

Reinsurance and Rating Agency Models

2008 CAre Seminar on Reinsurance

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Eric Simpson

215.246.1738

eric.simpson@towersperrin.com

Discussion Outline

- Rating Agency Capital Adequacy Models
- Reinsurance Impacts on an Insurer's BCAR Score
- Case Study: Assessing Reinsurance Alternatives Against BCAR Constraints

Rating Agency Models

Rating agency capital adequacy models continue to evolve

Complexity & Risk Sensitivity

Rating Agency	Ratio	Risk Based Capital <i>Quantitative</i> / <i>Qualitative</i>	Stress Testing
A.M. Best	Leverage Ratios And Peer Comparisons	A.M. Best Capital Adequacy Ratio (BCAR)	
S&P		S&P Capital Adequacy Ratio (CAR)	
Moody's			Moody's MRAC
Fitch			Fitch PRISM

Structural Overview: A.M. Best's Capital Adequacy Ratio

$$\text{BCAR} = \frac{\text{Adjusted Surplus}}{\text{Net Required Capital}}$$

Adjusted Surplus Components

Reported Surplus

Equity Adjustments

Unearned Premiums

Assets

Loss Reserves

Reinsurance

Debt Adjustments

Surplus Notes

Debt Service Requirements

Other Adjustments

Potential Catastrophe Losses

Future Operating Losses

Net Required Capital (NRC) Components

(B1) Fixed-Income Securities

(B2) Equity Securities

(B3) Interest Rate

(B4) Credit

(B5) Loss and Loss-Adjustment-Expense Reserves

(B6) Net Written Premium

(B7) Off Balance Sheet

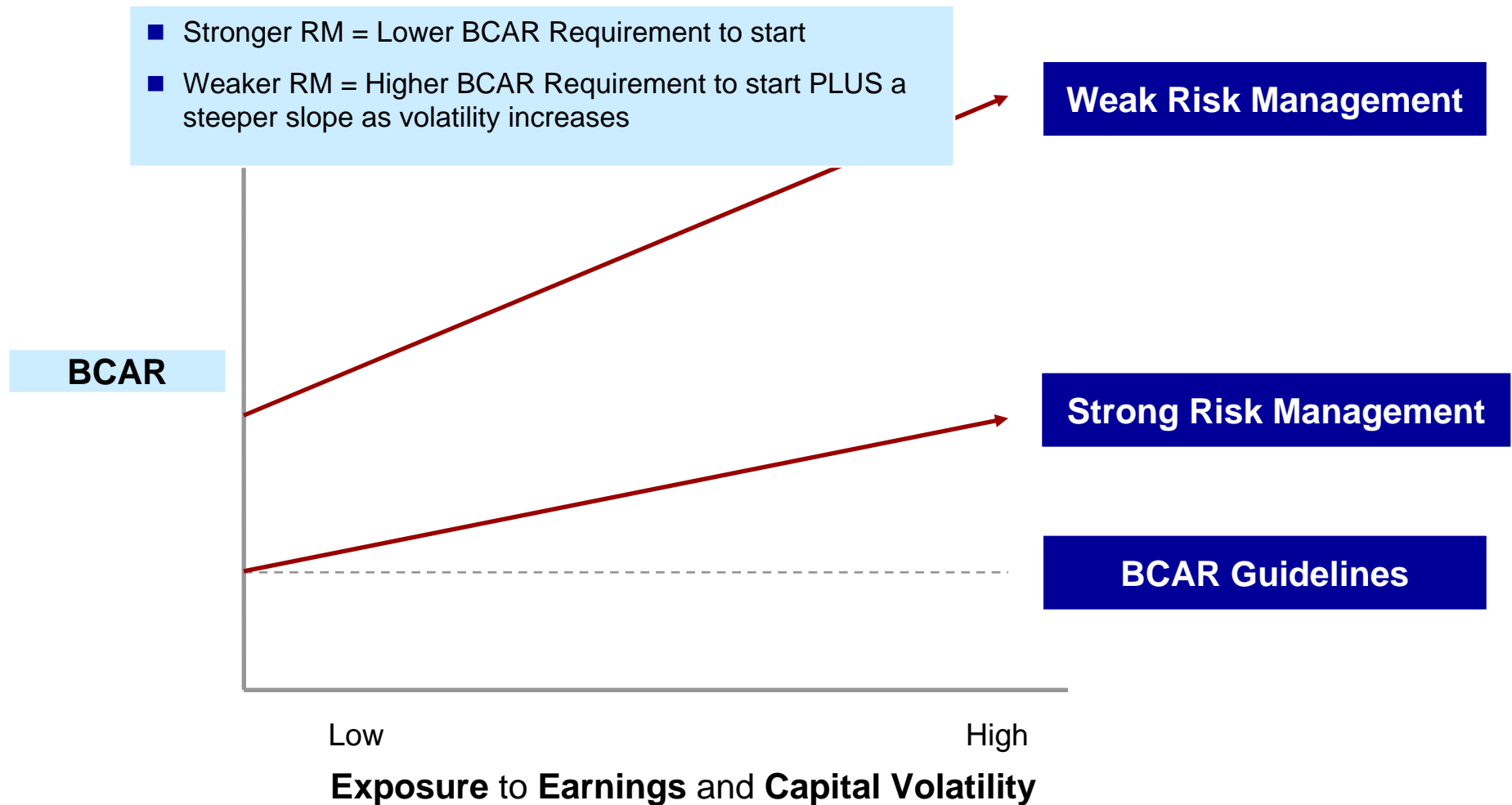
Covariance

