

Biennial Convention 2007

# Adventures in Risk

23-26 September 2007 • Christchurch, New Zealand



Institute of Actuaries of Australia

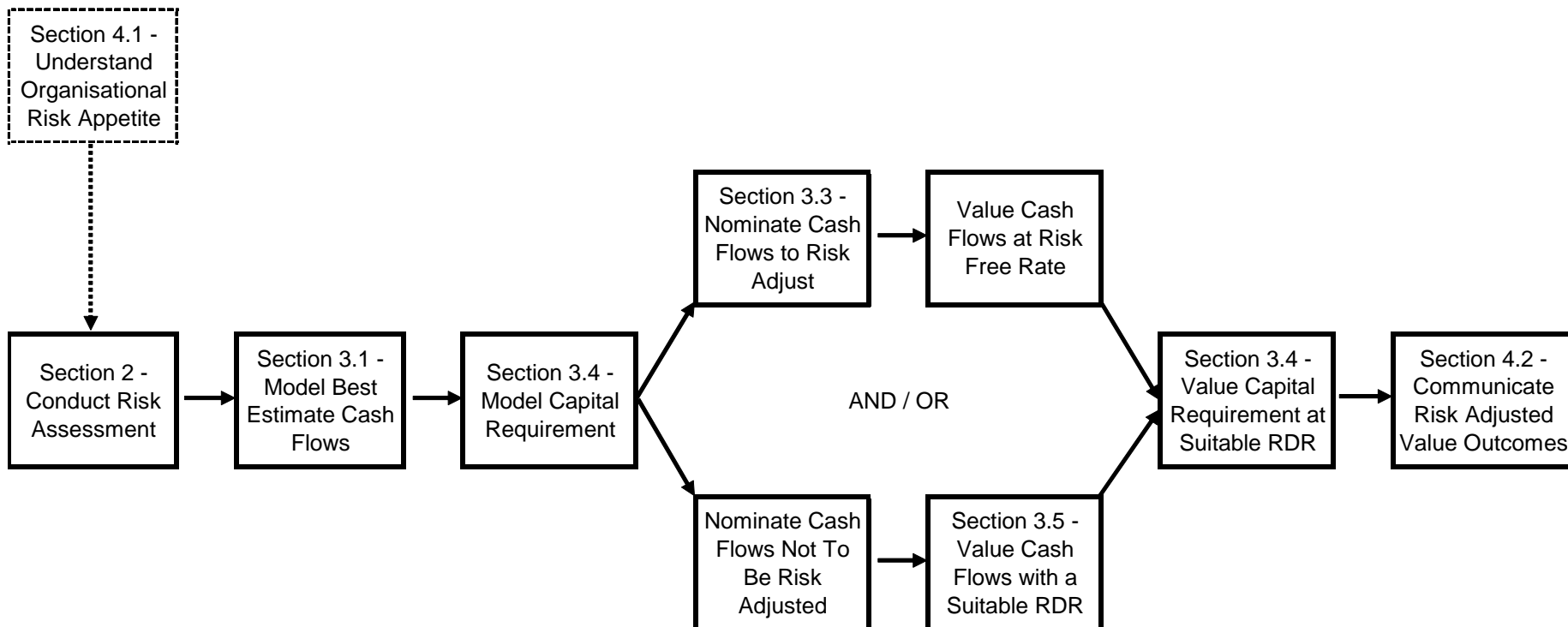


## Recognising Risk in Financial Decision Making

**Tim Gorst and Anton Kapel**



There are a number of steps that should be followed in order to appropriately recognise risk in financial decision making





