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Weathering the Storm in Risk Premia Strategies in the Commodity Markets: A Case Study

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Weathering the Storm in Risk Premia Strategies: A Case Study

I. Introduction

II. Weather Premia Strategies

III. (Arguably) A Type of Risk Premium

IV. Active Management

V. Risk Management Case Study

VI. Conclusion

Icon above is based on the statue in the Chicago Board of Trade plaza.

Source: Till (2019).

I. Introduction

- Sakkas and Tessaromatis (2018): "Commodity portfolios exposed to commodity factors earn significant risk premiums, in addition to the premium offered by a broadly diversified commodity index."

- In this brief presentation, we focus on an additional candidate risk premium in the commodity futures markets (which is on the verge of being formalized in the academic literature): the *weather premium*.

- A key point will be the extra diligence needed in the risk management for this type of strategy.

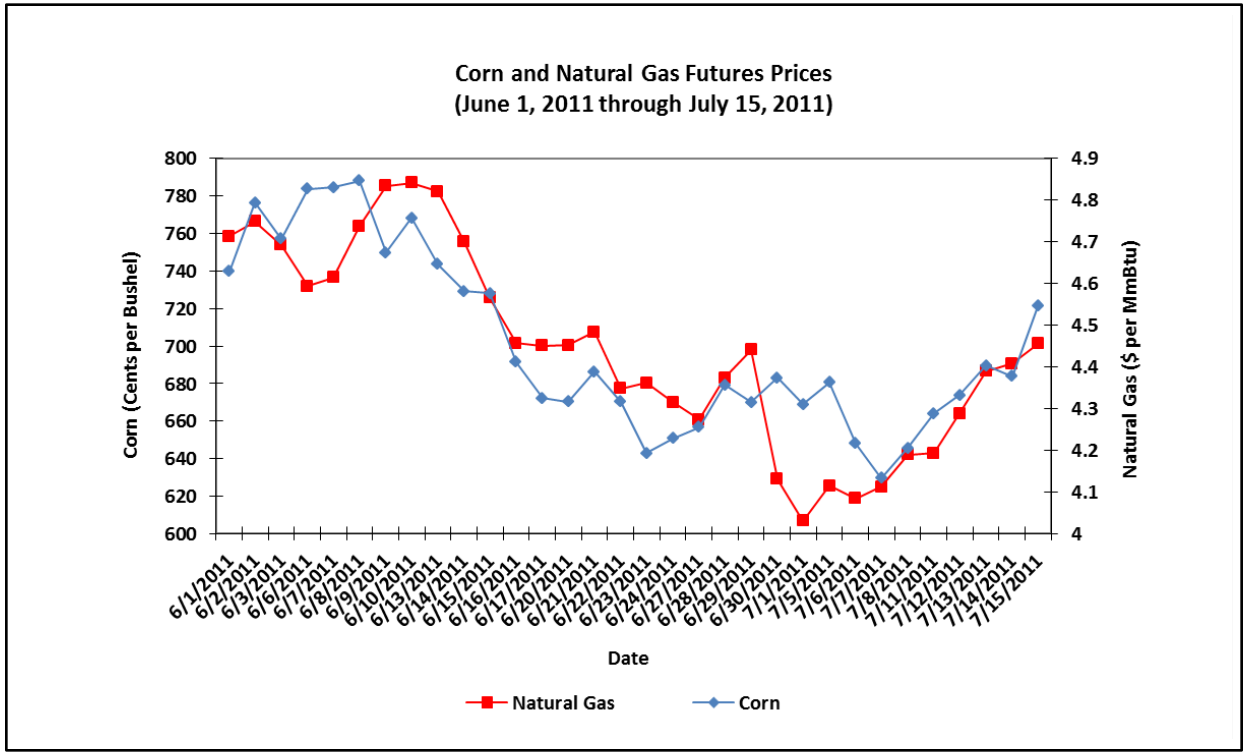
II. Description of Weather Premia Strategies

- A commodity futures price is systematically too high, reflecting the uncertainty of an upcoming weather event.
- Careful trade construction twinned with fundamental analysis are essential.
- The strategies can be found in the tropical, grain, and natural gas futures markets.

