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# Off-exchange Trading, Dark Pools and their Regulatory Dilemmas

**SUMMARY:** Exemption from pre-trade transparency on dark platforms enables the prevention of information leakage and a major market impact, thus block traders prefer these platforms to public ones. There are several dark trading facilities: systematic internalisers, crossing networks, etc. In this study, I focus explicitly on dark pools, and analyse why average trade size is decreasing while the number of transactions and the popularity of these venues continue to increase even though dark pools do not necessarily offer meaningful price improvement to investors. While seeking to answer these questions, I highlight that the use of dark pools has increasingly departed from their original purpose. In my paper, I explain in detail that liquidity is shifting dynamically from traditional public exchanges to dark platforms, with possible negative consequences to price discovery on lit venues. Sponsored access to information on dark platforms might harm overall market integrity as well. Although there is no consensus regarding the “useful ratio” of dark trade to lit trade, regulators and decision-makers on both sides of the Atlantic are increasingly concerned about the proliferation of dark liquidity. Both European and US regulators have been making systematic efforts to clamp down on dark ratios and curb the increasing popularity of dark trades. This paper presents current regulatory trends and their possible future changes, as well as their impact on dark liquidity.

**KEYWORDS:** off-exchange trading, dark pool, fragmentation, financial regulation

**JEL CODES:** G10, G14, G15, G18

## CHANGES IN THE DEMAND FOR OFF-EXCHANGE TRADING

The stock exchange is a significant source of funds for firms, providing access to additional liquidity for listed companies. At the same time, through a wide variety of available investment options, the stock exchange also offers investors an opportunity for risk management. In theory, stock exchange regulations guarantee a safe and transparent trading venue for buyers and sellers finding each other on the trading platform.

The evolution of stock market prices has

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been put under scientific scrutiny by numerous experts over the past few centuries. Nevertheless, despite the multitude of theories, it is difficult to pinpoint the factors influencing stock price developments.

Some analysts attribute more significance to speedy price discovery,<sup>1</sup> while others maintain that the interaction of investors’ decisions,<sup>2</sup> i.e. the human motive, plays a more important role in stock price movements.

Since increasingly technology-driven trading has reduced average transaction size drastically in recent years [from EUR 22,266 in 2006 to EUR 9,923 in 2009 – Report on regulation of trading in financial instruments – ‘dark pools’ etc., 2010/2075(INI)]<sup>3</sup>, the regulations

of stock exchange trading and compliance with pre-trade transparency requirements have had an increasingly distorting effect on prices. In practice this meant that the announcement of a sizeable buy or sell trade modified the market price to a greater extent than before.

There was growing demand, therefore, for off-exchange trading in order to execute certain large-volume exchange-traded transactions without information leakage and a major market impact (Réz, 2011). The concentration rule was removed in the European Union by the adoption of MiFID, a then novel EU regulation on capital markets, on 1 November 2007, which opened up the possibility of the operation of MTFs (multilateral trading facilities)<sup>4</sup>. *Similar alternative venues, the so-called alternative trading facilities*, had been launched about twenty years earlier in the United States.

Off-exchange trading forms are commonly referred to as dark liquidity. Dark liquidity means trading methods where the bid/ask quote is made public to the rest of the market players only after the execution of the transaction. Such transactions are normally executed over the counter either in dark pools or through internalisation, although even exchanges offer an increasing number of dark trading options nowadays.

Dark pools constitute a subset of regulated, hence legally operating, private execution venues<sup>5</sup>, which operate on the basis of limited pre-trade transparency requirements according to pre-defined exemptions. The original purpose of their establishment was to conceal the execution of large-volume transactions and thus avoid any price distorting effect.

Internalisation takes place when the investment service provider engaged by the investor executes the transaction constituting the order by filling the client's order from its available "inventory" or "stock". Internalisation, then, means that the brokerage firm fills the client's

order from its own account (HFSA, 2006a). During internalisation, the brokerage firm may make a profit on the spread, i.e. difference between the ask price and the bid price (SEC, 2014). According to the literature, there is a close correlation between dark pools and internalisation. More than three quarters of the trades executed in dark pools are likely to be internalised (Weaver, 2011).

Both internalisers and dark pools play an increasingly important role as possible venues for executing trades.

Clearly, the original reason for the creation of dark pools was to avoid price influencing information leakage in the case of large trades.

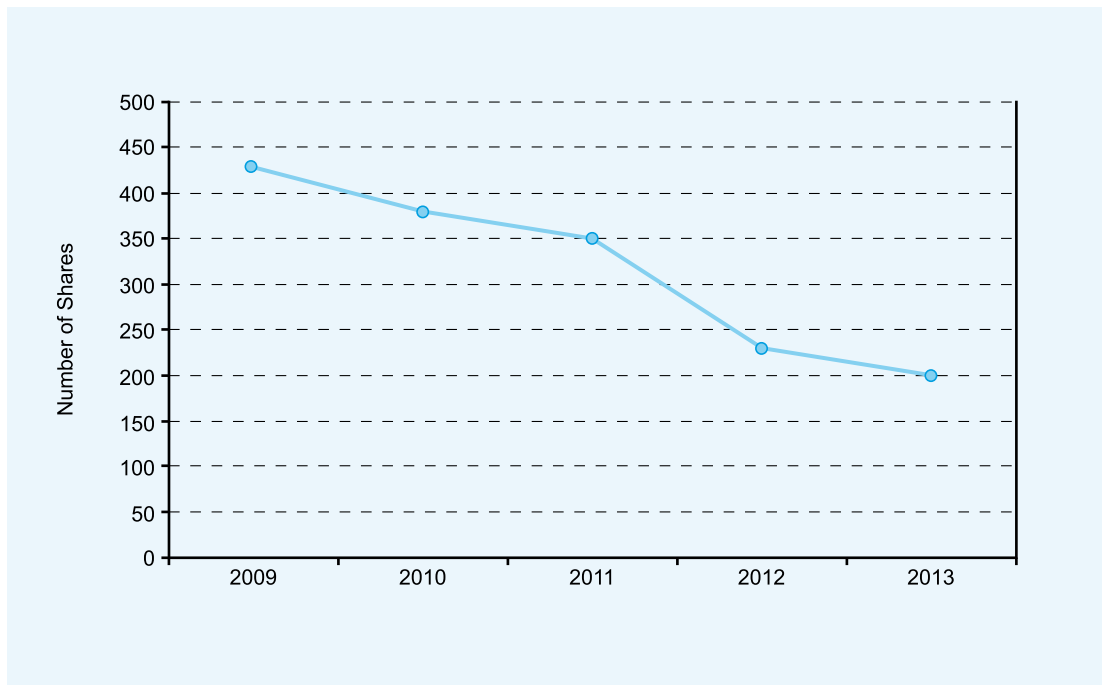
In recent years, however, these dark trading venues have not only been used by traders for block trades, but on a general scale, in relation to any transaction, in order to avoid pre-trade transparency requirements (which cannot be avoided in the open market) (Saraiya – Mittal, 2009). Average trade sizes in dark pools have declined significantly; a typical trade size today ranges from 200 to 1,000 shares. *Chart 1* presents the reduction of trade size in the US dark pool market between 2009 and 2013: while more than 430 shares were sold on average during a transaction in 2009, by 2013 this number declined to around 200 shares.

