



Motor Accident Insurance Commission

Retrospective profit study of Queensland CTP premiums as at 31 December 2018

27 May 2019

Version: **FINAL**

A handwritten signature in black ink that reads 'Richard Brookes'.

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Fellow of the Institute of Actuaries of Australia

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Nelson Vasconcelos

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1 EXECUTIVE SUMMARY

1.1 Levels of Scheme profit

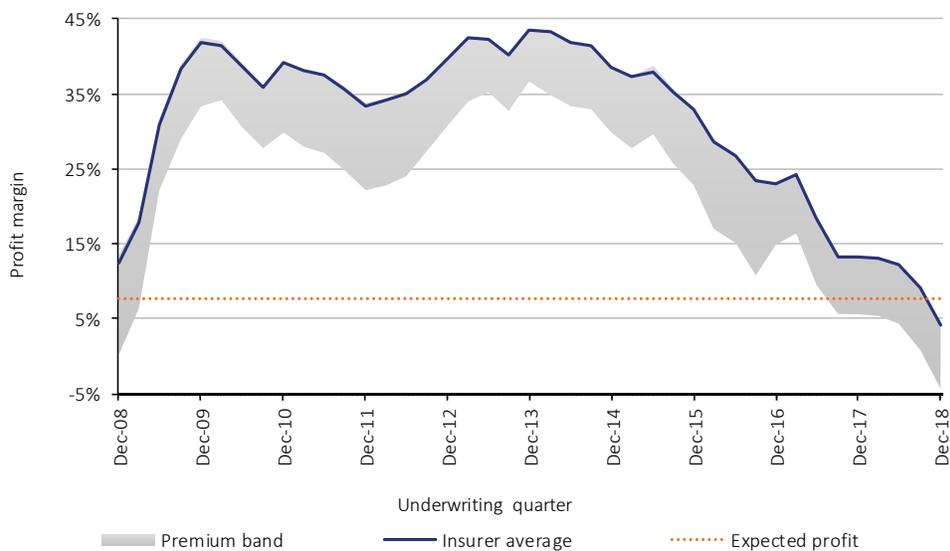
Table 1.1 shows our latest estimates of the average Scheme profit as at 31 December 2018 as a percentage of insurer premiums, and in dollar values per policy, for three future superimposed inflation scenarios.

Table 1.1 Scheme retrospective profit margins for all classes as at 31 December 2018

Underwriting Period	Profit margin (at insurer average premium)					
	0% p.a. SI scenario		1% p.a. SI scenario		2% p.a. SI scenario	
	%	\$	%	\$	%	\$
2014	42%	\$122	41%	\$121	41%	\$120
2015	36%	\$104	36%	\$103	35%	\$101
2016	27%	\$74	25%	\$71	24%	\$68
2017	19%	\$45	17%	\$41	16%	\$37
2018	13%	\$27	10%	\$21	7%	\$15
Most recent 3 years	20%	\$49	18%	\$44	16%	\$40
Most recent 5 years	28%	\$74	27%	\$71	26%	\$68
Most recent 10 years	33%	\$90	32%	\$89	32%	\$87

Figure 1.1 shows the Scheme profit margin over time, based on the 1% p.a. superimposed inflation scenario.

Figure 1.1 Scheme retrospective profit margin for MAIC premium band and insurer average premiums at 1% p.a. superimposed inflation



Note: We have estimated the cost net of NIISQ reduction for claims transferred to NIISQ from 1 October 2016.

Insurers price at or close to the ceiling premium on average. The insurer average premium achieves a profit margin above the expected profit margin for all underwriting quarters with the Dec-18 quarter being an exception.



1.2 Sources of Scheme profit for recent underwriting years

We have allocated the retrospective profit approximately to contributing factors for the 1% p.a. superimposed inflation scenario. Below is a breakdown of the contributing factors to the profit margin of underwriting years 2017 and 2018.

The components in Figure 1.1 and Figure 1.2 are both estimated at the end of the underwriting year so that they incorporate a similar amount of uncertainty and thus are comparable. The comparison aims to provide insights into the drivers of difference in the profit estimated at the end of the first year between underwriting years 2017 and 2018.

Table 1.4 provides a detailed commentary on the difference in each of the components.

Figure 1.2 Components of profit margin for underwriting year 2017

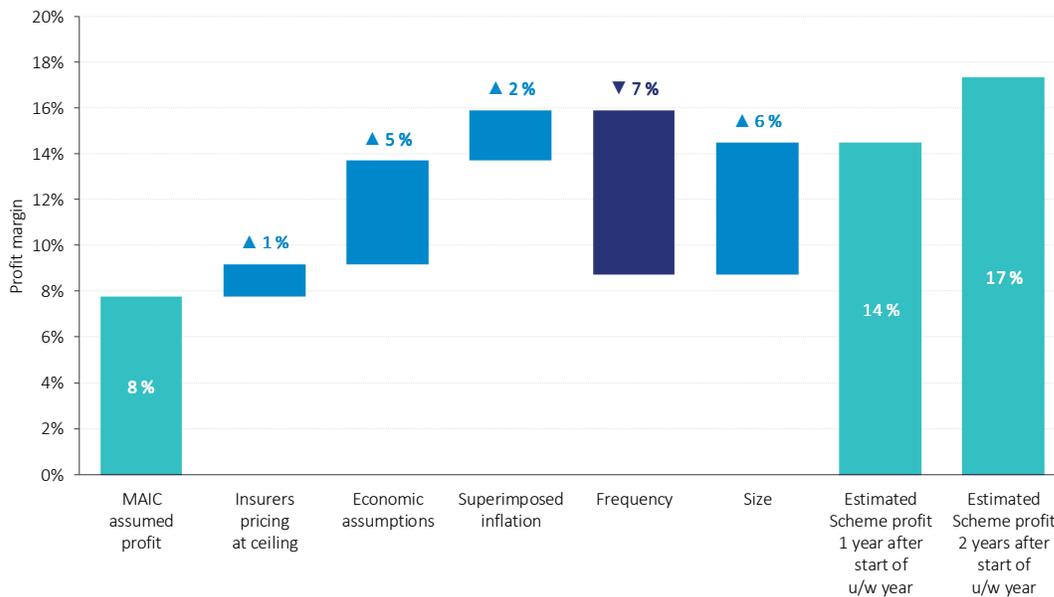


Figure 1.3 Components of profit margin for underwriting year 2018

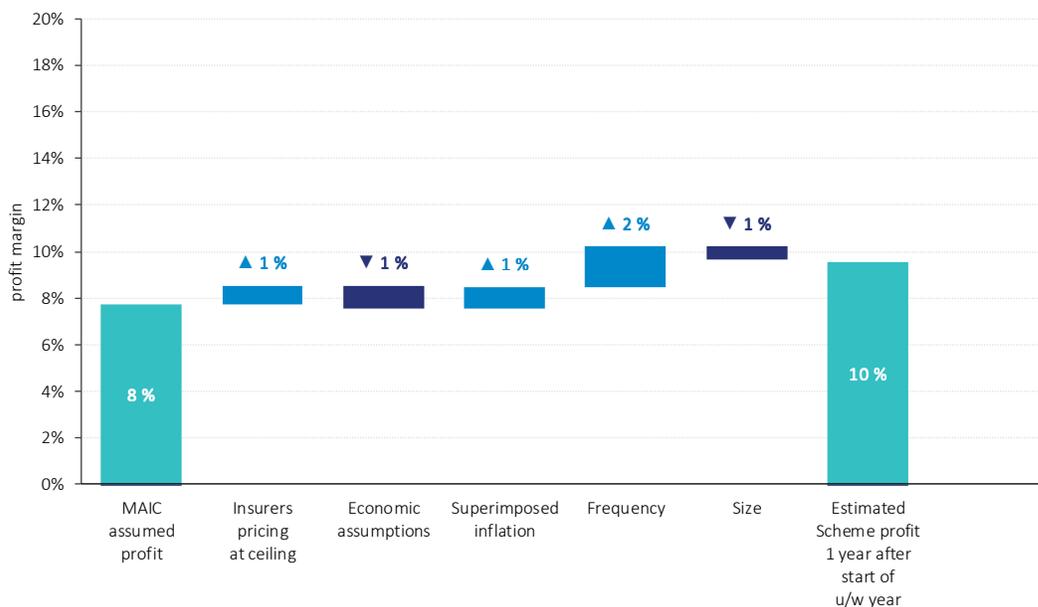


Table 1.4 Comparison of contributing factors to profit margin of underwriting year 2017 and 2018

Source of profit	Underwriting year		Description
	2017	2018	
MAIC assumed profit	8%	8%	The profit allowance set by MAIC has been 7.75% since 1 July 2008.
Insurers pricing at ceiling	+ 1%	+ 1%	Since the Dec-16 underwriting quarter, the ceiling premium has been set close to our central estimate of premium, reducing the profit generated by insurers pricing at the ceiling.
Economic assumptions	+ 5%	- 1%	Over 2017, both the actual and expected wage inflation were lower than the forecast at premium setting. This generated significant profit for underwriting year 2017. Actual wage inflation in underwriting year 2018 was much higher than the forecast at the premium setting. This translated into a decrease in profit.
Superimposed inflation	+ 2%	+ 1%	MAIC have revised the superimposed inflation assumption downwards from 2.5% p.a. to 1% p.a. since the Mar-17 underwriting quarter. Actual superimposed inflation has been close to zero.
Claim frequency	- 7%	+ 2%	Over 2017, the claim frequency used at premium setting was much lower than actual claim frequency, in part anticipating a continued fall in claim size.
Average claim size	+ 6%	- 1%	The average finalised claim size has exhibited a longstanding decreasing trend. The average claim size assumption used for premium setting decreased significantly over 2017 in response to this experience.
Estimated profit at end of underwriting year	14%	10%	
Average insurer filed profit margin at the start of underwriting	-6%	-8%	The gaps between the insurers' views and our estimate of the profit margin are large for both 2017 and 2018 underwriting years.



1.3 Uncertainty in estimates of profit

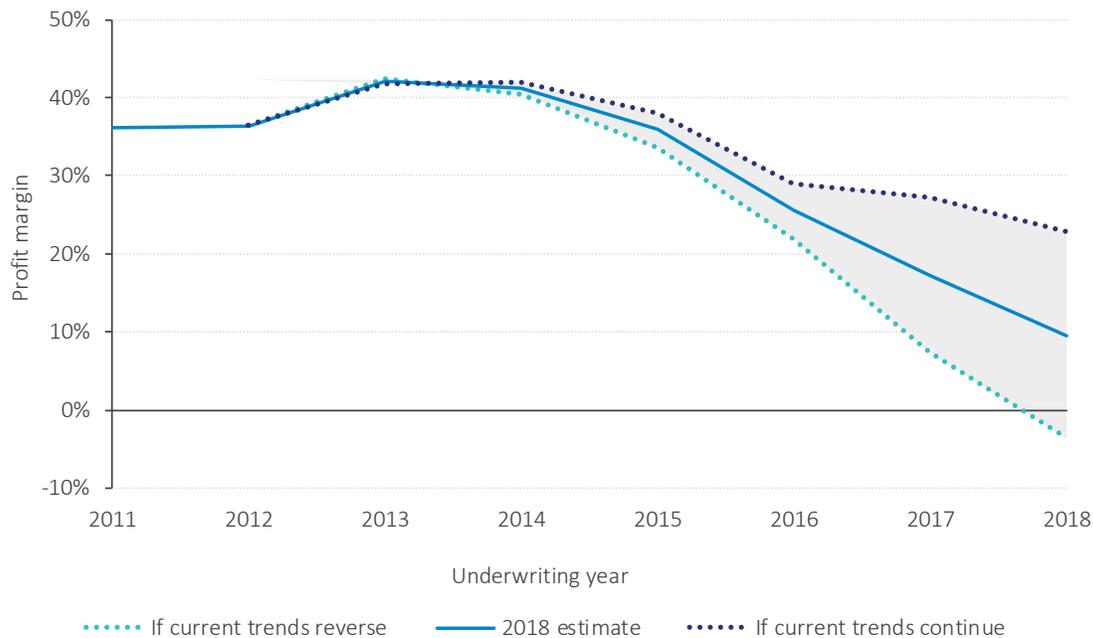
Estimates of profit for CTP insurance are subject to considerable degrees of uncertainty due to the dynamic environment. CTP is a long-tailed class and it takes many years before an underwriting quarter's claims cost can be known with a high degree of certainty. Actual results may be materially different from the results presented in this report, particularly for more recent underwriting quarters, because the present results are largely or wholly based on current model estimates. Figure 1.5 illustrates the degree of uncertainty in the estimated profit margin.

Although we make every effort to estimate a central estimate for Scheme profit for each underwriting year, the trend for the past several years has been that our estimates for a given underwriting year have increased over time. For instance, for the 2015 underwriting year:

- » As at December 2015, we estimated the profit margin to be 18%
- » As at December 2016, this had risen to 32%
- » As at December 2017, this had risen to 37%.

These increases have been due to a number of reasons, each of which has been largely unforeseen. The upper end of the grey region in Figure 1.5 is illustrative only and assumes that the pattern of the last few years continues. The lower end of the grey region assumes that the pattern reverses. The region narrows as one moves to the left because more of the claims cost has been paid and so the uncertainty is less. The grey region should be treated as indicative only and results which lie outside it are certainly possible.

Figure 1.5 Profit margin with uncertainties



2 BACKGROUND AND SCOPE

2.1 General

Queensland operates a common law “fault” based compulsory third party scheme, first introduced in 1936. The scheme provides motor vehicle owners with insurance policies that cover their unlimited liability for personal injury caused by, through, or in connection with the use of the insured motor vehicles anywhere in Australia. It is underwritten by private licensed insurers.

