number of approaches were used and the results compared by the actuary.

Most actuaries also added loadings to allow for sources of uncertainties that are not captured in historical data, e.g. model error and un-modelled sources of uncertainty. Many actuaries adopted a balanced score card approach in line with the Institute's risk margins framework, while others applied qualitative judgement.

Actuaries who adopted the approach outlined in 'A Framework for Assessing Risk Margins' tended to estimate OCL risk margins and PL risk margins in a consistent manner. For others, PL risk margins were often estimated using scaling factors on the OCL risk margin or Coefficient of Variation (CoV) as suggested by the Tillinghast and Trowbridge papers. A handful of actuaries estimated PL risk margins for their insurers using internal analysis of loss ratios overlaid with qualitative judgment.

The resulting OCL and PL risk margins were generally benchmarked against results from the previous valuation, the research papers and earlier APRA risk margins industry reports. A few actuaries also performed hindsight analysis and sensitivity testing on the CoVs adopted.

OCL Risk Margin Approach

- Tillinghast / Trowbridge Paper 10%
- Quant Analysis 4%
- Quant Analysis & Benchmarking 13%
- Quant Analysis & Qual Judgt 11%
- Institute's RM framework 62%

PL Risk Margin Approach

- Unclear 2%
- Tillinghast / Trowbridge Paper 24%
- Quant Analysis 4%
- Quant Analysis & Benchmarking 8%
- Quant Analysis & Qual Judgt 7%
- Institute's RM framework 55%
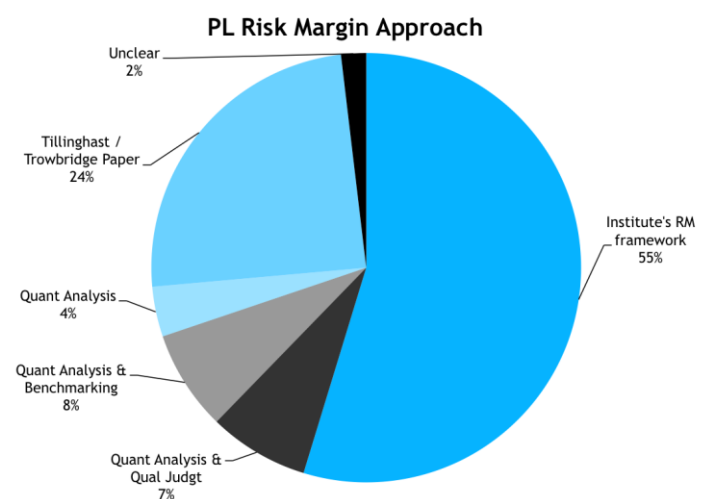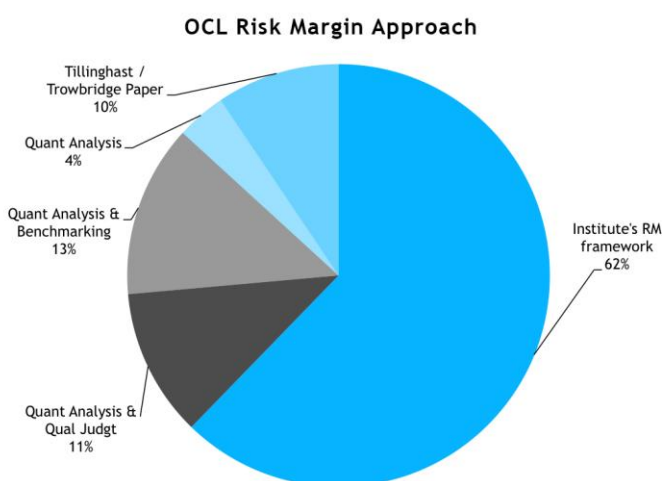
[2] www.actuaries.asn.au/Library/Reports/2001/RelevantDevSGLiabilityValGI.pdf

[3] www.actuaries.asn.au/Library/APRA Risk Margin Analysis Report.pdf

Diversification Benefits

Analysis

This section provides summaries of the diversification benefit adopted by all general insurers. The total diversification benefit for each entity is expressed as a percentage of the total net stand-alone risk margin. 55 out of 110 entities adopted a non-zero diversification benefit. Entities are grouped based on the portfolio concentration (proportion of the net insurance liabilities in the largest class), the number of different classes written and value of insurance liabilities. The groupings were selected to be of a similar size while highlighting the differences the diversification benefit adopted between these categories.

The change in diversification benefits across each grouping aligns with our expectations. Larger insurers, insurers writing more classes and insurers with lower portfolio concentration tended to adopt higher diversification benefits. Of course, these indicators are not independent. The three factors of portfolio concentration, size and number of classes are all correlated. In particular, insurers writing many classes tended to have much lower portfolio concentration than those with fewer classes of business.