This is stemming from investors' needs on the one hand and, on the other hand, from the business attitude of dark pool venue operators<sup>6</sup>, who often place more emphasis on increasing trading volumes than maintaining the quality of execution.

At the same time, the most crucial benefit of dark pools, namely, zero information leakage, is not always achieved fully. This is because the size of the buy order and the sell order is seldom the same.

If you have a 50,000 share buy order in a dark pool and the transaction is, all of a sudden, executed, it is reasonable to assume that there were more than 50,000 shares on the sell side. These

**AVERAGE EXECUTION SIZES AT DARK POOLS IN THE US**



Source: Celent Securities: Dark Pools: In the Eye of the Storm, 2013

“excess shares” have to be sold somewhere, which will inevitably drive down the price. If the price is actually pushed down, the buyer will perceive his transaction price as a loss.

Using the same example (a buy order of 50,000 shares), if someone announces a sell order of 100 shares and the order is filled, the seller will have reason to assume that there is a relatively significant intention to buy. He can now afford to wait until the buyer is forced to buy in the open market, thereby moving the prices in his favour (Fishler, 2011).

The existence of a size discrepancy between the buy and the sell side may entail information leakage with every execution which, in turn, may lead to adverse selection. This is a direct and perceivable effect of the purchase and sale transactions concluded in dark pools, which also manifests itself in public trading venues (Concha et al., 2011).

It is obvious that traders are constantly on the lookout for signs or information pointing to the existence of large orders resting in dark pools in order to earn large profits at minimum risk.

There are several methods available for this purpose. For instance, they can use “front running” when, being aware of the details of the client’s order, before filling the client’s order the executor of the order submits an order to the investment service provider on his own behalf to take advantage of the impact the client’s order will have on the prices (HFSA, Annual Report 2011). Another common method is “pinging”, where traders attempt to gain information about potential large deals concealed in dark pools by executing various smaller trades. If several smaller trades are executed, there is a good chance that the “sharks” or “gamers” have stumbled into the tip of an

iceberg, i.e. a large trade waiting to be executed (WSJ, 2008).

How widespread these off-exchange trading forms have become is an important but elusive question, and it is difficult to gauge the exact percentage of transactions executed in “dark” venues.

## STOCK MARKET EXODUS, INCREASING DARK LIQUIDITY

The market share of dark pools is extremely difficult to assess as the relevant data are not readily available. In 2013, for instance, the most influential dark pool of the world, Credit Suisse Crossfinder (McCrank, 2013) stopped its voluntary data reporting to Rosenblatt Securities, an agency disclosing up-to-date statistics on dark pools in its monthly newsletter and to TABB Group, a consulting firm publishing regular reports to assess the activities of dark pools.<sup>7</sup>

Among other things, this step, as well as the need for a clearer understanding of the situation drove the US Financial Industry Regulatory Authority (FINRA) to impose, as of April 2014, a reporting obligation on all alternative trading venues.<sup>8</sup>

Despite the difficulties involved in accessing data, it is plain to see that the volume of transactions executed in dark pools has shown a steeply rising trend in recent years. Trading in dark pools, of course, is much more prevalent in the United States than in Europe. While in 2010 the market share of dark pools was around 2 per cent in Europe according to Rosenblatt Securities and over 3 per cent according to Thomson Reuters, this ratio stood at 8.5 per cent in 2014 (Thomson Reuters, 2014). Moreover, Rosenblatt Securities reported an unprecedented 11 per cent market share in September 2013.

In the United States, dark pool trading volumes accounted for 13.3 per cent of the con-

solidated trading volume in December 2012 and 14.3 per cent a year later (Rosenblatt Securities Inc., 2014).

The exodus from traditional exchanges has become a general phenomenon, for several reasons. Brokers usually weigh a number of factors in deciding whether to match the buy and sell orders “internally” within the brokerage firm itself, sell the order to another internaliser, place it in dark pools or trade it on the stock exchange. One such factor is the transaction fee. Stock exchanges typically charge higher fees than dark trading venues. As *Manoj Narang*, CEO of high-frequency trading firm Tradeworx, put it: “the exchanges have basically become the liquidity venue of last resort”; in other words, only those trades get to be executed on traditional exchanges which cannot be concluded on more favourable terms on any other trading platform (McCrank, 2014). In addition, exchanges have become the bastion of technology-driven, algorithmic trading (high-frequency trading, HFT).

In the US, off-exchange trading grew from 25 per cent in 2009 to 35 per cent on 2013 (SEC, 2013) and, based on Bloomberg’s figures, the market share was 40.4 per cent on 10 June 2014.