2.2 Relevant legislation

The Motor Accident Insurance Amendment Act 2000 (“the Amendment Act”) took effect from 1 October 2000. This implemented a number of changes, bringing in statutory limits, of which one of the most significant was a restriction on plaintiff costs.

From 1 October 2000, the insurers, operating in a competitive market, determine the premiums within a range between the maximum (“ceiling”) and minimum (“floor”) rates set by MAIC.

The accident periods subject to the Amendment Act, i.e. from October 2000, will be referred to as constituting “the New Scheme”. Earlier accident periods will be referred to as constituting “the Old Scheme”.

The Civil Liability Act 2003 (“CLA”) applies to all accidents occurring on or after 2 December 2002. It affects the type of claims that can be made as well as bringing in further statutory limits, restricting some of the damages that can be claimed.

In relation to the latter, it contains Injury Scale Values (“ISV”) used for calculating general damages arising from incidents on or after 2 December 2002. Under the Act, general damages are calculated after consideration of the application of the ISV set out in the regulations.

The Civil Liability and Other Legislation Amendment Act 2010 (“CLAA”) increased the ISV scale amounts for general damages and the maximum recoverable legal costs. These changes apply for injuries occurring on or after 1 July 2010. The CLAA also made provision for further indexation, linked to AWE increases.

The Civil and Criminal Jurisdiction Reform and Modernisation Amendment Act 2010 (“CCJRA”) increased the jurisdictions of the District and Magistrates Courts. The effect is that, from 1 November 2010, many of the claims which would have previously been heard by the District Court will now be heard by the Magistrates Court and that some of those claims which would have been heard in the Supreme Court will be heard in the District Court.

2.3 Scope of this report

MAIC have requested that Taylor Fry conduct a review of the retrospective profitability of the premiums for the Queensland CTP Scheme for all vehicle classes. Of interest is the comparison of the hindsight non-ITCE premium with the floor and ceiling premiums, and the average filed insurer premium.

We have relied upon the advice given to MAIC on components of the risk premium for CTP insurance policies underwritten in the quarter 1 July to 30 September 2019. This advice was based on data to 31 December 2018 and is the latest complete annual advice given to MAIC. We will refer to this as “the Annual Advice”.

An abridged version of that advice, for circulation to insurers, appeared as “Queensland CTP Market Briefing: Insurer annex - Review of the risk premium for the 2019Q3 underwriting quarter”, dated 11 March 2019, by Richard Brookes and Nelson Vasconcelos. This will be referred to subsequently as “the Risk Premium report”.

All results in the report are presented on an all classes basis unless stated otherwise.



2.4 Previous report

The report titled “Retrospective profit study of Queensland CTP premiums as at 31 December 2017” dated 09 April 2018, by Richard Brookes and Peter Mulquiney (“the Previous Report”) was based on data to 31 December 2017 and is the counterpart to this present report. It is referred to subsequently as “the Previous Report”. The methodology adopted in this report is largely unchanged from the Previous Report, except for the treatment of the impact of the National Injury Insurance Scheme Queensland (NIISQ). In this report, the cost of claims net of NIISQ reduction from 1 October 2016 has been estimated directly from Scheme data whereas in the Previous Report, the gross claim size was estimated with a separate adjustment for the NIISQ reduction.



3 DATA

3.1 Items of data

3.1.1 General

In producing this report, we have relied on the following sources of data:

- » Numbers of vehicles registered by month from July 2000 to December 2018
- » Quarterly floor and ceiling premium rates
- » Premium assumptions
- » Insurers' rate and expense filings
- » Analysis from the Annual Advice.

3.1.2 Number of vehicles registered

This consists of total vehicle registrations, split by vehicle class for each month since 1 July 2000. The most recent twelve months of exposure was extracted and provided by MAIC on 22 January 2019. For exposure prior to this, we have relied upon the data from the Previous Report.

3.1.3 Quarterly floor and ceiling premium rates

Quarterly floor and ceiling premium rates for all classes were provided by MAIC for the period 1 July 2004 to 30 June 2019 on 22 January 2019.

3.1.4 Premium assumptions

The assumptions adopted by MAIC for the calculation of the floor and ceiling premiums for all classes were provided by MAIC on 22 January 2019. This information included the underlying assumptions for expenses, profit margin, vehicle class relativities, and average seat numbers for Classes 10A, 10B and 11 for underwriting periods beginning 1 July 2018 to 1 April 2019. For periods before 1 July 2018, we have relied upon the data from the Previous Report.

3.1.5 Insurers' rate and expense filings

Insurers' rate filings for all classes along with their expense filings were provided by MAIC for the period 1 July 2004 to 30 June 2019 on 22 January 2019.



4 METHODOLOGY

The aim of this study is to compare hindsight estimates of the non-ITCE premium with the floor and ceiling premiums set by MAIC, and the premiums filed by insurers, since the commencement of the New Scheme.

4.1 General

The National Injury Insurance Scheme Queensland (NIISQ) came into effect from 1 July 2016. All lifetime care and support costs for catastrophically injured claimants arising from accidents after 1 July 2016 will be covered under NIISQ. This is expected to reduce the average claim size for policies underwritten from 1 July 2015 due to the reduction in costs covered by CTP scheme after 1 July 2016. The claim frequency will remain unchanged as certain heads of damages (HOD) such as economic loss will still be covered by CTP scheme.

In this year's Risk Premium report, claim sizes are projected on the net-of-NIISQ basis.

The estimation of the hindsight premium is as follows:

- » Hindsight estimates (as at 31 December 2018) of Scheme claim frequency and net-of-NIISQ gross (of ITC/DAM) claim size by accident quarter were consistent with the Risk Premium report. Estimates covered accident quarters from 31 December 2000 to 31 December 2018 and were in 31 December 2018 dollar values
- » The claim size estimates were inflated to the middle of the calendar quarter in which they belong
- » Estimates of the claim size and claim frequency by underwriting quarter were then derived
- » For accidents occurred before 1 July 2016, we adjust the claims size projection to reflect the pre-NIISQ Scheme, where there is no claim cost transferred from the insurers to NIISQ. Details on the adjustment are in Section 4.6
- » The claim size estimates were discounted to the middle of the underwriting quarter in which they belong
- » The net risk premium was calculated as the product of claim frequency and the net average claim size (gross average claim size net of GST)
- » The hindsight (non-ITCE) premium was then calculated using the claims handling expense, acquisition and reinsurance cost and profit margin assumptions as used by MAIC in the corresponding underwriting quarters
- » For the purposes of comparison, premiums excluding GST and levies have been used at all times.

All the underwriting quarters included in our analysis have some claims to be settled and most have some claims yet to be reported. Therefore, our calculation of hindsight premium depends on our projection of the number and size of claims to be settled for each underwriting quarter. The more recent the underwriting quarter, the more dependent the estimated hindsight premium is on the assumptions underlying our projection.

Some details of the calculation follow.

4.2 Inflating future payments

Future finalised claim payments have been inflated to the middle of the calendar quarter to which they belong using December 2018 Access Economics forecasts of QLD AWE and ABS QLD AWE results. The methodology for combining these AWE sources is discussed in the Risk Premium report. Future finalised claim payments are sourced from the Annual Advice.



4.3 Discounting payments

Claim payments have been discounted to the middle of the underwriting quarter using the Government bond yield curve as at the end of the underwriting quarter.

4.4 Expenses, allowances and expected profit margin

In their calculation of the floor and ceiling premiums, MAIC make assumptions regarding:

- » Claims handling expenses (percentage of risk premium)
- » Acquisition costs (dollar cost)
- » Reinsurance costs (dollar cost).

These assumptions vary by underwriting quarter and vehicle class. We have used the assumptions from the ceiling calculation in our calculation of hindsight premium, effectively assuming that they represent the actual experience of insurers. The changes in these over the recent past for class 1 vehicles are:

- » Claims handling expenses has increased from 5.50% of the premium per policy to 6.25% of premium per policy at 1 January 2018
- » Acquisition costs reduced from \$25 to \$5 per policy at 1 October 2010, increased to \$7 per policy at 1 July 2013 and increased to \$8 per policy at 1 July 2015
- » Reinsurance costs decreased from \$5 per policy to \$4 per policy at 1 July 2013 and decreased to \$1.60 at 1 October 2016 following the introduction of NIISQ.

MAIC sets an allowance for profit. This profit margin is defined as the percentage of the total premium that is profit (rather than the percentage loading on expected costs). We maintain this definition of profit margin throughout this report. This expected profit margin is 8.5% of the corresponding premium up to 30 June 2008, and 7.75% of the corresponding premium from 1 July 2008.

4.5 Superimposed inflation

The procedure as described above was repeated for different future finalisation period superimposed inflation ("SI") scenarios (i.e. from 31 December 2018), these being:

- » 0% per annum, which is what Taylor Fry measure as the current rate of finalisation period superimposed inflation
- » 1% per annum, which is what MAIC allowed for in their calculation of ceiling and floor premium as at 31 December 2018
- » 2% per annum, chosen as a higher amount to illustrate the sensitivity of the hindsight risk premium to the superimposed inflation assumption.

4.6 Adjustment for introduction of NIISQ

NIISQ came into effect from 1 July 2016. All lifetime care and support costs for catastrophically injured claimants arising from accidents after 1 July 2016 will be covered under NIISQ. This is expected to reduce the average claim size for policies underwritten from 1 July 2015 due to the reduction in costs covered by CTP scheme. The claim frequency will remain unchanged as certain heads of damages (HoD) such as economic loss will still be covered by CTP scheme.

In the retrospective profit study this year, we updated the modelling approach so that:



- » For claims incurred after 1 July 2016, claim sizes are modelled on a net of NIISQ basis, which means that the projected sizes of NIISQ-eligible claims already incorporate a reduction from costs covered under NIISQ and an explicit adjustment was no longer required
- » For claims incurred prior to 1 July 2016, claim sizes are modelled on the pre-NIISQ basis, which means that no claims cost was transferred to NIISQ because NIISQ is not applicable to these claims
- » The net-of-NIISQ and pre-NIISQ projections have consistent model structures, the only difference between them being that they are fitted to claim sizes without and with (respectively) the payments expected to be transferred to the NIISQ.

We made adjustments to policies underwritten from 1 July 2015 to 30 September 2016 to reflect insurers' payments to MAIC for the exposure covered by NIISQ (known as 'NIISQ clawback').



5 RESULTS

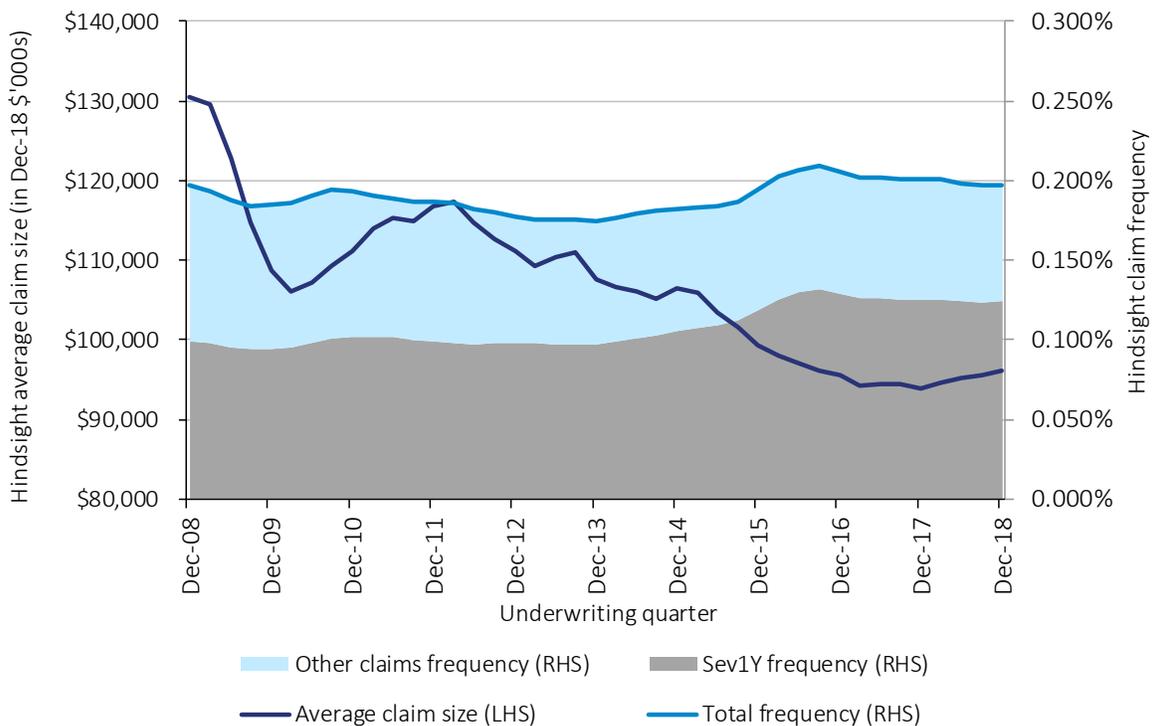
5.1 Hindsight premium

5.1.1 Hindsight risk premium

Figure 5.1 displays the Scheme hindsight claim frequency and average claim size, assuming no future superimposed inflation, from the 31 December 2008 to 31 December 2018 underwriting quarters.

Figure 5.1 also separates the frequency of legally represented Severity 1 claims (“Severity 1Y”, area shaded in grey) from that of the rest of the claims (area shaded in blue). We observe that the accelerated decrease in average claim size since 2016 coincides with an increase in the proportion of Severity 1Y claims.