II. Description of Weather Premia Strategies (Continued)

Stressful Weather Periods

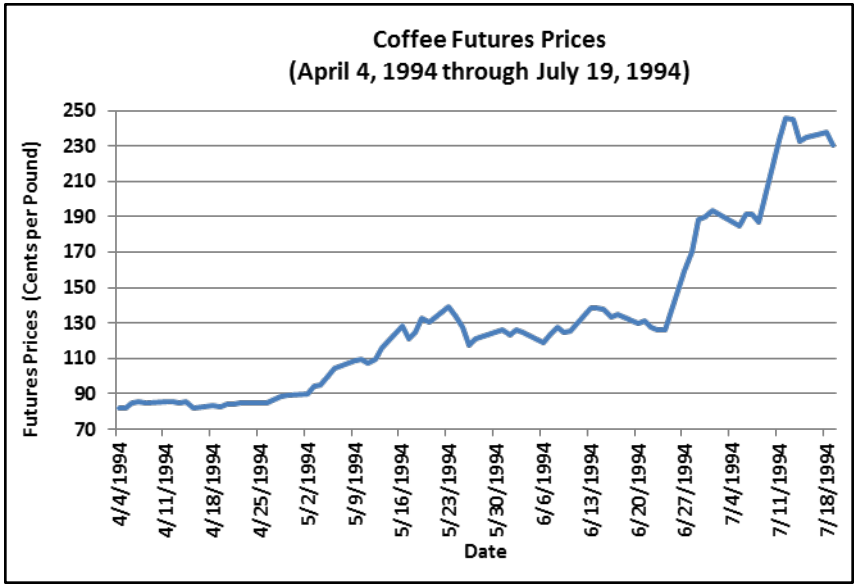
Corn and Natural Gas Futures Prices during the Summer of 2011, Exhibiting Common Reactions to the Prospect of Extreme Heat



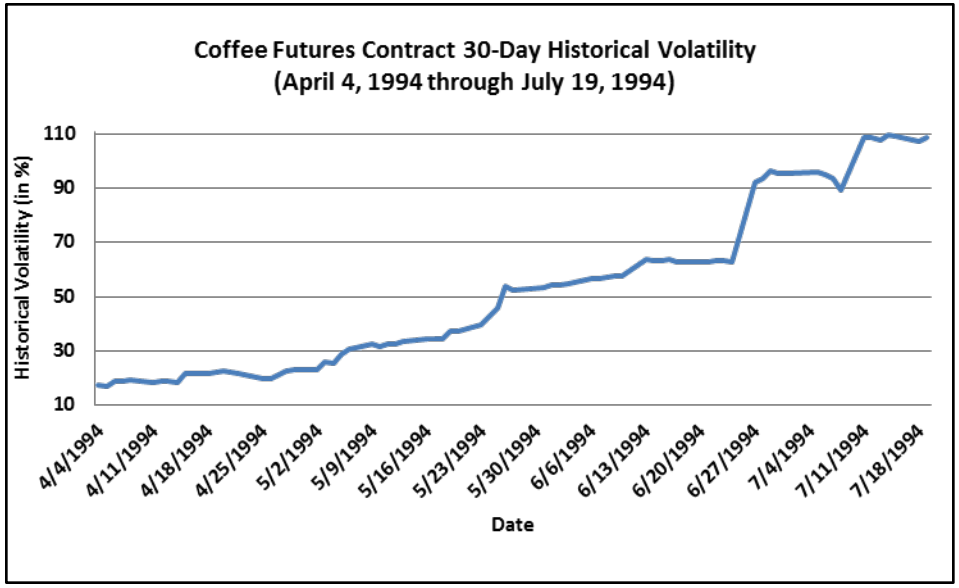
II. Description of Weather Premia Strategies (Continued)

Short-Option-Like Payoff Profiles

Coffee Futures Prices during Extreme Brazilian Winter



Explosive Volatility in Coffee Futures Prices during Extreme Brazilian Winter



III. A Type of Risk Premium

- Chang (1985): A risk premium refers to an "average reward to investors for being willing to assume a risk position in a risk-averse financial world."

