

Economic Capital Modeling – Do you know what you're trying to accomplish?

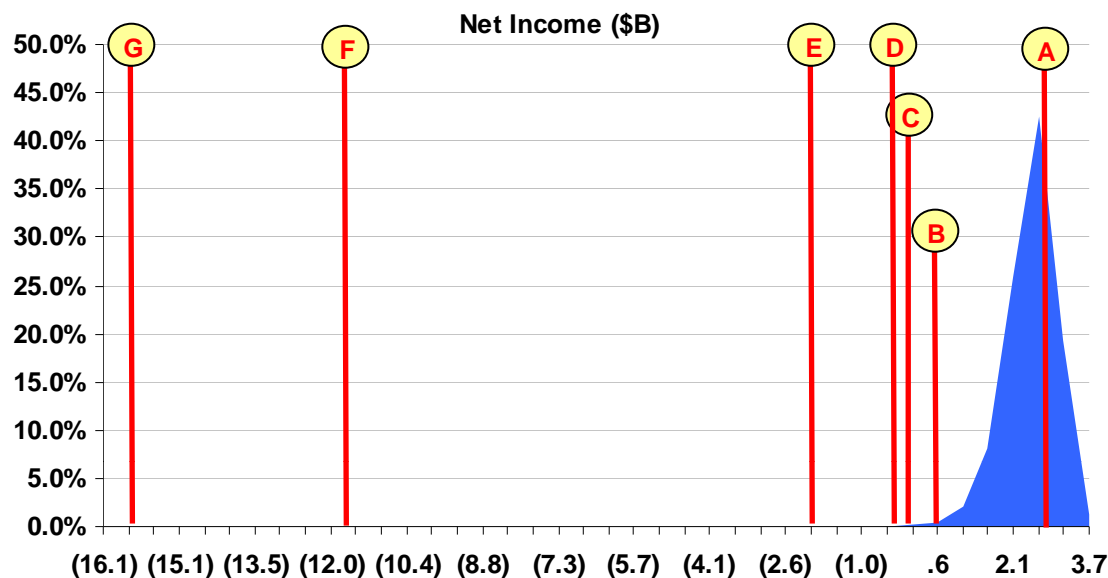
John Wilcox

“If you know yourself and know your enemy, you will not be imperiled in 100 battles”

General Sun Tzu – *The Art of War*

1. What is your true risk tolerance?
2. Do drivers for holding actual capital / managing risk, align with outcomes from economic capital models?
3. What decisions are you going to inform based on EC output?

Getting a Feel for Distributions – Know your tolerance?



Where do you focus action?



How important are key bets such as model miss or correlations at different return periods?