Figure 5.1: Estimated hindsight claim frequency and average claim size



Frequency trended downwards up to 2014 and increased to a peak in 2016. It has been decreasing since the peak. The current estimate for the 2018 underwriting year is approximately 0.197%. The average claim size has dropped sharply from its peak in early 2009. The average claim size has reduced steadily since 2011 with a sharp drop for policies underwritten since 2016 because part of the claim costs were transferred to the NIISQ.

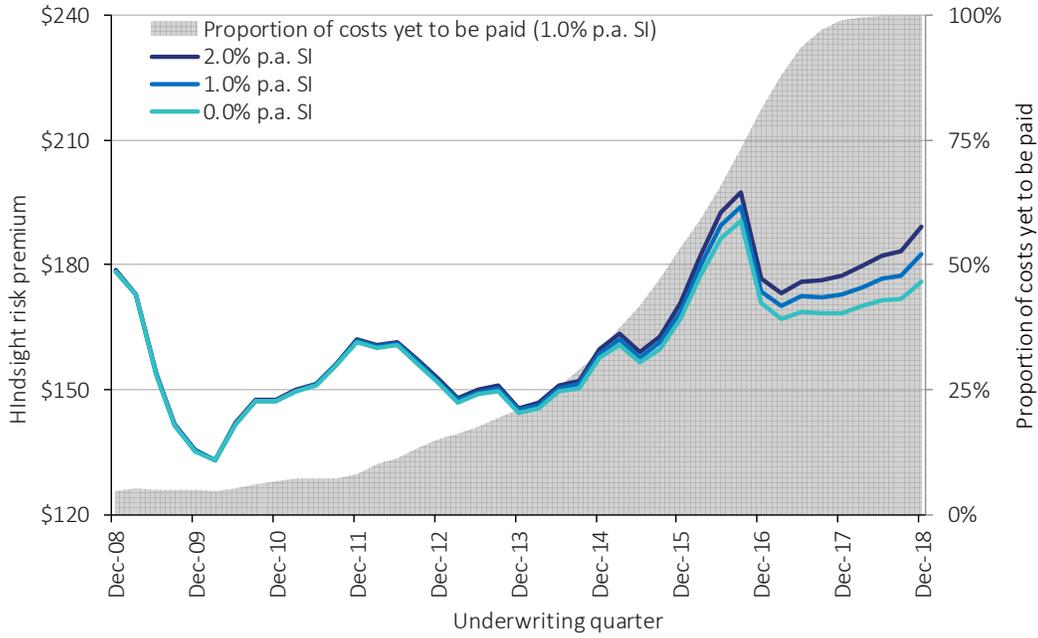
Figure 5.2 shows the resulting hindsight risk premium for the 31 December 2008 to 31 December 2018 underwriting quarters. We show this for three future finalisation period superimposed inflation scenarios:

- » 0% per annum, which is what Taylor Fry measure as the current rate of finalisation period superimposed inflation
- » 1% per annum, which is what MAIC allow for in their determination of premium



- » 2% per annum, chosen as a higher amount to illustrate the sensitivity of the hindsight risk premium to the superimposed inflation assumption.

Figure 5.2 Scheme hindsight risk premium

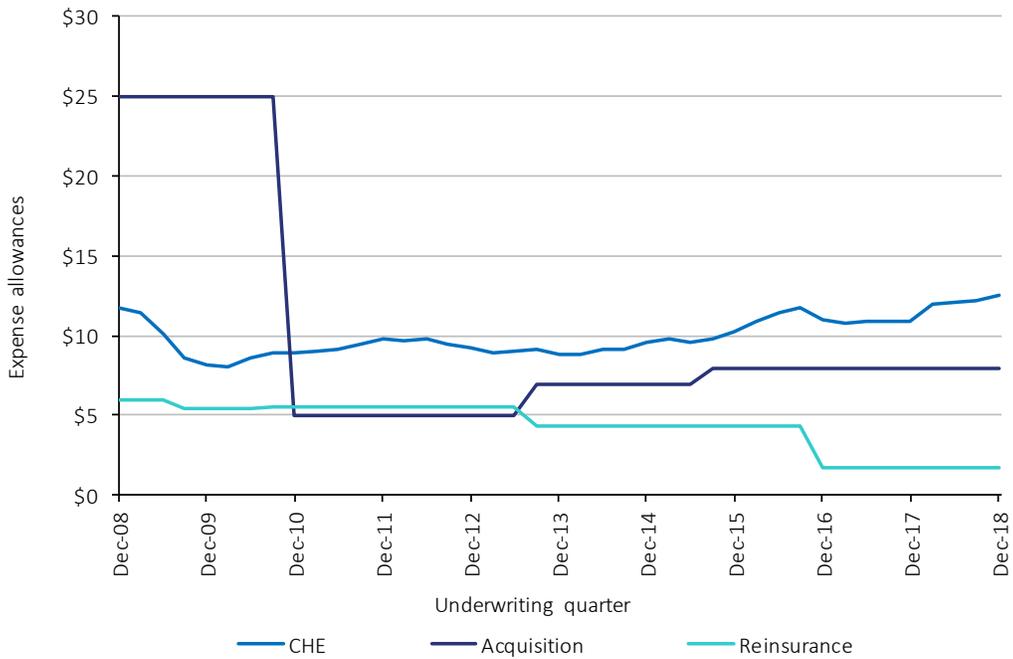


5.1.2 Expenses and allowances

The dollar cost of the expenses and allowances to be included in the hindsight premium varies a little depending on the superimposed inflation scenario. Figure 5.3 shows the expenses and allowances for the 1% p.a. superimposed inflation scenario. The largest movement is the reduction in assumed acquisition costs from 1 October 2010.



Figure 5.3 Expenses and allowances (1% p.a. SI scenario)



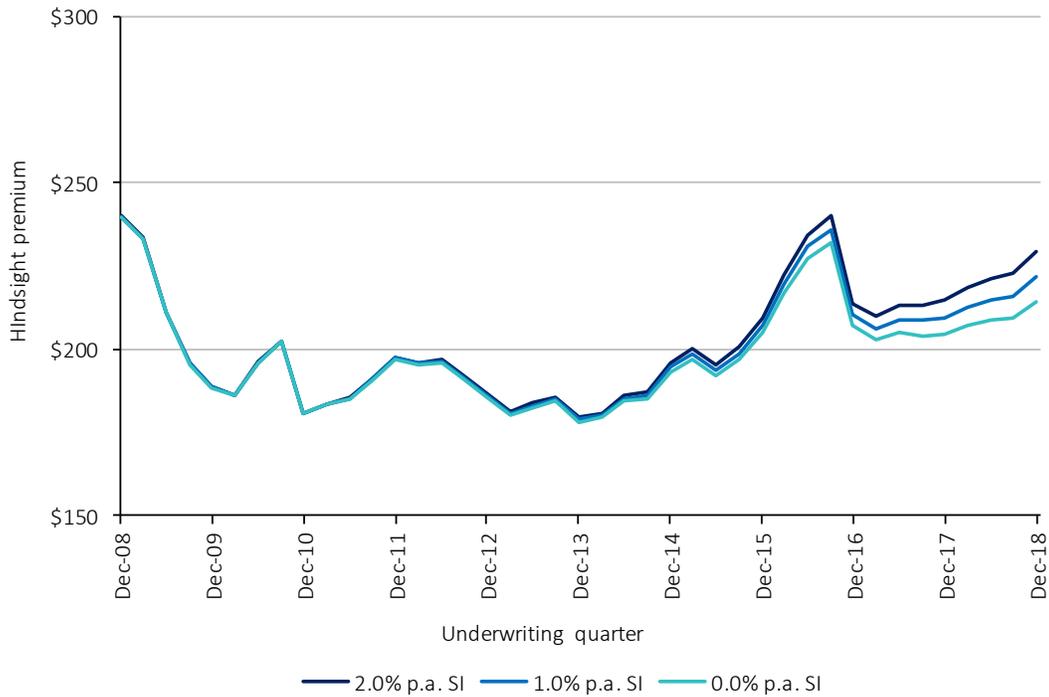
The reinsurance cost allowances were decreased from 1 October 2016 as a consequence of the introduction of the NIISQ. Claims handling expenses have increased gradually since 2009.

5.1.3 Scheme hindsight premium

Combining the risk premiums, expenses and allowances and the expected profit margin gives the hindsight premiums under each superimposed inflation scenario illustrated below in Figure 5.4. This hindsight premium is a combination of the hindsight risk premium shown in Figure 5.2 and the expenses and allowances shown in Figure 5.3. These hindsight premiums do not include GST.



Figure 5.4 Scheme hindsight premium (incl. expected profit margin)



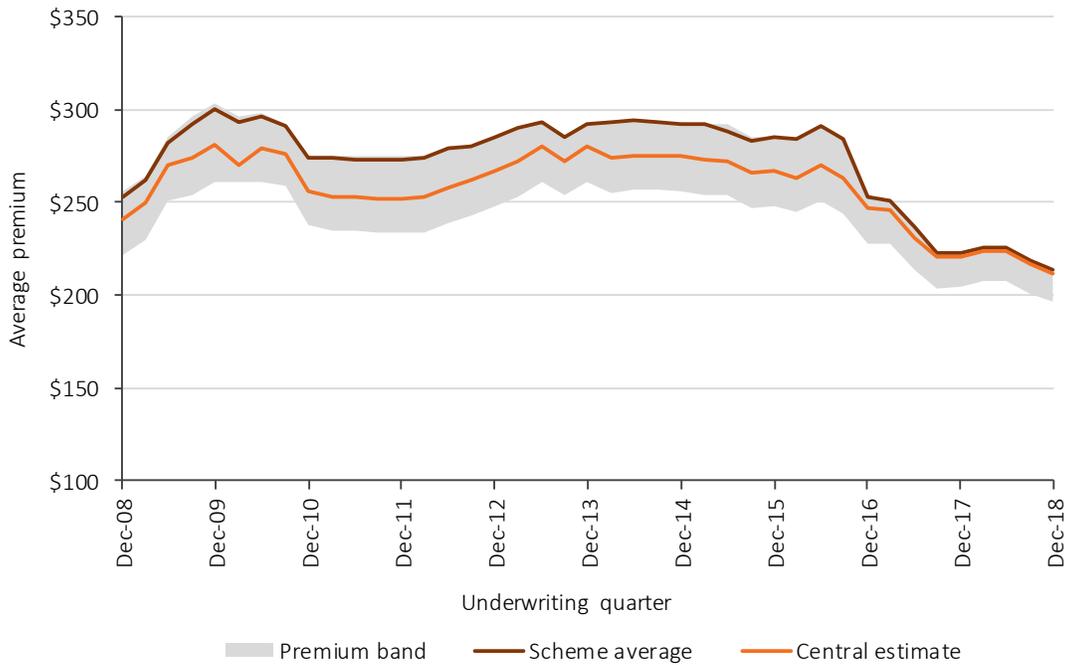
5.2 Central estimate, floor, ceiling and average insurer premiums

Figure 5.5 shows the central estimate premiums as set by MAIC and the premium band around these premiums within which the insurers can set premiums for the 31 December 2008 to 31 December 2018 underwriting quarters. The boundaries of the premium band are referred to as the premium floor and the premium ceiling. Since the Dec-16 underwriting quarter, the ceiling allowance has been reduced. It has resulted in a narrower premium band and closer ceiling premiums to the central estimates.

Additionally, Figure 5.5 shows average insurer premiums. The reduction in premium from 1 October 2016 is also because of the transfer of cost to the NIISQ (the “NIISQ offset”). As regards insurer’s payments to MAIC for the exposure covered by NIISQ for underwriting period from 1 July 2015 to 30 September 2016 (known as “the NIISQ clawback”), we have not adjusted the average insurer premium, but instead, chosen to adjust the relevant claim costs to reflect the clawback, for the benefit of better consistency with the rest of the methodology.



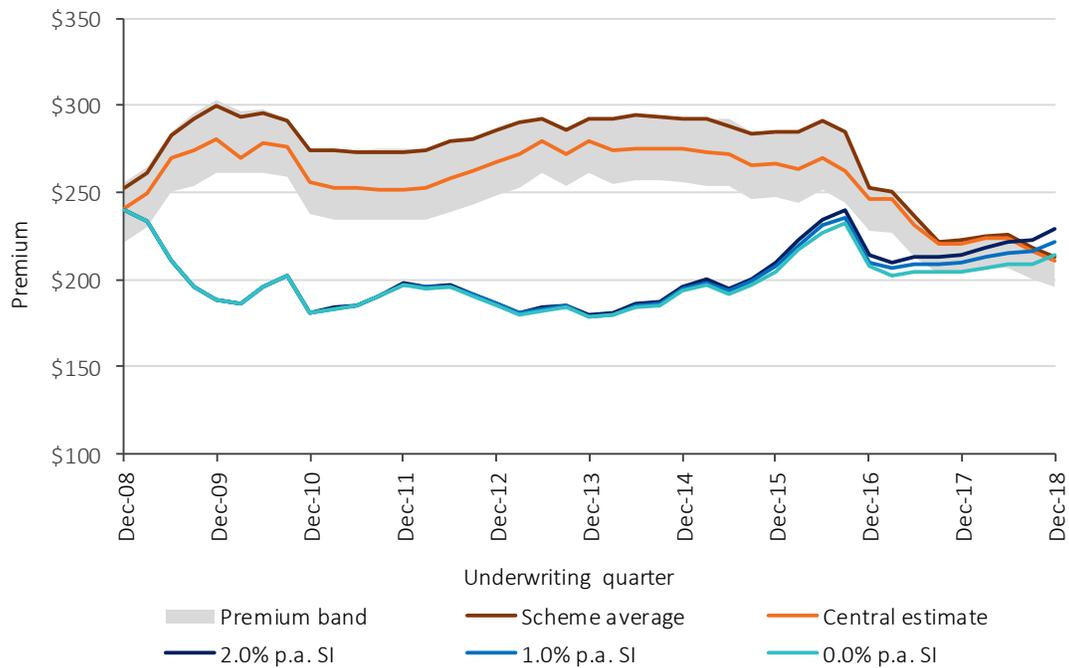
Figure 5.5 MAIC central estimate, premium band and insurer average premiums



5.3 Profit

Figure 5.6 shows the central estimate, insurer average premium and premium band versus the hindsight premiums for each of the future superimposed inflation scenarios. This is a combination of Figure 5.4 and Figure 5.5.

