

Ethical Issues with Dark Liquidity and the Ethics of Possible Remedies¹

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Abstract: Although considerable attention has been devoted by researchers and journalists to high frequency trading, considerably less attention has been paid to another major financial development—traders’ growing use of “dark liquidity” or “dark pools.” This paper discusses 1) the nature of dark liquidity; 2) the reasons behind the increasing use of dark pools; 3) the wide array of ethical issues—some obvious, some less so—connected with dark liquidity; and 4) the ethical merits of various options for coping with the problems associated with dark liquidity.

Financial markets are evolving quickly. This evolution raises a number of ethical issues. Most of the ethical attention during the past five years has centered on the rise of high frequency trading – i.e., computer trading at astronomically fast speeds that may favor big players over smaller players who do not use algorithms and fast computers to execute trades. Far less attention has been paid to another major financial development—traders’ growing use of “dark liquidity” or “dark pools.” This paper discusses 1) the nature of dark liquidity; 2) the reasons behind the increasing use of dark pools; 3) the wide array of ethical issues connected with

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dark liquidity; and 4) the ethical merits of various options for coping with the problems associated with dark liquidity.

We bring together into one place various ethical issues that currently have been touched upon piecemeal in the financial literature and popular press, while identifying some issues no one has yet discussed. In addition, we explore the ethical concerns in greater detail than has been done to date and evaluate the ethical merits of proposed ways of dealing with the rise of dark liquidity. Although academics in finance have written articles on matters such as how trading volume in dark pools varies from day to day (Buti et al, 2011); on the various incentives to trade in dark pools (Degryse, 2008); on the behavior of informed versus uninformed traders when it comes to using dark pools (Zhu, forthcoming); and on increasing market fragmentation (Blume, 2007), we could find few detailed or systematic discussions of dark pool ethical issues. Nor could we find any ethical evaluation of various options for dealing with the explosion of dark pools.

Part One: What Is Dark Liquidity?

Dark liquidity, also known as “dark pools,” refers to trades (usually equity market trades) that occur off of the public exchanges.² In essence, dark pools are private stock exchanges. The 2007 SEC Regulation REG NMS (National Market System) enables anyone to start a dark pool (Lopez, 2013). These pools developed as an automated way to look for counter parties without having to disclose the buyer’s or seller’s identity. Although they began as ways to execute large orders, dark pools increasingly take large parent orders and slice and dice them into smaller orders. The average dark pool trade is now only 200 shares (Bloomberg, 2013).

Computers match buyers and sellers of particular stocks who have electronically submitted their bids and offers, using pricing data available on the New York Stock Exchange (NYSE), NASDAQ, and other public stock exchanges. In that respect, dark pools are parasitic upon these lit exchanges to provide relevant pricing data.

These equity trades occur in private venues such as large banks and independently operated block trading facilities. Dark liquidity is frequently used by large investors who wish to keep their trades secret. Brokers/dealers execute a client

² Dark foreign exchange pools also now exist. Colona, 2012.

order against their own accounts or with other brokers who operate similar dark pools. When an investor trades on a public exchange (e.g., the New York Stock Exchange), sellers and buyers must state their identity. Other market players know not only who is trading but also the size of the trade and whether the investor is buying or selling. In the case of dark pools, other traders cannot tell whether all of the buying and selling is being done by multiple parties or by only one broker, trader or firm. Other market players may not even know who is on the other side of the trade and whether that party is a net buyer or seller. All of this information is generally kept hidden or “dark” in the case of trades executed in the over-the-counter (OTC) market (although there are some limited obligations to disclose in some cases in the case of dark pool operators in the European Union (Preece, 2013)). Prices do get posted but only after the trades are done, and the identities of the parties to the trades are not disclosed.

Dark pools have exploded in recent years. In 2008, dark pools represented only 4% of US equity trading volume. By October 2011, dark trades constituted around 12% of this volume. Dark pool volume has been growing at more than 15% per year in the US. Europe has a similar volume of dark trading, and dark pools are nascent in Australia and other segments of the Asia-Pacific market. In early 2013, trading on dark pools surpassed trading on the NYSE. As of this writing, at least 12% of all trades are being executed in dark pools (Lopez, 2013) with more than 30% of trade volume being off-market (Preece, 2013). The European Union has proposed capping the amount of trading that can be done in dark pools at 8% of total trading across the EU, but this restriction has not yet gone into effect (Fairless, 2013). By the end of the year, trading in dark pools in Europe exceeded 10% of executable liquidity (Healey, 2013). In the UK, off-exchange trading comprises 36% of volume, in France and Germany, 14% and in Switzerland, around 9% (Stafford, 2013). An astounding 98% of institutional investors now at least occasionally access dark liquidity pools (Healey, 2013).