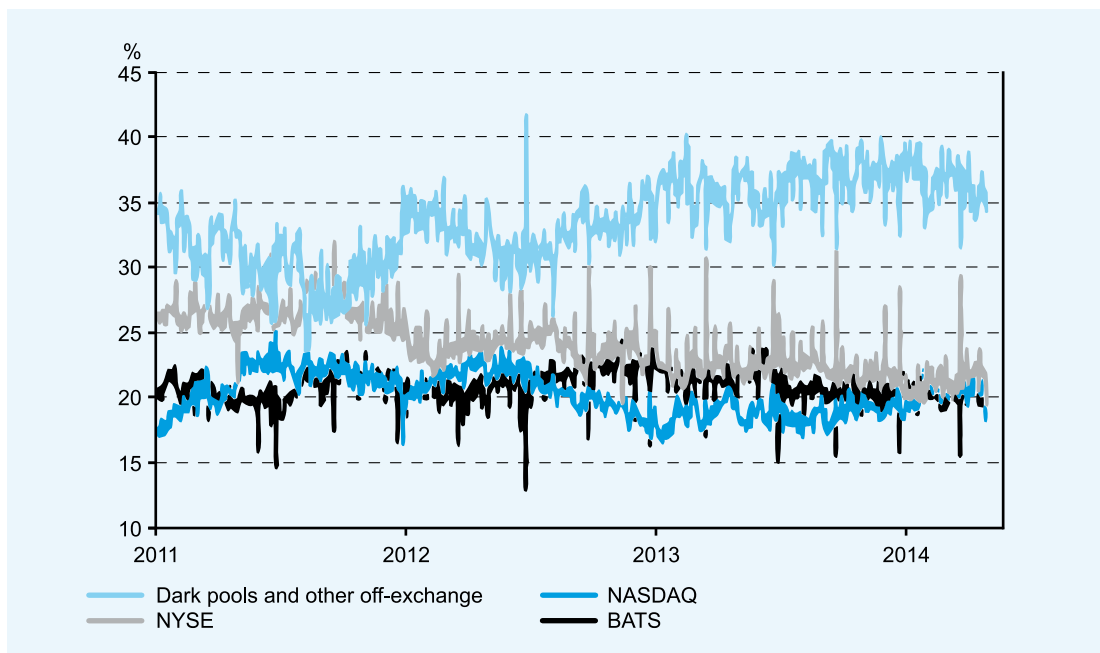
*Chart 2* illustrates the gaining ground of dark trading venues in the United States (percentage of trading volume, based on daily close).

The US market has fragmented into 12 traditional exchanges and about 45 alternative trading venues, most of them dark pools. In addition, more than 200 firms are involved in internalisation. More shares change hands nowadays in dark pools than on the New York Stock Exchange (Mamudi, 2014).

*Table 1* shows US trading venues and their respective market shares in March 2012, while *Chart 3* presents the market share of dark pools in the United States.

The level of fragmentation in the European financial market differs from that in the United

### THE GAINING GROUND OF DARK TRADING VENUES IN THE UNITED STATES



Bats Global Markets Inc. merged with Direct Edge Holdings LLC on Feb. 3. Before that date, Bats trading volume includes Direct Edge volume.

Source: Bloomberg, Mamudi, 2014

States in several regards. Since Europe does not have a uniform data reporting system in place (such as the consolidated tape in the United States), it is often difficult to compare data collected from various sources, and the settlement of cross-platform transactions is also more problematic. (Lengyel – Réz – Szép, 2011)

Although Europe has rapidly become the second most important player after the United States in respect of non-lit trading venues, electronic and dark trading gained true momentum only after the adoption of MiFID I. The possibility of dark trading had existed even before 2007 in the form of the dark liquidity options (reserve order or non-displayed order) offered by broker pools or public trading venues.

MiFID had been preceded by several crossing networks<sup>10</sup> where client orders are crossed against each other: POSIT Match and Liquidnet arrived

in Europe in 1998 and 2002, respectively. In reality, MiFID only intensified the competition for clients and forced traditional exchanges to rethink their existing business models. By the end of 2009, more than two dozen dark-liquidity providers had entered the race for transactions: traditional exchanges, crossing networks and systematic internalisers. The following venues were counted among the most important players: LSE, Deutsche Boerse, Swiss Stock Exchange, Euronext, Madrid Stock Exchange, as well as electronic platforms such as Aqueduct-Berliner Boerse, NYFIX Euro Millennium, NASDAQ OMX Europe, BATS Europe, NYSE Smartpool and Chi-X Europe (Banks, 2010).

Numerous financial institutions decided to enter the MTF-market as part of consortia: by simultaneously supporting several emerging funds, they not only reduced risk, but also acquired a stake in funds which were to become