We conducted regression analysis to examine the relationship between diversification benefits and three main factors: size of insurance liabilities, number of classes written and portfolio concentration. The analysis suggested that number of classes of business had the strongest explanatory power followed by portfolio concentration.

Note that this analysis suffers from the same limitations as of any industry wide benchmarking in that we could not allow for company specific factors or issues, nor could the measures or proxies used perfectly describe the underlying features of the portfolios.

After assessing a diversification benefit, the actuary needs to allocate that benefit by class for reporting to APRA. Insights into both the diversification benefit and its allocation can be gained by comparing standalone risk margins in Appendix B to the diversified risk margins in Appendix F1 and F2.

Figure 5: Diversification Benefit % by Portfolio Concentration
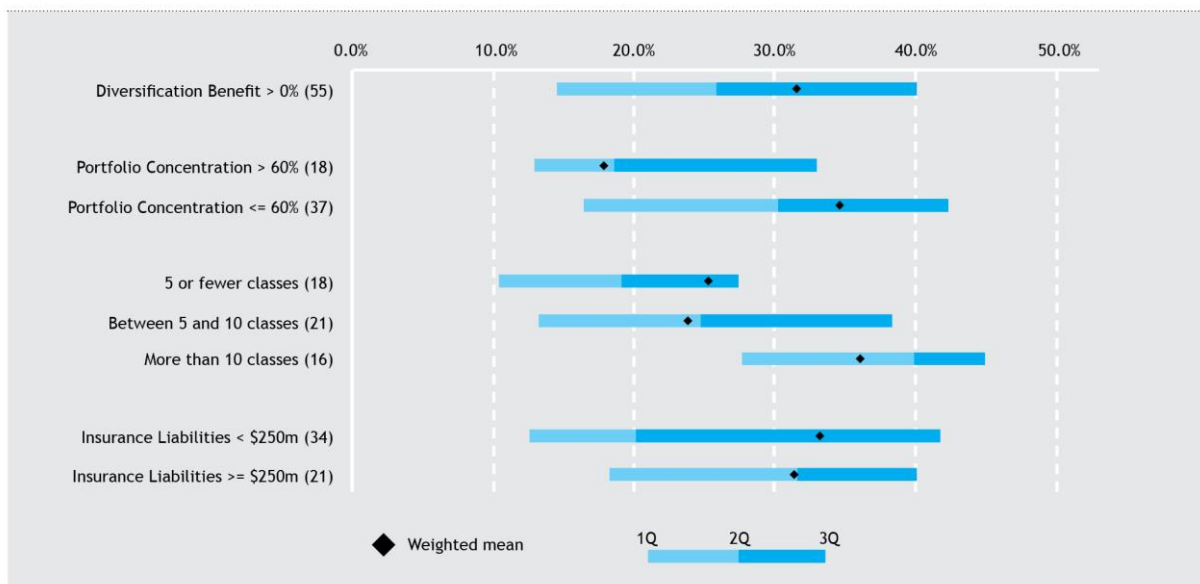
Approaches to Determining Diversification Benefits

From our review of ILVRs, there is a range of approaches actuaries use when estimating diversification benefits. The general approach is to combine the CoVs for each class using a matrix of correlations between classes. Some actuaries selected different correlation matrices for OCL and PL. Further assumptions were made about the correlations between OCL and PL. Most actuaries assume that the overall insurance liabilities are lognormally distributed when estimating diversified risk margins. Calculated diversification benefits tended to be allocated back to individual classes either in proportion to the central estimate or in proportion to some measure of its contribution to the total variability of the portfolio.

Some actuaries apply the selected correlation matrix to the full CoV for each class. A more sophisticated approach distinguishes between systemic and independent risk and applies correlation matrix to systemic variability only. This is based on the assumption that independent risk is uncorrelated between classes and between OCL and PL within each of the classes.

Even for the larger insurers, the approaches are generally fairly subjective and the correlation assumptions are primarily driven by judgment and general reasoning and/or taken directly from either of the Tillinghast and Trowbridge papers. As additional input into their selection of correlation assumptions, some actuaries also used internal data to estimate correlations between classes. The techniques used were generally based upon rank correlations or Pearson residuals of loss ratios and changes in incurred estimates. While the results from these approaches were considered, the adopted correlations tended to be higher (i.e. more conservative) than those implied by the analysis of internal data. A small number of insurers also stress tested their adopted correlation assumptions.