Figure 5.6 Scheme premium central estimate, premium band, insurer average premium and hindsight premiums



Insurer average premiums are above the hindsight premiums for superimposed inflation scenarios 0.0% p.a. and 1.0% p.a over all underwriting quarters except the last quarter of 2018. The hindsight premium under the 2.0% p.a. scenario exceeds the insurer average for underwriting quarters periods since 1 July 2018.

Pricing at the ceiling provides a similar result to the insurer average as most insurers have priced at this level most of the time.

Pricing at the floor has provided profit above the expected profit margin for most underwriting quarters before 2017, with 31 December 2007 to 31 March 2009 being an exception. However, we expect that pricing at the floor would have led to less than expected profits for underwriting quarters since 30 September 2017 under all three superimposed inflation scenarios. We expect the 30 June 2017 underwriting quarter to result in excess profits under a superimposed inflation scenario of 0% p.a. only. These observations in relation to pricing at the floor are not particularly relevant to the insurers, but we include them to show the degree of profit available to insurers if they had all chosen to price at the floor.

Figure 5.7 shows the profitability expressed as a profit margin for each superimposed inflation scenario. The most recent underwriting quarters are where superimposed inflation can cause the greatest variation. For the 31 December 2018 underwriting quarter, for example, the 0% p.a. superimposed inflation scenario leads to a 7% profit margin, whereas the 2% superimposed inflation scenario leads to a 1% profit margin.

Figure 5.7 Scheme profit margin for insurer average premium

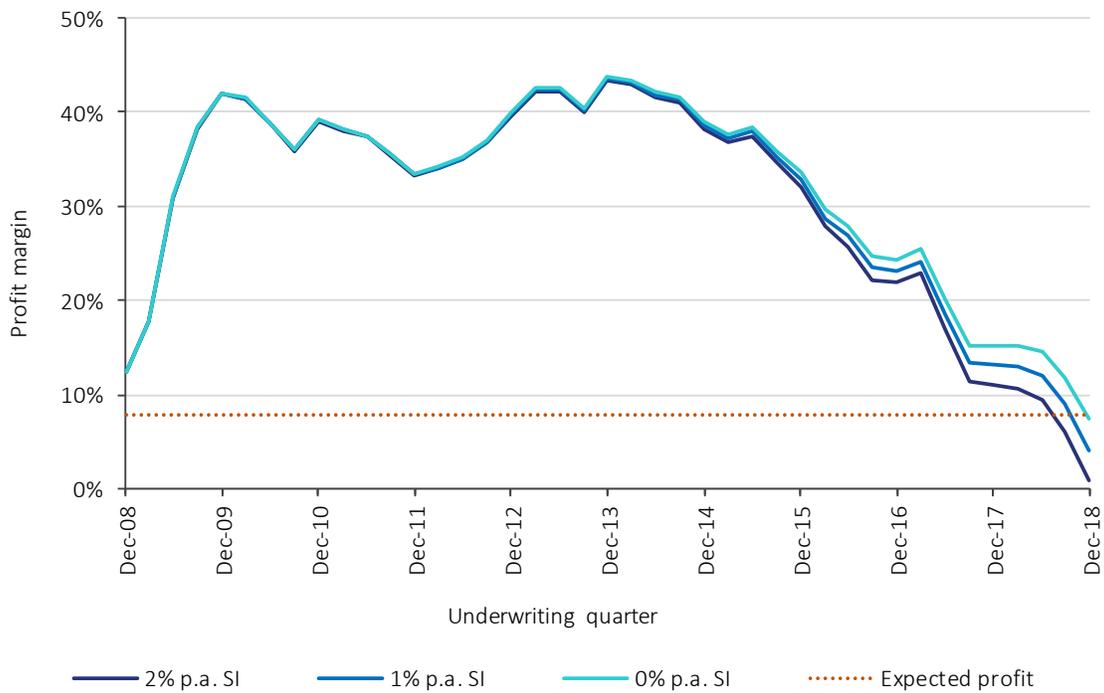
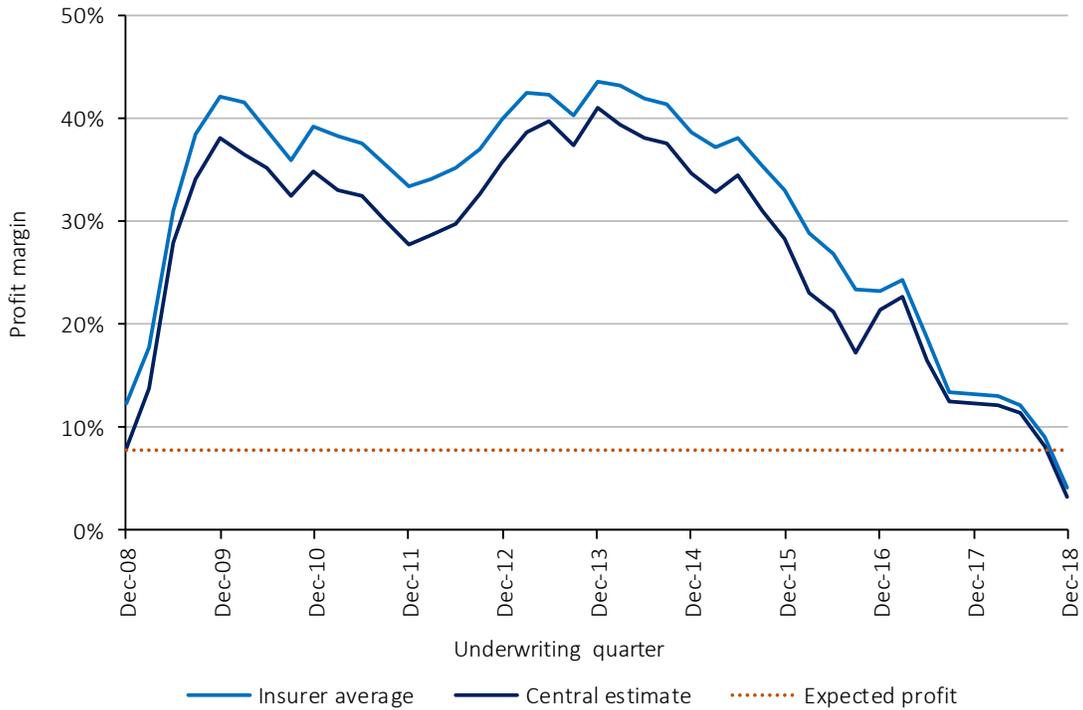


Figure 5.8 shows the central estimate alongside the insurer average premium for the 1% p.a. superimposed inflation scenario. The insurer average has been consistently above the central estimate. Both of these remained above the expected profit level until the very last quarter of 2018.



Figure 5.8 Scheme retrospective profit margin for central estimate and insurer average premium with 1% p.a. superimposed inflation



The most recent underwriting quarters are entirely dependent on projections and are likely to be revised in future reviews.

We summarise these profit results over selected periods in Table 5.1. We present these for each superimposed inflation scenario and for each of the insurer average premium, the premium ceiling and the premium floor.

Table 5.1 Scheme profit margins

	Insurer average	Ceiling	Floor
0% p.a. superimposed inflation			
Most recent 3 years	20%	20%	11%
Most recent 5 years	28%	29%	19%
Most recent 10 years	33%	33%	24%
1% p.a. superimposed inflation			
Most recent 3 years	18%	18%	9%
Most recent 5 years	27%	27%	18%
Most recent 10 years	32%	33%	23%
2% p.a. superimposed inflation			
Most recent 3 years	16%	16%	7%
Most recent 5 years	26%	26%	17%
Most recent 10 years	32%	32%	22%



6 RECONCILIATION

In this section, for the last five underwriting years we reconcile:

- » The Scheme all-class retrospective profit margin with the profit margin assumed by MAIC when setting the floor and ceiling
- » The Scheme all-class retrospective profit margin under the 1% SI scenario with the corresponding Scheme all-class retrospective profit margin from previous year using the Previous Report's rebased results.

Finally, we show how the estimated profit by underwriting year has changed over the last few measurement years.

6.1 Profit margin assumed by MAIC

Table 6.1 shows the reconciliation between the retrospective profit margin for all classes with the profit margin assumed by MAIC when setting the floor and ceiling. The table quantifies the following nine change categories:

1. Insurers filing near ceiling – the additional profit resulting from insurers pricing at or near the ceiling premium rather than at the central estimate premium where the expected profit margin is applied
2. Claim frequency deviation – the change in profit resulting from a difference between the claim frequency expected at underwriting and the current expected claim frequency (actual and the latest forecast)
3. Average claim size deviation – the change in profit resulting from a difference between the average claim size expected at underwriting and the current expected average claim size (actual and the latest forecast)
4. Adopted superimposed inflation – the change in profit resulting from the difference between the adopted superimposed inflation rate at underwriting and the observed superimposed inflation since underwriting (with a floor of 0% p.a.)
5. Loadings – the change in profit resulting from assumed increase in claim size due to the CLAA and 2012 tax change not emerging
6. Economic gap – the change in profit resulting from the difference between the advised gap and the gap MAIC used to set the floor and ceiling
7. Advised AWE – the change in profit resulting from the difference between the single-rate AWE rate, based on forecasts from Deloitte Access Economics, advised by Taylor Fry prior to underwriting and the current wage inflation (actual and the latest forecast)
8. Yields – the change in profit resulting from any change between the Government bond yield curve as at the time MAIC sets the floor and ceiling and the Government bond yield curve at the end of the underwriting quarter
9. Change in future superimposed inflation – policies written prior to 31 March 2017, were priced under a floor/ceiling regime incorporating the assumption that claim payments would experience superimposed inflation (SI) of 2.5% per annum. However, since 31 March 2017 MAIC has revised the allowance for future SI used in the floor/ceiling down to 1% per annum.



Table 6.1 Reconciliation of profit margin per policy to expected profit

Period	Expected profit margin	Changes due to									All-class insurer average profit margin (1% SI) ¹
		Insurers filling near ceiling	Claim frequency deviation	Average claim size deviation	Superimposed inflation deviation	Loadings deviation	Economic gap	Advised AWE	Yields	Change in future super-imposed inflation	
2014	8%	6%	3%	11%	5%	3%	0%	5%	-1%	0%	41%
2015	8%	6%	-5%	15%	6%	2%	0%	4%	0%	1%	36%
2016	8%	6%	-11%	13%	5%	1%	0%	2%	0%	2%	25%
2017	8%	1%	-5%	8%	2%	1%	0%	1%	1%	1%	17%
2018	8%	1%	2%	-1%	1%	0%	0%	0%	0%	0%	10%
Mar-18	8%	1%	0%	3%	1%	0%	0%	0%	0%	0%	13%
Jun-18	8%	1%	1%	1%	1%	0%	0%	1%	0%	0%	12%
Sep-18	8%	1%	4%	-2%	1%	0%	0%	-1%	-1%	0%	9%
Dec-18	8%	1%	2%	-5%	1%	0%	0%	-2%	-1%	0%	4%
Most recent 3 years	8%	3%	-5%	7%	3%	1%	0%	1%	0%	1%	17%
Most recent 5 years	8%	4%	-3%	9%	4%	1%	0%	2%	0%	1%	26%

1. As seen in Section 5.3. May not sum due to rounding.



Of particular interest in Table 6.1 over the past five years:

- » The average claim sizes have been substantially lower than expected at underwriting, resulting in additional profitability of 9%
- » The AWE growth has been lower than forecast at the time of premium setting, resulting in additional profitability of 2%
- » The superimposed inflation projection (2.5% per annum for policies written up to 31 March 2017 and 1% p.a. thereafter) has not emerged over the past five years, resulting in additional profitability of 4%.

6.2 The previous report

Table 6.2 shows the reconciliation between the profit margin under the 1% SI scenario and the results from the Previous Report. We show five changes:

1. Claim frequency deviation – the change in profit resulting from a difference between the expected claim frequency in the previous report and the current expected claim frequency (actual and the latest forecast)
2. Average claim size deviation – the change in profit resulting from a difference between the average claim size in the previous report and the current expected average claim size (actual and the latest forecast)
3. SI during the year – the change between assumed SI at the Previous Report and the combination of actual SI since the Previous Report and assumed SI for this report
4. Past wage inflation – the change between assumed wage inflation at the Previous Report and the expected wage inflation observed over the year
5. Future wage inflation – the change between projected wage inflation at the Previous Report and current projected wage inflation.

Table 6.2 shows that there has been little change in the retrospective profit margin since the Previous Report for the older underwriting periods. More recent periods are prone to greater change because these have less realised experience and thus a greater reliance on valuation projections.