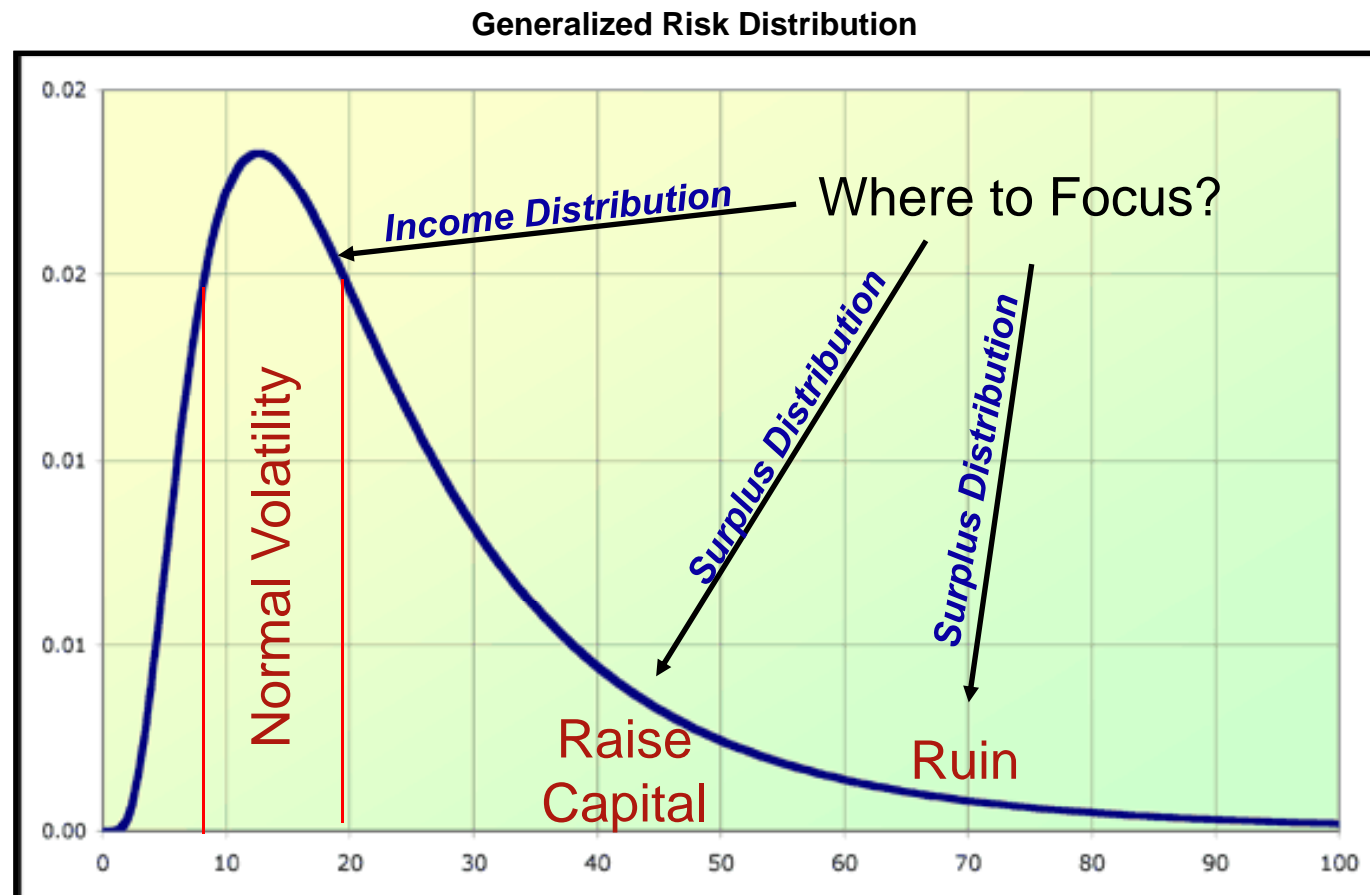


When do you no longer care?

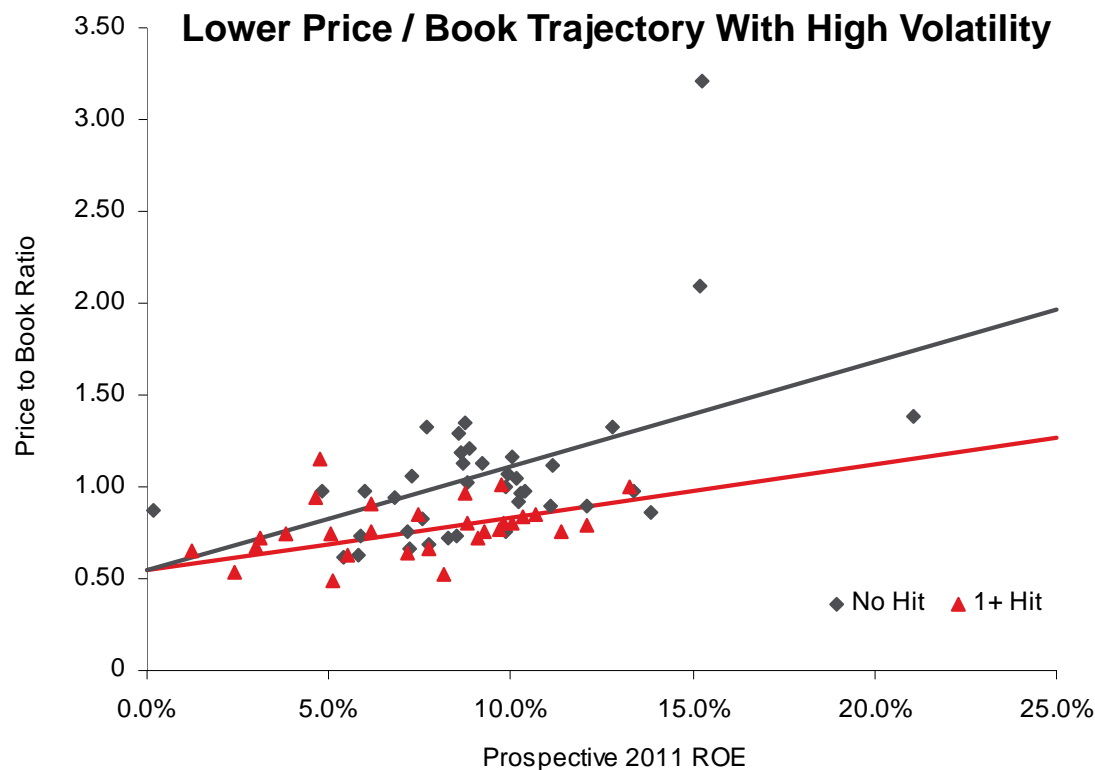
Event	Odds	Percentile
A Chance of an American home having at least one container of ice cream in the freezer:	9 in 10	90.00%
B Odds of being on plane with a drunken pilot:	117 to 1	0.85%
C Odds of being audited by the IRS:	175 to 1	0.57%
D Odds of dating a millionaire:	215 to 1	0.47%
E Odds of catching a ball at a major league ballgame:	563 to 1	0.18%
F Chance that Earth will experience a catastrophic collision with an asteroid in the next 100 years:	5,000 to 1	0.02%
G Odds of becoming a pro athlete:	22,000 to 1	0.00%
Odds of dating a supermodel:	88,000 to 1	N/A
Odds of being struck by lightning:	576,000 to 1	N/A
Odds of Chicago White Sox pitcher Mark Buehrle throwing a perfect game:	628,100 to 1	N/A