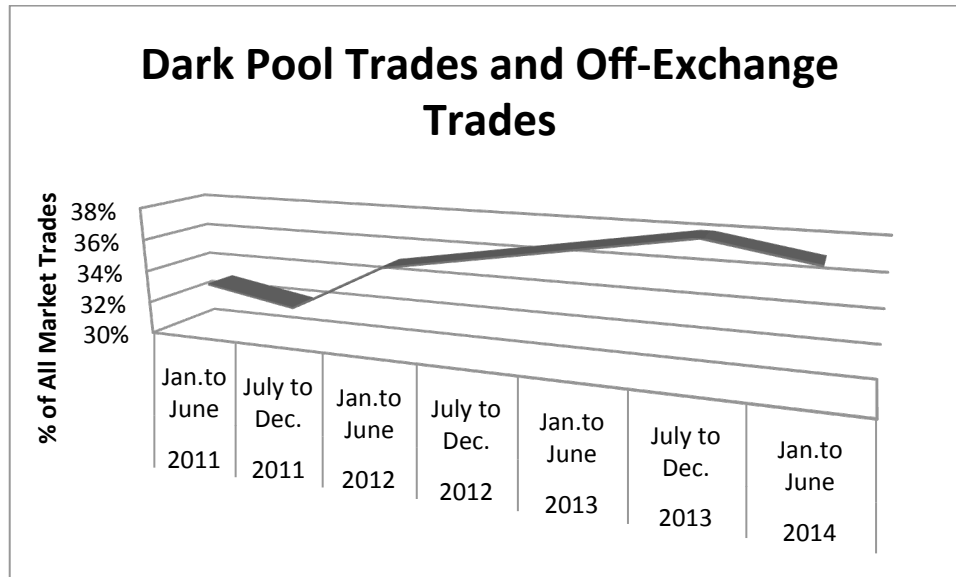


Figure 1: Off-exchange market share of trading volume from 2011-2014.

As of April 2013, the largest dark pools were operated by banks. Credit Suisse’s Crossfinder pool has led the pack with 18% of the dark pool volume, followed by Barclay’s Capital LX dark pool with 10% of the volume. Goldman Sachs’ Sigma X fund, Knight Capital Group’s Knight Lin and Dutch Bank’s Super X fund rounded out the list of big dark pools (D’Antona, Jr., 2013). Not surprisingly, these developments have dismayed the public exchanges which have begun to run their own non-displayed (i.e., “dark”) trading operations (e.g., NYSE’s Retail Liquidity Program).

Part Two: What Is Driving the Expansion of Dark Liquidity?

In one sense, dark liquidity is nothing new. Individual brokers used to note non-displayed orders on their blotters. Such information was available only to an individual broker’s personal clients (Chi-X, 2011). In other cases, dark liquidity took the form of orders that were held at “upstairs trading” desks – i.e., desks that were upstairs above the regular brokerage desks. In these cases, buyers and sellers would literally go to the upstairs rooms and negotiate the price and conditions for the trade (World Federation of Exchanges, 2010). One could even argue that the entire New York Stock Exchange used to be “dark.” Traders on the NYSE floor would do trades that were posted by the NYSE to the consolidated tape only after the trades were done. The lag could be substantial. Retail investors had little sense of where the market was going – in Patterson’s felicitous phrase, these “Joe Schmoes” could only see where the market had been

(Patterson, 2012). Now, however, these specialist traders on the NASDAQ and NYSE have largely been displaced by the rise of computer trading on both the lit and dark exchanges. Investors can trade directly with each other, bypassing the middlemen. In that respect, dark trading has “democratized” liquidity that used to be available only to a few (Healey, 2013). Computers match buy and sell orders, executing trades automatically when these orders match. All trades executed in pools off of the lit exchanges do need to be posted to the tape but the posting need not identify either buyers or sellers nor even in which dark pool the trade occurred.

The expansion of dark pools has several causes. Much trading is now high frequency trading (HFT). Dark pool operators have portrayed themselves as providers of protection from high frequency “predators” (McDermott, 2011). By avoiding the public exchanges where high frequency trading dominates, investors have hoped to avoid being at a disadvantage vis-a-vis the “big” players who can avail themselves of information and who trade upon it in an almost instantaneous fashion. In addition, large institutional investors know that if they come onto the market with a large buy or sell order, they likely will move the market against them before all of their order can be fulfilled. In a dark pool trade, the other players ostensibly do not even know whether the investor doing business is buying or selling a given equity. Keeping the side secret has become ever more important to institutional investors because trades have become ever larger with the concentration in the field of asset management reducing the number of players available to place orders (Healey, 2013). In theory, investors using dark pools are able to minimize “information leakage,” thereby effecting more efficient trades. In other cases, an investor may not want others to know that he or she is liquidating a position to raise cash, e.g., to send a child abroad for an education. If that fact became public knowledge, the child might be at risk of being kidnapped for ransom (Private conversation with hedge fund director, 2013). A recent survey of investors using dark pools revealed that liquidity and anonymity were the primary two reasons for opting for dark liquidity. The desire to minimize market impact was cited as well (Bennet et al, 2010).

Are these stated reasons for turning to dark liquidity well-grounded? In some cases, large investors using dark pools have been able to get better prices than those quoted on the public exchanges. Dark pool orders are often crossed at the midpoint between the quoted best bid (buy) and offer (sell) prices, so investors in theory save on the bid-offer spread and on exchange fees (Preece, 2013). Technological advances in trading have definitely made it possible for broker-dealers to do a better job of matching an array of buy and seller orders. There is some evidence that dark pools have lowered the commission costs paid by

institutional investors (McDermott, 2011). The risks in using dark pools to try to realize a better price or to remain anonymous at least appear to be less than they were in the past. As stock prices have become less volatile, investors are less worried about making especially safe trades. They are thus willing to move business off of the highly regulated public exchanges into the opaque dark pools (Popper, 2013).

