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Enterprise Based Asset Allocation:
An Application of the Enterprise Capital & Risk Management

June 1, 2006

An Application of Enterprise Capital and Risk Management

- Enterprise Capital and Risk Management
- Enterprise Based Asset Allocation ("EBAA")
- Components
- Application/Results
- Final Caveat
- Summary

Enterprise Capital and Risk Management

- → **Background**
- → **Philosophy**

Enterprise Capital and Risk Management:

Background - Identifying Measurable & Manageable Capital Risk Exposures – Some of Which Can Be "Modeled"

Operational

- Governance/Internal Control Failure
- Technology Obsolescence
- Distribution Ineffectiveness
- Rogue/Illicit Behaviors
- Human Resource Policies and Practices

Environmental

- Judicial Contractual Reformation
- Rate/Form/Regulatory
- Tax/Legislative Change
- Current and Prospective Tax Profile
- Changing Rating Agency/Regulatory Temperaments
- Natural Disasters
- Social/Economic Inflation

Financial

- Underwriting
  - Selection/Pricing Standards vs Adherence
  - Reinsurance Structure, Adequacy & Failure
  - Claims Policies/Procedures vs. Practices
  - Loss Cost/Reserve Mis-Statements
- Investment
  - Asset Allocation Mistakes
  - Credit//Liquidity Failures
  - Duration/Optionality Mis-Calculation
  - (Retroactive) Accounting Changes
- Leverage/Capital Structure
  - Over-Reaching Operational & Reserve Leverage
  - Debt/Equity Leverage
  - Share Repurchase/Issuance
  - Inter-related Operating Results/Debt Covenants
  - Goodwill Collapse

Enterprise Capital and Risk Management:
Philosophy

Enterprise Return (and Risk) Impacted by Four Dominant Factors . . .

Return on Equity	=	Underwriting Leverage	X	Underwriting Margin	+	Investment Leverage	X	Return on Assets

For Which We Believe . . .

- The Objective is to Maximize Long-Term After-tax Total Return on Equity Subject to Company
  - Risk Tolerances
  - Income Requirements
  - All Other Specific Constraints

- And, the Strategy Components are:
  - Enterprise Based Asset Allocation Framework
  - Mean Reversion of Product Line and Asset Returns
  - Company Specific Customization

View The Enterprise as a Stream of Probabilistic Cash Flows With Future Contingent Calls Occasioned by the Incidence of Taxes

Enterprise Capital and Risk Management:
Philosophy: An Integrated Evaluation "Process"

Operating and Financial Opportunities . . .

- Capital Structure
- Capital Allocation
- Product Line Mix
- Asset Allocation
- Reinsurance Structure
- Acquisitions/New Products

Regardless of Success Measure . . .

- Total Return On Equity
- Operating Margins
- Earnings Growth & Volatility
- Capital Impairment Probability
- Price/Book Multiple
- Financial Ratings

Are Evaluated in an Integrated Framework Reflecting Business Environment.

- Regulation
- Rating Agencies
- Taxation

Enterprise Based Asset Allocation

- → **Purpose**
- → **Methods**

Enterprise Based Asset Allocation:
Four-Fold Purpose

Formulate Investment Objectives, Policy and Guidelines

- Total Return Goals vs. Operating Income Requirements
- Risk Measures and Tolerances
- Defined Minimums and Maximums

Establish "Strategic" and Tactical Asset Class Allocation Capacity and Limits

- Equity vs. Fixed Income (Sub-Sector Credit, Duration & Optionality)
- Taxable vs. Tax-Exempt
- Alternative Asset Classes

Reflect Business Operating Environment

- Insurance Underwriting Results and Leverage
- Current and Prospective Tax Profile
- Regulatory Requirements and Rating Agency Expectations

Benchmark Investment Performance

- Enterprise Based Investment Benchmarks® (EBIB®)*
- Pre-Tax and After-Tax Total Return and Book Income Metrics
- Bookmark℠* Customization to Investment Policy Statement and Portfolio Cash Flows

Enterprise Based Asset Allocation:
Methods' Overview

Enterprise Based Capital Management Discipline

Comprehensive Efficient Frontier Return on Equity/Risk Evaluation

- Product Line Underwriting Margins & Volatility
- Asset Class Returns & Volatility
- Correlations (Among Products, Among Assets and Between Assets and Products)
- Leverage and Taxes
- Multiple (And Competing) Return and Risk Measures

Financial Statement Simulation

- Multi-Period/Multi-Line/Multi-Statement/Multi-Accounting Conventions
- Varied Line of Business Premium, Combined Ratios and Loss Payout Pattern
- Changing Interest Rate/Investment Return Environments
- Deterministically Simulated Impact of Alternative Investment Strategies

Dynamic Financial Analysis*

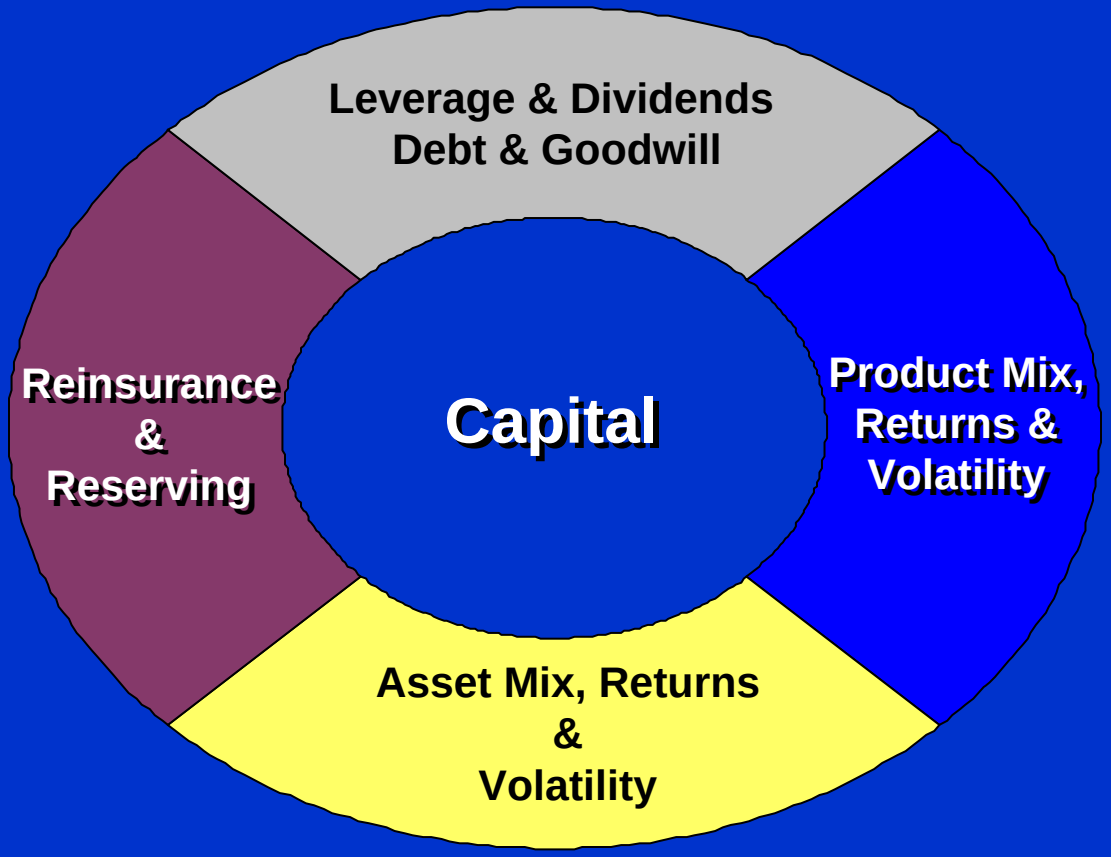
- Multi-Period/Multi-Line GAAP & Statutory Financial Results
- Defined/Calculated Probability Distributions for Loss Frequency /Severity and Asset Returns
- Stochastically Generated Multi-Path Impact of Alternative Investment Strategies

Enterprise Asset Allocation ≠ Duration "Matching" or Balance Sheet Risk Partitioning

* ALM.IT® Asset Liability Management – Insurance Tool, Registered Mark of General Reinsurance Corporation

Enterprise Based Asset Allocation:
Methods - Enterprise Capital Management Discipline

Components of Capital Management . . .

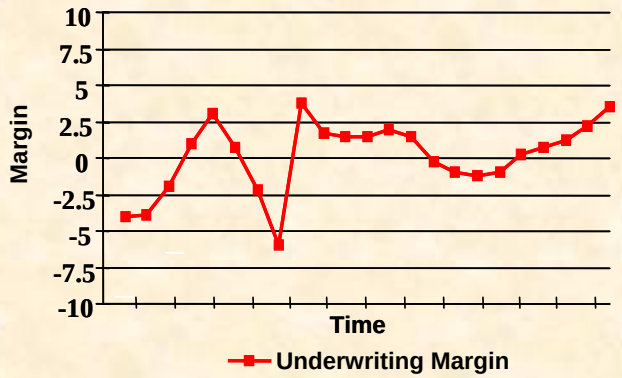


Are Analyzed in an Integrated Framework.

