



P&C Industry Capital Modeling
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Watch the **A** for slides with supporting detail

Overview

The Need: Macro-Economic Capital Modeling for the US P&C Industry

- According to A.M. Best (from the 2010 ERM SRQ):
 - Just 28% of respondents use an ECM to quantify aggregate risk.
 - By company size: Large (55%), Medium (33%), Small (17%).
- ORSA requirements are coming.
- Consumers of financial reports are more savvy with the language of risk modeling (VaR, PML, etc.) and demanding metrics from ECMs.
- Developing an ECM is costly.
- Economic Capital Modeling on the entire industry will provide:
 - Reference points for companies without individual models
 - Facilitation of industry discussions on risk preference, risk transfer, and risk profile
 - Insight into implications of existing adequacy measures

Overview

Industry Risk Benchmarks Research

- Data Sources: SNL, NAIC, A.M. Best, CIAB, III.org
- Significant effort invested into data validation and correction
- Accident Year 1980 to 2010 (reported as of 1989 to 2010)
- Gross and net of reinsurance
- Available parameterization:
 - Pricing risk (loss ratio volatility)
 - Reserve volatility (adverse/benign reserve development)
 - Payment pattern volatility
 - Correlation between lines of business
- Definition of market segments:
 - Large National
 - Super Regional
 - Regional
 - Specialty
 - Reinsurer
 - Other

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INSURANCE RISK BENCHMARKS

GC ANALYTICS® / RISK LIGHTHOUSE

October 2012



Overview

The Model: Components

The model we will introduce is a one-year stochastic financial projection built from . . .

- 2011 **Statutory filing data** provided by SNL:
 - Balance Sheet, Income Statement, U&I Exhibit
 - Asset detail from Schedule D
 - Reserve detail from Schedule P

- **Risk parameters** from the Industry Risk Benchmarks research produced by Risk Lighthouse and Guy Carpenter

- **Economic scenarios** provided by Barrie and Hibbert valued at 12/31/2011

- AIR Version 14 **event files** for modeling losses on residential property, commercial property, and auto physical damage for three natural perils:
 - Hurricane with near-term frequency and demand surge
 - Earthquake with fire following and demand surge
 - Winter Storm with demand surge

. . . In MetaRisk®

Overview

The Model: Comments on Structure and Scope

- Throughout this discussion, we will refer to the model discussed as the Industry BenchmaRQ model.
- The Industry BenchmaRQ model is the aggregation of the Combined statutory financial filings for 291 P&C insurance groups (see Appendix for list).
- We can create functional economic capital models for subsets. For today, we will also inspect the following market segments:
 - Large National (More than \$1B commercial lines premium)
 - Small Regional (Less than \$1B all-lines premium, not specialty or reinsurer)
 - Reinsurers
- The model produces equally-likely, alternate versions of financial statements for one prospective year of performance.
- 1-Year Reserve volatility is benchmarked to industry reserve experience over the previous 30 years.
- Underwriting lines of business follow Schedule P definition with some aggregation (10 total lines).

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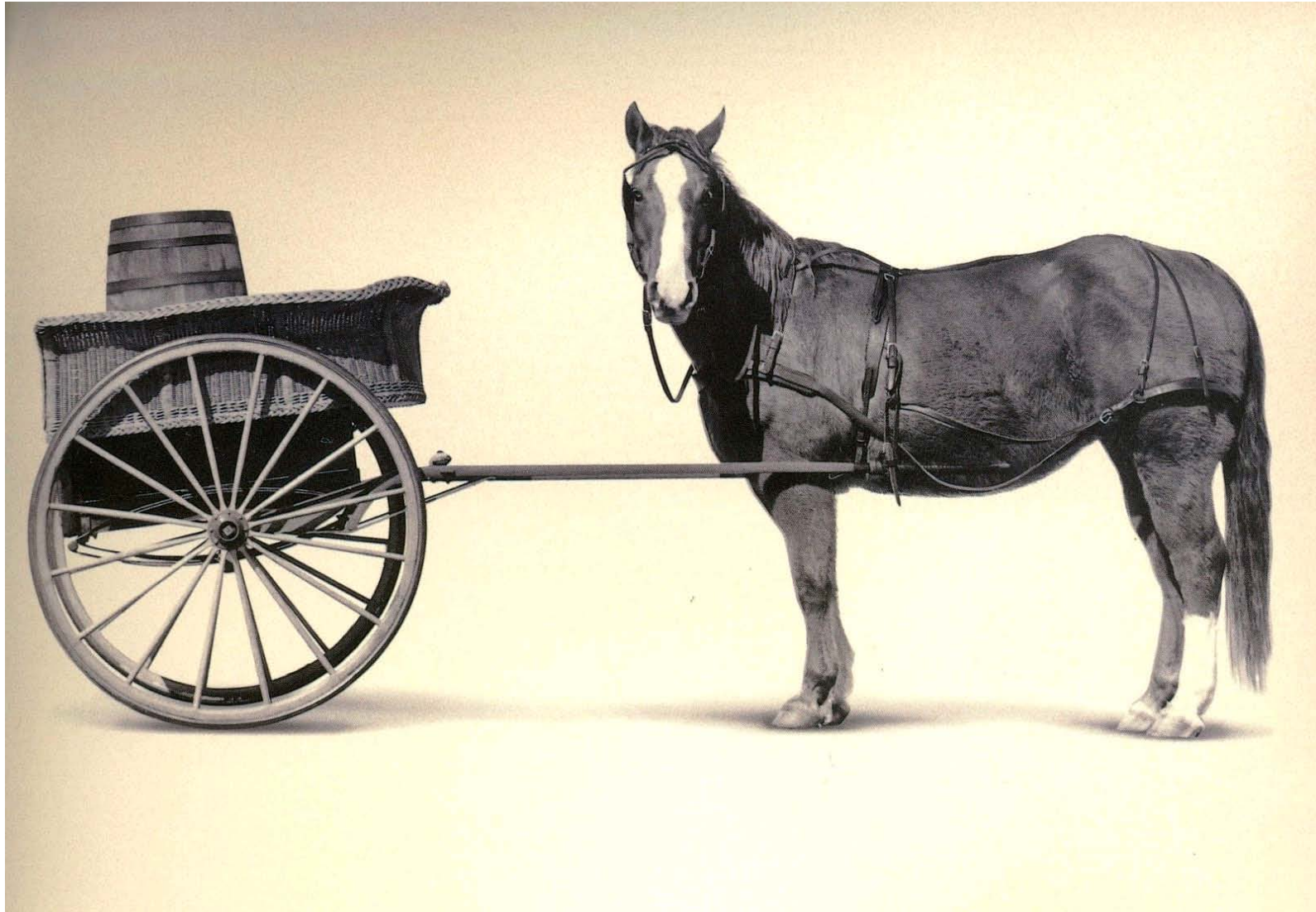
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Whoa Nellie!

Spoiler Alert



Conclusions

Some Observations from the Models (and Chosen Risk Preferences)

- The industry is very well capitalized.
- Natural catastrophes pose the largest source of one-year financial risk, though asset risk is also very significant on a GAAP basis.
- Reinsurance makes HO/FO and CMP (particularly CMP) more palatable.
- About a quarter of the industry capital base is allocable to natural catastrophe risk.
- Underwriting conditions are bad.
- The Small Regional segment is better capitalized and less volatile.

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Model Specification

Capitalization: Opening Statutory Balance Sheet

- Circled figures have added underlying detail (see subsequent slides).

Billions

Assets		Liabilities	
Total Bonds	785.2	Gross Loss & LAE Reserves	722.5
Total Stocks	235.6	Ceded Loss & LAE Reserves	184.8
Property	9.1	Net Loss & LAE Reserves	537.7
Cash	56.7		
Other Invested Assets	110.2	Gross Unearned Premium Reserves	214.3
Total Cash & Invested Assets	1,196.9	Ceded Unearned Premium Reserves	30.8
		Net Unearned Premium Reserves	183.5
Uncollected Premium	96.2		
		Other Liabilities	140.6
		Total Liabilities	861.8
		Surplus Notes	12.6
		Capital & Surplus	494.9
		Policyholder Surplus	507.5
Other Assets	76.2		
Total Assets	1,369.3	Total Liabilities & Policyholder Surplus	1,369.3

Model Specification

Capitalization: Notes on Momentum

- Year-over-year changes in the statutory balance sheet indicate a rise in liabilities of 0.94%, a drop in total cash and invested assets of -0.74%, and a net effect of a reduction of 1.62% to policyholder surplus.
- RBC Figures:
 - Total Adjusted Capital: \$629.6 B
 - Authorized Control Level (ACL): \$99.9 B
- Estimated BCAR of 280%
- Gross PML (greater of 1-in-100 HU and 1-in-250 EQ) of about \$130 B.

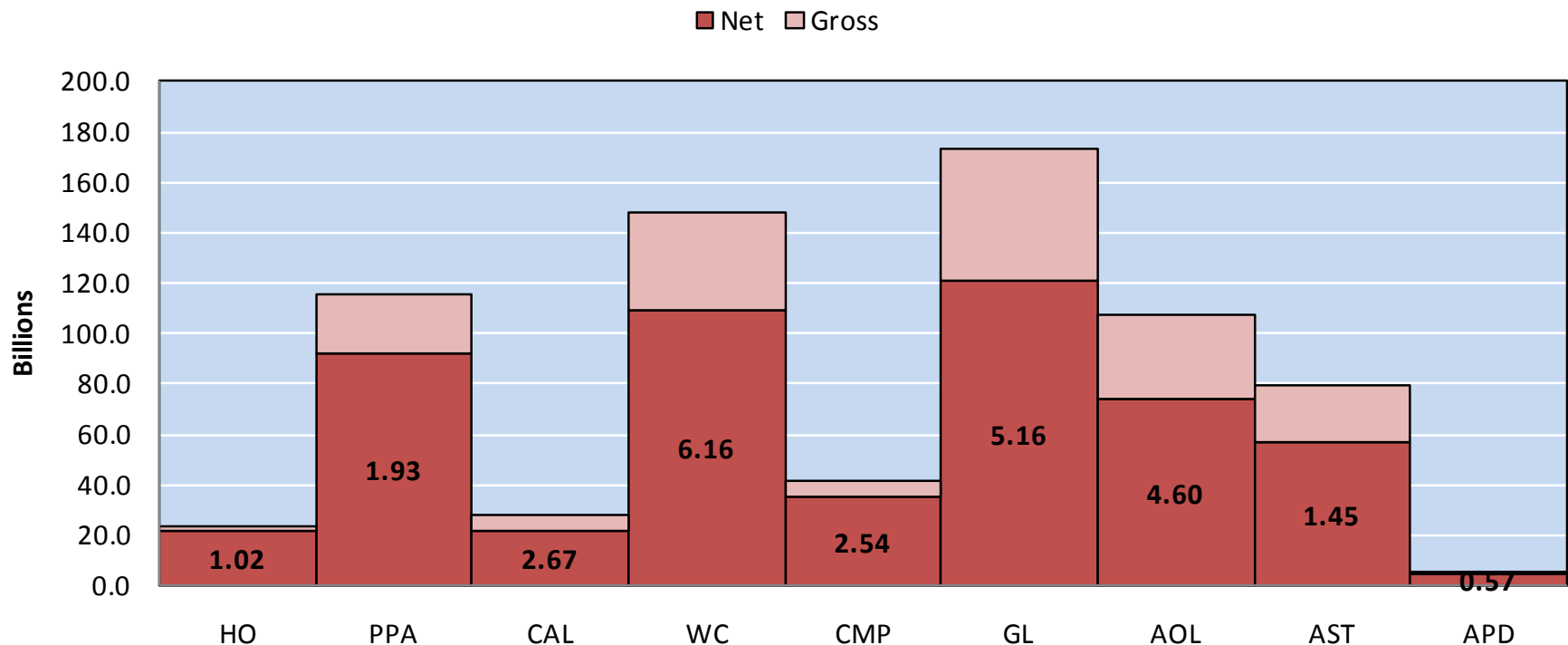
		Year End 2011 / Year End 2010	
<u>Assets from Balance Sheet(s)</u>		<u>Liabilities from Balance Sheet(s)</u>	
Total Bonds	(0.73%)	Net Loss & LAE Reserves	1.20%
Total Stocks	6.84%	Net Unearned Premium Reserves	1.86%
Property	1.61%	Total Liabilities	0.94%
Cash	(17.90%)		
Other Invested Assets	(5.17%)		
<u>Total Cash & Invested Assets</u>	<u>(0.74%)</u>	<u>Policyholder Surplus</u>	<u>(1.52%)</u>
Total Assets	0.01%	Total Liabilities & Policyholder Surplus	0.01%

Model Specification

Reserves and Duration: Summary By Line

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- Gross and Net Loss and ALAE reserves are summarized by line.
- Duration of each line noted on each column.
- Total Net Reserves of \$537.7 Billion, with overall duration of 3.85



Model Specification

Reserves and Duration: Reserve Volatility

Billions

- Calendar-year reserve volatility for a single period is calibrated to twenty years of industry history.
- Volatility is correlated between lines via scaled medical inflation scenarios.
- Each model realization recognizes a single scenario for medical inflation, thereby correlating the volatility between lines (and with the assets).
- LOB #8 and #9 are merely linked to CPI volatility and contain minimal volatility.

LOB	Net Reserves	Volatility to Prior Year Reserves
1. HO/FO	22.1	5.1%
2. PPA	92.4	2.4%
3. CAL	22.0	3.4%
4. WC	109.7	3.2%
5. CMP	35.3	2.9%
6. GL	120.7	3.4%
7. AOL	73.9	4.9%
8. AST	56.6	CPI-Linked
9. APD	4.9	CPI-Linked
Total	537.7	

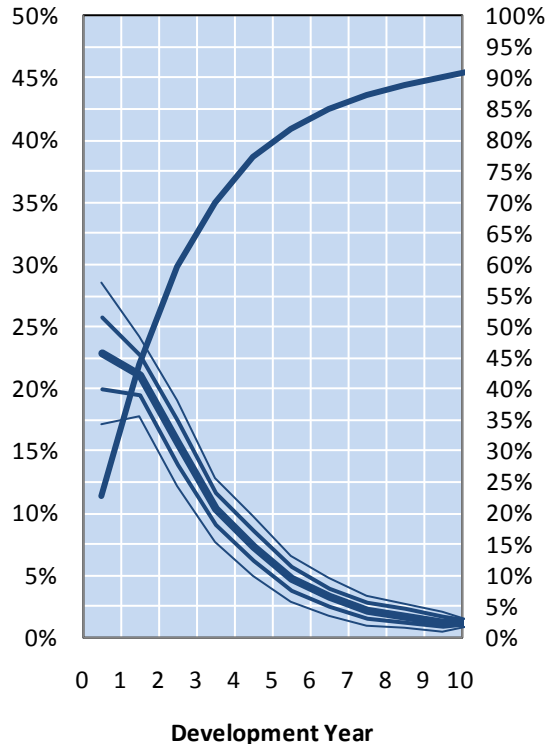
Model Specification

Reserves and Duration: Two Types of Payment Pattern

- Payment patterns and increment volatilities are unique to line, but a simple rule bifurcates the lines into two types.