Thinking about Risk & Return – managing different financial goals (income, surplus) requires focus on different parts of the curve

- Not all risks are created equal
 - Normal volatility
 - Tail risk



While none can be ignored, stock companies may be more concerned with earnings volatility while mutual's may focus more on capital raise



➤ **No earnings hits >150% of average quarterly operating income:**

- 1 point increase in prospective ROE increases P/B by 5.7 points

➤ **1 or more earnings hits:**

- 1 point increase in prospective ROE increases P/B by only 2.9 points

Price to Book Regression History

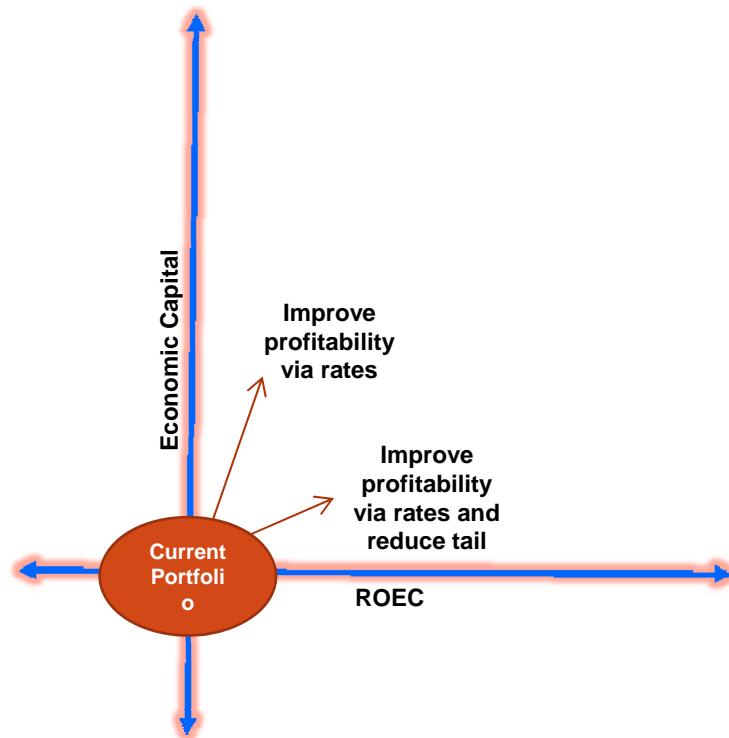
Valuation Differentials (No Hits vs. 1 or More Earnings Hits)

	Dec '10	May '10	Feb '10	Nov '09	Aug '09	Apr '09	Nov '08	Mar '08	Dec '07	May '07	Nov '06
At a 10% ROE	33.2%	28.5%	17.2%	15.4%	24.0%	33.6%	42.0%	31.1%	12.1%	11.0%	12.5%
At a 15% ROE	42.5%	54.3%	32.4%	36.0%	31.8%	48.4%	40.7%	48.8%	30.3%	44.5%	26.8%

