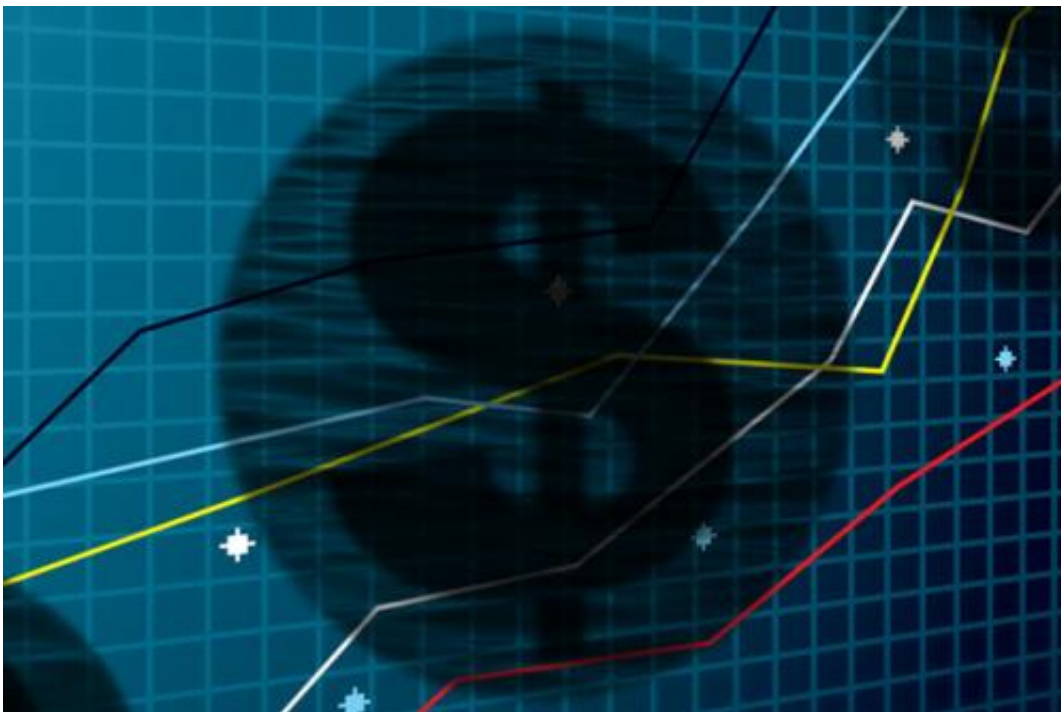


# How 'dark pools' can help public stock markets

February 3 2014, by Peter Dizikes

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Credit: José-Luis Olivares/MIT

A "dark pool" may sound like a mysterious water source or an untapped oil well. In reality, it's a finance term: Dark pools are privately run stock markets that do not show participants' orders to the public before trades happen. They are a growing presence in stock trading, now representing at least one-eighth, and possibly much more, of all stock trading volume in the U.S.

But what is the effect of dark pools on "price discovery"—that is, the ongoing setting of prices on markets, which is thought to benefit from the transparency provided by public exchanges? At least one survey has shown that a clear majority of finance professionals—71 percent—think dark pools are "somewhat" or "very" problematic in establishing stock prices.

But a new paper by an MIT professor, to be published in the *Review of Financial Studies*, asserts that this is not necessarily the case. Dark pools, it says, can actually help price discovery in the right circumstances. They do this, in part, by attracting less-informed traders, while better-informed traders—who may place a premium on acting quickly to execute trades—may be unable to fill their orders in smaller dark pools, and head back to the public exchanges to do business.

"The dark pool is like a screening device that siphons off uninformed traders," says Haoxiang Zhu, a financial economist at the MIT Sloan School of Management, the author of the new paper. "In the end, on the [public] exchange, you get left with a higher concentration of the informed traders who contribute to price discovery."

## **Not enough liquid in the pools**

Dark pools are believed to have originated in the 1980s, but have gained much more traction in the last half-decade. A 2009 study by the Securities and Exchange Commission estimated that 32 such dark pools, some run by prominent financial firms, represented about 8 percent of stock trades; a consulting firm, the Tabb Group, and a brokerage, Rosenblatt Securities, estimated in 2011 that dark pools handle 12 percent of U.S. trading volume. Along with that growth has come concerns about transparency problems in the markets.

"The usual intuition is that dark pools harm price discovery in the public

venues, because people who have information [might] go hide in the dark," Zhu observes.

For investors, the appeal of trading in a dark pool is the ability to make transactions without moving the market. Consider a well-informed investor with good information about firms—say a large institutional investor, such as a mutual fund. Suppose such an investor is buying some of its shares in a public company. Doing so in a dark pool might be appealing, because buying those shares in a public exchange might create an impact on the price that would make executing the investor's remaining orders more costly.

However, Zhu's paper, based on a model of trading behavior, implies that the risk for investors of not being able to execute transactions in dark pools is a principal factor limiting the harm they might do to price discovery on public exchanges. To see why, consider that Zhu's model includes both well-informed investors, acting on the basis of detailed knowledge about a stock, and as well as less-informed investors—trading due to, say, a need to rebalance a portfolio.

Now, if multiple well-informed investors arrive at the same conclusion about a company's stock—say, that the firm's quarterly earnings will rise and that buying is a good idea—they will rush to the dark pools to attempt trades. But many of those smart investors will discover liquidity problems in the dark pool: They crowd on one side of the market, and there may not be enough underinformed investors willing to take the other side of the trade. Needing to execute the trade promptly, the well-informed investors hurry back to the public stock exchanges in a greater proportion than the less-informed traders.

"If [well-informed traders] do not get their orders filled, their information becomes stale," Zhu says.

The aggregate information generating price discovery on the public stock exchanges will thus be more accurate on average when dark pools are part of the process.

"It is basically a signal-to-noise argument," Zhu says.

## **Making models and seeking facts**

To be clear, Zhu's paper is based on a model of investor behavior. He also provides some caveats about his findings: For example, if dark pools use opaque rules, well-informed investors may not rush back to public exchanges as quickly. Moreover, better price discovery can coincide with worse liquidity, in the form of wider bid-ask spreads and higher price impacts on exchanges.

Still, as he notes, "Modeling forces us to have discipline in interpreting the data."

Other scholars say the work yields valuable insights about the potential effects of investor behavior.

"I think he's captured the essence of these dark pools," says Charles Jones, a professor of finance and economics at Columbia University who has conducted extensive empirical research on investor knowledge and behavior. Such finance models, Jones adds, "really help set up hypotheses" for future empirical testing.

Maureen O'Hara, a professor of finance at Cornell University, says that Zhu's paper "makes a real contribution by highlighting that dark pools can improve market performance, and not degrade it as has been suggested by some. His research agenda going forward will provide important insights into these market structure issues."

Currently Zhu is at work on two additional research papers about dark pools—one theoretical, and another empirical. The theoretical study models dark-pool trading with large sizes of trades; the empirical study aims to evaluate the relationship between dark pools and high-frequency computerized trading.

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