



**International  
Accounting Standards  
Board**

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This document is provided as a convenience to observers at Insurance Working Group meetings, to assist them in following the discussion. It does not represent an official position of the IASB. Board positions are set out in Standards.

Note: These notes are based on the staff paper prepared for the Insurance Working Group Meeting. Paragraph numbers correspond to paragraph numbers used in the Insurance Working group paper. However, because these notes are less detailed, some paragraph numbers are not used.

### **INFORMATION FOR OBSERVERS**

**IASB Meeting:** Insurance Working Group, April 2008  
**Paper:** Risk margins - illustrations of interaction between balance sheet and performance statement (Agenda paper 7B)

## Base data

### Basic information

Contract starts	1 Jul 01	Contract ends	30 Jun 02
Number of contracts	1,000		
Premium	1,000	per contract	
Acquisition costs	0	per contract	
Claims arising on 31 Dec 01	are paid on	31 Dec 01	
Claims arising on 30 Jun 02	are paid on	30 Jun 02	
Estimated investment return		5%	
Risk-free rate		4%	
Ignore possibility of early cancellation			
Ignore tax			

Figures presented in CU '000. Rounding differences may exist.

### Estimated claims

	<i>Claim probability per year</i>	<i>Average claim size per claim all contracts (including contracts with no claims)</i>	
Unbiased estimate at inception	10%	9,000	900

50% of claims are incurred on 31 December 01 and 50% on 30 Jun 02

**Base Case - Examples 1 & 2****Expected present value of claims at 1 July 01**

	<i>Nominal amount</i>	<i>Present value</i>
Expected claims to be paid 31 December 01	450	441
Expected claims to be paid 30 June 02	450	<u>433</u>
		<u><u>874</u></u>

**Margin at inception**

Premium received		1,000
Acquisition costs		0
Expected present value of claims (as above)		<u>-874</u>
Implied margin at inception		<u><u>126</u></u>

**Assumed distribution of margin at inception**

Uncertainty about:		
- the frequency of claims		63
- the severity of claims		<u>63</u>
Total		<u><u>126</u></u>

**Case with extended claims settlement period- Examples 3&4**

Claims arising on 31 Dec 01	are paid on	30 Jun 02
Claims arising on 30 Jun 02	are paid on	31 Dec 02

Uncertainty about:

- the frequency of claims	released at end of coverage period
- the severity of claims	released at payment of claims

**Expected present value of claims at 1 July 01**

	<i>Nominal amount</i>	<i>Present value</i>
Expected claims to be paid 30 June 02	450	433
Expected claims to be paid 31 December 02	450	424
		<u>857</u>

**Margin at inception**

Premium received	1,000
Acquisition costs	0
Expected present value of claims (as above)	<u>-857</u>
Implied margin at inception (*)	<u>143</u>

(\*) Based on the assumption of no profit at inception, the margin is calibrated back to premium. The margin is higher than in the base case due to increased impact of discounting.

**Assumed distribution of margin at inception**

Uncertainty about:

- the frequency of claims	72
- the severity of claims	72
Total	<u>143</u>

## Example 1: Base Case, Prospective approach

### Balance sheet

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>
Cash	0	0	139	0
Investments	1,000	575	0	0
<b>Total assets</b>	<b>1,000</b>	<b>575</b>	<b>139</b>	<b>0</b>
Pre-claim liability (unearned premium)	1,000	506	0	0
Claims liabilities	0	0	0	0
<b>Total liabilities</b>	<b>1,000</b>	<b>506</b>	<b>0</b>	<b>0</b>
Equity (retained earnings)	0	69	139	0
<b>Total liabilities and equity</b>	<b>1,000</b>	<b>575</b>	<b>139</b>	<b>0</b>

### Income statement

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>	<i>Total</i>
Gain at inception (before acquisition costs)	0				0
Release from risk		64	66	0	130
Acquisition costs	0				0
<b>Net underwriting result</b>	<b>0</b>	<b>64</b>	<b>66</b>	<b>0</b>	<b>130</b>
Investment income		25	14	0	39
Interest accrued on insurance liabilities		-20	-10	0	-30
<b>Net profit</b>	<b>0</b>	<b>69</b>	<b>70</b>	<b>0</b>	<b>139</b>
Opening retained earnings	0	0	69	139	
Net profit	0	69	70	0	
<b>Closing retained earnings</b>	<b>0</b>	<b>69</b>	<b>139</b>	<b>139</b>	
<b>Movement of Risk Margin</b>					
Beginning of period		126	64	0	126
Interest on risk margin		2	2	0	4
Release from risk during period		-64	-66	0	-130
<b>End of period</b>	<b>126</b>	<b>64</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Example 2: Base Case, IAS 18

