



ACTUARIAL
 SOCIETY
OF SOUTH AFRICA

QUANTIFYING RISK, ENABLING OPPORTUNITY

Actuarial Principles

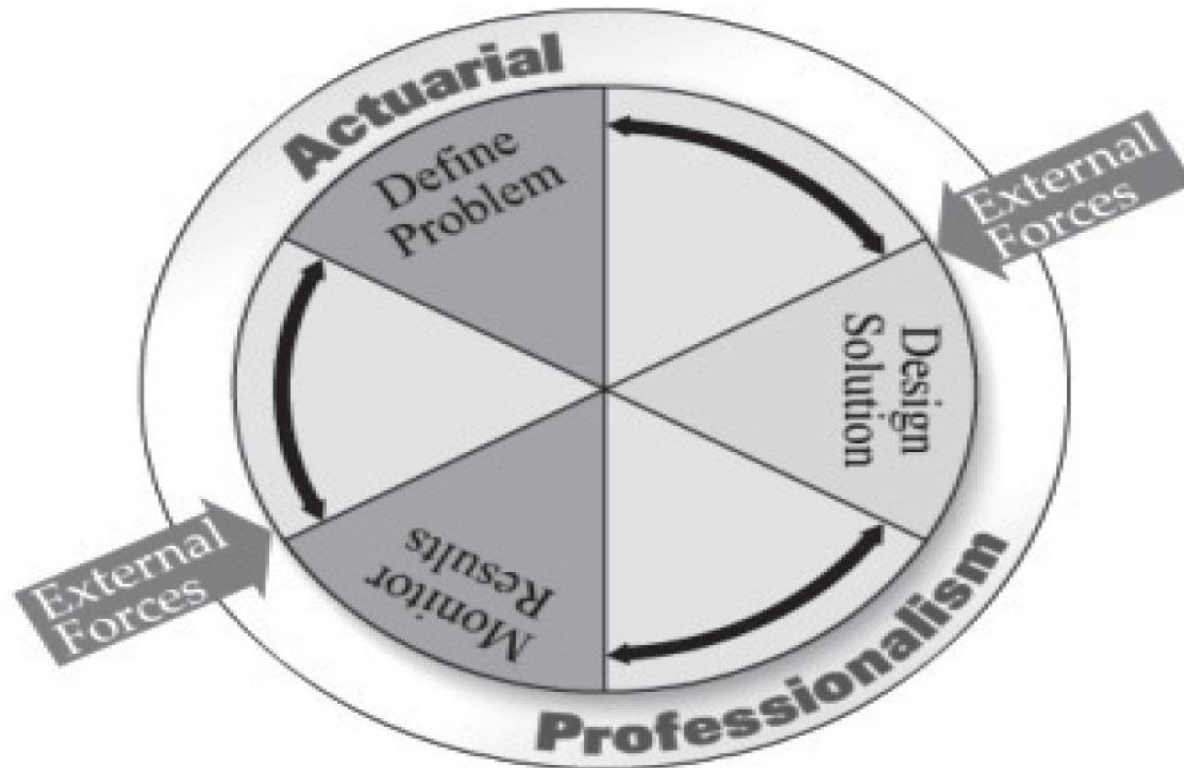
Some Banking Applications

Garth Griffin
14th May 2013

The Actuarial “Brand Offering”

- Technical element:
 - The assessment of uncertain future cash flows and assigning a current value to them.
- Commercial element:
 - To interpret the technical assessment in a commercial context and to provide relevant advice
- Professional element;
 - To provide this advice within the framework of a profession

The Actuarial Control Cycle



Banking Impairments

- Determined within accounting standards framework (IFRS)
- Requires “objective evidence”
- May be “identified” (account level) or “unidentified” (portfolio level)
- Generally uses “best estimates”

Impairment build-up Reconciliation

Opening Balance

Less:

Interest on non-performing book

Less:

Amounts written off

Plus:

New Impairments raised

Equals:

Closing Balance

Regulatory “Expected Loss”

- Regulatory “EL” generally $>$ Impairment provision
- Any excess deducted from capital
- Regulatory “EL” based on TTC PD and “downturn” LGD

Pillar III Disclosure

Expected vs Actual Loss Parameters

Asset Portfolio	Probability of Default		Loss given Default		Exposure @ Default
	Expected %	Actual %	Expected %	Actual %	Expected as % Actual
Corporate	2.4	1.7	31.8	13	92.9
Sovereign	1.4	-	20.9	-	-
Banks	0.7	0.1	33.8	-	-
Retail Exposure	4.4	4.1	23.9	25.6	109.9
<i>Retail Mortgages</i>	<i>4.6</i>	<i>4.3</i>	<i>13.8</i>	<i>16.6</i>	<i>104.3</i>
<i>Credit Cards</i>	<i>5.1</i>	<i>4.6</i>	<i>64.2</i>	<i>65.2</i>	<i>118.2</i>
<i>Other Retail</i>	<i>3.5</i>	<i>3.2</i>	<i>31.3</i>	<i>40.3</i>	<i>124.5</i>