$$\text{NRC} = \sqrt{(\text{B1})^2 + (\text{B2})^2 + (\text{B3})^2 + (0.5 * \text{B4})^2 + [(0.5 * \text{B4}) + \text{B5}]^2 + (\text{B6})^2 + (\text{B7})}$$

Source: AM Best

Rating Agency Models

An insurer's "target" BCAR at a given rating level varies based on its relative risk management strength and loss ratio volatility



Source: A.M. Best and Towers Perrin.

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Rating Agency Models

While Best has published BCAR “minimums”, each company’s “target” BCAR reflect its seasoning, volatility, and ERM strength

ILLUSTRATIVE

Rating Level	BCAR “Minimums” (1)	BCAR “Targets” (2)
A++	190	220
A+	175	205
A	160	190
A-	145	175

- (1) *Reflects conservative view of Best’s BCAR “minimums (e.g. 15 points higher than Best’s published “minimum scores)*
- (2) *Reflects an interpretation of BCAR “targets” to reflect Best’s steeper capital requirements for:*
 - a) *Higher volatility*
 - b) *Weaker ERM strength*

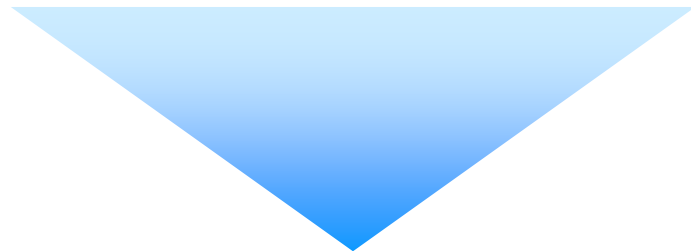


Reinsurance Impacts on an Insurer's BCAR Score

Reinsurance Impacts

Reinsurance has a dual benefit of enhancing BCAR values

Reinsurance



Reduces "required capital"



Increases "expected" BCAR value



Reduces risk of loss to reported capital



Reduces probability of reduced BCAR

Reinsurance Impacts

Effective quota share and XOL reinsurance create favorable “BCAR arbitrage”, with QS yielding more lift to “expected” BCAR values