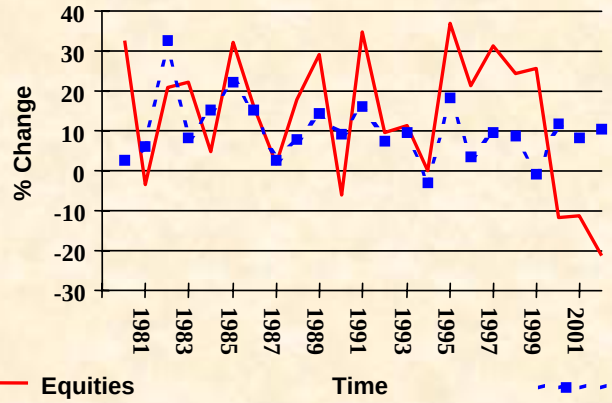
Enterprise Based Asset Allocation:

Methods - Measuring and Managing Risk/Return Tradeoffs Within The Context of The Insurance Enterprise

Combining *unpredictable* underwriting results . . .



with *uncertain* investment outcomes . . .



Return

- Operating Earnings
- Net Income

External Factors

- Regulatory/Accounting
- Rating Agencies/Analysts
- Tax Considerations
- Ownership Constituency

. . . to measure and manage risk/return trade-offs from operations, investments, leverage, etc., across the enterprise.

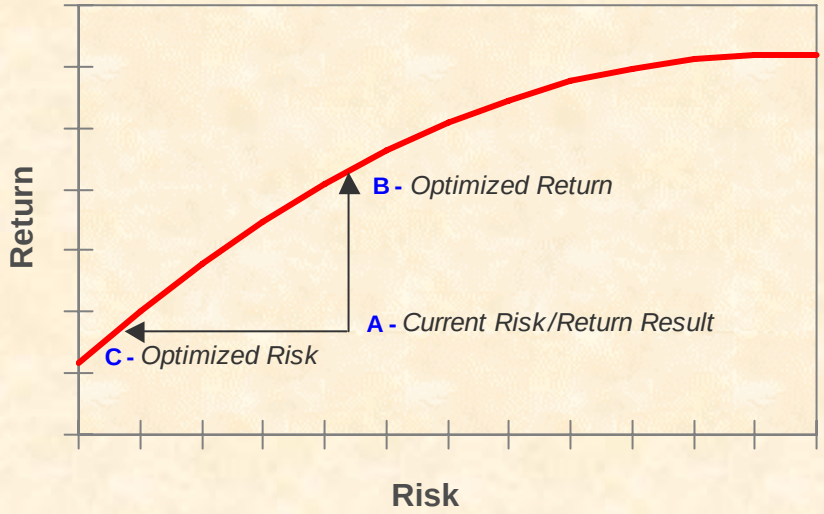
Risk Measures

- Earnings Shortfall
- ***Probability of Capital Impairment***

Enterprise Based Asset Allocation:

Methods - Bridging From Enterprise Efficient Frontier Analysis To Financial Simulation and Stress Testing

Efficient Frontier Analysis



Financial Outcomes

Net Written Prem
A/Y LR
Underwriting Exp
U/W G/L
Taxable Int Inc
After-tax Inc

Prem. Recpt
Losses Pd
Expenses Pd
II Receipts
Net Operating CF
Taxes Pd
Net Cash Flow

Stocks
Tax-exempts
Taxables
Other Assets
Total Assets
Loss Reserves
Unearned Premium
Other Liabilities
Surplus
Total Liabilities

Components

- → Asset Returns & Risk
- → Fixed Income Peculiarities
- → Product Line Behaviors (and Correlations to Assets)
- → Partitioning Risk

Several Asset Classes Offer Superior Risk Adjusted Returns While Others Are Seriously Disadvantaged, and Income Uniformly Drives Total Return

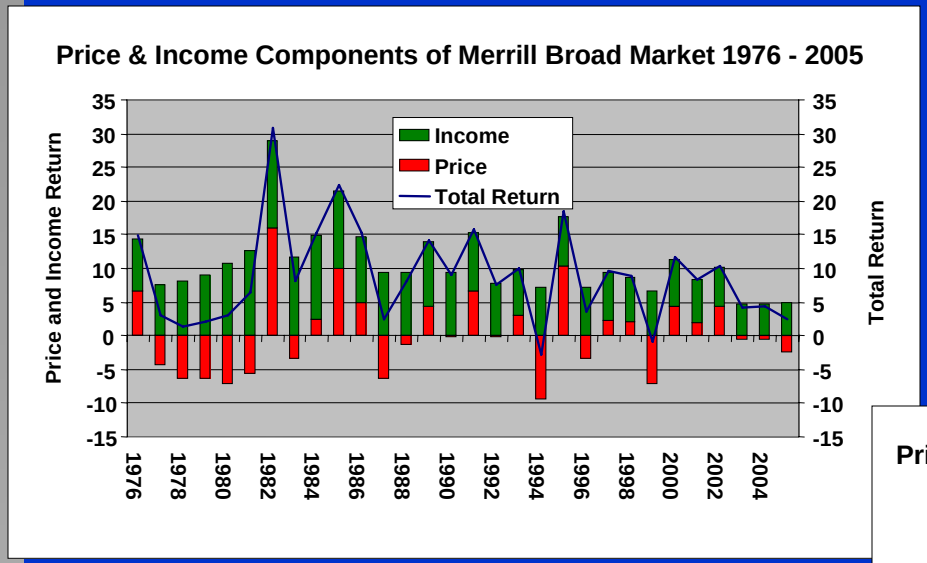
Asset Returns & Risk

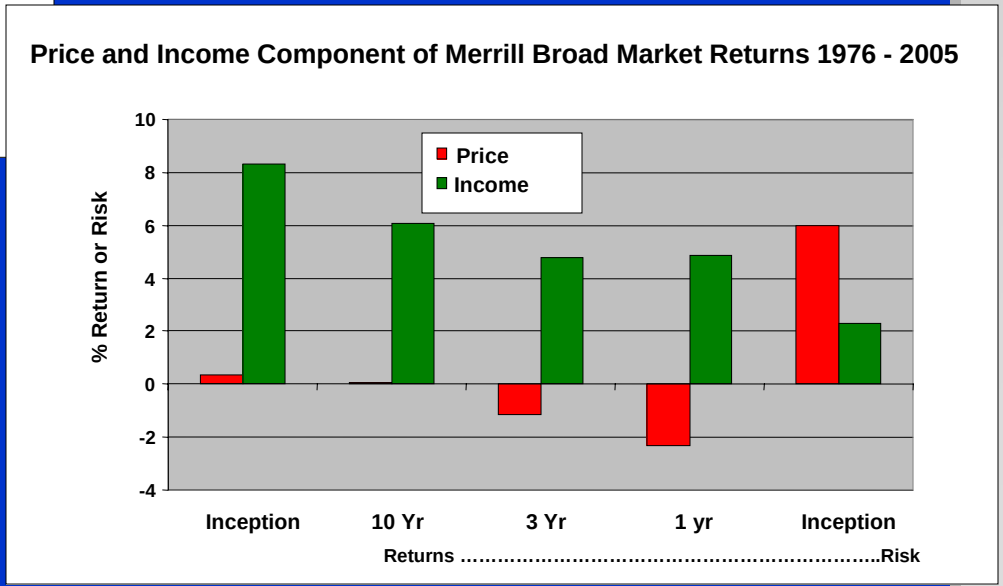
	Total Return 1980 - 2005				Return Per Unit of Risk			Five Year Statistics 2001 - 2005		
Sector	Inception	10 year	5 year	1 year	Inception	10 Yr	5 Yr	Effective Duration	Effective Yield	Income Return
Treasury	9.14	5.98	5.47	1.45	1.16	1.11	1.13	4.57	3.86	5.73
Agency	9.52	6.61	6.27	1.63	1.27	1.47	1.24	4.68	4.27	5.65
AA Corporate	9.63	7.07	7.46	1.76	1.37	1.37	1.36	4.95	4.62	6.08
High Yield	9.60	6.56	8.39	2.74	0.95	0.69	0.72	4.46	9.51	8.89
ABS	7.94	5.72	5.01	2.58	1.90	2.23	1.72	2.11	3.92	5.23
MBS Fixed	9.46	6.26	5.61	2.62	1.09	1.92	1.87	2.85	4.86	4.93
CMBS	10.49	7.09	6.89	1.84	1.23	1.29	1.36	4.79	4.78	6.08
Municipal*	9.17	7.22	7.03	3.47	1.81	2.39	2.04	4.42	4.61	7.02
S&P 500	13.15	9.08	0.54	4.92	0.82	0.47	0.03			
MSCI EAFE	10.81	5.05	3.01	14.17	0.48	0.24	0.11			
Convertibles	11.46	8.84	4.22	1.01	0.83	0.55	0.30			

Source: Merrill Lynch, Ibottson, Morgan Stanley and GR-NEAM Analytics EXCEL/Merrill/2006/EFF Upload Statistics
* Municipal at Tax Equivalent

Income is The Overwhelmingly Dominant Driver of Total Return and Price is The Dominant Component of Risk (Look Elsewhere for "Total Return")