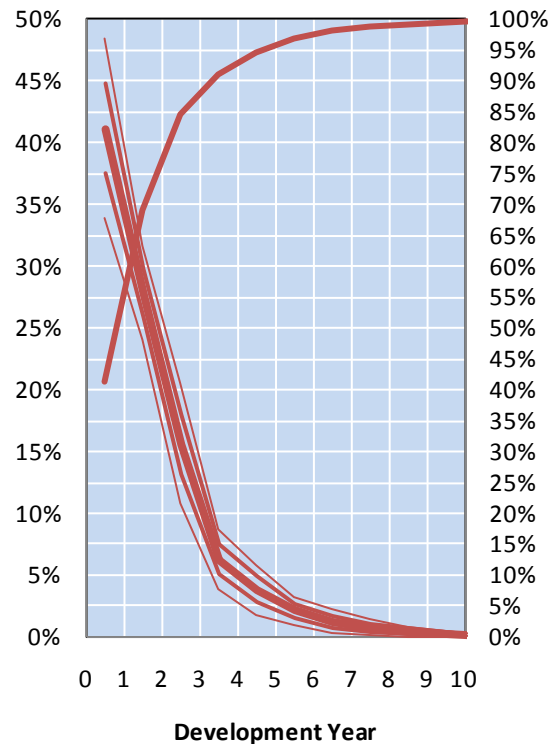
All Schedule P Lines

- Duration: 3.85
- Incremental pattern (left axis) displays +/- 1 std dev and +/- 2 std dev



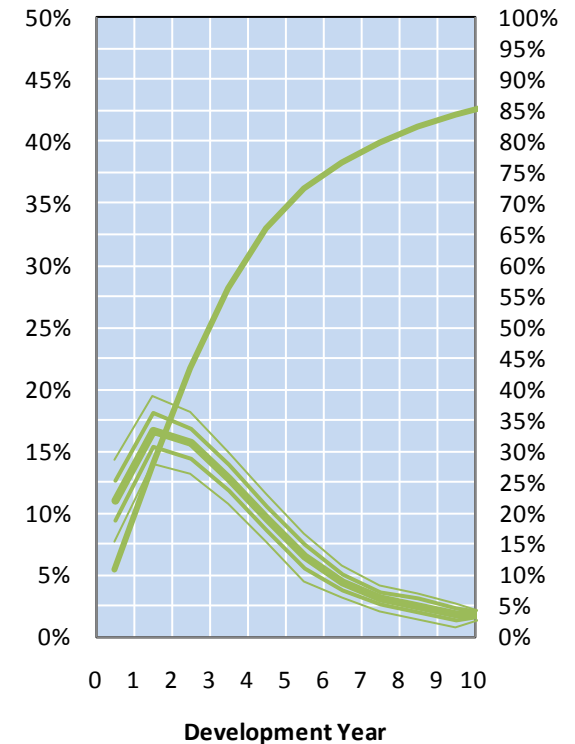
Fast Paying [HO,PPA,CMP,AST,APD]

- Duration: 1.78
- Development year increments monotonically decrease



Slow Paying [CAL,WC,GL,AOL]

- Duration: 5.20
- Development year increments increase before decreasing

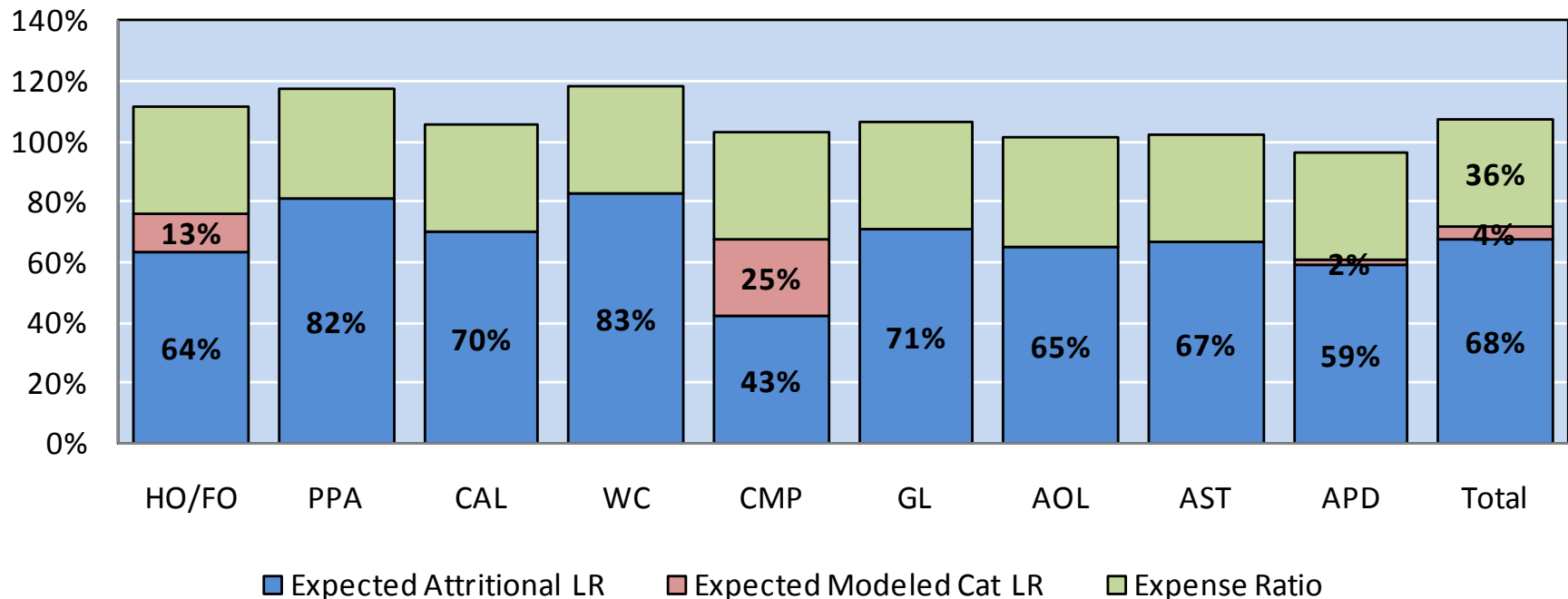


Model Specification

Underwriting: Gross Pricing Assumptions

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- We assume 3% growth in WP in 2012, equivalent with 2011 growth.
- ELR is the three-year weighted average of ultimate burning cost.
- Volatility measures the variability of the ultimate loss ratio.
- Natural catastrophe losses modeled explicitly are segregated from attritional losses for each line of business.

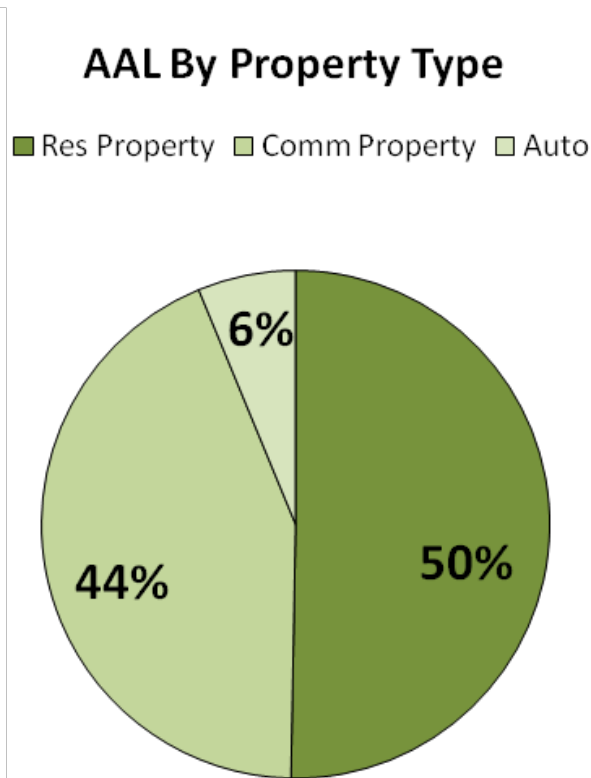
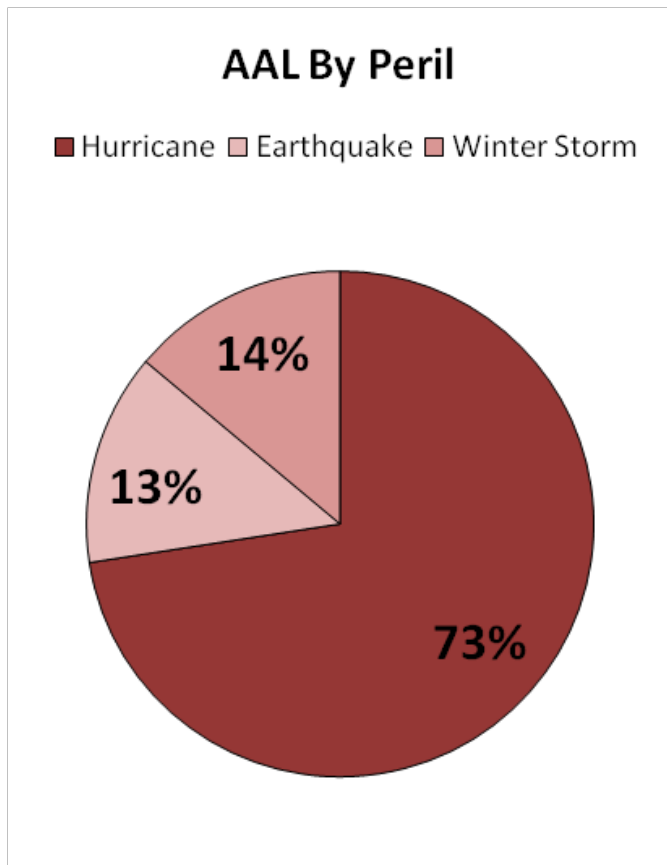


Model Specification

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Underwriting: Annual Aggregate Losses for Modeled Perils

- The total AAL represents 4.1 loss ratio points to projected 2012 gross earned premium.



Billions

Annual Frequency

HU	2.5
EQ	6.6
WS	5.6

Annual Severity

HU	5.4
EQ	0.4
WS	0.5

AAL

HU	13.3
EQ	2.5
WS	2.6
Total	18.3

Model Specification

Assets: Fixed Income Asset Profile

- Asset profile is a simplification of industry fixed income holdings, based on information from 2011 Schedule D.
- With the downgrade of US Treasury securities in 2011, many AAA municipal bonds were also downgraded to AA.
- ‘Embedded Coupon Rate’ is the ratio of interest income received in 2011 to total par outstanding.
- Only 0.5% of holdings are below investment grade.
- Equity holdings are modeled to perform according to the modeled performance of the S&P 500.
- See Appendix for full fixed income asset profile.

Billions

Market Value

	AAA	AA	A	BBB	BB	B	Total	Pct
Government	0.0	99.3	0.0	0.0	0.0	0.0	99.3	11.9%
Municipal	80.2	261.9	60.9	15.5	0.8	0.4	419.7	50.4%
Corporate	6.3	257.8	35.6	11.2	1.6	1.3	313.7	37.7%
Total	86.4	619.0	96.5	26.7	2.4	1.7	832.7	
Pct	10.4%	74.3%	11.6%	3.2%	0.3%	0.2%		

Average Time to Maturity

	AAA	AA	A	BBB	BB	B	Total
Government		4.8					4.8
Municipal	7.9	9.3	11.3	11.5	9.5	12.2	9.4
Corporate	5.7	6.2	6.8	6.6	7.3	6.5	6.2
Total	7.7	7.3	9.6	9.4	8.0	7.9	7.7

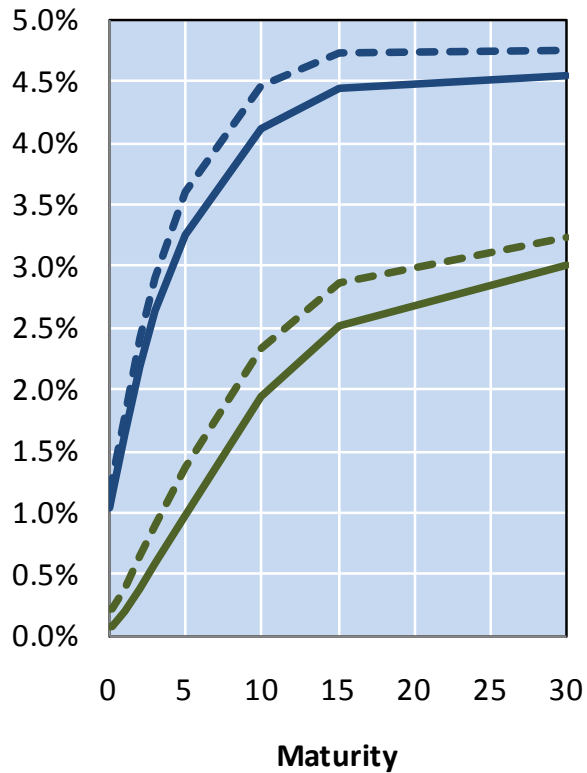
Embedded Coupon Rate

Government	2.43%
Municipal	4.12%
Corporate	4.08%

Model Specification

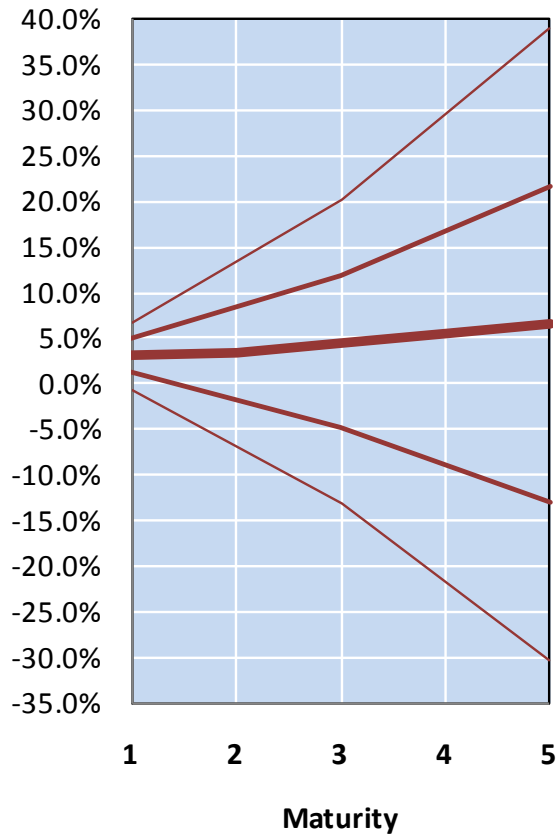
Assets: Summary of Economic Scenarios

Key Interest Rate Assumptions



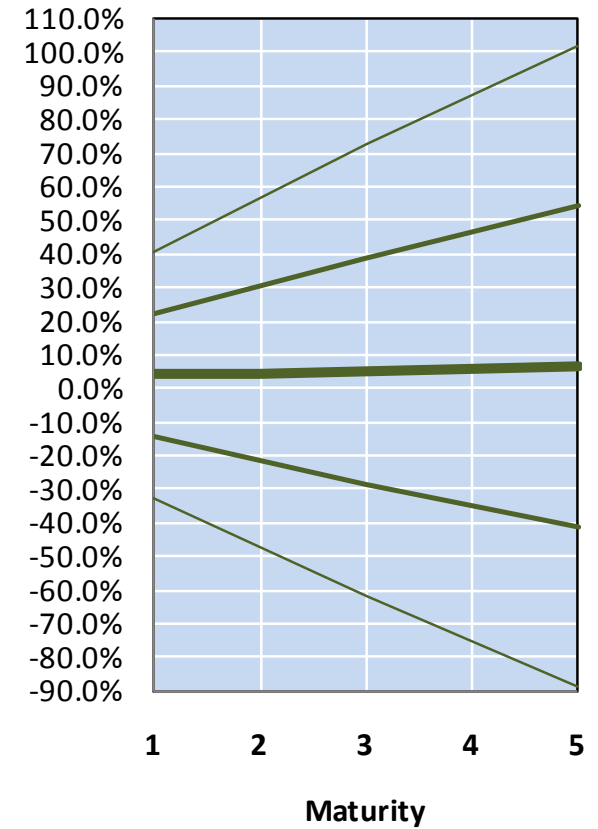
— CorpAA BOY - - - CorpAA EOY
— MuniAA BOY - - - MuniAA EOY

Medical Inflation



— Mean — +/- 1 SD — +/- 2 SD

Equities Return



— Mean — +/- 1 SD — +/- 2 SD

Model Specification

Segment Summary: Opening Balance Sheet

- Large National companies comprise approximately 72% of the industry as we have defined it.
- Small Regional companies tend to invest in less equities.
- Reserve leverage is higher for Large National and highest for Reinsurers.
- Asset leverage quite consistent across segments.

Billions

Balance Sheet Item	Industry		Large National		Small Regional		Reinsurer	
Total Bonds	785.2	57.3%	526.1	54.1%	76.5	66.6%	55.6	54.5%
Total Stocks	235.6	17.2%	190.7	19.6%	12.3	10.7%	18.9	18.6%
Total Assets	1,369.3	100.0%	973.1	100.0%	114.9	100.0%	102.0	100.0%

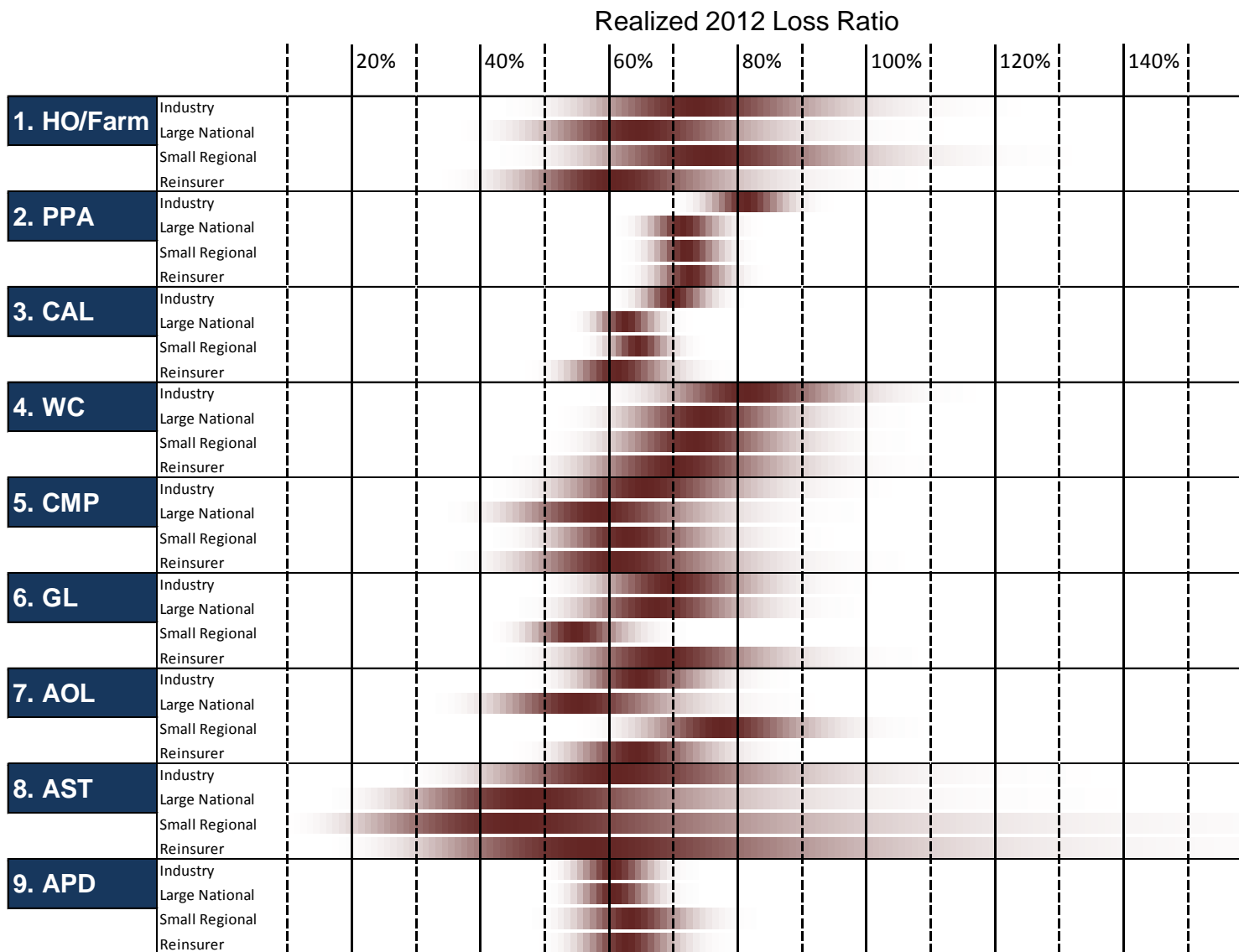
Net Loss & LAE Reserves	537.7	62.4%	381.7	62.8%	38.0	53.3%	46.9	74.1%
Net Unearned Premium Reserves	183.5	21.3%	127.1	20.9%	19.1	26.8%	6.1	9.6%
Total Liabilities	861.8	100.0%	607.9	100.0%	71.3	100.0%	63.3	100.0%

Policyholder Surplus	507.5		365.2		43.6		38.7	
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Model Specification

Segment Summary: 2012 Loss Ratio Distributions

- In some cases, underwriting performance varies significantly across segments.
- We assume a lognormal distribution with benchmarked volatility.