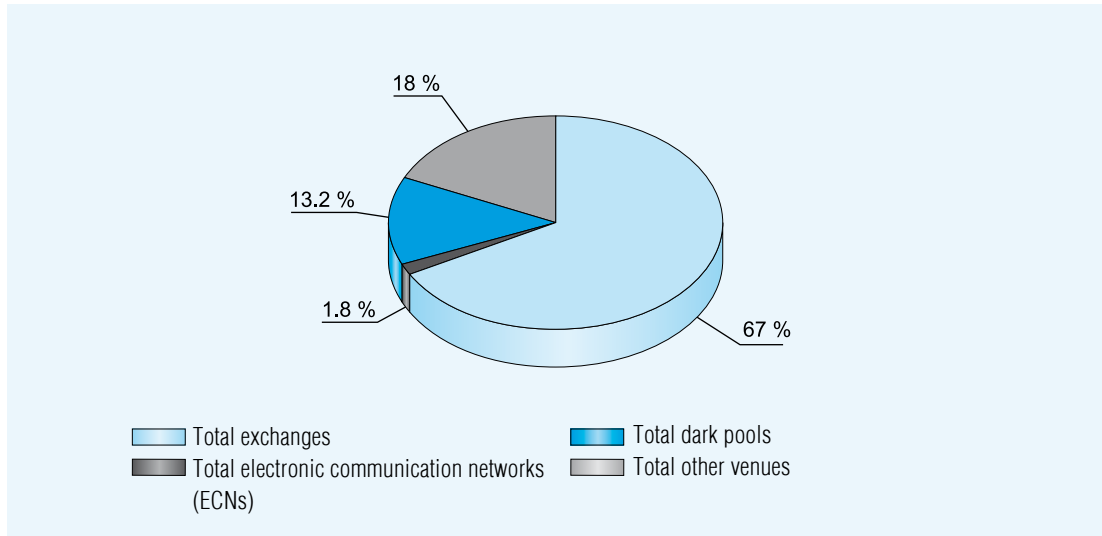
Table 1

**US TRADING VENUES AND THEIR MARKET SHARE (MARCH 2012)**

| VENUE   | AVERAGE MARKET SHARE OF CONSOLIDATED VOLUME (per cent) |
|---|--|
| NASDAQ Stock Market   | 18.1   |
| New York Stock Exchange   | 12.3   |
| NYSE Arca   | 11.7   |
| BATS BZX Exchange   | 8.3  |
| Direct Edge EDGX Exchange   | 6.3  |
| NASDAQ OMX BX (formerly the Boston Stock Exchange)                            | 2.8  |
| Direct Edge EDGA Exchange   | 2.7  |
| BATS Y-Exchange (BYX)   | 2.6  |
| NASDAQ OMX PSX (formerly the Philadelphia Stock Exchange)                     | 1.0  |
| National Stock Exchange (NSX)   | 0.4  |
| Chicago Stock Exchange (CHX)  | 0.4  |
| NYSE MKT (formerly NYSE Amex/American Stock Exchange)                         | 0.2  |
| CBOE Stock Exchange   | 0.2  |
| <b>Total exchanges</b>  | <b>67.0</b>  |
| LavaFlow  | 1.8  |
| <b>Total electronic communication networks (ECNs)<sup>9</sup></b>             | <b>1.8</b>   |
| Credit Suisse Crossfinder   | 1.9  |
| Goldman Sachs Sigma X   | 1.5  |
| Knight Link   | 1.4  |
| Getco GETMatched  | 1.2  |
| Barclays LX   | 1.1  |
| Deutsche Bank SuperX  | 0.8  |
| UBS PIN   | 0.7  |
| Knight Match  | 0.7  |
| Morgan Stanley MS POOL  | 0.7  |
| Level ATS   | 0.6  |
| Liquidnet   | 0.6  |
| BIDS Trading  | 0.5  |
| Instinet Cross  | 0.5  |
| Citi Match  | 0.5  |
| ConvergEx Millennium  | 0.3  |
| ConvergEx VortEx  | 0.2  |
| <b>Total dark pools</b>   | <b>13.2</b>  |
| More than 200 hundred other OTC trading firms                                 | 18.0   |
| <b>Total other venues (internalisation, alternative trading venues, etc.)</b> | <b>18.0</b>  |
| <b>TOTAL</b>  | <b>100.0</b>   |

Source: CFA Institute (2012b) based on data from TABB LiquidityMatrix, Thomson Reuters Equity Market Share Reporter, www.lavatrading.com, and US SEC.

**MARKET SHARE OF DARK POOLS IN THE UNITED STATES  
(MARCH 2012)**



Source: CFA Institute (2012b) based on data from TABB LiquidityMatrix, Thomson Reuters Equity Market Share Reporter, www.lavatrading.com, and US SEC.

key players in dark trading. In 2008, for instance, ten financial institutions participated in the foundation of Burgundy MTF.

The tradition of large-volume (block) trading was another driving force behind the dynamic development of off-exchange markets in Europe.

At the same time, partly owing to the lack of a uniform data reporting system, the new and complex European markets emerging are less transparent.

Table 2 indicates the main market participants based on market share.

**THE IMPACT OF DARK TRADING ON THE QUALITY OF THE MARKET – AN OVERVIEW OF THE LITERATURE**

An important element of the factors considered by investors and brokers in selecting trading venues is the quality of the market in the

given venue. The lower the investor’s explicit costs (such as transaction costs) and the more favourable the terms governing the execution of the same transaction, the more attractive the market is.

The quality of the market may be influenced by several factors, the two most important of which are market depth and the bid-offer spread. A market can be considered good quality if its depth allows for the execution of larger transactions with the lowest possible price distorting effect. By similar analogy, the smaller the bid-offer spread, the better the market quality.

A survey conducted by the CFA Institute found that up to a certain level, dark pool trading activity has a clearly positive impact on market quality: it reduces bid-offer spreads and increases market depth. However, this effect reverses beyond a certain threshold (which, according to the estimate of the CFA Institute, occurs when more than 46.7

Table 2

**MAIN MARKET PARTICIPANTS BY MARKET SHARE**

| VENUE                           | VOLUME OF ON-SITE TRADING AS A PERCENTAGE OF TOTAL VOLUME – FIVE-DAY AVERAGE (14 June 2014 – 18 June 2014) |
|---------------------------------|--|
| LSE Group                       | 39.41  |
| BATS Chi-X Europe               | 14.24  |
| NYSE Euronext                   | 12.36  |
| Turquoise                       | 7.54   |
| Bolsa de Madrid                 | 8.55   |
| Nasdaq OMX                      | 3.94   |
| Xetra                           | 2.83   |
| Oslo Bors                       | 1.54   |
| SIX Swiss Exchange              | 1.38   |
| Irish Stock Exchange            | 0.66   |
| Equiduct                        | 0.53   |
| Wiener Börse                    | 0.1  |
| Aquis                           | 0.04   |
| TOM MTF                         | 0.02   |
| <b>Lit order books (total)</b>  | <b>93.14</b>   |
| BATS Chi-X Europe               | 1.98   |
| UBS MTF                         | 1.2  |
| Turquoise                       | 1.08   |
| Liquidnet                       | 0.38   |
| SIGMA X MTF                     | 0.78   |
| ITG Posit                       | 0.93   |
| Instinet Blockmatch             | 0.44   |
| Nordic@Mid                      | 0.01   |
| Smartpool                       | 0.04   |
| BLINK MTF                       | 0.02   |
| <b>SLS</b>                      | <b>0.00</b>  |
| <b>Dark order books (total)</b> | <b>6.86</b>  |

