Implementation of a Protection Program: One Year On

TRIP Protection @ The University of Chicago

Presentation for
Global Volatility Summit 2013

Mike Edleson
Chief Risk Officer

NOTE:
‘TRIP’ is the acronym for our Endowment
Last Year’s Presentation on 1 Page:
The Case for TRIP Protection

- Big' Losses hurt 'exponentially' more

Endowment Portfolio

Push for Return → Non-linear β
Pro-cyclical alpha (= β ?)
Illiquidity (interaction with ↓ mkt)
Leverage
Rebalancing

Risks
Bigger than Expected in Down Markets

Improve with TRIP Protection

Deep Downside Risk Appetite?
Wrong-Way (Negative Convexity) Risk in Endowments

The concept of ‘Wrong-way’ risk in a portfolio is shown at the right

- $\beta \uparrow$ as Markets $\downarrow$ = Lose more \(-\)$$ than expect

The natural tendency for an endowment is to produce wrong-way risk or negatively-convex returns:

- Volatility & correlation spikes during market crises
- Natural ‘carry’ strategies in many hedge funds
- Natural risk profile of credit investments
- Interaction effect with illiquidity
- Beta of our ‘alpha’
- Interaction effect with leverage
- Rebalancing as being short gamma
- ‘Carry’ fees to GPs for alternatives creates kinked risk profile

Negative convexity is evident in actual endowment returns

$\beta \sim 0.5$ actual example:

- $\beta$ is 75% greater in down markets than up. Lose -$$ at accelerated pace
- Like being SHORT sizable put option on market (yields ‘premium’ which is about $\frac{1}{3}$ of what we call ‘alpha’)

Illustration of Wrong-Way Beta

Looking at the Beta of Returns in UP and DOWN Markets...
Typical Endowment Return is RISKIER to the downside.
# Risk Drivers of Our Investment Returns

<table>
<thead>
<tr>
<th>RISK DRIVER</th>
<th>Governance Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary</strong></td>
<td></td>
</tr>
<tr>
<td>Global Equity Risk</td>
<td>β target 0.75 (0.7 – 0.8 range)</td>
</tr>
<tr>
<td><strong>Secondary</strong></td>
<td></td>
</tr>
<tr>
<td>Return Appetite</td>
<td>Target established consistent with risk controls</td>
</tr>
<tr>
<td>Liquidity Risk (Illiq. Premium)</td>
<td>Cut back to 35% ‘Illiquid’</td>
</tr>
<tr>
<td>Leverage</td>
<td>No Explicit Leverage</td>
</tr>
<tr>
<td>Short Optionality Premium (wrong-way risk)</td>
<td>Offset with Volatility Allocation</td>
</tr>
<tr>
<td><strong>Tertiary</strong></td>
<td></td>
</tr>
<tr>
<td>Value Premium</td>
<td>measure &amp; monitor</td>
</tr>
<tr>
<td>Interest Rate Risk</td>
<td>measure &amp; monitor</td>
</tr>
<tr>
<td>Small Cap Premium</td>
<td>measure &amp; monitor</td>
</tr>
<tr>
<td>EM vs. Developed (correlated w/materials/resources)</td>
<td>measure &amp; monitor</td>
</tr>
</tbody>
</table>

TRIP Protection is just one facet of an integrated TRIP investment strategy and risk management approach.
Protection Program STEPS — ‘Preface’ Phase

- Meet & Talk (+ go to GVS)
  Protection managers & sell-side
- Risk Framework — Risk Drivers
- Develop Case
- Socialize Staff & Board
- Assess Appetite
- Identify Program Goals
- Governance
  (part of investment strategy, vs. tempting alternative of hiding & doing opportunistically)

We are not suggesting a radical fix that will eliminate losses. This is a practical, partial hedge that represents a focused, balanced, cost-effective solution to improve our return profile when the impact is largest.

ALL this precedes even thinking about implementation!
### Allocation and Cost
The Program & Costs

- ✔ Equity = main focus (primary risk driver)
- ✔ Try to ‘linear-ize’ wrong-way β profile

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**Table: TRIP Allocation and Cost**

<table>
<thead>
<tr>
<th></th>
<th>(as a % of all TRIP)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIP (Endowment)</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>TRIP Protection</td>
<td>2%</td>
<td>0-4% strategic allocation</td>
</tr>
<tr>
<td>Budget Max Loss</td>
<td>− 65 bps</td>
<td>Capitalize 3x max bleed</td>
</tr>
<tr>
<td>Long-term Loss (standalone)</td>
<td>− 25-40 bps</td>
<td>As some years don’t lose max loss, some gain</td>
</tr>
<tr>
<td>w/Alpha, net of fees (standalone)</td>
<td>− 20-30 bps</td>
<td>3-5 bp fee drag, but manager skill vs. crowded passive protection</td>
</tr>
<tr>
<td>...Portfolio Impact (in combination with TRIP returns)</td>
<td>− 12-20 bps</td>
<td>Compound return improved by negatively-correlated, convex return component</td>
</tr>
</tbody>
</table>

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*Improve the return profile of TRIP by partially protecting its downside with:*
- a 2% strategic allocation to volatility/ option products w/ positive convexity,
- including a max 0.65% premium budget,
- and an expected long-run draw of -12-20 bps on average endowment return
- but contributing several hundred bps to TRIP return in an extreme tail event

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GVS 2013: Implementation of a Protection Program