### Balance sheet

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>	
Cash	0	0	139	0	
Investments	1,000	575	0	0	
Recoverable acquisition costs	0	0	0	0	
<b>Total assets</b>	<b>1,000</b>	<b>575</b>	<b>139</b>	<b>0</b>	
Pre-claim liability (unearned premium)	1,000	500	0	0	
Claims liabilities	0	0	0	0	
<b>Total liabilities</b>	<b>1,000</b>	<b>500</b>	<b>0</b>	<b>0</b>	
Equity (retained earnings)	0	75	139	0	
<b>Total liabilities and equity</b>	<b>1,000</b>	<b>575</b>	<b>139</b>	<b>0</b>	

### Income statement

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>	<i>Total</i>
Premium revenue		500	500	0	1,000
Claims expense		-450	-450	0	-900
Acquisition costs	0	0	0	0	0
<b>Net underwriting result</b>	<b>0</b>	<b>50</b>	<b>50</b>	<b>0</b>	<b>100</b>
Investment income		25	14	0	39
Interest accrued on claims liabilities		0	0	0	0
<b>Net profit</b>	<b>0</b>	<b>75</b>	<b>64</b>	<b>0</b>	<b>139</b>
Opening retained earnings	0	0	75	139	
Net profit	0	75	64	0	
<b>Closing retained earnings</b>	<b>0</b>	<b>75</b>	<b>139</b>	<b>139</b>	
<b>Movement of Risk Margin (implicit)</b>					
Beginning of period		100	50	0	100
Interest on risk margin		0	0	0	0
Release from risk during period		-50	-50	0	-100
<b>End of period</b>	<b>100</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>

### Example 3: Extended claims settlement period, Prospective approach

#### Balance sheet

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>
Cash	0	0	0	165
Investments	1,000	1,025	600	0
<b>Total assets</b>	<b>1,000</b>	<b>1,025</b>	<b>600</b>	<b>165</b>
Pre-claim liability (unearned premium)	1,000	506	0	0
Claims liabilities	0	478	478	0
<b>Total liabilities</b>	<b>1,000</b>	<b>983</b>	<b>478</b>	<b>0</b>
Equity (retained earnings)	0	42	122	165
<b>Total liabilities and equity</b>	<b>1,000</b>	<b>1,025</b>	<b>600</b>	<b>165</b>

#### Income statement

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>	<i>Total</i>
Gain at inception (before acquisition costs)	0				0
Release from risk		37	74	38	149
Acquisition costs	0				0
<b>Net underwriting result</b>	<b>0</b>	<b>37</b>	<b>74</b>	<b>38</b>	<b>149</b>
Investment income		25	25	15	65
Interest accrued on insurance liabilities		-20	-19	-10	-49
<b>Net profit</b>	<b>0</b>	<b>42</b>	<b>80</b>	<b>43</b>	<b>165</b>
Opening retained earnings	0	0	42	122	
Net profit	0	42	80	43	
<b>Closing retained earnings</b>	<b>0</b>	<b>42</b>	<b>122</b>	<b>165</b>	
<b>Movement of Risk Margin</b>					
Beginning of period		143	109	37	143
Interest on risk margin		3	2	1	6
Release from risk during period		-37	-74	-38	-149
<b>End of period</b>	<b>143</b>	<b>109</b>	<b>37</b>	<b>0</b>	<b>0</b>

