Discussion Paper

The Impact of Anonymous Trading on SFE Market Microstructure

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Project Summary

We focus on the impact of the removal of trader identification on the SFE limit order book. A number of electronic markets have recently introduced anonymous trading yet the literature suggests that the impact of this decision will not necessarily be optimal for the market. In analysis of this question it will be necessary to model the implicit, as distinct from the reported, spread because the current minimum price movements appear to have considerable impact on the reported spreads, particularly in the interest rate futures and futures options markets.

Background and aims of project

On 16 January 2004 the Sydney Futures Exchange (SFE) announced that in relation to its Australian interest rate products, all pre-trade mnemonics (or broker identifiers) would be removed from its trading system over the two days commencing Monday 23rd February 2004. As a consequence of this change, traders would be unable to identify the party that had placed an order in the electronic limit order book that operates on the SFE. Further, participants would no longer have access to the identity of parties that had last bought/sold the contract of interest, nor receive such information via the live messaging system that previously documented all completed trades as they were finalized. Additionally, all "Request For Quote" messages would have the broker mnemonic field blanked out. This change was extended to commodity contracts and then New Zealand products in June and July 2004 respectively. Interestingly, while the identity of the counterparty to a transaction was not available to a participant prior to the trade, this information was provided to the parties to the transaction via a trade confirmation message upon trade execution. In August 2005, the SFE adopted a fully anonymous trading system for all of its contracts which introduced both pre and post-trade anonymity to the futures market in that the trade confirmation message received by those involved in a transaction now also excluded counterparty identity.

In its 2004 annual regulatory report to ASIC, the SFE highlighted three main reasons for the switch to an anonymous trading system. Firstly, it suggested that the change would result in a fairer market in that all participants would have equal access to information "… regardless of size, location or membership status". Secondly, the orderliness of the market would be enhanced as larger orders "…can be executed more discreetly with a reduced risk of price slippage". Finally, the transparency of the market would be enhanced, where the SFE makes the point that the concept of transparency needs to be interpreted in a regulatory setting with a focus on "[the market's ability to facilitate efficient price discovery". As evidence of the successful

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implementation of the modified trading system, the SFE pointed to the 20% growth in trading volume achieved over 2004 and further claimed that liquidity was at record levels.

The aim of the current project is to identify the effect of the change in trading system upon the way in which information is incorporated into the SFE's limit order book. Specifically, we will test for any impact upon the liquidity of the market, which directly affects the cost of trading on the market. This will require us to examine both the size of the effective spread observed in the limit order book as well as the depth of the book for prices beyond the best bid and ask.

Significance and Innovation

Anonymity and transparency are important attributes of the securities trading process. Market transparency, which refers to the ability of market participants to observe information about the trading process, has been shown to affect various attributes of market structure, including market liquidity and market depth. The question of the effect of trader anonymity (or lack of transparency) on securities trading is an important one, but one which lacks conclusive evidence. The degree of trader anonymity may be an important determinant of market quality (Grammig et al, 2001).

Theoretical studies tend to predict that anonymous trading systems will attract more informed trading (see, for example Roell (1990), Fishman and Longstaff (1992), Forster and George (1992), Theissen (2001)). Barclay, Hendershott, and McCormick (2003) find empirical support for these predictions as in their study informed trades in Nasdaq listed stocks tend to migrate to anonymous ECNs. Grammig et al (2001) find similar results in their study of the German stock market. Reiss (2004) presents contrary findings in a study investigating how anonymity affects dealer decisions about where to place trades. He finds informed interdealer trades migrating from the anonymous dealer market to the direct and transparent market, and argues that this arises due to perceived adverse selection costs in the anonymous market.

In an automated trading system the level of transparency is reflected in the information disclosed in the limit order book. It is argued that too much transparency increases the 'free option' cost of limit order providers, and can result in order withdrawal and a consequent reduction in market depth. A model proposed by Foucault, Moinas, and Theissen (2003) predicts that large traders in a transparent regime (where limit orders are non-anonymous) will post worse prices to reduce free riding by uninformed traders. They find support for this view empirically: after the Paris Bourse removed broker identities, spreads narrowed and depth increased. Madhavan, Porter and Weaver (2005) analyse an event where transparency was increased. In 1990 the Toronto Stock Exchange made public the information in the limit order book, both on the traditional trading floor and on its automated trading system. They find the increase in transparency reduces liquidity and increases execution costs and volatility.

The switch to anonymous trading on the SFE provides a unique context for the examination of the resulting effect on the price formation process for a number of reasons. Firstly, unlike previous empirical studies, we are able to examine the regime switch over a number of different times and contracts as the introduction was staggered over contract classes. This enables us to provide more generalisable results whilst reducing the possible effect of contemporaneous compounding events. Secondly, we are able to measure the impact of the switch on different types of

securities (futures and futures options) written on different underlying assets (interest rate products, commodities, equities etc.), with each displaying different characteristics (trading volume, open interest, term to expiry, tick size etc.). The staggered introduction of the trading system modifications also enables us to differentiate between the impact of pre-trade anonymity from complete (pre-and post trade) anonymity.

Description of Approach

We will examine each class of futures contract affected by the change in the trading system. We will collect all quotes entered and trades executed from the RASP interface provided by SIRCA for the two nearest to maturity futures contracts in each category of futures contracts across a 16-week window centered upon the structural change. This will enable us to recreate dynamically each contract's limit order book. We will then estimate a range of alternative liquidity measures focusing on the behaviour of the bid-ask spread and the volume of contracts offered at each available price. We propose to estimate the components of the bid-ask spread using models such as those by Stoll (1989), George, Kaul and Nimalendran (1991) and Lin, Sanger and Booth (1995), focusing on changes in adverse selection costs and inventory holding costs. We will also estimate the implicit or effective spread as the spread appears to be of size one tick from inspection of a small sample of data (see Smith and Whaley (1994)). Having downloaded, filtered and manipulated the raw data we will undertake a range of univariate and multivariate tests in order to determine both the individual characteristics of the liquidity measures as well as the determinants of any cross-sectional variation in these variables before and after the modification of the trading system.

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