

**Appendix B - Summary of Alternative Formulas Proposed**

1 As proposed

$$\left[ \frac{\text{Premiums allocated to date} + \text{Claims and benefits paid to date}}{\text{Total expected premiums} + \text{Total expected claims and benefits}} \right] * \text{CM at initial recognition} - \text{CM previously recognized} = \text{CM recognized in current period}$$

2 As proposed with weighting(relative)

$$\left[ \frac{\text{Premiums allocated to date} * x + \text{Claims and benefits paid to date} * (1-x)}{\text{Total expected premiums} * x + \text{Total expected claims and benefits} * (1-x)} \right] * \text{CM at initial recognition} - \text{CM previously recognized} = \text{CM recognized in current period}$$

3 As proposed with weighting(risk-based)

$$\left[ \frac{\text{Premiums allocated to date} + \text{Claims and benefits paid to date} * n}{\text{Total expected premiums} + \text{Total expected claims and benefits} * n} \right] * \text{CM at initial recognition} - \text{CM previously recognized} = \text{CM recognized in current period}$$

4 Claims

$$\left[ \frac{\text{Incurred claims and benefits to date} * \text{CM at initial recognition}}{\text{Total expected claims and benefits over life of contract}} \right] - \text{CM previously recognized} = \text{CM recognized in current period}$$

5 Premiums Allocated

$$\left[ \frac{\text{Premiums allocated to date}}{\text{Total premiums expected}} * \text{CM at initial recognition} \right] - \text{CM previously recognized} = \text{CM recognized in current period}$$



**Appendix B Formula 1 - As Proposed**

Ratio= 
$$\frac{\text{(Premiums allocated to date + Claims and benefits paid to date)}}{\text{(Total expected premiums + Total expected claims and benefits)}}$$

	<b>Initial Recognition</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Premiums allocated to the current period		12,000	12,000	12,000	12,000	12,000
Premiums allocated to date		12,000	24,000	36,000	48,000	60,000
Total expected premiums	60,000	60,000	60,000	60,000	60,000	60,000
Current period claims payments		2,250	6,750	11,250	11,250	13,500
Claims paid to date		2,250	9,000	20,250	31,500	45,000

<b>IA - With changes in expected claims</b>						
Total expected claims	48,000	37,750	31,500	31,250	36,000	45,000
Ratio calculated for the period		0.1458	0.3607	0.6164	0.8281	1.0000
Composite margin recognized in earnings to date		2,345	5,801	9,915	13,320	16,084
Less: composite margin recognized in previous periods		-	2,345	5,801	9,915	13,320
<b>Composite margin recognized in current period</b>		<b>2,345</b>	<b>3,456</b>	<b>4,114</b>	<b>3,405</b>	<b>2,764</b>
Remaining composite margin	16,084	13,739	10,283	6,169	2,764	-

<b>IB - No change in expected claims</b>						
Total initially expected claims	48,000	48,000	48,000	48,000	48,000	48,000
Ratio calculated for the period		0.1319	0.3056	0.5208	0.7361	1.0000
Composite margin recognized in earnings to date		2,122	4,915	8,377	11,840	16,084
Less: composite margin recognized in previous periods		-	2,122	4,915	8,377	11,840
<b>Composite margin recognized in current period</b>		<b>2,122</b>	<b>2,792</b>	<b>3,463</b>	<b>3,463</b>	<b>4,244</b>
Remaining composite margin	-	10,077	6,759	2,458	1,106	-

<b>Assumptions at initial recognition</b>		
Coverage period	5	years
Claims handling period	5	years
Premiums Allocated		
Yearly	\$ 12,000	
Total expected	\$ 60,000	
Acquisition costs		
Incremental	\$ 2,000	
Non-incremental	\$ 5,000	
Discount rate	5%	
Investment rate	8%	
Composite margin	\$ 16,084	

Appendix B Formula 2 - DP Proposed with weighting (similar to Formula 3)

$$\text{Ratio} = \frac{\text{Premiums allocated to date} * x + \text{Claims and benefits paid to date} * (1-x)}{\text{Total expected premiums} * x + \text{Total expected claims and benefits} * (1-x)}$$

