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Daily volatility behavior in Chinese futures markets

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Abstract

This study examines the daily volatility of four futures contracts on Chinese futures exchanges (copper, mungbeans, soybeans and wheat). We find that returns have asymmetric effects on volatility, meaning that negative returns have a greater effect on volatility than positive returns do. Volume is positively related to volatility, open interest is negatively related to volatility, and the extent of large-volume traders' participation is also positively related to volatility. We conjecture that the global patterns of volatility relationship, which have become more pronounced in Chinese markets in more recent years, are attributable to the results of ongoing government attempts to achieve transparency and better disclosure.

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1. Introduction

The Chinese futures markets started trading in 1993. They have seen some tumultuous events in the last 10 years, and they are still evolving. During this period, the Chinese government implemented many regulatory reforms in the governance of its futures markets.

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While the research findings on the effects of government regulations on futures markets are mixed, the regulations on the futures markets in China are more “general” regulations that focus on the trading environment and general operational structures. These regulations are intended to establish stability and regularity in the trading of these futures contracts, as trading in Chinese futures markets is generally perceived as highly speculative. [Pliska and Shalen \(1991\)](#) provide simulation results in suggesting that extreme margin and position limit regulations are counterproductive. These trading regulations tend to lower volume and open interest in the futures markets. However, [Ma et al. \(1993\)](#), in a study of silver futures, find that timely margin interventions occurring after excessive price jumps actually dampened volatility. In several recent studies, [Yang et al. \(2001a, b\)](#) find that the government plays an important role in aligning futures prices with cash prices. The existing literature about the effect of futures regulation focuses more on the trading regulations and the US markets. The effect of “general” regulations, as in case of the Chinese regulations, upon an emerging futures market is generally unknown.

This study examines the volatility behavior of the Chinese futures markets within the context of ongoing China’s general regulations. Chinese regulations on the futures market tend to serve useful functions. First, they attempt to curb excessive speculations by individuals and firms, which inject substantial noises into the futures pricing by spreading rumors and engaging in sporadic trading, causing a wider swing in the futures prices and thus increasing the volatility. Second, these regulations establish an environment whereby market participants can obtain relevant and useful information to make their informed decisions. As a result, futures price can provide a better predictor of the cash price and serve a price discovery function. The information enhancing function of regulations likely reduces excessive volatility. As more and effective regulations are implemented in China in recent years, we expect that these regulations will result in lower volatility than the earlier years and the vicissitudes of futures prices are more likely to respond better to fundamental economic forces.

We study the daily volatility behavior of four Chinese futures contracts (copper, mung-beans, soybeans and wheat) on the three exchanges and examine how the volatility is related to fundamental factors in futures trading under the influence of ongoing regulations. The Chinese government understands that effective futures market operation depends in part on the price discovery function of futures prices, which depends in turn on the volatility of the futures market. An examination of the relationships of daily volatility behavior allows us to gauge the impact of the government’s regulatory reforms and sheds some lights on the usefulness of the general regulations for other emerging futures markets.

We examine several hypotheses related to daily volatility. We test how the daily volatility of these four futures contracts relate to futures price changes, trading volume, open interest, and the extent of large-volume traders’ participation. Many authors have examined these relationships in other futures markets. First, we test whether volatility is related to returns on futures contracts. The finding of the asymmetric effect of positive and negative returns on futures volatility is largely consistent with research in equity markets (e.g., [Pindyck \(1984\)](#); [French et al. \(1987\)](#); [Campbell and Hentschel \(1992\)](#) and [Bekaert and Wu \(2000\)](#)). The literature on asymmetric volatility responses to equity market returns suggests that a risk premium is the underlying reason. Consider there is a negative shock to the equity market in the form of bad news, resulting in a rise in equity volatility and a drop in equity prices.

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