- Equity = main focus (primary risk driver)
- Try to ‘linear-ize’ wrong-way β profile
Strategies and Criteria

**What are the Criteria we want in a Protection Program?**

- Philosophy (manager truly ‘gets’ what we’re trying to do)
- Significant Performance in extreme downturn
- Performance in short-term shocks?
- Liquidity of structure & strategy / ability to monetize
- Execution
- Manager alpha
- Asset class fit & mix (primary focus equity)
- Transparency & control
- Liquidity of traded products
- (-) short optionality/’wrong way’ higher order risks
- (-) Reinvestment / roll risk
- (-) CP risk
- (-) Basis risk (balance with cost/alpha)
- (-) Cost (Fees, Bleed, Other)
- + ROBUST

**TRIP needs a small allocation with the following properties:**

- Positive Convexity
- Performs well during market downturns
- Protects TRIP return profile

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**GVS 2013: Implementation of a Protection Program**
Protection Program STEPS — ‘Strategy’ Phase

Find your Protection Philosophy

The Big Questions:

✓ What types of losses to protect?
  ❖ Crises only? ...Market corrections?
  ❖ ‘Attachment point’ & Timing

✓ Cost vs. Basis Risk? ...Active vs. Passive?

✓ Strategic vs. Opportunistic?

✓ Pure Protection vs. Rel Val?
  ❖ What are you willing to sell to reduce program cost?

✓ How do your balance your competing criteria?

Politics – (IC, boss)

How Committed?

Internal vs. External

‘Sizing’ →

What mix of Greeks do you want?

Meet with Everybody (refining above points)

We are looking for:

✓ Focus on Convexity & Volatility
✓ Nearly all long; no hidden short optionality risks
✓ A mix of robust, cost-effective strategies
✓ Evaluating with the criteria on last slide

Sizing (example):

<table>
<thead>
<tr>
<th>Endowment</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection Capital</td>
<td>20</td>
</tr>
<tr>
<td>Loss Budget</td>
<td>6-7</td>
</tr>
<tr>
<td>Max Loss</td>
<td>9</td>
</tr>
<tr>
<td>Realistic Loss</td>
<td>6</td>
</tr>
<tr>
<td>Bleed</td>
<td>4</td>
</tr>
<tr>
<td>Delta</td>
<td>-35</td>
</tr>
<tr>
<td>Notional</td>
<td>210</td>
</tr>
</tbody>
</table>

Manager

You

Gotta decide what you’re comfortable with, Find managers who ‘get it,’ You monitor & control it.

There are many strategy-types in Volatility & Protection space to choose from. Different managers specialize in different styles, and some optimize with a mix.
<table>
<thead>
<tr>
<th>44 Managers Evaluated! (Five are shown here:)</th>
<th>Manager A</th>
<th>Manager B (hired)</th>
<th>Manager C</th>
<th>Manager D (short-listed)</th>
<th>Manager E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advisory Service</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fund</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience/Genesis</td>
<td>Risk Model &amp; Advisory</td>
<td>Vol Trading Expertise</td>
<td>Vol Trading / Fund</td>
<td>Organic FOHF Hedging</td>
<td>Former Multi-Strat Managers</td>
</tr>
<tr>
<td>Competence</td>
<td>Excellent</td>
<td>Excellent</td>
<td>?</td>
<td>Very Good</td>
<td>?</td>
</tr>
<tr>
<td>Philosophy/Focus</td>
<td>Not Aligned</td>
<td>Excellent</td>
<td>Moderate</td>
<td>Good</td>
<td>Moderate / Shotgun</td>
</tr>
<tr>
<td>Process/Sophistication</td>
<td>Good</td>
<td>Very Good</td>
<td>Good</td>
<td>Good</td>
<td>Fair -</td>
</tr>
<tr>
<td>Strategy: Type</td>
<td>Linear</td>
<td>Convex, Vol, Volgamma, Term</td>
<td>Convex, Vol, Opp</td>
<td>Convex</td>
<td>Any</td>
</tr>
<tr>
<td>Strategy: Other Dynamic Global Macro</td>
<td>Dynamic</td>
<td>Some Rel Vol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asset Classes</td>
<td>Multi</td>
<td>Equity</td>
<td>US Equity</td>
<td>Equity/Multi</td>
<td>Multi</td>
</tr>
<tr>
<td>Infrastructure/Execution</td>
<td>Limited</td>
<td>Excellent</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Transparency / Control</td>
<td>Full</td>
<td>Full</td>
<td>Limited</td>
<td>Full</td>
<td>Full</td>
</tr>
<tr>
<td>Payoff</td>
<td>Low</td>
<td>High</td>
<td>Med +</td>
<td>High</td>
<td>?</td>
</tr>
<tr>
<td>Payoff</td>
<td>Low</td>
<td>High</td>
<td>Med +</td>
<td>High</td>
<td>?</td>
</tr>
<tr>
<td>Cost (net of Alpha)</td>
<td>Very Low (None)</td>
<td>Med (Low)</td>
<td>Med (?)</td>
<td>Med (Med)</td>
<td>?</td>
</tr>
<tr>
<td>Fees</td>
<td>Low</td>
<td>Med</td>
<td>Extremely High</td>
<td>Low</td>
<td>Very Low</td>
</tr>
</tbody>
</table>
THANK YOU

Mike Edleson
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The University of Chicago

You’ve Earned a BREAK*!

Global Volatility Summit 2013