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Informational linkages between dark and lit trading venues ☆

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Abstract

We examine the linkages between dark and lit venues using a proprietary data set. We find that algorithmic trades for less liquid stocks are correlated with higher spreads and price impact, as well as contemporaneous trading on the lit venues. Also, signed trades for these stocks predict future returns over the next 15–120 minutes. Trades for liquid stocks, trades by the dark venue brokerage desk, and trades of large blocks transmit less information to lit venues. The results suggest informed agents split orders using algorithms across dark and lit trading venues, with lit orders providing some price discovery.

JEL classification: D53; G12; G28

Keywords: Crossing networks; Algorithmic trading; Price discovery; Information transmission

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1. Introduction

Crossing networks, or dark pools of liquidity, have come under the spotlight in the recent financial press.[1] They account for a large and increasing proportion of shares transacted and the growth they have exhibited over the past few years shows no signs of abating.[2] Along with this growth, there has been increased regulatory scrutiny, as well as a surge of academic literature that examines how crossing networks work, why traders use them, and what implications their growth has for price discovery and the market microstructure of the stocks.

The SEC's recent "Concept Release on Equity Market Structure," (Release No. 34-61358) has a section that focuses on the "effect of undisplayed liquidity on order execution quality, the effect of undisplayed liquidity on public price discovery, and fair access to sources of undisplayed liquidity." Central to all these concerns are the questions we attempt to answer in this study: What is the information content of trades in crossing networks (CN)? Are there linkages between the information in dark pools and information in the lit pools (quoting exchanges)? How does the information contained in the dark pools affect the overall market quality for all market participants?

Some extant theoretical studies (Hendershott and Mendelson, 2000; Buti, Rindi, and Werner, 2010a; Ye, 2011; Zhu, 2011) examine trading strategies of informed and liquidity traders in the presence of CNs and the impact of CNs on price discovery on the quoting exchanges. The papers draw different conclusions based on model parameters and the nature of the information. Hendershott and Mendelson (2000) highlights a number of key factors that determine CN attractiveness (to both informed and liquidity traders) and the effects of CN introduction on market liquidity and the costs borne by liquidity traders. In terms of price discovery on the quoting exchange, Ye (2011) suggests that introducing a "crossing network reduces price discovery and volatility" while Zhu (2011) finds that "adding a dark pool can … concentrate payoff-relevant information on the exchange, and, under natural conditions, improve the informativeness of exchange prices."

In general, all of these studies admit the possibility that informed traders may use CNs to reduce their transactions costs and maximize profits from their information. White papers released by CNs themselves caution buy-side traders seeking liquidity on CNs against "toxic liquidity," referring to executions on CNs that are often followed by poor short term returns, suggesting the presence of informed trader counterparties (e.g. Mittal, 2008).

Nonetheless, it is not immediately obvious whether CNs will have high levels of informed trading. Alternative market venues such as regional exchanges and the upstairs market have historically had lower levels of informed trading than the central exchange

[1]We use the term crossing networks and dark pools interchangeably in our study to refer to non-quoting exchanges that facilitate crosses between traders. Once a cross, consisting of a buyer and seller of a fixed quantity of a given ticker, is identified, the crossing network executes and prices the trade using information from the quoting exchange. Traditionally, trades were priced at the midpoint of the best bid and offer, leading to claims of a reduction in transactions costs. The crosses may be continuous or batched at fixed time intervals. For further details on the mechanics of crossing network, see Ye (2011) and Ready (2012).

[2]Rosenblatt Securities reports that 10.86% of volume in July 2011 was on crossing networks that report volumes to them. The TABB Group, a consultancy, estimates the compound annual growth rate (CAGR) of crossing network volumes at 42.5% over the 2007–2010 horizon. Examples of crossing networks include Posit, SigmaX, Liquidnet, and Instinet.