Source: BATS Trading, Market share by market, June 18, 2014, Volume summary

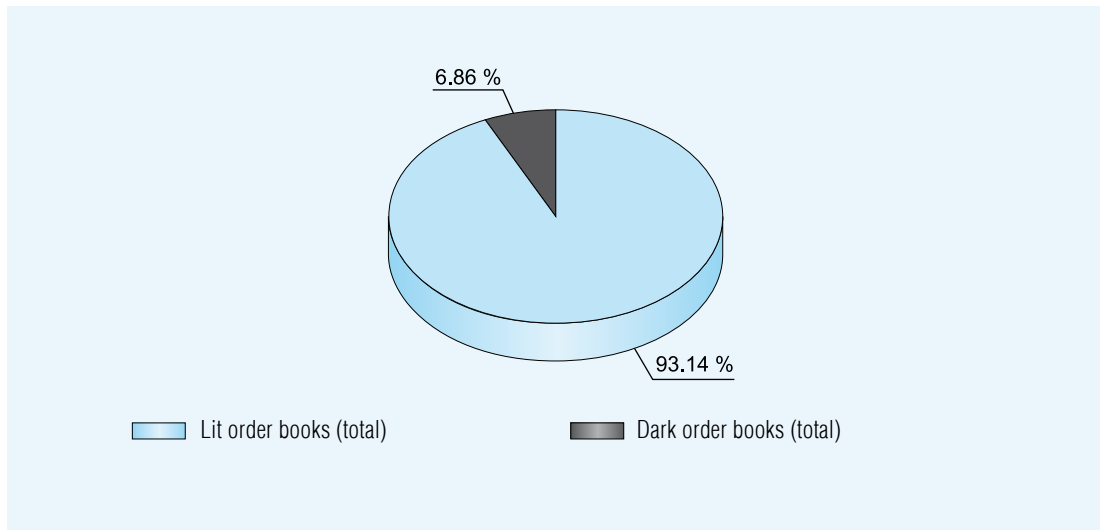
per cent of stock trading takes place in undisplayed venues) (CFA Magazine, 2012a).

By contrast, in their study written in Australia *Comerton-Forde* and *Putniņš* set this threshold well below fifty per cent. Examining the effect of dark trading on price discovery,

they drew a similar conclusion to that of the staff of the CFA Institute: low levels of dark trading may have a positive effect on markets; however, dark trading above the ten per cent “tipping point” is associated with a steep decline in information efficiency; in other



**MARKET SHARE OF DARK ORDER BOOKS IN EUROPE (AVERAGE TOTAL VOLUME,  
14 JUNE 2014 – 18 JUNE 2014)**



Source: BATS Trading, Market share by market, 18 June 2014, Volume summary

words, lack of pre-trade information impedes the price discovery process of the market (it is more difficult to factor private information into prices). Adverse selection is more likely to occur in “lit” markets, which will drive up spreads (Comerton-Forde, Putniņš, 2013).

Degryse, de Jong and van Kervel analysed the relationship between dark trading and market liquidity and found that dark trading harms liquidity. They argue that, in line with the principle of “cream-skimming”, dark markets attract less informed investors, which leads to adverse selection in traditional, lit markets. The authors stress that limit orders tend to migrate from traditional markets to the competing alternative venues, which leaves investors trading strictly in the traditional market worse off (Degryse et al, 2011).

According to Hatheway, Kwan and Zheng, the activity of dark pools damages the quality of US markets and hampers price discovery, except for larger transactions. Based on their findings, the authors concluded that

dark pools caused market segmentation. This means that dark pools pay investment service providers by the share (offering a price slightly more favourable than the mid-quote price, i.e. they offer sub-penny price improvement) in order to attract the service provider to place the order with them (*payment for order flow*).<sup>11</sup> Another phenomenon facilitating market segmentation is called the uninformed retail order. Being “uninformed”, retail traders have little information about the origin or destination of the share, and in the lack of adequate information they are willing to buy or sell the given share practically at any price. Such investors are attractive to both brokers and trading venues as, due to the investor’s lack of information, the trading venue can be chosen fairly freely, and there is a better opportunity to take advantage of the spread (although the “best execution” principle is intended to curb this practice).<sup>12</sup>

Dark venues attract uninformed small orders, “skimming” liquidity from lit markets.

By contrast, *Zhu* (2013) arrives at the exact opposite conclusion: adding a dark pool alongside a traditional exchange in his model, he finds that dark pools improve the efficiency of price discovery as informed traders tend to concentrate on exchanges. At the same time, improved price discovery is associated with reduced exchange liquidity; thus the social welfare implications are not straightforward. *Zhu* also stresses that dark pools attract uninformed orders which, essentially, divides the market into two parts in terms of the presence of relevant information.

All this clearly demonstrates that money markets and investment options are extremely fragmented these days. Regulators therefore focus their efforts on limiting dark trading to transaction sizes that truly influence market price and on facilitating the disclosure, as much as possible, of the key details of dark trades, such as participants, transaction types and transaction matching technologies. The latter is particularly important from the perspective of data collection (aimed at determining what percentage and which portion of trading is concluded in dark venues); in addition, it fosters efficient price discovery in traditional “lit” venues.

## REGULATION

The vast majority of the literature concentrating on dark liquidity – *Hatheway, Kwan and Zheng* (2013), *CFA Institute* (2012b), *Comerton-Forde and Putniņš* (2012), *Degryse, de Jong and van Kervel* (2011) – concludes that the migration of trading to dark venues may deteriorate the quality of “lit” markets. The experts, however, express different opinions in respect of the dark percentage at which these negative effects may emerge.

The reason for this discrepancy may be the different databases used by the authors for

drawing their conclusions (authors analysed, for instance, respective parts of the Australian, US and European markets). The extent to which experts considered endogeneity also differed (i.e. the correlation between specific factors: for instance, non-block dark transactions, spreads and market depth are not necessarily in a clear, causal relationship with one another; a change in one may have an impact on another).

This may be the reason why the authors determined the “tipping point” so differently: while the study of the CFA Institute determined the threshold above which dark trading may harm open markets at nearly fifty per cent, the Australian Securities and Investments Commission (ASIC, 2013), as well as *Comerton-Forde* and *Putniņš* found that, if used for the execution of non-block transactions, dark pools may impair spreads and market depth on “lit” platforms above as little as a market share of 10 per cent.

There is no consensus, then, about the threshold; most of the literature, however, agrees that lit markets and traders may be hurt overall if an excessive part of trading is performed in dark venues.

Another problem that may arise in relation to dark trading is the fact that numerous venues provide their clients with sponsored access to certain trading platforms, which may give rise to fraud: some traders may gain access to benefits at the expense of others under ambiguous conditions (for example, the company providing sponsored access may belong to the same group as the sponsor). Investors have an interest in being provided with equal, simultaneous and non-discriminatory access.