Appendices

Appendix A – Statistical Methodology

For a class of insurance/reinsurance c:

Weighted average risk margin $_c$ =

$$\frac{\sum_{i=1}^{n} RM_{ci}}{\sum_{i=1}^{n} CE_{ci}}$$

Variance of weighted risk margin $_c$ =

$$\frac{1}{(n-1)} \sum_{i=1}^{n} \frac{CE_{ci}}{\sum_{i=1}^{n} \frac{CE_{ci}}{n}} (\%RM_{ci} - \%WARM_c)^2$$

Where:

c represents class of business $c_1, c_2, c_3, \dots c_m$.

i represents insurer $i_1, i_2, i_3, \dots i_n$

CE_{ci} = central estimate in dollars for class c of insurer i

RM_{ci} = risk margin in dollars for class c of insurer i

$\%RM_{ci}$ = risk margin as percentage of central estimate for class c of insurer i

$\%WARM_c$ = weighted average risk margin for class c across all insurers

Quartiles are determined by ordering observations from lowest to highest, and taking the observations at the 25 per cent, 50 per cent (median) and 75 per cent positions. There are several possible approaches to determine the 1st and 3rd quartiles where they land between data observations – in this analysis we have used the 'N+1' approach. This tends to present a wider quartile range than other approaches, and arguably provides a better understanding of the typical range of experience.

Appendix B – Risk Margin Tables

The following tables show the stand-alone risk margin outcomes by class.

They form the basis for the charts in the main body of the report.

Outstanding Claim Liabilities for Direct Business

Direct classes	Number of Insurers	Weighted Average RM%		RM% Quartiles		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Householders	30	6.9%	2.6%	6.4%	9.5%	12.7%
Domestic Motor	33	7.2%	3.0%	6.4%	7.6%	13.1%
Commercial Motor	27	9.9%	4.9%	10.1%	15.4%	24.3%
Other direct - category A	5	11.9%	4.8%	*	*	*
Travel	16	10.4%	2.8%	9.9%	11.6%	14.1%
Fire and ISR	37	11.6%	5.5%	10.5%	16.2%	30.0%
Marine	35	13.6%	6.0%	9.2%	15.7%	24.5%
Aviation	10	14.7%	3.7%	13.6%	18.4%	26.8%
Consumer Credit	19	10.0%	4.8%	9.1%	12.8%	20.5%
Other Accident	33	11.0%	4.5%	9.2%	14.3%	24.4%
Other direct - category B	30	10.0%	7.0%	8.6%	13.5%	25.1%
Mortgage	8	15.7%	3.4%	10.9%	17.9%	28.0%
CTP	9	11.1%	1.5%	9.7%	10.8%	12.6%
Public and Product Liability	47	14.3%	6.1%	13.0%	16.9%	29.1%
Professional Indemnity	36	15.5%	5.7%	14.0%	18.4%	24.9%
Employers' Liability	22	15.8%	5.1%	13.2%	19.1%	33.6%
Other direct - category C	8	22.7%	8.6%	20.4%	34.1%	47.1%

Premium Liabilities for Direct Business

Direct classes	Number of Insurers	Weighted Average RM%		RM% Quartiles		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Householders	30	10.9%	4.4%	10.2%	12.5%	18.6%
Domestic Motor	28	9.7%	3.5%	8.1%	10.1%	16.9%
Commercial Motor	25	11.8%	5.9%	12.4%	17.7%	33.2%
Other direct - category A	5	16.3%	11.5%	*	*	*
Travel	16	13.6%	4.3%	12.1%	15.9%	21.6%
Fire and ISR	34	15.7%	9.8%	15.5%	21.0%	45.5%
Marine	33	15.4%	8.0%	12.4%	19.2%	30.0%
Aviation	4	*	*	*	*	*
Consumer Credit	16	16.6%	8.8%	9.3%	20.1%	36.8%
Other Accident	28	16.0%	9.7%	13.1%	17.8%	37.1%
Other direct - category B	28	18.2%	15.3%	13.8%	18.9%	34.6%
Mortgage	7	26.5%	4.6%	23.3%	31.6%	41.9%
CTP	7	15.2%	4.7%	11.0%	17.1%	17.3%
Public and Product Liability	38	16.6%	9.1%	17.5%	22.3%	34.0%
Professional Indemnity	32	19.1%	5.7%	17.3%	22.8%	28.5%
Employers' Liability	13	14.0%	4.2%	12.6%	16.4%	17.9%
Other direct - category C	6	18.5%	18.1%	*	*	*

As mentioned earlier, in this analysis the weighted mean and standard deviation for both 'category A' reinsurance risk margins is not shown. They are distorted by risk margins for large captive reinsurers that are not typical of reinsurers generally.

Direct class risk margins have been included for comparative purposes.