Fixed Income Peculiarities





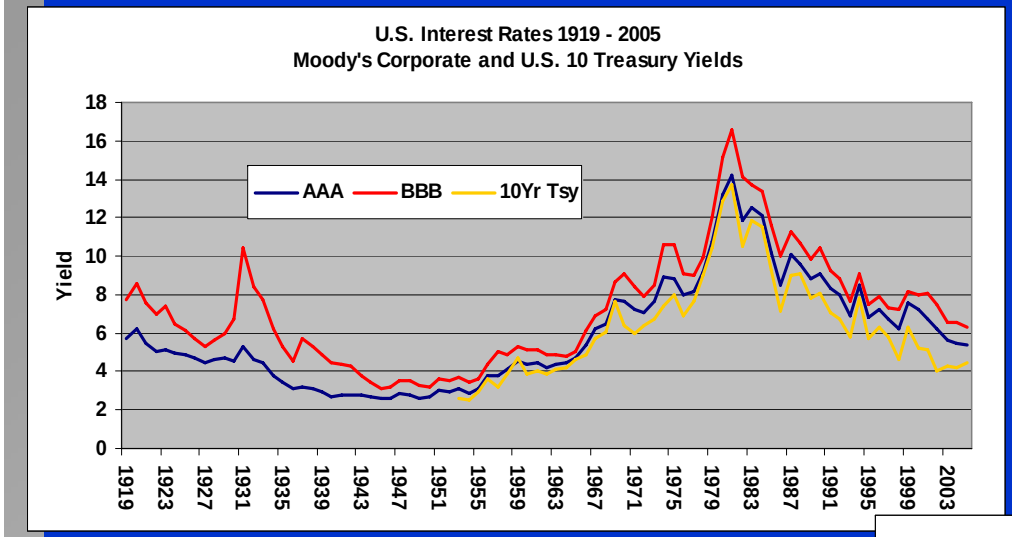
There Are Numerous Fixed Income Risk Exposures and They Vary By Sector

Fixed Income Risk Exposures

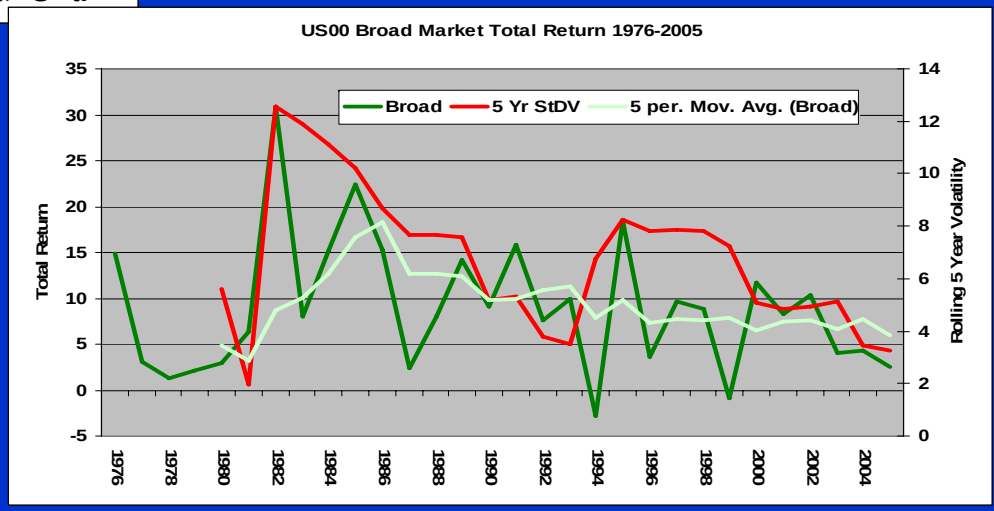
Sector	Interest Rate Risk	Optionality	Credit Down Grade - Default	Liquidity	Principal Accounting Consideration
U.S. Government	Varies	Very Low	None	High	EITF 03-1
Corporate (Inv. GRD)	Varies	Low	Varies	Varies	OTTI, EITF 03-1
High Yield BB	Varies	Varies	High	Varies	OTTI, EITF 03-1
Asset-Backed	Modest	Varies	De minimus	Varies	EITF 99-20, EITF 03-1, FAS 91
Mortgage Backed	Varies	High	De minimus	High	EITF 99-20, EITF 03-1, FAS 91
Municipals	Varies	Varies	De minimus	Varies	EITF 03-1

Source: GR-NEAM Analytics

As U.S. Interest Rates Have Declined From Historic Highs, Broad Market Total Returns Have Drifted Downward and Volatility Has Lessened



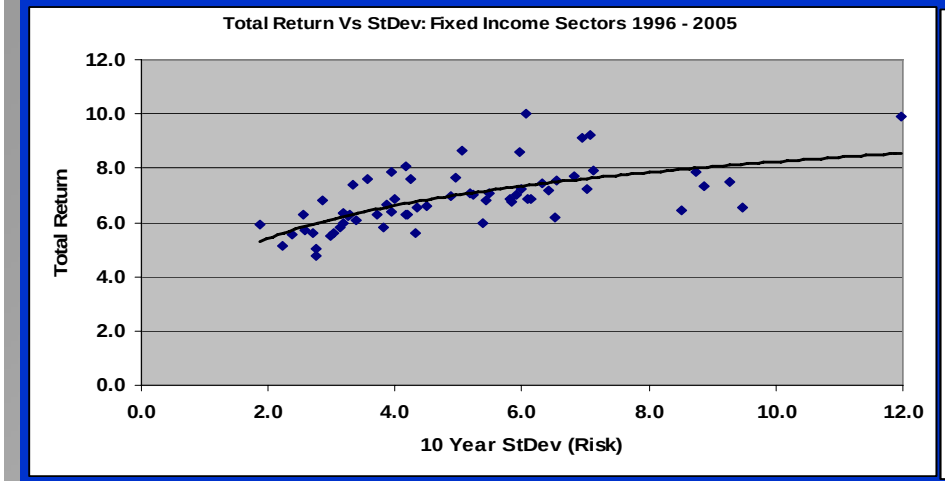
Fixed Income Peculiarities

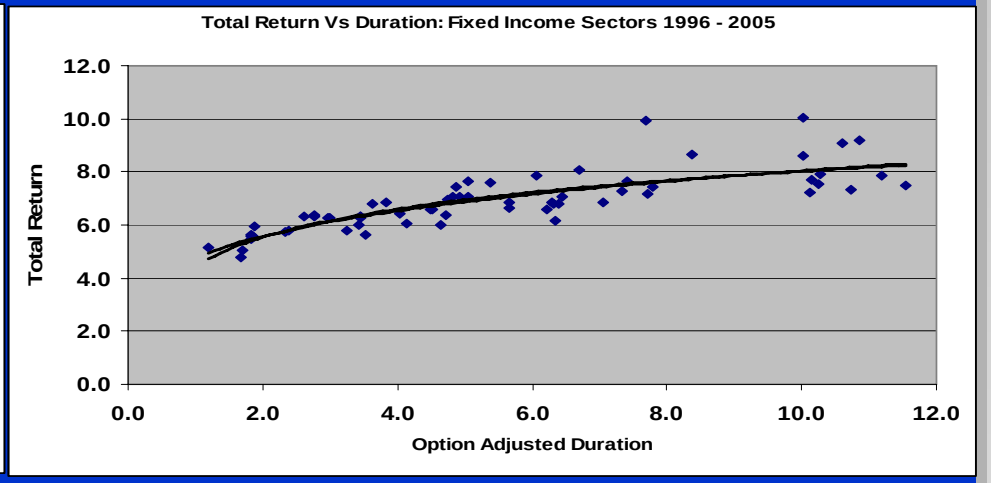


Source: U. S. Federal Reserve, Merrill Lynch and GR-NEAM Analytics
EXCEL Corre-Covar Stable/Covariance Stability ML Treasury - Credit ,
Historic Bond Time Series 1919 - Present

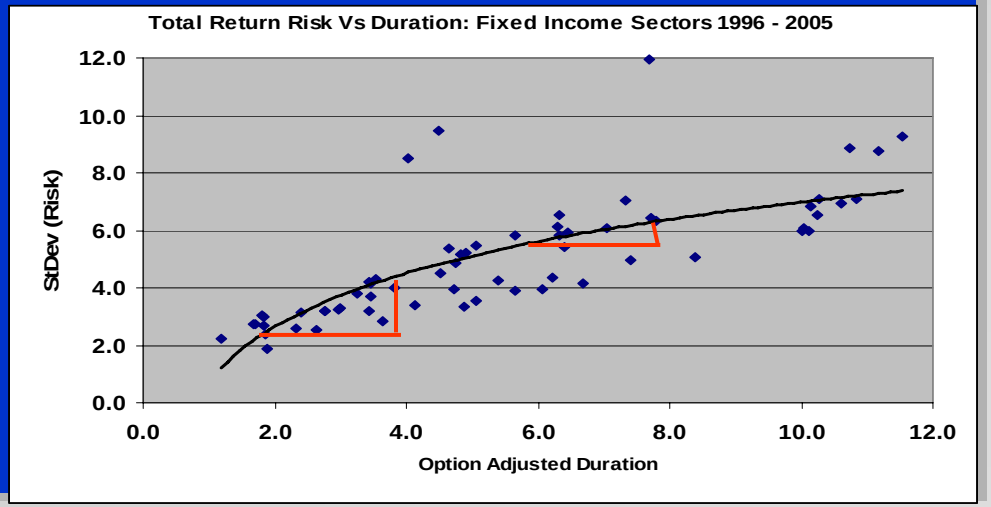
Total Return/Risk Trade-offs Among Domestic Fixed Income Classifications Reveal Duration's Decreasing Relevance of Fixed Income Volatility Reflecting Credit, Optionality and Event Risk

Incremental Total Return Is Earned Only As Volatility of Return (Risk) & Duration Increase . . .