IFRS9 Proposed “Expected Loss”

- Major change from current impairment provisioning
- Accounts in “good standing”
 - 12 month “expected loss”
- Accounts with deteriorating rating (incl arrears):
 - “Lifetime expected loss”
- Lifetime expected loss:
 - *“..information that is reasonably available, including information about past events, current conditions, and reasonable and supportable forecasts of future events and economic conditions.”*

IFRS 9: Lifetime Expected Loss

- What is the expected lifetime of the asset?
- How does the loss exposure change over time (e.g. mortgages?)
- How do we assign future “PD’s” to an account/client and what drives such changes? Personal circumstances? Duration as a client? Business/economic cycles?
- Future collateral values?
- Future costs associated with defaulting accounts?

Home Loan: Risk, Reward & Expected Lifetime Losses

	Client A	Client B
Prime client rate:	9.0%	9.0%
Mortgage Interest Rate:	9.0%	12.0%
"Credit Adjusted" rate @ outset:	8.9%	11.3%
Term:	30	30
Nominal Loan Value:	100000	100000
Probability of default:	0.5%	3.5%
Loan to Value @ inception:	100.0%	100.0%
Property value escalation:	0.0%	0.0%
Default expense (%value):	15.0%	15.0%
Property value haircut on default:	10.0%	10.0%

Home Loan: Risk, Reward & Expected Lifetime Losses

	Client A	Client B
Value of nominal cash flow @ outset:		
- discounted @ prime client rate:	100000	127541
Value of "lifetime losses" @ outset:		
- discounted @ prime client rate:	726	5876
- discounted at "credit adjusted" rate:	728	5206
Value of credit adjusted cash flow @ outset:		
- discounted @ prime client rate:	99274	121665
- discounted at "credit adjusted" rate:	100000	100000

Model Build & Validation

- Natural territory for actuaries
- 2008 – a “wake up” call

“Modeller’s Hippocratic Oath”

- I will remember that I didn’t make the world and it doesn’t satisfy my equations
- Though I will use models boldly to estimate value, I will not be overly impressed by the mathematics
- I will never sacrifice reality for elegance without explaining why I have done so
- Nor will I give the people who use my model false comfort about its accuracy – instead, I will make explicit its assumptions & oversights
- I understand that my work may have enormous effects on society and the economy, some perhaps even beyond my comprehension.

(E Derman & P Wilmott)

Model Build & Validation

- Natural territory for actuaries
- 2008 – a “wake up” call
- Models must be accessible to business management (“use test”)
- “Back testing” to include understandable “actual vs expected” analysis
- Professional standards on model validation?

Return on Equity Decomposition

			Current Year	Prior Year
1	Margin on average interest bearing assets		4.00	3.75
2	Impairment losses on loans and advances/ average interest bearing assets	<i>less</i>	1.05	1.25
3	Net margin on average interest bearing assets	<i>equals</i>	2.95	2.50
4	Average interest bearing assets/ average banking assets	<i>multiply by</i>	0.90	0.95
5	Banking net interest yield	<i>equals</i>	2.66	2.38
6	Banking non interest yield	<i>plus</i>	3.40	3.25
7	Banking net revenue yield	<i>equals</i>	6.06	5.63

Return on Equity Decomposition

[2]

			Current Year	Prior Year
7	Banking net revenue yield	<i>equals</i>	6.06	5.63
8	Operating expenses/ average banking assets	<i>less</i>	3.50	3.60
9	Net Banking Return (Gross)	<i>equals</i>	2.56	2.03
10	Taxation & Other / average banking assets	<i>less</i>	0.75	0.60
11	Net Banking Return (Net)	<i>equals</i>	1.81	1.43
12	Average banking assets/ average Risk Weighted Assets	<i>multiply by</i>	1.50	1.45
13	Return on average Risk Weighted Assets	<i>equals</i>	2.71	2.07
14	Risk Weighted Leverage (average Risk Weighted Assets/ average equity)	<i>multiply by</i>	8.10	7.50
15	Return on Equity	<i>equals</i>	21.93	15.53

Some Embedded Value Applications

- IFRS 9 & “expected lifetime losses”
- Portfolio embedded values
- Customer value
- Others.....

Opportunities for the Profession

- To establish the credentials of the profession in this area, we need to develop some “IP” at the level of the profession.
- This must be done as a profession and not just as individual members of the profession – however talented.
- We have a growing global network to tap into

Thank You!