Outstanding Claim Liabilities for Reinsurance Business (with Direct Business Comparison)

Reinsurance Classes	Number of Insurers	Weighted Average RM%		RM% Quartiles		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Direct - Category A	47	7.5%	3.2%	7.2%	10.8%	17.7%
Proportional - Category A	15	*	*	10.0%	22.7%	27.3%
Non-proportional - Category A	15	*	*	16.4%	23.6%	31.8%
Direct - Category B	65	11.7%	5.1%	10.5%	13.0%	26.7%
Proportional - Category B	32	12.5%	7.3%	10.8%	15.5%	33.0%
Non-proportional - Category B	21	18.7%	14.7%	11.2%	19.0%	32.9%
Direct - Category C	70	13.2%	3.7%	12.9%	19.0%	28.7%
Proportional - Category C	30	16.7%	29.1%	14.8%	21.1%	31.7%
Non-proportional - Category C	25	30.7%	75.0%	19.4%	26.3%	36.2%

Premium Liabilities for Reinsurance Business (with Direct Business Comparison)

Reinsurance Classes	Number of Insurers	Weighted Average RM%		RM% Quartiles		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Direct - Category A	43	10.5%	3.9%	9.6%	15.4%	25.0%
Proportional - Category A	12	*	*	8.0%	26.0%	42.4%
Non-proportional - Category A	11	*	*	10.0%	56.7%	90.1%
Direct - Category B	57	16.0%	9.9%	15.4%	22.0%	35.9%
Proportional - Category B	26	19.8%	11.5%	14.5%	20.5%	38.9%
Non-proportional - Category B	17	16.7%	25.1%	11.9%	28.0%	76.5%
Direct - Category C	58	17.9%	6.8%	17.0%	22.6%	32.9%
Proportional - Category C	25	26.2%	11.7%	20.6%	25.0%	37.0%
Non-proportional - Category C	14	43.8%	32.6%	20.1%	24.4%	54.4%

The following table shows the diversification benefit adopted by insurers, consistent with the charts in the main body of the report. Each set of rows represents a different segmentation of the 55 insurers that reported a diversification benefit.

Diversification Benefit for Direct and Reinsurance business

Direct Classes	Number of Insurers	Weighted Average DB%		DB% Quartiles (%)		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Diversification Benefit > 0%	55	31.5%	12.1%	14.5%	25.9%	40.1%
Portfolio Concentration > 60%	18	17.9%	12.8%	12.9%	18.5%	33.0%
Portfolio Concentration <= 60%	37	34.6%	9.6%	16.4%	30.2%	42.3%
5 or fewer classes	18	25.3%	18.6%	10.4%	19.1%	27.4%
Between 5 and 10 classes	21	23.8%	13.1%	13.3%	24.7%	38.3%
More than 10 classes	16	36.0%	8.4%	27.6%	39.9%	44.9%
Insurance Liabilities < $250m	34	33.2%	19.0%	12.6%	20.1%	41.8%
Insurance Liabilities >= $250m	21	31.3%	11.4%	18.2%	31.6%	40.0%

Appendix C – Risk Margins of Large vs Small Insurers, Direct Classes

The following tables provide stand-alone risk margins by size of insurers. Large insurers are those ranked in the top 5 in each class based on net OCL or net PL. Note that only classes with more than 10 insurers are shown in the tables below.

Outstanding Claim Liabilities for Direct Business by Size of Insurer

Direct Classes	Number of Insurers	Weighted Average RM%	
		Largest 5 insurers	Remaining Insurers
Householders	30	6.8%	7.1%
Domestic Motor	33	6.5%	8.8%
Commercial Motor	27	9.6%	11.1%
Travel	16	10.7%	9.6%
Fire and ISR	37	11.0%	12.6%
Marine	35	12.3%	16.8%
Aviation	10	14.6%	17.6%
Consumer Credit	19	8.9%	16.9%
Other Accident	33	9.5%	14.3%
Other direct - category B	30	8.9%	12.0%
Public and Product Liability	47	12.4%	18.7%
Professional Indemnity	36	15.1%	15.9%
Employers' Liability	22	15.3%	18.1%

Premium Liabilities for Direct Business by Size of Insurer

Direct Classes	Number of Insurers	Weighted Average RM%	
		Largest 5 insurers	Remaining Insurers
Householders	30	10.9%	11.0%
Domestic Motor	28	10.1%	8.9%
Commercial Motor	25	12.1%	10.7%
Travel	16	13.0%	15.4%
Fire and ISR	34	12.9%	21.0%
Marine	33	13.7%	18.7%
Consumer Credit	16	15.8%	21.6%
Other Accident	28	12.4%	21.9%
Other direct - category B	28	17.4%	21.6%
Public and Product Liability	38	13.4%	24.1%
Professional Indemnity	32	18.0%	20.0%
Employers' Liability	13	13.6%	16.8%

Appendix D – Ratio of PL to OCL Risk Margins, Direct Classes

This appendix compares the relativity of PL to OCL risk margins within each class.

