

# **Allocating Economic Capital to Drive Business Decisions**

**March 27, 2014**

# Why Do This?

## Core beat even bigger than headline; PO raised

### ■ EPS beat bigger than it looked; underwriting driven

3Q operating EPS of \$1.53 beat our \$1.29 estimate (\$1.44 consensus). However, the underlying earnings beat was even better than the headline number suggested. Allstate incurred a 3Q \$0.18 per share charge related to prior period reserves for discontinued lines and an \$0.11 per share charge related to pension costs.

### ■ Underlying margins healthy, again; cat losses well below est.

Lower catastrophe losses were the main driver of the underwriting beat but the underlying accident year ratio was also better. ALL's efforts to improve homeowners – a valuation drag the past several years– are showing progress and given pricing momentum, these results should continue to improve ex- cats. Auto margins have been resilient, particularly impressive given the renewed premium growth.

## Bank of America Merrill Lynch

**Alison Jacobowitz** +1 646 855 4409  
Research Analyst  
MLPF&S  
alison.jacobowitz@baml.com

**Jay A. Cohen** +1 646 855 5716  
Research Analyst  
MLPF&S  
jay.a.cohen@baml.com

**Matthew Palazola** +1 646 855 1976  
Research Analyst  
MLPF&S  
matthew.palazola@baml.com

### ■ Stock Data

Price	US\$52.96
Price Objective	US\$59.00

# Capital (Cost) Allocation

## Leading Practice Benchmarking

Leading Practice	Rationale
1) Allocate cost of capital as opposed to capital	Realities of insurance capital usage support capital cost approach (i.e., Shared Asset Framework)
2) Away from sole reliance on extreme tail metrics to a blend of short, medium and long return period metrics	Focus on e.g., Volatility, Impairment and (Franchise) Ruin
3) Integrate explicit, formal statements of risk preference	Every risk metric has an implicit risk preference function underlying it
4) Design the capital allocation process based on performance criteria	Employ design process (from engineering) to implement the preference framework, rather than selecting a mathematical formula and living with the implied preference
5) Create an operational buffer between the capital model and local users	<ul style="list-style-type: none"><li>• Use a sophisticated method to produce percentage allocations which are then applicable to any total</li><li>• Only allocate cost of capital as far down in the organization as necessary</li><li>• Translate cost of capital into familiar terms – e.g., % load in target combined ratios</li></ul>

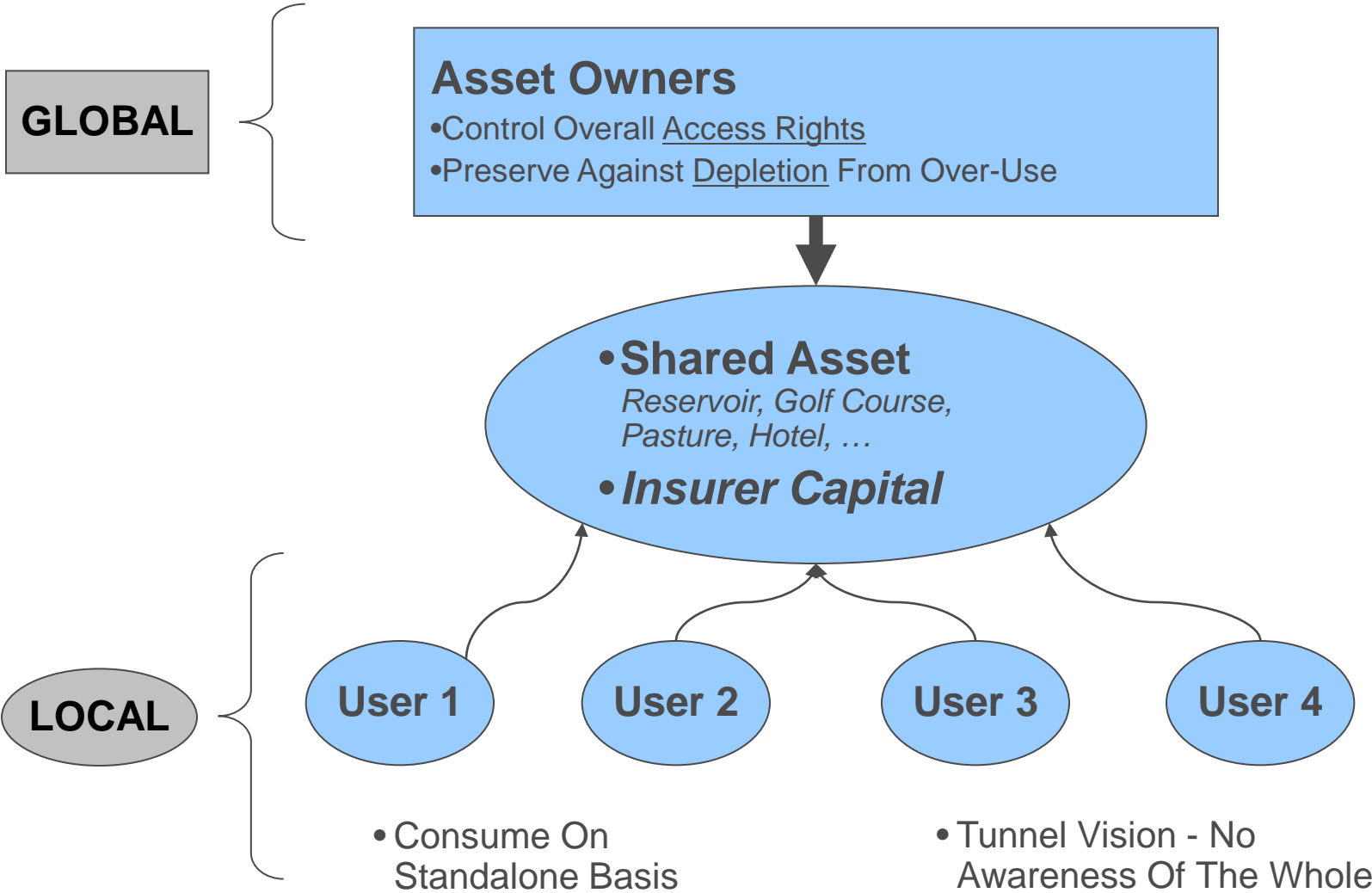
# **Realistic Capital Usage Cost Framework:**

## **Insurance Capital as a Shared Asset**

## Valuing Parental Guarantees

- Merton & Perold (1993): “**risk capital**” for a financial services profit center is the cost of parental guarantee to make up any shortfalls
- Insurer provides these **shortfall guarantees** to every policy, product segment, profit center, operating company, etc.
- Guarantees are backed by the entire capital pool
- Everyone has simultaneous rights to (potentially) use up **all the capital**
- Company must manage the timing and size of guarantee exercises:
  - Concentrations
  - Correlation
  - Reserve deficiencies
- Too many calls for cash and the common pool of capital gets drained

# Insurer Capital is a Shared Asset



# Shared Assets Can Be Used Two Different Ways

## Consumptive Use

- Example: RESERVOIR
- *Permanent* Transfer To The User

## Non-Consumptive Use

- Example: GOLF COURSE
- *Temporary* Grant Of Partial Control To User For A Period Of Time

## Both Consumptive and Non-Consumptive Use

- Example: HOTEL
- *Temporary* Grant Of Room For A Period Of Time
- Guest could destroy room or entire wing of hotel, which is *Permanent Capacity Consumption*

# An Insurer Uses Its Capital Both Ways

## 1. “Rental” Or Non-Consumptive

- Returns Meet Or Exceed Expectation
- Capacity Is Occupied, Then Returned Undamaged
- A.k.a. *Room Occupancy*

## 2. Consumptive

- Results Deteriorate
- Reserve Strengthening Is Required
- A.k.a. *Destroy Your Room, Your Floor, Or Even The Entire Hotel*

***Charge Each Segment for Its Capital Usage***



# Capital Usage Cost Calculation

## *Paying for the Parental Guarantee*

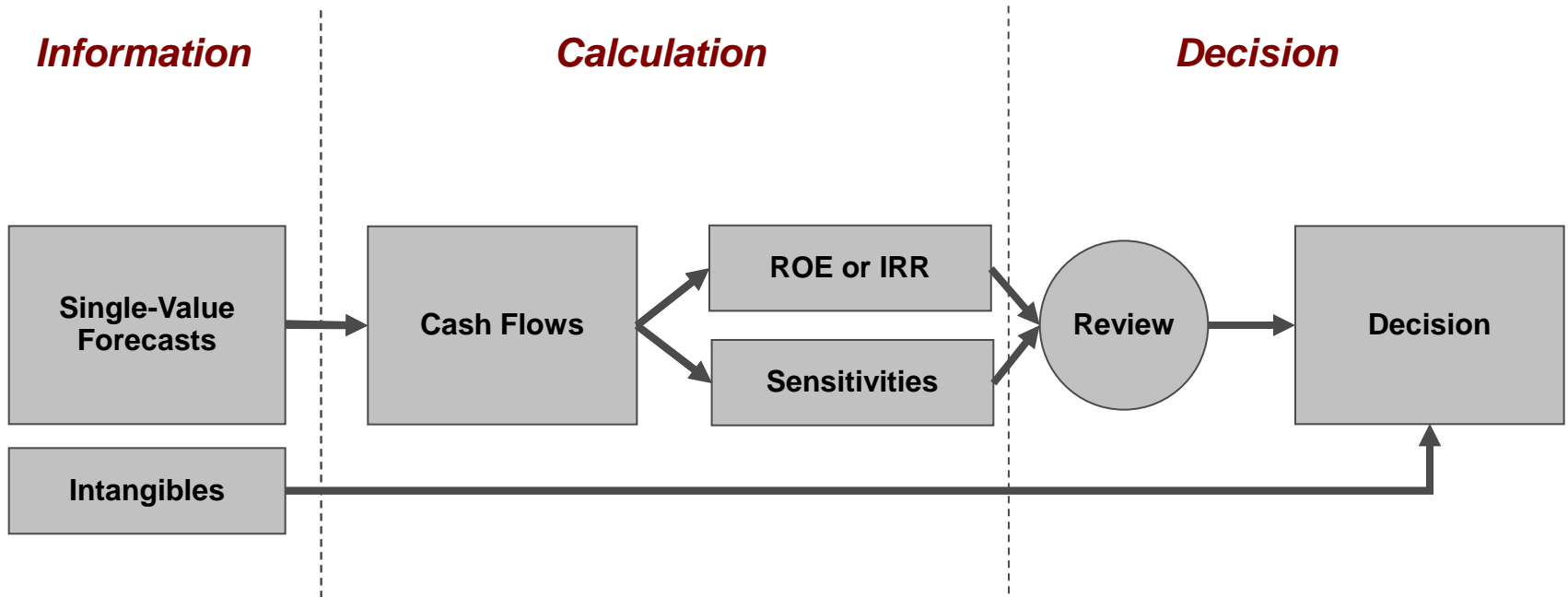
### Two Kinds Of Charges:

1. **Rental** = upfront fee for right to (possibly) use the Guarantee
  - *Occupying underwriting capacity*
  - *BCAR, SPCAR, RBC, SCR, ...*
2. **Consumption** = contingent fee for using the Guarantee
  - Function of *Potential for Deficit (Consumption)*
  - *Risk appetite / preference / riskiness leverage function*

# Explicit Risk Preferences

# Evolution of Decision Making

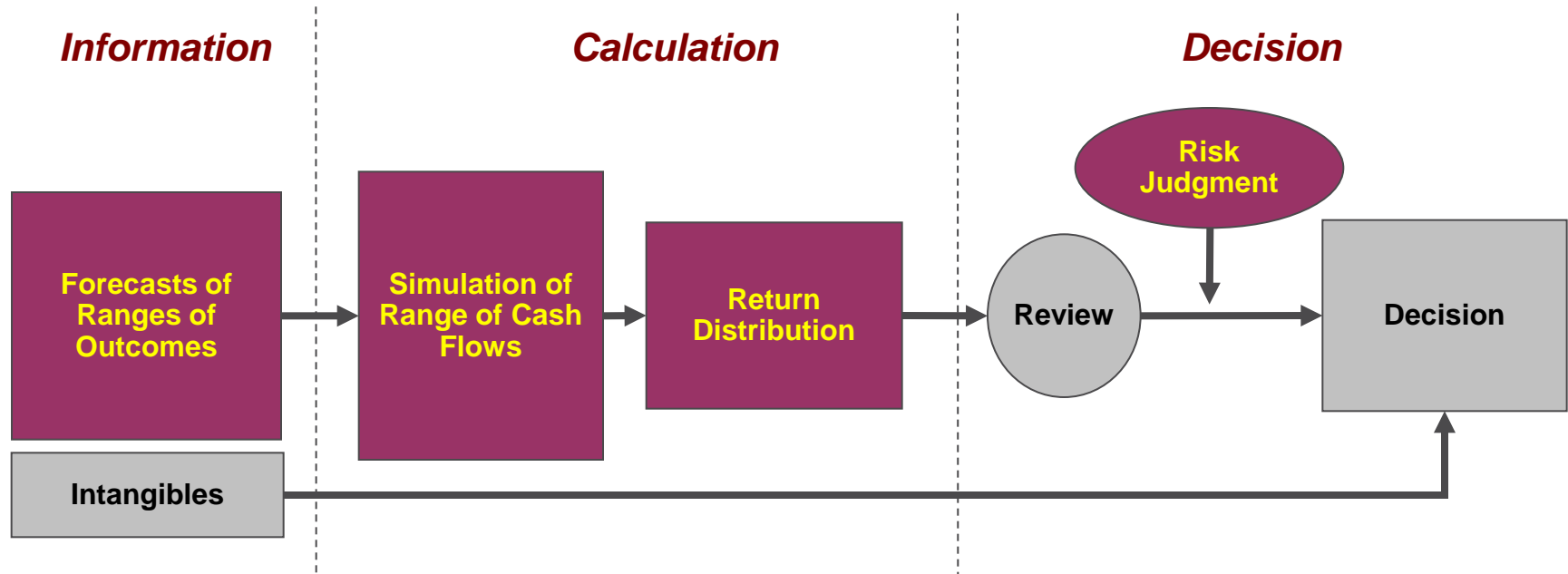
## #1: *Deterministic Project Analysis*



- Carl Spetzler, "The Development of a Corporate Risk Policy for Capital Investment Decisions," *IEEE Transactions on Systems Science and Cybernetics*, Sept 1968

# Next Step: Risk Analysis

## #2: Risk Analysis

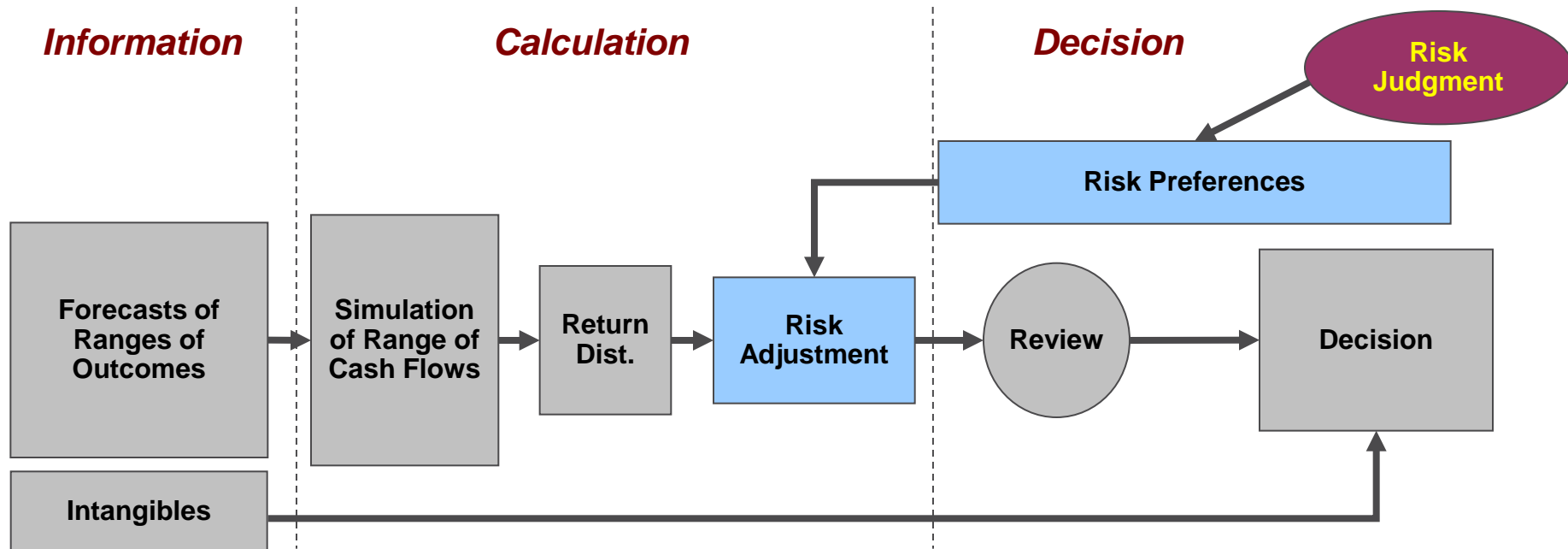


- Similar to DFA or Monte Carlo processes
- Uncertainty in variables is quantified
  - Only info which is impossible/too costly to quantify remains intangible

- Judging the acceptability of alternatives (“Risk Judgment”) is intuitive and specific to the decision maker