- The reward is not conditioned on superior judgement.

- Why could weather premia exist in the commodity futures markets? Cochrane (2001): For the same reason as why catastrophe reinsurance had given quite high returns; this occurs when "markets are quite a bit segmented."

IV. Active Management

- A manager must decide how much to leverage the strategy, how many reserves to set aside in the event of a catastrophic event, and whether to give up any returns by hedging out some of the strategy's extreme risks.

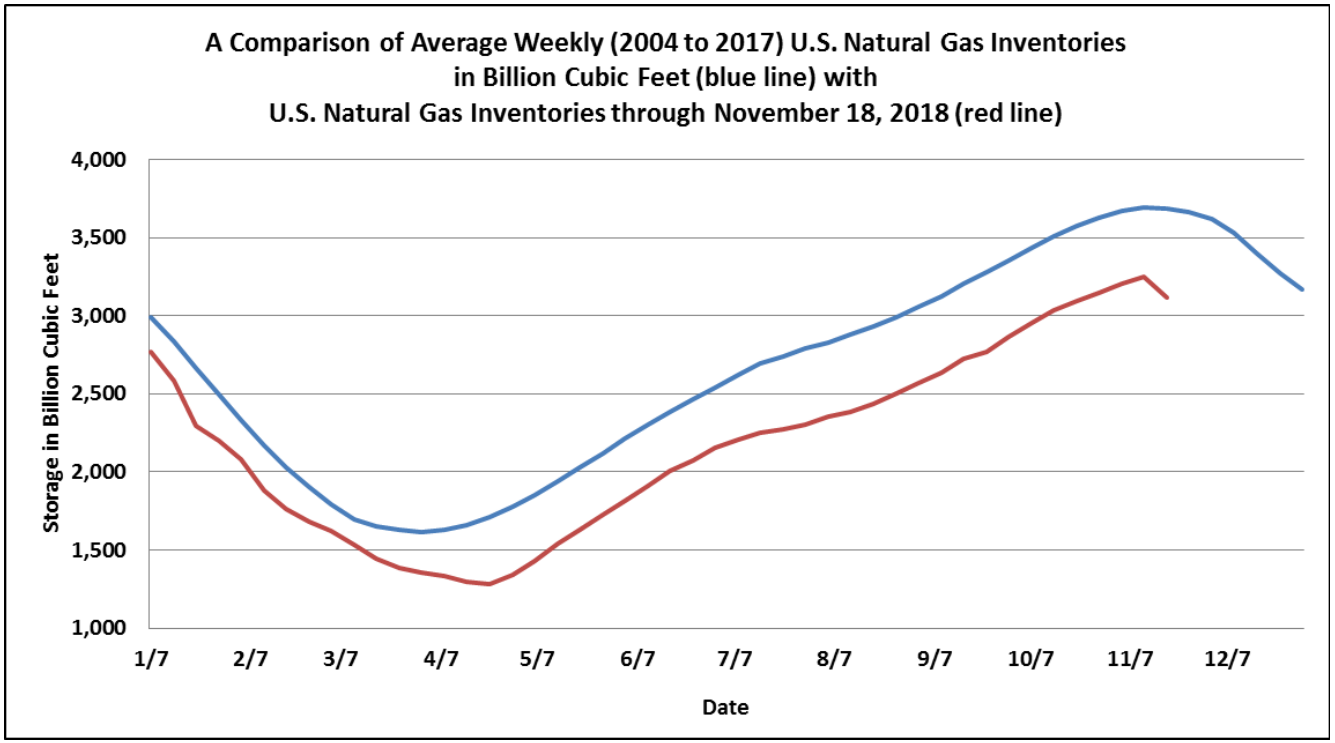
- Further, an actively managed position should have superior timing, careful trade construction, and disciplined risk management.

- Inventories are a crucial fundamental variable, especially in weather-sensitive markets like corn and natural gas.