The PL scale up factor was calculated as the PL risk margin percentage divided by the OCL risk margin percentage. We also derived risk margins using the Tillinghast formulae based on industry average portfolios and calculated the corresponding PL scale up factors.

For property classes, the PL scale up factors were broadly in line with the Tillinghast and Trowbridge research papers. For liability classes, the observed relativities were significantly lower than those in the research papers. For some classes, this may be due to asbestos exposures that are only within the OCL. This also may reflect actuaries becoming less reliant on those papers.

Ratio of PL to OCL risk margins

| Direct Classes | PL Scale Up Factor Quartiles | | | Tillinghast | Trowbridge |
	1st	2nd	3rd		
Householders	1.19	1.40	1.75	1.48	1.50
Domestic Motor	0.88	1.26	1.61	1.13	1.20
Commercial Motor	1.01	1.45	1.67	1.33	1.30
Other direct - category A	1.27	1.61	2.10	1.32	1.40
Travel	1.10	1.34	1.70	1.81	1.40
Fire and ISR	1.27	1.52	1.76	1.64	1.60
Marine	0.88	1.22	1.51	2.07	1.40
Consumer Credit	0.78	1.29	2.06	1.12	1.40
Other Accident	1.30	1.44	1.77	1.69	1.40
Other direct - category B	1.12	1.41	1.75	0.99	1.40
Mortgage	1.66	1.90	2.00	1.17	1.40
CTP	0.67	1.44	1.60	1.40	1.80
Public and Product Liability	1.18	1.27	1.42	1.81	1.60
Professional Indemnity	1.10	1.26	1.49	1.69	2.00
Employers Liability	0.86	1.22	1.40	1.47	1.60
Other direct - category C	0.64	0.93	1.43	1.45	1.45

Figure 6: PL Scale up Factors by Class of Business
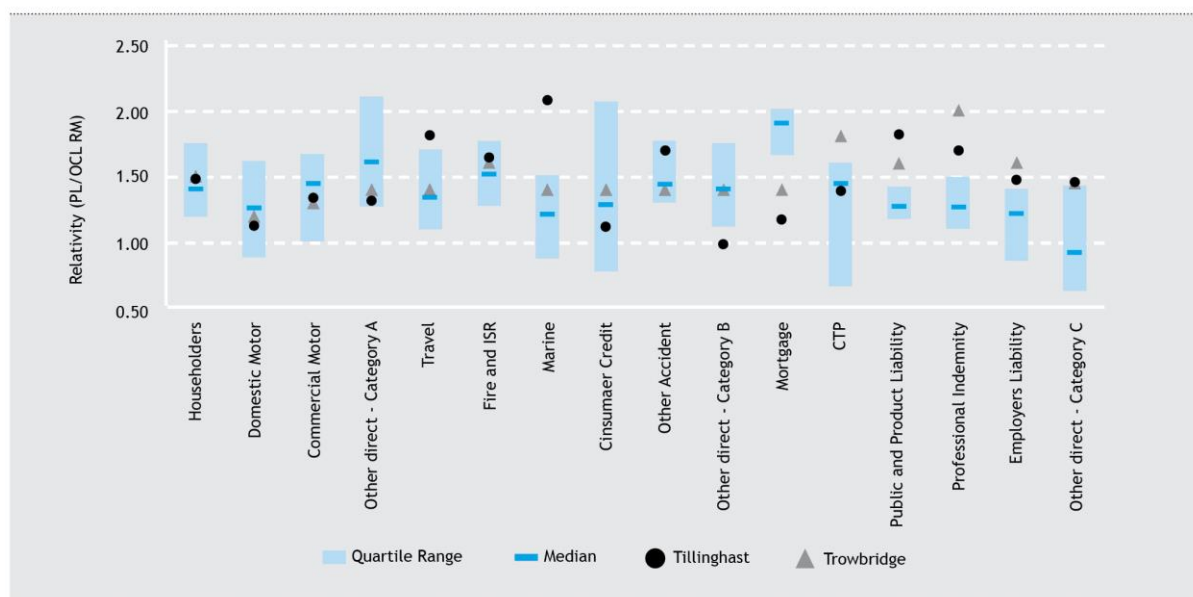
Appendix E – Change in Diversified Risk Margins, Direct Classes, 2007 to 2013

This section provides the movement in diversified risk margins since June 2007 by class of business for each direct insurer that was included in both the current and the 2008 reports. This comparison is on diversified risk margins because the stand-alone results were not collected at that time.

'Other direct' and reinsurance classes are excluded due to changes to business classification over that time. The aviation PL risk margin movement is not shown due to the small size of that class.

