

Predicting and Managing Operational Risk Events, an Australian Bank Analysis

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Operational risk analysis

Operational risk analysis has two main purposes for financial institutions:

- the amount of appropriate capital to hold in reserves against future operational risk events
- to assist management determine appropriate cost effective management to manage operational risk events to acceptable levels in the future



Quantitative modelling failure as predictive model

- Models have failed to capture the events around the mean and the extreme risks in a single model
- Operational risk is a complex system with the events being adaptive and interrelated, and are therefore evolving over time, making reliable stochastic modelling impossible



Operational Risk Analysis (Corrigan & Allan)

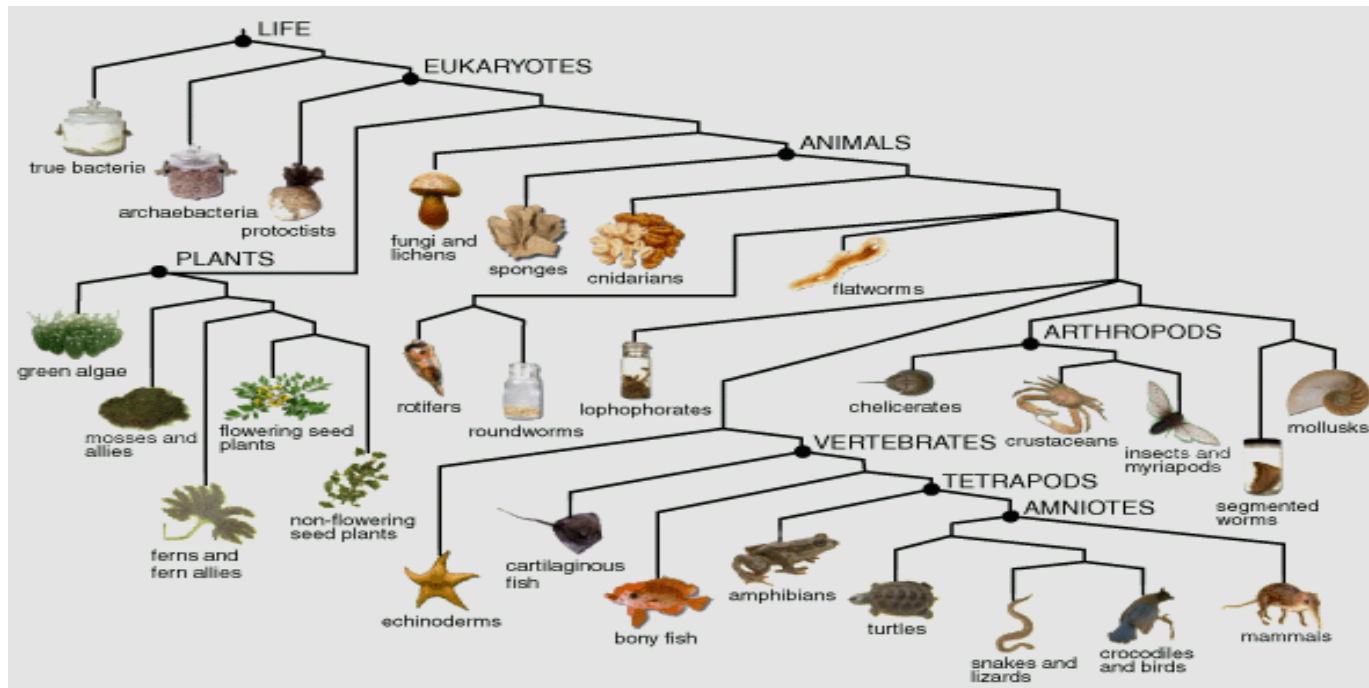
- Evolutionary analysis provides a unique and powerful way of classifying risks that is independent of traditional organisational boundaries and risk taxonomy structures such as are imposed through capital standards.
- There are significant conceptual parallels between biological evolution and operational risk events



