

Discussion of:  
Hedge Fund Tail Risk: Hedging Mechanisms and  
Performance  
by Juha Joenväärä and Mikko Kauppila

Zhaogang Song  
Johns Hopkins Carey Business School

FIRS (Lisbon) 2016

# Summary

$$\begin{aligned}R^i &= \alpha^i + \beta^i R^m + \varepsilon^i \\SCTR^i &= -\mathbb{E} [\beta^i R^m | R^m \leq -VaR^m] \\ICTR^i &= -\mathbb{E} [\varepsilon^i | R^m \leq -VaR^m]\end{aligned}$$

- Two findings
  - 1 ICTR explains cross-sectional fund performance, **low ICTR better performance**, but **SCTR does not**
  - 2 Low-ICTR funds have contemporaneous high protective option positions (straddles and puts) **only during stressful times**, while low-SCTR funds **always hold such options**
- Interpretation: Low-ICTR funds **possess skills in hedging** tail risks, while low-SCTR funds **do not**

# Big Picture

- Risk vs skill (regarding tail risks) of hedge funds
  - ▶ Skipped many important works on other risks and skills
- Returns data
  - ▶ Mitchell and Pulvino (2001), Agarwal and Naik (2004), Agarwal, Bakshi, and Huij (2010), Jiang and Kelly (2012), Gao, Gao, and Song (2015) among others
- Portfolio holdings data
  - ▶ Agarwal, Ruenzi, and Weigert (2015): high tail risk, high return, and high tail risk portfolios
  - ▶ Current paper: low tail risk, high return, and high tail insurance

# Discussion Organization

- Comments on conceptual issues
  - ▶ Risk or skill? idiosyncratic? hedging? causality?...
- Comments on empirical implementation issues
  - ▶ Benchmark model, performance evaluation, ...

## Comment #1 on Conceptual Issues: Risk or Skill?

- Agarwal, Ruenzi, and Weigert (2015) constructs a tail risk measure based on similar ideas
  - ▶ “...the conditional probability that an individual hedge fund has its worst individual return realizations exactly at the same time when the market also has its worst return realizations in a given time span”
- However, they get the opposite finding: high tail risk, high fund return
- The current paper first finds low tail risk high fund return, and then appeals to tail risk hedging skill
  - ▶ External consistency: how to reconcile the contradictory empirical findings?
  - ▶ Internal consistency: how can a measure proxy for both risk and skill? Why not a skill measure directly if the objective is to show some hedge funds have better tail risk hedging skills?

## Comment #2 on Conceptual Issues: Idiosyncratic?

- Does ICTR capture “idiosyncratic” tail risk?

$$R^i = \alpha^i + \beta^i R^m + \varepsilon^i, \text{ICTR}^i = -\mathbb{E} [\varepsilon^i | R^m \leq -\text{VaR}^m]$$

- ▶  $\text{ICTR}^i$  measures a fund's idiosyncratic return when market return is low
- Comments
  - ▶  $\text{ICTR}^i$  seems to be a mixture of “systematic” and “idiosyncratic” risks
  - ▶ Given that  $\varepsilon^i$  is irrelevant of  $R^m$ , why conditional on market return?
  - ▶ This will introduce noises: for example,  $\varepsilon^i$  may achieve positive values sometimes when  $R^m$  is low because it is the idiosyncratic component
  - ▶ This may be the mechanical reason for the **puzzling** finding that low-ICTR funds use protective positions heavily only in marker stressful times that are systematic
- Suggestions: do not condition on  $R^m$

## Comment #3 on Conceptual Issues: Hedging?

- The paper's second major finding, "tail risk hedging", relies on protective option positions of low ICTR/SCTR funds
  - ▶ Protective options are calls+puts and puts;
  - ▶ Non-protective are calls

Underlying Position	Option Position	Effect
Long	Put	Protective
Short	Put	Non-Protective
No	Put	Non-Protective

- Comments
  - ▶ Calls+puts are not necessarily protective, which depend on relative strikes, but not a too serious issue
  - ▶ The current definition is fine for long positions, which are rarely the case for hedge funds
- Suggestions: Should report main results (Tables 5 and 6) using alternative definitions of protective options, e.g, those of Aragon and Martin (2012)

## Comment #4 on Conceptual Issues: Causality?

- The paper's second major finding, “tail risk hedging”, relies on **contemporaneous** option positions of low ICTR/SCTR funds
  - ▶ Baseline results (Tables 5-6) use regressions of time-t tail risk on time-t option positions
- Comments
  - ▶ NOT appropriate: the option positions are for future risks
  - ▶ Interpretation of the current result: funds with historically low tail risk tend to do more tail risk hedging, rather than tail risk hedging leads to low tail risk
- Suggestions: Should use lagged option positions in baseline results; explore the option maturity for the right lagged horizon



# Comments on Empirical Implementation Issues

- Panel regressions are used in baseline results on how ICTR and SCTR explain fund performance
  - ▶ Panel regressions are good in controlling for a large number of different factors
  - ▶ But, out-of-sample portfolios results are robust and nonparametric given the nonlinearity of hedge fund performance (at least to me)
  - ▶ I would recommend using portfolio results as the baseline evidence (the authors have done some as robustness checks)

# Comments on Empirical Implementation Issues

- Portfolio results

- ▶ Monthly holding horizons: use quarterly, semi-annually, and annually important because protective options are usually beyond one month
- ▶ Only five: use tercile portfolios as there are enough funds
- ▶ Equal-weight: use value-weight
- ▶ To facilitate comparisons, use double-sorting portfolios to control for other factors (hedge funds returns are highly nonlinear)

# Conclusion

- The paper studies an important issue – hedge fund skills on tail risk
- The negative relation between ICTR and fund returns suggest skills, and results on option positions seem consistent with skills
- Several issues need be cleared up to claim low-ICTR funds possess “tail risk hedging” skills
  - ① Reconcile with Agarwal, Ruenzi, and Weigert (2015) and establish **internal consistency**
  - ② Whether ICTR is really **idiosyncratic**
  - ③ Whether option positions are really for **“hedging”**
  - ④ Whether hedging **leads to** low future tail risk
- Need use more **standard and robust** empirical methods to deliver convincing main empirical finding