CATEGORY	CAPITAL FACTORS	QUOTA SHARE (QS)	EXCESS OF LOSS (XOL)
Net Premiums Written Risk (B6)	25% - 40%	<ul style="list-style-type: none"> B6 risk is <u>reduced</u> Greater benefit than XOL from higher premium cession “Structured QS” adjusted for retained risk from loss-limiting items 	<ul style="list-style-type: none"> B6 risk is <u>reduced</u> Lower benefit than QS from lower premium cession
Loss & LAE Reserve Risk (B5)	25% - 40%	<ul style="list-style-type: none"> B5 risk is <u>reduced</u> 	<ul style="list-style-type: none"> B5 risk is <u>reduced</u> Potential greater benefit than QS (over time) with less build-up of retained reserves (reduces volatility)
Credit Risk (B4)	5% - 10%	<ul style="list-style-type: none"> B4 risk is <u>increased</u> Greater risk than XOL for higher reinsurance recoverables Potential capital “penalty” for excess reinsurance dependence 	<ul style="list-style-type: none"> B4 risk is <u>increased</u> for recoverables Much greater “penalty” for cat-exposed insurers with large ceded PMLs under Best’s stress test
Invested Asset Risk (B1; B2)	1% - 2%	<ul style="list-style-type: none"> B1/B2 risk is <u>reduced</u> modestly 	<ul style="list-style-type: none"> B1/B2 risk is <u>reduced</u> modestly
Adjusted Surplus (APHS)	N/A	<ul style="list-style-type: none"> APHS effect is <u>neutral</u> as surplus aid from ceding commission is usually offset by DAC asset adjustment 	
Overall Impact to “Expected” BCAR	N/A	<ul style="list-style-type: none"> <u>Greater uplift</u> to BCAR scores than XOL 	<ul style="list-style-type: none"> <u>Less uplift</u> to BCAR scores than QS Above-average XOL retentions may require insurer to maintain a higher “target” BCAR to offset greater volatility



Case Study: Assessing Reinsurance
Alternatives Against Rating Agency
Constraints

Reinsurance Case Study

The company's goals and rating constraints were integral to developing the best reinsurance solution

- The company, a mid-sized Casualty insurer, issued an RFP for a reinsurance intermediary to evaluate reinsurance options and an assessment of capital raising alternatives.
- The company's primary goal was to enhance their net earnings and ROEs--while ensuring the stability of their BCAR ratio--and addressing the key factors and metrics needed to achieve a Best's ratings "A".
- The company has only been in business a few years and their current reinsurance program was effectively quota share.

Reinsurance Case Study

Any prospective reinsurance change needs to address the relevant rating factors

Rating Category	Opportunities	Threats
Balance Sheet Strength	<ul style="list-style-type: none"> ■ Over time, strong potential for reduced “target” BCAR requirements: <ul style="list-style-type: none"> ■ As operation “seasons” ■ If ERM is deemed “strong” ■ Considerable capacity for holding company to issue debt 	<ul style="list-style-type: none"> ■ Downside risk of higher “target” BCAR requirements: <ul style="list-style-type: none"> ■ If company’s “volatility” is deemed above-average ■ If company’s ERM is deemed “weak” ■ Limited capacity for future growth (in the absence of raising capital)
Operating Performance	<ul style="list-style-type: none"> ■ Strong prospects to enhance earnings & ROEs via QS reductions ■ XOL structure could afford more stable net loss ratios to offset inherent severity on Casualty book 	<ul style="list-style-type: none"> ■ Potential concern from Best from dramatic shift from QS to XOL structure ■ High expense ratio persists if build-out is not absorbed by top-line growth
Business Profile	<ul style="list-style-type: none"> ■ Boosting surplus thru earnings and raising capital may afford better market opportunities 	<ul style="list-style-type: none"> ■ May be inopportune time to infuse hard capital given softening market conditions

Reinsurance Case Study

The broker response required an integrated, dynamic analysis

- A multidisciplinary team was assembled.
- Used stochastic models to project the company's financial statements and specifically their AM Best BCAR score to assess expected results, volatility, and downside probabilities.
- Various reinsurance structures, along with capital scenarios, were reviewed and compared with the goal of achieving a target BCAR and operating returns needed for an A rating within a two-year time horizon.
- Charts and exhibits were shared with the company to help illustrate the risk/reward tradeoff of the various options.

Reinsurance Case Study

Several reinsurance alternatives were considered

Current Program (60% QS):	▪ 60% Quota Share
Excess of Loss Option:	▪ \$750 xs \$250 Excess of Loss
Quota Share and Excess of Loss Blended Option:	▪ \$750 xs \$250 Excess of Loss ▪ 35% Net Lines Quota Share

Reinsurance Case Study

Both the XOL and the blended options produce stronger expected earnings with neutral-to-lower volatility than current QS program

XYZ Insurance Company

Percentile Ranges of Pre-Tax Operating Income

In US Dollar ('000)