For all of these reasons, dark pools have been popular with investors who are placing large block orders to buy or sell equities. However, as we argue below, these benefits may not be as great or as certain as some dark pool investors may believe and the risks may be far greater than these parties realize.

Part Three: Ethical Issues Connected with Dark Liquidity

Lack of Transparency Regarding Dark Pool Operations and Liquidity

Investors may know far less about the operators of dark pools than they think they do. Each of these pools operates with its own rules (Cohn, 2014). The brokers operating the pools have not always told their clients much about the brokers' own operations. Pipeline Trading Systems recently had to pay \$1.2 million to settle SEC charges. Pipeline had failed to disclose that the majority of trades were being filled not by Pipeline but by an affiliate with "access to specialized information about trades" (McDermott, 2011).

Although investors cite good liquidity as a main reason for using dark pools, 60% of surveyed dark pool users indicated that they had trouble ascertaining just how much volume of trading given dark pool operators had, in fact, executed (Bennett et al, 2010). 20% of investors in this same study said they had no information regarding the liquidity of their dark pool operators. When information was provided, investors had difficulty ascertaining whether trades were being matched "naturally" (i.e., with other investors' buy/sell trades) or using brokers' own internal funds. In many cases, dark pool trading is protected by what the Securities Trading Association views as worrisome confidentiality clauses within trading agreements that participants must sign (Driscoll, 2009). Indeed, some insiders within the financial industry refer to dark pool trading as "toxic liquidity" (Gapper, 2014), because investors do not understand what is happening in these pools and because dark pool activity may be harmful to investor health.

Even when pools disclose volume numbers, making comparisons across pools is tricky. Generally accepted accounting principles (GAAP) generally require near standardization of financial reporting across industries but there are very few

standards that apply to both private and public exchanges. Liquidity, for example, has at least three meanings:

Resting Liquidity: The number of shares matched within the venue against orders that were resting within that venue at the time the order was received (i.e., natural liquidity).

Solicited Liquidity: The number of shares matched within the venue against orders solicited from outside the venue after the order was received.

Routed Liquidity: The number of shares routed out to another venue and executed at that alternative venue (Morgan, 2009).

Investors do not necessarily know to which type of liquidity a particular dark pool is referring when the pool reports on its liquidity or whether some pools are double-counting their trades. Consequently, it is difficult to ascertain how deep the liquidity is in a given pool. Often investors get a better price when the liquidity is deeper, so this lack of transparency is far from trivial.

This lack of transparency is getting worse. Dark pools are going even darker. As of April 2013, Credit Suisse, which operates the large dark pool Crossfinder, is no longer reporting volumes in its pool. Other non-reporting large operators include JP Morgan, Merrill Lynch Bank of America, and Fidelity Capital Markets (D'Antona, Jr., 2013). Furthermore, even when liquidity data are provided, the pools sometimes charge a fee for making this crucial data available (Johannesburg Stock Exchange, 2011)

Dark exchanges price their trades in varying ways. An exchange may charge per share, impose a percentage charge on value per executed order or assess a monthly flat-rate fee, or the pool's operator may opt to use the same pricing it uses on its lit orders (Johannesburg Stock Exchange, 2011). Smaller investors can be at a disadvantage within such a system, a fact recognized by the NYSE. The NYSE's Retail Liquidity Program is especially designed to allow retail investors to get dark-pool pricing (sometimes a 1/10th of a cent higher or lower than prices available to institutional investors (Vigna, 2012)).

Investors should be circumspect when entering these dark exchanges because interests of the clients often appear to be of secondary concern to dark pool operators and traders (see below). Bogle (2009) has long contended that financial industry insiders are losing any sense that they have some basic responsibilities toward those whose money they are managing and/or trading.

Despite this declining sense of fiduciary duty coupled with dark pools' opaqueness, investors are apparently still being tempted to execute transactions off of the lit exchanges. Why are they so tempted? The results of a mid-2013 survey of 250 financial professionals conducted by Labaton Sucharow, a New York City financial district law firm, revealed that the 2008 financial crisis has done little to set the moral compass on Wall Street back to true north. A majority of respondents (52%) believed that competitors engage in unethical or illegal behaviors to gain an edge in the market (Labaton Sucharow, 2013). More than a quarter of respondents stated that the financial services industry does not put the interests of clients first. Perhaps even more discouraging was the belief, expressed by 29% of those surveyed, that Wall Street professionals may need to behave unethically or illegally to be successful. These survey results suggest that investors, as well as traders and brokers, are willing to use dark pools because they feel they must push ethical and legal boundaries in order to be successful.

Lack of Promised Anonymity

Simply calling a pool “dark” does not mean that all trades are genuinely anonymous nor that they remain so as the transaction winds its way through the pools. Not all dark pools are dark in the same way (Healey, 2013). Many dark pools route trades out to other parties. Depending upon who these parties are, the transactors' identities may or may not remain hidden. Given that anonymity is one of the main two reasons investors cite for their use of dark pools, this point is troublesome. Dark liquidity broker/dealers may be engaged in a kind of false advertising when they pitch their services as a way to insure anonymity but then adopt operating strategies that share investors' identities with other traders or pools.