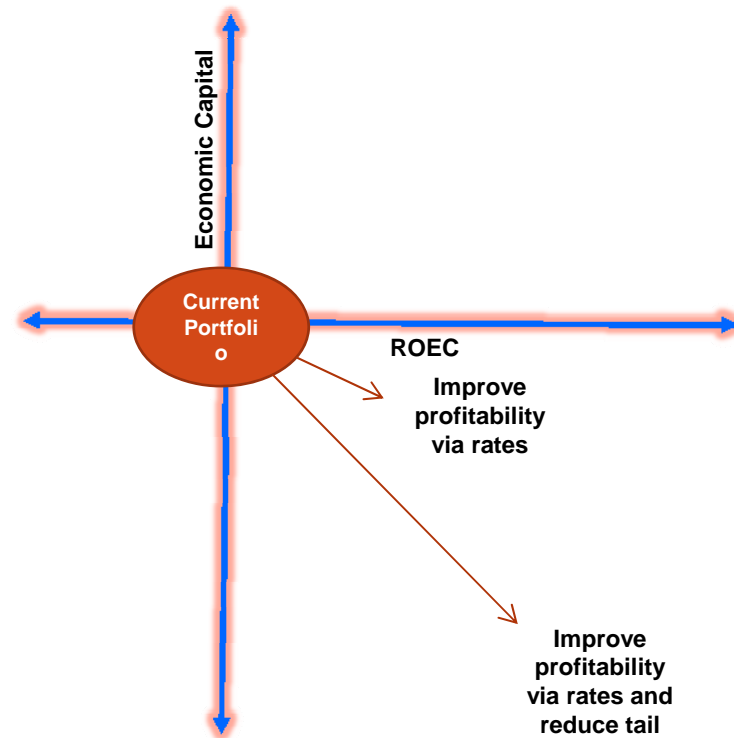
Valuation differential has persisted through time!

Economic capital models that are not aligned with business goals may result in sub-optimal decisions

