

Executive Summary

Previous academic literature has attempted to capture risk premia in commodity futures markets. Signals deriving from past performance (Erb and Harvey (2006)), hedging pressure (Basu and Miffre (2013)), inventory levels (Gorton, Hayashi, and Rouwenhorst (2013)) or idiosyncratic volatility (Fuertes, Miffre, and Fernandez-Perez (2015)) have shown to generate excess returns when applied into a trading strategy. This thesis focuses on signals based on the term structure of commodity futures (Gorton and Rouwenhorst (2006)) and examines two risk premia directly related to its slope.

An investment strategy based on two components attempts to capture the absolute term premia. The first component is the carry premium, which is based on the direction of the term structure. Futures contracts trading in contango, offering a negative roll-yield suggest negative carry, whereas contracts trading in backwardation with positive roll-yield indicate positive carry. Hence, contango is taken as a signal to sell the (front contract of a) commodity while backwardation signals to buy the respective (front contract of a) commodity.

The curve premium as the second component of the investment strategy optimizes the carry by positioning on the most attractive part of the term structure in terms of roll-yield. The curve strategy thereby buys the contracts on the curve with the lowest slope, which are set to be most backwardated (least contangoed) and sells the contracts with the highest slope which are the most in contango (least in backwardation).

Capturing both risk premia, the two single-premia strategies are then combined into a joint risk premia framework, expecting to add value to the single strategies and outperform passive long-only investments.

From existing literature two main research questions are derived. Using an empirical analysis of the proposed investment strategies, this thesis attempts to answer the following questions:

- Is it possible to outperform a long-only strategy in commodity futures by taking strategic long-short positions based on term structure signals?
- Does a portfolio combination of the carry and curve premium achieve higher risk adjusted returns than a long-only investment in commodity futures?

The results show that the carry signal as well as the curve signal implemented in an investment strategy on 24 commodities generate higher returns than a long-only investment equally weighted among the same commodities. Furthermore, a combination of the two premia into a joint risk premia framework enhances these returns even more. Over a large dataset from 1970 to 2020, the combined strategy earns annual returns of 9.25% with a Sharpe ratio of 0.88. Compared to a long-only investment in the same commodities and even a widely used commodity benchmark like the Standard & Poor's GSCI, both the absolute and the risk-adjusted returns are higher. Furthermore, the results stand up to diverse robustness checks when tested over different time periods, applying transaction costs, or extending the holding periods.

Further research may extend the study by expanding the double-sort term structure strategy with other factors such as the momentum factor (Erb and Harvey (2006)) or inventory levels (Gorton, Hayashi, and Rouwenhorst (2013)), likewise to Fuertes et al. (2015).