Lack of Investor Protection

i. Broker/Dealer Conflicts of Interest

Investors contact brokers/dealers to place an order. Brokers then decide among venues for executing the trade. One venue might offer the broker a rebate for placing the trade, while another might charge the broker a commission. Some hedge funds even offer “payment for order flow” – i.e., the funds pay large sums of money to entice online brokers to route all customer orders to a particular hedge fund (Lewis, 2014). Given that brokers are profit-seeking entities, brokers have an incentive to choose a venue that bolsters their bottom line. They typically do not pass rebates or fees they receive back through to their clients. So brokers may well choose the venue that is best for a given broker's bottom line rather than

the venue that offers the client the best price or the greatest liquidity (McDermott, 2011).

Dark pool operators also sometimes trade on their own accounts. Many operators do not disclose whether they give priority to their “proprietary trades” over “agency trades” (i.e., trades where they are supposed to be acting as an agent for their investor clients). When Bennett et al surveyed investors (2010), about half said their dark pool providers did not provide clear information on this issue. Investors could not tell whether, for example, dark pool traders were allowed to cancel investor orders if doing so enabled the traders to make a greater profit for themselves. It is not clear how many dark pool operators even have explicit formal policies addressing this prioritization and cancellation issues. In other words, a broker’s dark pool traders may be trading against that broker’s customers. At present, there are no rules prohibiting such trading (Lewis, 2014).

ii. Toxic Traders

Some pools may harbor traders who are engaged in problematic behavior that hurts investors. Larger pool operators usually provide some oversight designed to identify toxic traders. However, these “bad apples” often are identified one or two days after the trade has settled. At that point, they may have been able to do a fair amount of harm to investors using the tainted pool. Barclays has pioneered the use of surveillance technology designed to scan trading behavior and to identify and then remove “toxic traders” on a real time basis (D’Antona, Jr., 2013). Such technology, though, is not used by all dark pools. Consequently, investors are at risk as an ever increasing number of new dark pool players appear and start pitching their services to investors.

In other cases, broker crossing off-exchange networks are limiting which participants can enter their pools (Healey, 2013). They may legally do so under regulation ATS. Such limitations may make trading safer for institutional investors, but it does so at the expense of limiting access (possibly capriciously) to liquidity to a few select players and thus pushes us toward a two-tiered trading system that has concerned many regulators and governmental officials.

iii. Counterparty Risk Unknown and Unknowable

Investors should always evaluate counterparty risk. This risk refers to the danger that an investor’s trading partner may go bankrupt or not honor a deal for some reason. An investor should do due diligence and find out how financially strong a given trading partner is before entering into a deal with that party. However, in

the case of OTC dark pools with anonymized trades, investors have no way of themselves vetting counterparties whose identity is unknown. Nor can they see whether and to what extent their counterparties are at risk by dint of trades these counterparties have with other dark parties. These dark trades are not backed by the clearinghouse guarantees of transactions done on the public exchange, guarantees that afford some protection against counterparty risk.

iv. Program Trading Risks

High frequency trading (HFT) has been implicated in major market price swings. Although some investors are drawn to dark pools to avoid having to compete with high frequency traders, dark pool operators likely are themselves using some form of program trading to execute dark trades. There may be far more HFT occurring in dark pools than investors may think. Barclays, for example, has been sued for allegedly misleading investors as to the extent of protection its pool would afford them (Shafer, 2014). In any case, trading algorithms will very likely become increasingly complex and opaque as brokers/dealers/banks tinker with program trading with a view to eking out for themselves (and perhaps for their clients) every possible advantage.

Rogue computer algorithms leave investors and traders vulnerable to large price movements. The SEC has proposed enhancing its standards for systems compliance and integrity (Regulation SCI) and extending it to alternative trading systems and dark pools. But this is only a proposal, and it primarily formalizes only the set of voluntary automation standards exchanges have adopted in the past. The fact that the SEC is making this proposal only highlights the program trading risks connected with dark pools.

v. Destabilization of Exchanges and Driving Out of Small Investors

In addition, program and high frequency trading contribute to very high volumes of orders, many of which are placed and then cancelled as computer programs work out new strategies. In fact, dark pool operators offer preferred status to firms that create the most liquidity. NASDAQ conferred such status on firms that traded 25 million shares per day. Dark pools have given “top tier” ranking to firms that poured 40 million shares per day into the pools (Patterson, 2012, 41). In 2006, algorithm trading came close to crashing the data pipeline that feeds option trading pools (Patterson, 2012). The unprecedented shutdown of NASDAQ in fall 2013 for over two hours has been linked to the exchanges’ inability to keep up with the volume of trading. Knight Capital, a trading firm, lost \$460 million in the so-called “flash crash” of 2010 (Gapper, 2014). The rapid

development of trading technology has outpaced technological change and investment at both lit and dark exchanges (Moore, 2013). While this problem of technological mismatch clearly derives from many causes, the expansion of dark pools has contributed to and exacerbated the problem of crashes at the major exchanges. Shutdowns harm small investors who do not have the resources to sue the exchanges or to unwind trades. They tend to have to “eat” any losses related to such unwinds, leaving them especially vulnerable to destabilization of exchanges. It is not surprising, therefore, that small investors are fleeing the lit exchanges and may be moving away from the dark ones as well (Garrison, 2013).

vi. Share Buybacks Hidden

In an effort to attract business, dark pools (e.g., Liquidnet) have begun to offer capital markets transactions. These include initial public offerings and share buyback/stock repurchases (Makan et al, 2011). Through these means, dark pools can connect directly with investors, thereby bypassing the middleman (e.g., capital markets bankers who send business over to dark pools). The volume in share buybacks has grown steadily since 2011.

