

When do stock futures dominate price discovery?

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Summary

- In perfect markets, derivatives are redundant securities and do not affect stock price
 - Easley, O'Hara and Srinivas (1998) suggest that the unidirectional linkage from spot to derivatives markets is valid only in complete markets
- Given that derivatives provide a low-cost venue for trading, the derivatives trading process is not redundant
- This paper examines the role of futures trading in the price discovery process
- Specifically, it studies the interaction of liquidity in futures markets and price discovery

Summary ... 2

- Findings:
 - Futures market plays a larger role in price discovery when it is liquid
 - Suggests that there is a trade-off between liquidity and the benefit of leverage that futures offer
 - During periods of high information flow, the futures market plays an important role in price discovery
 - However, this is not due to liquidity benefits in the futures market

Motivation ... 1

- Findings are similar to those of Shastri et al. (2008)
 - Information share of futures market is higher when bid-ask spreads on the futures market are relatively narrower and when spot market volatility is lower
- The authors suggest that a 24% information share for futures market is low given the amount of leverage that they provide
- No theory that says what the optimal information share of a trading location should be for a given level of liquidity
 - While the single stock futures (SSF) market in the U.S. is very illiquid, the very liquid equity options market in the U.S. has an information share of only 17% (Chakravarty et al. (2004))
 - A large number of potentially-informed institutional investors may be prevented from trading derivatives

Motivation ... 2

- Better way to motivate the paper:
 - Most single stock futures markets around the world are illiquid
 - The NSE SSF market is extremely liquid
 - Does this higher level of liquidity lead to a greater role of the SSF market in the price discovery process?
 - Stock and futures market structures may be different, leading to different levels of liquidity
 - On the NSE, these securities trade side-by-side under the same market structure

Data

- Not clear what data is available
- Trade data is available
- At what frequency is the limit order book data available?
 - Is all order flow information available and the limit order book is recreated at 1-second intervals?
 - Are only snapshots of the limit order book at fixed points of time during the trading day available?
- If it is the latter, then the price impact cost measure will be very noisy

Sample selection

- What is the criteria for selecting 97 stocks out 223 that have derivatives?
- If liquidity is the only criterion, then better to include all 223 as a large part of the analyses in any case breaks down the sample into liquidity-based quartiles
- With a larger sample, the analyses could be based on quintiles or even deciles

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- As a measure of post-trade liquidity, consider using Amihud's ILLIQ measure
- Price impact cost (IC) looks at the price impact of a trade size of ₹250,000, which is the average trade size in the futures market but represents an extremely large trade in the spot market
- Compute two ICs, one based on average trade size in the futures market (already done) and another based on the average trade size in the spot market, and present the results for both

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- If they are based on spot market measures, then results in Tables 4 and 5 are surprising as they show that futures market contributes more to the price discovery process for stocks with high spot market liquidity

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- One alternate way of forming these quartiles is to use a relative liquidity measure
 - For example, take IC_F/IC_S
 - Similarly, for the traded volume measure

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- Trading hours during sample period (March to August 2009) was 9:55 AM to 3:30 PM and not 9 AM to 3:30 PM (page 15)
- Change occurred in early January 2010

Conclusion

- Gives us a better understanding of the impact of derivatives trading on the price discovery process of the underlying security
- Futures markets play a larger role in price discovery when liquidity is better
- While futures markets dominate during information-intensive periods, this is not due to liquidity benefits
- Interesting paper and definitely recommend that you read it