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Defence Against the Dark Arts - A Practical Handbook for Reserving Actuaries

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Introduction

Purpose

- How we use judgement in reserving
- Reserving pitfalls surrounding our personal styles
- Scope
 - Common pitfalls seven deadly sins
 - 3D actuarial reserving personality type model
 - Behaviour of / interaction between different types
 - How to develop customised defence mechanisms

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- Deadly Sin 1: Over-Confidence
 "I know what I am doing" Pride
- Deadly Sin 2: Over-Granularisation
 - "I want 140 reserving classes, each in 3 currencies, then take out problem accounts, large losses and Cats" - Greed
- Deadly Sin 3: Love
 - "Roses are red, violets are blue, I'll drop my reserves if you're asking me to" - Lust
- Deadly Sin 4: Inappropriate Benchmarks
 - "I wish my reserving class was like yours" Envy

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Seven Deadly Sins of Reserving

- Deadly Sin 5: Scattergun
 - "Let's do paid, incurred, numbers, amounts paid and settled, closed, open, re-opened, stochastic, case reserve strength, exposure method, BF, ELR and the dartboard method" – Gluttony
- Deadly Sin 6: Resistance to Challenge
 "I'm right and you're wrong" Wrath
- Deadly Sin 7: Anchoring Error
 - "What did we do last time?" Sloth





Modelling the Judgement of the Archetypal Actuaries

- Portfolio
 - 10 reserving classes
 - Each has *True Mean* (n) reserve, n = 1, ..., 10
 - Each has Uncertainty Level (n), n = 1, ..., 10
- Mean for Actuary A for Class n = True Mean (n) * {1 + [Uncertainty Level (n) * Disposition (A)]}
- Standard Deviation for Actuary A for Class n = True Mean (n) * Uncertainty level (n) * [1 + Experience (A)]







Actuary	Туре	Mean	SD
А	OVM	96,276	3,724
В	OVS	92,213	3,787
С	ONM	92,486	7,514
D	ONS	92,507	7,493
Е	PVM	103,769	3,769
F	PVS	103,821	3,821
G	PNM	107,613	7,613
Н	PNS	107,586	7,586



A Guide to Duelling – aka Peer Review

Challenge

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- Persuasion factor of 100% no change in estimate
- Persuasion factor of -100% adopt challenger's estimate Persuasion factor of 0% - adopt midpoint estimate
- Perfect Peer Review
 - Share judgements adopt the better of the two estimates
 Consensus, commutative
- (Experience Based) Peer Review
 - A combined experience level of 100% perfect peer review
 - A combined experience level of -100% challenge
 - A combined experience level of 0% midpoint between perfect peer review and challenge

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		Challen	ge Outcom	es: Impro	vement in	Mean			
Primary		1							
Actuary	Α	В	С	D	E	F	G	н	1
А	0%	1%	-63%	-72%	73%	72%	14%	8%	1
В	0%	0%	0%	0%	0%	0%	0%	0%	
С	45%	44%	2%	2%	69%	68%	21%	22%	1
D	6%	6%	0%	0%	19%	19%	25%	25%	
E	55%	51%	-31%	-24%	0%	2%	-81%	-80%	
F	0%	0%	0%	0%	0%	0%	0%	0%]
G	69%	68%	24%	26%	43%	44%	0%	-1%	
н	19%	19%	25%	25%	6%	6%	0%	0%	
	Cha	llenge Out	comes: Im	provemen	t in Stand	ard Devia	tion		
Primary		1							
Actuary	Α	В	С	D	E	F	G	н	1
А	27%	45%	-28%	-30%	28%	23%	-29%	-9%	
в	0%	0%	0%	0%	0%	0%	0%	0%]
С	55%	69%	16%	28%	56%	52%	11%	28%	1
D	12%	12%	10%	12%	12%	12%	11%	12%]
E	19%	43%	-49%	-31%	23%	17%	-54%	-24%]
F	0%	0%	0%	0%	0%	0%	0%	0%	
G	54%	68%	9%	22%	55%	52%	11%	24%	
н	12%	13%	11%	12%	12%	12%	11%	12%	The Actuarial Professi



			Outcomes	Improvem	ent in Mea	n			
Primary	Secondary Actuary								
Actuary	А	В	С	D	E	F	G	Н	
А	54%	49%	38%	38%	98%	96%	61%	66%	
В	50%	49%	31%	32%	79%	76%	43%	48%	
С	71%	66%	57%	54%	79%	81%	97%	90%	
D	69%	66%	53%	53%	84%	87%	90%	100%	
E	97%	79%	60%	69%	58%	57%	40%	37%	
F	97%	73%	62%	74%	55%	57%	40%	40%	
G	79%	70%	100%	92%	69%	69%	54%	54%	
н	85%	75%	92%	99%	70%	70%	53%	53%	
		Outcor	mes: Impro	vement in	Standard D	eviation			
Primary	Secondary Actuary								
Actuary	А	В	с	D	E	F	G	н	
А	32%	45%	17%	15%	28%	25%	11%	11%	
В	11%	26%	2%	2%	-2%	1%	-2%	1%	
С	57%	68%	35%	40%	57%	52%	24%	31%	
D	51%	60%	25%	30%	45%	41%	16%	23%	
E	24%	34%	6%	4%	33%	30%	15%	17%	
F	32%	42%	12%	12%	34%	34%	16%	18%	
G	55%	64%	24%	28%	58%	54%	32%	37%	
н	44%	57%	21%	19%	50%	47%	25%	31%The Actu	arial Profes



			Outcomes	: Improvem	nent in Mea	n			
Primary	Secondary Actuary								
Actuary	Α	В	С	D	E	F	G	н	
Α	41%	43%	-25%	-17%	88%	89%	61%	71%	
В	44%	49%	15%	20%	69%	65%	21%	30%	
С	55%	55%	2%	9%	72%	73%	21%	30%	
D	38%	44%	7%	13%	68%	64%	33%	44%	
E	91%	75%	33%	53%	44%	41%	-32%	-17%	
F	75%	92%	22%	35%	40%	40%	14%	19%	
G	73%	69%	24%	34%	53%	53%	0%	6%	
н	67%	85%	34%	44%	38%	36%	7%	13%	
		Outcor	nes: Impro	wernent in	Standard D	leviation			
Primary	Secondary Actuary								
Actuary	Α	В	С	D	E	F	G	н	
А	37%	47%	3%	9%	41%	39%	13%	28%	
в	16%	26%	9%	11%	9%	12%	13%	17%	
С	59%	71%	16%	33%	63%	59%	11%	36%	
D	42%	52%	16%	23%	50%	48%	21%	31%	
E	37%	41%	1%	21%	37%	34%	-12%	13%	
F	43%	50%	17%	23%	36%	35%	14%	18%	
G	61%	72%	9%	30%	59%	56%	11%	29%	
н	50%	61%	20%	30%	43%	39%	16%	24%be Adt	uarial Profess





Know Thyself

- Know your actuarial personality type
- Know which deadly sins are likely to affect you
- Incorporate defences into your working practices

Actively Improve Your Peer Review

- Peer review can greatly benefit you
- Practice reviewing and being reviewed
- Practice identifying key issues, drivers of difference
 Improves communication skills, robustness of work
- Play Devil's Advocate