Questions for the Shareholders

- (1) Was the presentation of model inputs sufficiently clear so that the board can understand it?**

- (2) Does the model adequately capture measurable risks in the P&C insurance industry? Rate the adequacy of risk parameterization on a scale of 1 to 10.**

- (3) Do you believe the model is sufficient to influence strategic decisions? Which types of decisions?**

- (4) Do you find the risk preferences expressed (i.e. 50/50 weighting of 1-in-4 and 1-in-100 TVaR) appropriate?**

- (5) Do you believe the industry is:**
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Results and Implications

Mean Financials: Statutory Balance Sheet

- The Mean Balance Sheet is constructed from the average result for each line item over all simulations.

- It implies an expected return on surplus of 3.2%

- Invested assets are reallocated at the end of period according to the initial distribution.

Item	Year end 2010	Average Year End 2012
Bonds	785.2	794.0
Stocks	235.6	239.1
Cash	56.7	59.0
Other Invested Assets	<u>110.2</u>	<u>111.4</u>
Total Cash and Invested Assets	1,187.8	1,203.5
Other Assets	181.5	182.1
Total Assets	1,369.3	1,385.6
Net Loss and ALAE Reserves	537.7	545.8
Net Unearned Premium Reserves	183.5	175.3
Other Liabilities	<u>140.6</u>	<u>140.6</u>
Total Liabilities	861.8	861.7
Surplus Notes	12.6	12.6
Capital And Surplus	<u>494.9</u>	<u>511.3</u>
Policyholder Surplus	507.5	523.9
Total Liabilities & Policyholder Surplus	1,369.3	1,385.6

Results and Implications

Mean Financials: Statutory Income Statement

- The Mean Income Statement is constructed from the average result for each line item over all simulations.
- It's painful on average: 105.5% Combined Ratio and 3.9% Investment Return

Item	Amount
Net Earned Premium	428.2
Net Incurred Loss	312.3
Net Underwriting Expenses	139.5
Underwriting Gain	-23.6
Investment Income and Realized Capital Gains	46.2
Income Tax	4.5
Net Income	18.2
Change in Unrealized Capital Gains	-2.3
Deferred Taxes	-0.5
Change In Surplus	16.4

Results and Implications

Volatility of GAAP Equity: Inherent Risk

- Let's simulate change in GAAP equity without reinsurance.
- This 'naked' view provides understanding of the inherent risk of the business.
- Fixed income securities are stated at market value and therefore sensitive to changes in interest rates.
- The correlation between interest rates and inflation induces correlation between fixed income assets and reserve liabilities.
- We'll categorize and rank the risk sources.

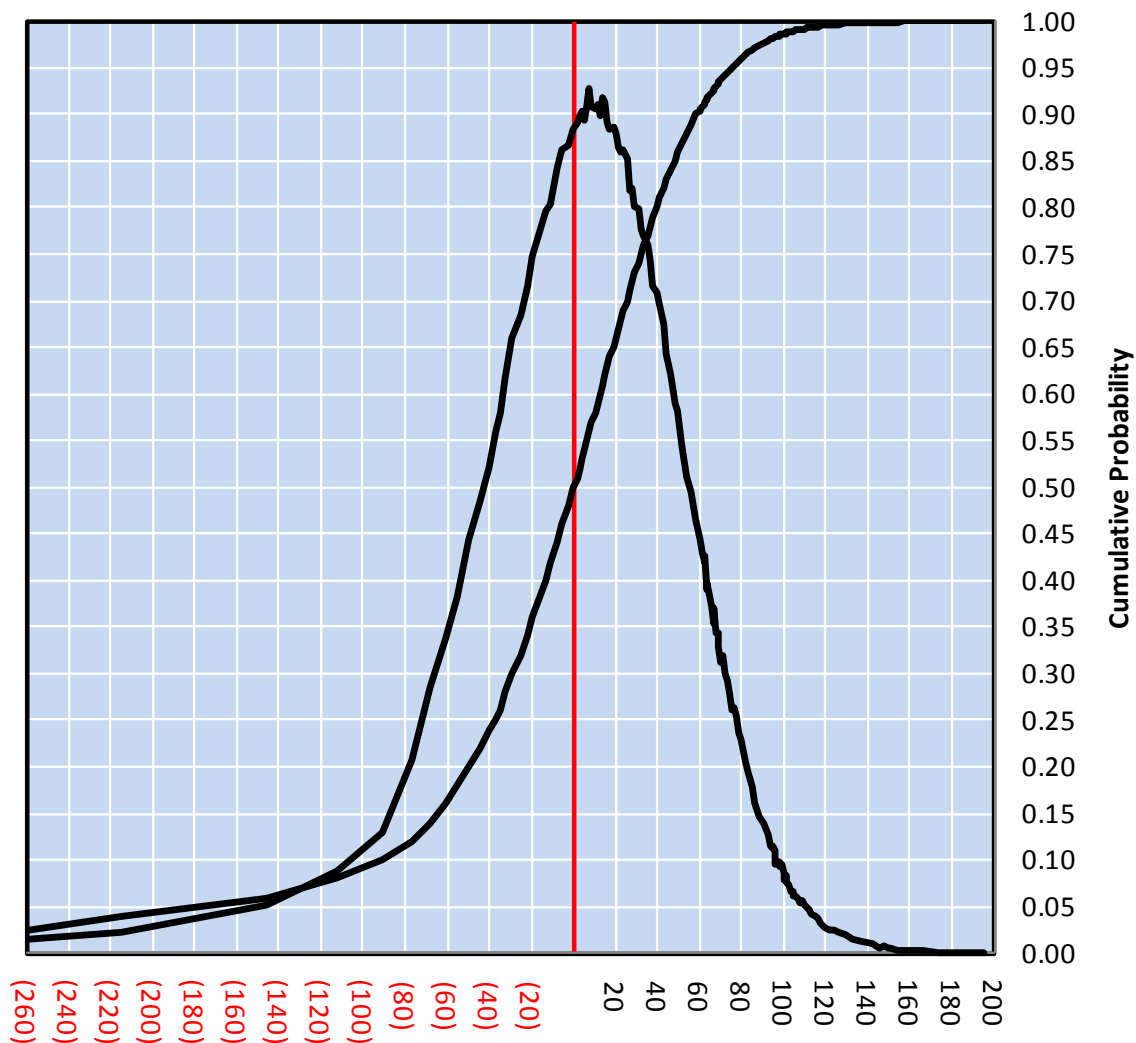
Results and Implications

Volatility of GAAP Equity: Nominal Change

- Negative expected ROE is driven by both negative underwriting return and projected increase in interest rates.
- While the chance of increasing value is about 50/50, downside scenarios are much larger than upside.
- We'll break down the contributions to the 16.0% overall volatility.

Measure

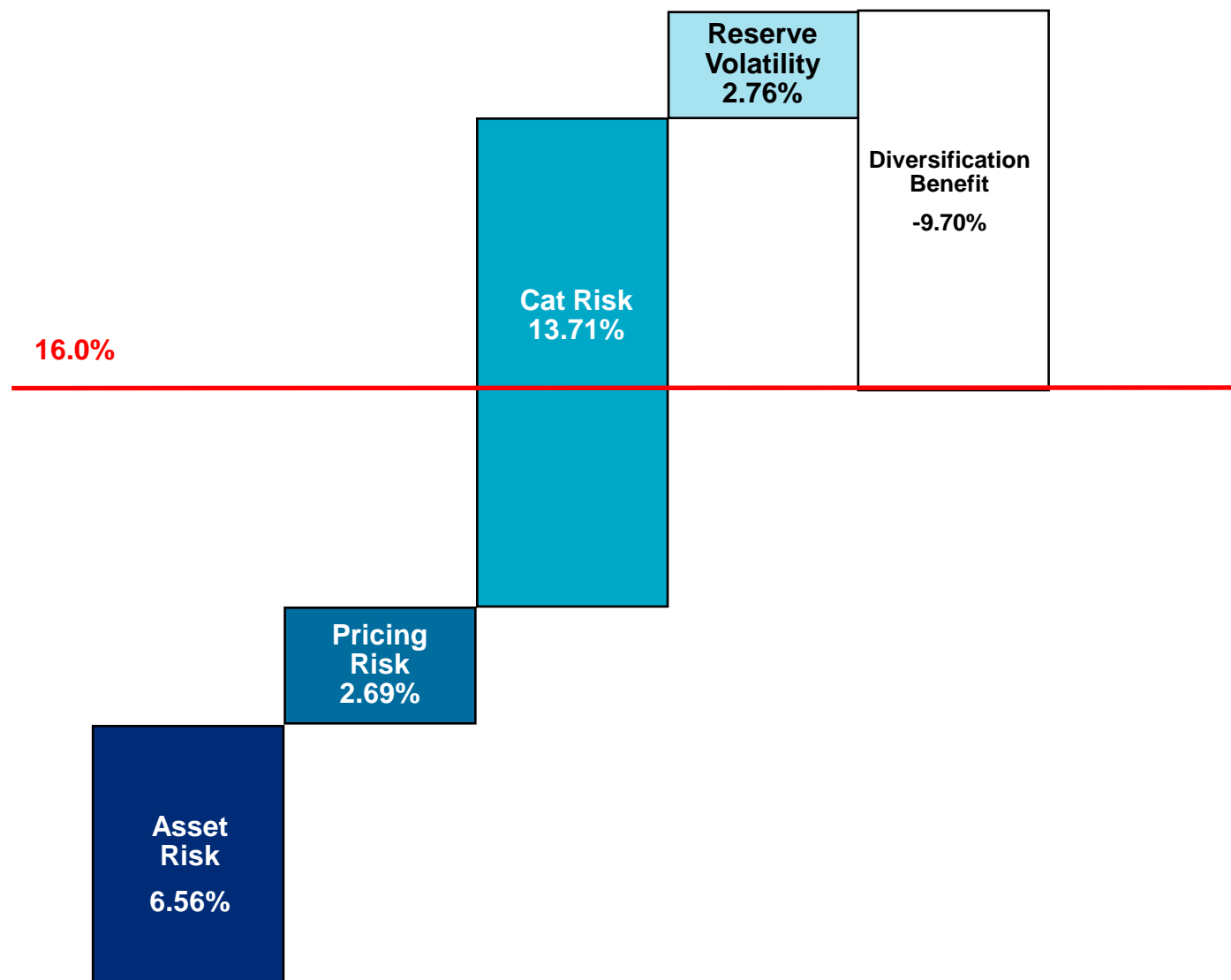
Mean Δ in GAAP Equity	-13.2 B
Mean ROE (Post Tax)	-2.4%
Coefficient of Variation	16.0%
P[Change<0]	49.0%



Results and Implications

Volatility of GAAP Equity: Decomposition

- Let's build up the 16.0% CV of GAAP Equity from the various sources of risk.
- Pricing risk (loss ratio uncertainty on incoming business) would be more significant in a multi-year model with cycle.
- Cat risk poses the largest source of 1-year volatility.
- Reserve volatility is also relatively minor over the short time horizon.
- Diversification of the risk sources is significant.

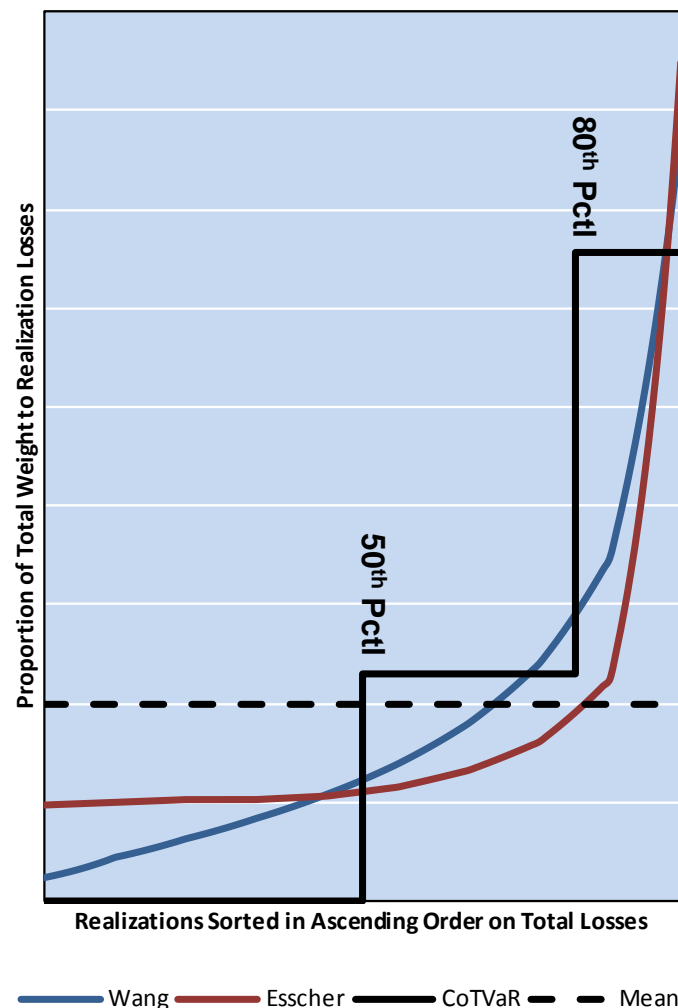


Results and Implications

Risk Preferences: Comments on Quantification

- Allocation of capital (or capital charge) is most explicit under the Scenario View, where a weight is assigned to each model realization.
- Common ways to compute the weights include:
 - Probability transforms (e.g. Wang transform)
 - Utility transforms (e.g. Esscher transform)
 - Weighted Co-TVaR
- The risk manager can define any Risk Preference Function.
- Weighted Co-TVaR is a step function with several strengths:
 - Ease of calculation, explanation, interpretation
 - Reliance on a common metric in risk management
 - Compatibility with practice of defining zones of operating loss impact: missing earnings, losing enough to warrant a downgrade, destruction of solvency.

Example: Equivalent Total Risk Charge

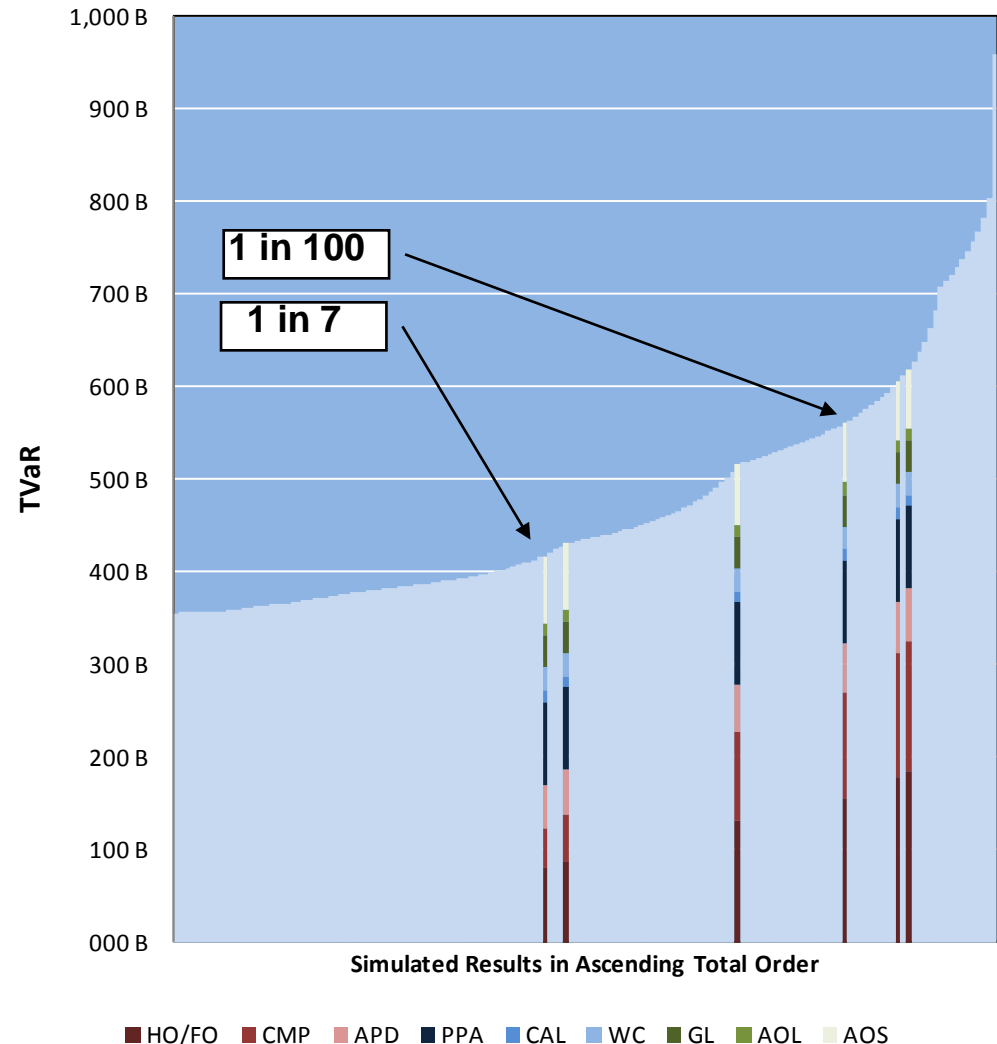


Results and Implications

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Risk Preferences: Visualizing the Gross TVaR Curve

- Sort the total loss on each trial in ascending order. The average result past the nth-largest trial is TVaR.
- TVaR at zero is simply the average of all trials, \$356 B.
- The higher the return period, the more capital is allocated to the cat-exposed lines (colored in shades of red, HO/FO, CMP, and APD).
- For casualty lines, the frequency attritional claims is assumed independent. In a multi-year view, correlation of reserve development would lead to higher contributions at high thresholds.