Table 6.2 Reconciliation of profit margin per policy to expected profit

Period	Previous Report (1% SI)	Changes due to					Insurer average profit margin (1% SI) ¹
		Claim frequency deviation	Average claim size deviation	SI during the year	Past wage inflation	Future wage inflation	
2013	43%	0%	-1%	0%	0%	0%	42%
2014	41%	0%	0%	0%	-1%	0%	41%
2015	37%	0%	0%	0%	-1%	0%	36%
2016	26%	0%	1%	1%	-2%	0%	25%
2017	14%	2%	3%	1%	-3%	0%	17%
2013-2017	32%	0%	1%	0%	-1%	0%	32%

1. As seen in Section 5.3. May not sum due to rounding

6.3 Underwriting year 2017 and 2018

We examine and compare a breakdown of the contributing factors to the profit margin of underwriting year 2017 and 2018. In Figure 6.1, we also present the profit margin as at the end of the second year after underwriting to illustrate the extent to which the profit estimate may vary over time.

The components in Figure 6.1 and Figure 6.2 are both estimated at the end of the underwriting year so that they incorporate a similar amount of uncertainty and thus are comparable. The comparison aims to provide insights into the drivers of difference in the profit estimated at the end of the first year between underwriting years 2017 and 2018.

Figure 6.1 Components of profit margin for underwriting year 2017

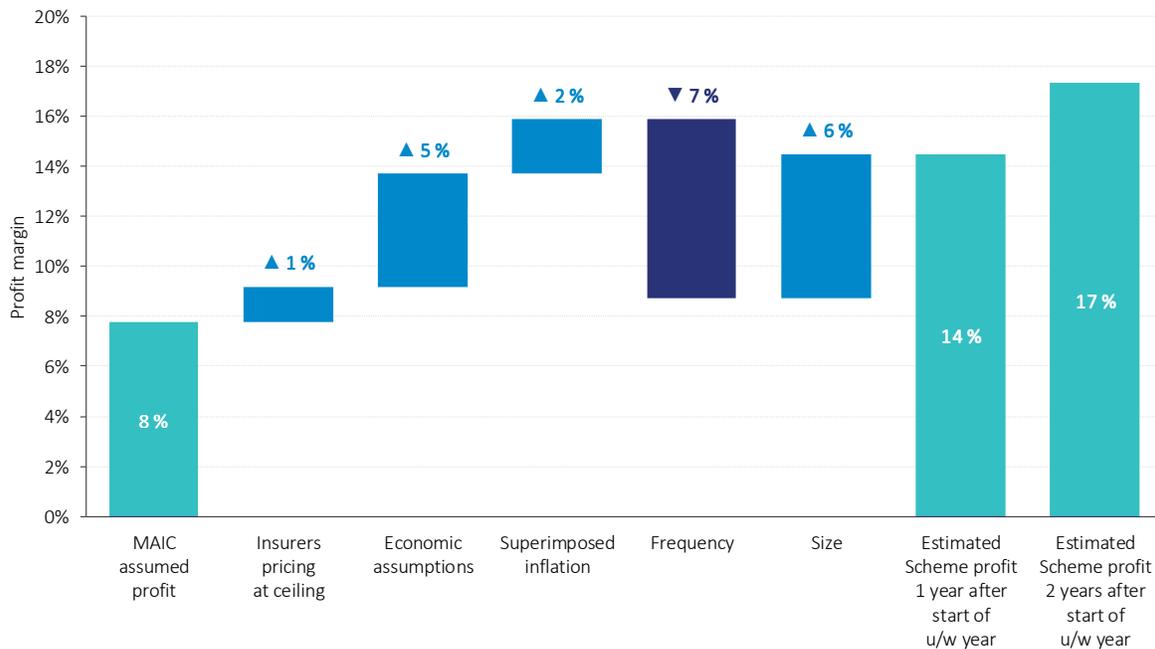
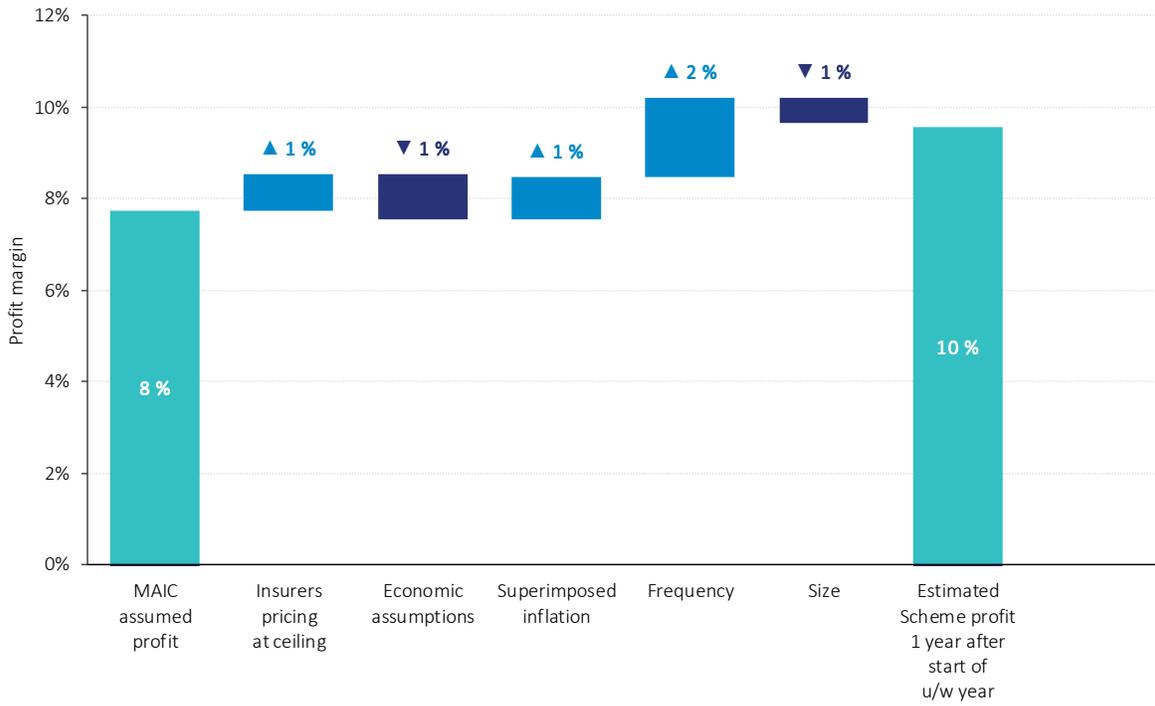


Figure 6.2 Components of profit margin for underwriting year 2018



In Table 6.3, we compare the contributing factors to profit margin and provide an explanation of the differences between the two underwriting years.



Table 6.3 Comparison of contributing factors to profit margin of underwriting year 2017 and 2018

Source of profit	Underwriting year		Description
	2017	2018	
MAIC assumed profit	8%	8%	The profit allowance set by MAIC has been 7.75% since 1 July 2008.
Insurers pricing at ceiling	+ 1%	+ 1%	Since the Dec-16 underwriting quarter, the ceiling premium has been set close to our central estimate of premium, reducing the profit generated by insurers pricing at the ceiling.
Economic assumptions	+ 5%	- 1%	Over 2017, both the actual and expected wage inflation were lower than the forecast at the premium setting. This generated significant profit for the underwriting year 2017. Actual wage inflation in the underwriting year 2018 was much higher than the forecast at the premium setting. This translated to a decrease in profit.
Superimposed inflation	+ 2%	+ 1%	MAIC have revised the superimposed inflation assumption downwards from 2.5% p.a. to 1% p.a. since the Mar-17 underwriting quarter. Actual superimposed inflation has been close to zero.
Claim frequency	- 7%	+ 2%	Over 2017, the claim frequency used at premium setting was much lower than actual claim frequency, in part anticipating a continued fall in claim size.
Average claim size	+ 6%	- 1%	The average finalised claim size has exhibited a longstanding decreasing trend. The average claim size assumption used for premium setting decreased significantly over 2017 in response to this experience.
Estimated profit at end of underwriting year	14%	10%	
Average insurer filed profit margin at the start of underwriting	-6%	-8%	The gaps between insurer's view and our estimate of the profit margin are large for both 2017 and 2018 underwriting years.



6.4 Changes over the last few measurement years

Finally, we note that our estimates of the projected ultimate average claim size for future underwriting quarters have been decreasing in real terms for at least the last five years, as evidence of a weakening severity profile and lower than expected finalisation sizes has emerged. At any point in time, our measurement of the emerging claim size for the most recent underwriting periods will be almost the same as our then current projected ultimate average claim size for future underwriting quarters. As the latter falls, our assessment of profit increases. The result is that our measurement of profit for any given underwriting quarter has grown at each successive measurement. If the current trends in severity profile and claim size continue, this pattern of increasing profit assessment is likely to continue. Table 6.4 shows our assessment of profit for the last few measurement years.

Table 6.4 Assessments of profit by measurement year

Underwriting year	Measurement year					
	2013 (2.5% p.a. SI)	2014 (2.5% p.a. SI)	2015 (2.5% p.a. SI)	2016 (1% p.a. SI)	2017 (1% p.a. SI)	2018 (1% p.a. SI)
2013	17%	29%	35%	40%	43%	42%
2014		24%	28%	38%	41%	41%
2015			18%	32%	37%	36%
2016				25%	26%	25%
2017					14%	17%
2018						10%

Note: The profit estimates in Table 6.4 use the future superimposed inflation scenario consistent with the allowance for superimposed inflation made by MAIC which was current at the time of measurement.

6.5 Uncertainties in the estimated profit margin

Estimates of profit for CTP insurance are subject to considerable degrees of uncertainty due to the dynamic environment. CTP is a long-tailed class and it takes many years before an underwriting quarter's claims cost can be known with a high degree of certainty. Actual results may be materially different from the results presented in this report, particularly for more recent underwriting quarters, because the present results are largely or wholly based on current model estimates. Figure 6.3 illustrates the degree of uncertainty in the estimated profit margin.

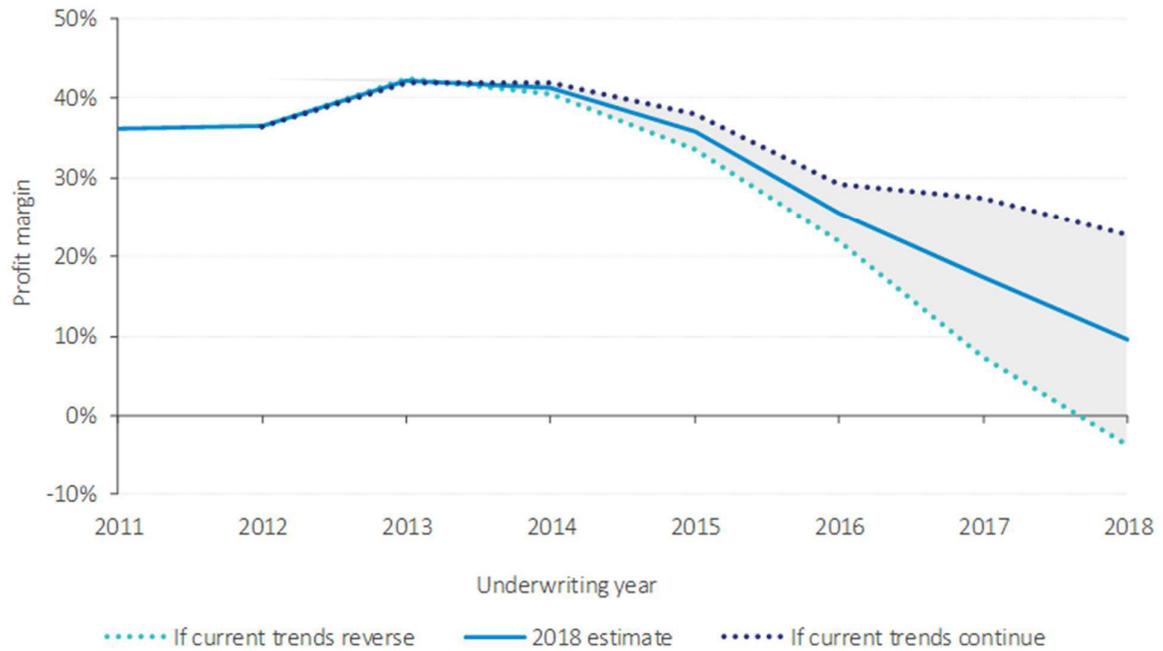
Although we make every effort to estimate a central estimate for Scheme profit for each underwriting year, the trend for the past several years has been that our estimates for a given underwriting year have increased over time. For instance, for the 2015 underwriting year:

- » As at December 2015, we estimated the profit margin to be 18%
- » As at December 2016, this had risen to 32%
- » As at December 2017, this had risen to 37%.

These increases have been due to a number of reasons, each of which has been largely unforeseen. The upper end of the grey region in Figure 6.3. Figure 6.3 is illustrative only and assumes that the pattern of the last few years continues. The lower end of the grey region assumes that the pattern reverses. The region narrows as one moves to the left because more of the claims cost has been paid and so the uncertainty is less. The grey region should be treated as indicative only and results which lie outside it are certainly possible.



Figure 6.3 Profit margin with uncertainties



In the estimation of uncertainties, we have considered the inherent uncertainty of different contributing factors to profit margin. The considerations and assumptions were:

- » Profit attributed to insurers pricing at ceiling is realised at the start of underwriting and does not develop over time
- » Profit attributed to claims materialising differently to expected follows an established pattern
- » Profit attributed to past superimposed information not emerging is proportional to the level of superimposed inflation assumed at premium setting and follows the pattern of profit emergence from claims.



7 RELIANCES AND LIMITATIONS

In producing this report, we have relied on data supplied by MAIC on vehicle registrations, underwritten premium, premium filing and claims data without audit or independent verification. The accuracy of the results is dependent on both the accuracy and completeness of the data provided. However, in the course of the analysis, internal checks have been carried out which would be expected to find gross inconsistencies. None have come to light and we have accepted the data at face value.