# Next Step: Risk Preference Function

## #3: Risk Preferences

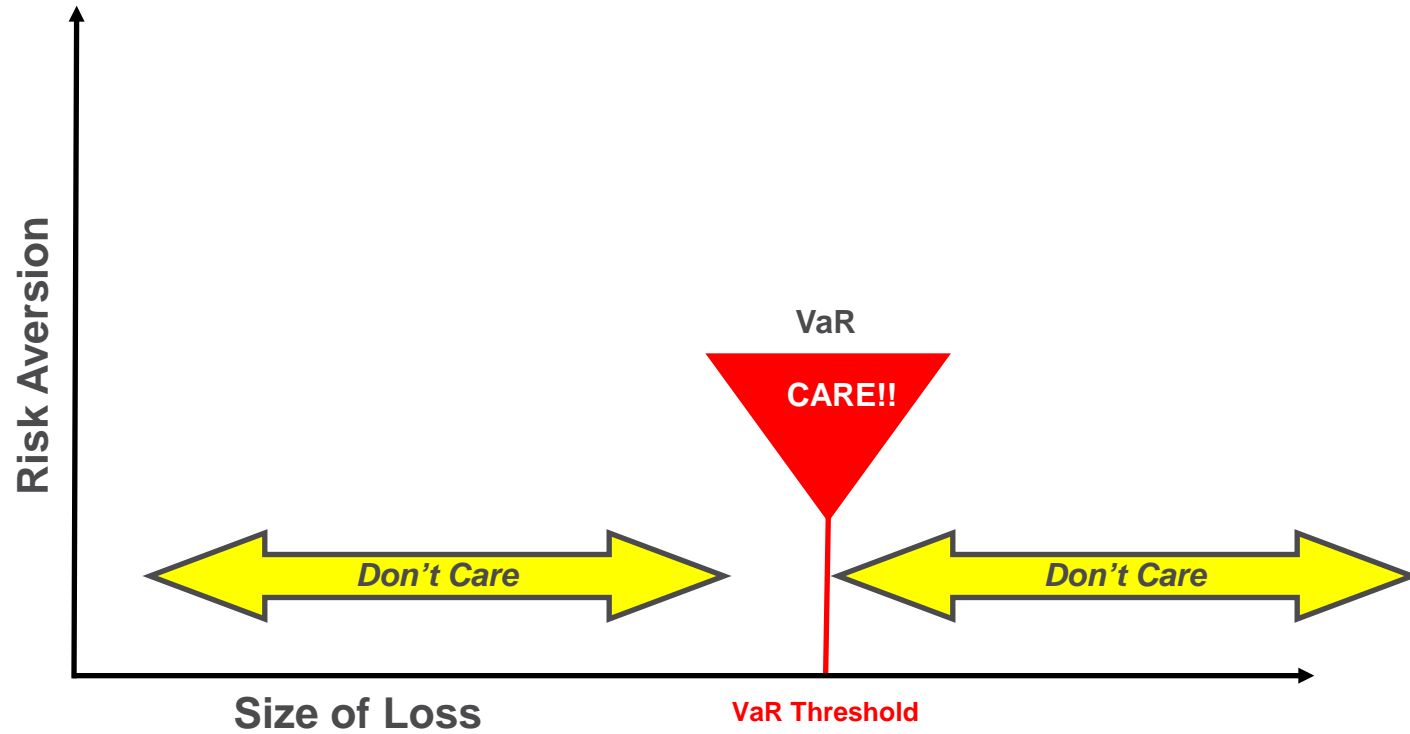


- An extension of Risk Analysis
- Intuitive risk judgment, which is applied in Risk Analysis, is quantified by means of a *corporate Risk Preference function*

- Risk preference function does not replace judgment, but simply formalizes it so it can be *applied consistently*

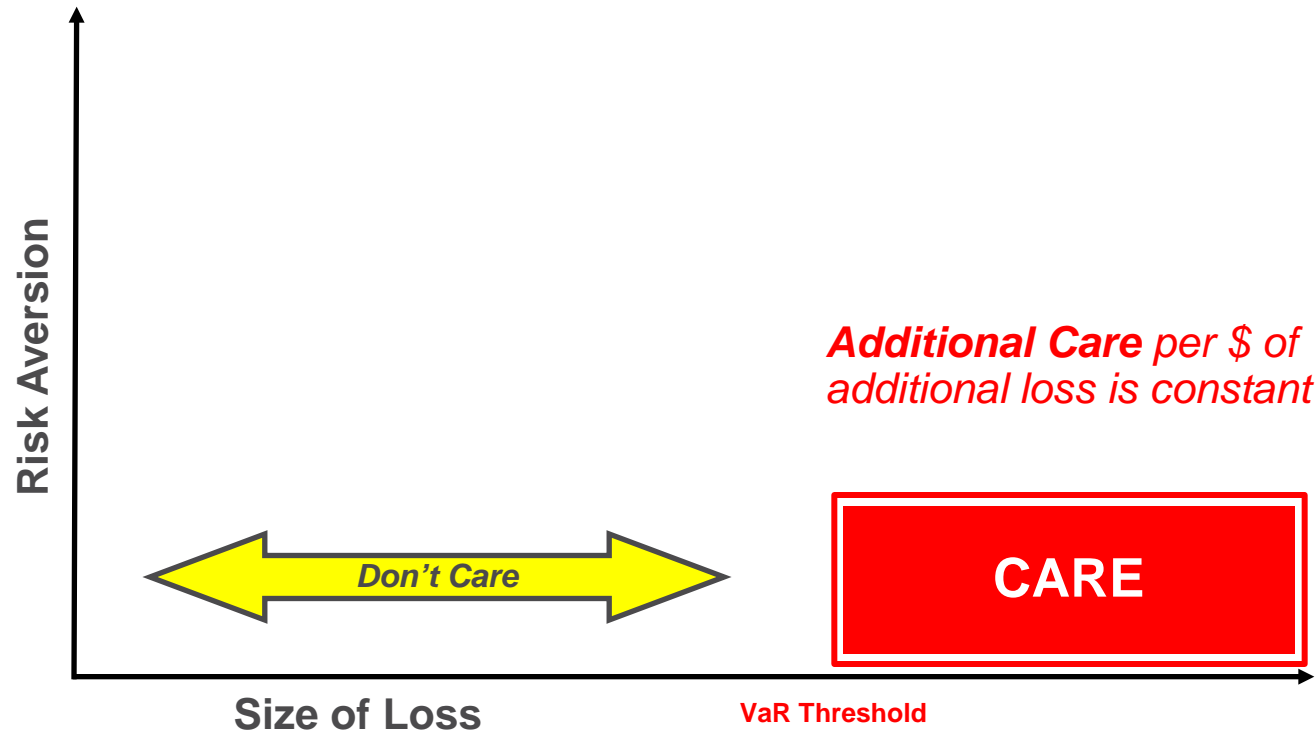
# Every Approach Has an IMPLICIT Risk Preference

## VaR



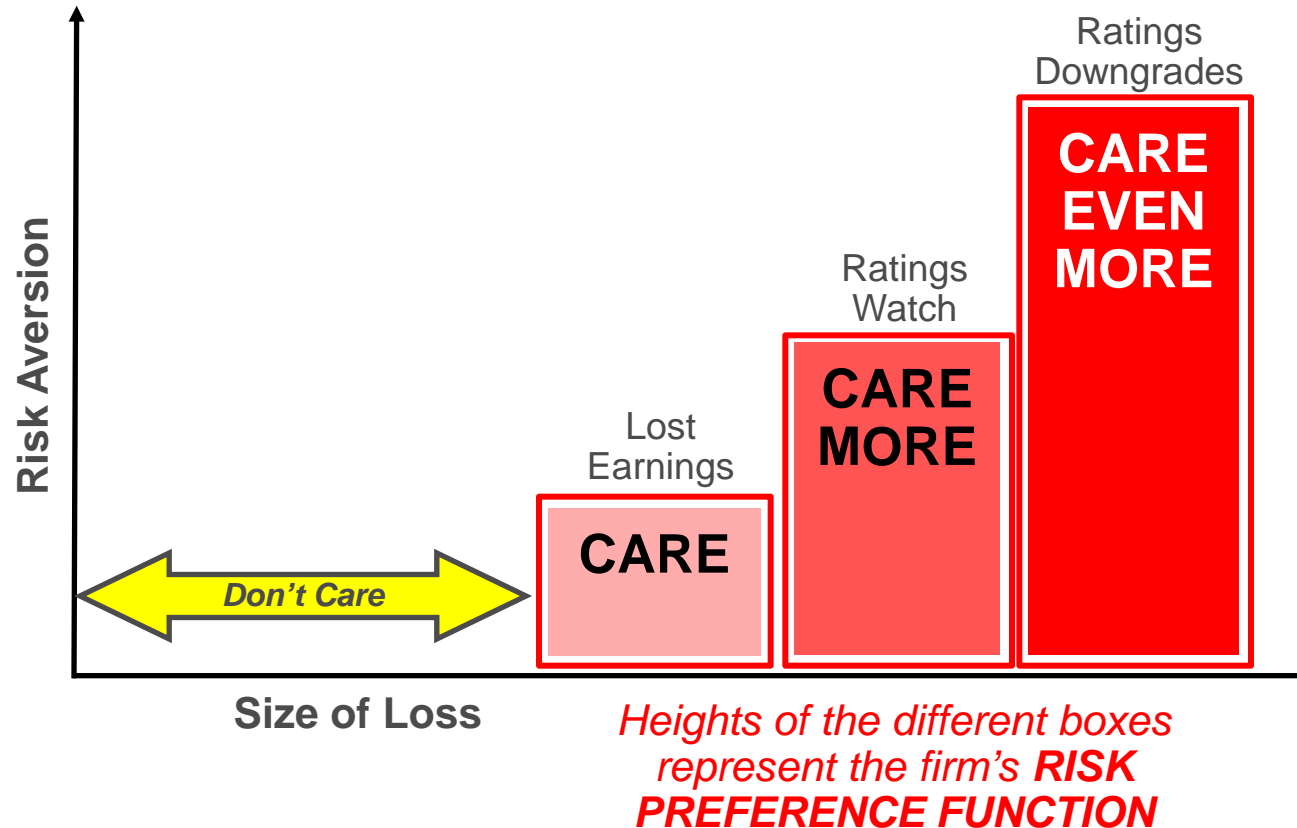
# Every Approach Has an IMPLICIT Risk Preference

