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The relationship between futures trading activity and exchange rate volatility, revisited

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Abstract

This paper examines the relationship between trading activity in currency futures and exchange rate volatility. In order to measure trading activity, the paper uses both volume and open interest to distinguish between speculators/day traders and hedgers. The study uses three different measures of volatility: (1) the extreme value estimator that measures intra-day volatility; (2) historical volatility; and (3) conditional volatility from the GARCH (1, 1) process. Main finding is that speculators and day traders destabilize the market for futures. Whether hedgers stabilize or destabilize the market is inconclusive. The results suggest that speculators' demand for futures goes down in response to increased volatility. Meanwhile, the demand from hedgers shows mixed results, depending on the method used to measure volatility.

JEL classification: F3; G14; G15

Keywords: Exchange rate volatility; Futures trading activity; Volume-volatility relation

1. Introduction

This paper examines the relationship between futures trading and the underlying price variability of currency futures. It is generally believed that trading in futures increases with an increase in price volatility.[2] On the other hand, some researchers, such as Bessembinder and Seguin

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[1] Tel.: +1 215 951 2813; fax: +1 215 951 2652.
[2] See e.g. Clifton (1985), Grammatikos and Saunders (1986), McCarthy and Najand (1993), and Chatrath et al. (1996).

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(1992, 1993), report a negative relationship between volume and variability. This paper determines whether there is a positive or negative relationship between volatility and the demand for currency futures. Also, this study distinguishes between hedgers and speculators and explains how each affects price variability. While some studies claim that activity in the futures markets leads to stability of prices, others claim that the effect is destabilizing.[3] Results indicate a mixed verdict on the issue of bi-directional causality between volume and volatility.

This paper has two purposes. The first purpose is to determine whether the trading activity of investors, speculators, or hedgers stabilizes or destabilizes the currency futures market. The second purpose is to examine the relationship between exchange rate volatility and the demand for hedging in currency futures. Specifically, the paper examines the impact of an increase (decrease) in volatility on the demand for futures by hedgers and speculators.

A number of researchers have addressed the issue of volatility and volume in general, but very few have done this research for currencies. Studying the relationship between exchange rates and futures trading activity using both open interest and volume to measure trading activity allows this paper to separate hedgers from speculators and day traders. Whereas open interest is a measure of hedging positions, volume gives a measure of speculating activities. Furthermore, three different ways to measure volatility include: (1) the historical standard deviation, which gives volatility for investors with a long investment horizon; (2) an intra-day measure based on daily high-low prices, which measures the volatility of speculators and day traders; and (3) conditional variance based on generalized autoregressive conditional heteroskedasticity (GARCH), based on Bollerslev's (1986) technique. This paper uses the vector autoregressive (VAR) system to determine the relationship between volatility and volume and uses Granger tests to determine whether there is any causality. The impulse response function in the VAR system allows this paper's findings to show how a shock to one variable in the system affects the conditional forecast of the other variable.

This research is important because it gives insight into the relationship between volatility and futures activity. Economists believe that futures markets provide a medium for hedging, help in price discovery, and improve overall market efficiency. On the other hand, some researchers suggest that futures markets lead to higher speculation and, therefore, cause the markets to destabilize. This study provides insights into how the trading activities of both hedgers and speculators impact volatility and, hence, market stability. In addition, the study also answers the question of whether the demand for futures is positively or negatively correlated to increased volatility and, therefore, draws inferences on investors' reaction to increased volatility.

This paper is organized as follows. Section 2 reviews the previous literature. Section 3 discusses the paper's data and methodology. Section 4 explains the empirical results, and Section 5 presents the conclusions.

2. Literature review

Previous studies on the relationship between trading in futures and the underlying price volatility provide mixed evidence. According to Bessembinder and Seguin (1992), an increase in volatility decreases the demand for S&P 500 futures contracts. Bessembinder and Seguin (1993) find the same results to be true for currency, commodity, and interest rate futures markets. However, Karpoff (1987), Chen et al. (1995), and a number of other researchers report a positive correlation between futures trading activity and volatility.

[3] See e.g. Karpoff (1987), Figlewski (1981), Bessembinder and Seguin (1992), Chatrath et al. (1996), and Adrangi and Chatrath (1998).