In carrying out this analysis we have made a number of assumptions. For example, we have assumed that the claims handling expense ratio and the acquisition and reinsurance costs included by MAIC in the ceiling calculation are reasonable proxies for the actual expenses. To the extent that this assumption is false, the profit estimates would change.

Our analysis is heavily dependent on our estimates of total claims cost from each accident quarter. These are derived from the Annual Advice and so this report is subject to the same reliances and limitations as that advice.

Due to limitations on data availability, a number of approximations have been made. Should these turn out to be materially inaccurate then our results would also be affected. In particular, our re-calculation of the ceiling premium based on perfect advanced knowledge of the claim frequency is approximate. We have also extrapolated current experience to estimate claim frequency and sizes for a number of future accident quarters to enable us to produce estimates of hindsight premium for underwriting quarters beginning 1 January 2018 to 31 December 2018. Underwriting quarters with exposure after 31 December 2018 are subject to increased uncertainty since they are based on no actual experience, but rather projections based entirely on model assumptions.

In our judgement we have employed techniques and assumptions that are appropriate, and the conclusions presented herein are reasonable given the information currently available. However, it should be recognised that the actual ultimate profit may deviate, perhaps materially, from our estimates.

Detailed judgements about the methodology, analyses, assumptions and estimated profits should be made only after considering this report in its entirety.

The report has been prepared for the Commission for the specific purpose stated in Section 2.3. No reliance should be placed on this report for any other purpose without confirming with us that such a purpose is appropriate. No other distribution of this report to parties outside of the Commission is permitted without the prior written permission of Taylor Fry. This report is to be considered in its entirety, as parts of the report considered in isolation may be misleading. If any part of this report is to be distributed or provided to other parties, then the entire report including all appendices and not excerpts must be distributed or provided.



Appendix A Economic Assumptions

- A.1 Historical Government yields
- A.2 Future rates of wage inflation



Appendix A

Appendix A. 1 Commonwealth forward rates

Underwriting	1	2	3	4	5	6	7	8	9	10
Dec-07	6.90%	7.10%	6.82%	6.44%	6.15%	6.01%	5.99%	5.99%	5.99%	5.99%
Mar-08	6.45%	6.18%	6.10%	6.10%	6.10%	6.10%	6.10%	6.10%	6.10%	6.10%
Jun-08	7.04%	6.86%	6.56%	6.40%	6.39%	6.39%	6.39%	6.39%	6.39%	6.39%
Sep-08	5.23%	5.08%	5.18%	5.34%	5.54%	5.69%	5.71%	5.71%	5.71%	5.71%
Dec-08	2.78%	3.01%	3.72%	4.21%	4.45%	4.49%	4.49%	4.49%	4.49%	4.49%
Mar-09	2.74%	3.39%	4.11%	4.67%	5.04%	5.22%	5.25%	5.25%	5.25%	5.25%
Jun-09	3.40%	4.86%	6.02%	6.18%	6.18%	6.18%	6.18%	6.18%	6.18%	6.18%
Sep-09	4.04%	5.28%	5.75%	5.77%	5.77%	5.77%	5.77%	5.77%	5.77%	5.77%
Dec-09	4.37%	4.92%	5.53%	5.98%	6.25%	6.35%	6.35%	6.35%	6.35%	6.35%
Mar-10	4.51%	5.51%	6.07%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%
Jun-10	4.46%	4.52%	4.70%	4.96%	5.31%	5.63%	5.74%	5.75%	5.75%	5.75%
Sep-10	4.75%	4.91%	4.96%	5.02%	5.08%	5.13%	5.17%	5.21%	5.24%	5.27%
Dec-10	4.97%	5.36%	5.58%	5.73%	5.80%	5.81%	5.81%	5.81%	5.81%	5.81%
Mar-11	4.85%	5.09%	5.35%	5.57%	5.74%	5.86%	5.93%	5.95%	5.95%	5.95%
Jun-11	4.80%	4.91%	5.06%	5.27%	5.53%	5.79%	5.83%	5.83%	5.83%	5.83%
Sep-11	3.80%	3.50%	3.72%	4.02%	4.31%	4.56%	4.76%	4.93%	5.05%	5.13%
Dec-11	3.33%	3.10%	3.21%	3.38%	3.60%	3.89%	4.20%	4.46%	4.67%	4.83%
Mar-12	3.54%	3.54%	3.63%	3.75%	3.92%	4.12%	4.37%	4.66%	5.00%	5.32%
Jun-12	2.60%	2.36%	2.47%	2.65%	2.88%	3.16%	3.49%	3.78%	4.01%	4.19%
Sep-12	2.56%	2.46%	2.53%	2.63%	2.77%	2.94%	3.15%	3.39%	3.67%	3.98%
Dec-12	2.66%	2.63%	2.76%	2.94%	3.19%	3.45%	3.70%	3.93%	4.14%	4.34%
Mar-13	2.83%	2.87%	2.99%	3.16%	3.39%	3.64%	3.87%	4.09%	4.29%	4.48%
Jun-13	2.48%	2.71%	3.17%	3.58%	3.95%	4.27%	4.55%	4.77%	4.95%	5.08%
Sep-13	2.42%	2.75%	3.25%	3.70%	4.09%	4.42%	4.70%	4.92%	5.07%	5.17%
Dec-13	2.45%	2.96%	3.53%	4.03%	4.48%	4.85%	5.16%	5.40%	5.57%	5.67%
Mar-14	2.61%	3.08%	3.53%	3.93%	4.29%	4.60%	4.87%	5.09%	5.27%	5.40%
Jun-14	2.46%	2.68%	3.03%	3.36%	3.66%	3.93%	4.16%	4.36%	4.53%	4.67%
Sep-14	2.57%	2.71%	2.99%	3.29%	3.57%	3.82%	4.04%	4.24%	4.42%	4.56%
Dec-14	2.19%	2.13%	2.24%	2.41%	2.64%	2.92%	3.19%	3.43%	3.62%	3.79%
Mar-15	1.71%	1.74%	1.84%	1.99%	2.19%	2.43%	2.71%	2.95%	3.14%	3.27%
Jun-15	1.94%	2.03%	2.26%	2.60%	3.03%	3.41%	3.73%	3.99%	4.18%	4.30%
Sep-15	1.87%	1.94%	2.10%	2.35%	2.67%	3.01%	3.29%	3.53%	3.73%	3.87%
Dec-15	1.98%	2.02%	2.19%	2.46%	2.81%	3.19%	3.50%	3.75%	3.94%	4.06%
Mar-16	1.91%	1.92%	2.04%	2.21%	2.43%	2.64%	2.85%	3.03%	3.21%	3.37%
Jun-16	1.58%	1.53%	1.61%	1.74%	1.90%	2.10%	2.29%	2.47%	2.64%	2.79%
Sep-16	1.56%	1.52%	1.58%	1.69%	1.82%	1.99%	2.19%	2.38%	2.55%	2.71%
Dec-16	1.74%	2.00%	2.29%	2.56%	2.82%	3.06%	3.29%	3.50%	3.69%	3.87%
Mar-17	1.63%	1.94%	2.23%	2.51%	2.76%	3.00%	3.21%	3.41%	3.59%	3.75%
Jun-17	1.68%	1.95%	2.20%	2.44%	2.66%	2.87%	3.07%	3.25%	3.41%	3.56%
Sep-17	1.83%	2.14%	2.41%	2.67%	2.90%	3.11%	3.31%	3.49%	3.64%	3.78%
Dec-17	1.93%	2.14%	2.34%	2.53%	2.70%	2.87%	3.02%	3.16%	3.29%	3.41%
Mar-18	2.06%	2.35%	2.58%	2.75%	2.89%	2.99%	3.08%	3.16%	3.23%	3.31%
Jun-18	1.96%	2.08%	2.23%	2.39%	2.57%	2.74%	2.90%	3.04%	3.16%	3.25%
Sep-18	1.97%	2.15%	2.31%	2.47%	2.61%	2.74%	2.87%	2.98%	3.08%	3.17%
Dec-18	1.68%	1.68%	1.76%	1.90%	2.09%	2.30%	2.51%	2.70%	2.86%	2.97%

Appendix A

Appendix A. 2 Future rates of wage inflation

Quarter	QLD AWE	Inflation rate p.a.
Dec-18	1,201.48	
Mar-19	1,213.36	3.05%
Jun-19	1,219.66	1.94%
Sep-19	1,225.09	1.97%
Dec-19	1,231.62	2.20%
Mar-20	1,238.48	2.35%
Jun-20	1,245.98	2.56%
Sep-20	1,254.21	2.76%
Dec-20	1,263.07	2.92%
Mar-21	1,272.37	3.01%
Jun-21	1,281.96	3.07%
Sep-21	1,291.74	3.08%
Dec-21	1,301.57	3.07%
Mar-22	1,311.45	3.07%
Jun-22	1,321.41	3.08%
Sep-22	1,331.49	3.08%
Dec-22	1,341.58	3.04%
Mar-23	1,351.59	2.99%
Jun-23	1,361.47	2.92%
Sep-23	1,371.21	2.86%
Dec-23	1,380.81	2.80%
Mar-24	1,390.27	2.74%
Jun-24	1,399.62	2.70%
Sep-24	1,408.89	2.67%
Dec-24	1,418.16	2.66%
Mar-25	1,427.52	2.69%
Jun-25	1,437.11	2.75%
Sep-25	1,447.00	2.82%
Dec-25	1,457.23	2.90%
Mar-26	1,467.79	2.96%
Jun-26	1,478.62	3.00%
Sep-26	1,489.68	3.04%
Dec-26	1,500.92	3.05%
Mar-27	1,512.25	3.05%
Jun-27	1,523.62	3.03%
Sep-27	1,534.96	2.99%
Dec-27	1,546.25	2.95%
Mar-28	1,557.47	2.90%
Jun-28	1,568.54	2.85%
Sep-28	1,579.50	2.90%
& later		

Notes; Queensland forecasts from Access Economics 'Business Outlook' for December 2018
Assumed long term inflation rate is derived by averaging over the preceding 6 years

Appendix B Ultimate Incurred Costs

- B.1 Historical finalised uninflated claim payments (gross of ITC/DAM)
- B.2 Outstanding claims liability uninflated/undiscounted (gross of ITC/DAM)



Appendix C Modelled Scheme relativities

- C.1 Modelled Scheme frequency relativities by accident period
- C.2 Modelled Scheme size relativities by accident period



Appendix C.1 Modelled Scheme Frequency relativities by accident period

Class	Frequency relativities by accident year										Exposures by accident year																				
	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1,938,690	2,017,900	2,095,781	2,117,667	2,198,664	2,284,505	2,339,776	2,378,734	2,426,865	2,480,869	2,546,507	2,601,542	2,642,477	2,700,244	2,751,922	2,793,141
2	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	6,584	7,231	7,987	8,183	9,076	9,997	10,539	11,065	11,853	12,468	13,305	13,868	14,580	15,235	15,854	16,495	
3	2166%	2240%	2240%	2240%	2240%	2240%	2240%	2240%	2240%	2240%	2240%	1775%	1775%	1775%	1775%	2,469	2,479	2,545	2,556	2,621	2,646	2,691	2,717	2,715	2,690	2,690	2,705	2,704	2,692	2,636	2,638
4	169%	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	22,981	26,127	27,800	27,827	31,693	32,650	31,872	34,334	37,429	40,821	42,550	42,145	39,070	39,158	40,192	43,585	
5	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	8,591	9,693	10,682	11,026	12,020	12,944	14,194	15,989	17,922	19,524	21,394	22,961	24,544	26,197	27,936	29,815	
6	94%	95%	95%	96%	97%	98%	99%	100%	101%	101%	101%	101%	101%	101%	459,771	490,219	521,206	529,579	561,838	600,220	630,726	657,434	680,464	705,619	739,109	768,443	792,920	818,595	845,656	878,144	
7	322%	339%	339%	339%	339%	310%	310%	310%	310%	310%	310%	310%	310%	310%	51,387	54,469	57,758	58,417	62,752	67,632	69,647	69,900	70,005	72,004	74,454	75,616	74,274	73,515	73,867	76,308	
8	141%	141%	141%	141%	141%	141%	141%	141%	141%	141%	141%	141%	141%	141%	5,495	5,459	5,383	5,375	5,401	5,458	5,503	5,449	5,523	5,506	5,489	5,559	5,605	5,749	5,782	5,777	
9	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	162%	3,201	3,293	3,420	3,441	3,533	3,551	3,608	3,659	3,677	3,743	3,751	3,758	3,723	3,772	3,811	3,898	
10A	372%	421%	473%	535%	603%	603%	603%	603%	603%	603%	603%	603%	603%	603%	2,019	2,040	2,139	0	0	2,249	2,569	2,634	2,658	2,682	2,711	2,665	2,887	2,615	2,605	2,705	
10B	2930%	2930%	2930%	2930%	2930%	2058%	2058%	2058%	2058%	2058%	2058%	2058%	2058%	2058%	1,445	1,459	1,531	0	0	1,454	1,791	1,930	2,000	2,163	2,214	2,171	2,157	2,161	2,176	2,216	
11	474%	474%	474%	474%	474%	474%	474%	474%	474%	474%	474%	474%	474%	474%	4,258	4,566	4,868	4,934	5,422	5,676	5,859	5,782	5,653	6,164	6,576	6,781	6,810	6,476	6,435	6,780	
12	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	34,157	36,881	40,616	41,788	46,356	49,709	52,286	53,241	55,182	57,690	60,008	62,264	66,508	73,112	80,071	84,375	
13	40%	38%	36%	35%	33%	32%	30%	29%	28%	26%	25%	24%	23%	23%	53,594	59,268	67,708	70,287	81,190	92,067	101,110	103,610	106,509	112,166	118,737	124,131	125,833	125,501	125,192	124,771	
14	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	24,850	23,929	23,742	23,739	24,086	24,163	24,279	24,467	24,794	24,952	25,067	25,006	24,899	24,924	24,998	25,226	
15	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	9,159	8,475	8,413	8,420	8,595	8,836	8,855	8,651	8,588	8,591	7,993	7,710	7,590	7,179	6,792	6,642	
16	209%	230%	253%	279%	279%	279%	279%	279%	279%	279%	279%	279%	279%	279%	772	760	833	824	864	849	943	972	1,030	1,022	1,059	1,049	1,050	1,093	1,054	1,168	
17	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	43,463	42,768	42,068	41,908	41,128	40,426	39,802	39,439	38,992	38,479	38,264	38,136	37,994	38,284	38,776	38,774	
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	27%	27%	27%	27%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	8,386	14,076	18,132	19,394	23,893	28,428	32,062	33,661	35,857	38,407	41,394	43,455	43,604	44,322	45,284	47,087	
20	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	6,043	7,595	8,256	8,394	8,868	9,366	9,740	9,985	10,418	11,012	11,299	11,807	11,823	11,749	11,700	11,954	
21	26%	26%	26%	26%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	2,815	3,952	4,804	5,097	5,775	6,580	7,177	7,425	7,952	8,604	9,067	9,390	9,667	8,781	8,693	8,727	
22	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	4,239	4,385	4,652	4,674	4,881	5,282	5,193	5,167	5,233	5,364	5,627	5,780	5,877	5,981	6,025	6,107	
24	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	630	760	1,186	1,251	1,312	1,400	1,749	2,058	2,053	2,227	2,450	2,682	2,859	2,978	3,472	3,659	
25	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26															159%	159%															12,597