Difficulty in accessing data on dark trading have also given rise to concerns. This problem may (also) be explained by dark platforms’ vested interest in keeping confidential the data pertaining to their own business models or clients.<sup>13</sup>

In summary, the contradiction is stemming from the fact that the short-term private interests (lower transaction costs, significantly better prices for investors, etc.) of market participants providing and using dark trading services are in conflict with the overall market's longer-term (public) interests which call for more information in order to facilitate efficient price discovery and investor confidence.

In view of the above, regulatory authorities considered it necessary in several countries to revise the existing rules on the once negligible, but today fairly substantial, dark liquidity in the market. The next part of this paper presents the main features of European and US regulations and highlights the regulatory dilemmas arising in relation to dark pools.

In the United States, Regulation NMS (National Market System) was revised and reformed in 2005. With regard to the regulation of dark pools,<sup>14</sup> Rule 610 provides that market participants should have fair and non-discriminatory access to different venues and prices. This regulation is not applicable to alternative trading systems (ATS) unless they execute more than five per cent of the trades in the given share. According to the SEC, at present none of the alternative trading systems exceed this threshold. Consequently, under the regulation alternative trading systems may legally operate dark platforms. Rule 610 allows investors to access a particular trading centre through so-called private linkages; however, the trading centres may not impose unfairly discriminatory terms. It limits the fees that a trading centre can charge investors for access to its protected quotations to no more than USD 0.003 per share (CFA, 2012b).

The main difference between the logic of US and European regulation is the fact that, while the US regulation distinguishes traditional ex-

changes (subject to stricter rules) from alternative trading systems (viewed as brokers or traders subject to less stringent requirements), Europeans treat all MTFs in a uniform fashion. In theory, the same rules are applicable to all MTFs (including dark pool operators) which, however, may apply for exemption from the pre-trade transparency requirements if certain conditions are met (Boskovic – Ceruti – Noel, 2009).

Possible waivers apply to large (well above average market size) transactions, transactions with a reference price, negotiated transactions (a volume weighted average price transaction), orders held in an order management facility (which gave rise to “iceberg orders” on regulated markets or MTFs). Various concerns have arisen in respect of these exemptions over the past seven years including the inconsistent application of the rules by certain Member States and markets, which had an adverse effect on price discovery (CESR, 2010). The revision of the MiFID commenced in 2010, one of its primary objectives being to eliminate the abovementioned inconsistencies. Another objective is to extend the scope of the regulation to crossing networks, given that currently the transactions executed there fully qualify as OTC transactions.

Although similar regulations are also in place in Australia and Canada, the proposals to maximise the ratio of dark trading by the end of 2016 are highly debated (according to the proposals, only up to 8 per cent of the total daily trading volume of a share can be traded in dark markets, and maximum 4 per cent of the daily quantity sold can be executed in a single dark venue).

Similarly, US regulators have been contemplating to impose restrictions on dark trading: they would only permit the execution of a transaction in a dark platform if the alternative trading system offers a meaningful price improvement for the investor.<sup>15</sup>

According to IOSCO, the regulatory principles addressing dark liquidity are designed to:

- minimise the adverse impact of the increased use of dark pools and dark orders in transparent markets on the price discovery process;
- mitigate the effect of any potential fragmentation of information and liquidity;
- help to ensure that regulators have access to adequate information to monitor the use of dark pools and dark orders;
- help to ensure that investors have sufficient information so that they are able to understand the manner in which orders will be handled and executed<sup>16</sup>;
- increase the monitoring of dark orders and dark pools in order to facilitate an appropriate regulatory response (IOSCO, 2010a).

Traditional exchanges, which seek to “win back” customers, are set to benefit from the adoption of the relevant restrictions and changes. Obviously, dark pools gained ground because they satisfy existing market demand. This is precisely why traditional exchanges engaged in setting up dark pools themselves or initiated cooperation with market participants with well-established dark pools (Smout – Hutchison, 2014). They are also prepared for a potential restriction on dark trading in money markets: the London Stock Exchange, for instance, envisages the introduction of a “mid-session auction” in order to offer traders some of the advantages of anonymous trading, while remaining within the bounds of the new regulations.

For the duration of the auction, normal trade would be suspended, and buyers and sellers would submit their offers with an algorithm used to determine the price. *Brian Schwieger*, LSE’s head of equities said that the mid-session auction may offer an alternative to those who have no access to a dark pool for executing larger trades (Cave, 2014).

## SUMMARY

Exemption from pre-trade transparency requirements in off-exchange venues provides an opportunity for the execution of block trades without information leakage and a major market impact.

While there are numerous dark trading platforms, this paper merely touched upon systematical internalisers and crossing networks, and was intended to focus primarily on dark pools. The trade size of dark pools has practically shrunk to stock exchange size by now, whereas their use has become extremely widespread (with a steadily growing number of transactions). In addition, it is not entirely true that these platforms offer meaningfully better prices to investors.

This means that they do not fill the market role originally intended by the authorities.

The increasing popularity of dark trading and the liquidity drainage observed in exchanges force regulators to revise the existing rules. There are concerns that large-scale dark trading (the exact extent of which is subject to professional debate) has an adverse effect on efficient price discovery in traditional “lit” markets, and that sponsored access to certain services restricts the group of potential investors, impairing non-discriminatory market participation. Dark pool owners, in turn, are in the position to perceive certain trading trends earlier than other market players, which they can easily turn to their advantage.

The functioning of dark pools lacks transparency and it can be understood in retrospect at most; meanwhile, the area of dark trading witnesses an enormous technological progress as automated trading is gaining ground. All this leaves regulators perpetually one step behind (they can respond to market changes only on a retrospective basis).

These dilemmas prompted regulatory au-

thorities to initiate consultations about standards restricting the level of dark trading and setting forth their nature in more detail. As dark trading is a response to existing and justified market needs, regulators do not seek to eliminate this form of trading, but rather to

curb their excessive use. This is a fully warranted effort.

Accordingly, we are likely to see the retrenchment of dark trading options in the near future, and market participants should prepare themselves accordingly.