## TVaR



# Every Approach Has an IMPLICIT Risk Preference

## “Zones of Impact” of Capital



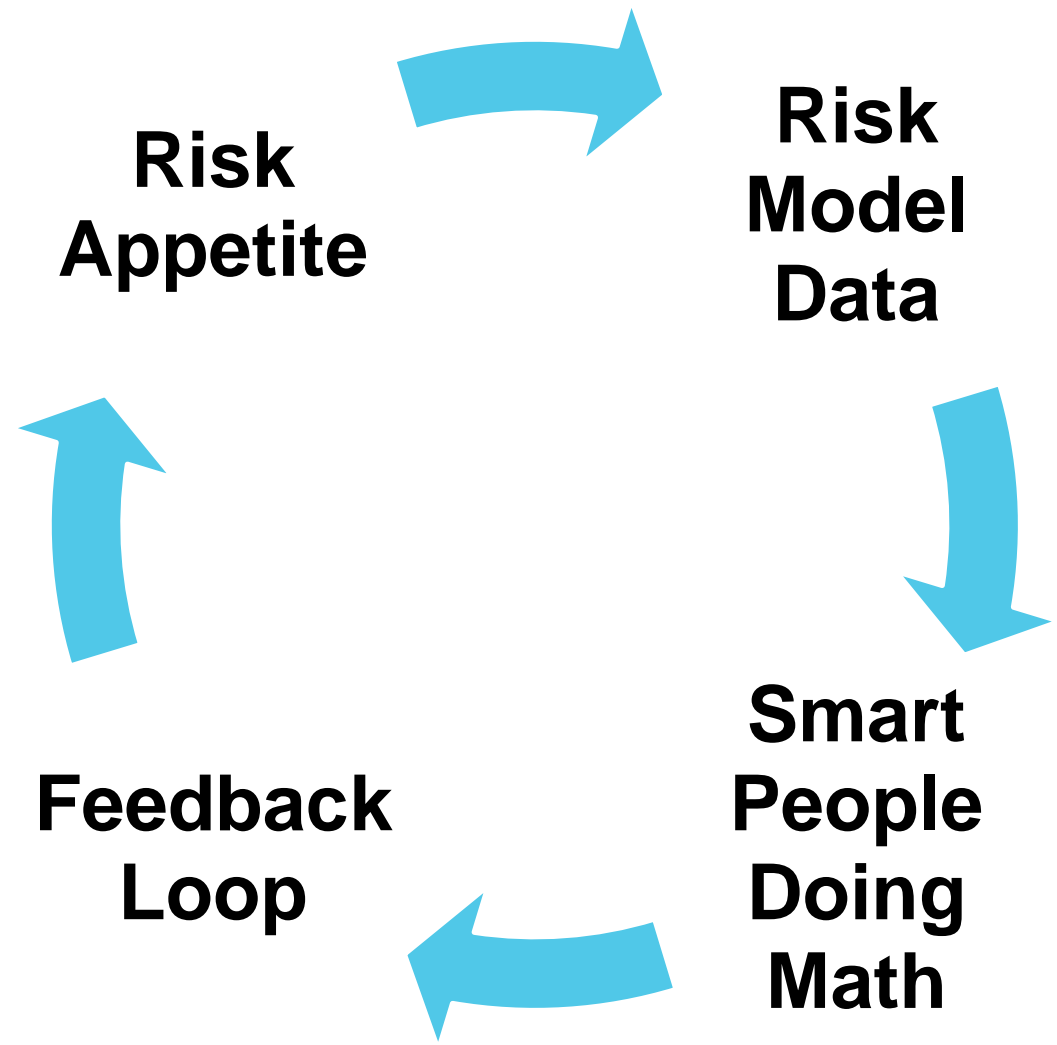


# How does the Shared Asset Approach stack up?

Your Company May Consider	Shared Asset Framework
<b><i>Focus primarily on the underlying economics</i></b>	Can use any performance metric from capital model (e.g., discounted U/W result)
<b><i>Multiple degrees of risk: both tail risk and volatility contribution matter</i></b>	Can use any combination of return periods or entire downside distribution
<b><i>Expected profitability matters in capital since it provides a buffer against losses</i></b>	Use underwriting result
<b><i>There is a level of base capital required to operate business</i></b>	Rental charge
<b><i>Desire to reflect:</i></b> <ul style="list-style-type: none"> <li>• <b><i>Performance accountability of each line</i></b></li> <li>• <b><i>Enterprise impact of material change in business mix</i></b></li> </ul>	Transparently handled through the concentration charge approach (using your risk preferences to determine cost of capital at enterprise level and share of responsibility at event level)
<b><i>Acknowledge external constraints</i></b>	Use BCAR for rental charge
<b><i>Transparent enough to support “what-if” analysis and cascading throughout the business</i></b>	Built for transparency and ease of implementation and testing

# **Using the Shared Asset Framework to allocate capital within a company**

# Allocating capital is an iterative process

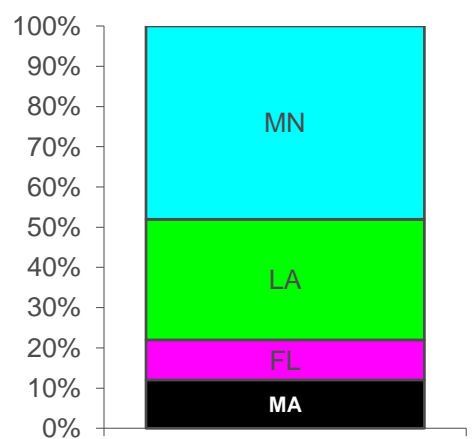


# Risk model data

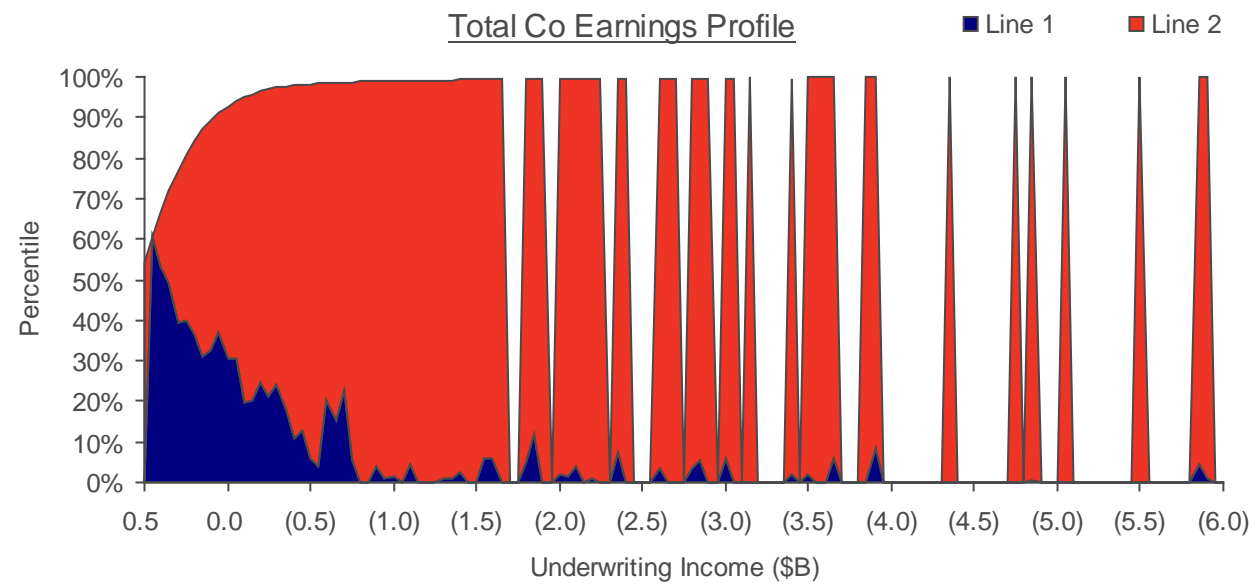
## ➤ Illustrative Company

- \$10B Premium
- 4 States
- 2 lines (non-volatile & volatile)

Premium Distribution



Total Co Earnings Profile

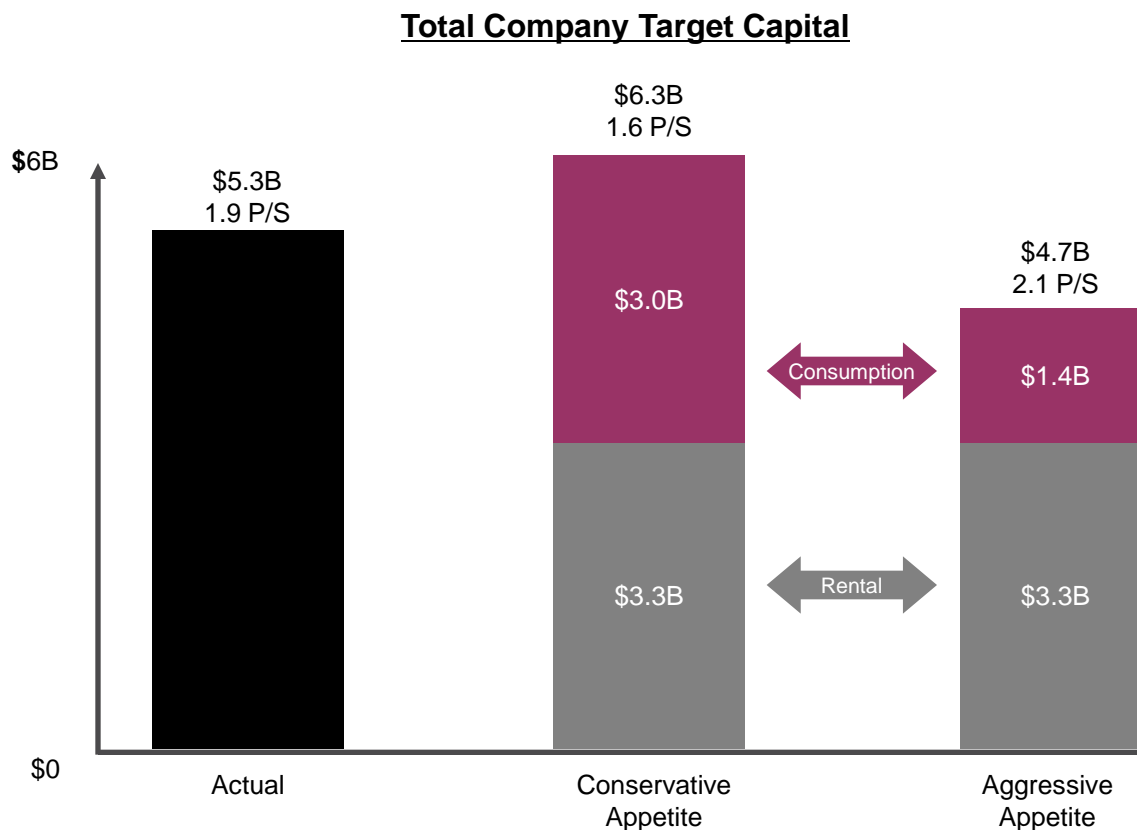


Risk Metrics

	Risk Type	Premium	C/R	Prob. of Profit	Std Dev Profit	1/100	1/250	1/1,000
Line 1	Non-volatile	\$7B	96.0	94%	\$0.2B	(\$0.2B)	(\$0.2B)	(\$0.3B)
Line 2	Volatile	\$3B	94.0	83%	\$0.6B	(\$1.4B)	(\$2.6B)	(\$6.2B)
<b>Total Co</b>		<b>\$10B</b>	<b>95.0</b>	<b>93%</b>	<b>\$0.6B</b>	<b>(\$1.1B)</b>	<b>(\$2.3B)</b>	<b>(\$6.2B)</b>