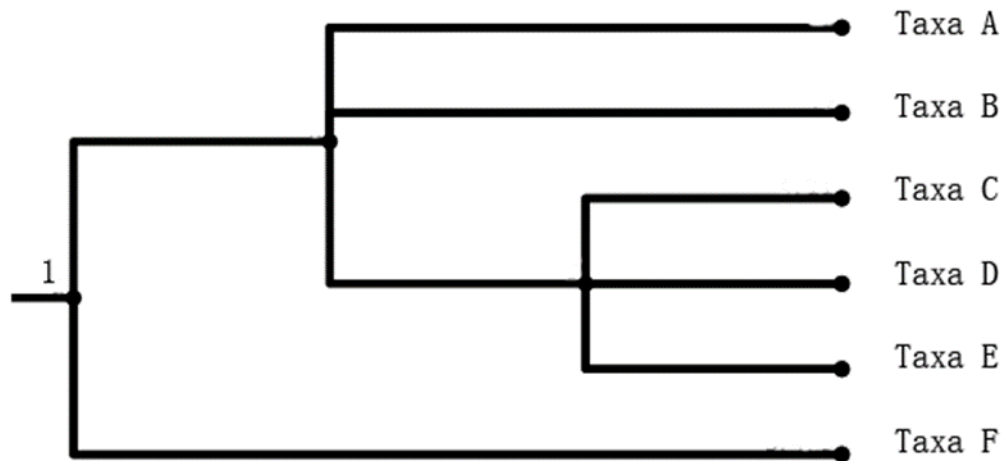
Operational Risk Analysis (Corrigan & Allan)

Concepts	Biological Evolution	Risk Evolution
Characteristics	Phenotype	Causes and descriptions of risk events
Inheritance	Common ancestors	Events from common origin
Evidence	Fossils	Historical data
Random variation	Mutation	Innovation, regulation
Selection	Natural selection	Management
Extinction	Death of species	Risk eradication