## Example 4: Extended claims settlement period, IAS 18

### Balance sheet

	<i>1 Jul 01</i>	<i>31 Dec 01</i>	<i>30 Jun 02</i>	<i>31 Dec 02</i>
		<i>6 months</i>	<i>6 months</i>	<i>6 months</i>
Cash	0	0	0	165
Investments	1,000	1,025	600	0
Recoverable acquisition costs	0	0	0	0
<b>Total assets</b>	<b>1,000</b>	<b>1,025</b>	<b>600</b>	<b>165</b>
Pre-claim liability (unearned premium)	1,000	500	0	0
Claims liabilities	0	450	450	0
<b>Total liabilities</b>	<b>1,000</b>	<b>950</b>	<b>450</b>	<b>0</b>
Equity (retained earnings)	0	75	150	165
<b>Total liabilities and equity</b>	<b>1,000</b>	<b>1,025</b>	<b>600</b>	<b>165</b>

### Income statement

	<i>1 Jul 01</i>	<i>31 Dec 01</i>	<i>30 Jun 02</i>	<i>31 Dec 02</i>	<i>Total</i>
		<i>6 months</i>	<i>6 months</i>	<i>6 months</i>	
Premium revenue		500	500	0	1,000
Claims expense		-450	-450	0	-900
Acquisition costs	0	0	0	0	0
<b>Net underwriting result</b>	<b>0</b>	<b>50</b>	<b>50</b>	<b>0</b>	<b>100</b>
Investment income		25	25	15	65
Interest accrued on claims liabilities		0	0	0	0
<b>Net profit</b>	<b>0</b>	<b>75</b>	<b>75</b>	<b>15</b>	<b>165</b>
Opening retained earnings	0	0	75	150	
Net profit	0	75	75	15	
<b>Closing retained earnings</b>	<b>0</b>	<b>75</b>	<b>150</b>	<b>165</b>	

### Movement of Risk Margin (implicit)

Beginning of period		100	50	0	100
Interest on risk margin		0	0	0	0
Release from risk during period		-50	-50	0	-100
<b>End of period</b>	<b>100</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Liability movements - Examples 1&2

### Example 1

	<i>Claims due 30 June</i>		<i>Claims due 30 Dec 02</i>		<i>Total</i>
	<i>Before margin</i>	<i>Margin</i>	<i>Before margin</i>	<i>Margin</i>	
1 Jul 01 Present value of claims (before risk)	441		433		874
Margin - frequency		32		32	63
Margin - severity		32		32	63
Subtotal	441	63	433	63	1,000
31 Dec 01 Interest	9	1	9	1	20
31 June 02 Claims paid	-450				-450
31 Dec 01 Release from risk (frequency)		-32			-32
31 Dec 01 Release from risk (severity)		-32			-32
31 Dec 01 Balance	0	0	441	64	506
30 June 02 Interest	0	0	9	1	10
31 June 02 Claims paid			-450		-450
31 June 02 Release from risk (severity)		0		-33	-33
30 June 02 Release from risk (frequency)				-33	-33
30 June 02 Balance	0	0	0	0	0
31 Dec 02 Interest	0	0	0	0	0
30 Dec 02 Release from risk (severity)				0	0
30 Dec 02 Claims paid			0		0
30 Dec 02 Balance	0	0	0	0	0

### Example 2

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>	<i>Total</i>
Start of period					0
Premiums	1,000				1,000
Acquisition costs	0				0
Claims paid		-450	-450	0	-900
End of period	1,000	-450	-450	0	100
Implied margin at 1 July 01	100				

## Liability movements - Examples 3&4

### Example 3

	<i>Claims due 30 June 02</i>		<i>Claims due 30 Dec 02</i>		<i>Total</i>
	<i>Before margin</i>	<i>Margin</i>	<i>Before margin</i>	<i>Margin</i>	
1 Jul 01 Present value of claims (before risk)	433		424		857
Margin - frequency		36		36	72
Margin - severity		36		36	72
Subtotal	433	72	424	72	1,000
31 Dec 01 Interest	9	1	8	1	20
31 June 02 Claims paid					0
31 Dec 01 Release from risk (frequency)		-36			-36
31 Dec 01 Release from risk (severity)		0			0
31 Dec 01 Balance	441	36	433	73	983
30 June 02 Interest	9	1	9	1	19
31 June 02 Claims paid	-450				-450
31 June 02 Release from risk (severity)		-37		0	-37
30 June 02 Release from risk (frequency)				-37	-37
30 June 02 Balance	0	0	441	37	478
31 Dec 02 Interest	0	0	9	1	9
30 Dec 02 Release from risk (severity)				-38	-38
30 Dec 02 Claims paid			-450		-450
30 Dec 02 Balance	0	0	0	0	0