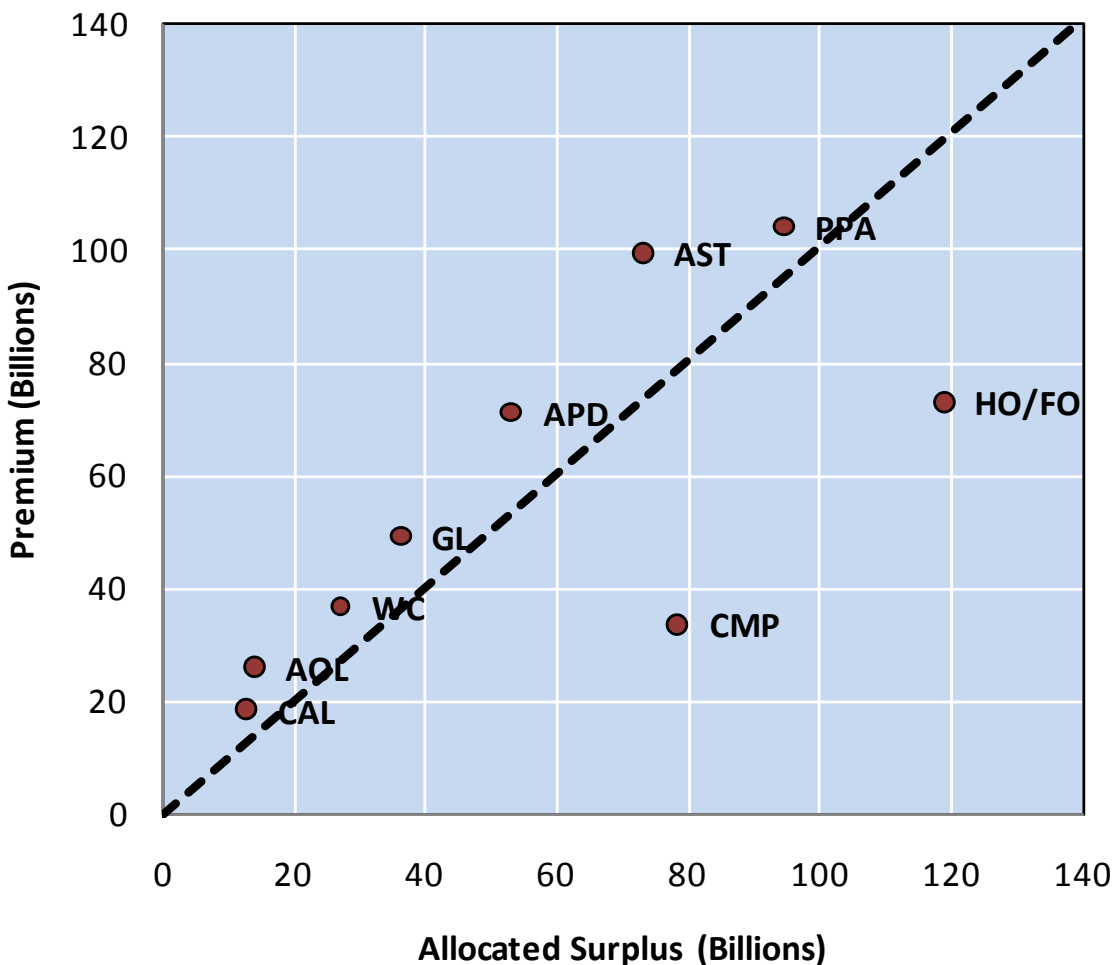


Results and Implications

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Risk Preferences: Capital Allocation and Premium-to-Surplus

- The chart displays expected 2012 gross written premium against 2011 surplus.
- The ratio in total is 1.01, represented by the dotted line.
- Lines of business with comparatively more risk in the model fall below the dotted line.
- The allocation depends on the model as well as our selection of risk preferences (see Appendix).



Results and Implications

A

Risk Preferences: Capital Allocation Between Cat and Non-Cat

- This chart summarizes the capital allocation indications by peril.
- Our choice of risk preferences implies an allocation of approximately 1/4 of industry capital for natural catastrophe losses.
- The Appendix further breaks down the allocation percentages by region.

Summary By Peril

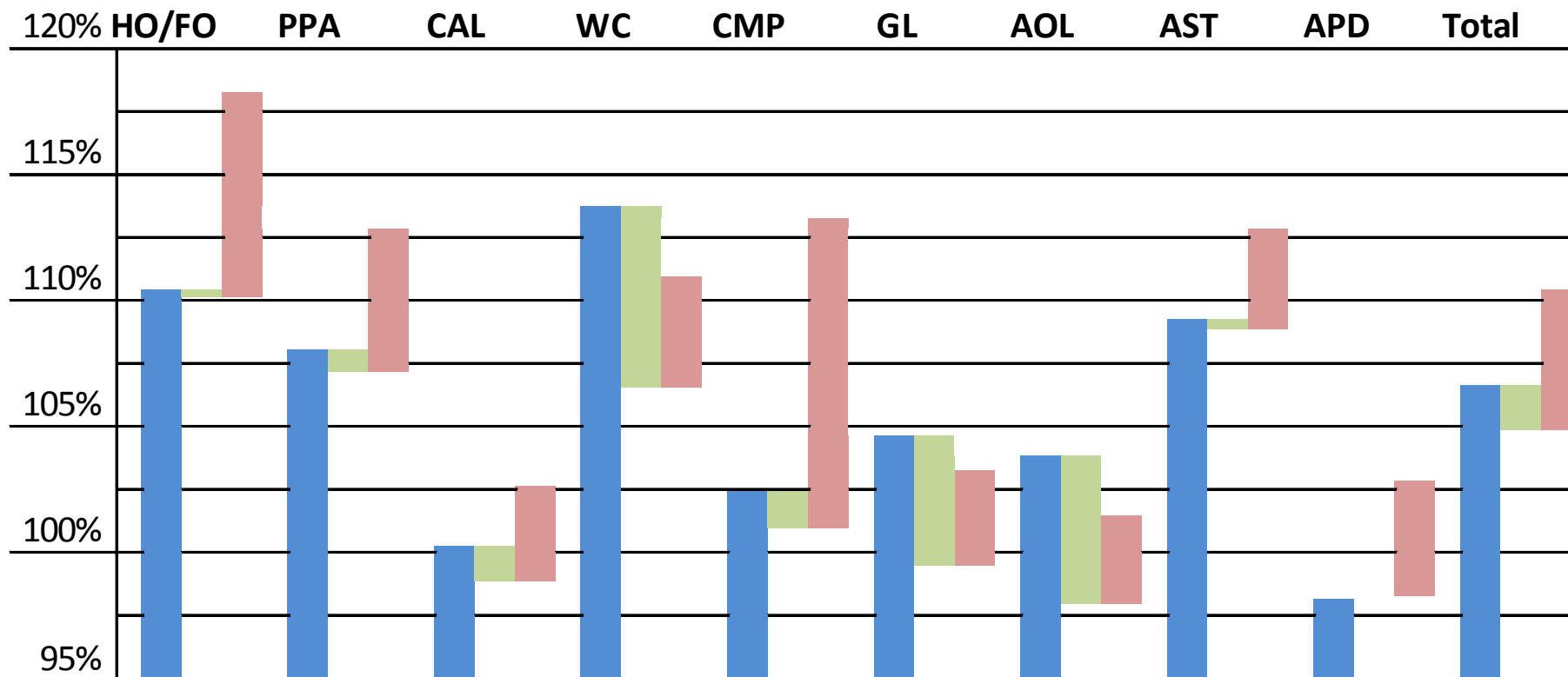
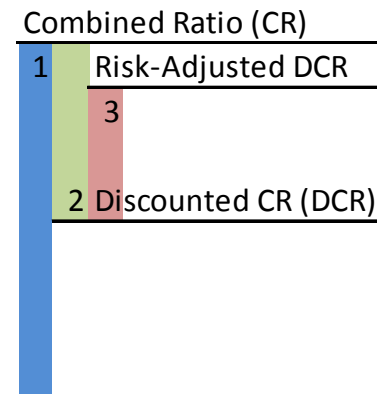
Line of Business	Return Period			Allocated Surplus
	7	100	Ave	
Non-Cat	85%	61%	73%	370.9
Hurricane	12%	33%	23%	114.4
Earthquake	2%	5%	4%	19.4
Winterstorm	1%	0%	1%	2.8
Total Cat	15%	39%	27%	136.6
Total TVaR	100%	100%	100%	507.5

Results and Implications

Risk Adjusted Return: Graphical View

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- Risk-Adjusted Discounted Combined Ratio includes credit for investment return and charge for holding capital to support risk.
- Recognizing both duration and capital cost is a means to compare profitability on a fair scale

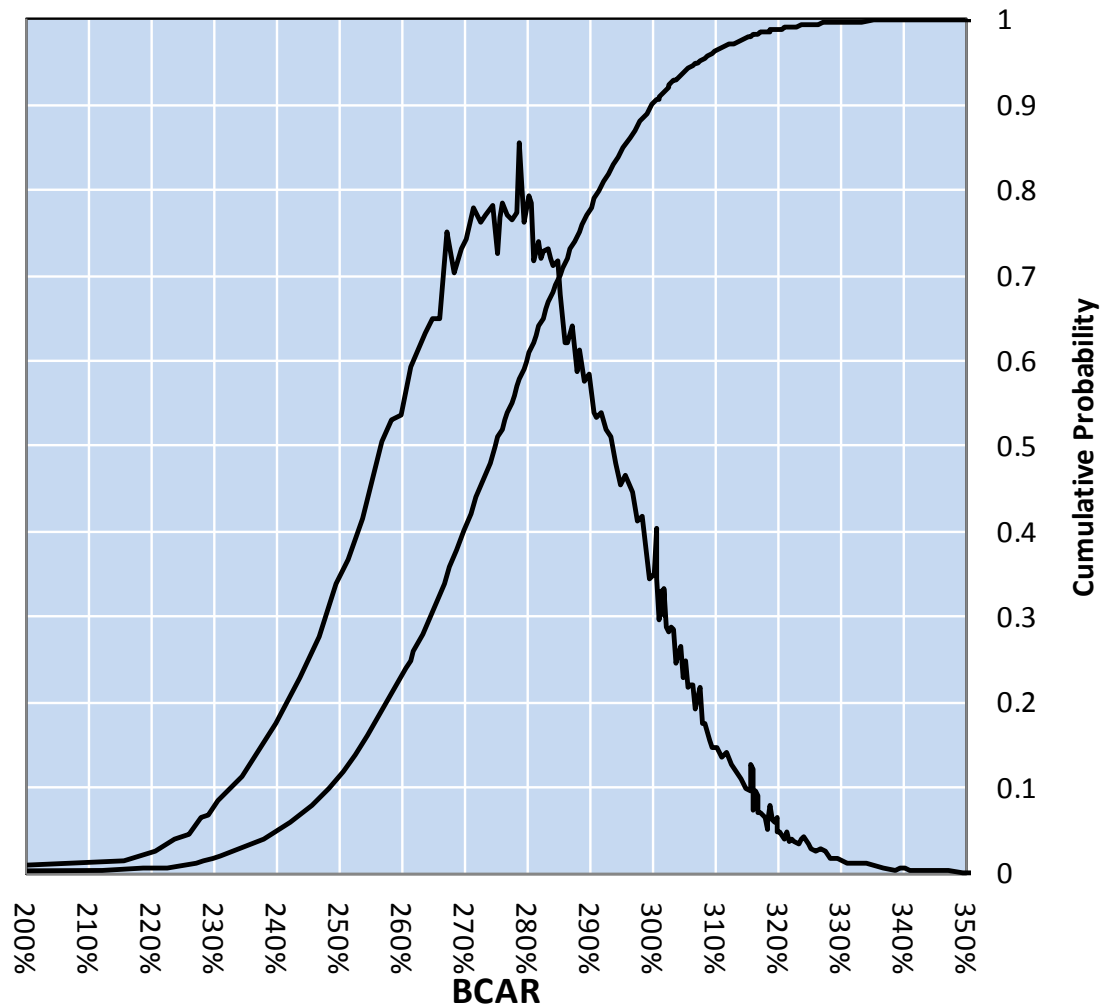


Results and Implications

BCAR Distribution

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- Estimated BCAR for the end of the prospective period can be tabulated as any random variable.
- Mean realized BCAR score for the end of 2012 is 274%.
- Our model implies a negligible chance of BCAR falling below 175%, the technical minimum requirement for an A++ rating.
- The standard deviation of BCAR without reinsurance is 32% and improves to 20% with reinsurance.

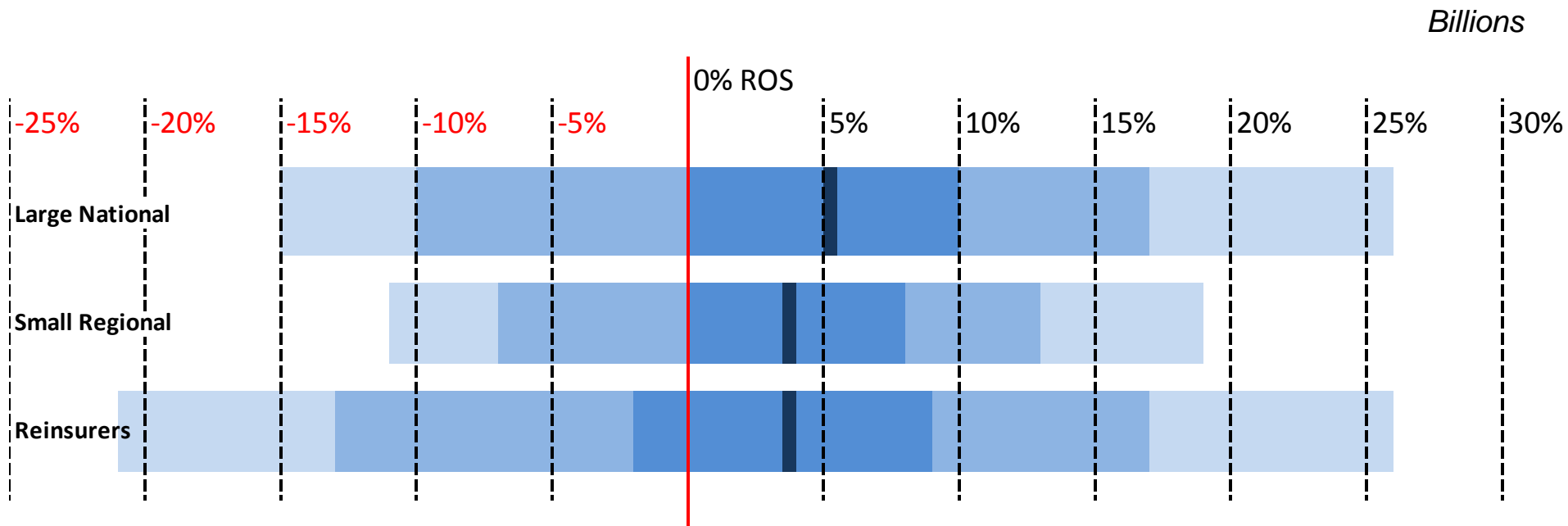


Results and Implications

Segment Comparisons: Return on Statutory Surplus

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- Distributions below depict spread of potential 2012 results for net statutory return on surplus.
- Small Regional segment characterized by lowest volatility, driven by asset allocation.



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Model Specification

Reserves and Duration: Summary By Line

- Overall Ceded Ratio of about 25.6%
- Lines can be classified as Fast Paying and Slow Paying (see next slide).
- With an overall duration of 3.85, the industry is exposed to the risk of unanticipated loss inflation, particularly from medical cost escalation.
- We have projected the tail with a simplistic 'repeat last increment until exhaust' technique.