For the majority of the classes, at least half of the insurers have adopted lower diversified OCL and PL risk margins in this report compared to in 2007. Possible reasons include the stable environment, better data and more advanced techniques for assessing uncertainties.

The main exception is mortgage where higher risk margins tended to be adopted (although on a wide quartile range) likely reflecting the changed economic outlook since 2007.

Changes in the underlying uncertainty are not the only drivers of changes in diversified risk margins. Other factors such as changes in business mix and changes in diversification benefit allocation can also have an impact.

Figure 7: Movement in Diversified OCL Risk Margins %, 2007-2013
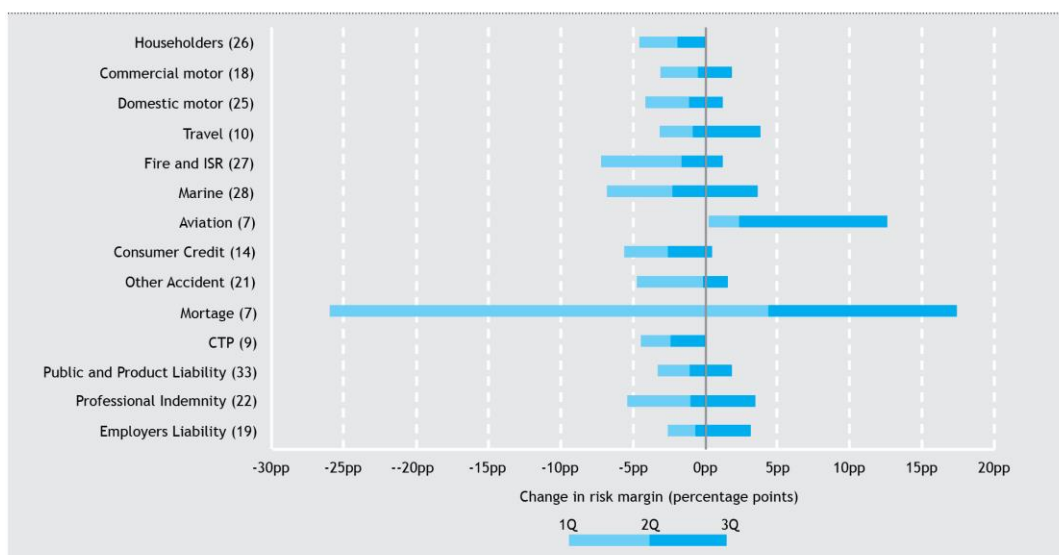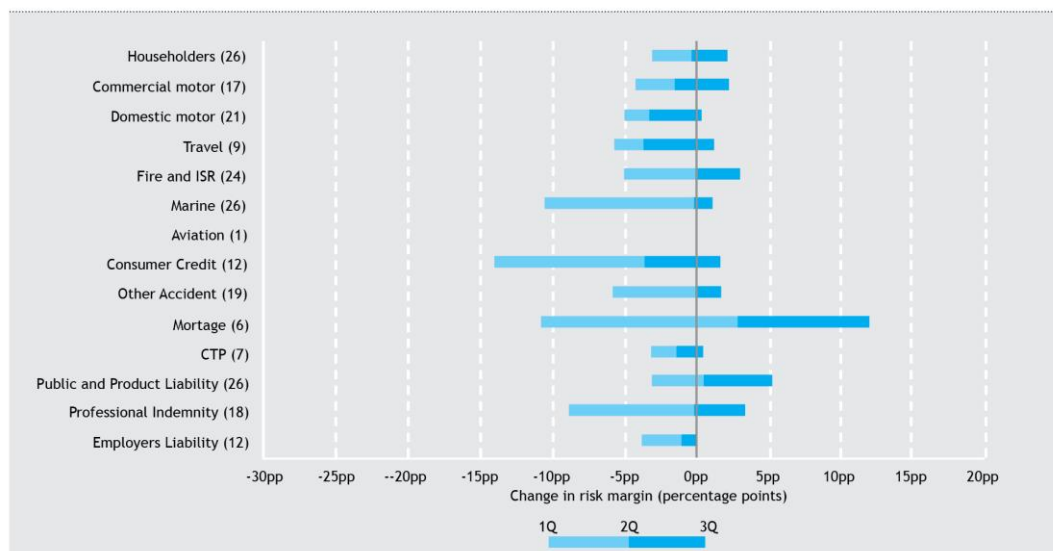

Figure 8: Movement in Diversified PL Risk Margins %, 2007-2013

Appendix F1 – Comparison of Diversified Risk Margins, Direct Classes, 2007 and 2013

The following tables recast the 2007 diversified risk margins using the current basis. The unweighted mean and standard deviation presented in 2007 have been removed in favour of quartiles. Because the current set of statistics is more robust to extreme risk margins in very small classes, data that was excluded in the original 2007 analysis have now been included.

