Determinants of liquidity and execution probability in exchange operated dark pool: Evidence from the Australian Securities Exchange ☆

William Peng He [a],*, Andrew Lepone [b]

[a] *Finance Discipline, The University of Sydney Business School 2006, Australia*
[b] *Macquarie Graduate School of Management, Australia*

A R T I C L E   I N F O

A B S T R A C T

This study investigates the determinants of liquidity and execution probability in an exchange operated dark pool. We analyse a unique set of data collated from the Australian Securities Exchange (ASX) that allows the identification of trades and orders in its Centre Point dark pool. This study contributes to the understanding of factors that influence traders' preference to transact through an exchange operated dark pool and the execution probability of dark orders. We also examine the impact of Centre Point dark pool trading on market quality. The results show that the level of trading activity in the dark pool is higher for larger stocks with lower prices. Dark pool's share of total volume is higher when quoted spreads are wider, best depth is thicker, and when order imbalance, volatility and adverse selection are lower in the central limit order book. Execution probability of Centre Point orders increases when dark pool trading is most active and when average Centre Point order size is greater. We find no evidence of Centre Point trading being detrimental to market quality in our sample.

1. Introduction

The proliferation of dark trading venues has created a new way for market participants to execute orders without pre-trade transparency. This opaque mechanism for trading has attracted increasing volumes and interest from traders and exchanges. Dark pools can be defined as automated trading venues characterized by pre-trade opacity, anonymity and derivative pricing (often at the mid-price). Nowadays, different dark sources of liquidity, such as electronic communication networks (ECNs), internalization pools, ping destinations and exchange operated dark order matching systems are being classified under this general category.

Competition between exchanges, broker ECNs and alternative trading systems, such as Chi-X, has prompted the introduction of new trading mechanisms to attract order flow from different market participants. Traders that want to execute orders with minimal price impact, information leakage and transaction cost calls for pre-trade opacity and mid-price execution. Institutional investors worry about the risk of information leakage, and generally want to hide their orders from the continuous limit order market. Disclosure of trading intentions attracts imitation and front running by opportunistic and predatory traders. This will create short term adverse selection, increase transaction costs and reduce investment returns. Institutional traders also face the challenge of shrinking trade size, as the increase in algorithmic trading in recent years reduces average order size. It is therefore, not surprising that there is a growing demand for trading venues that make it possible for institutions to keep their orders secret and minimize price impact (Buti et al., 2010a).

However, dark pools have been subjected to considerable debate and controversy in recent times regarding their lack of transparency and contribution to price discovery. For example, the Securities and Exchange Commission (SEC) in the United States has raised concerns on the potential effects of dark pools on market quality: dark pools could impair price discovery by drawing valuable order flow away from the public quoting markets. "To the extent that desirable order flow is diverted from the public markets, it potentially could adversely affect the execution quality of those market participants who display their orders in the public markets. Anything that significantly detracts from the incentives to display liquidity in the public markets could decrease that liquidity."[1] In 2009, SEC Chairman Schapiro testified before the House Committee on Financial Services: "Dark pools may lead to lack of transparency, may result in the development of significant private markets that exclude public investors (through the use of 'indications-of-interest'), and may potentially impair the public price discovery function if they divert a significant amount of marketable order flow away from the more traditional and transparent markets."[2] The International Organization of Securities Commissions (IOSCO, 2011) and Australian Securities and Investment Commission (ASIC, 2013) have raised similar concerns about the implications of dark pool trading activity.

Despite the growing importance of darks pools as an avenue for trading, finance literature provides relatively little insight into the determinants of liquidity and execution probability in dark pools, and how they in turn affect market quality of the main exchange. Even less literature exists, when it comes to examining these topics specifically in relation to exchange operated dark pools. Past studies often focus on broker operated crossing networks, such as ITG's Posit, Liquidnet, Pipeline, etc. In this paper, we study an exchange operated dark pool, which runs as a part of its main market. Unlike broker operated crossing networks, where orders are routed to, the ASX's Centre Point dark pool can be accessed by submitting certain types of orders on the main exchange. In contrast to some broker dark pools, ASX's Centre Point requires trading at mid-point of the bid-ask spread and is open to all market participants. The analysis in this study will draw on proprietary data provided by the exchange to produce accurate metrics for addressing the aforementioned research questions.

In June 2010, the ASX launched a trading system that allows market participants to execute orders with no pre-trade transparency. ASX's Centre Point dark pool works by continuously matching buy and sell orders for the same stock at the mid-point of the prevailing bid-ask spread. During the 6 months since its launch, trading activity (including Centre Point trades and crossings) in ASX's dark pool accounts for

---

[1] Chapman, Peter, SEC Worried About Dark Pools, Traders Magazine, July 2009.
[2] David Scheer and Jesse Westbrook, SEC May Force More Disclosure About 'Dark Pools,' Schapiro Says, Bloomberg.com, June 19th, 2009.