Industry Total

Billions

LOB	Gross Reserves	Net Reserves	Duration	Estimated Net 2012 Payment
1. Homeowners/Farmowners (A)	23.5	22.1	1.02	13.5
2. Private Passenger Auto Liability (B)	115.8	92.4	1.93	41.5
3. Commercial Auto Liability (C)	28.2	22.0	2.67	8.1
4. Workers Compensation (D)	148.3	109.7	6.16	14.3
5. Commercial Multi-Peril (E)	41.3	35.3	2.54	10.9
6. General Liability (H1,H2)	173.2	120.7	5.16	23.7
7. All Other Liability Lines (F1,F2,G,O,R1,R2)	107.1	73.9	4.60	16.1
8. All Other Short-Tailed (I,K,L,M,N,P,S,T)	79.5	56.6	1.45	25.6
9. Auto Physical Damage (J)	5.5	4.9	0.57	4.6
Total	722.5	537.7	3.85	158.3

Model Specification

Underwriting: Gross Pricing Assumptions

- We assume 3% growth in WP in 2012, equivalent with 2011 growth.
- ELR is the three-year weighted average of ultimate burning cost.
- Volatility measures the variability of the ultimate loss ratio.
- Natural catastrophe losses modeled explicitly are segregated from attritional losses for each line of business.

LOB	Expected 2012	Expected	Billions		
	Direct and Assumed Earned Premium	2012 Total Loss and LAE Ratio	Cat Allocation	xCat Vol (CV)	xCat 2012 ELR
1. Homeowners/Farmowners (A)	73.5	76%	50%	16%	64%
2. Private Passenger Auto Liability (B)	82.6	82%		5%	82%
3. Commercial Auto Liability (C)	17.0	70%		4%	70%
4. Workers Compensation (D)	30.3	83%		11%	83%
5. Commercial Multi-Peril (E)	31.7	68%	43%	14%	43%
6. General Liability (H1,H2)	47.5	71%		11%	71%
7. All Other Liability Lines (F1,F2,G,O,R1,R2)	19.9	65%		10%	65%
8. All Other Short-Tailed (I,K,L,M,N,P,S,T)	90.7	67%		24%	67%
9. Auto Physical Damage (J)	57.4	61%	6%	6%	59%
Total	450.7	72%	100%		68%

Expense Ratio (to EP) **36%**
 Cat File Gross AAL: **18.3**

Model Specification

Underwriting: Gross Versus Net Pricing Assumptions

- Overall ELR puts the expected combined ratio above 100 on a nominal basis.
- Workers Compensation is in a challenging environment.
- Homeowners and CMP have been dogged by severe weather losses.
- Private auto insurance is an increasingly commoditized risk in the industry.

LOB	Expected 2012 EP			ELR		
	Gross	Net	Ceded Ratio	Gross	Net	Variance
1. Homeowners/Farmowners (A)	73.5	66.4	9.6%	76.3%	74.0%	2.3%
2. Private Passenger Auto Liability (B)	82.6	81.0	2.0%	81.5%	71.6%	9.9%
3. Commercial Auto Liability (C)	17.0	15.7	7.9%	70.2%	63.8%	6.5%
4. Workers Compensation (D)	30.3	25.2	16.8%	82.9%	77.3%	5.7%
5. Commercial Multi-Peril (E)	31.7	28.2	11.0%	67.7%	66.1%	1.6%
6. General Liability (H1,H2)	47.5	36.0	24.2%	71.1%	68.3%	2.8%
7. All Other Liability Lines (F1,F2,G,O,R1,R2)	19.9	18.2	8.4%	65.5%	67.4%	-2.0%
8. All Other Short-Tailed (I,K,L,M,N,P,S,T)	90.7	67.5	25.6%	66.6%	72.8%	-6.2%
9. Auto Physical Damage (J)	57.4	55.3	3.7%	61.0%	61.7%	-0.7%
Total	450.7	393.5	12.7%	72.0%	70.0%	2.0%

Model Specification

Underwriting: Annual Aggregate Losses for Modeled Perils

- Property catastrophe losses are roughly equivalent between personal and commercial lines, with a small fraction from APD.
- Hurricane is a low frequency / high severity peril compared to earthquake and winter storm, which look relatively similar in this summarized view.
- The total AAL represents 4.1 loss ratio points to projected 2012 gross earned premium.

	Residential Property	Commercial Property	Auto	Total	Percent	Annual Frequency
Hurricane	6.99	5.83	0.48	13.30	73%	2.46
Earthquake	0.92	1.52	0.03	2.48	14%	6.55
Winter Storm	1.31	0.62	0.62	2.55	14%	5.57
Total	9.22	7.97	1.14	18.33	100%	
Percent	50%	43%	6%	100%		

Billions

Model Specification

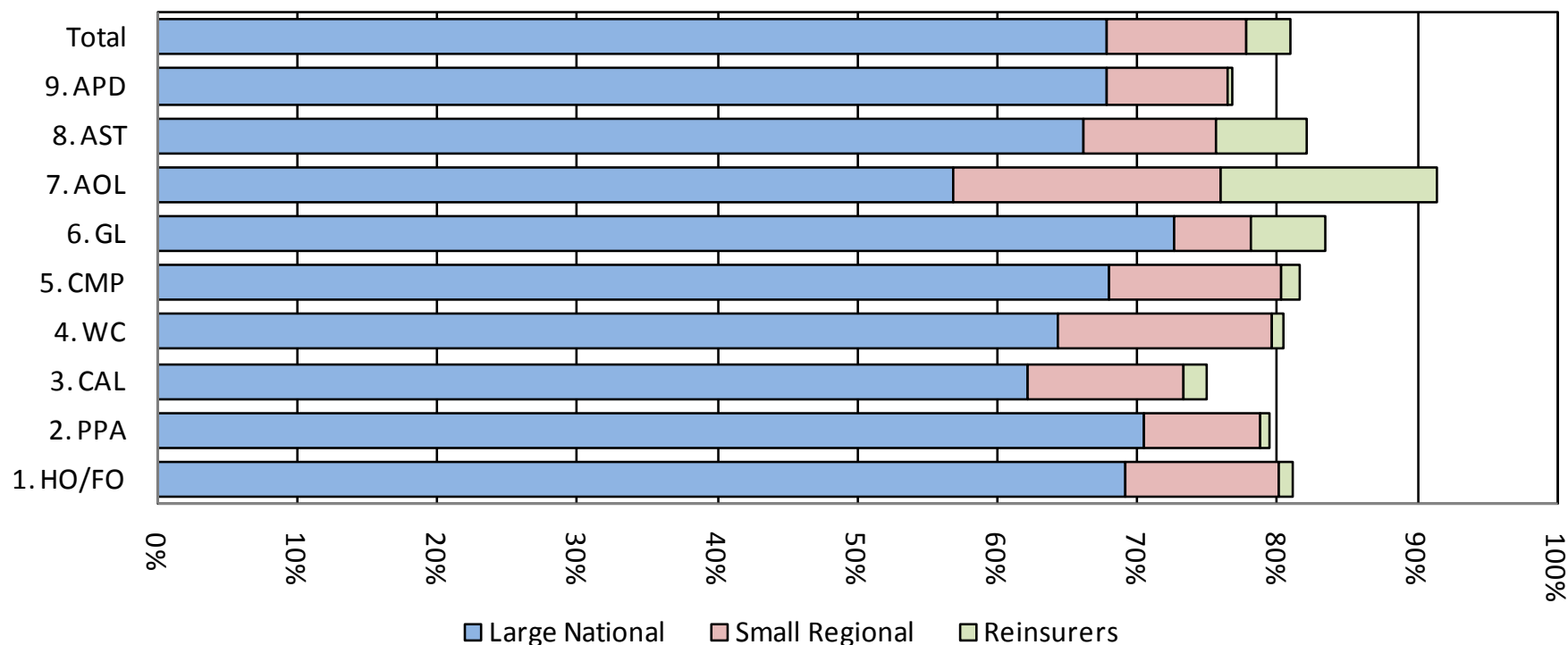
Segment Summary: D&A Premium Breakdown

Line of Business	Industry	Expected 2012 Direct and Assumed EP		
		% Large National	% Small Regional	% Reinsurers
1. Homeowners/Farmowners (A)	73.5	69%	11%	1%
2. Private Passenger Auto Liability (B)	82.6	70%	8%	1%
3. Commercial Auto Liability (C)	17.0	62%	11%	2%
4. Workers Compensation (D)	30.3	64%	15%	1%
5. Commercial Multi-Peril (E)	31.7	68%	12%	1%
6. General Liability (H1,H2)	47.5	73%	5%	5%
7. All Other Liability Lines (F1,F2,G,O,R1,R2)	19.9	57%	19%	15%
8. All Other Short-Tailed (I,K,L,M,N,P,S,T)	90.7	66%	9%	6%
9. Auto Physical Damage (J)	57.4	68%	9%	0%
Total	450.7	68%	10%	3%

Model Specification

Segment Summary: D&A Premium Breakdown

- Approximately 81% of the industry is represented by our three segment definitions
- Reinsurers make up a tiny proportion of the industry premium in most lines except AOL.



Model Specification

Segment Summary: Direct and Assumed Pricing Assumptions

- Approximately 80% of the industry is represented by our two segment definitions
- Poor performance of a few companies contributes to the overall higher expected loss ratio for the Small Regional segment

Line of Business	2012 Expected Loss Ratio				Volatility			
	Large		Small		Large		Small	
	Industry	National	Regional	Reinsurer	Industry	National	Regional	Reinsurer
1. Homeowners/Farmowners (A)	76%	67%	78%	63%	16%	17%	17%	18%
2. Private Passenger Auto Liability (B)	82%	72%	72%	73%	5%	5%	4%	5%
3. Commercial Auto Liability (C)	70%	63%	65%	62%	4%	5%	5%	8%
4. Workers Compensation (D)	83%	76%	75%	73%	11%	11%	12%	14%
5. Commercial Multi-Peril (E)	68%	61%	64%	64%	14%	16%	13%	17%
6. General Liability (H1,H2)	71%	69%	55%	70%	11%	12%	8%	14%
7. All Other Liability Lines (F1,F2,G,O,R1,R2)	65%	57%	79%	65%	10%	16%	10%	11%
8. All Other Short-Tailed (I,K,L,M,N,P,S,T)	67%	56%	63%	70%	24%	33%	48%	38%
9. Auto Physical Damage (J)	61%	61%	64%	63%	6%	6%	8%	7%
Total	72%	65%	70%	68%				

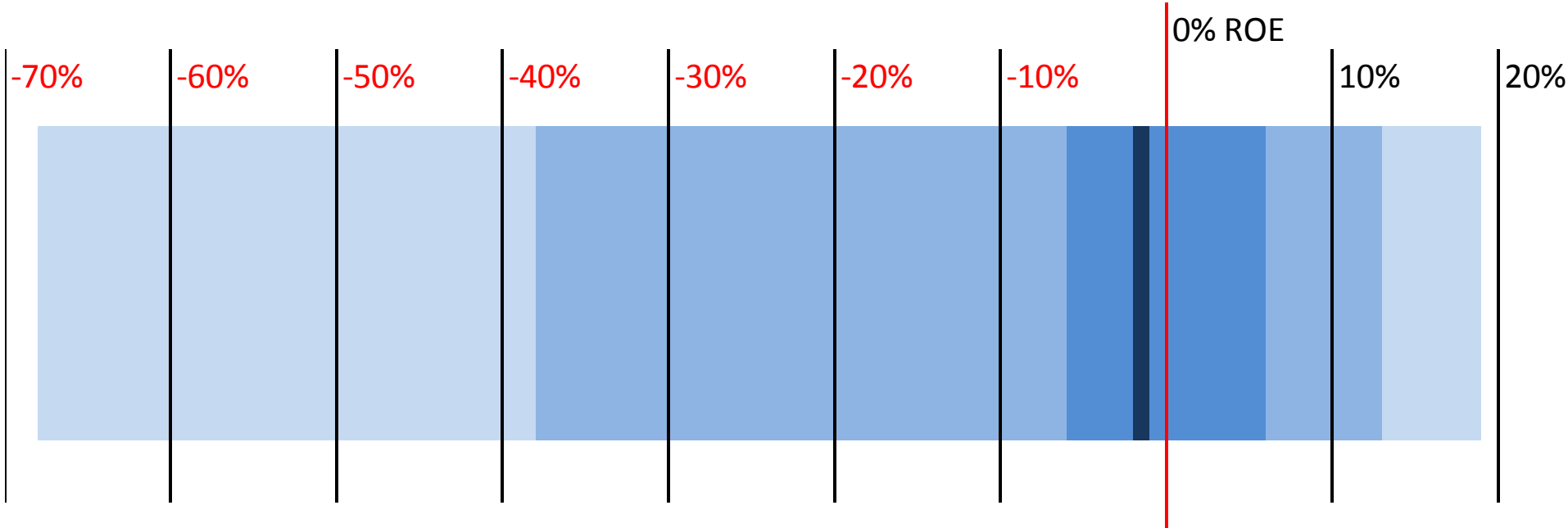
Results and Implications

Volatility of GAAP Equity: ROE Distribution

- A 99% confidence interval for ROE achieved in 2012 spans from -68% to +19%.

- Extreme negative tail scenarios are generated by large natural catastrophe events, significant increases in interest rates, and severe hikes in medical inflation.

Confidence Interval Ranges



Results and Implications

Risk Preferences: Gross and Net TVaR Figures By Line

- TVaR is the average AY incurred loss result for all simulations larger than a given total threshold.
- TVaR can be broken down to line of business because for a model realization we know contributing losses from each line. We can allocate capital based on these contributions.
- Natural catastrophes drive the tail results on a gross basis.
- Keep in mind this is a one year model. For casualty lines, the frequency of AY 2012 attritional losses is assumed independent. In a multi-year view the correlation of reserve development between these lines would lead to an increasing co-TVaR sequence in these tables as well.

Gross (Inherent) Loss and LAE

Net (Residual) Loss and LAE

Line of Business	Return Period						Return Period					
	7	10	50	100	200	250	7	10	50	100	200	250
Homeowners/Farmowners (A)	80.2	87.9	132.6	154.8	178.2	185.7	54.6	55.3	57.6	58.2	59.1	59.1
Private Passenger Auto Liability (B)	89.3	89.2	88.9	88.8	88.8	88.8	74.3	74.5	75.0	74.9	75.1	75.3
Commercial Auto Liability (C)	12.0	12.0	12.0	12.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0	10.0
Workers Compensation (D)	25.5	25.4	25.3	25.3	25.3	25.3	20.1	20.1	20.4	20.5	20.6	20.7
Commercial Multi-Peril (E)	42.7	50.5	94.4	115.5	134.5	139.7	19.3	19.4	19.5	19.6	19.7	19.8
General Liability (H1,H2)	34.3	34.3	34.0	34.0	34.0	34.1	25.4	25.4	25.6	25.7	25.6	25.7
All Other Liability Lines (F1,F2,G,O,R1,R2)	13.1	13.1	13.1	13.1	13.1	13.1	12.6	12.6	12.7	12.7	12.7	12.7
All Other Short-Tailed (I,K,L,M,N,P,S,T)	72.0	71.2	65.0	64.3	64.0	64.3	61.4	63.2	70.4	73.6	76.0	76.7
Auto Physical Damage (J)	47.3	47.9	51.3	53.4	56.0	56.9	43.6	43.6	43.9	44.1	44.2	44.2
Total TVaR	416.5	431.6	516.6	561.1	605.9	619.8	321.2	324.2	335.1	339.3	343.1	344.3

Results and Implications

Risk Preferences: Capital Allocation and Premium-to-Surplus

- Because capital both buffers short-term volatility insures against extreme scenarios, we'll weight two TVaR thresholds together: 1 in 4 and 1 in 100.

- Allocation is illustrative of capital charge allocation.

- Using total losses (as opposed to net underwriting losses) is a simplified approach to recognizing the operational constraints of writing business.

- The effect of reinsurance in dampening the spread of premium-to-surplus ratios is significant.

Gross (Inherent) Loss and LAE

Line of Business	Return Period			Allocated Surplus	Expected WP	Premium-to-Surplus
	7	100	Ave			
Homeowners/Farmowners (A)	19%	28%	23%	118.9	73.2	0.62
Private Passenger Auto Liability (B)	21%	16%	19%	94.6	104.3	1.10
Commercial Auto Liability (C)	3%	2%	3%	12.7	18.5	1.46
Workers Compensation (D)	6%	5%	5%	27.0	36.9	1.37
Commercial Multi-Peril (E)	10%	21%	15%	78.3	33.8	0.43
General Liability (H1,H2)	8%	6%	7%	36.3	49.3	1.36
All Other Liability Lines (F1,F2,G,O,R1,R2)	3%	2%	3%	13.9	26.0	1.88
All Other Short-Tailed (I,K,L,M,N,P,S,T)	17%	11%	14%	72.9	99.6	1.37
Auto Physical Damage (J)	11%	10%	10%	53.0	71.3	1.35
Total TVaR	100%	100%	100%	507.5	512.9	1.01

Net (Residual) Loss and LAE

Line of Business	Return Period			Allocated Surplus	Expected WP	Premium-to-Surplus
	7	100	Ave			
Homeowners/Farmowners (A)	17%	17%	17%	86.7	64.8	0.75
Private Passenger Auto Liability (B)	23%	22%	23%	114.7	99.6	0.87
Commercial Auto Liability (C)	3%	3%	3%	15.4	15.7	1.02
Workers Compensation (D)	6%	6%	6%	31.2	30.4	0.98
Commercial Multi-Peril (E)	6%	6%	6%	29.9	28.4	0.95
General Liability (H1,H2)	8%	8%	8%	39.2	35.7	0.91
All Other Liability Lines (F1,F2,G,O,R1,R2)	4%	4%	4%	19.4	19.2	0.99
All Other Short-Tailed (I,K,L,M,N,P,S,T)	19%	22%	20%	103.5	59.2	0.57
Auto Physical Damage (J)	14%	13%	13%	67.4	67.0	0.99
Total TVaR	100%	100%	100%	507.5	420.1	0.83

Results and Implications

Risk Preferences: Cat Capital Allocation By Region and Peril

- On a gross basis, tail losses are dominated by Florida hurricane risk.
- The Total line is the allocation of Homeowners, CMP, and APD to overall capital.