10,000 iterations

Exceeding Probability	Gross	Current 60% QS	Pure XOL	Blended QS/XOL
100%	(13,815)	(796)	(1,726)	428
99%	(9,059)	91	76	1,562
95%	(918)	2,039	3,396	3,775
75%	7,631	4,515	7,647	6,538
50%	12,579	6,117	10,385	8,322
25%	17,267	7,650	12,959	10,007
5%	23,409	9,682	16,327	12,208
1%	26,965	10,942	18,477	13,632
"Expected" U/W Earnings	12,057	6,025	10,195	8,202
Std Dev	7,576	2,324	3,943	2,572
CV	-63%	-39%	-39%	-31%

Reinsurance Case Study

The blended option emerged as superior with acceptable “expected” and “downside” BCAR values

XYZ Company

Percentile Ranges of Illustrative BCAR Scores
10,000 iterations

Exceeding Probability	Current 60% QS	Pure XOL	Blended QS/XOL
99%	193%	132%	178%
95%	203%	139%	187%
75%	217%	149%	197%
50%	226%	155%	205%
25%	235%	161%	212%
5%	248%	168%	221%
1%	257%	174%	228%
"Expected" BCAR	226%	154%	205%

Reinsurance Case Study

Further financial analysis reinforced the blended option as superior in 2009 after 2008's transition statutory impacts

		2008 Transition Year			2009 "Run Rate" Year		
		Current 60% QS	Pure XOL	Blended XOL/QS	Current 60% QS	Pure XOL	Blended XOL/QS
Income Statement	NWP	36,540	105,391	64,815	41,964	90,165	59,036
	NEP	34,924	74,532	48,650	40,353	86,116	56,212
	Net U/W Income/(Loss)	1,917	(2,253)	224	1,225	5,812	3,852
	Net Income	5,104	2,709	4,080	5,064	8,922	6,958
Balance Sheet	Assets	168,020	192,374	174,083	185,740	223,377	192,284
	L&LE Res	56,334	69,478	57,495	64,230	86,069	63,707
	UPR	19,861	49,105	34,411	21,472	53,154	37,235
	Liabilities	102,034	128,783	109,121	114,689	150,863	120,364
	PHS	65,987	63,592	64,962	71,051	72,514	71,920
Trade Ratios	L&LE	68%	58%	60%	68%	58%	60%
	Expense	<u>25%</u>	<u>32%</u>	<u>29%</u>	<u>28%</u>	<u>33%</u>	<u>31%</u>
	Combined Ratio	93%	90%	90%	96%	92%	92%
Key Metrics	ROR	22%	6%	13%	19%	16%	19%
	ROE	8%	4%	6%	7%	13%	12%
	NWP/PHS	55%	166%	100%	59%	124%	82%
	BCAR (expected)	226%	155%	205%	216%	171%	217%
	BCAR (@ 95th percentile)	203%	139%	187%	177%	138%	182%

Key Metric	Acceptable	Moderately	
		Acceptable	Unacceptable
BCAR	>220	>205	<205
ROE	>12%	>8%	<8%
ROS	>12%	>8%	<8%

Reinsurance Case Study

The ratings outcome proved favorable

- A preferred reinsurance structure arose - one that blended an excess of loss approach with an underlying quota share.
 - This structure significantly increased the company's net earnings, did not introduce additional volatility, and maintained an acceptable range of BCAR scores for a reasonable range of loss scenarios.
 - The company appreciated the financial flexibility of the blended approach, particularly as their strong BCAR result would not necessitate raising additional capital (e.g. Trust Preferreds)
 - Some XOL options had to be disregarded due to their negative impacts on BCAR, despite their superior earnings generation.
- The company shared its strategic plans—including its rationale and analysis supporting its reinsurance structure change-- with A.M. Best who gave favorable feedback and affirmed the company's A- rating.



Supplement:
Supporting Case Study Exhibits

Reinsurance Case Study

Reinsurance Option Assessment

Reins. Option	Strengths	Weaknesses
Current 60% QS Program	<ul style="list-style-type: none"> ■ Excellent BCAR ■ Conservative net leverage ■ Strong capacity for growth ■ Market continuity; building bank 	<ul style="list-style-type: none"> ■ Sub-par ROEs persist ■ Modest earnings generation ■ Lacks surplus size ■ Little prospect for ratings upgrade given low retention levels
XOL Option	<ul style="list-style-type: none"> ■ Superior earnings generation ■ Excellent RORs ■ Strong “run-rate” ROEs in '09 ■ Simple reinsurance structure 	<ul style="list-style-type: none"> ■ BCARs fall short of '08/'09 targets ■ Capital infusion needed to restore to BCAR base case ■ Weak '08 Stat results from UPR take-back ■ Little capacity for growth ■ Heightened Best concerns with aggressive QS reductions ■ Uncertain prospect for ratings upgrade
QS/XOL Option	<ul style="list-style-type: none"> ■ Excellent BCAR results ■ Structure allows phased transition from QS to XOL over time ■ Capacity for additional growth ■ Strong earnings generation 	<ul style="list-style-type: none"> ■ Moderate '08 Stat results during transition ■ Market costs for XOL are uncertain (exposure vs. experience rated dynamic) ■ Stronger prospects for future ratings upgrade

