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Price discovery and volatility spillovers in index futures markets: Some evidence from Mexico ☆

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Abstract

This paper investigates the hypotheses that the recently established Mexican stock index futures market effectively serves the price discovery function, and that the introduction of futures trading has provoked volatility in the underlying spot market. We test both hypotheses simultaneously with daily data from Mexico in the context of a modified EGARCH model that also incorporates possible cointegration between the futures and spot markets. The evidence supports both hypotheses, suggesting that the futures market in Mexico is a useful price discovery vehicle, although futures trading has also been a source of instability for the spot market. Several managerial implications are derived and discussed.

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1. Introduction

Under perfectly efficient markets, new information is impounded simultaneously into cash and futures markets. However, in reality, institutional factors such as liquidity, transaction costs, and other market restrictions may produce an empirical lead–lag relationship between price changes in the two markets. Futures markets could incorporate new information more quickly than do cash markets given their inherent leverage, low transaction costs, and lack of short-sale restrictions (Tse, 1999).

Several studies suggest that futures markets play a critical role in price discovery for the underlying spot market (Chatrath et al., 1999; Lien and Tse, 2000; Yang et al., 2001). This price discovery function implies that prices in the futures and spot markets are systematically related in the short run and/or in the long run. In the co-integration jargon, the price discovery function implies the presence of an equilibrium relation binding the two prices together. If a departure from equilibrium occurs, prices in one or both markets should adjust to correct the disparity.

Advocates of futures trading like Schreiber and Schwartz (1986) and Edwards (1988) argue that the futures market is a source of price stability since it absorbs the brunt of the price adjustments. In addition, they argue that futures markets provide important information to investors on subsequent movements in spot prices, enabling them to more effectively manage exposure to cash market risks (see also Darrat and Rahman, 1995; Pericli and Koutmos, 1997; Darrat et al., 2002).

Yet, challengers of futures markets like Kawaller et al. (1987), Harris (1989), Antoniou and Holmes (1995) and Koutmos and Tucker (1996), charge that futures trading, especially by institutional investors, unduly influences spot prices and triggers excessive volatility due to the speculative nature of derivative activities. The detrimental economic and financial consequences of the alleged market volatility prompt some analysts and regulators to call for limiting futures trading activities. In fact, the US Committee on Banking, Finance and Urban Affairs (1988) went as far as recommending the elimination of these markets altogether.

Research on the price discovery role of futures markets and their possible volatility implications for the spot market generally focuses on the US and a few other developed markets. This paper examines the case for Mexico that has recently established index futures trading. At least two main features distinguish our analysis in this paper. First, we improve the statistical efficiency of our results by simultaneously testing, in the context of a unified econometric framework, the price discovery function of the Mexican futures market together with the hypothesis that futures trading propagates volatility in the underlying spot market. Second, to avoid possible omission-of-variable biases in the conditional first- and second-moments, we extend the univariate exponential generalized autoregressive conditional heteroskedasticity (EGARCH) model to a bivariate error-correction EGARCH model (dubbed an EC-EGARCH) to incorporate the underlying long-run relations between index and index futures markets both in the conditional means and variances. Our EC-EGARCH model allows the conditional volatilities and covariance to adjust to deviations from long-run price disequilibria, whereas traditional EGARCH models do not. As such, the model facilitates the testing of both short run and long run vola-

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