Whereas class of business risk margins in most of this report are before diversification the 2013 risk margins shown here are after diversification to allow comparison with 2007 when only diversified risk margins were collected.

Outstanding Claims Liabilities Diversified Risk Margins for Direct Business

| | Number of Insurers | | Weighted Average Diversified RM% | | | | Diversified RM% Quartiles | | | | | |
| | | | Mean | | Std dev | | 1st | | 2nd | | 3rd | |
Direct classes	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013
Householders	41	30	5.6%	4.3%	2.0%	2.2%	4.9%	4.2%	7.5%	6.8%	14.1%	8.1%
Domestic Motor	40	33	5.6%	4.7%	3.2%	2.4%	4.8%	4.7%	6.2%	5.9%	11.0%	9.3%
Commercial Motor	35	27	7.1%	5.2%	3.7%	3.8%	6.2%	5.8%	10.0%	10.0%	18.0%	19.3%
Travel	16	16	7.7%	7.0%	1.9%	1.7%	6.8%	6.2%	8.5%	7.1%	13.6%	12.0%
Fire and ISR	45	37	8.5%	7.2%	3.7%	4.7%	7.5%	6.7%	11.4%	11.3%	15.3%	23.3%
Marine	44	35	9.5%	7.7%	9.5%	5.4%	7.1%	6.3%	12.1%	10.6%	21.9%	20.5%
Aviation	10	10	6.7%	8.9%	n/a	3.7%	5.1%	7.0%	9.3%	15.0%	20.3%	21.3%
Consumer Credit	18	19	8.2%	6.7%	5.9%	4.5%	6.2%	5.5%	9.9%	8.9%	21.8%	19.3%
Other Accident	41	33	8.2%	6.5%	3.6%	4.1%	6.9%	6.0%	10.0%	10.1%	16.1%	20.0%
Mortgage	12	8	9.4%	15.7%	6.2%	3.4%	3.1%	10.9%	19.4%	17.9%	42.4%	28.0%
CTP	13	9	9.3%	8.2%	2.0%	1.9%	8.6%	7.0%	10.4%	7.3%	12.1%	9.2%
Public and Product Liability	53	47	11.2%	9.6%	8.1%	5.2%	9.9%	10.1%	13.1%	13.0%	25.8%	22.8%
Professional Indemnity	37	36	13.8%	12.4%	7.1%	5.8%	9.7%	10.6%	13.0%	14.3%	19.1%	19.7%
Employers' Liability	25	22	12.5%	10.0%	4.6%	4.3%	9.6%	8.8%	12.6%	12.4%	26.5%	22.2%

Premium Liabilities Diversified Risk Margins for Direct Business

| | Number of Insurers | | Weighted Average Diversified RM% | | | | Diversified RM% Quartiles | | | | | |
| | | | Mean | | Std dev | | 1st | | 2nd | | 3rd | |
Direct classes	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013
Householders	35	30	8.8%	7.8%	3.1%	2.7%	7.6%	7.2%	10.3%	9.5%	15.0%	14.3%
Domestic Motor	32	28	7.0%	6.5%	3.7%	2.2%	5.6%	6.0%	9.5%	7.4%	13.6%	11.2%
Commercial Motor	26	25	9.1%	7.8%	4.4%	3.7%	7.1%	7.1%	11.1%	10.6%	19.7%	27.0%
Travel	13	16	6.8%	10.1%	4.8%	4.0%	10.5%	8.1%	12.1%	10.3%	15.5%	19.8%
Fire and ISR	37	34	13.0%	11.0%	8.7%	6.9%	11.3%	10.2%	14.7%	15.3%	25.2%	33.0%
Marine	37	33	12.3%	10.2%	6.7%	5.6%	9.8%	7.6%	13.1%	13.4%	21.8%	25.8%
Consumer Credit	15	16	14.5%	13.8%	12.4%	9.1%	10.1%	8.1%	16.0%	14.9%	35.0%	28.1%
Other Accident	32	28	12.3%	10.8%	5.3%	7.4%	10.0%	8.9%	13.1%	12.1%	20.5%	32.6%
Mortgage	11	7	18.4%	26.5%	8.3%	4.6%	16.9%	23.3%	25.0%	31.6%	34.2%	41.9%
CTP	9	7	12.3%	11.0%	3.0%	2.5%	10.6%	8.1%	12.7%	11.8%	14.0%	13.4%
Public and Product Liability	39	38	12.6%	11.7%	6.7%	5.2%	11.7%	12.7%	14.6%	16.1%	24.7%	27.9%
Professional Indemnity	27	32	17.0%	15.3%	8.7%	5.7%	12.5%	12.9%	18.8%	16.7%	25.0%	26.9%
Employers' Liability	15	13	11.7%	9.8%	5.4%	3.8%	10.3%	8.0%	11.9%	9.8%	16.5%	16.6%

Appendix F2 – Diversified Risk Margins, Reinsurance Classes, 2007 and 2013

Reinsurance classes for APRA purposes changed between 2007 and 2013, so a direct comparison is not available. Instead, diversified risk margins from the classes as collected in both periods are presented. As stated earlier, some mean and standard deviations are not shown as they are distorted by an atypical reinsurer.