IV. Active Management (Continued)

Example of When Fading Weather Not Advisable …

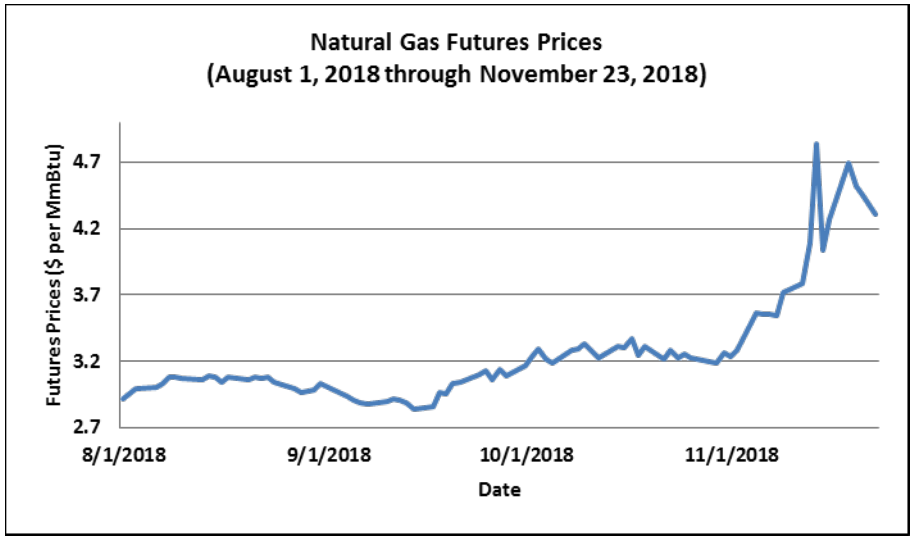
U.S. Natural Gas Storage Builds in 2018 (through mid-November) were Below Average



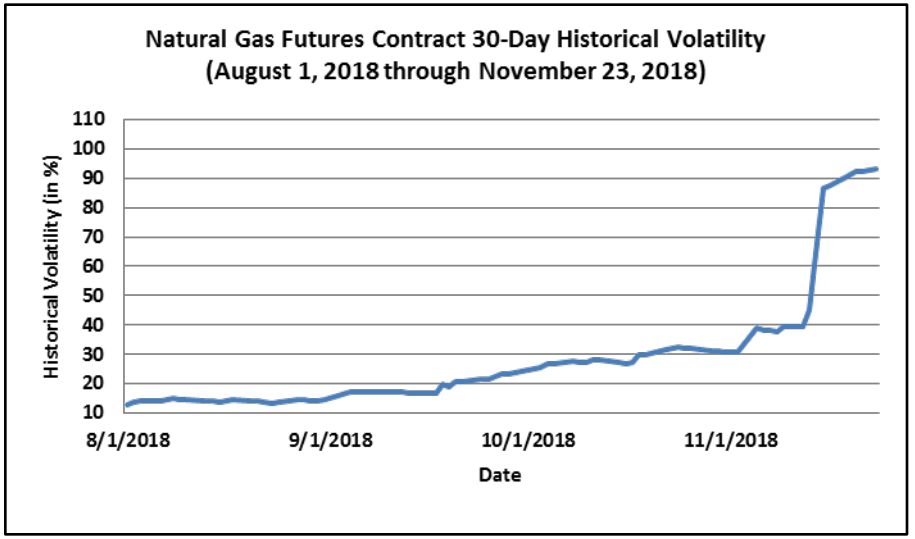
IV. Active Management (Continued)

