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Master Thesis  
in  
Quantitative Finance

# **Food Commodity Speculation and the Recent Food Crisis**

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## **Executive Summary**

### **Motivation and Objectives**

After a long era of falling prices, the prices of wheat, corn, soybeans, and other agricultural commodities started to increase dramatically in the middle of the first decade of the new century. Goods gaining more than 100% in value within the two and a half years from January 2006 until July 2008 were no rarity. After a phase of consolidation in the second half of the year 2008, another price peak occurred in the early 2011. These extraordinary situations drove many countries into substantial difficulties and several nations suffered from hunger and violent riots. At present, there is a lively debate about potential causes of the crises. The spectrum of possible explanations ranges from classical factors, such as adverse climatic events or increased demand for food due to population growth, to more modern phenomena as the impact of speculative traders or the production of biofuels.

A first target of the thesis is to investigate the various sources having caused the sharp increase in prices. Qualitative and quantitative facts shall be provided in order to allow for a well-grounded discussion of the various drivers. In a next step, the focus is set on speculation. Certain authors claim that the reason for the spiraling food prices was the activity of speculative traders entering the commodity markets. Therefore, the different types of traders participating in the markets for commodities and their motivation shall be discussed. Furthermore, an overview of the most popular investment instruments shall be given. Consequently, the aim is to provide empirical evidence about the behavior of speculators in the past and whether they have an impact on the prices and price volatilities of agricultural commodities. These aspects are specified in four hypotheses that shall be answered within the thesis. Finally, the current policy responses being discussed among regulators and governments to remedy future food crises shall be addressed.

### **Methodology**

Concerning the methodology, the thesis follows a threefold approach. Initially, an extensive study of the most popular literature within the field of research was conducted. This knowledge is the fundament upon which the thesis is built on and it ensures that the work at hand seamlessly fits into the ongoing debate in this field. As a second methodological step, several experts have been interviewed in order to make the link between theory and practice.

The diverse backgrounds of the interviewees allow to approach the problem from various points of view. Third, based on the knowledge acquired from the literature and the inputs received from experts, empirical tests have been conducted.

### **Results**

The analysis of the potential drivers of the price peaks in the years 2008 and 2011 shows that there are many factors that are likely to have contributed to the price spikes. For example, droughts in major food exporting countries, low stocks-to-use ratios, or increased production of biofuels were identified as drivers of the soaring food prices. The discussion, however, illustrated as well that no single factor but rather a mixture of several adverse events was the source of the high price levels.

The empirical analysis of the effect of speculative traders on food prices led to controversial results. First of all, it was shown that the open interest of speculative traders in commodity markets effectively increased. Nevertheless, since the open interest of bona fide hedgers increased as well, it was not the case that the speculators started to dominate the markets. Second, the regression analysis provides statistically significant evidence for a positive correlation between the measure of speculative activity and the goods' futures and spot prices. In other words, when more purely financially motivated traders engage in long futures positions, prices tend to increase. A central question that needs to be answered in further studies concerns the causality of the relationship. Third, a second series of empirical tests investigating the relationship between speculative traders and price volatility did not lead to meaningful results. Often, there was no clear pattern in the relationship recognizable. Nonetheless, one regression analysis provides evidence that an increase in the speculative measure leads to lower price volatility.