	Homeowners/Farmowners		Commercial Muti Peril		Auto Physical Damage		Total	
	1 in 4	1 in 100	1 in 4	1 in 100	1 in 4	1 in 100	1 in 4	1 in 100
Attritional	11.8%	8.5%	3.3%	2.4%	10.7%	7.9%	25.9%	18.9%
Hurricane	6.2%	16.6%	5.4%	15.0%	0.5%	1.4%	12.0%	33.0%
Northeast	0.4%	0.9%	0.3%	0.9%	0.0%	0.0%	0.7%	1.9%
Mid Atlantic	0.3%	0.6%	0.2%	0.4%	0.0%	0.0%	0.5%	1.1%
Southeast	0.6%	0.5%	0.3%	0.3%	0.0%	0.0%	1.0%	0.9%
Gulf	0.4%	0.5%	0.3%	0.4%	0.0%	0.0%	0.8%	0.9%
Florida	3.7%	13.3%	3.6%	12.5%	0.3%	1.3%	7.7%	27.0%
Texas	0.6%	0.5%	0.5%	0.4%	0.0%	0.0%	1.2%	1.0%
Other	0.1%	0.2%	0.1%	0.1%	0.0%	0.0%	0.2%	0.3%
Earthquake	0.9%	2.3%	1.4%	3.0%	0.0%	0.0%	2.3%	5.3%
California	0.4%	0.7%	0.9%	1.4%	0.0%	0.0%	1.4%	2.1%
Pacific Northwest	0.1%	0.3%	0.2%	0.4%	0.0%	0.0%	0.3%	0.6%
New Madrid	0.3%	1.2%	0.2%	1.0%	0.0%	0.0%	0.5%	2.2%
Other	0.1%	0.1%	0.1%	0.3%	0.0%	0.0%	0.1%	0.4%
Winterstorm	0.3%	0.2%	0.2%	0.1%	0.2%	0.1%	0.7%	0.5%
Northeast	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Other	0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.5%	0.4%
Total	19%	28%	10%	21%	11%	10%	41%	58%

Results and Implications

Risk Adjusted Return: Calculations and Assumptions

- Risk Adjusted DCR includes credit for investment return, and charge for holding capital to support risk.
- Because interest rates are so low, the net effect (in current conditions) is a larger ratio than the nominal combined ratio.

(A) Capital Cost: 5%
 (B) Total Capital (Billions): 507.5

Component	HO/FO	PPA	CAL	WC	CMP	GL	AOL	AST	APD	Total
(1) Capital Allocation (1)	23.4%	18.6%	2.5%	5.3%	15.4%	7.2%	2.7%	14.4%	10.4%	100.0%
(2) Premium (2)	73.5	82.6	17.0	30.3	31.7	47.5	19.9	90.7	57.4	450.7
(3) Expected Net Loss Ratio (3)	74.0%	71.6%	63.8%	77.3%	66.1%	68.3%	67.4%	72.8%	61.7%	70.2%
(4) Discount Factor (4)	0.996	0.986	0.979	0.907	0.975	0.923	0.911	0.993	1.000	0.974
(5) Discounted Loss Ratio (3)*(4)	73.7%	70.6%	62.4%	70.1%	64.5%	63.0%	61.4%	72.3%	61.7%	68.3%
(6) Capital Cost (A)*(B)*(1)/(2)	8.1%	5.7%	3.7%	4.4%	12.3%	3.8%	3.5%	4.0%	4.6%	5.6%
(7) Expense Ratio	36.5%	36.5%	36.5%	36.5%	36.5%	36.5%	36.5%	36.5%	36.5%	36.5%
(8) Combined Ratio (CR) (3)+(7)	110.5%	108.1%	100.3%	113.8%	102.6%	104.7%	103.9%	109.3%	98.2%	106.6%
(9) Discounted Combined Ratio (5)+(7)	110.2%	107.1%	98.9%	106.6%	101.0%	99.5%	97.9%	108.8%	98.2%	104.8%
(10) Risk-Adjusted DCR (5)+(6)+(7)	118.3%	112.9%	102.6%	111.0%	113.3%	103.3%	101.4%	112.8%	102.8%	110.5%
(11) Rank	9	7	2	5	8	4	1	6	3	

Results and Implications

BCAR Distribution: Benchmarking

- Of 625 rated companies, the surplus-weighted average BCAR is 289.
- BCAR scores vary significantly by organization structure, but not by Financial Size Category.
- Key inputs for the calculation of BCAR in our model are shown to the left.
- BCAR inputs lack full detail of a precise BCAR calculation, but produce a starting BCAR of 280%.
- Net Cat PML is an educated guess.

Financial Size Category	Surplus Weighted BCAR
1	94
2	171
3	288
4	278
5	302
6	302
7	306
8	303
9	293
10	272
11	319
12	259
13	285
14	295
15	288
Total	289

Key BCAR Assumptions

Category	Value
Asset	8%
Reserve	25%
Premium	28%
Credit	8%
UEPR Equity	7%
Loss Reserve Equity	9%
Net Cat PML	50,000,000,000

Organization Structure	Surplus Weighted BCAR
Cooperative	269
Lloyds	256
Mutual	350
Other	235
Reciprocal Exchange	353
Stock	258
Total	289

Results and Implications

Segment Comparisons: Statutory Balance Sheet

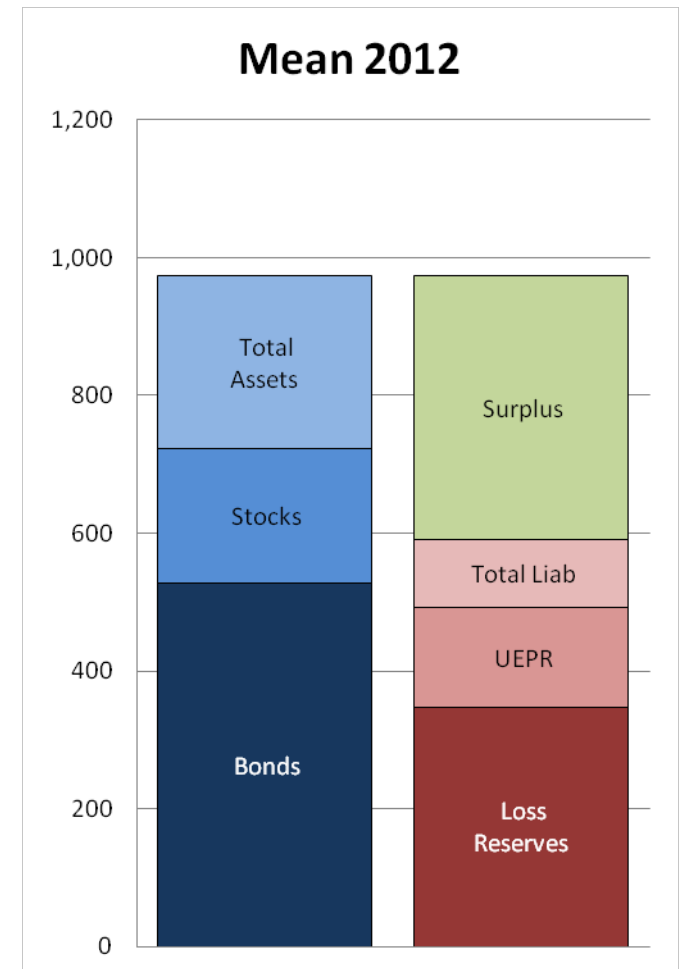
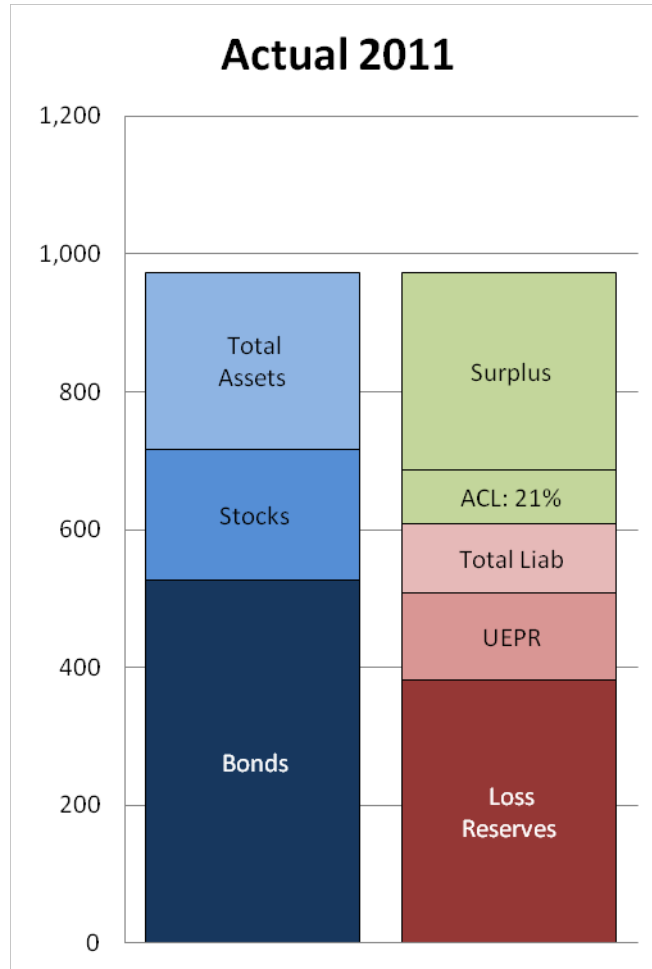
Billions

- **Large National Segment**

- Performance:

- Expected return on surplus of 4.8%
- Volatility 7.2% of mean surplus

- RBC ACL on opening balance sheet equal to 21% of surplus.



Results and Implications

Segment Comparisons: Statutory Balance Sheet

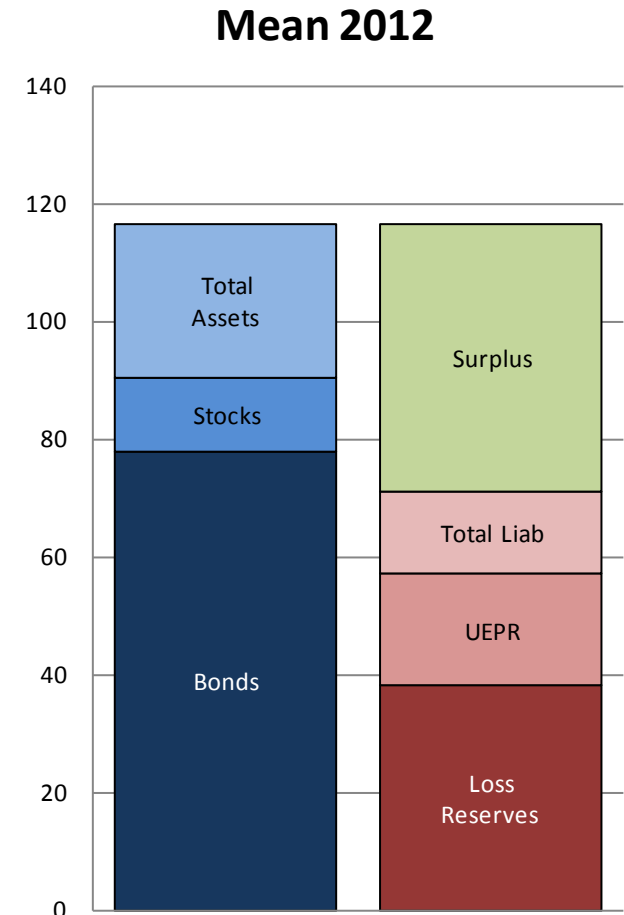
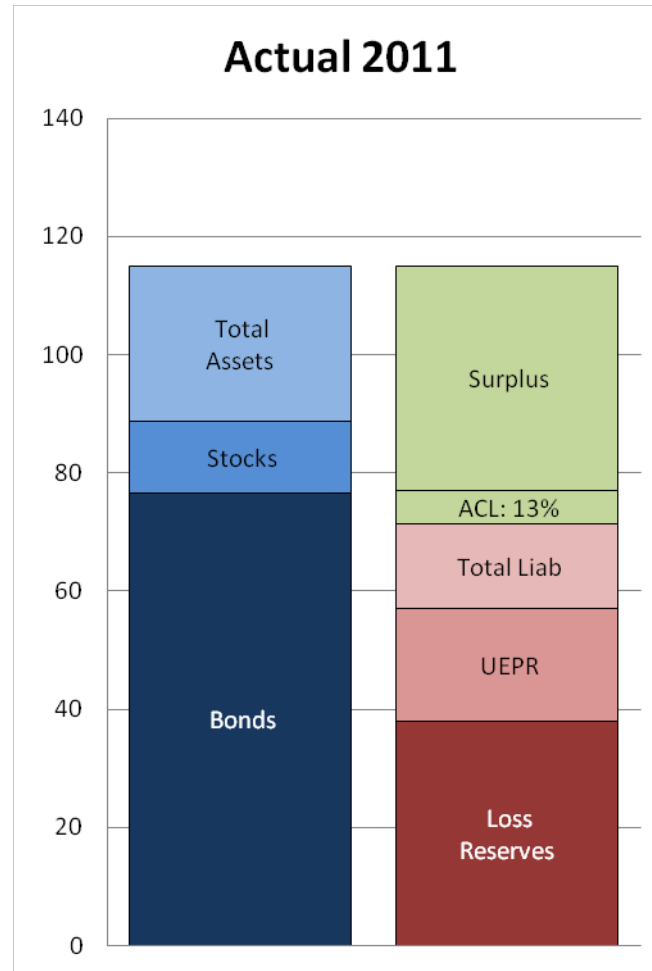
• Small Regional Segment

• Performance:

- Expected return on surplus of 3.8%
- Volatility 5.5% of mean surplus

- RBC ACL on opening balance sheet equal to 13% of surplus.

Billions



Results and Implications

Segment Comparisons: Statutory Balance Sheet

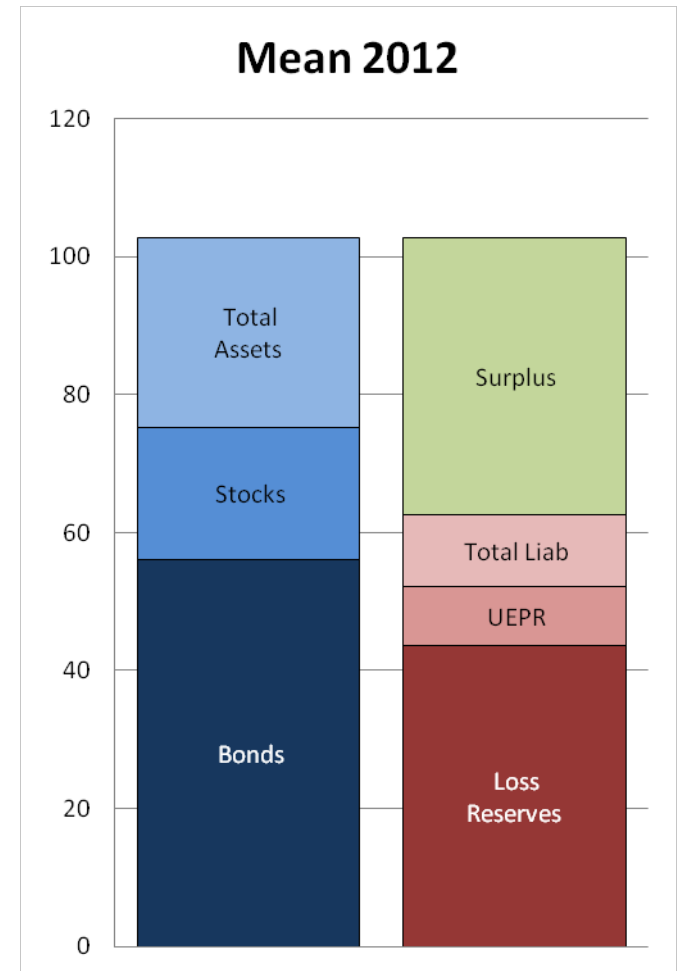
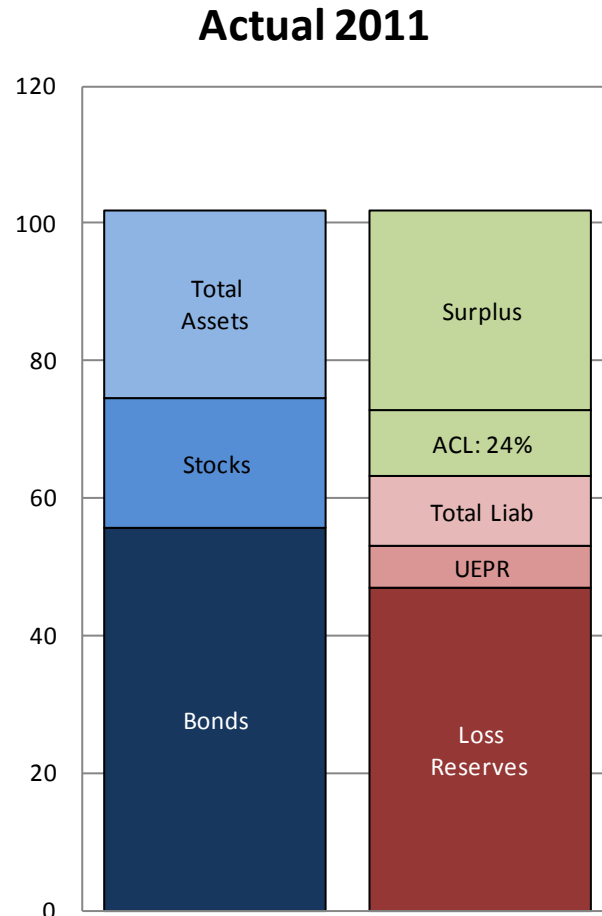
• Reinsurer Segment

• Performance:

- Expected return on surplus of 3.7%
- Volatility 8.1% of mean surplus

• RBC ACL on opening balance sheet equal to 24% of surplus.