### Example 4

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>	<i>Total</i>
Start of period					0
Premiums	1,000				1,000
Acquisition costs	0				0
Claims paid		0	-450	-450	-900
End of period	1,000	0	-450	-450	100

Implied margin at 1 July 01

100

## Cash flows and investments - Examples 1&2

### Expected (probability-weighted) cash flows -unbiased estimate at inception

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>	<i>Total</i>
Start of period					0
Premiums	1,000				1,000
Acquisition costs	0				0
Investments bought	-1,000				-1,000
Investments matured		450	589	0	1,039
Claims paid		-450	-450	0	-900
End of period	0	0	139	0	139

### Investments - zero coupon bonds maturing 30 June 02

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>
Start of period		439	0	0
Bought	439			
Sub-total	439	439	0	0
Interest		11	0	
Matured (30 June 02)		-450		
End of period	439	0	0	0

### Investments - zero coupon bonds maturing 31 Dec 02

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>
Start of period		561	575	0
Bought	561			
Sub-total	561	561	575	0
Interest		14	14	0
Matured (31 Dec)			-589	0
End of period	561	575	0	0

### Summary of investments

	<i>1 Jul 01</i>	<i>31 Dec 01</i>	<i>30 Jun 02</i>	<i>31 Dec 02</i>
Zeroes at cost				
- maturing 31 Mar 02	439	0	0	0
- maturing 30 Sept 02	561	561	0	0
Subtotal	1,000	561	0	0
Accrued interest				
- maturing 30 June 02				
- maturing 31 Dec 02		14		
Subtotal	0	14	0	0
Total	1,000	575	0	0

## Cash flows and investments - Examples 3&4

### Expected (probability-weighted) cash flows -unbiased estimate at inception

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>	<i>Total</i>
Start of period					0
Premiums	1,000				1,000
Acquisition costs	0				0
Investments bought	-1,000				-1,000
Investments matured			450	615	1,065
Claims paid			-450	-450	-900
End of period	0	0	0	165	165

### Investments - zero coupon bonds maturing 30 June 02

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>
Start of period		429	440	0
Bought	429			
Sub-total	429	429	440	0
Interest		11	10	
Matured (30 June 02)			-450	
End of period	429	440	0	0

### Investments - zero coupon bonds maturing 31 Dec 02

	<i>1 Jul 01</i>	<i>31 Dec 01</i> <i>6 months</i>	<i>30 Jun 02</i> <i>6 months</i>	<i>31 Dec 02</i> <i>6 months</i>
Start of period		571	585	600
Bought	571			
Sub-total	571	571	585	600
Interest		14	15	15
Matured (31 Dec)				-615
End of period	571	585	600	0

### Summary of investments

	<i>1 Jul 01</i>	<i>31 Dec 01</i>	<i>30 Jun 02</i>	<i>31 Dec 02</i>
Zeroes at cost				
- maturing 31 Mar 02	429	429	0	0
- maturing 30 Sept 02	571	571	571	0
Subtotal	1,000	1,000	571	0
Accrued interest				
- maturing 30 June 02		11	14	
- maturing 31 Dec 02		14	15	
Subtotal	0	25	29	0
Total	1,000	1,025	600	0

## Workings

### Factors for discounting and compounding

		<i>Investment rate</i>	<i>Risk-free rate</i>
Annual return	$r$	5.00%	4.00%
Log of payout after 12 months	$P = \ln(1+r)$	4.88%	3.92%
Return for			
3 months	$\exp((3/12)*P)$	1.23%	0.99%
6 months	$\exp((6/12)*P)$	2.47%	1.98%
9 months	$\exp((9/12)*P)$	3.73%	2.99%
12 months	$\exp((6/12)*P)$	5.00%	4.00%
15 months	$\exp((15/12)*P)$	6.29%	5.02%
18 months	$\exp((18/12)*P)$	7.59%	6.06%
Discount factor for			
3 months		1.0123	1.0099
6 months		1.0247	1.0198
9 months		1.0373	1.0299
12 months		1.0500	1.0400
15 months		1.0629	1.0502
18 months		1.0759	1.0606