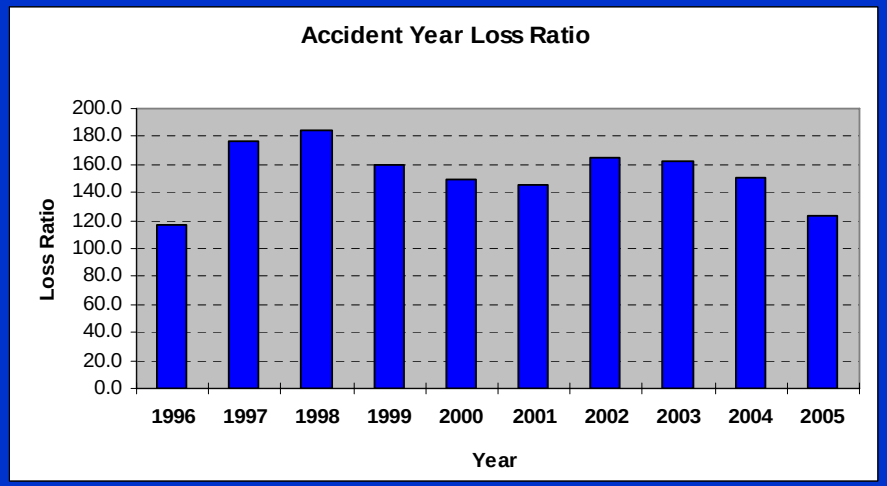
. . . However, Incremental Risk (Volatility of Return) Increases at a *Decreasing* Rate as Duration Increases.

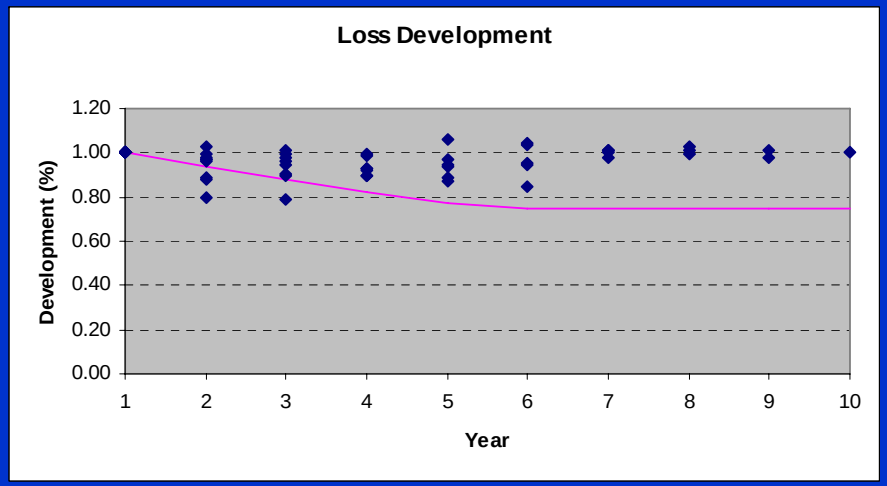


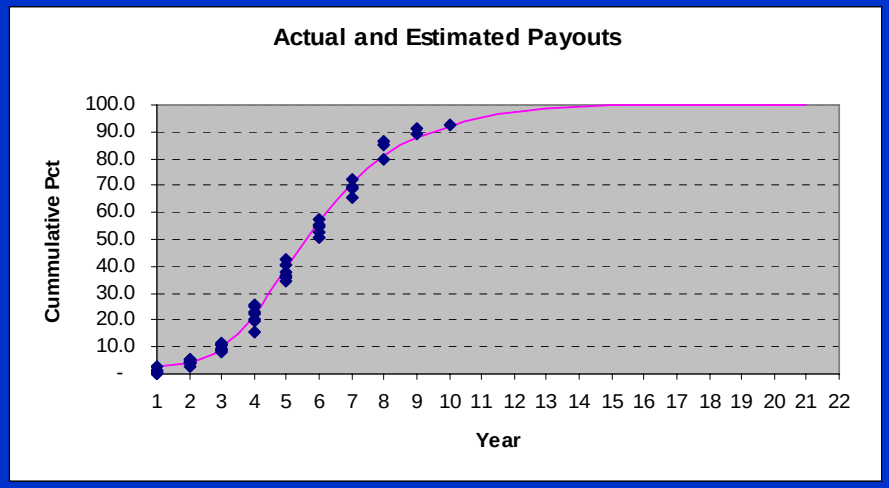
Source: Merrill Lynch and GR-NEAM Analytics.
Municipal Data at Tax Equivalents @ EXCEL/MERRILL/2006 EFF Uploads Statistics

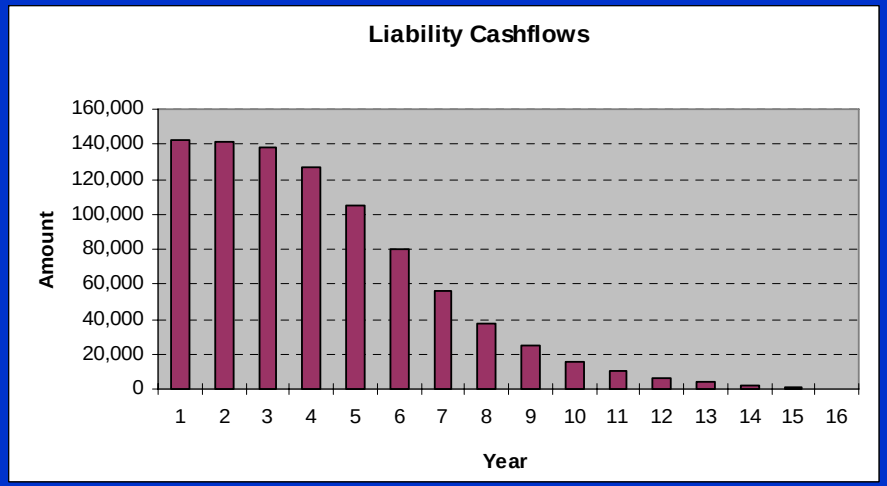
Detailing Product Line and Company Underwriting Results

Product Line Behaviors (& Correlations to Asset Returns





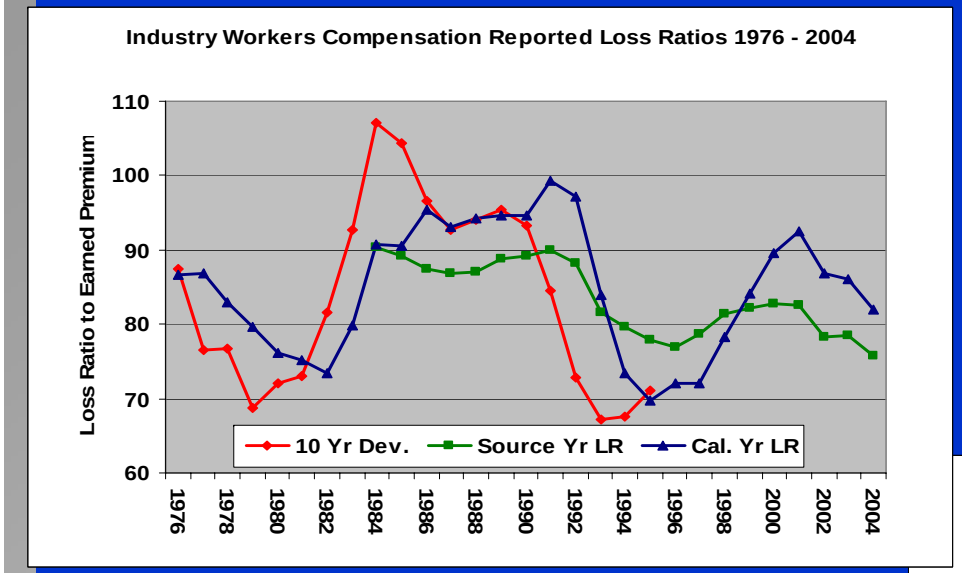




Source: National Underwriter Insurance Data Services From Highline Data

Historic Reporting Understates Volatility and the Loss Ratios' Correlation to Interest Rates Needs to Be Managed (Work Comp)

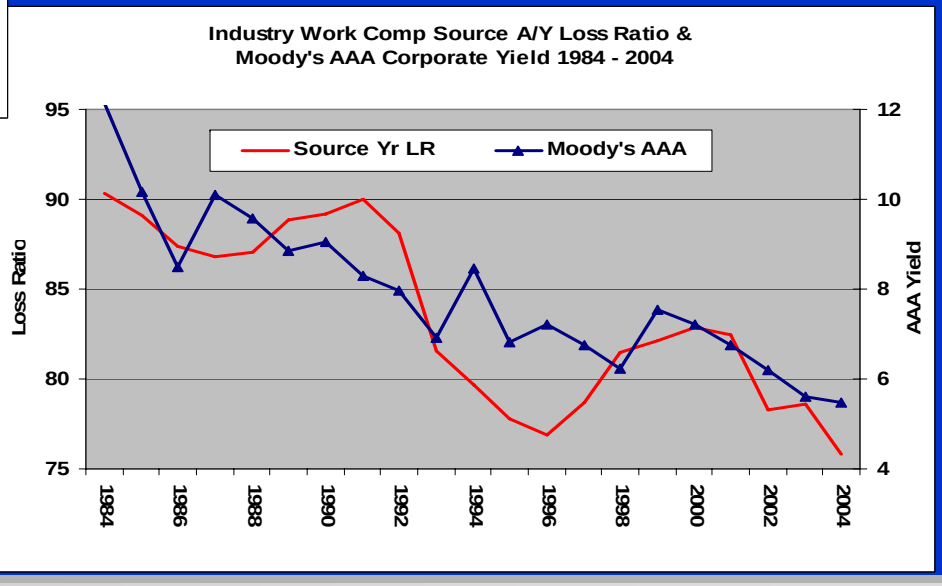
Product Line Behaviors (& Correlations to Asset Returns



Multiple Loss Ratio Metrics With Differing Risk (Volatility) Estimates. . . . .