… A Cold Snap Then Duly Materialized

Natural Gas Futures Prices during a Cold Snap



Explosive Volatility in Natural Gas Futures Prices during a Cold Snap

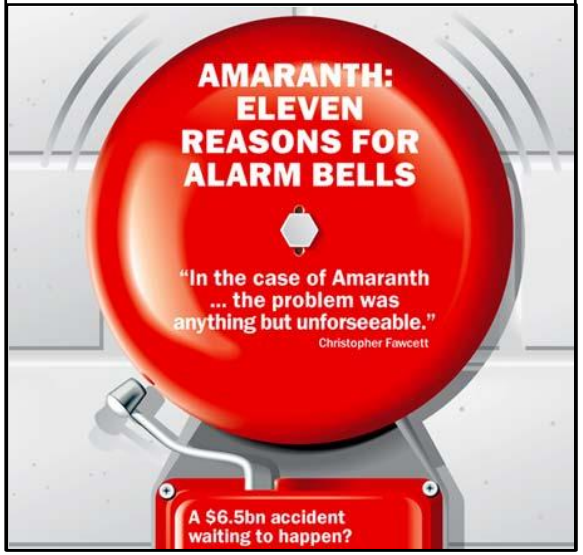


V. Risk Management Case Study

- Natural gas derivatives trading has offered hedge funds and traders a potentially alluring combination of scalability and volatility, and at times, pockets of predictability.

- Even with the past natural gas trading debacles of MotherRock, Amaranth, Bank of Montreal, and Saracen, this faith has continued unabated.

The Hedge Fund, Amaranth, Had Numerous Operational Risks



Source: Hosking (2006.)

- OptionSellers.com is the latest trading firm to suffer large-scale losses in the natural gas futures markets.

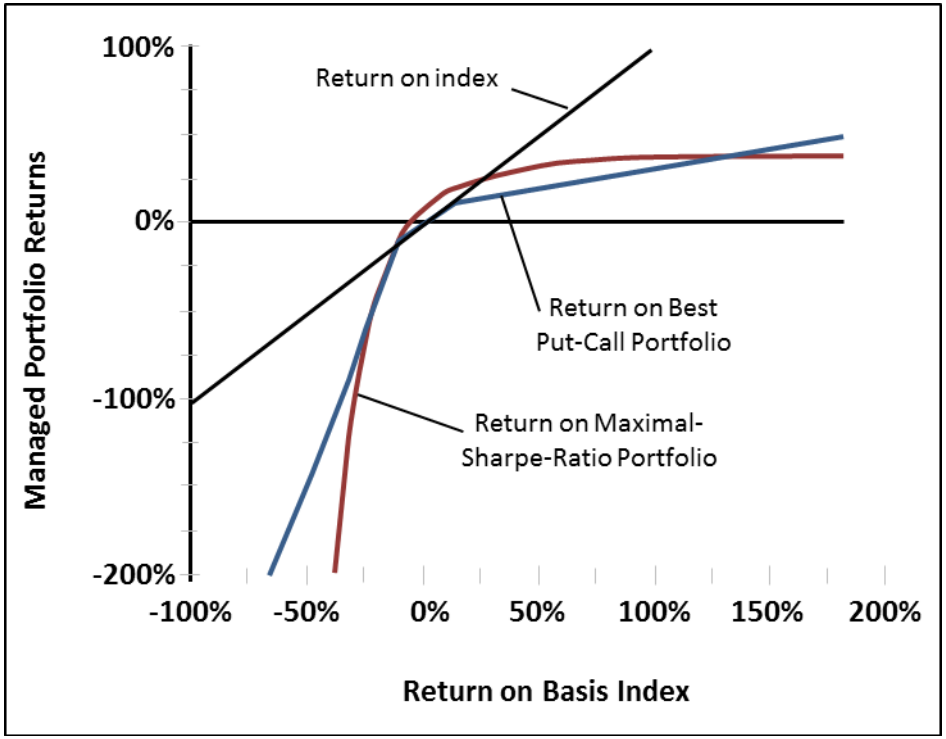
V. Risk Management Case Study (Continued)

High Sharpe Ratio Strategies Can Have Occasional Crashes

Banerji (2018): OptionSellers.com "specialized in selling options contracts to collect income", including in the natural gas futures markets.

Neal (2008): "A registered broker since 1984, … [OptionSellers.com's founder] favors selling far-out-of-the-money options on physical commodities such as *natural gas*, coffee and gold." [Italics added.]

Payoff on the Maximal-Sharpe-Ratio Portfolio with (Short) Options



Source: Goetzmann et al. (2002), Figure 4.