Notes: Sourced from the Annual Advice

Appendix C. 2 Modelled Scheme size relativities by accident period

class	Size relativities by accident year																		Number of claims by accident year																	
	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019						
1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	5,200	4,669	4,349	4,074	4,252	4,376	4,156	4,440	4,465	4,429	4,481	4,600	4,915	5,421	4,862	1,252					
2	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	7	5	3	12	9	6	6	4	10	7	10	6	9	6	11	7	0				
3	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	125	117	126	104	96	128	157	120	112	79	78	106	73	86	81	9					
4	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	132	97	91	87	77	119	123	135	134	86	143	111	132	140	111	16					
5	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	0	3	2	4	0	2	1	2	2	2	2	0	0	0	3	1					
6	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	1,196	1,104	1,012	1,160	980	1,213	1,064	1,245	1,237	1,238	1,298	1,407	1,402	1,739	1,601	409					
7	133%	133%	133%	133%	133%	133%	133%	133%	133%	133%	133%	133%	133%	133%	133%	466	399	419	404	420	469	381	422	381	437	396	396	386	467	400	107					
8	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%	2	26	18	10	10	13	12	14	6	21	16	21	18	13	14	0					
9	111%	111%	111%	111%	111%	111%	111%	111%	111%	111%	111%	111%	111%	111%	111%	13	7	12	15	8	13	7	15	12	10	7	21	8	13	12	0					
10A	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
10B	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
11	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	126%	56	56	37	45	47	56	39	62	56	70	56	47	58	65	41	3					
12	157%	157%	157%	157%	157%	157%	157%	157%	157%	157%	157%	157%	157%	157%	157%	9	16	11	1	9	8	11	17	13	13	14	8	26	17	15	4					
13	170%	170%	170%	170%	170%	170%	170%	170%	170%	170%	170%	170%	170%	170%	170%	46	67	56	69	60	67	73	66	58	45	65	49	48	44	55	6					
14	131%	131%	131%	131%	131%	131%	131%	131%	131%	131%	131%	131%	131%	131%	131%	5	9	4	3	3	9	1	6	1	0	2	3	2	0	1	1					
15	171%	171%	171%	171%	171%	171%	171%	171%	171%	171%	171%	171%	171%	171%	171%	11	11	16	18	8	15	16	8	21	16	14	8	10	19	7	1					
16	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	4	2	2	3	5	9	6	5	7	3	5	3	7	5	6	1					
17	177%	177%	177%	177%	177%	177%	177%	177%	177%	177%	177%	177%	177%	177%	177%	18	41	32	18	15	10	14	19	17	18	25	19	14	16	14	0					
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
19	212%	212%	212%	212%	212%	212%	212%	212%	212%	212%	212%	212%	212%	212%	212%	7	9	9	11	14	4	10	7	12	8	2	11	18	6	4	0					
20	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	1	4	1	0	0	2	2	1	1	0	0	3	0	0	1	0					
21	237%	237%	237%	237%	237%	237%	237%	237%	237%	237%	237%	237%	237%	237%	237%	1	2	3	3	4	1	3	1	2	2	2	2	0	0	0	0					
22	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0					
23	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	2	4	0	1	3	5	9	2	4	1	1	3	0	1	1	0					
24	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	0	0	1	0	0	0	1	0	2	0	0	0	0	2	0	0					
25	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0					
26																																				

Notes: Sourced from the Annual Advice
Does not include adjustment for NIISQ

Appendix D MAIC's Pricing Assumptions

D.1 MAIC's pricing assumptions used to set floor and ceiling premiums



Appendix D

Appendix D.1 MAIC's pricing assumptions used to set floor and ceiling premiums

Underwriting	Scheme average premium (\$, excluding GST, levies)		Claims process savings (\$)		Claims handling expenses	Acquisition Costs (\$)	Reinsurance Cost (\$)	ANTS Impact	Profit margin	Insurer average filed gross premium (\$)
	Floor	Ceiling	Floor	Ceiling						
Dec-08	221.76	255.42	0.00	0.00	6.0%	25.00	6.00	-9.1%	7.8%	252.43
Mar-09	229.76	264.41	0.00	0.00	6.0%	25.00	6.00	-9.1%	7.8%	261.80
Jun-09	250.56	285.21	0.00	0.00	6.0%	25.00	6.00	-9.1%	7.8%	282.15
Sep-09	254.16	295.87	0.00	0.00	5.5%	25.00	5.47	-9.1%	7.8%	292.62
Dec-09	261.10	302.98	0.00	0.00	5.5%	25.00	5.47	-9.1%	7.8%	299.79
Mar-10	261.02	296.06	0.00	0.00	5.5%	25.00	5.47	-9.1%	7.8%	293.32
Jun-10	260.93	297.83	0.00	0.00	5.5%	25.00	5.47	-9.1%	7.8%	295.81
Sep-10	258.80	292.31	0.00	0.00	5.5%	25.00	5.49	-9.1%	7.8%	291.41
Dec-10	237.65	274.55	0.00	0.00	5.5%	5.00	5.48	-9.1%	7.8%	273.81
Mar-11	234.68	274.51	0.00	0.00	5.5%	5.00	5.48	-9.1%	7.8%	273.76
Jun-11	234.80	274.62	0.00	0.00	5.5%	5.00	5.48	-9.1%	7.8%	273.12
Sep-11	234.07	275.14	0.00	0.00	5.5%	5.00	5.51	-9.1%	7.8%	273.33
Dec-11	234.02	275.08	0.00	0.00	5.5%	5.00	5.51	-9.1%	7.8%	273.27
Mar-12	234.15	275.20	0.00	0.00	5.5%	5.00	5.51	-9.1%	7.8%	274.10
Jun-12	238.85	279.90	0.00	0.00	5.5%	5.00	5.51	-9.1%	7.8%	279.28
Sep-12	243.02	280.15	0.00	0.00	5.5%	5.00	5.52	-9.1%	7.8%	280.12
Dec-12	248.32	285.45	0.00	0.00	5.5%	5.00	5.51	-9.1%	7.8%	285.42
Mar-13	252.98	290.07	0.00	0.00	5.5%	5.00	5.51	-9.1%	7.8%	290.05
Jun-13	260.78	292.81	0.00	0.00	5.5%	5.00	5.51	-9.1%	7.8%	292.80
Sep-13	253.63	285.39	0.00	0.00	5.5%	7.00	4.37	-9.1%	7.8%	285.39
Dec-13	260.80	292.59	0.00	0.00	5.5%	7.00	4.37	-9.1%	7.8%	292.59
Mar-14	255.01	292.75	0.00	0.00	5.5%	7.00	4.37	-9.1%	7.8%	292.75
Jun-14	256.52	294.24	0.00	0.00	5.5%	7.00	4.37	-9.1%	7.8%	293.90
Sep-14	256.59	293.22	0.00	0.00	5.5%	7.00	4.35	-9.1%	7.8%	292.88
Dec-14	256.07	292.69	0.00	0.00	5.5%	6.99	4.34	-9.1%	7.8%	292.23
Mar-15	253.86	292.27	0.00	0.00	5.5%	6.99	4.34	-9.1%	7.8%	291.82
Jun-15	253.59	291.99	0.00	0.00	5.5%	6.99	4.34	-9.1%	7.8%	287.80
Sep-15	246.80	285.22	0.00	0.00	5.5%	7.99	4.34	-9.1%	7.8%	283.40
Dec-15	247.83	285.26	0.00	0.00	5.5%	7.99	4.34	-9.1%	7.8%	284.88
Mar-16	244.51	284.78	0.00	0.00	5.5%	7.99	4.33	-9.1%	7.8%	284.40
Jun-16	251.33	291.60	0.00	0.00	5.5%	7.99	4.33	-9.1%	7.8%	291.22
Sep-16	244.05	284.29	0.00	0.00	5.5%	7.99	4.33	-9.1%	7.8%	284.29
Dec-16	228.08	252.42	0.00	0.00	5.7%	7.99	1.71	-9.1%	7.8%	252.42
Mar-17	227.51	251.82	0.00	0.00	5.7%	7.99	1.71	-9.1%	7.8%	250.93
Jun-17	213.30	236.69	0.00	0.00	5.7%	7.99	1.71	-9.1%	7.8%	236.69
Sep-17	203.95	222.18	0.00	0.00	5.7%	7.99	1.71	-9.1%	7.8%	222.18
Dec-17	204.68	222.96	0.00	0.00	5.7%	7.99	1.71	-9.1%	7.8%	222.96
Mar-18	207.55	225.82	0.00	0.00	6.2%	7.99	1.71	-9.1%	7.8%	225.82
Jun-18	207.55	225.82	0.00	0.00	6.2%	7.99	1.71	-9.1%	7.8%	225.82
Sep-18	200.73	219.01	0.00	0.00	6.2%	7.99	1.71	-9.1%	7.8%	219.01
Dec-18	196.04	213.36	0.00	0.00	6.2%	7.99	1.71	-9.1%	7.8%	213.36

Notes: Supplied by MAIC

Appendix E Comparison of Estimates

- E.1 Hindsight estimation of all class risk premiums based on data to 31 December 2018

- E.2 Hindsight estimation of all class profitability based on data to 31 December 2018



Appendix E

Appendix E. 1 Hindsight estimation of all-class premiums based on data to 31 December 2018