RBC Based Economic Capital Model



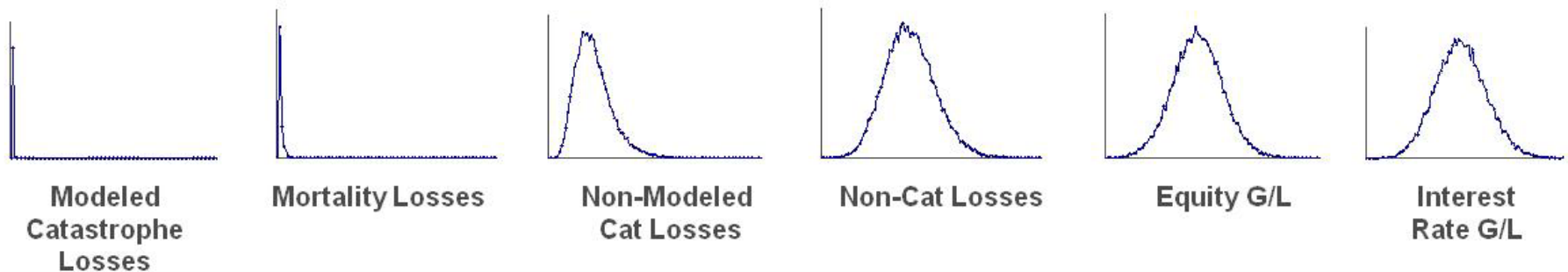
Solvency Based Economic Capital Model



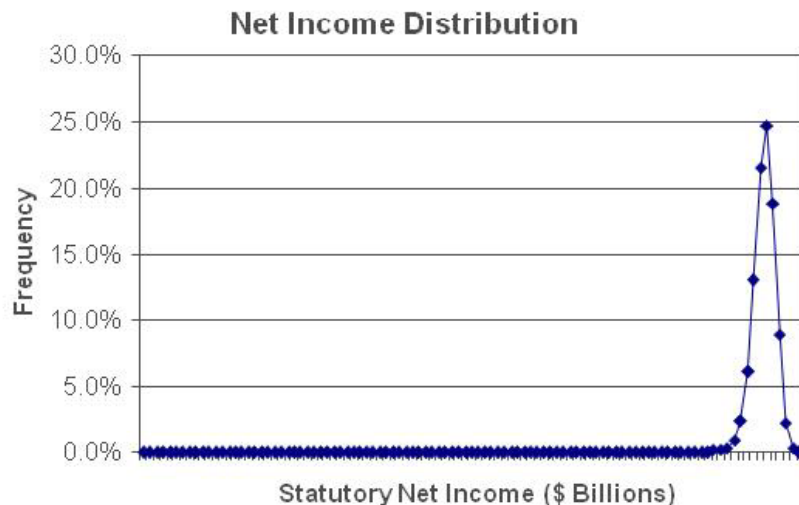
Your companies priorities regarding risk / return and capital targets must be appropriately balanced

Enterprise Risk / Economic Capital Model Value – Optimization of risks across the enterprise

- Overall risk of company is driven by underlying key risks and interrelationship among risks



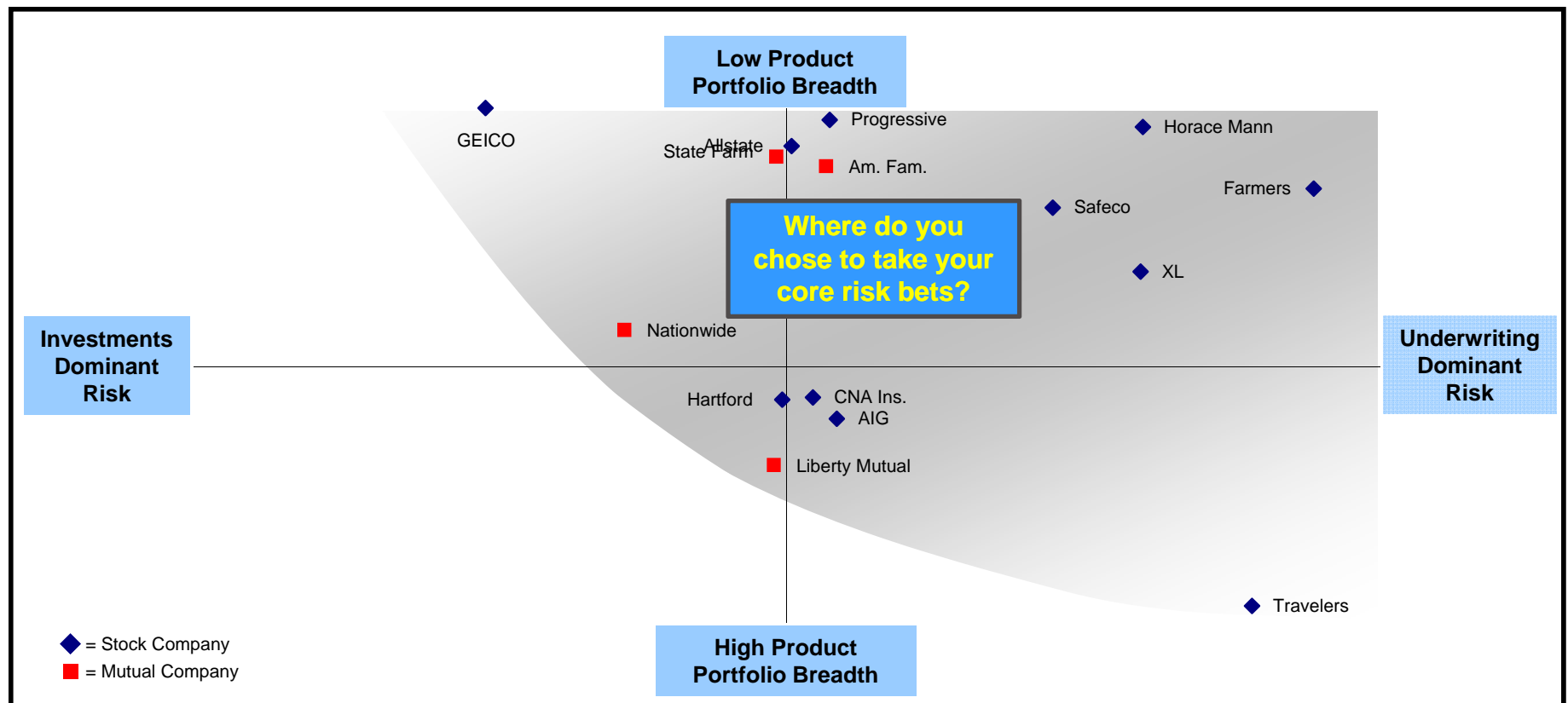
Some risks have more influence than others!