	10 Yr Dev.	Source Yr LR	Cal. Yr LR
Average	83.8	83.5	84.9
Risk (StDv)	12.6	4.9	8.6

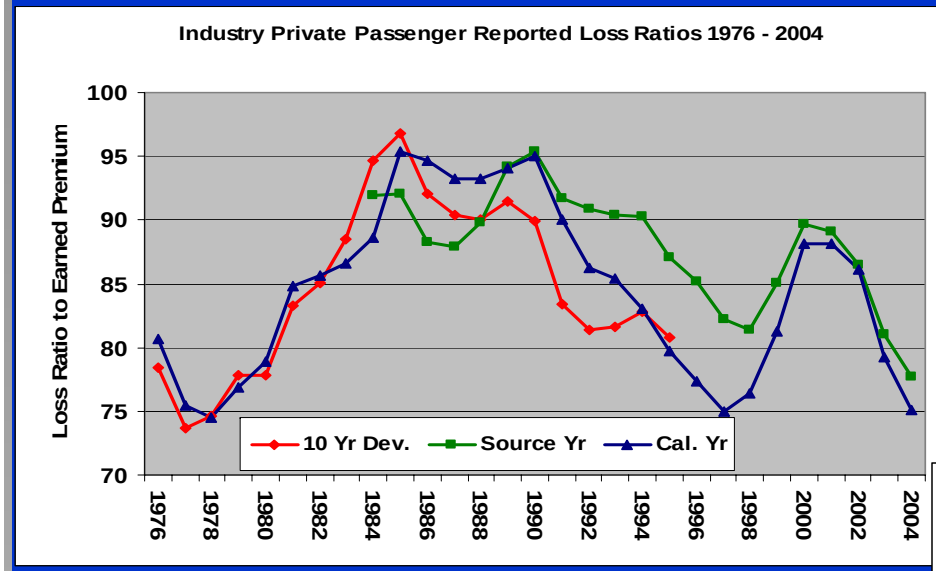
Historic Industry Loss Ratios Appear to Track Investment Yields (Correlation - R^2 = 65%) . . . .



Source: Loss & Loss Adj. Ratio @ A.M. Best Schedule P Summaries.
EXCEL/FIN MODELS/Correlation Line of Business.
Source: GR-NEAM Analytics

Private Passenger Auto Liability Volatility is Not Masked by Reporting But the Loss *Ratios* Correlation to Interest Rates Still Needs to Be Managed

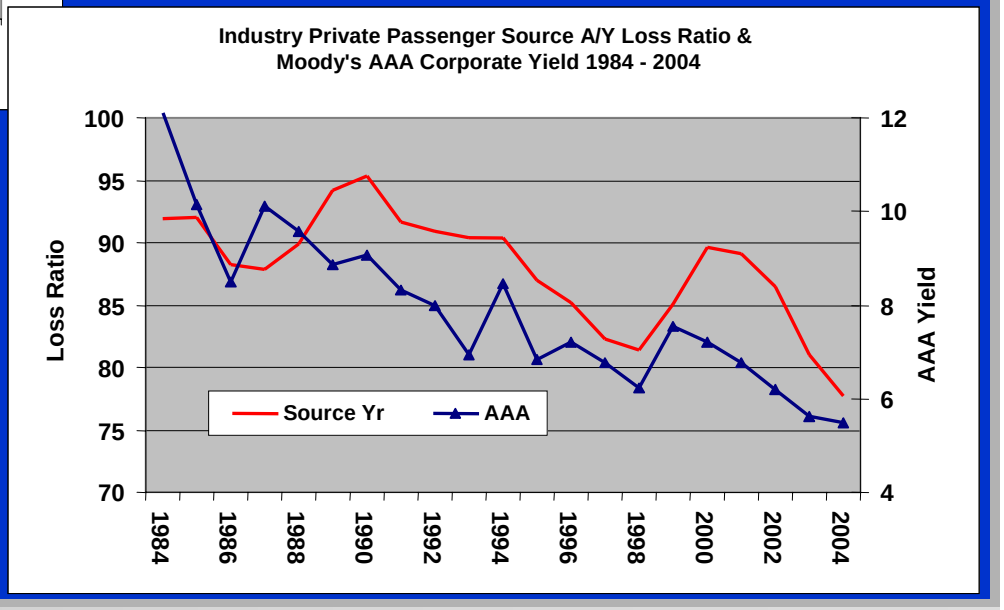
Product Line Behaviors (& Correlations to Asset Returns



Multiple Loss Ratio Metrics With Differing Risk (Volatility) Estimates. . . . .

	10 Yr Dev.	Source Yr	Cal. Yr
Average	84.7	88.0	84.4
Risk (StDv)	6.7	4.6	6.8

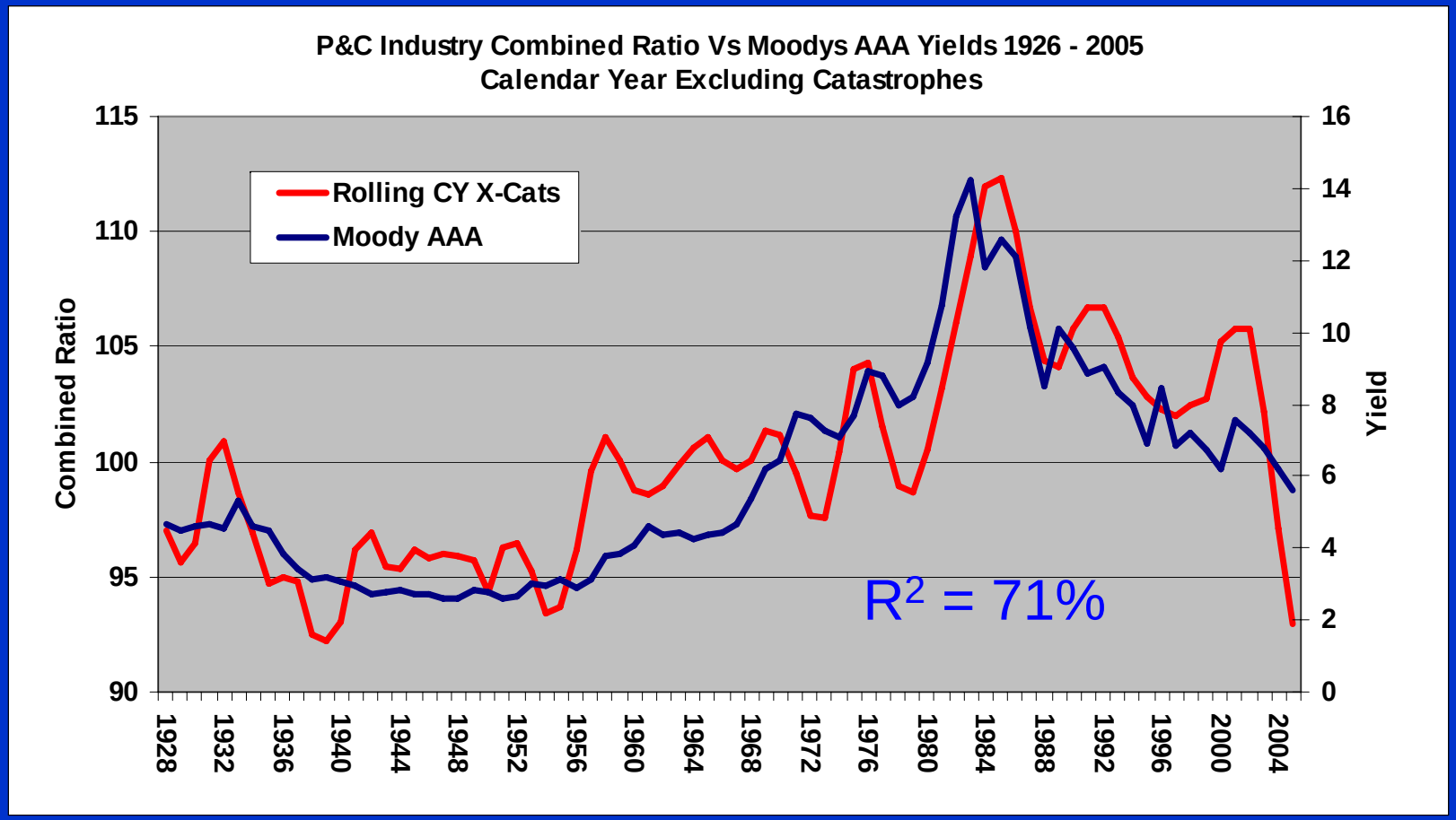
Historic Industry Loss Ratios Appear to Track Investment Yields (Correlation - R^2 = 76%) . . . .