Using dark pools for share buybacks is not illegal. However, such transactions are done anonymously so investors may not realize that it is the company itself that is buying that company’s stock. When companies buy back their shares on the open market, investors can see them doing so. When they use dark pools, the transaction is kept in the shadows.

Lawyers generally advise that stock repurchases be announced prior to their commencement:

In order to avoid potential liability for insider trading in connection with a share repurchase program, a company should publicly disclose the program prior to its commencement... At a minimum, disclosure should be made with enough time to allow the market to absorb the announcement and include the following information:

- the estimated time period during which the purchases will be made;
- the maximum number of shares proposed to be acquired or the maximum amount of funds to be expended;
- the objective of the acquisition of shares;
- any plan or proposal relating to the disposition of the shares to be purchased; and
- an indication of how the purchases will be made (Atkins, 2013).

It is not clear whether firms that are using dark pools for stock buybacks are publicly disclosing these repurchases in accordance with these prudential recommendations. Moreover, given that such repurchases, precisely because they are hidden, do not signal to the market that the firm thinks its shares are undervalued and thus a good buy, the question arises as to why firms find it attractive to do buybacks using dark pools.

The question gains even more force since the SEC has ruled that firms using dark pools do not qualify for the “safe harbor” protection for transactions that they would have if they did the buy backs on the open lit markets. We suspect that firms may be using these pools because “shares repurchased pursuant to a privately-negotiated repurchase are not computed into a company’s daily volume limitation, so a company may privately repurchase shares while also engaged in repurchases on the open market” (Atkins, 2013). Moreover, given that these buybacks do not have to be reported under item 703 of Regulation S-K until the firm issues its next official periodic report, firms can buyback substantial amounts of stock under the radar.

An additional concern connected with use of dark pools for share repurchases centers on shareholder protection. Rule 10b-18’s safe harbor provision stipulates that a share repurchase cannot be made at a price that exceeds the highest independent bid or the last independent transaction price (whichever is higher). Since dark pool repurchase transactions are not bound by this provision of safe harbor protection, a manager could negotiate a repurchase price at a higher price per share than an equivalent lit market transaction would require. A manager’s repurchase decision in a dark pool might be driven by a different priority than creation of shareholder value.

Insider Trading Enabled

A related concern centers on insider trading. The recent lawsuit against hedge fund billionaire Steve Cohen has revealed that dark pools are being used for insider trading. Yet many investors do not realize that the SEC is not able to quickly ascertain who is trading what in these dark pools. To track trades, the SEC must do careful historical forensic analysis of complicated patterns of trades and even subpoena trading records in order to catch insider traders. Although the SEC is developing an audit trail system for tracking trades real-time, the commission may still be years away from being able to rely on such a system (Winter, 2013).

Pricing is often disclosed selectively, with dark pool price quotes being sent only to select investors. Regulators are concerned that high-frequency traders are placing orders on lit exchanges with a view to manipulating prices in dark pools (which, as noted above, base prices off of quotes in the lit public exchanges) (Bloomberg, 2013). In addition, because some trades travel faster over fiber optic cables to exchanges and pools located closer to the party doing the trade, algorithms written by and for high speed traders employed by big banks and others who own and operate dark pools enable some traders to see incoming trades at one venue and to move quickly to trade ahead (i.e., to “front run”) those trades at other venues (Lewis, 2014). Thus, it is perhaps not surprising that there “appears to be a correlation between the growth of dark pools and the number of criminal insider trading cases brought by government officials” (Werner, 2013, 2).

It seems likely that some traders and investors are drawn to dark pools to avoid regulatory scrutiny reason. It is striking that when Canada promulgated rules stipulating that trades can be routed away from public exchanges and to dark pools only if those operating the dark pools can demonstrate and document that customers get a significantly better price in the dark pool, dark pool trading volume in Canada shrank to almost a third of what it had been before these rules designed to protect investors (Popper, 2013).

Lack of Accountability for Mistakes

If someone makes a posting or pricing error on dark pool exchanges, the public has no way of knowing who was at fault. In October 2012, an automated trading program run by a dark pool made at least 258 bad “prints” in more than 100 stocks. Stock prices swung wildly for an hour. To this day, we still do not know which trader or firm was behind the mistake (Lopez, 2013). When there is little or no accountability for such errors, investors have little reason to place much trust in the operations of dark pools.