"I'm trying to diversify my portfolio."

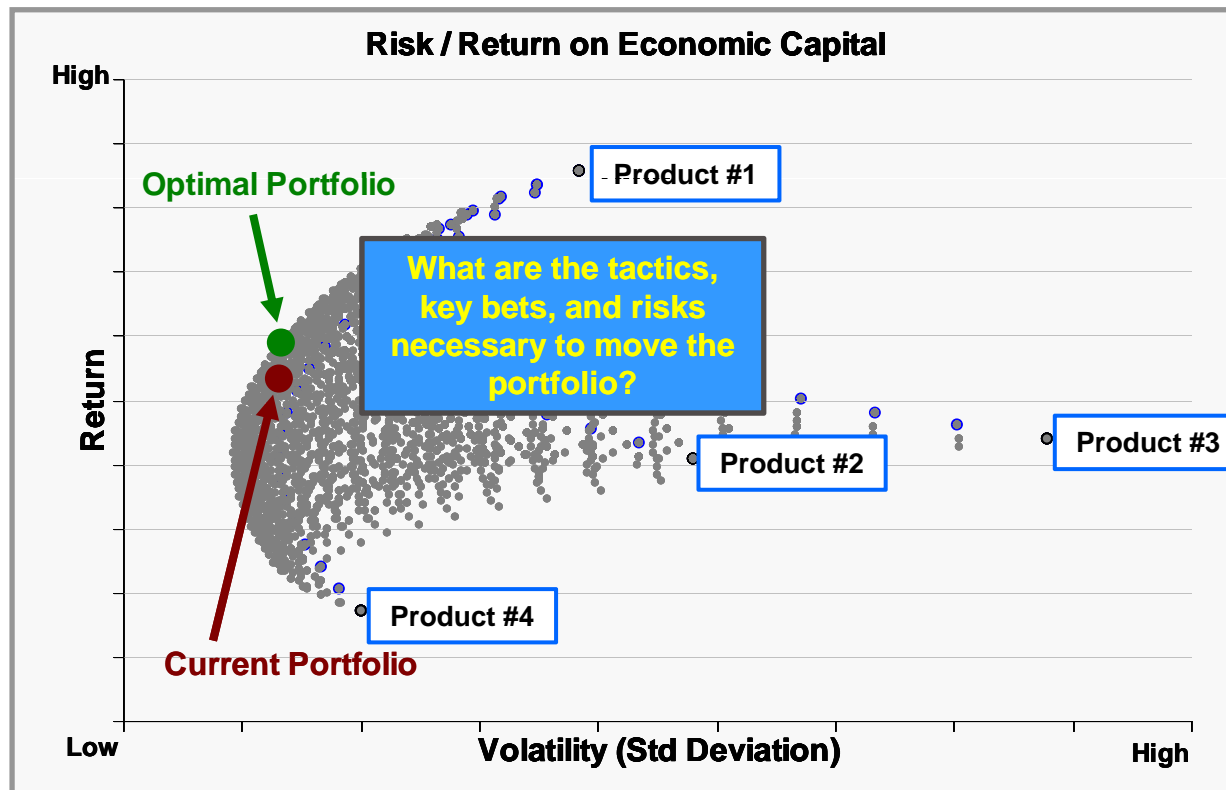
Risk Concentration and Product Breadth Study – where do you chose to take risk?

- Carriers employ different risk strategies, with varying levels of success; what's your core?
- From its current position, companies can pursue strategy to increase underwriting risk, investment risk, or both
- Success; understand and optimize risk correlations



Optimizing the portfolio requires an integrated evaluation of tactical actions and key bets / risks