Billions



Fixed Income Asset Profile

Government and Municipals

Bond Type	Bond Quality	Market Value	Amortized Cost	Average Time To Maturity	Embedded Coupon Rate	Average Duration
Government	AA	31,112,118,806	29,259,435,670	1	-	0.50
Government	AA	41,933,963,322	39,436,854,489	3	0.02425	2.38
Government	AA	14,825,006,505	13,942,198,113	8	0.02425	6.49
Government	AA	8,162,336,608	7,676,280,885	15	0.02425	11.02
Government	AA	3,303,504,004	3,106,784,963	25	0.02425	15.65
Municipal	AAA	7,130,173,439	6,678,915,265	1	-	0.50
Municipal	AAA	31,233,500,569	29,256,778,327	3	0.04120	2.37
Municipal	AAA	22,115,416,680	20,715,764,536	8	0.04120	6.39
Municipal	AAA	14,047,694,991	13,158,637,068	15	0.04120	10.71
Municipal	AAA	5,631,025,379	5,274,646,078	25	0.04120	14.96
Municipal	AA	19,796,591,565	18,543,694,446	1	-	0.50
Municipal	AA	91,204,497,331	85,432,299,044	3	0.04120	2.37
Municipal	AA	60,620,179,934	56,783,618,043	8	0.04120	6.39
Municipal	AA	60,283,314,067	56,468,071,921	15	0.04120	10.71
Municipal	AA	29,972,244,852	28,075,345,626	25	0.04120	14.96
Municipal	A	3,886,081,304	3,640,136,943	1	-	0.50
Municipal	A	11,244,074,701	10,532,453,777	3	0.04120	2.37
Municipal	A	20,390,636,984	19,100,143,606	8	0.04120	6.39
Municipal	A	14,615,888,600	13,690,870,541	15	0.04120	10.71
Municipal	A	10,716,106,909	10,037,900,288	25	0.04120	14.96
Municipal	BBB	647,123,740	606,168,232	1	-	0.50
Municipal	BBB	4,263,775,697	3,993,927,614	3	0.04120	2.37
Municipal	BBB	3,598,928,531	3,371,157,646	8	0.04120	6.39
Municipal	BBB	3,953,220,030	3,703,026,558	15	0.04120	10.71
Municipal	BBB	3,064,904,929	2,870,931,610	25	0.04120	14.96
Municipal	BB	77,172,092	72,287,984	1	-	0.50
Municipal	BB	305,766,123	286,414,636	3	0.04120	2.37
Municipal	BB	149,088,817	139,653,205	8	0.04120	6.39
Municipal	BB	189,048,440	177,083,843	15	0.04120	10.71
Municipal	BB	118,273,334	110,787,989	25	0.04120	14.96
Municipal	B	16,143,538	15,121,838	1	-	0.50
Municipal	B	131,040,129	122,746,792	3	0.04120	2.37
Municipal	B	83,560,384	78,271,970	8	0.04120	6.39
Municipal	B	69,531,028	65,130,512	15	0.04120	10.71
Municipal	B	119,399,324	111,842,717	25	0.04120	14.96

Fixed Income Asset Profile

Corporate Bonds

Bond Type	Bond Quality	Market Value	Amortized Cost	Average Time To Maturity	Embedded Coupon Rate	Average Duration
Corporate	AAA	1,175,587,602	1,119,340,942	1	-	0.50
Corporate	AAA	2,829,350,720	2,693,978,821	3	0.04078	2.36
Corporate	AAA	1,697,377,316	1,616,165,330	8	0.04078	6.30
Corporate	AAA	162,018,245	154,266,390	15	0.04078	10.43
Corporate	AAA	410,034,060	390,415,746	25	0.04078	14.37
Corporate	AA	37,428,256,788	35,637,480,494	1	-	0.50
Corporate	AA	101,689,243,856	96,823,863,982	3	0.04078	2.36
Corporate	AA	95,737,282,047	91,156,677,181	8	0.04078	6.30
Corporate	AA	9,250,614,121	8,808,013,212	15	0.04078	10.43
Corporate	AA	13,662,358,203	13,008,674,882	25	0.04078	14.37
Corporate	A	2,346,486,894	2,234,217,890	1	-	0.50
Corporate	A	14,714,202,720	14,010,193,299	3	0.04078	2.36
Corporate	A	14,878,586,188	14,166,711,745	8	0.04078	6.30
Corporate	A	1,598,032,491	1,521,573,715	15	0.04078	10.43
Corporate	A	2,082,645,170	1,982,999,824	25	0.04078	14.37
Corporate	BBB	316,700,233	301,547,530	1	-	0.50
Corporate	BBB	3,230,969,622	3,076,382,038	3	0.04078	2.36
Corporate	BBB	7,396,344,588	7,042,462,262	8	0.04078	6.30
Corporate	BBB	194,904,736	185,579,408	15	0.04078	10.43
Corporate	BBB	70,661,379	67,280,545	25	0.04078	14.37
Corporate	BB	112,806,218	107,408,940	1	-	0.50
Corporate	BB	555,664,354	529,078,276	3	0.04078	2.36
Corporate	BB	696,708,374	663,373,965	8	0.04078	6.30
Corporate	BB	151,998,464	144,726,011	15	0.04078	10.43
Corporate	BB	78,918,971	75,143,048	25	0.04078	14.37
Corporate	B	100,527,400	95,717,609	1	-	0.50
Corporate	B	869,464,370	827,864,351	3	0.04078	2.36
Corporate	B	78,808,090	75,037,472	8	0.04078	6.30
Corporate	B	31,832,894	30,309,831	15	0.04078	10.43
Corporate	B	170,010,982	161,876,709	25	0.04078	14.37

Industry Total Composition (291 NAIC Combined Groups)

AAA Mid-Atlantic Insurance Group (Combined)	Central Mutual of Ohio Group (Combined)	Geovera Holdings, Inc. Group (Combined)	Munich Reinsurance America, Inc. (Combined)	SCF Arizona (Combined)
Acceptance Indemnity Insurance Company (Combined)	Cincinnati Equitable Insurance Cos (Combined)	Germania Mutual Group (Combined)	Mutual Benefit Ins. Co. (Combined)	SCOR Reinsurance Company Group (Combined)
Accident Fund Insurance Company of America (Combined)	Cincinnati Insurance Group (Combined)	Global Indemnity Group, Inc. (Combined)	Narragansett Bay Insurance Company Group (Combined)	SECURA Insurance Companies (Combined)
ACE American Insurance Company (Combined)	Civil Svc Employees & CSE Safeguard (Combined)	Global Re Corporation of America (Combined)	National Group (Combined)	Selective Insurance Company of America (Combined)
Affirmative Insurance Company (Combined)	Clarendon National Insurance (Combined)	Grange Insurance Association (Combined)	National Guaranty Insurance Company (Combined)	Sentry Insurance a Mutual Company (Combined)
Alfa Mutual Insurance Company (Combined)	CMG Mortgage Insurance Company (Combined)	Grange Mutual Cas Co (Combined)	National Indemnity Company (Combined)	Sequoia Insurance Company (Combined)
Alleghany Insurance Holdings, LLC (Combined)	CNA Surety Corporation (Combined)	Gray Insurance Company (Combined)	National Security Fire & Cas Company (Combined)	Shelter Mutual Insurance Company (Combined)
Allianz Global Risks US Ins Company (Combined)	Coliseum Reinsurance Company (Combined)	Greater New York Mutual Insurance Company (Combined)	Nationwide Mutual Insurance Company (Combined)	Sompo Japan Insurance Company of America (Combined)
Allied World Assurance Holdings Group (Combined)	Columbia Mutual Insurance Company (Combined)	Grinnell Mutual Group (Combined)	Navigators Insurance Company (Combined)	Southern Farm Bureau Cas Consolidated (Combined)
Allstate Insurance Group (Combined)	Commerce Insurance Company (Combined)	GuideOne Mutl & GuideOne Spclty Mutl (Combined)	NC Farm Bureau Insurance Group (Combined)	Southern General Financial Group (Combined)
Alterra Capital Group (Combined)	Concord General Mutual Insurance Co (Combined)	Hanover Insurance Company (Combined)	NCMIC Insurance Company (Combined)	SPARTA Insurance Company (Combined)
Ambac Assurance Corporation (Combined)	Consolidated Lloyds (Combined)	HANYS Member Hospss Self-Ins Trust (Combined)	New Jersey Manufacturers Ins Company (Combined)	Star Insurance Company (Combined)
Amerco Corporation (Combined)	Continental Casualty Company (Combined)	Harleysville Mutual Insurance Company (Combined)	New Jersey Skylands Insurance Association (Combined)	State Auto Group (Combined)
American Contractors Insurance Group (Combined)	Cooperativa de Seguros Múltiples de PR (Combined)	Hartford Fire Insurance Company (Combined)	New London County Mutual Ins Company (Combined)	State Farm Mutual Automobile Ins Co (Combined)
American European Insurance Group (Combined)	COUNTRY Mutual Insurance Company (Combined)	HCC Insurance Holdings Group (Combined)	New Mexico Mutual Group (Combined)	State National Insurance Company, Inc. (Combined)
American Family Mutual Ins Company (Combined)	Crum & Forster Insurance Companies (Combined)	Highmark Cas Ins Co. & HM Cas Ins Co. (Combined)	New York Central Mutual Fire Insurance Company (Combined)	Swiss Reinsurance America Corporation (Combined)
American Financial Group, Inc. (Combined)	Cumberland Insurance Group (Combined)	Hiscox Insurance Company Inc. (Combined)	New York Marine and General Ins Co (Combined)	Technology Insurance Company, Inc. (Combined)
American Hallmark Ins Co of TX (Combined)	CUMIS Insurance Society, Inc. (Combined)	Hochheim Prairie Insurance Group (Combined)	NGM Insurance Company (Combined)	Tennessee Farmers Mutual Insurance Company (Combined)
American Independent Companies, Inc. (Combined)	Dakota Group (Combined)	Homesite Insurance Group (Combined)	NORCAL Mutual Insurance Company (Combined)	TIG Insurance Company (Combined)
American International Group, Inc. (Combined)	De Smet Farm Mutl Ins Co of SD (Combined)	Horace Mann Insurance Company (Combined)	Norfolk & Dedham Group (Combined)	Tokio Marine Holdings, Inc. (Combined)
American Mercury Insurance Co. (Combined)	Developers Surety and Indemnity Company (Combined)	Houston General Insurance Exchange (Combined)	Nor Star Companies Group (Combined)	Topal Insurance Company (Combined)
American Mutual Share Insurance Corporation (Combined)	Direct General Group (Combined)	Houston International Insurance Group (Combined)	Ohio Farmers Ins. Co. (Combined)	Tower Hill Preferred & Omega Insurance Company (Combined)
American National P&C Company (Combined)	Doctors Co, An Interinsurance Exchange (Combined)	IDS Property Casualty Insurance Company (Combined)	Ohio Mutual Insurance Group (Combined)	Tower Hill Prime & Tower Hill Select (Combined)
American Safety Casualty Ins Company (Combined)	Donegal Mutual Insurance Company (Combined)	IMT Mutual Holding Group (Combined)	Oklahoma Farm Bureau Insurance Group (Combined)	Tower Insurance Company of New York (Combined)
AMERISAFE Group (Combined)	DTRIC Insurance Co., Ltd. (Combined)	Infinity P&C Insurance Group (Combined)	Old Republic General Insurance Group - U.S. (Combined)	Transatlantic Holdings Inc (Combined)
Amerisure Mutual Insurance Company (Combined)	Eastern Alliance Insurance Group (Combined)	Insurance Company of the West (Combined)	OneBeacon Insurance Group (Combined)	Travelers Companies, Inc. (Combined)
AmGUARD NorGUARD EastGUARD & WestGUARD (Combined)	Employers Holdings Inc. (Combined)	Integon National Insurance Company (Combined)	Oregon Mutual Insurance Company (Combined)	Triad Guaranty Insurance Company (Combined)
Amica Mutual Insurance Company (Combined)	Employers Mutual Casualty Company (Combined)	Island Insurance Companies (Combined)	Pacific Specialty Ins Co./Pacific Specialty P&C Co. (Combined)	Ulico Property and Casualty Group (Combined)
Apollo Casualty Company (Combined)	Endurance Group (Combined)	ISMIE Insurance Group (Combined)	Palisades Safety and Insurance Association (Combined)	Union Mutual of Vermont Companies (Combined)
Arbella Insurance Group (Combined)	Enumclaw Insurance Group (Combined)	James River Insurance Group (Combined)	Partner Reinsurance Co of the U.S. (Combined)	United Automobile Insurance Group (Combined)
Arch Capital Group (U.S.) Inc. (Combined)	Erie Insurance Group (Combined)	Kentucky Farm Bureau Mutl Ins Co (Combined)	PENCO Insurance Companies (Combined)	United Farm Family Mutual Ins Company (Combined)
Argo Group US, Inc. (Combined)	Esurance Insurance Company (Combined)	KnightBrook Ins Co Guilderland Re Co (Combined)	Penn Millers Insurance Company (Combined)	United Fire & Casualty Company (Combined)
ARI Mutual Insurance Company (Combined)	Everest Reinsurance Company (Combined)	Lackawanna Casualty Company (Combined)	Penn National Insurance (Combined)	United Services Automobile Association (Combined)
Arrowood Indemnity Company (Combined)	Evergreen National Indemnity Company (Combined)	Lancer Insurance Group (Combined)	Philadelphia Contributionship (Combined)	Unitrin P&C Insurance Group (Combined)
ARX Holding Corp (Combined)	Factory Mutual Insurance Company (Combined)	Liberty Mutual Insurance Company (Combined)	Philadelphia Indemnity Ins Company (Combined)	Universal Insurance Holdings of North America (Combined)
Aspen American Ins Co. & Aspen Specialty Ins Co. (Combined)	Farm Bureau Mutual Insurance Co of MI (Combined)	Loya Insurance Company (Combined)	Physicians Insurance A Mutual Group (Combined)	Universal Surety Co & Inland Ins Co. (Combined)
Assoc Industries of MA Mutl Ins Co (Combined)	Farm Bureau Mutual Insurance Company (Combined)	Lumbermens Mutual Casualty Company (Combined)	Plymouth Rock Assurance Corporation (Combined)	USF Insurance Company (Combined)
Assurant Group (Combined)	Farm Bureau Mutual Insurance Company of Idaho (Combined)	MAG Mutual Group (Combined)	PMI Mortgage Insurance Co. (Combined)	Utica Mutual Insurance Company (Combined)
Assured Guaranty Municipal Corp. (Combined)	Farmers Alliance Mutual Insurance Co (Combined)	Maiden Reinsurance Company (Combined)	ProAssurance Group of Companies (Combined)	Vermont Mutual Insurance Group (Combined)
Atlantic Casualty Insurance Company (Combined)	Farmers and Mechanics Mutual Group (Combined)	Maine Employers' Mutual Ins Group (Combined)	Producers Agriculture Insurance Company (Combined)	VFH Captive Insurance Company (Combined)
Atlantic Charter Insurance Company (Combined)	Farmers Auto Ins Assn & Auto Mgmt Corp (Combined)	MAPFRE PRAICO Corporation (Combined)	Progressive Insurance Group (Combined)	Virginia Farm Bureau Mutl Ins Co (Combined)
Auto Club Enterprises Insurance Group (Combined)	Farmers Insurance Group of Companies (Combined)	Markel and Affiliates (Combined)	ProMutual Group (Combined)	W.R. Berkley Corporation (Combined)
Auto Club Insurance Association (Combined)	Farmers Mutl Hail Ins Co of Iowa Group (Combined)	Maxum Specialty Insurance Group (Combined)	Protective Insurance Company (Combined)	Wawanesa Insurance Group (Combined)
Auto-Owners Insurance Company (Combined)	FCCL Insurance Group (Combined)	Medical Insurance Group (Combined)	Providence Group (Combined)	Western Mutual Insurance Group (Combined)
AXIS Specialty Insurance Company (Combined)	Federal Insurance Company (Combined)	Medical Liability Mutual Insurance Company (Combined)	Providence Washington Ins Company (Combined)	Western National Insurance Group (Combined)
Balboa Insurance Company (Combined)	Federated Mutual Group (Combined)	Medical Mutual Group (Combined)	Public Service Mutual Insurance Company (Combined)	Western Reserve Mutual Casualty Company (Combined)
Bankers Insurance Company (Combined)	Fidelity National Insurance Co. (Combined)	Medmarc Insurance Group (Combined)	PURE Group of Insurance Companies (Combined)	Western World Insurance Company (Combined)
Bar Plan Group (Combined)	Fire Districts NY Group (Combined)	Mendota Insurance Company (Combined)	QBE the Americas (Combined)	Wisconsin County Mutual Group (Combined)
Barnstable Group (Combined)	Fireman's Fund Insurance Companies (Combined)	Mercer Insurance Group (Combined)	Quanta Indemnity Company (Combined)	XL Reinsurance America Inc. (Combined)
Beacon Mutual Insurance Group (Combined)	First Acceptance Ins Company, Inc. (Combined)	Merchants Mutual Insurance Company (Combined)	Quincy Mutual Group (Combined)	Zenith Insurance Company (Combined)
Bond Safeguard Ins Co. & Lexon Ins Co. (Combined)	First Financial Insurance Company (Combined)	Mercury Casualty Company (Combined)	Radian Guaranty Inc. (Combined)	Zurich American Insurance Company (Combined)
Buckeye Insurance Group (Combined)	First Professionals Insurance Company, Inc. (Combined)	Merrimack Mutual Fire Ins Company (Combined)	Red Shield Insurance Company (Combined)	
Builders Insurance (A Mutual Captive) (Combined)	First State Insurance Group (Combined)	Metropolitan P&C Insurance Company (Combined)	ReliaMax Insurance Company (Combined)	
Builders Mutual Insurance Company (Combined)	Flexpoint Fund Group (Combined)	Middle Georgia Group (Combined)	RenRe North America Insurance Holdings Group (Combined)	
CA State Auto Assn Inter-Ins Bureau (Combined)	Florida Family Insurance Company (Combined)	Millers First Insurance Company (Combined)	Republic Companies, Inc. (Combined)	
California Capital Insurance Company (Combined)	Florists' Mutual Insurance Company (Combined)	Mitsui Sumitomo Insurance Group (Combined)	Republic Mortgage Insurance Company (Combined)	
California Casualty Indemnity Exchange (Combined)	Frankenmuth Insurance (Combined)	Mortgage Guaranty Ins Corporation (Combined)	RLI Insurance Company Group (Combined)	
Cameron Insurance Companies (Combined)	Franklin Homeowners (Combined)	Motorists Insurance Group (Combined)	Rockingham Mutual Insurance Company (Combined)	
Canal Insurance Company (Combined)	Franklin Mutual Group (Combined)	Motors Insurance Corporation (Combined)	Safety Insurance Company (Combined)	
Celina Mutual Group (Combined)	Genworth Mortgage Ins Corporation (Combined)	Mountain States Insurance Group (Combined)	Safeway Insurance Company (Combined)	