Price Benefits to Investors Mixed

Academic research on the effects of dark pools on pricing and liquidity is at present limited. Although dark pools have grown in part because large investors believe that they get better pricing by executing trades in these pools than on the lit exchanges, early academic research suggests that alleged benefits to investors are mixed. In the case of lit public exchanges (e.g., the Toronto stock exchange) that allow dark orders, market participants who think that dark liquidity may be

present initially post visible quotes more carefully. That is, the quoted spreads are more narrow, which is advantageous to investors. However, once traders suspect that dark trades have been executed and thus liquidity has been diminished, traders widen their spreads (Foley et al, 2012). So price benefits seem to be quite variable.

Data from Canada also suggests that investors are not getting great prices in dark pools. As noted above, after Canada implemented a new law stating that dark trades could not occur unless dark pools provided a significantly better price than the investor could get on a lit exchange, volume in dark pools not only dropped, the bid-ask spread post-legislation narrowed by 25% (Bloomberg, 2013). So apparently investors in dark pools were not initially getting as good a deal as they may have thought. Today “only a handful of entities that call themselves dark pools can genuinely claim to add value above and beyond what is found on the [lit] exchanges in terms of execution size and price improvement” (Merrin, 2013).

Lower Trading Costs May Not Be Beneficial

Investors often cite lower transaction costs as a reason for moving trades out of the lit exchanges. Whether costs are consistently lower has not yet been determined. Moreover, we need to think about implicit or hidden costs of the sort discussed above, not just price spreads. Even if the explicit costs are lower, one needs to ask why that might be so. At present, public exchanges are subject to extensive and costly regulations designed to insure transparency, fairness, market stability, etc. Many of these regulations at present do not apply to dark pools. In other words, transaction costs with dark liquidity may be lower because regulatory costs are reduced. Such variance in regulatory costs not only gives dark networks a competitive advantage over public exchanges. It does so by putting investors at risk, a point apparently not well understood by many investors or the larger public.

There is another problem. Trades executed in the dark do not contribute to price discovery. When huge numbers of shares are traded in the dark, the market ceases to be able to fulfill one of its crucial roles in a free market--namely, maximizing price discovery (Hatheway, 2009). Loss of price discovery is a real cost at the systemic level that is rarely discussed by those who advocate for dark pools.

Part Four: What Should Be Done to Protect Investors from Dangers of Dark Pools?

It is widely accepted that capitalism's moral legitimacy rests upon the existence of relatively fair and transparent markets with maximal price discovery and with fair and open access and enforced investor protections (Healey, 2013; Hatheway, 2009; Merrin, 2013). Any solution within the capitalistic framework should restore and enhance the perception that the markets have these qualities. The 2007 financial debacle remains fresh in the minds of many investors. The UK Financial Services Authority (Ferguson, 2013) identified a number of proximate causes of the 2007 meltdown. Two key factors were risky trading activities and the failure to manage financial risk. Restoring investor trust must somehow minimize or contain risk and enable parties to better manage risk throughout the trading system. The problem is pressing with 67% of long-term investors indicating that they have problems trusting dark pools (Popper, 2013). At least three possible solutions to the problem of restoring moral legitimacy spring to mind: 1) do nothing, letting the market sort out a solution; 2) regulate dark pools like the lit exchanges; 3) selectively regulate dark pools, requiring that they show real benefits to investors and addressing risks identified above. (For a summary point by point comparison of the various options' ability to address ethical issues identified in this paper, see Table 1).

Option 1: Do Nothing

The argument in favor of this option would run along the following lines. Market players are "big boys." They should be allowed to decide which risks they want to run. As one trading firm CEO put it, investors need to investigate trading on their own because "information, analysis, and choice are an investor's most powerful weapons" (Tabb quoted in *Financial Times*, 2014). Moreover, if there truly are problems with dark pools, market players will perceive an opportunity to win the trust of concerned market participants. They will develop market-based solutions to these problems, so there is no need for regulation.

There is something to be said for this argument. Already we are seeing the emergence of some variants on dark pools. Credit Suisse has launched a new "light pool" in the US. According to the bank, this new pool will categorize users based upon past trading practices. The pool aims to attract long term investors such as pension funds, while preventing high frequency traders and others who may be seeking to game the system from doing so by preventing them from entering orders directly into the exchange. There is an intentional delay in

processing entered orders. This delay adds microseconds to the time of trade execution and thus discourages HFT players. The new exchange has said as well that it will not sell high speed data to others (Demos and Grant, 2011). The new Investor Exchange is evolving along similar lines (Lewis, 2014). The exchanges (e.g., BATS) are evolving new forms of reporting that provides greater detail on trades (Healey, 2013). This market response helps address the concern with toxic traders. In addition, if investors really care about the details of exchange operations and the depth of liquidity in these pools, dark pools could try to gain a market advantage by advertising that they will provide liquidity and operations data to would-be investors.