2A Margin recognized during coverage should be high

X	0.85
(1-x)	0.15

	Day 0	Year 1	Year 2	Year 3	Year 4	Year 5
Ratio calculated for the period		0.19	0.39	0.60	0.81	1.000
Composite Margin Balance	\$ 16,084					
Composite margin recognized to date		\$ 2,991	\$ 6,278	\$ 9,715	\$ 12,983	\$ 16,084
less composite margin recognized in prior periods		\$ -	\$ (2,991)	\$ (6,278)	\$ (9,715)	\$ (12,983)
Composite margin recognized in current period		\$ 2,991	\$ 3,287	\$ 3,438	\$ 3,267	\$ 3,101
Total CM recognized		\$ 2,991	\$ 6,278	\$ 9,715	\$ 12,983	\$ 16,084

2B Margin recognized during claims handling period should be high

X	0.25
(1-x)	0.75

	Day 0	Year 1	Year 2	Year 3	Year 4	Year 5
Ratio calculated for the period		0.11	0.33	0.63	0.85	1
Composite Margin Balance	\$ 16,084					
Composite margin recognized to date		\$ 1,741	\$ 5,309	\$ 10,121	\$ 13,643	\$ 16,084
less composite margin recognized in prior periods		\$ -	\$ (1,741)	\$ (5,309)	\$ (10,121)	\$ (13,643)
Composite margin recognized in current period		\$ 1,741	\$ 3,569	\$ 4,812	\$ 3,522	\$ 2,441
Total CM recognized		\$ 1,741	\$ 5,309	\$ 10,121	\$ 13,643	\$ 16,084

Appendix B Formula 3 - DP Proposed with weighting (risk-profile)

$$\text{Ratio} = \frac{\text{Premiums allocated to date} + \text{Claims and benefits paid to date} * n}{\text{Total expected premiums} + \text{Total expected claims and benefits} * n}$$

3A Short-tail risk profile contract

n 0.18

	Day 0	Year 1	Year 2	Year 3	Year 4	Year 5
Ratio calculated for the period		0.19	0.39	0.60	0.81	1.00
Composite Margin Balance	\$ 16,084					
Composite margin recognized to date		\$ 2,990	\$ 6,277	\$ 9,716	\$ 12,983	\$ 16,084
less composite margin recognized in prior periods		\$ -	\$ (2,990)	\$ (6,277)	\$ (9,716)	\$ (12,983)
Composite margin recognized in current period		\$ 2,990	\$ 3,287	\$ 3,439	\$ 3,268	\$ 3,101

3B Long-tail risk profile contract

n 3.02

	Day 0	Year 1	Year 2	Year 3	Year 4	Year 5
Cumulative CM recognized		0.11	0.33	0.63	0.85	1.00
Composite Margin Balance	\$ 16,084					
Composite margin recognized to date		\$ 1,738	\$ 5,307	\$ 10,122	\$ 13,644	\$ 16,084
less composite margin recognized in prior periods		\$ -	\$ (1,738)	\$ (5,307)	\$ (10,122)	\$ (13,644)
Composite margin recognized in current period		\$ 1,738	\$ 3,569	\$ 4,815	\$ 3,522	\$ 2,440

**Appendix B Formula 4 - Claims**

Ratio = 
$$\frac{\text{Incurred claims and benefits to date} * \text{CM at initial recognition}}{\text{Total expected claims and benefits over life of contract}}$$

	<u>Day 1</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Paid to date		2,250	9,000	20,250	31,500	45,000
Total expected claims		37,750	31,500	31,250	36,000	45,000
Ratio		0.06	0.29	0.65	0.88	1.00
<b>CM Recognized</b>		<b>959</b>	<b>3,637</b>	<b>5,827</b>	<b>3,771</b>	<b>1,891</b>
Remaining composite margin	16,084	15,125	11,489	5,662	1,891	-

**Appendix B Formula 5 - Allocated Premiums**

$$\text{Ratio} = \frac{\text{Premiums allocated to date}}{\text{Total premiums expected}} * \text{CM at initial recognition}$$

	<u>Day 1</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Premiums allocated to date		12,000	24,000	36,000	48,000	60,000
Total Premiums Expected		60,000	60,000	- 60,000	60,000	60,000
Ratio		0.20	0.40	0.60	0.80	1.00
<b>CM Recognized</b>		<b>3,217</b>	<b>3,217</b>	<b>3,217</b>	<b>3,217</b>	<b>3,217</b>
Remaining composite margin	16,084	12,867	9,650	6,434	3,217	-