Large National Composition (35 NAIC Combined Groups)

ACE American Insurance Company (Combined)
Alleghany Insurance Holdings, LLC (Combined)
Allianz Global Risks US Ins Company (Combined)
Allstate Insurance Group (Combined)
American Financial Group, Inc. (Combined)
American International Group, Inc. (Combined)
Arch Capital Group (U.S.) Inc. (Combined)
Arrowood Indemnity Company (Combined)
Assurant Group (Combined)
CNA Surety Corporation (Combined)
Continental Casualty Company (Combined)
Factory Mutual Insurance Company (Combined)
Farmers Insurance Group of Companies (Combined)
Federal Insurance Company (Combined)
Fireman's Fund Insurance Companies (Combined)
First State Insurance Group (Combined)
Hanover Insurance Company (Combined)
Hartford Fire Insurance Company (Combined)
HCC Insurance Holdings Group (Combined)
Liberty Mutual Insurance Company (Combined)
Markel and Affiliates (Combined)
National Indemnity Company (Combined)
Nationwide Mutual Insurance Company (Combined)
OneBeacon Insurance Group (Combined)
Philadelphia Indemnity Ins Company (Combined)
Progressive Insurance Group (Combined)
QBE the Americas (Combined)
State Farm Mutual Automobile Ins Co (Combined)
TIG Insurance Company (Combined)
Tokio Marine Holdings, Inc. (Combined)
Travelers Companies, Inc. (Combined)
United Services Automobile Association (Combined)
W.R. Berkley Corporation (Combined)
Zenith Insurance Company (Combined)
Zurich American Insurance Company (Combined)

Small Regional Composition (157 NAIC Combined Groups)

Accident Fund Insurance Company of America (Combined)	Farmers Alliance Mutual Insurance Co (Combined)	NC Farm Bureau Insurance Group (Combined)
Aegis Security Insurance & American Sentinel Insurance Cos. (Combined)	Farmers and Mechanics Mutual Group (Combined)	NCMIC Insurance Company (Combined)
Affirmative Insurance Company (Combined)	Farmers Auto Ins Assn & Auto Mgmt Corp (Combined)	New London County Mutual Ins Company (Combined)
Alfa Mutual Insurance Company (Combined)	Farmers Mutl Hail Ins Co of Iowa Group (Combined)	New Mexico Mutual Group (Combined)
American Contractors Insurance Group (Combined)	FCCI Insurance Group (Combined)	New York Central Mutual Fire Insurance Company (Combined)
American European Insurance Group (Combined)	Federated Mutual Group (Combined)	NGM Insurance Company (Combined)
American Hallmark Ins Co of TX (Combined)	Fidelity National Insurance Co. (Combined)	NORCAL Mutual Insurance Company (Combined)
American Independent Companies, Inc. (Combined)	First Acceptance Ins Company, Inc. (Combined)	Norfolk & Dedham Group (Combined)
American Mutual Share Insurance Corporation (Combined)	First Professionals Insurance Company, Inc. (Combined)	North Star Companies Group (Combined)
AMERISAFE Group (Combined)	Florists' Mutual Insurance Company (Combined)	Oklahoma Farm Bureau Insurance Group (Combined)
Amerisure Mutual Insurance Company (Combined)	Frankenmuth Insurance (Combined)	Oregon Mutual Insurance Company (Combined)
AmGUARD NorGUARD EastGUARD & WestGUARD (Combined)	Franklin Homeowners (Combined)	PEMCO Insurance Companies (Combined)
Apollo Casualty Company (Combined)	Franklin Mutual Group (Combined)	Penn Millers Insurance Company (Combined)
Arbella Insurance Group (Combined)	Geovera Holdings, Inc. Group (Combined)	Penn National Insurance (Combined)
Argo Group US, Inc. (Combined)	Germania Mutual Group (Combined)	Philadelphia Contributionship (Combined)
ARI Mutual Insurance Company (Combined)	Grange Insurance Association (Combined)	Physicians Insurance A Mutual Group (Combined)
ARX Holding Corp (Combined)	Gray Insurance Company (Combined)	ProAssurance Group of Companies (Combined)
Assoc Industries of MA Mutl Ins Co (Combined)	Greater New York Mutual Insurance Company (Combined)	ProMutual Group (Combined)
Assured Guaranty Municipal Corp. (Combined)	Grinnell Mutual Group (Combined)	Providence Group (Combined)
Atlantic Charter Insurance Company (Combined)	GuideOne Mutl & GuideOne Spclty Mutl (Combined)	Public Service Mutual Insurance Company (Combined)
Bankers Insurance Company (Combined)	HANYS Member Hosps Self-Ins Trust (Combined)	Quincy Mutual Group (Combined)
Bar Plan Group (Combined)	Hochheim Prairie Insurance Group (Combined)	Red Shield Insurance Company (Combined)
Barnstable Group (Combined)	HomeSite Insurance Group (Combined)	ReliaMax Insurance Company (Combined)
Beacon Mutual Insurance Group (Combined)	Horace Mann Insurance Company (Combined)	RenRe North America Insurance Holdings Group (Combined)
Buckeye Insurance Group (Combined)	Houston General Insurance Exchange (Combined)	Republic Companies, Inc. (Combined)
Builders Insurance (A Mutual Captive) (Combined)	IDS Property Casualty Insurance Company (Combined)	RLI Insurance Company Group (Combined)
California Capital Insurance Company (Combined)	ILM Group (Combined)	Rockingham Mutual Insurance Company (Combined)
California Casualty Indemnity Exchange (Combined)	Infinity P&C Insurance Group (Combined)	Safety Insurance Company (Combined)
Cameron Insurance Companies (Combined)	Island Insurance Companies (Combined)	SECURA Insurance Companies (Combined)
Celina Mutual Group (Combined)	ISMIE Insurance Group (Combined)	Sequoia Insurance Company (Combined)
Central Mutual of Ohio Group (Combined)	Kentucky Farm Bureau Mutl Ins Co (Combined)	Sompo Japan Insurance Company of America (Combined)
Cincinnati Equitable Insurance Cos (Combined)	Lackawanna Casualty Company (Combined)	South Carolina Farm Bureau Mutual Insurance Company (Combined)
Civil Svc Employees & CSE Safeguard (Combined)	Loya Insurance Company (Combined)	Southern General Financial Group (Combined)
CMG Mortgage Insurance Company (Combined)	MAG Mutual Group (Combined)	State National Insurance Company, Inc. (Combined)
Columbia Mutual Insurance Company (Combined)	Maine Employers' Mutual Ins Group (Combined)	Tennessee Farmers Mutual Insurance Company (Combined)
Concord General Mutual Insurance Co (Combined)	MAPFRE PRAICO Corporation (Combined)	Topa Insurance Company (Combined)
Cumberland Insurance Group (Combined)	Medical Insurance Group (Combined)	Ullico Property and Casualty Group (Combined)
CUMIS Insurance Society, Inc. (Combined)	Medical Liability Mutual Insurance Company (Combined)	United Automobile Insurance Group (Combined)
Dakota Group (Combined)	Medical Mutual Group (Combined)	United Farm Family Mutual Ins Company (Combined)
Developers Surety and Indemnity Company (Combined)	Mercer Insurance Group (Combined)	United Fire & Casualty Company (Combined)
Direct General Group (Combined)	Merchants Mutual Insurance Company (Combined)	Universal Surety Co & Inland Ins Co. (Combined)
Doctors Co, An Interinsurance Exchange (Combined)	Merrimack Mutual Fire Ins Company (Combined)	USF Insurance Company (Combined)
Donegal Mutual Insurance Company (Combined)	Middle Georgia Group (Combined)	Utica Mutual Insurance Company (Combined)
Eastern Alliance Insurance Group (Combined)	Millers First Insurance Company (Combined)	Vermont Mutual Insurance Group (Combined)
Employers Holdings Inc. (Combined)	Mitsui Sumitomo Insurance Group (Combined)	VFH Captive Insurance Company (Combined)
Endurance Group (Combined)	Motorists Insurance Group (Combined)	Virginia Farm Bureau Mutual Ins Co (Combined)
Enumclaw Insurance Group (Combined)	Mountain States Insurance Group (Combined)	Wawanesa Insurance Group (Combined)
Esurance Insurance Company (Combined)	Mutual Benefit Ins. Co. (Combined)	Western Mutual Insurance Group (Combined)
Evergreen National Indemnity Company (Combined)	Narragansett Bay Insurance Company Group (Combined)	Western National Insurance Group (Combined)
Farm Bureau Mutual Insurance Co of MI (Combined)	National American Insurance Company of California (Combined)	Western Reserve Mutual Casualty Company (Combined)
Farm Bureau Mutual Insurance Company (Combined)	National Group (Combined)	Wisconsin County Mutual Group (Combined)
Farm Bureau Mutual Insurance Company of Idaho (Combined)	National Security Fire & Cas Company (Combined)	Safeway Insurance Company (Combined)
		Union Mutual of Vermont Companies (Combined)

Reinsurer Composition (36 NAIC Companies)

Arch Reinsurance Co.	Putnam Reinsurance Co.
AXIS Reinsurance Co.	PXRE Reinsurance Co.
Dorinco Reinsurance Co.	QBE Reinsurance Corp.
EMC Reinsurance Co.	Odyssey America Re Corp.
Endurance Re Corp. of America	PARIS RE America Insurance Co.
Everest Reinsurance Co.	Partner Re Co. of the U.S.
Excalibur Reinsurance Corp.	Platinum Underwriters Re Inc.
Finial Reinsurance Co.	Putnam Reinsurance Co.
General Reinsurance Corp.	PXRE Reinsurance Co.
Global Reinsurance Corp. of Am	QBE Reinsurance Corp.
Munich American Re Co.	SCOR Reinsurance Co.
Munich Reinsurance America Inc	Shelter Reinsurance Co.
New England Reinsurance Corp.	Swiss Reinsurance America Corp
New Jersey Re-Insurance Co.	Toa Reinsurance Co. of America
Odyssey America Re Corp.	Transatlantic Reinsurance Co.
PARIS RE America Insurance Co.	Trenwick America Re Corp.
Partner Re Co. of the U.S.	White Mountains Re Co. of Am
Platinum Underwriters Re Inc.	XL Reinsurance America Inc.

The Value of Economic Capital Modeling

Enterprise Risk Management Defined

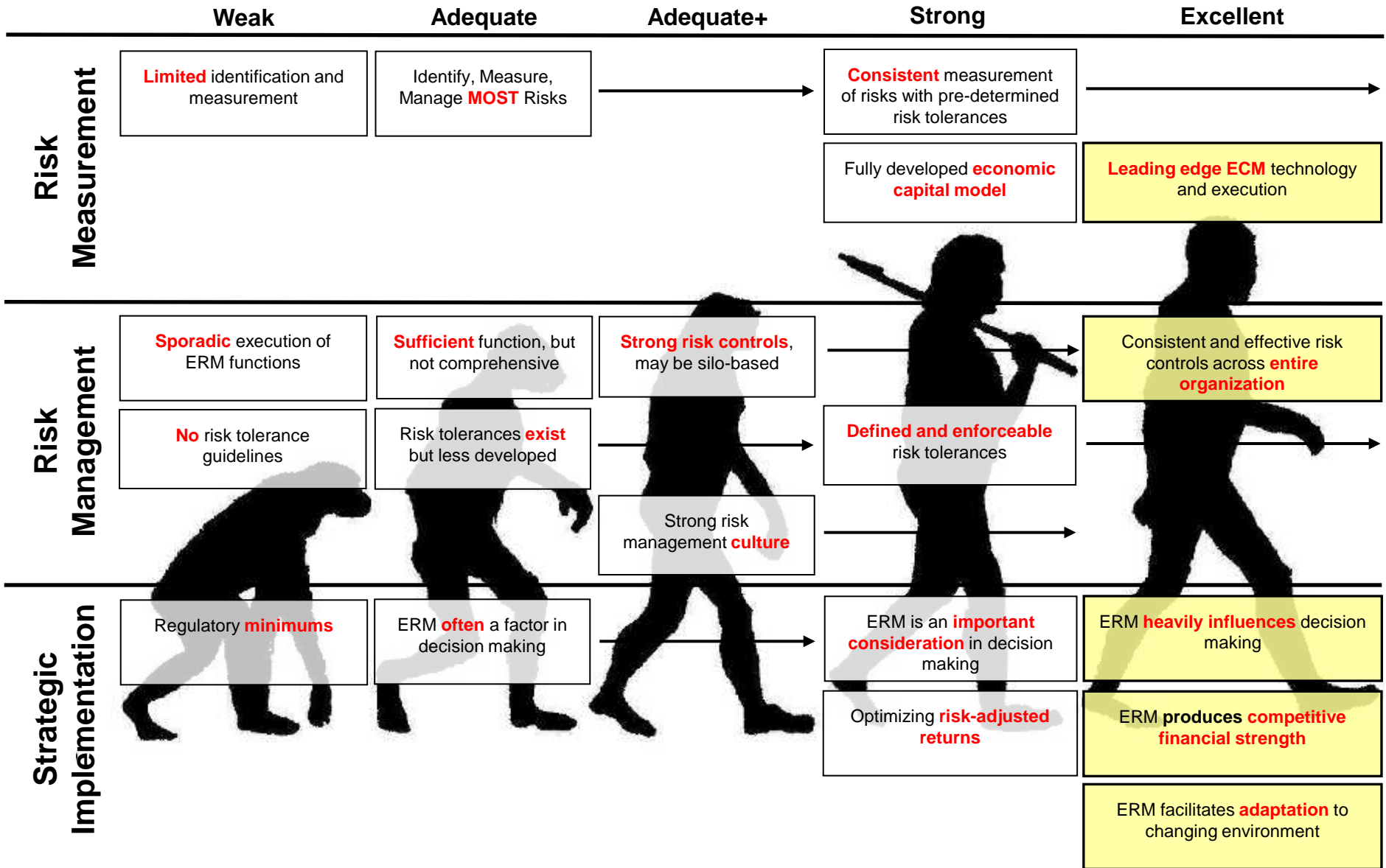
- Enterprise Risk Management is the process of systematically and comprehensively:
 - **Identifying** critical risks
 - **Assessing** and **quantifying** their impacts, where possible
 - Implementing integrated strategies to **mitigate, manage, and price** risk.
 - Thereby **maximizing enterprise value**

Establishing Risk Thresholds

Definitions

- Risk **Profile**:
 - Parameters for executing a business strategy.
 - Classes of business, rating tiers, residual vs. commercial market
 - Expense structure
 - Etc.
- Risk **Appetite**:
 - Acceptable uncertainty a company given the corresponding reward.
 - “Retention of net catastrophic risk less than or equal to peers”
 - “Avoidance of excessive underwriting volatility”
 - Etc.
- Risk **Tolerance**:
 - Limits of a company’s capacity for taking on risk.
 - “Risk exposure to medical inflation as a percentage of surplus”
 - “Probability of maintaining an A rating”
 - Etc.

The Evolution of an Excellent ERM Practice





GUY CARPENTER