Source: Loss & Loss Adj. Ratio @ A.M. Best Schedule P Summaries.
EXCEL/FIN MODELS/Correlation Line of Business.
Source: GR-NEAM Analytics

All Lines Industry Results Display Long-Term Correlation to Interest Rates

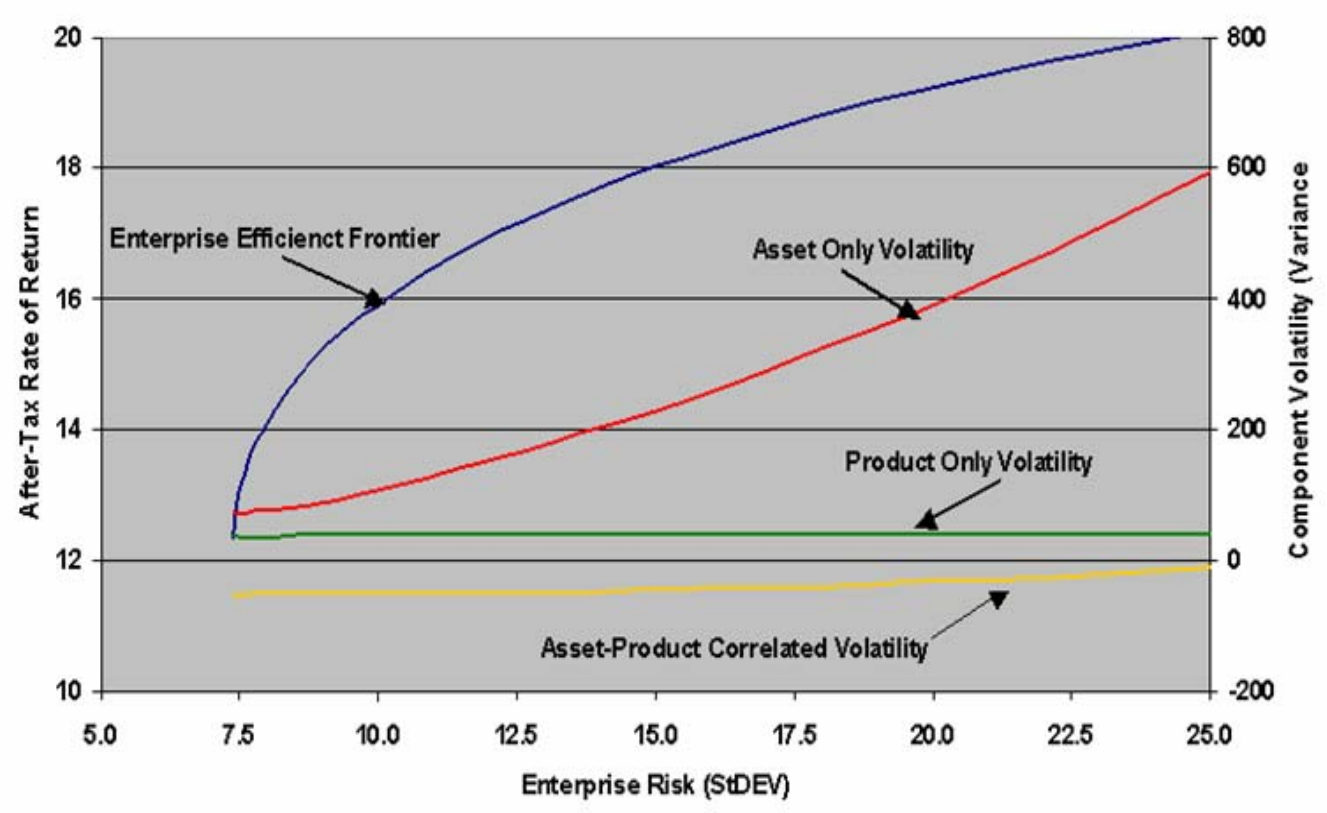
Product Line Behaviors (& Correlations to Asset Returns



EXCEL Industry Summary Data 1921 – 2005 Correlation
Source: A.M. Best Aggregates and Averages, Insurance Information Institute, Federal Reserve and GR-NEAM Analytics

Asset Returns and Product Margins Negative Correlation Mitigates Enterprise Risk But Can Not Overcome Asset Volatility Whose Impact Is Amplified By Asset/Capital Leverage

Partitioning Risk



Statistics	Industry
After-Tax Return on Equity	16.9
Risk (Std Dev)	17.7
Capital Impair -10%	28.4
Duration	5.4
After-Tax Return on Assets	3.8
Invested Assets/Capital	3.5
Premium/Capital	1.3
Combined Ratio	95.4

Source: GR-NEAM Analytics
Corre-Covar Stable/Capital Allocation-Correlation-Risk Partition.XLS

Components

- Application Assumptions
- Capital Impairment (TVAR, VAR, Whatever)
- Non-Normal Asymmetric Returns

Enterprise Based Asset Allocation:
Base Case Assumptions

- **Domestic and International Capital Market Returns**
  - Fixed/Equity
  - Returns/Volatility/Duration/Credit/Optionality
- **Underwriting Margins, Volatility and Leverage**
  - Gross/Net
  - CY/AY/Developed
- **Assumed Historic Correlations**
- **(After-Tax) Total Return Objectives and Capital Impairment/Threshold Constraints**

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Russell 2000 766.14 -5.98 -0.80 16:18
DJ Insurance 426.82 0.75 0.20 16:05
DJ P&C Insurance 359.45 0.27 0.10 16:04
DJ Life Insurance 608.10 -0.48 -0.10 16:06
TreasuryYieldCurve
DAY AGO
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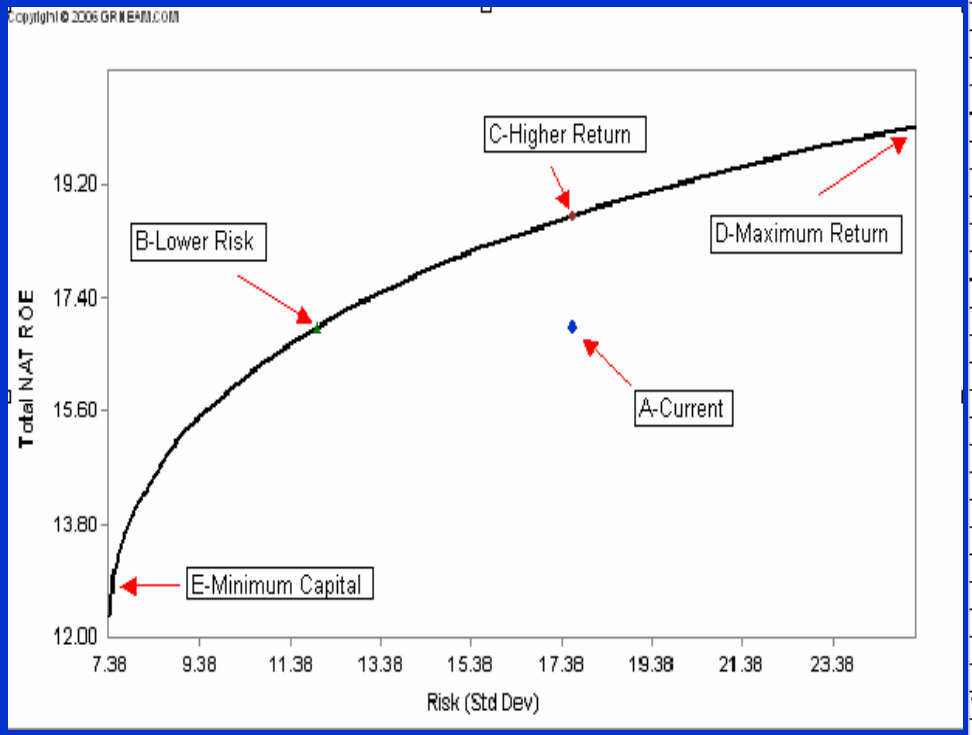
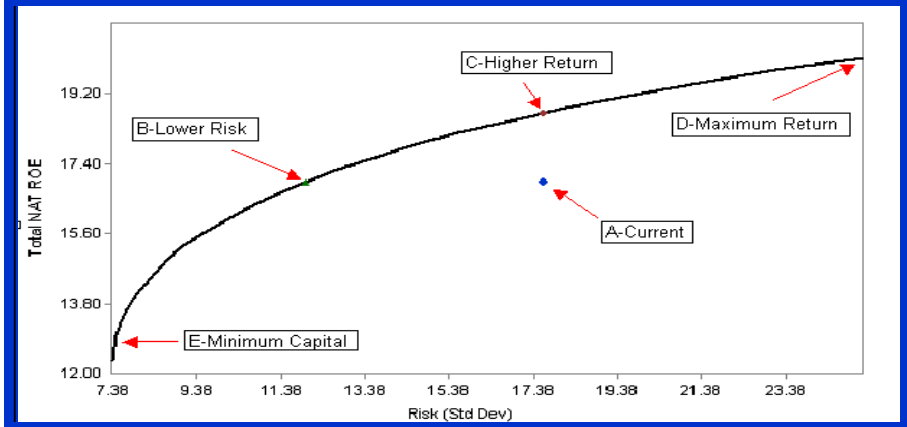
"Optimal" Asset Allocation Depends Upon Underwriting Margins, Volatility and Leverage; Definition of "Return" and Definition and Tolerance For Risk