V. Risk Management Case Study (Continued)

- Banerji (2018): OptionSellers.com was forced to liquidate its positions in mid-November 2018 "following wrong-way options bets on oil and natural gas prices."

- In an email to a client, the firm wrote: "Have I lost all the money in my account, then?" Answer: "Yes."

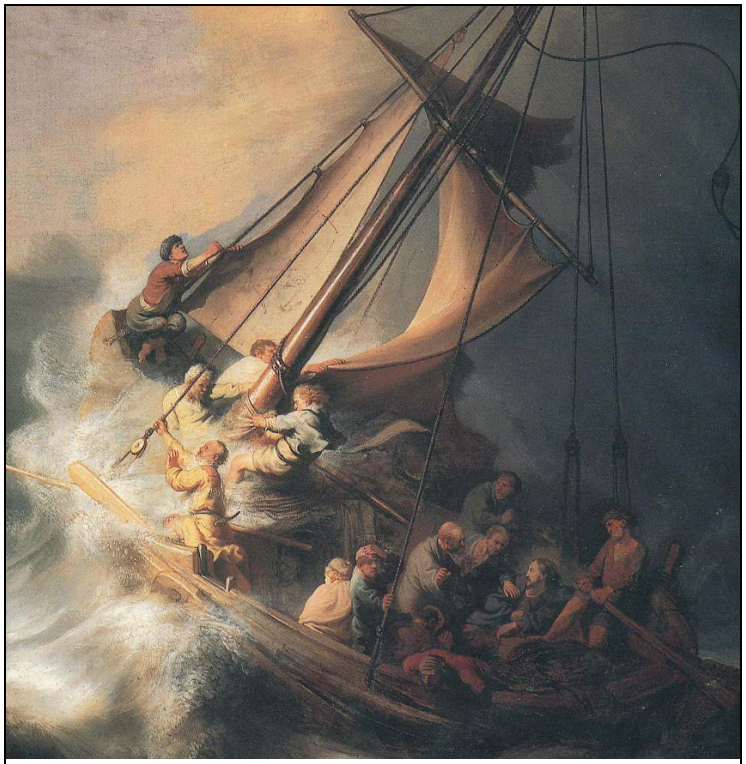
- Further, "[s]ome clients were left with a negative balance, meaning they … [were] in debt to" the trading company's clearing firm.

V. Risk Management Case Study (Continued)

- OptionSellers.com referred to the parabolic move in natural gas prices as a “rogue wave.”
- Pirrong (2018) explained why he found this characterization unconvincing.
- “[T]he natural gas market was primed for a violent move: low inventories going into the heating season made the market vulnerable to a cold snap, which duly materialized and sent the market hurtling upwards,” as shown in the previous slides.

VI. Conclusion

- One should not employ a trade construction that has potentially unlimited losses.
- In addition, these types of strategies should be modestly sized within a diversified portfolio.
- In "weathering the storm" of potential losses, we find the latter conclusion quite relevant in monetizing other commodity risk-premia opportunities: one should do so via (diversified) multi-factor portfolios.



Rembrandt's Storm on the Sea of Galilee, Isabella Stewart Gardner Museum, Boston, and Cover of Against the Gods: The Remarkable Story of Risk by Peter Bernstein, John Wiley & Sons, 1996.

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For an article on the historical parallels between 1873 and the more recent Global Financial Crisis, as seen when looking into the distant mirror of Degas' painting, please see: Till, H., 2011, "Cotton Through a Distant Mirror," Commodities Now, http://www.premiacap.com/publications/CN_Degas_0311.pdf, March, pp. 28-29.

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Articles by Hilary Till, till@premiaresearch.com, can be accessed here:
http://faculty-research.edhec.com/faculty-researchers/alphabetical-list/r-s-t/till-hilary-143898.kjsp?RH=faculty-gb1

Hilary Till is also the Contributing Editor of the "Global Commodities Applied Research Digest," a publication of the J.P. Morgan Center for Commodities at the University of Colorado Denver, which in turn can be accessed here: http://www.jpmcc-gcard.com

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