## Understanding the organisation's risk appetite and attitudes is critical context to financial decision making ...

---

**TABLE 2**
**Example Risk Appetite Statement – Key Capital Metrics**


---

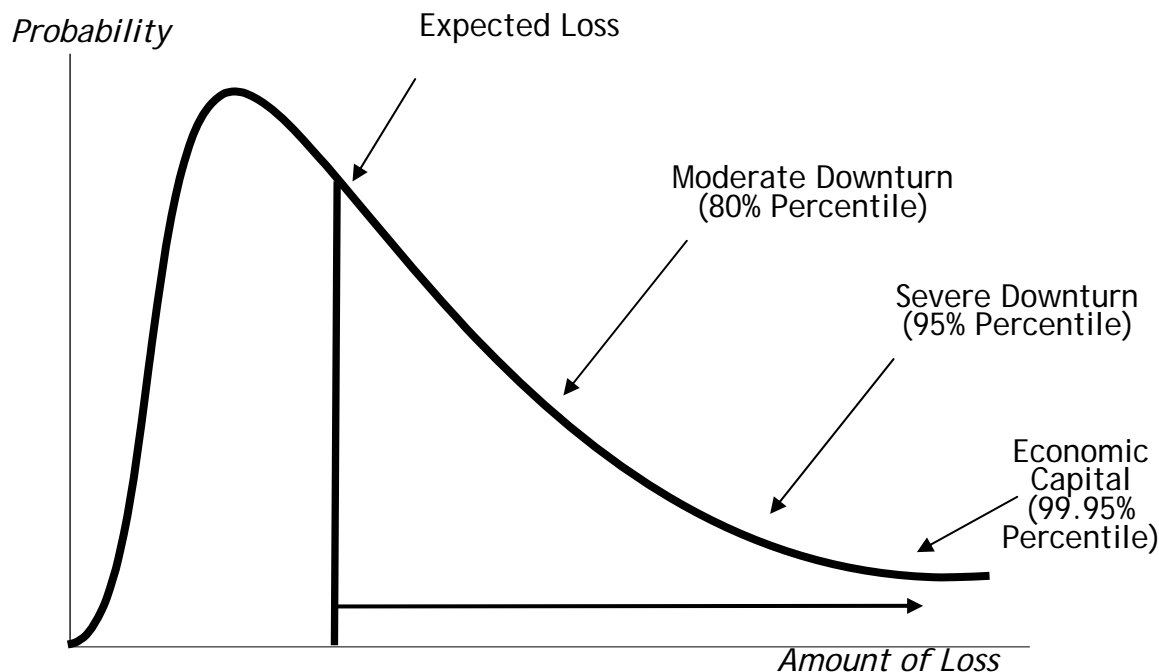
	<b>Total Business</b>	<b>Business Unit A</b>	<b>Business Unit B</b>	<b>Business Unit C</b>
Cash Earnings	\$	\$	\$	\$
End of Year Book Capital ("E")	\$	\$	\$	\$
End of Year Regulatory Capital ("RC")	\$	\$	\$	\$
End of Year Risk Capital				
- Economic Capital (@ 99.95%*)	\$	\$	\$	\$
- Severe Downturn (@ 95%*)	\$	\$	\$	\$
- Moderate Downturn (@ 80%*)	\$	\$	\$	\$
Return on Average Capital				
- ROE (Book Capital)	%	%	%	%
- RORC (Regulatory Capital)	%	%	%	%
- ROEC (Economic Capital)	%	%	%	%

---

\* Risk capital confidence intervals are generally a function of the organisation's target debt rating.



... where risk capital corresponds to agreed points on the aggregate loss distribution



\* Economic capital confidence interval is generally a function of the organisation's target debt rating



A risk assessment will assess the potential risks associated with a decision across relevant risk classes, and time horizon