Evolutionary Analysis



Typical Evolutionary Tree



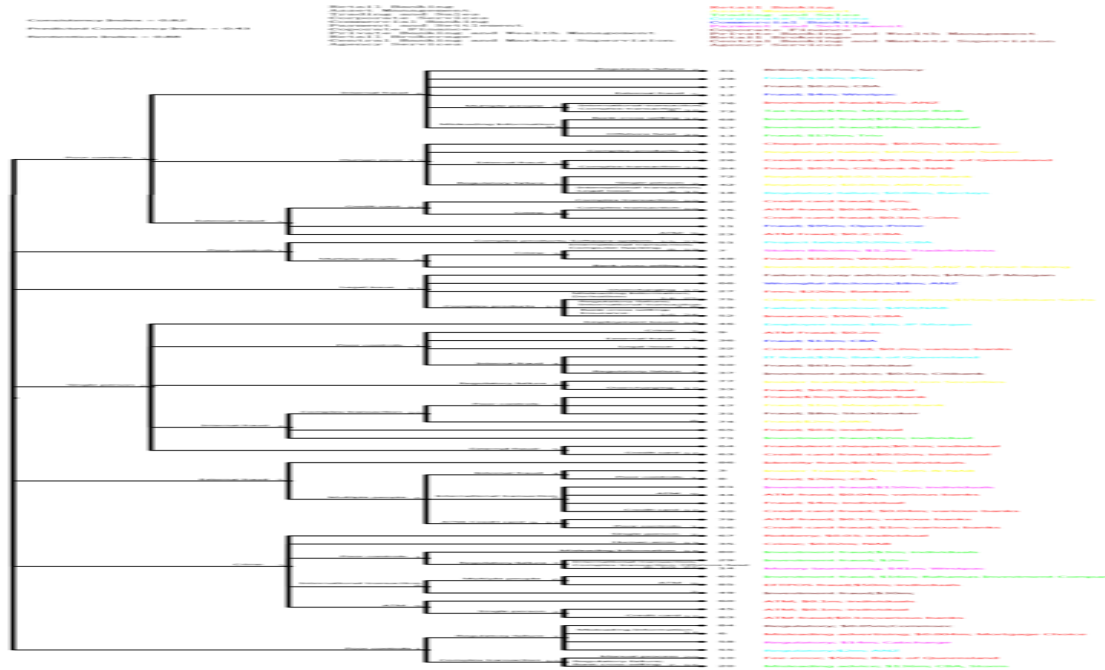
Australian Risk Events Characteristics

	Characteristic	Definition
1	Poor controls	Event where controls that should have been in place were not or were ineffective
2	Single person	Event initiated by an individual
3	Crime	Event involving theft other than by deception
4	Internal fraud	Event involving fraudulent activity by a member of staff
5	External fraud	Event involving fraudulent activity by an external person(s)
6	Multiple people	Event initiated by many people
7	Regulatory failure	Event where a government regulation was breached
8	International transaction	Event involving a transaction occurring across a country border
9	ATM	Event involving an ATM
10	Complex transaction	Event involving a transaction that involved many parts
11	Legal issue	Event where a customer took an institution to court for remedy, but the event was not a regulatory breach
12	Credit card	Event involving use/misuse of a credit card
13	Human error	Event where a staff member made a mistake
14	Misleading Information	Event where the product/service details were not made clear to a customer
15	Complex products	Event involving products that had numerous components
16	Bank cross selling	Event involving a bank selling a product/service to a customer that was different to what the customer originally bought from the bank
17	Overcharging	
18	Employment issues	Event where employment contract conditions or government regulations relating to employment were breached
19	Computer hacking	Event involving hacking into a system
20	Manual process	Event involving a manual process
21	Offshore fund	Event where a transaction involved a fund that was domiciled outside the country where the investor was located
22	Money laundering	Event where funds were transferred for the purposes of creating a false impression that the transaction was legitimate
23	Software system	Event involving a software issue
24	Insurance	Event involving an insurance product
25	Derivatives	Event involving a derivative transaction

Australian Business Lines

	Business line
26	Retail Banking
27	Trading and Sales
28	Asset Management
29	Corporate Services
30	Commercial Banking
31	Payment and Settlement
32	Corporate Finance
33	Private Banking and Wealth Management
34	Retail Brokerage
35	Central Banking and Markets Supervision
36	Agency Services

Australian Results



Australian Results, without Business Lines

	Whole Tree	Trees Separated by Year		
	2010-2014	2010	2011-2012	2013-2014
Characteristics	Poor control	Poor control	Poor control	Poor control
	Single person	Single person	Single person	
	Multiple people	Poor controls; Internal fraud	Poor controls, Internal fraud	
	Legal issue	Legal issue	Legal issue	
	Crime	Crime	Poor controls; Complex products	
	External fraud	External fraud	External fraud; Multiple people; International transactions	External fraud

Australian Results, without Business Lines

Considering the “without business lines” analysis first:

- External fraud, legal issues and crime are relatively simple risk events;
- An institution can have risk events involving both multiple people and a single person;
- Poor controls are a major source of risk events;
- Surprisingly, “human error” is not evident as a risk event characteristic.



Australian Results, with Business Lines

	Whole Tree	Trees Separated by Year		
	2010-2014	2010	2011-2012	2013-2014
Characteristics	Poor control	Poor control	Poor control	Poor controls
	Single person	Single person	Single person	External fraud
	Multiple people	Multiple people	Bank cross selling	
	Legal issue	Legal issue	Regulatory failure	
		International transaction		
Business lines	Retail Banking	Retail Banking	Retail Banking	
			Trading and Sales	
			Asset Management	

Australian Results, with Business Lines

Considering the “with business lines” results, there is a particularly interesting result, in that only the retail business line emerges as a Tier 1 characteristic, suggesting:

- Just being in the retail banking business itself creates operational risk events that result from other characteristics interrelating;
- Other lines of business are not Tier 1 characteristics, which is interesting as Basel II stipulates for the “prescribed method” of determining risk capital for banks, that lines of business are used.



Australian Bank Results

To operationalise this process in an institution, there are two major requirements, both of which require skilled operators, i.e. institutionalising the process may not be feasible due to the need to:

- Determine the risk event characteristics from reported events;
- Interpret the output.



Australian Bank Results

- Phylogenetic analysis can assist institutions to better understand the characteristics of their operational risk events.
- Australian bank analysis shows significant stability in the characteristics
- The analysis allows institutions to efficiently control their operational risk events to the extent that is cost efficient.



Australian Bank Results

- The analysis assists with predicting and managing operational risk events and is not concerned directly with capital determination for regulatory purposes, although it could be used for assisting with this function through enabling management to argue for capital reductions where the analysis has identified relevant characteristics that have subsequently been subject to improved management.