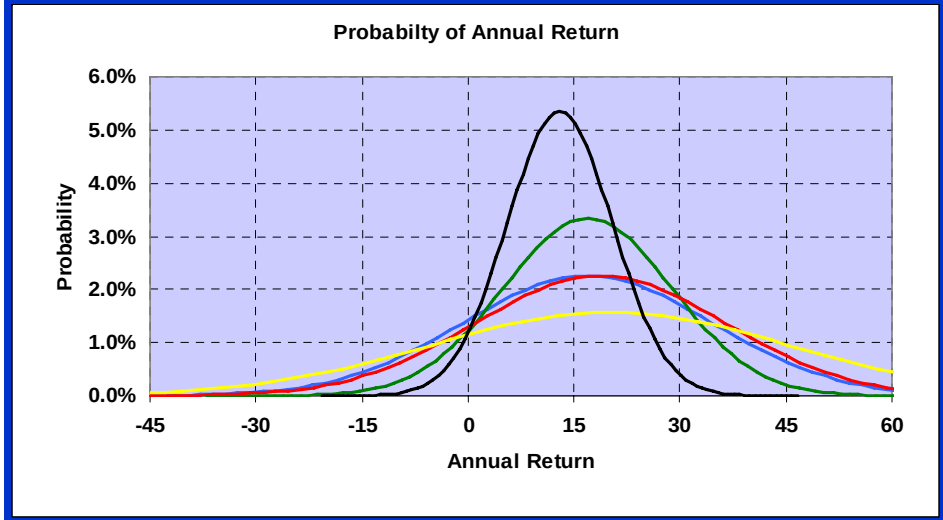
	Current	Lower Risk	Higher Return	Maximum Return	Minimum Capital
Statistics	A	B	C	D	E
After-Tax Total Return on Equity	16.93	16.93	18.72	20.14	12.99
After-Tax Inc. Return on Equity	13.86	16.66	16.81	14.95	12.99
Risk (Std Dev)	17.66	11.96	17.66	25.23	7.47
Capital Impair -10%	28.39	7.97	25.93	46.47	0.73
Duration	5.36	5.30	7.17	8.06	2.30
Convexity	(0.12)	(0.20)	(0.20)	0.05	(0.12)
After-Tax Total Return on Assets	3.79	3.63	4.11	4.52	2.61
After-Tax Inc. Return on Assets	2.90	3.55	3.57	3.04	2.61
Invested Assets/Capital	3.48	3.48	3.53	3.53	3.47
Premium/Capital	1.25	1.25	1.24	1.24	1.25
Combined Ratio	95.37	94.66	94.78	94.78	95.14
Quality Distribution					
Average Rating	Aa1	Aa1	Aa1	Aaa	Aa2
Sector Distribution					
U.S. Treasury/Agency	12.0	5.0	5.0	5.0	25.0
Municipal	32.0	49.5	50.5	43.8	14.2
Corporate	17.0	5.0	7.9	12.5	33.4
High Yield	3.0	4.9	4.5	3.8	4.2
MBS/Other Structures	21.0	34.3	23.0	10.0	23.1
Equity	15.0	1.3	9.2	25.0	0.0
Total	100.0	100.0	100.0	100.0	100.0
Product Line Mix					
Home Owners	10.0	12.0	12.0	12.0	9.7
Private Auto	35.0	35.2	31.2	31.2	42.0
Fire/Allied	10.0	10.0	10.0	10.0	8.1
CMP	10.0	8.0	8.0	8.0	8.0
Workers Comp	10.0	8.0	12.0	12.0	8.0
General Liability	10.0	12.0	12.0	12.0	8.2
Commercial Auto	5.0	6.0	6.0	6.0	6.0
Professional	5.0	4.0	4.0	4.0	4.0
Surety/Fidelity	2.0	2.4	2.4	2.4	2.4
Other	3.0	2.4	2.4	2.4	3.6
Total	100.0	100.0	100.0	100.0	100.0

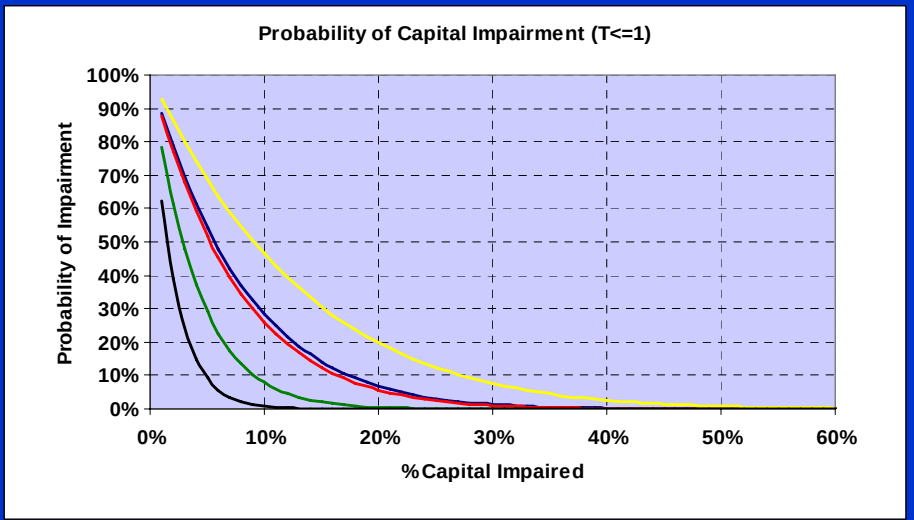
Source: GR-NEAM Analytics
C:\jbachma\Excel\Corre-Covar Stable\Capital Impairment S&P Industry Enterprise EFF Detail.XLS

Product Line Mix, Asset Allocation, Capital Allocation, Reinsurance Utilization, Acquisition/Divestiture All Impact Enterprise Return and Risk



	Current	Lower Risk	Higher Return	Maximum Return	Minimum Capital
Statistics	A	B	C	D	E
After-Tax Total Return on Equity	16.93	16.93	18.72	20.14	12.99
After-Tax Inc. Return on Equity	13.86	16.66	16.81	14.95	12.99
Risk (Std Dev)	17.66	11.96	17.66	25.23	7.47
Capital Impair -10%	28.39	7.97	25.93	46.47	0.73
Duration	5.36	5.30	7.17	8.06	2.30

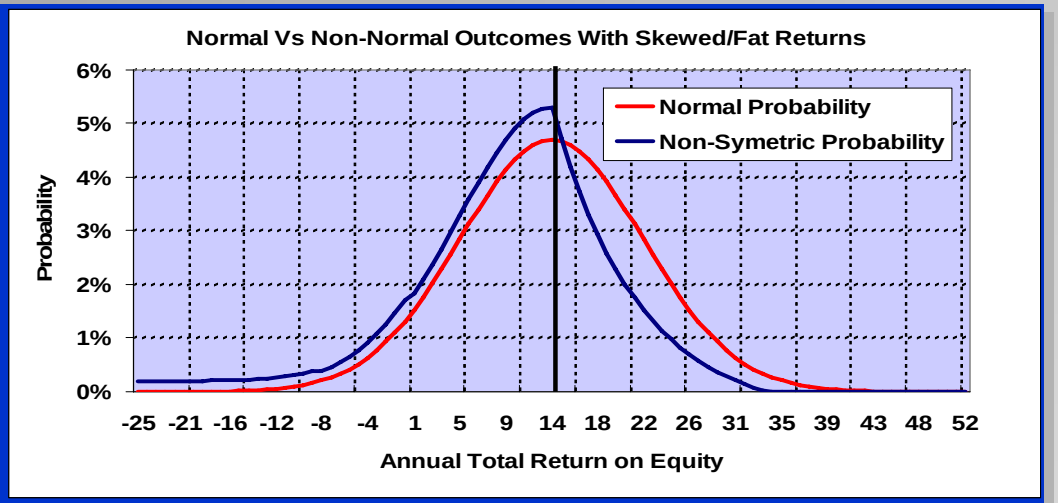


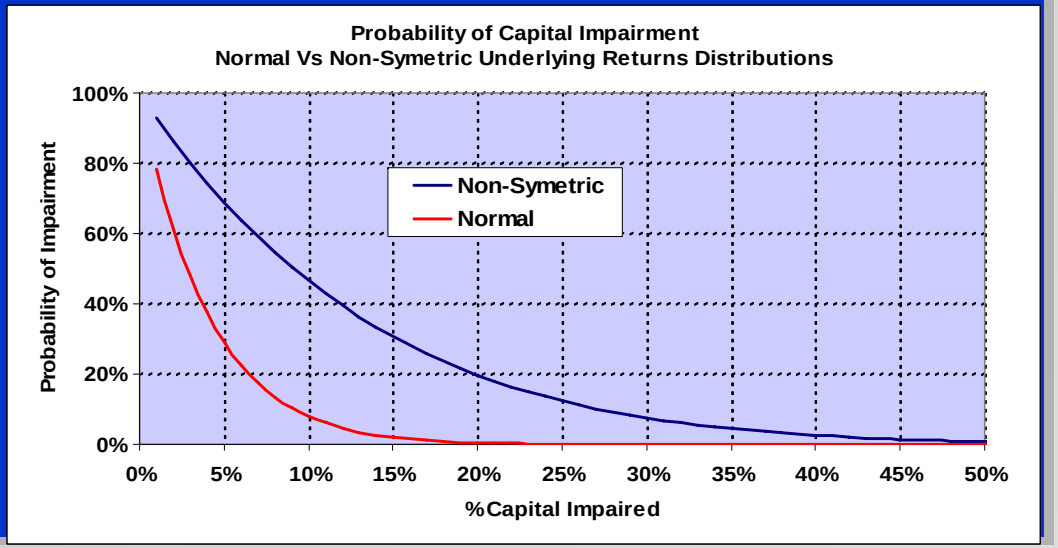


Source: GR-NEAM Analytics

However, Asymmetric Returns Lead to Non-Normal Distributions and Understate Risk and Capital Impairment Probabilities

