


APPLIED FINANCE

Lecture 7



GOALS FOR TODAY


- ▶ Get you to admit this is a valid alternative framework (albeit orthogonal) to capital allocation / release / IRR
 - ▶ Given it's a possibility, demonstrate how it can be practically implemented as a means of pricing reinsurance
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▶ TWO BETS

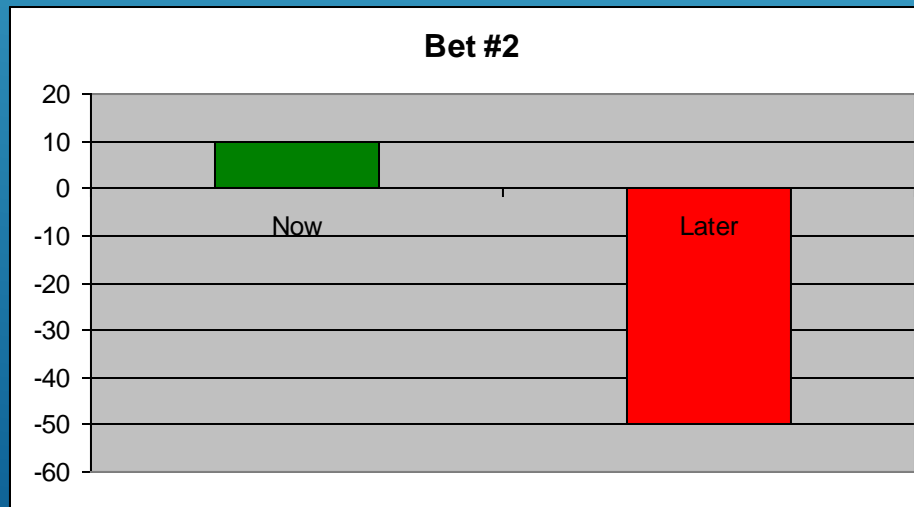
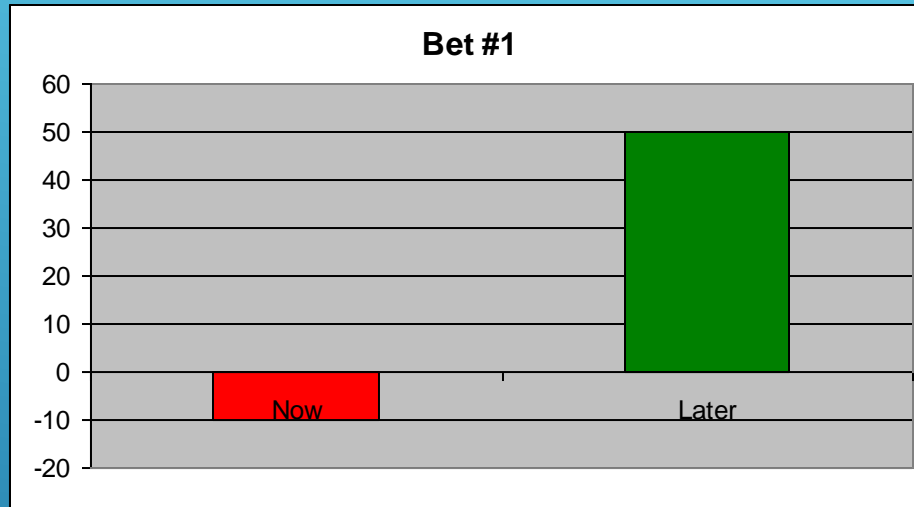
▶ Bet #1

- ▶ You pay me \$10 now
- ▶ I might pay you \$50 later

▶ Bet #2

- ▶ I pay you \$10 now
 - ▶ You might have to pay me \$50 later
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PAYOFF DIAGRAMS



- ▶ You spend now, hope to receive later
- ▶ You spend NOW, voluntarily
- ▶ With the odds I give you, you can compute an expected value and decide if you want to make the bet

BET #1
SPEND THEN *MAYBE* RECEIVE



- ▶ You receive now, hope you don't have to spend later
- ▶ You *MAY* spend *LATER*, involuntarily
- ▶ With the odds I give you, you can compute an expected value and decide if you want to make the bet

BET #2

RECEIVE THEN MAYBE SPEND

CAPITAL?

- ▶ Bet #1 = \$10
 - ▶ You spend \$10 capital **NOW no matter what**
 - ▶ The capital investment is current and certain – i.e., not contingent
 - ▶ Allocated = spent
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CAPITAL?

- ▶ Bet #2 = \$???
 - ▶ I should be sure you have \$40 available **LATER**, but you don't spend anything **NOW**
 - ▶ If Bet #2 hits, you spend \$40 capital **LATER**
 - ▶ Capital expenditure (= allocation) is contingent and in the future
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ALLOCATION VS CONSUMPTION

- ▶ Two different but equally valid frameworks for
 - ▶ Treating capital
 - ▶ Evaluating insurance business segments
 - ▶ Developing indicated prices for reinsurance
 - ▶ Nearly orthogonal
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▶ Four questions:

1. ALLOCATION VS CONSUMPTION
What do you do with the total capital?
2. How do you evaluate business segments?
3. What does it mean to be in a portfolio?
4. How is relative risk contribution reflected?



ALLOCATION VS CONSUMPTION

Question 1: What happens to the total capital?

Allocation	Consumption
<ul style="list-style-type: none">• Divided up among the segments.• Either by explicit allocation, or assignment of the marginal change in the total capital requirement from adding the segment to the remaining portfolio	<ul style="list-style-type: none">• Left intact• Each segment has the right to “call” upon the total capital to pay its operating deficits or shortfalls

ALLOCATION VS CONSUMPTION

Question 2: How are the segments evaluated?

Allocation	Consumption
<ul style="list-style-type: none">• Give the allocations to each segment• Evaluate each segment's return on their allocated capital• Must clear their hurdle rate	<ul style="list-style-type: none">• Give each segment "access rights" to the entire capital• Evaluate each segment's potential calls (both likelihood and magnitude) on the total capital• Must pay for the likelihood and magnitude of their potential calls

ALLOCATION VS CONSUMPTION

Question 3: What does being in a portfolio mean?

Allocation	Consumption
<ul style="list-style-type: none">• Being standalone with less capital• But still having access to all the capital if necessary, although it is unclear how this is reflected	<ul style="list-style-type: none">• Being standalone with potential access to all the capital• But all other segments have similar access rights

▶ This is **THE CRITICAL SLIDE!**

ALLOCATION VS CONSUMPTION

Question 4: How is relative risk contribution reflected?

Allocation	Consumption
<ul style="list-style-type: none">• Use a single risk measure to determine required capital• Select a dependence structure for the aggregation of segment distributions into a portfolio aggregate distribution• The marginal impact of adding a segment to the remaining portfolio is that segment's risk contribution	<ul style="list-style-type: none">• Use scenario-level detail generated by stochastic modeling• Use explicit risk-return evaluation via utility function• Segment's risk contribution is determined at the scenario level, then aggregated over all scenarios

FINAL THOUGHT:

- This actually IS capital allocation for insurance, done right
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