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#### NOTES

- <sup>1</sup> Investment principles relying on fundamental analysis essentially attempt to determine a given investment's real intrinsic value and under- or overvalued status (and hence, the magnitude of an expected price movement) in consideration of the macroeconomic and industry environment and the position of the company in the real economy (financial management indicators, financial statements).
- <sup>2</sup> Technical analysis, in turn, provides projections based on shifts in supply and demand and investor "sentiment" in respect of a stock exchange product.
- <sup>3</sup> High-frequency trading is a possible and increasingly popular form of automated trading, which involves incredibly rapid, technology-driven response. Moving in and out of positions in fractions of a second provides an opportunity for outperforming the rest of the market players. HFT is typically a form of proprietary trading with small bid sizes, short holding periods and positions closed at the end of the day (Réz, 2011). HFT has become so widespread that HFT quotes account for 70 per cent of all trades on the New York Stock Exchange (Portnoy, 2011).
- <sup>4</sup> MTFs are trading platforms competing with traditional stock exchanges. They gained ground in Europe following the adoption of the MiFID Directive in 2007, when the concentration rule was abolished. Previously, investment service providers were permitted to trade quoted shares and other securities on stock exchanges only. After 2007, the most important MTFs have been Chi-X, BTAS Exchange and Turquoise. The increasing market share of MTFs can be explained by their use of sophisticated IT technologies and lower fees than those offered by traditional stock exchanges (Fioravanti – Gentile, 2011).
- <sup>5</sup> When an investor instructs its investment service provider to execute a certain transaction, the provider has several options in respect of the venue and method of execution. For instance, it may decide to execute the transaction on a regular stock exchange or it may opt to turn to a third party, i.e. market makers. These firms buy and sell stocks at publicly quoted prices and, in order to attract orders, they are willing to pay consideration to the investor or to the entity acting on the investor's behalf, i.e. the broker. (This is usually a certain sum of money per share known as "payment for order flow"). Obviously, the provider may choose a dark trading venue as well, if it deems such a venue more favourable. As a rule, service providers must essentially adhere to the "best execution" principle; in other words, they must strive to find the optimal solution best serving the client's interests (HFSA, 2006b).
- <sup>6</sup> Dark pools are usually operated by banks or alternative trading platforms.
- <sup>7</sup> Based on the article published on 4 February 2014 in *The Trade News*: [http://www.thetradenews.com/news/Asset\\_Classes/Equities/FINRA\\_dark\\_reporting\\_plan\\_approved\\_but\\_concerns\\_remain.aspx](http://www.thetradenews.com/news/Asset_Classes/Equities/FINRA_dark_reporting_plan_approved_but_concerns_remain.aspx)

- <sup>8</sup> Alternative trading venues are required to report weekly trading volume data to FINRA, which publishes on its website data on liquid instruments with a two-week delay, and information on less liquid products with a four-week delay.
- <sup>9</sup> Brokerage firms/exchanges which can be accessed directly only by members (institutional investors, brokerage firms and market makers), while private investors' orders can only be routed through brokerage firms (Réz, 2011).
- <sup>10</sup> Crossing network: Crossing networks are private execution venues typically operated by larger investment banks and brokerage firms (unregulated markets and MTFs), and are exempt from pre-trade transparency requirements. Their transactions currently qualify as over-the-counter (OTC) trades. CNs are available only to the clientele defined by the operator and they ensure anonymity to their clients (Réz, 2011); while they are similar to dark pools, in Europe they operate outside and independently of regulated markets and MTFs (FESE, 2010, 2). By contrast, they are considered to be alternative trading systems (ATS) in the United States, and are subject to the rules imposed on ATS trading (World Bank, 2009, 8).
- <sup>11</sup> See footnote 5
- <sup>12</sup> See footnote 5
- <sup>13</sup> According to the Technical Committee of the International Organization of Securities Commissions (IOSCO), a body analysing, among other things, the regulatory environment, the challenges to be tackled by dark pool regulations cover three main issues:
- the impact on the price discovery process where there is a substantial number of dark orders and/or orders submitted into dark pools which may or may not be published;
  - the impact of potential fragmentation on information and liquidity searches; and
  - the impact on market integrity due to possible differences in access to markets and information (IOSCO, 2010b).
- <sup>14</sup> Rule 611 is aimed at price protection and provides that a transaction must be executed at the best possible price. With that in mind, quotations available on various trading platforms must be compared and if a better price is identified, the transaction must be routed to that platform. Since dark pools do not display their quotations, transactions concluded there do not enjoy the same protection. In theory, Rule 612 (the so-called "sub-penny rule") is intended to prevent certain market participants from gaining advantages through minor, sub-penny price improvements, which would lead to excessive market fragmentation. Rules 601 and 603, in turn, introduce obligations in respect of data reporting.
- <sup>15</sup> Mary Jo White, Chair of SEC justified stricter regulations by the following: "[...] the consensus of the research is that the current extent of dark trading can sometimes detract from market quality, including the informational efficiency of prices. [...] Transparency has long been a hallmark of the U.S. securities markets, and I am concerned by the lack of it in these dark venues. Transparency is one of the primary tools used by investors to protect their own interests, yet investors know very little about many trading venues that handle their orders" (Mary Jo White, 2014).
- <sup>16</sup> In respect of ensuring investors' access to information it should be noted that in June 2014 the Chief Prosecutor of New York state filed civil law charges against Barclays PLC Bank for running its highly popular dark pool, LX, in a manner misleading investors. Barclays allegedly favoured high-frequency traders in LX over other investors while downplaying the role of the high-frequency trading dark pool. According to the Chief Prosecutor, Barclays PLC intentionally deceived its investors by misrepresenting the operations of LX.