# Risk appetite informs target capital

- Risk appetite + Shared Asset Framework = target capital
- Everyone's appetite is different, let's examine two choices
  - Conservative: withstand 2x 1/250 years without losing "secure" rating
  - Aggressive: withstand 2x 1/100 years without losing "secure" rating

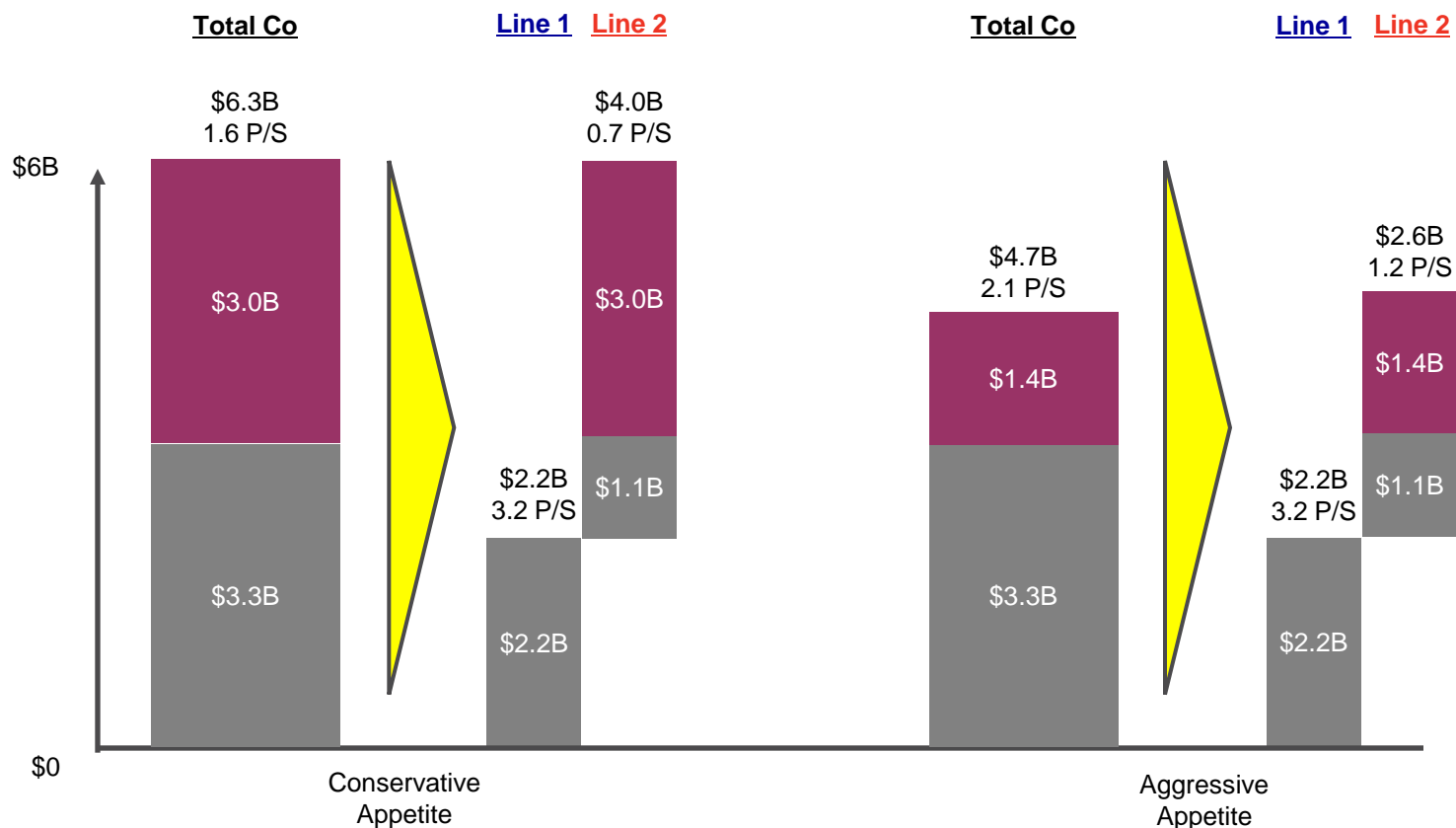


# Assigned to line of business

## ➤ Same approach for Total Co works for lines as well

- Illustrated approach leverages proportion of stand-alone consumption capital
- Mix of rental & consumption capital varies across lines

### Target Capital



# Allocating to state

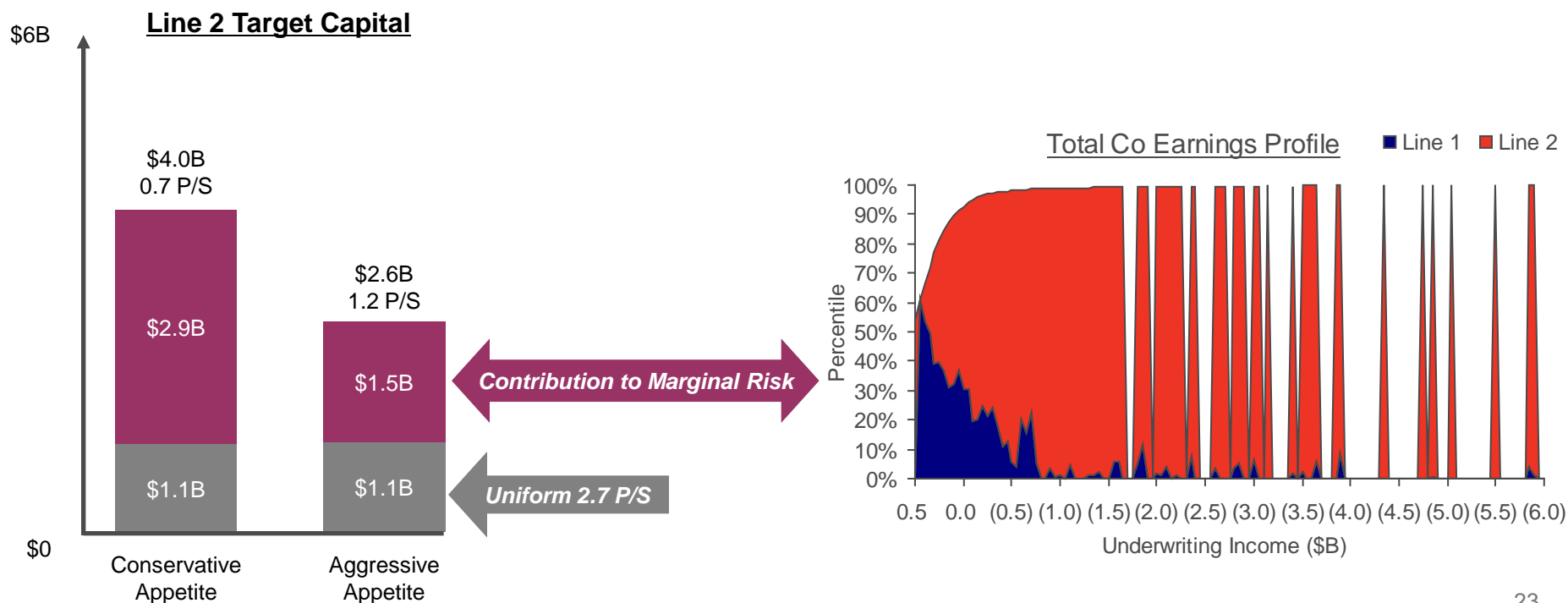
## ➤ Guiding Principles:

- Fundamental before technical
- Keep it simple

## ➤ Rental charge applied to states via uniform P/S ratio

## ➤ Consumption charge will vary, but how?

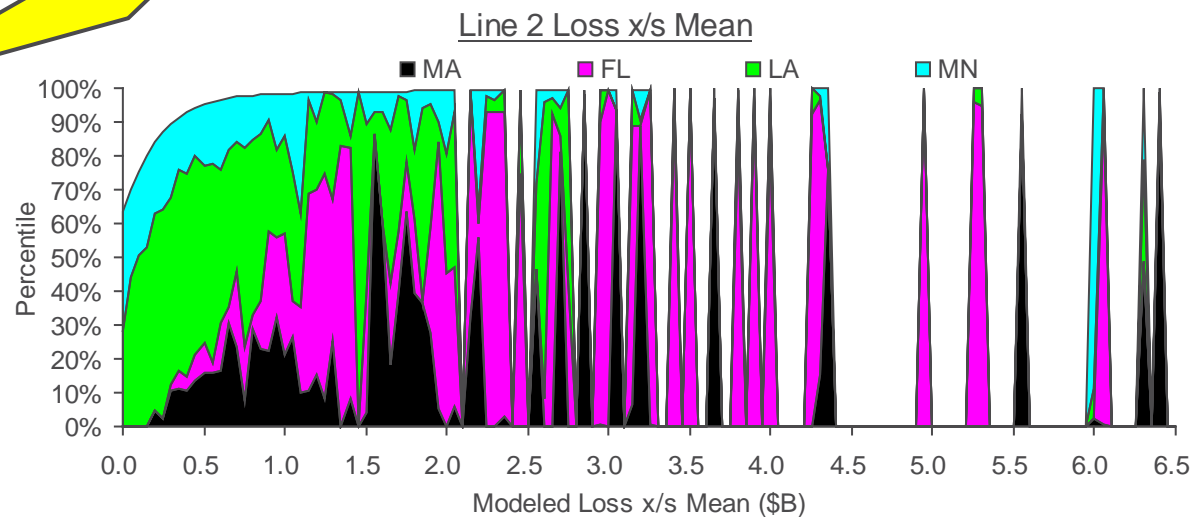
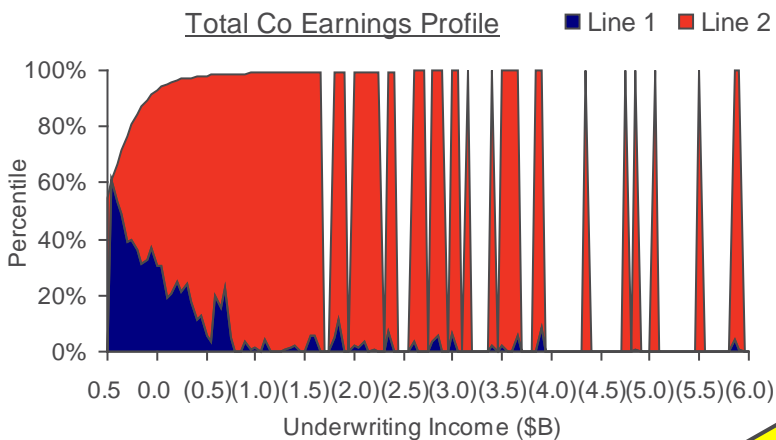
- Could use same approach as assigning to line segments (fixed point)
- Or, could vary according to contribution to marginal portfolio risk (continuous)



# Contribution to marginal risk

## ➤ Definition of marginal risk?

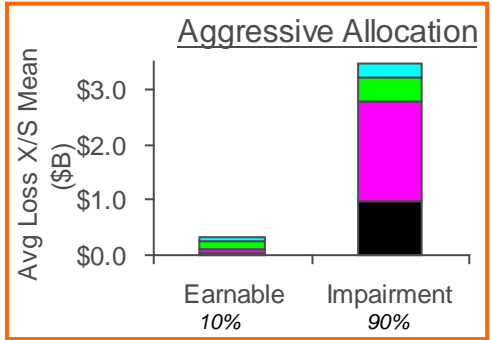
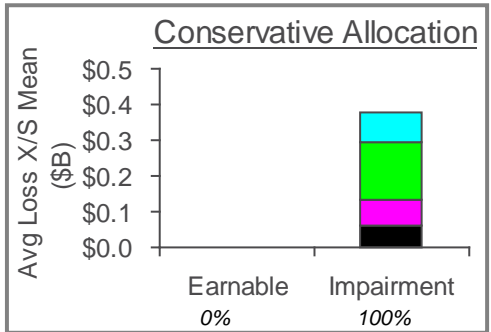
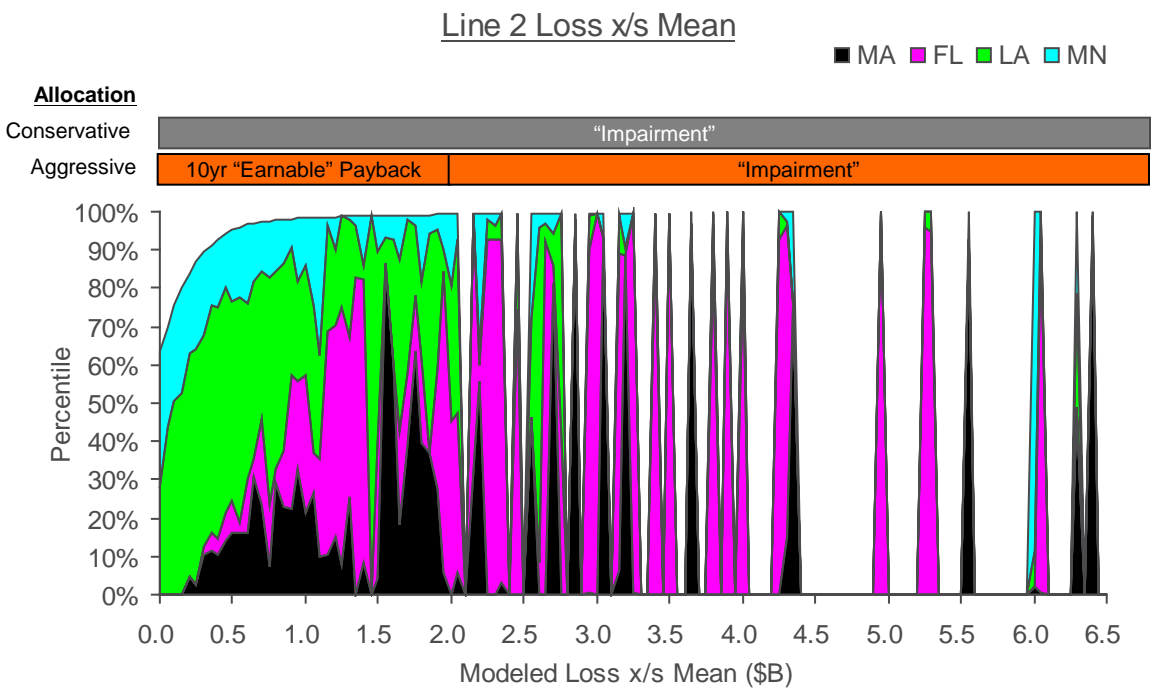
- Total loss
- Worse than expected (excess of mean)





# Allocation mechanics

- **Some outcomes are worse than others, differentiate consumption charge accordingly**
  - E.g. losses that you earn your way out of (“earnable”) vs. those you don’t (“impairment”)
  - Simple approach is segment TVaR (co-x TVaR)
  - Lot’s of options for fine tuning: financial triggers (earnings, rating), weights / transforms
- **These preferences can have big downstream implications...**



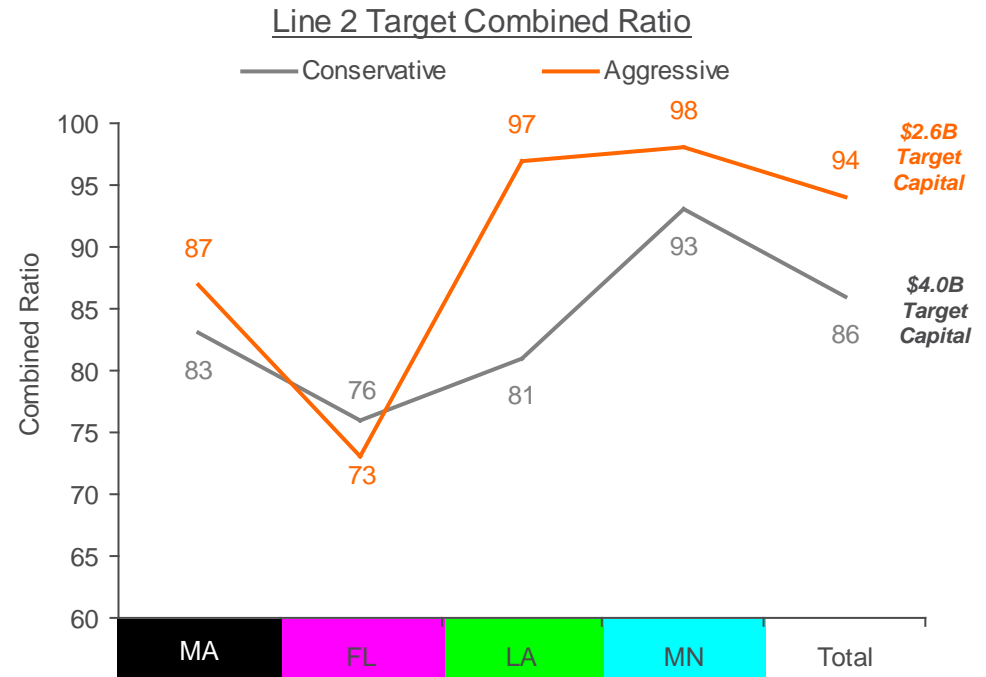
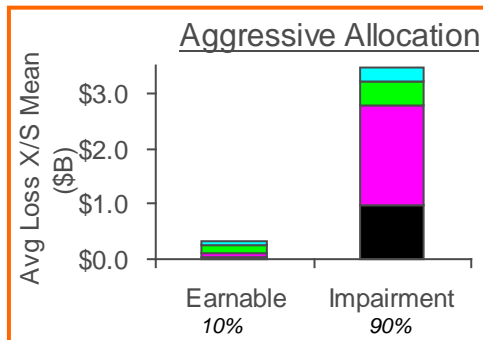
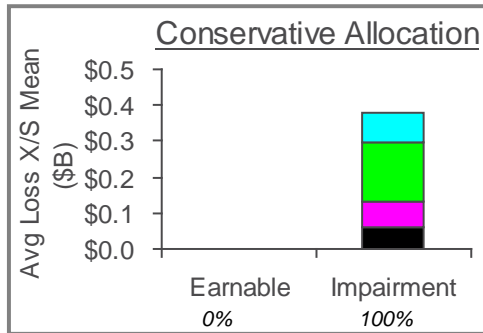
# Results