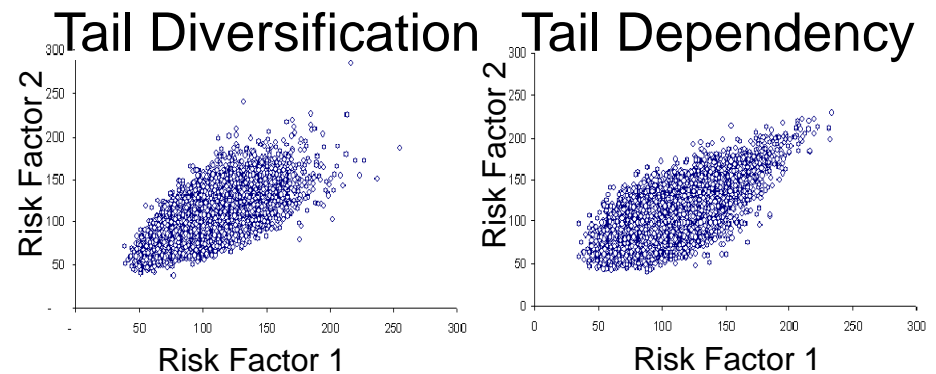
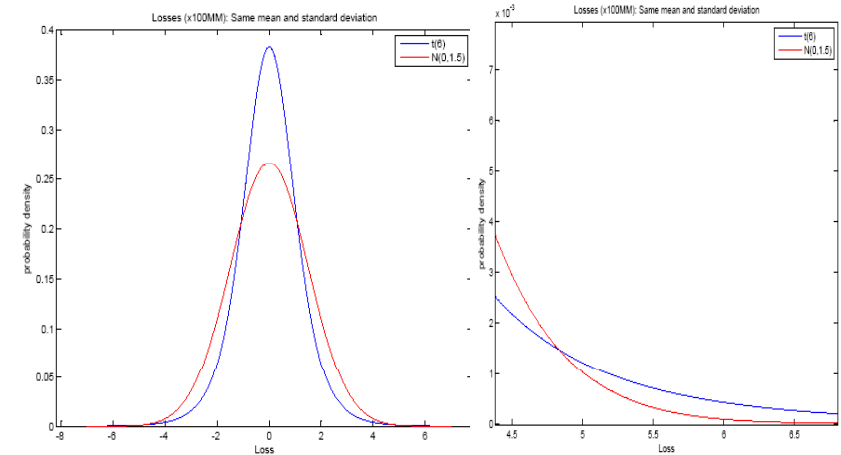
- Efficient frontier analysis allows us to evaluate our current portfolio of products and optimize enterprise returns
- Risk / Return tradeoff can be calculating via Sharpe Ratio = return/volatility
- Find highest Sharpe Ratio possible for asset set for best return/risk relationship



Portfolio	Sharpe Ratio
Product #1 Only	3.5
Product #2 Only	0.5
Product #3 Only	0.5
Product #4 Only	(1.5)
Product 1 & 2	4.5
Product 1 & 3	4.2
Product 1 & 4	3.9
Current Portfolio	4.4
Optimal Portfolio	5.4

Other things that should be considered when evaluating risk in economic capital models

- **Fat Tails**
 - Real-life distributions are rarely standard normal distributions
 - The tail (extreme end) of distribution is of interest in risk analysis
- **Black Swans**
 - A good portion of risk management data / experiences are based on what has actually occurred in the past, but...
 - Black Swans are events that have not yet occurred but are possible
- **Diversification in extreme events**
 - A portfolio of risks is assumed to benefit from diversification with some risks offsetting others
 - In extreme cases, diversification does not hold (correlation goes to 1) and everything goes bad together: called tail dependency
- **Underwriting Cycle Risk**
 - Long term market cycles can be overlooked within the models



Key Takeaways

- **Understanding and optimizing risk profile requires a view of current performance conditions / priorities, and potential future strategic decisions**
- **What are the risks you manage every day? Think Broadly!!**
 - Consider risk profile and payoff potential (attractive / unattractive)
 - What is the result of reducing (or hedging) this risk or exploiting this risk?
 - How do I control this risk (formal limits in place)
- **Risks to Consider Include**
 - Personal: which route to take to work, do I fill up the car with gas or try to stretch it till tomorrow, do I eat Chinese food from the Allstate...
 - Operational / execution risks (deadlines, processes, etc), are risks understood, quantified, and agreed upon?
 - Managing Conflict: do I have any? Is it productive (creative tension) or destructive?
 - Taking initiative / “experimenting at the margin” (learning organization)
- **Thinking about the business in terms of risk and return optimization can help us understand what type of company we want to be when we grow up, but**
 - What is our risk tolerance / appetite?
 - What are the main influencers of our capital management practices?
 - How should we implement actions to maximize value?