Similar to direct classes, the 2013 risk margins shown below for reinsurance classes are after allowing for diversification to allow comparison with 2007.

2013 Outstanding Claim Liabilities Diversified Risk Margins for Reinsurance Business

Direct Classes	Number of Insurers	Weighted Average RM%		RM% Quartiles (%)		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Proportional - Category A	15	*	*	6.9%	14.8%	22.9%
Non-proportional - Category A	15	*	*	11.1%	14.2%	18.2%
Proportional - Category B	32	9.3%	5.8%	7.8%	14.7%	24.5%
Non-proportional - Category B	21	14.1%	11.9%	9.2%	14.9%	20.9%
Proportional - Category C	30	12.0%	15.9%	10.6%	15.1%	25.0%
Non-proportional - Category C	25	20.0%	41.3%	14.5%	16.2%	23.8%

2007 Outstanding Claim Liabilities Diversified Risk Margins for Reinsurance Business

Direct Classes	Number of Insurers	Weighted Average RM%		RM% Quartiles (%)		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Property						
Facultative excess of loss	13	*	*	10.4%	15.8%	35.4%
Facultative proportional	16	9.0%	27.6%	11.7%	13.9%	23.9%
Treaty excess of loss	21	*	*	12.3%	16.0%	23.9%
Treaty proportional	29	*	*	9.1%	13.8%	24.3%
Marine and Aviation						
Facultative	10	11.7%	2.3%	11.8%	13.4%	23.2%
Treaty excess of loss	17	17.2%	22.9%	10.2%	14.6%	36.7%
Treaty proportional	22	14.7%	30.1%	9.2%	11.9%	21.4%
Casualty						
Facultative excess of loss	14	15.8%	7.3%	13.1%	17.0%	26.0%
Facultative proportional	11	10.9%	2.7%	10.0%	12.0%	18.0%
Treaty excess of loss	29	18.7%	34.8%	11.9%	18.3%	33.1%
Treaty proportional	25	12.2%	5.7%	10.1%	16.6%	25.8%
Reinsurance Non-split	9	23.6%	17.8%	7.4%	12.1%	28.2%

2013 Premium Liabilities Diversified Risk Margins for Reinsurance Business

Direct Classes	Number of Insurers	Weighted Average RM%		RM% Quartiles (%)		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Proportional - Category A	12	*	*	6.6%	16.9%	34.1%
Non-proportional - Category A	11	*	*	8.5%	28.3%	68.9%
Proportional - Category B	26	14.4%	6.9%	10.7%	15.9%	34.0%
Non-proportional - Category B	17	12.7%	21.6%	9.8%	20.0%	58.0%
Proportional - Category C	25	19.6%	7.7%	12.4%	21.4%	29.3%
Non-proportional - Category C	14	30.3%	17.4%	15.5%	22.7%	39.9%

2007 Premium Liabilities Diversified Risk Margins for Reinsurance Business

Direct Classes	Number of Insurers	Weighted Average RM%		RM% Quartiles (%)		
		Mean (%)	Std dev (%)	1st	2nd	3rd
Property						
Facultative excess of loss	8	14.7%	9.2%	16.6%	30.8%	47.3%
Facultative proportional	10	15.0%	8.3%	12.0%	25.7%	41.7%
Treaty excess of loss	10	*	*	16.4%	33.9%	51.2%
Treaty proportional	14	*	*	10.2%	22.3%	34.4%
Marine and Aviation						
Facultative	5	16.3%	6.6%	*	*	*
Treaty excess of loss	7	24.1%	13.6%	16.2%	20.7%	42.0%
Treaty proportional	8	22.7%	9.8%	15.3%	20.9%	31.3%
Casualty						
Facultative excess of loss	8	19.3%	7.1%	15.9%	27.0%	49.1%
Facultative proportional	9	15.8%	4.8%	14.0%	20.6%	28.5%
Treaty excess of loss	10	22.3%	13.9%	16.5%	26.5%	53.7%
Treaty proportional	9	14.9%	6.1%	13.5%	15.9%	33.1%
Reinsurance Non-split	8	14.8%	12.2%	6.0%	17.7%	46.6%