## ➤ Capital allocation translated into target combined ratio

- Target return 10%
- Credit for investment income

## ➤ These results are an important feedback loop

- Risk preferences are hard to articulate
- If you can't accept these results, revisit your risk appetite

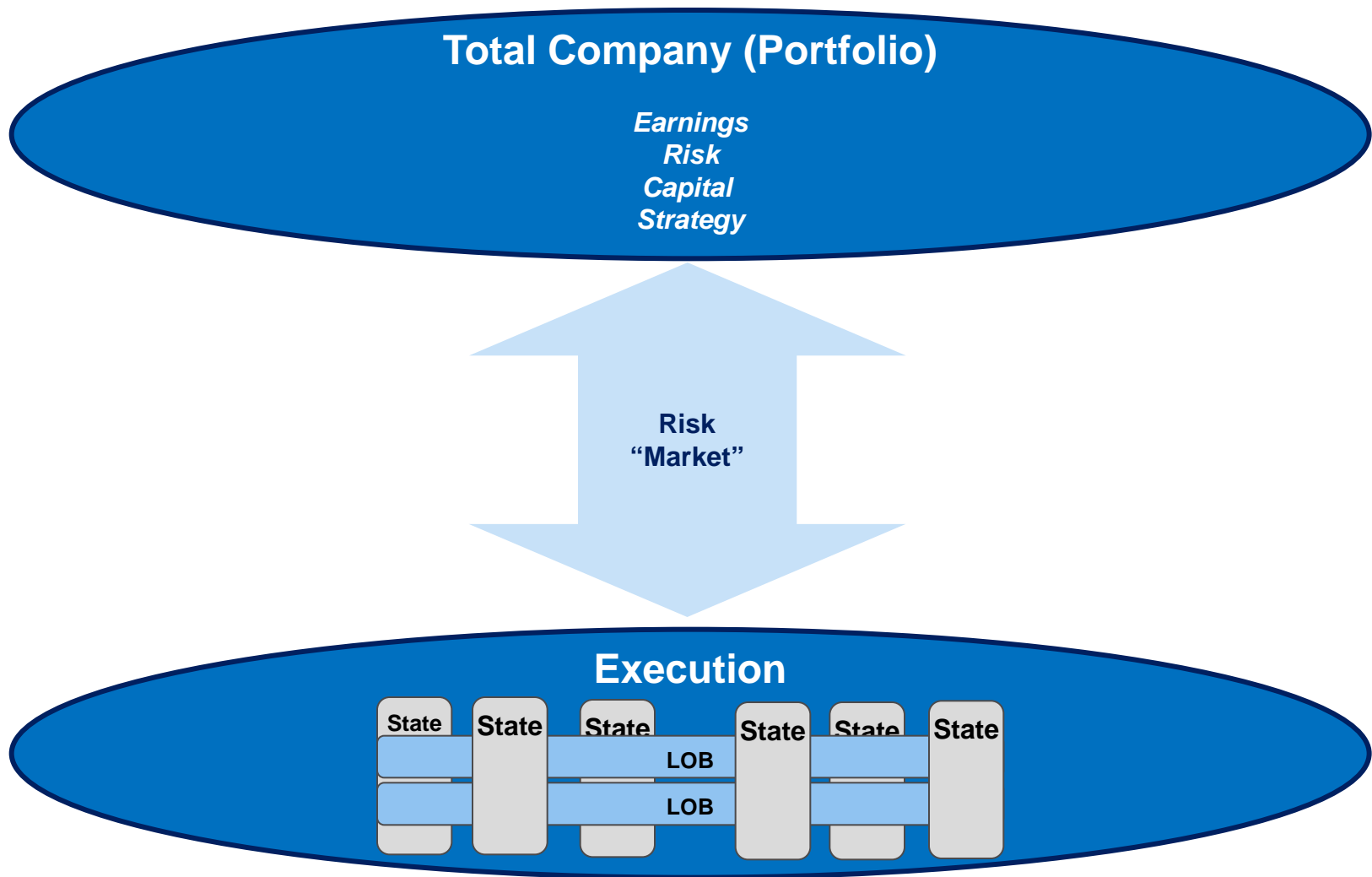


## Leading Practice Benchmarking

Leading Practice	This Approach
1) Allocate cost of capital as opposed to capital	<b>Allocates Capital</b>
2) Away from sole reliance on extreme tail metrics to a blend of short, medium and long return period metrics	✓
3) Integrate explicit, formal statements of risk preference	✓
4) Design the capital allocation process based on performance criteria	✓
5) Create an operational buffer between the capital model and “executors”	✓

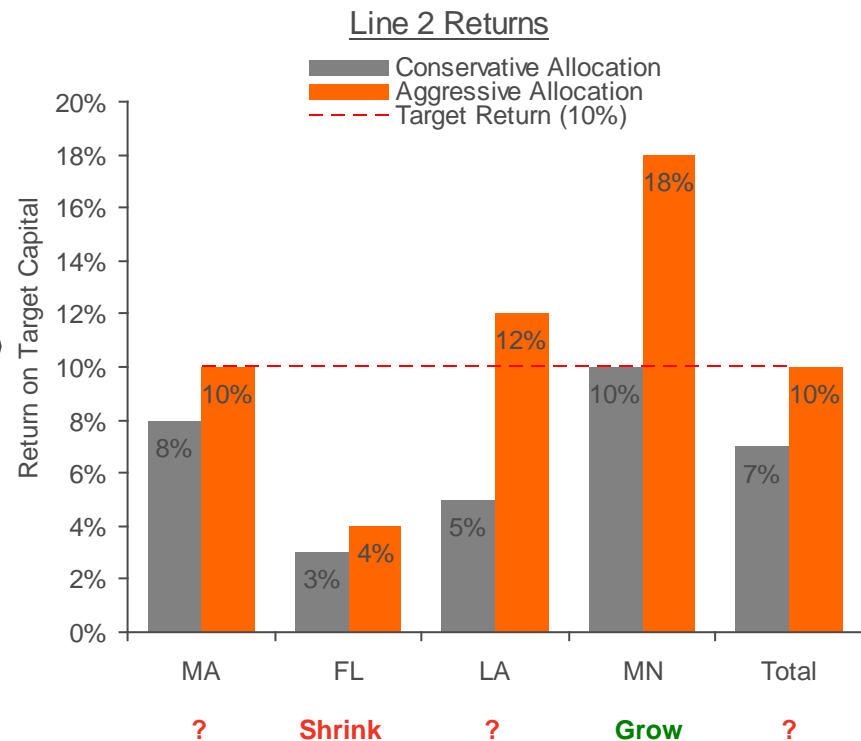
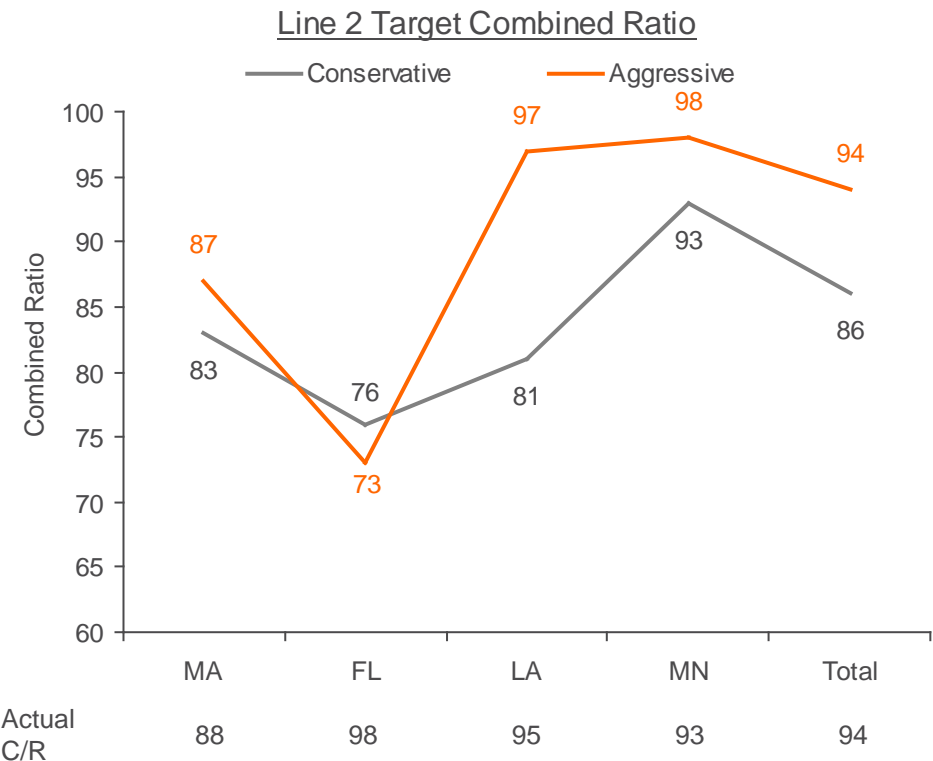
# **Driving business decisions with economic capital**

