NORTH-HOLLAND

Available online at www.sciencedirect.com
SCIENCE DIRECT®
International Review of Financial Analysis
12 (2003) 563–577

IRFA
INTERNATIONAL REVIEW OF
Financial Analysis

An empirical examination of the impact of market microstructure changes on the determinants of option bid–ask spreads

Sean Pinder*

Department of Finance, University of Melbourne, Melbourne 3010, Australia

Abstract

This paper examines the determinants of bid–ask spreads in the Australian Options Market before and after it switched from a quote-driven floor-traded market to an order-driven screen-traded market. This study reports that both put and call option bid–ask spreads are positively related to the option's value, its remaining term-to-maturity, its absolute hedge ratio and the volatility of returns from the underlying asset and negatively related to the level of trading activity in that option series. The study also reports that spreads are generally less when market makers are obliged to maintain continuous quotes in the market. The paper also finds that following the change in trading regime, both call and put option spreads became more sensitive to the absolute value of the option's delta. This finding is consistent with previous theoretical and empirical work from equities markets that has suggested that a switch to an electronic trading regime results in an increase in the adverse selection component of the bid–ask spread. There is also some limited evidence that suggests that the switch to electronic trading resulted in call option spreads being less sensitive to the return volatility of the underlying asset but more sensitive to the option's price.

JEL classification: D40; C31; G13
Keywords: Bid–ask spreads; Market microstructure; Options

* Tel.: +61-3-8344-5101; fax: +61-3-8344-6914.
E-mail address: spinder@unimelb.edu.au (S. Pinder).

1057-5219/03/$ – see front matter © 2003 Elsevier Inc. All rights reserved.
doi:10.1016/S1057-5219(03)00063-2

1. Introduction

The bid–ask spread is of great importance to market participants as it represents a major component of the cost of executing transactions immediately. Since the seminal work of Demsetz (1968), two alternative strands of theory have developed to explain the determinants of bid–ask spreads. Firstly, information-based models (see Bagehot, 1971; Copeland & Galai, 1983; Easly & O'Hara, 1987; Glosten & Milgrom, 1985) suggest that the bid–ask spread is determined by market makers who balance the expected loss suffered by transacting with those in possession of superior information, the so-called "adverse selection" or "information asymmetry" problem, against the gain made by offering immediacy to liquidity traders. Alternatively, inventory-based models (see Garman, 1976; Ho & Stoll, 1981, 1983; Stoll, 1978) propose that the bid–ask spread reflects the compensation required by market makers in order to induce them from their optimal inventory levels in the face of uncertain order flows.

Numerous studies have considered the determinants and behaviour of bid–ask spreads in relation to various markets including foreign exchange markets (Ding, 1999), equities markets (Aitken & Frino, 1996; Goldstein & Nelling, 1999; McInish & Wood, 1992; Menyah & Paudyal, 1996), futures markets (Frino, McInish, & Toner, 1998; Gwilym & Thomas, 1998; Kofman & Moser, 1997) and options markets (Berkman, 1992; George & Longstaff, 1993; Neal, 1992; Vijh, 1990). The empirical results from these studies of different markets generally concur that spreads are negatively related to alternative measures of trading activity and positively related to measures of price volatility.

Over the last decade an increasing number of exchanges, including the Singapore Stock Exchange, the New Zealand Stock Exchange, the Sydney Futures Exchange, and the Hong Kong Futures Exchange, have switched from traditional floor-trading to electronic screen-based systems. Consequently, an area of interest that has recently developed is the differential impact of alternative market structures upon both the magnitude of bid–ask spreads and the sensitivity of spreads to their previously identified determinants. For example, Theissen (2002), in his examination of parallel floor and screen-based trading systems, documents that bid–ask spreads in an anonymous screen-based trading market contain a larger adverse-selection component and hence are more sensitive to those factors, such as price volatility and trading volume, that impact upon this component.

A recent innovation in the Australian Options Market (AOM) provides a unique opportunity to examine the influence of market microstructure design on option bid–ask spreads. Over a 3-month period, beginning November 1997, securities listed on the AOM switched from a floor-traded quote-driven system to an electronically traded order-driven system known as the Derivative Trading Facility (DTF). Contemporaneously with this, the obligations of market makers in the AOM were also altered. The present study contributes to the existing literature as many of the determinants of option bid–ask spreads, such as nearness-to-money and option delta, are unique to option markets. Therefore, the purpose of this current study is to investigate the impact on the determinants of option-bid–ask spreads of changes in the microstructure of the AOM.