Reinsurance Case Study BCAR Calculation Summary

	2008			2009		
	60% QS Current	Pure XOL	Blended XOL/QS	60% QS Current	Pure XOL	Blended XOL/QS
<u>APHS Components:</u>						
PHS	65,987	63,592	64,962	71,051	72,514	71,920
UPR Equity	1,483	3,667	2,569	1,603	3,969	2,780
Loss Res Equity	2,182	2,691	2,227	2,487	3,333	2,467
Total Adjusted PHS (A)	69,651	69,949	69,758	75,142	79,816	77,168
<u>Net Required Capital Components:</u>						
Investment Risk	1,730	2,018	1,803	1,887	2,326	1,963
Credit Risk	9,786	5,554	7,716	11,663	6,056	9,325
Interest Rate Risk	619	721	644	674	832	702
Total Assets Risk:	12,135	8,293	10,164	14,225	9,214	11,989
<u>Underwriting Risks:</u>						
Reserve Risk	23,343	28,791	23,824	26,109	34,987	25,897
NWP Risk	11,099	32,016	19,689	12,506	26,869	17,595
Total Underwriting Risks:	34,442	60,807	43,513	38,615	61,856	43,492
Gross Required Capital	46,577	69,100	53,677	52,840	71,070	55,481
Net Required Capital (B)	30,775	45,088	34,231	34,839	46,702	35,618
BCAR (A/B)	226%	155%	205%	216%	171%	217%
<u>Leverage Measures:</u>						
NWP/PHS	0.6	1.7	1.0	0.6	1.2	0.8
Reserves/PHS	0.9	1.1	0.9	0.9	1.2	0.9

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Reinsurance Case Study

Key BCAR Drivers

	2008			2009		
	60% QS Current	Pure XOL	Blended XOL/QS	60% QS Current	Pure XOL	Blended XOL/QS
Credit Risks:						
Agents' Balance and Other Assets	16,491	16,627	16,523	21,058	21,435	21,138
Asset charge	0.05	0.05	0.05	0.05	0.05	0.05
Req'd capital	783	786	783	1007	1016	1009
Reinsurance Recoverables	121,484	79,096	105,774	137,133	83,613	121,894
Reins Dependence Factor	1.48	1.20	1.30	1.55	1.20	1.36
Reinsurance Charge	0.05	0.05	0.05	0.05	0.05	0.05
Req'd capital	9,003	4,768	6,933	10,656	5,040	8,316
Credit Risk	9,786	5,554	7,716	11,663	6,056	9,325
Underwriting Risk:						
Reserves	56,334	69,478	57,495	64,230	86,069	63,707
Discount Factor	0.85	0.85	0.85	0.85	0.85	0.85
Deficiency Factor	1.10	1.10	1.10	1.10	1.10	1.10
Adjusted reserves	52,978	65,339	54,069	60,403	80,941	59,911
Capital Factor	0.48	0.48	0.48	0.48	0.48	0.48
Adjusted reserves*Capital Factor	25,376	31,296	25,898	28,932	38,770	28,697
Growth Factor	1.08	1.08	1.08	1.06	1.06	1.06
Diversification Factor	0.85	0.85	0.85	0.85	0.85	0.85
Req'd capital	23,343	28,790	23,824	26,109	34,987	25,897
NWP	36,540	105,391	64,815	41,964	90,165	59,036
BCAR Growth Chrg.	1.08	1.08	1.08	1.06	1.06	1.06
Capital Factor Adj	0.34	0.34	0.34	0.34	0.34	0.34
Diversification Factor	0.83	0.83	0.83	0.83	0.83	0.83
Req'd capital	11,099	32,016	19,689	12,504	26,870	17,593

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