The option of preserving the status quo would allow dark pool participants to continue to enjoy the oft-alleged benefits of their trades' low impact on markets and possibly lower trading costs (Godellas and Griffin, 2010). In most cases, participants could continue to conduct their dark pool trades with anonymity. However, the market approach has limitations. First, it does not address possible conflicts of interest that may harm institutional investors. Credit Suisse, for example, has not committed to keeping its own traders out of this "light pool." Second, given that investors are very skittish about the market after the financial debacle involving investment banks and mortgage-backed securities, it is not clear whether investors will be inclined to want to trust the assurances of investment banks that they now suddenly have the best interests of mutual funds and pension funds in mind. In particular, we have as yet no reason to think that commercial and investment banks are limiting involvement in risky trading activities in any of these independent electronic pools or that they are doing a better job than they did several years ago in managing the very risks identified as contributing to the financial debacle. Third, this type of market solution does not by itself deal with the larger problem of declining transparency in the markets and the threat to price discovery. Fourth, having new lit alternative exchanges/pools does not eliminate market fragmentation and the opportunities such fragmentation provides to insiders to game the system at the expense of investors. In fact, it contributes to it. In the US alone, liquidity is now spread out over at least fifty venues including 12 stock exchanges and numerous off-exchange pools. This laissez-faire-driven fragmentation has reduced market depth and made it easier for traders to affect prices and to harm institutional and retail investors (Merrin, 2013). Fifth, even if these new lit pools operate well, we will not have solved the larger problem of potential systemic risk within the markets. We will still have the problem of multiple clearinghouses and the possibly destabilizing effects of HFT in the other dark pools.

Option 2: Regulate dark pools like the lit exchanges

A second way to make dark pools more transparent would be to make dark pools subject to many, if not all, of the same regulations as the lit exchanges. Dark pools could also be required to have to post prices and detailed trading data (including identities of buyers and sellers revealed as on the lit exchanges) to the tape prior to executing trades. Investors would know who the counter party to the trade is. If a dark pool's owner was on the other side of a trade or was routing trades in a way that favored these dark pool owners, investors could, in principle, identify such issues much more quickly. In addition, all dark pool exchanges could be required to be settled through a single central clearinghouse. At present, each exchange can decide on its own how and through whom it will settle its trades. Having such a clearinghouse for all products would make it easier to unwind trades and to insure that investors are protected against default (Deloitte, 2013). If trades need to be unwound, requiring that the trades go through a single clearinghouse would make it easier to figure out who owed what to whom.

If lit pool regulations were extended to dark pools, then the concerns with counter party identity and risk assessment could be addressed. Trade volumes and pricing would become transparent. Broader regulation could also address concerns about share repurchases and error accountability. However, regulation usually comes at a high cost, and dark pool trading benefits might disappear entirely if lit market regulations were extended to dark pools. In effect, Option 2 would convert dark pools into lit exchanges.

Imposing extensive and onerous regulations may not address many of the issues discussed above. Institutional or long-term investors have been drawn to dark pools precisely because they believe these alternative venues allow them to buy and sell large blocks of stocks anonymously without moving the market against them. As Frank Hatheway, the chief economist at NASDAQ testified before Congress, legislating that all dark pool trading data must be revealed may have the unintended consequence of harming institutional investors:

Long-term investors typically make decisions based on corporate fundamentals, while short-term traders typically make decisions based on interday trading information, such as displayed orders. Those who would compel dark pools to display their bids and offers in real time or to reveal ... [the trading partners'] identities in real time are helping precisely the wrong side. Who would benefit from additional quantitative information hitting the tape in real time, fundamental long-term investors or short-term information-based traders? Given the fears that already exist that high-

frequency traders are somehow taking advantage of the existing electronic information, isn't it ironic that we are considering mandating a slew of new very sensitive trade data to be delivered to them in real time? (Committee on Banking, Housing, and Urban Affairs, 2010, p. 15).

If dark pools were regulated exactly like the lit exchanges, the odds are high that banks would simply find some way to get around the law – e.g., by inventing another type of venue that would be dark (Stafford, 2013). Moreover, as with the first possible solution, simply posting trading data does not deal with the problems of hidden exchange rebates or the destabilization of exchanges caused in part by complicated program trading. It also needs to be admitted that the regulators often miss many problems. The federal government is pressuring JP Morgan to pay billions of dollars in fines for activities that the bank engaged in after Dodd-Franks was passed. As one commentator notes, the Feds have practically been living at JP Morgan for years, yet they apparently did not identify the compliance deficiencies that led to big losses at JP Morgan's London office (WSJ, 2013). Even if the US legislative and worldwide financial regulatory bodies were to pass a draconian set of regulations, the reality is that changes in the marketplace are far outpacing regulators' ability to keep up. This fact has been recognized by the SEC itself. Kurzan (2012, p. 12) notes both that "most compliance personnel do not have the background to understand, monitor or test the models" underlying trade practices" and that "models and systems evolve faster than risk or compliance processes."

Option 3: Pass targeted regulations designed to help dark liquidity truly help retail and institutional investors

The third approach concedes that there may be advantages to trading in dark pools. Some investors report better execution of trades due in part to the promised anonymity. By regulating dark pools like lit exchanges, one effectively transforms dark pools into lit pools. The third option seeks to preserve dark pools as dark, while allowing for select regulations designed to deal with ethical problems of the sort described above.