# Operating Paradigm



# Risk market in action

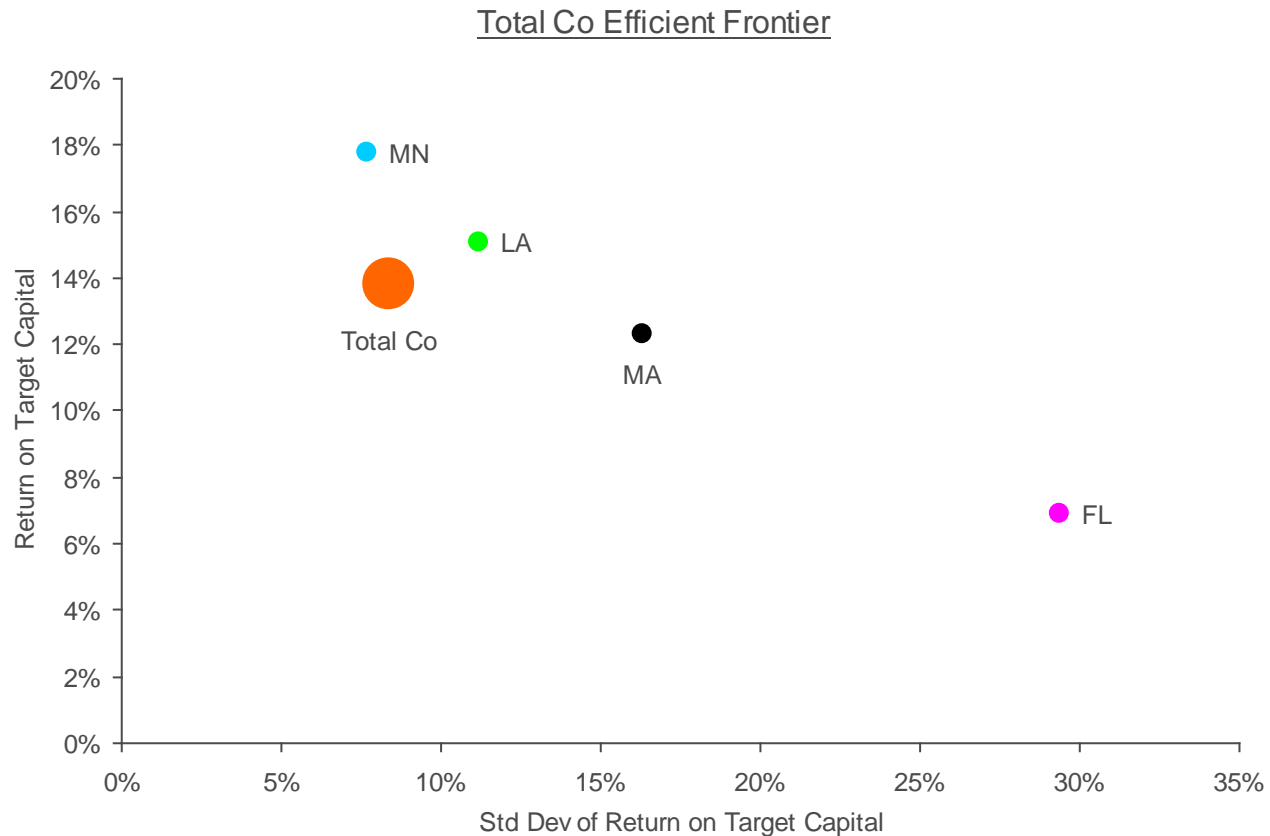
- Target combined ratios are the “price” in our risk market
- Prices send signals
- How would you respond to these signals?



# The final frontier

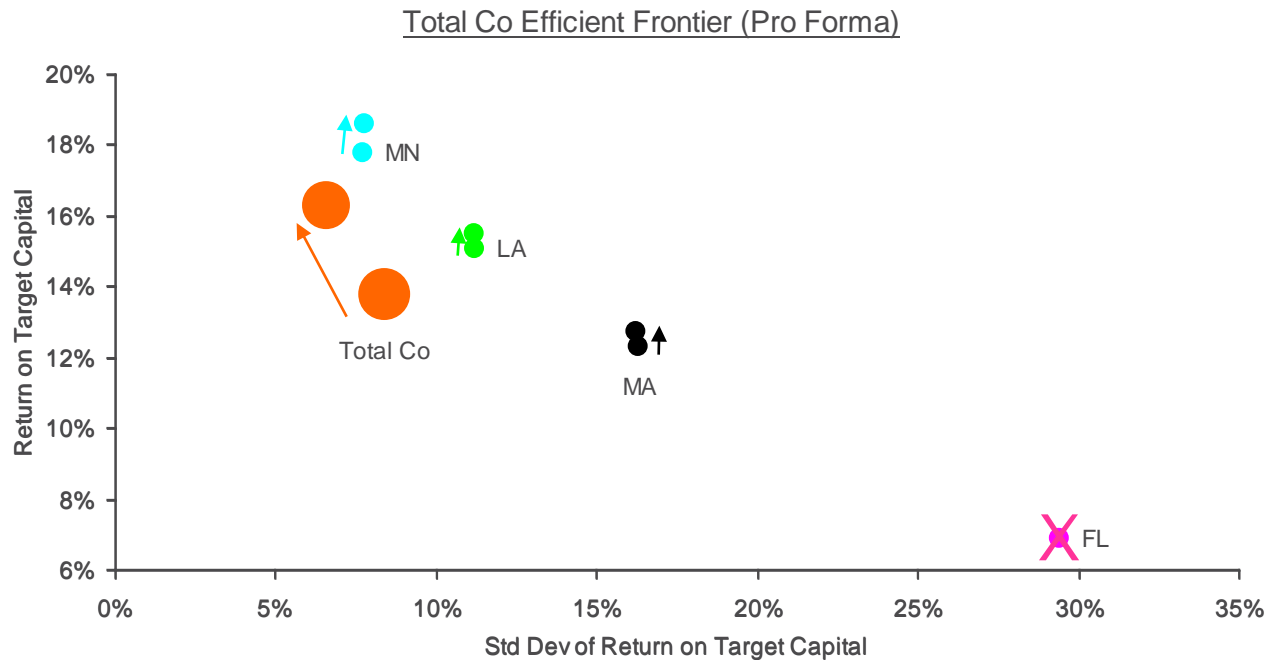
## ➤ Managing as a portfolio requires ability to make trades

- Profit
- Growth
- Return
- Volatility



# Optimizing

- **Diversification has multiple benefits in optimizing portfolio**
  - Can make new risks look good
  - Can make existing risks look better
- **Risk appetite and current portfolio define possibilities**
- **Example: Remove FL**



Target Combined Ratio (Base)					
	MA	FL	LA	MN	Total
Line 1	100	100	100	100	100
Line 2	87	73	97	98	94

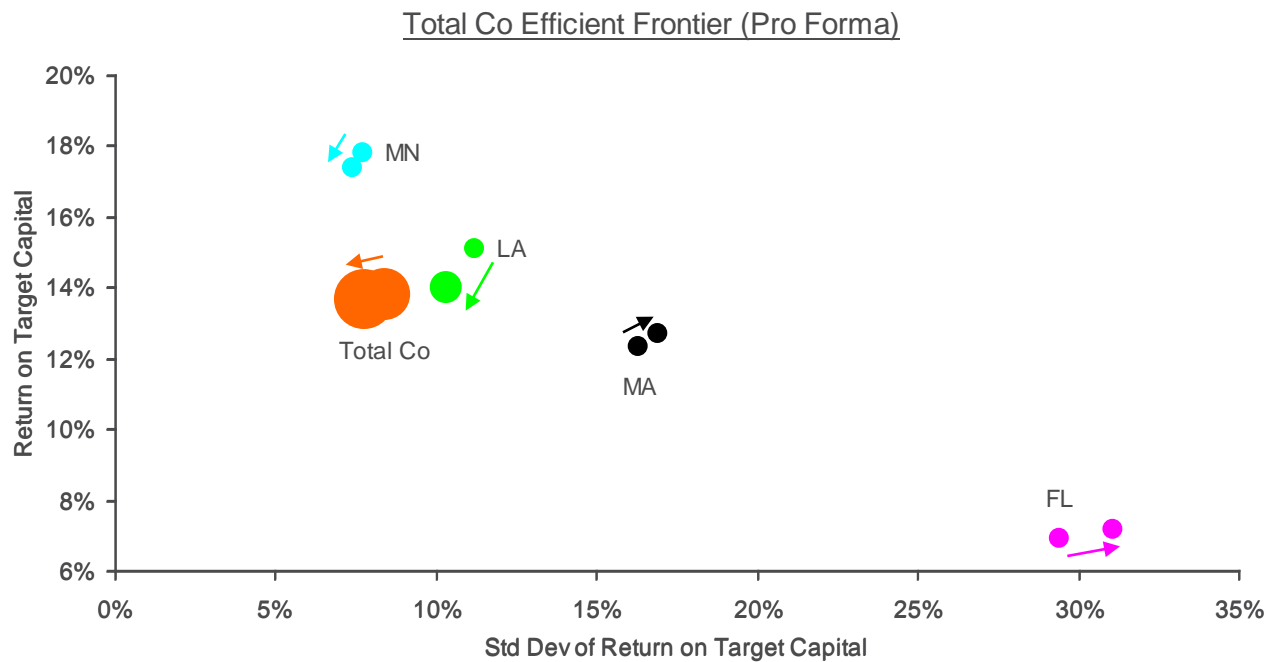


Target Combined Ratio (Pro Forma)					
	MA	FL	LA	MN	Total
	100	-	100	100	100
	88	-	98	100	97



# Optimizing...Round 2

- Example: Increase LA by 50%



Target Combined Ratio (Base)					
	MA	FL	LA	MN	Total
Line 1	100	100	100	100	100
Line 2	87	73	97	98	94



Target Combined Ratio (Pro Forma)					
	MA	FL	LA	MN	Total
	100	100	100	100	100
	88	75	95	98	94

# Q&A