Statistic	Treasury	AA Corporate	MBS	Munis	S&P 500
	Select Asset Class Total Returns and P&C Product Line Underwriting Margins 1980 - 2005				
Average	9.41	9.84	9.76	6.85	14.31
StDev	7.86	7.03	8.65	4.58	16.11
Skewness	0.67	0.56	1.91	0.52	-0.50
Kurtosis	0.62	0.91	5.32	0.92	-0.61
Statistic	Home Owners	Work Comp	General Liability	Private Auto	Reins.
Average	-9.78	-12.25	-22.30	-4.02	-16.07
StDev	11.98	7.88	13.16	4.29	13.16
Skewness	-2.26	0.19	-0.77	0.51	-1.98
Kurtosis	8.08	-1.59	-0.60	-0.27	5.50





Source: GR-NEAM Analytics
Fin Models\Ruin-Impairment\Normal -Non-Normal Plots.xls
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Final Caveat

Enterprise Capital and Risk Management:
Caveat

- **Directional Guidance - - - Not a Single Point Estimate**
- **Asymmetric Outcomes Confound Conventional Tools**
- **Tools' Precision Fosters Complacency and Unfounded Implied "Accuracy"**
- **Low Probability, High Severity and Extreme Events Occur Frequently- - and Repeatedly**
- **Process and Execution Really Matter; Not "3 – Dots"**

Summary

Enterprise Capital and Risk Management:
Summary:

- **Enterprise Capital and Risk Management Is a Critical Success Factor For Going Concern Businesses**
- **Many "Risks" to Business Success Can Not Be Modeled (Rogue Behavior, Civil Insurrection, etc.). Alternatively, Many Risks Can Be Modeled But With Varying "Precision"**
- **Enterprise Based Asset Allocation Identifies Capacity for Financial Risk and Return/Risk Opportunities & Trade-offs Across The Entire Enterprise Integrating Many Facets of Operational Risk Exposure**
  - **Underwriting (Pricing & Selection)**
  - **Reinsurance Utilization and Failure**
  - **Claims Practices/Procedures**
  - **Actuarial Pricing/Reserving**
  - **Investment Risk of Durations, Credit, Optionality & Liquidity**
  - **Regulatory/Rating Agency Requirements/Preferences**
- **Enterprise Based Capital Impairment Best Measures Risk of Capital Loss**
- **Underwriting Margins/Volatilities and Leverage Impact Upon Capital Impairment Risk Dominate Asset Sector/Duration/Credit Quality Combinations**
- **Events with Extremely Low Probabilities of Occurring Occur Frequently and Often Repeatedly**
- **Integrated Enterprise Capital and Risk Management and Asset Allocation is a Journey, not a destination: More a Process Than an Outcome; of Which Enterprise Based Asset Allocation is Only One.**

Benchmarking

Enterprise Based Asset Allocation Investment Performance Benchmarking

The Performance Measurement Dilemma…

After-Tax Total Return Objectives, Book Income Requirements, Portfolio Cash Flows and Client Constraints/Directives

+

Traditional Pre-Tax Total Return Benchmark Indices

=

Performance Attribution Noise

Source: Merrill Lynch

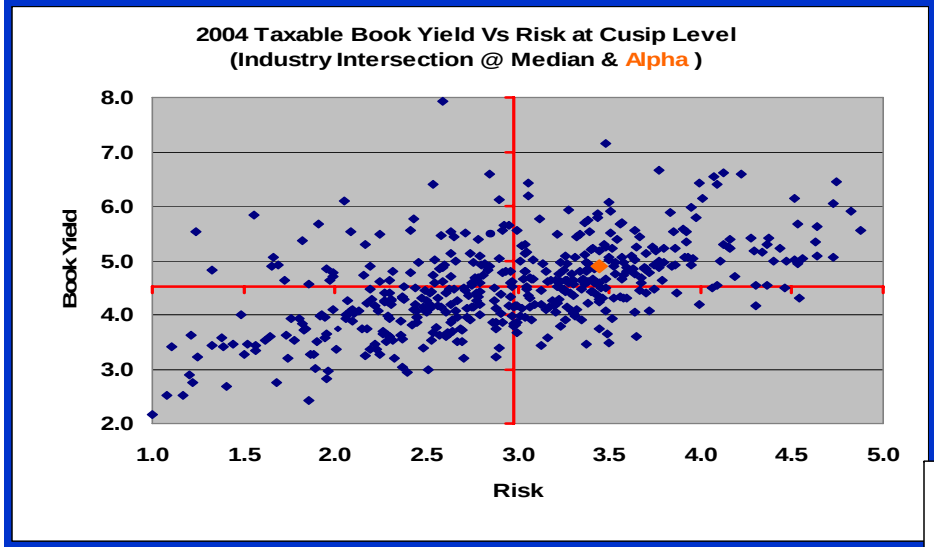
Enterprise Based Asset Allocation Investment Performance Benchmarking

- **Traditional Pre-Tax Total Return Metrics Misleading Indicator of Investment Performance and Can Result in Reduced After-Tax Total Return**
  - Fails to Address After-Tax Return Consequences - - of Anything
  - Ignores Client Current Income Requirements
  - Silent as Respects Gain/Loss
  - Ignores Portfolio Contributions and Withdrawals
  - Pre-Tax Total Return Focus Encourages Turnover and the Acceleration of Taxes (= Loss of Future Income)
- **After-Tax Income Maximization Leads to Greatest After-Tax Risk Adjusted Total Return**
  - Fixed Income Total Returns Driven By Earned Income
  - Most Often Harvesting Pre-tax Total Return Gains Results in an Acceleration of Taxes and Reinvestment at Lower rates of earned income
- **Historic Benchmark Deficiencies Due to Many Varied Sources**
  - Diffuse Constituencies
  - Varied Limits of Understanding
  - Inertia/Conflicts/CFA
  - Index Provider Technology

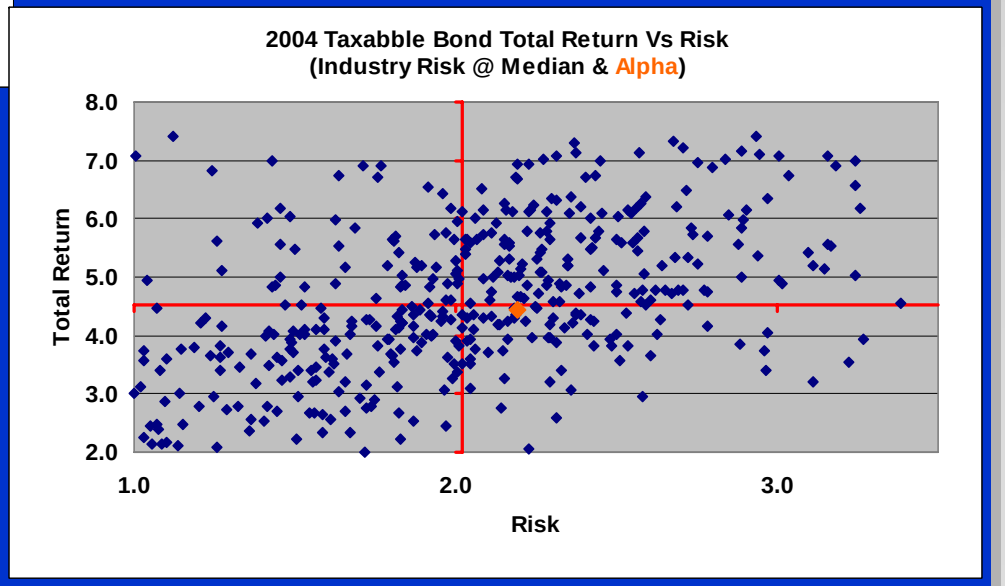
Enterprise Based Asset Allocation Investment Performance Benchmarking

- **Enterprise Based Asset Allocation Identifies and Assesses Return/Risk Opportunities & Trade-Off**
- **Underwriting Margin/Volatility and Leverage Dominate Asset Sector/Duration/Credit Quality Combinations**
- **Financial Simulation Allows Further Flexibility to Express Risk Tolerances and Financial Consequences of Alternative Strategies**
  - Financial Statement Impact
  - "Market Cycle" Duration Effect
- **Fixed Income Investment Performance Benchmarks (EBIB® and Bookmark℠)***
  - Benchmark Index Construction Based Upon Insurer's Enterprise Based Asset Allocation and Merrill Lynch Global Fixed Income Index Universe of Insurer Eligible Investments
  - Pre-Tax and After-Tax Total Return and Book Income Metrics
  - Customized to Portfolio Guidelines, Constraints, Contributions and Withdrawals
  - Benchmark Performance Statistics (Returns, Durations, Convexities, Constituents, etc.) Publicly Available on Daily Basis Through Merrill Lynch and Open Bloomberg Incepting 12/31/1996

Investment Risk/Return Comparatives are Readily Available



Mean Legacy Score-Alpha @ 4.48		
Quadrant	Book Yld	Total Retn
NE	4.32	3.59
SW	1.61	2.52
SE	1.45	3.53
NW	5.15	3.10



Source: National Underwriter Data Services from Highline Data Services and GR-NEAM Analytics