---

**TABLE 1**

**Example – A Generic Risk Type Framework**

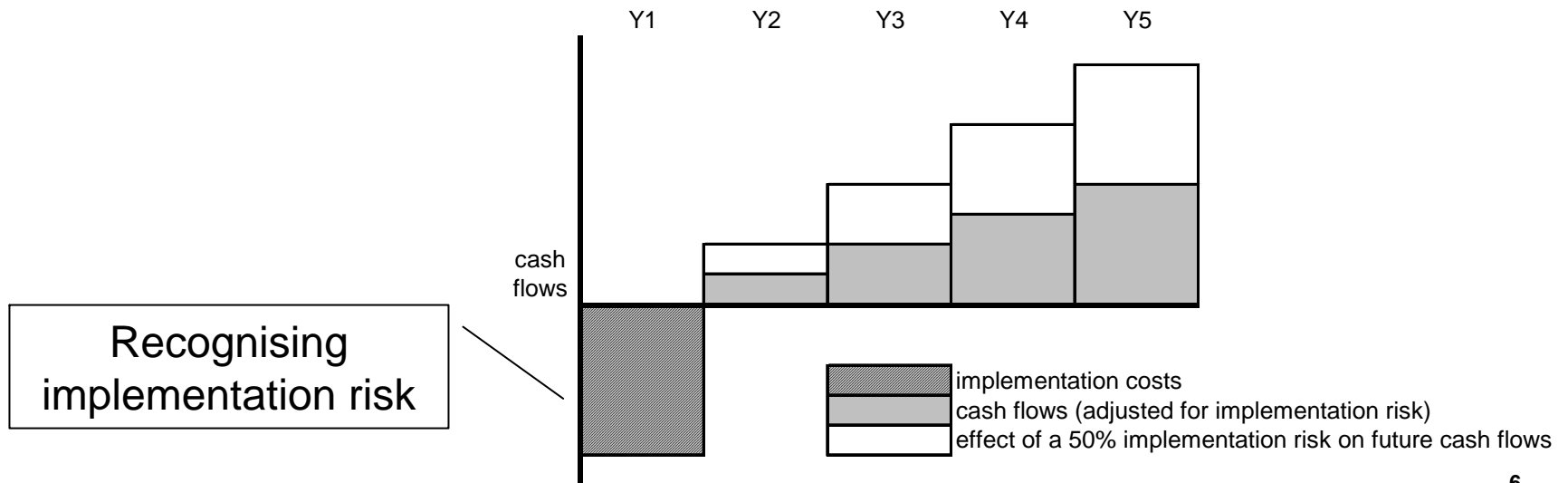
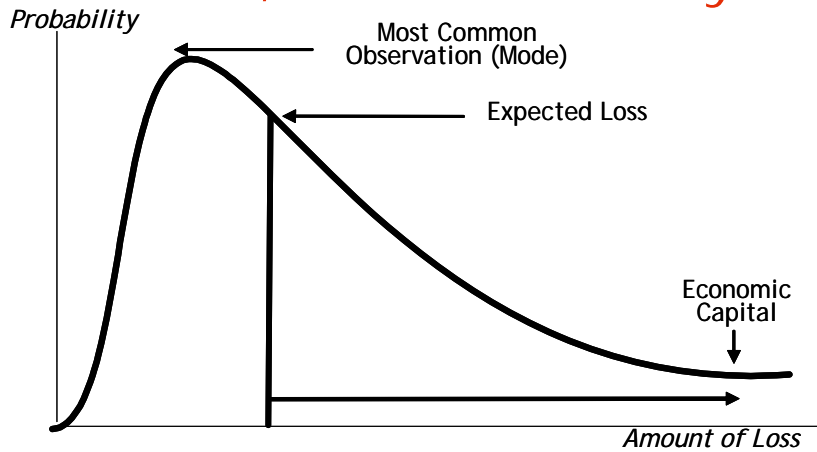
---

<b>Risk Type</b>	<b>As defined by the chance that, over the relevant time horizon, losses result from:</b>
Market risk	the business being exposed to adverse market movements
Credit risk	a payee's (or borrower's) failure to meet the term of any contract
Operational risk	inadequate or failed internal processes, people and systems or from external events
Insurance risk	an unforeseen increase to insurance claims, that cannot be offset by a corresponding timely increase in insurance premiums
Liquidity risk	an inability to realise assets within a required time horizon
Funding risk	an inability to raise required business capital, on appropriate terms, within a required time horizon
Strategic risk	poor strategic choices
Reputation Risk	reputation / brand damage
Business risk	any other unexpected reduction in revenue that cannot be offset by a corresponding timely decrease in expenses

---



Base cash flows should reference the "mean", not mode, and be suitably adjusted for implementation risk





Cost of Capital should be recognised:

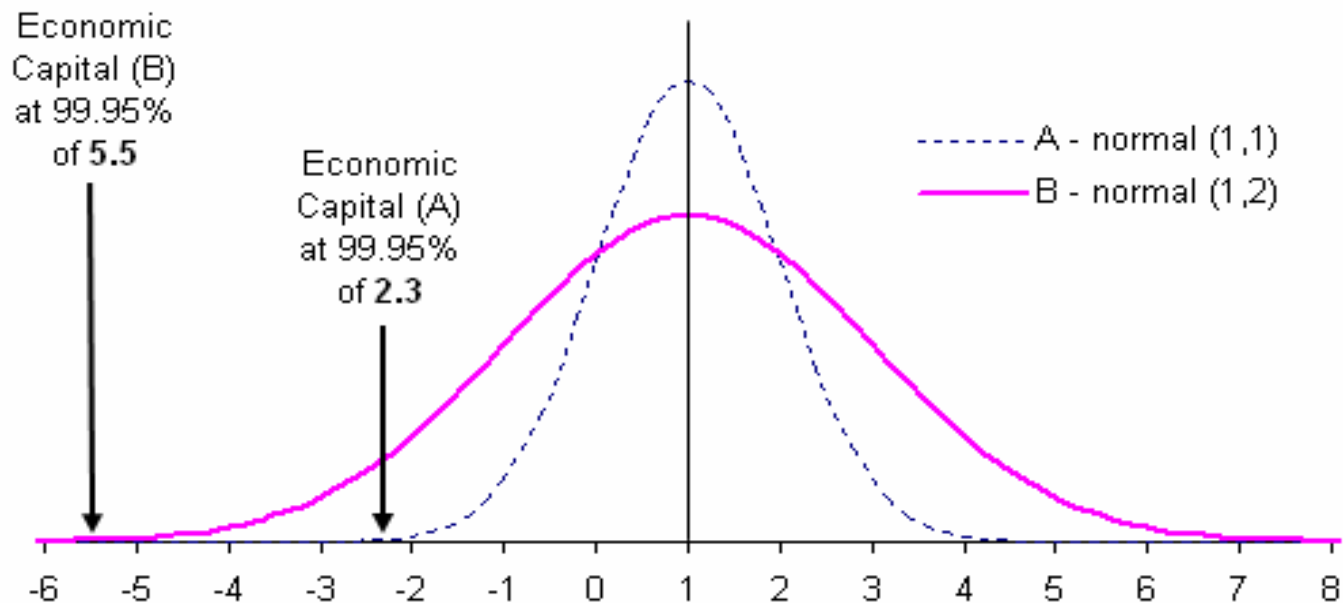
- \* primarily through a risk-based Economic Capital lens
- \* by forecasting an explicit annual “Capital Charge”

■ Some “secondary” capital lenses through which to consider the financial decision might include:

- regulatory
- physical book
- target
- liquid
- etc.