For example, both Canada and Australia have passed laws requiring that dark trades cannot be executed unless the dark pool offers a significantly better price than that available on a lit exchange (Popper, 2013; Puaar, 2013). After those laws were passed, dark trading dropped dramatically. This sort of law, if more

widely adopted globally, might at least provide some price protection to institutional investors while still permitting dark pools to operate. The other advantage with this approach is that dark pools do not need to conform to a host of regulations involving the timed posting of prices in multiple venues. They simply need to be able to demonstrate that institutional investors reap some advantage from trading in a given dark pool rather than on one of the lit exchanges. Brokers do not need to check every trading venue. This option would thus mitigate the danger of sweeping regulations (see Option 2) applicable to the posting and scanning of prices across a score of exchanges and trading platforms. This latter point is important given the mounting evidence that Regulation NMS (which requires that, before brokers can buy or sell a given stock for a client, they must scan more than twelve US stock exchanges and approximately 50 private equity trading venues for the best price) has spawned complicated program trading, which has contributed to the destabilization of exchanges (Bunge, 2014).

A slightly different option would involve legally requiring that brokers first offer their best possible price for buying or selling a stock to the public markets before being permitted to trade at that price in a dark pool or some other off-exchange venue. This idea has been floated recently and is being discussed by regulators, institutional investors, brokers and officials from both dark pools and lit exchanges (Massoudi, 2012). This option would seem to address concerns about the undermining of lit exchanges, would foster price transparency and price discovery, and might act as a check on undisclosed fees and rebates. The dark pools themselves could then continue to offer anonymity to large institutional investors who do not want to move the market against them.

To provide a few more examples of a targeted regulation: Governments might pass laws requiring dark pool operators to establish and to adhere to rules controlling how the pools will handle proprietary and agency trades. Investors would then be in a better position to judge for themselves how troublesome potential conflicts of interest might prove to be. Or requiring that dark pools provide more disclosure regarding their fees, rebates, processes and investor protections might enable institutional and retail investors to do a better job assessing the performance of various dark exchanges. Unhappy buyers or sellers could then knowledgeably vote with their feet and put underperforming dark pools out of business.

As we noted under Option 1, dark pools have evolved in part because they promise large investors better pricing and lower trading costs. In order to preserve dark pool benefits valued by participants (especially institutional investors), an approach of targeted, rather than sweeping, regulation may be a

way to preserve certain dark pool advantages while also addressing the most troubling risks of these markets. For example, liquidity information might be required while trade anonymity could be preserved; or dark pool operators could be required to vet the financial solvency of those who want to trade in their pools to help reduce counterparty risk. This more piecemeal approach to mitigating risk would also permit all market players to comment on proposed regulations and to refine them in ways that make sense and that may help to avoid unintended consequences. On the other hand, targeted regulation can prove costly insofar as it involves constant tinkering with the system. Focused regulations, like more ambitious ones, may also produce unintended consequences (Rosenblatt Securities, 2012).

Conclusion

We have argued that the rise of dark liquidity, driven by a desire for anonymity and better pricing, raises many ethical concerns. What should be done about these concerns is far from clear. There are difficulties associated with each of the various remedies considered above, although we would tend to favor targeted regulation. This more piecemeal approach (Option 3) has the advantage of providing some greater investor protection while permitting dark pools to seek competitive advantage through differentiating themselves within the market from other exchanges (Option 1). The attached Appendix compares the three options' ability to address the ethical issues identified in this paper. Option 3 appears to be the most viable and to do the best job of addressing and mitigating ethical concerns.

However, even if we were to adopt Option 3, a more fundamental problem would still remain. The market is no longer populated primarily by stockholders who are searching for long-term value and solid returns. Today's electronic marketplace – both the dark and lit corners – are dominated by short-term, high frequency traders seeking to maximize short-term profits. Realizing that smaller investors are at a substantial disadvantage when it comes to competing with traders equipped with sophisticated trading programs, many retail investors have chosen to flee the market entirely. Ethicists and policy makers need to step back and view the evolution of the market as a whole and consider how and whether the market mechanisms (e.g., the exchanges, trading programs, etc.) can be modified to make for a system that is fairer to and thus more attractive to small as well as large investors. By comprehensively identifying and categorizing the various ethical problems posed by the explosion of dark trading, this paper makes a small, but significant, contribution to approaching this larger, daunting challenge.

APPENDIX: RELEVANCE OF REGULATORY OPTIONS TO ETHICAL ISSUES				
#	ISSUE ADDRESSED	OPTION 1: LAISSEZ FAIRE/STATUS QUO	OPTION 2: REGULATE DARK POOLS SIMILARLY TO LIT EXCHANGES	OPTION 3: PASS TARGETED REGULATIONS TO BENEFIT INVESTORS
1.	Minimization of trade's impact on market by keeping buyer/seller identify hidden	X		X
2.	Potential for lower commission costs for investors	X		
3.	Lack of information on pool's operation and pool's liquidity.	X	X	X
4.	Promised trade anonymity not always delivered	X (if dark pools decide to compete on preserving anonymity)		
5.	Broker/dealer conflicts of interest			X
6.	Two tiered trading system (limited access for some parties)			X
7.	Unknown counterparties and inability to assess counterparty risk.		X	X
8.	Program trading risks and exchange instability		X	X
9.	Undisclosed dark pool share repurchases		X	X
10.	Potential for undisclosed insider trading		X	X
11.	Non-accountability for errors		X	X
12.	Lack of price discovery for trades		X (if all trades and identities need to be posted to the tape prior to trades)	

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