Underwriting	Scheme Frequency	Scheme Average size (\$)	Profit Margin	0% p.a. superimposed inflation					1% p.a. superimposed inflation					2% p.a. superimposed inflation				
				Net RP (\$)	CHE (\$)	Acquisition Costs (\$)	Reinsurance Costs (\$)	Hindsight Premium (\$)	Net RP (\$)	CHE (\$)	Acquisition Costs (\$)	Reinsurance Costs (\$)	Hindsight Premium (\$)	Net RP (\$)	CHE (\$)	Acquisition Costs (\$)	Reinsurance Costs (\$)	Hindsight Premium (\$)
Dec-08	0.197%	99,662	7.75%	178.36	11.77	25.00	6.00	239.71	178.46	11.78	25.00	6.00	239.83	178.57	11.79	25.00	6.00	239.96
Mar-09	0.193%	98,560	7.75%	172.74	11.40	25.00	6.00	233.22	172.85	11.41	25.00	6.00	233.34	172.96	11.42	25.00	6.00	233.47
Jun-09	0.187%	90,317	7.75%	153.55	10.13	25.00	6.00	211.04	153.64	10.14	25.00	6.00	211.15	153.74	10.15	25.00	6.00	211.26
Sep-09	0.184%	84,551	7.75%	141.36	8.55	25.00	5.47	195.54	141.45	8.56	25.00	5.47	195.65	141.55	8.56	25.00	5.47	195.76
Dec-09	0.185%	80,628	7.75%	135.26	8.18	25.00	5.47	188.52	135.34	8.19	25.00	5.47	188.62	135.43	8.19	25.00	5.47	188.72
Mar-10	0.186%	78,663	7.75%	133.02	8.05	25.00	5.47	185.95	133.11	8.05	25.00	5.47	186.05	133.19	8.06	25.00	5.47	186.15
Jun-10	0.191%	81,804	7.75%	141.73	8.57	25.00	5.47	195.96	141.84	8.58	25.00	5.47	196.08	141.94	8.59	25.00	5.47	196.21
Sep-10	0.195%	83,272	7.75%	147.17	8.90	25.00	5.49	202.23	147.31	8.91	25.00	5.49	202.40	147.46	8.92	25.00	5.49	202.56
Dec-10	0.193%	83,749	7.75%	147.14	8.90	5.00	5.48	180.51	147.29	8.91	5.00	5.48	180.68	147.45	8.92	5.00	5.48	180.86
Mar-11	0.191%	86,415	7.75%	149.56	9.05	5.00	5.48	183.30	149.73	9.06	5.00	5.48	183.49	149.90	9.07	5.00	5.48	183.69
Jun-11	0.188%	88,326	7.75%	151.12	9.14	5.00	5.48	185.08	151.30	9.15	5.00	5.48	185.29	151.48	9.16	5.00	5.48	185.50
Sep-11	0.187%	92,024	7.75%	155.95	9.43	5.00	5.51	190.67	156.15	9.45	5.00	5.51	190.90	156.36	9.46	5.00	5.51	191.14
Dec-11	0.186%	95,446	7.75%	161.49	9.77	5.00	5.51	197.04	161.74	9.79	5.00	5.51	197.33	162.00	9.80	5.00	5.51	197.63
Mar-12	0.185%	95,173	7.75%	160.10	9.69	5.00	5.51	195.44	160.40	9.70	5.00	5.51	195.79	160.71	9.72	5.00	5.51	196.15
Jun-12	0.182%	97,275	7.75%	160.61	9.72	5.00	5.51	196.03	161.00	9.74	5.00	5.51	196.47	161.40	9.76	5.00	5.51	196.93
Sep-12	0.180%	95,956	7.75%	156.29	9.46	5.00	5.52	191.07	156.74	9.48	5.00	5.52	191.58	157.20	9.51	5.00	5.52	192.11
Dec-12	0.178%	94,199	7.75%	151.64	9.17	5.00	5.51	185.72	152.13	9.20	5.00	5.51	186.28	152.63	9.23	5.00	5.51	186.86
Mar-13	0.176%	92,327	7.75%	146.94	8.89	5.00	5.51	180.31	147.45	8.92	5.00	5.51	180.90	147.99	8.95	5.00	5.51	181.51
Jun-13	0.176%	93,557	7.75%	148.85	9.01	5.00	5.51	182.50	149.40	9.04	5.00	5.51	183.13	149.97	9.07	5.00	5.51	183.79
Sep-13	0.175%	94,308	7.75%	149.69	9.06	7.00	4.37	184.41	150.29	9.09	7.00	4.37	185.10	150.91	9.13	7.00	4.37	185.81
Dec-13	0.175%	91,288	7.75%	144.40	8.74	7.00	4.37	178.33	145.01	8.77	7.00	4.37	179.03	145.63	8.81	7.00	4.37	179.75
Mar-14	0.177%	90,952	7.75%	145.40	8.80	7.00	4.37	179.48	146.05	8.84	7.00	4.37	180.22	146.71	8.88	7.00	4.37	180.99
Jun-14	0.179%	92,174	7.75%	149.60	9.05	7.00	4.37	184.30	150.37	9.10	7.00	4.37	185.19	151.17	9.15	7.00	4.37	186.11
Sep-14	0.181%	91,850	7.75%	150.41	9.10	7.00	4.35	185.21	151.29	9.15	7.00	4.35	186.22	152.20	9.21	7.00	4.35	187.27
Dec-14	0.182%	95,837	7.75%	157.50	9.53	6.99	4.34	193.35	158.57	9.59	6.99	4.34	194.58	159.69	9.66	6.99	4.34	195.87
Mar-15	0.183%	97,507	7.75%	160.82	9.73	6.99	4.34	197.17	162.09	9.81	6.99	4.34	198.62	163.40	9.89	6.99	4.34	200.13
Jun-15	0.184%	94,327	7.75%	156.39	9.46	6.99	4.34	192.07	157.68	9.54	6.99	4.34	193.55	159.02	9.62	6.99	4.34	195.09
Sep-15	0.187%	95,046	7.75%	159.69	9.66	7.99	4.34	196.94	161.24	9.76	7.99	4.34	198.73	162.85	9.85	7.99	4.34	200.58
Dec-15	0.195%	95,432	7.75%	166.83	10.09	7.99	4.34	205.15	168.75	10.21	7.99	4.34	207.35	170.74	10.33	7.99	4.34	209.64
Mar-16	0.202%	97,601	7.75%	177.21	10.72	7.99	4.33	217.08	179.61	10.87	7.99	4.33	219.84	182.11	11.02	7.99	4.33	222.72
Jun-16	0.206%	100,932	7.75%	186.41	11.28	7.99	4.33	227.65	189.36	11.46	7.99	4.33	231.04	192.42	11.64	7.99	4.33	234.56
Sep-16	0.209%	102,064	7.75%	190.53	11.53	7.99	4.33	232.38	193.90	11.73	7.99	4.33	236.25	197.40	11.94	7.99	4.33	240.28
Dec-16	0.206%	92,817	7.75%	170.86	10.79	7.99	1.71	207.43	173.62	10.96	7.99	1.71	210.61	176.47	11.14	7.99	1.71	213.89
Mar-17	0.201%	92,799	7.75%	166.89	10.54	7.99	1.71	202.85	169.93	10.73	7.99	1.71	206.34	173.06	10.93	7.99	1.71	209.95
Jun-17	0.202%	93,900	7.75%	168.81	10.66	7.99	1.71	205.06	172.31	10.88	7.99	1.71	209.09	175.92	11.11	7.99	1.71	213.25
Sep-17	0.201%	94,179	7.75%	168.26	10.62	7.99	1.71	204.42	172.16	10.87	7.99	1.71	208.91	176.18	11.12	7.99	1.71	213.55
Dec-17	0.201%	94,728	7.75%	168.48	10.64	7.99	1.71	204.68	172.81	10.91	7.99	1.71	209.67	177.30	11.19	7.99	1.71	214.84
Mar-18	0.201%	95,732	7.75%	169.89	11.68	7.99	1.71	207.34	174.69	12.01	7.99	1.71	212.90	179.65	12.35	7.99	1.71	218.65
Jun-18	0.198%	97,934	7.75%	171.30	11.77	7.99	1.71	208.96	176.59	12.13	7.99	1.71	215.10	182.08	12.51	7.99	1.71	221.45
Sep-18	0.197%	99,074	7.75%	171.62	11.80	7.99	1.71	209.34	177.38	12.19	7.99	1.71	216.01	183.36	12.61	7.99	1.71	222.94
Dec-18	0.197%	102,016	7.75%	176.06	12.10	7.99	1.71	214.48	182.45	12.54	7.99	1.71	221.89	189.11	13.00	7.99	1.71	229.60

Notes: Net risk premium excludes GST
Hindsight premium includes profit loading

Appendix E

Appendix E. 2 Hindsight estimation of all-class profitability based on data to 31 December 2018

Underwriting	0% p.a. superimposed inflation						1% p.a. superimposed inflation						2% p.a. superimposed inflation					
	Floor	Ceiling	Average	Floor (\$)	Ceiling (\$)	Average (\$)	Floor	Ceiling	Average	Floor (\$)	Ceiling (\$)	Average (\$)	Floor	Ceiling	Average	Floor (\$)	Ceiling (\$)	Average (\$)
Dec-08	0%	13%	12%	0.62	34.29	31.29	0%	13%	12%	0.51	34.17	31.18	0%	13%	12%	0.40	34.06	31.07
Mar-09	6%	19%	18%	14.61	49.27	46.65	6%	19%	18%	14.50	49.15	46.54	6%	19%	18%	14.38	49.04	46.42
Jun-09	22%	32%	31%	55.87	90.52	87.46	22%	32%	31%	55.78	90.42	87.36	22%	32%	31%	55.67	90.32	87.26
Sep-09	29%	39%	38%	73.77	115.49	112.23	29%	39%	38%	73.67	115.39	112.13	29%	39%	38%	73.57	115.29	112.03
Dec-09	33%	43%	42%	87.18	129.07	125.88	33%	43%	42%	87.09	128.98	125.79	33%	43%	42%	87.00	128.89	125.70
Mar-10	34%	42%	42%	89.48	124.52	121.77	34%	42%	41%	89.39	124.43	121.69	34%	42%	41%	89.30	124.34	121.60
Jun-10	31%	39%	39%	80.16	117.06	115.04	31%	39%	39%	80.05	116.94	114.93	31%	39%	39%	79.93	116.83	114.81
Sep-10	28%	36%	36%	72.23	105.75	104.85	28%	36%	36%	72.09	105.60	104.70	28%	36%	36%	71.93	105.45	104.55
Dec-10	30%	39%	39%	71.13	108.03	107.29	30%	39%	39%	70.97	107.87	107.13	30%	39%	39%	70.80	107.71	106.96
Mar-11	28%	38%	38%	65.59	105.42	104.67	28%	38%	38%	65.41	105.24	104.49	28%	38%	38%	65.23	105.06	104.31
Jun-11	27%	38%	37%	64.06	103.88	102.38	27%	38%	37%	63.87	103.69	102.19	27%	38%	37%	63.67	103.49	102.00
Sep-11	25%	36%	36%	58.18	99.25	97.44	25%	36%	36%	57.97	99.03	97.23	25%	36%	35%	57.75	98.81	97.01
Dec-11	22%	34%	33%	52.25	93.30	91.50	22%	34%	33%	51.98	93.04	91.23	22%	34%	33%	51.70	92.76	90.96
Mar-12	23%	34%	34%	53.86	94.91	93.80	23%	34%	34%	53.54	94.59	93.48	23%	34%	34%	53.21	94.25	93.15
Jun-12	24%	35%	35%	58.02	99.06	98.44	24%	35%	35%	57.61	98.65	98.03	24%	35%	35%	57.18	98.23	97.61
Sep-12	27%	37%	37%	66.76	103.89	103.86	27%	37%	37%	66.29	103.41	103.38	27%	37%	37%	65.79	102.92	102.89
Dec-12	31%	40%	40%	76.99	114.13	114.10	31%	40%	40%	76.47	113.61	113.58	31%	40%	40%	75.94	113.07	113.05
Mar-13	34%	43%	43%	86.65	123.74	123.72	34%	42%	42%	86.10	123.19	123.17	34%	42%	42%	85.54	122.63	122.61
Jun-13	35%	43%	43%	92.43	124.46	124.44	35%	42%	42%	91.84	123.87	123.86	35%	42%	42%	91.24	123.27	123.25
Sep-13	33%	40%	40%	83.51	115.27	115.27	33%	40%	40%	82.88	114.63	114.63	32%	40%	40%	82.22	113.97	113.97
Dec-13	37%	44%	44%	96.29	128.08	128.08	37%	44%	44%	95.65	127.44	127.44	36%	43%	43%	94.99	126.77	126.77
Mar-14	35%	43%	43%	89.44	127.18	127.18	35%	43%	43%	88.76	126.49	126.49	35%	43%	43%	88.05	125.79	125.79
Jun-14	34%	42%	42%	86.50	124.23	123.88	33%	42%	42%	85.69	123.41	123.07	33%	42%	42%	84.84	122.56	122.22
Sep-14	33%	42%	42%	85.73	122.36	122.02	33%	41%	41%	84.80	121.43	121.09	33%	41%	41%	83.83	120.46	120.12
Dec-14	30%	39%	39%	77.71	114.32	113.87	30%	39%	39%	76.57	113.18	112.73	29%	38%	38%	75.39	112.00	111.55
Mar-15	28%	38%	38%	71.97	110.38	109.93	28%	37%	37%	70.63	109.04	108.59	27%	37%	37%	69.23	107.65	107.19
Jun-15	30%	39%	38%	76.41	114.80	110.62	30%	39%	38%	75.04	113.44	109.25	29%	38%	37%	73.62	112.02	107.83
Sep-15	26%	36%	36%	65.13	103.54	101.72	26%	36%	35%	63.48	101.89	100.07	25%	35%	35%	61.77	100.18	98.36
Dec-15	24%	34%	34%	58.58	96.01	95.63	23%	33%	33%	56.54	93.98	93.59	22%	32%	32%	54.43	91.87	91.48
Mar-16	18%	30%	30%	44.25	84.53	84.14	17%	29%	29%	41.70	81.98	81.59	16%	28%	28%	39.05	79.33	78.94
Jun-16	16%	28%	28%	41.32	81.59	81.21	15%	27%	27%	38.20	78.47	78.09	14%	26%	26%	34.95	75.22	74.84
Sep-16	12%	25%	25%	29.69	69.92	69.92	11%	23%	23%	26.11	66.35	66.35	9%	22%	22%	22.39	62.63	62.63
Dec-16	16%	24%	24%	36.72	61.07	61.07	15%	23%	23%	33.79	58.14	58.14	13%	22%	22%	30.76	55.11	55.11
Mar-17	18%	26%	25%	40.39	64.69	63.80	16%	24%	24%	37.16	61.47	60.58	15%	23%	23%	33.83	58.14	57.25
Jun-17	11%	20%	20%	24.13	47.51	47.51	10%	19%	19%	20.42	43.80	43.80	8%	17%	17%	16.58	39.96	39.96
Sep-17	8%	15%	15%	15.37	33.60	33.60	6%	13%	13%	11.23	29.46	29.46	3%	11%	11%	6.95	25.18	25.18
Dec-17	8%	15%	15%	15.86	34.14	34.14	5%	13%	13%	11.25	29.53	29.53	3%	11%	11%	6.48	24.76	24.76
Mar-18	8%	15%	15%	16.28	34.55	34.55	5%	13%	13%	11.15	29.43	29.43	3%	11%	11%	5.85	24.12	24.12
Jun-18	7%	15%	15%	14.78	33.05	33.05	4%	12%	12%	9.13	27.40	27.40	2%	10%	10%	3.26	21.53	21.53
Sep-18	4%	12%	12%	7.61	25.89	25.89	1%	9%	9%	1.45	19.74	19.74	-2%	6%	6%	4.94	13.35	13.35
Dec-18	-1%	7%	7%	1.82	15.50	15.50	-4%	4%	4%	8.66	8.67	8.67	-8%	1%	1%	15.77	1.56	1.56

Notes: Derived from previous appendices