Trading Strategies and Return Patterns in Commodity Futures Markets

Abstract

This thesis analyzes commodity futures pricing, trading activities in commodity futures contracts and their use for investment strategies. The aim of this thesis is to fill important gaps in the research field of commodity markets and to highlight special characteristics of commodity futures. It consists of three main chapters which are based on three research papers.

The first paper *Smart Beta Strategies on Commodity Futures Markets* analyzes the use of commodity futures for passive long-only factor investment strategies. It builds on the idea of using factor investment strategies, sometimes also called smart beta strategies, in the space of commodity futures markets. This paper identifies and analyzes eight different types of smart beta strategies, including equal-weight, low-volatility, momentum and term-structure strategies. Term structure strategies can provide an excess return of up to 25% p.a. in the sample-period and prove to be a very attractive investment strategy. These results also cannot be explained by known equity or bond risk-factors. These results highlight the possible information content of the term structure of futures prices and also provide the idea for the second research paper.

The second paper *A Factor Decomposition of Term Premiums in Commodity Futures Markets* examines the term structure of expected commodity futures returns on a theoretical and empirical basis. We use a 3-factor model, which is based on the Cortazar N-factor model, to decompose commodity futures term premiums into a constant, a linear and a non-linear function for the time to expiry. We show that commodity futures returns for maturities of one month and up to twelve months

are well explained by this model. Furthermore the information of this model can also be used for profitable long-short trading strategies with Sharpe ratios up to 0.93.

The third paper *Short Term Commodity Futures Contracts: Trading Patterns and Returns* analyzes the specific behaviour of commodity futures in the last trading months, when trading activity is possibly influenced by the physical delivery process. The physical delivery process is usually avoided by financial investors. In our study we analyze trading patterns in volume, open interest and futures returns based on differences in the timing of the physical delivery process for different commodities. We find that the notice day presents an important turning point for every commodity futures contract, when the contract turns from an actively traded contract to a very illiquid contract. Furthermore, we also show that long investors who are willing to run the risk of physical delivery can earn a risk premium during the notice period.