## Example: same cash flow but different risk adjusted value



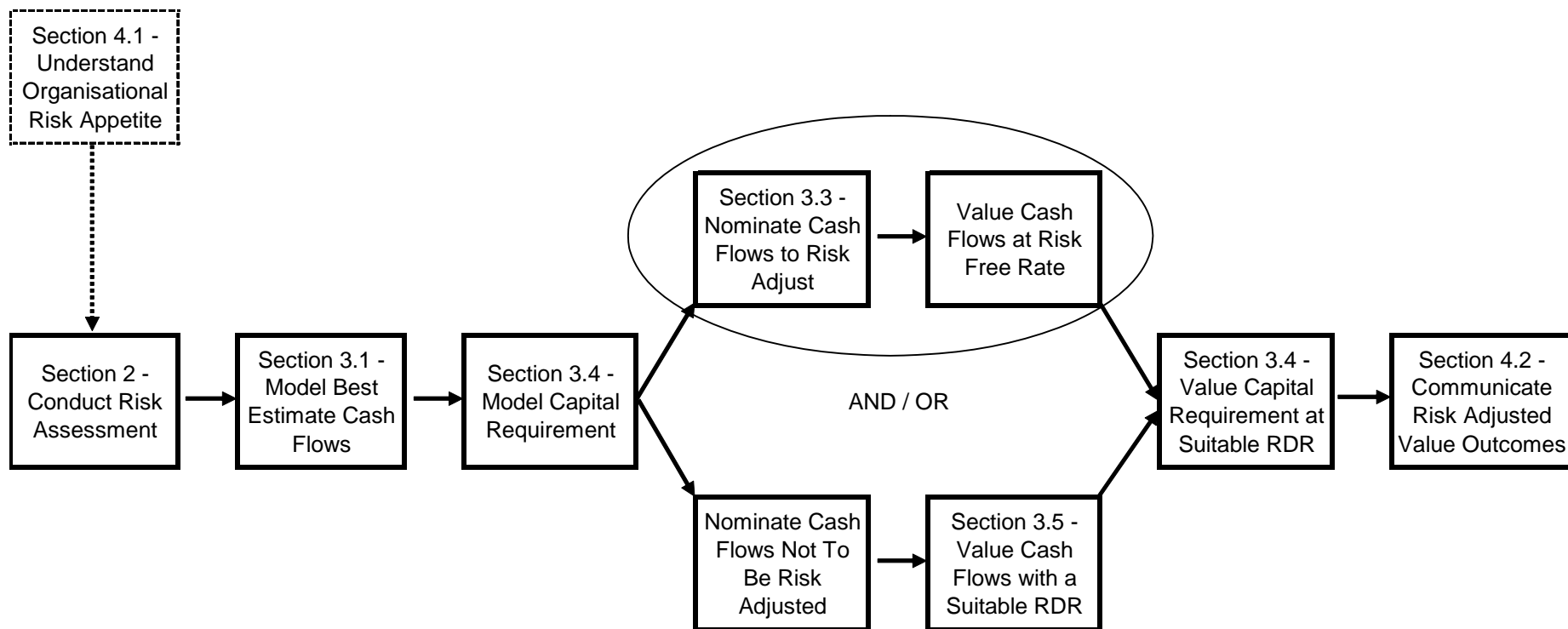
	A	B
Cash Flow	1 pa	1 pa
Economic Capital	2.3	5.5
Discount Rate (RDR)	LOWER	HIGHER
Valuation	HIGHER	LOWER

Value is reduced through the impact of the initiative risk, and risk attitudes of decision makers, to increase both the **capital charge**, and the **risk adjusted discount rate**





Where cash flows are adjusted for risk, then the appropriate RDR for these cash flows would be the risk free rate





Where cash flows are adjusted for risk, then the appropriate RDR for these cash flows would be the risk free rate

■ However this requires:

- decomposing revenue and cost cash flows into components that are affected by each individual underlying risk type
- deriving or assuming a statistical distribution for each risk type
- understanding the correlations that might exist between these various risk types



Communicating results of the financial assessment of initiative(s) should provide transparency around the manner in which adjustments for risk have been made

---

**TABLE 4**
**Example – “Base Case” NPV of a Pipeline of Alternative Initiatives**


---

	Initiative A	Initiative B	Initiative C
NPV of Cash Flows			
- Implementation Investment Required (if applicable)	\$	\$	\$
- Best Estimate (Mean) Cash Flows	\$	\$	\$
- Implementation Risk Adjustments to Cash Flows	\$	\$	\$
- Introduced Risk Adjustments to Cash Flows	\$	\$	\$
Less NPV of Cost of Economic Capital By Key Type			
- Market Risk	\$	\$	\$
- Credit Risk	\$	\$	\$
- Operational Risk	\$	\$	\$
- etc ...			
<b>Total NPV</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
Chosen Discount ( <i>Hurdle</i> ) Rate	%	%	%
<i>IRR (if applicable)</i>	%	%	%

---



## CONCLUSION - The 7 Deadly Sins

1. **rigidly applying a fixed discount rate** irrespective of risk to decide on “yes/no” investment decisions
2. **undisciplined ad hoc adjustments** to get to the NPV that “feels right”
3. **over reliance on recent history** to define future losses
4. **over aggressive revenue forecasts**
5. an “ad hoc” risk assessment process
6. **ignoring implementation risk**
7. **inconsistent application of time horizon and terminal values** to financial assessment