LITERATURE

- BANKS, E. (2010): *Dark Pools: The Structure and Future of Off-Exchange*. Trading and Liquidity. Palgrave Macmillan
- BOSKOVIC, T. – CERRUTI, C. – NOEL, M. (2009): Comparing European and U.S. Securities Regulations: MiFID versus Corresponding U.S. Regulations. *World Bank Working Paper Series*, No. 184, <http://elibrary.worldbank.org/doi/pdf/10.1596/978-0-8213-8253-0> (Downloaded: 20 June 2014)
- CAVE, T. (2014): Five Questions on LSE's New Intra-Day Auction. *Financial News*, <http://www.efinancialnews.com/story/2014-03-20/five-things-on-lse-new-auction?ea9c8a2de0ee111045601ab04d673622> (Downloaded: 27 June 2014)
- COMERTON-FORDE, C. – PUTNIŃŠ, T. J. (2013): Dark Trading and Price Discovery (19 November 2013), <http://dx.doi.org/10.2139/ssrn.2183392> (Downloaded: 14 April 2014)
- CONCHA, J. – FISHLER, E. – BAR, M. – FRAENKEL, P. (2011): *Characteristics of Different Liquidity Pools and their Effect on Execution*. pp. 115–122. In: *Algorithmic Trading and Smart Order Routing, Part 2: Execution Strategies*. The Trade Handbooks, The Trade Ltd
- CURREN, R. (2008): Watch Out for Sharks in Dark Pools. *The Wall Street Journal*. 19 August, p. c5. Available at WSJ Blogs
- DEGRYSE, H. – DE JONG, F. – VAN KERVEL, V. (2014): The Impact of Dark Trading and Visible Fragmentation on Market Quality (January 2014). *TILEC Discussion Paper No. 2011–026*, <http://ssrn.com/abstract=1815025> (Downloaded: 14 April 2014)
- DE PERETTI, Ph. – TAPIERO, O. J. (2014): A GARCH Analysis of Dark-Pool Trades. DRAFT, [http://hal-paris1.archives-ouvertes.fr/docs/00/98/48/34/PDF/A\\_GARCH\\_analysis\\_of\\_dark.pdf](http://hal-paris1.archives-ouvertes.fr/docs/00/98/48/34/PDF/A_GARCH_analysis_of_dark.pdf) (Downloaded: 14 April 2014)
- FIORAVANTI, S. F. – GENTILE, M. (2011): The Impact of Market Fragmentation on European Stock Exchanges. CONSOB, July 2011, file:///C:/Users/MTA/Downloads/qdf69enzázalék20(1).pdf (Downloaded: 14 April 2014)
- FISHLER, E. (2011): Dark Pools: Theory and Practice. Presentation Delivered at Columbia University on 31 October 2011, [http://ieor.columbia.edu/files/seasieor/industrial-engineering-operations-research/pdf-files/Fishler\\_E\\_FESeminar\\_Fall1.pdf](http://ieor.columbia.edu/files/seasieor/industrial-engineering-operations-research/pdf-files/Fishler_E_FESeminar_Fall1.pdf) (Downloaded: 10 April 2014)
- KERKHOFF, M. (2014): Dipping Our Toes into Dark Pools. Excerpt of Richard Russell's Dow Theory Letters, <http://www.financialsense.com/contributors/matthew-kerkhoff/dipping-our-toes-into-dark-pools> (Downloaded: 23 June 2014)
- LENGYEL, J. – RÉZ, É. – SZÉP, O. (2011): The current questions of regulating capital markets, South-East Europe. *International Relations Quarterly*, Vol. 2. No. 3. (Autumn 2011), pp. 1–22, [http://bet.hu/data/cms166811/DKE\\_07\\_M\\_E\\_Lengyel\\_Rez\\_Szep.pdf](http://bet.hu/data/cms166811/DKE_07_M_E_Lengyel_Rez_Szep.pdf) (Downloaded: 23 March 2014)
- MAMUDI, S. (2014): Dark Pools – Private Stock Trading vs. Public Exchanges. 5 May 2014, <http://www.bloomberg.com/quicktake/dark-pools/> (Downloaded: 25 May 2014)
- MCCRANK, J. (2013): Credit Suisse's Cross-finder Dark Pool gets Darker. Reuters UK Edition, Friday, 19 April 2013, <http://uk.reuters.com/article/2013/04/19/uk-darkpools-creditsuisse-idUKBRE93I16D20130419> (Downloaded: 23 June 2014)
- MCCRANK, J. (2014): Dark markets may be more harmful than high-frequency trading. Reuters New

York, Monday, 7 April 2014, <http://www.reuters.com/article/2014/04/07/us-markets-darkpools-analysis-idUSBREA3605M20140407> (Downloaded: 23 June 2014)

PORTNOY, K. (2011): High Frequency Trading and the Stock Market: A Look at the Effects of Trade Volume on Stock Price Changes. *The Park Place Economist XIX*, pp. 69–75, Illinois Western University

RÉZ, É. (2011): Átalakuló piaci struktúra, Az új kereskedési technikák és helyszínek hatásai. (Market structure under microscope. The impact of new trading techniques and venues). *Credit Institute's Review*. Volume 10, No. 5, [http://www.bankszovetseg.hu/wp-content/uploads/2012/10/430\\_454\\_rez\\_eva.pdf](http://www.bankszovetseg.hu/wp-content/uploads/2012/10/430_454_rez_eva.pdf) (Downloaded: 23 March 2014)

SARAIYA, N. – MITTAL, H. (2009): Understanding and Avoiding Adverse Selection in Dark Pools. Investment Technology Group, [http://www.posit-alert.com/news\\_events/papers/AdverseSelectionDarkPools\\_113009F.pdf](http://www.posit-alert.com/news_events/papers/AdverseSelectionDarkPools_113009F.pdf) (Downloaded: 10 April 2014)

SMOUT, A. – HUTCHISON, C. (2014): New rules help stock exchanges fight back against “dark pools”. Reuters UK Edition. Friday 4 April. <http://uk.reuters.com/article/2014/04/04/markets-exchanges-dark-pools-idUKL5N0MW35320140404> (Downloaded: 15 May 2014)

VAHEY, J. – OPPENHEIMER, L. (2013): Dark Pools: Fear of the Dark. Third Way Publications, [http://issuu.com/thirdway/docs/third\\_way\\_report\\_-\\_dark\\_pools-\\_fear/5?e=2172540/4628890](http://issuu.com/thirdway/docs/third_way_report_-_dark_pools-_fear/5?e=2172540/4628890) (Downloaded: 12 June 2014)

WEAVER, D. G. (2011): Internalization and Market Quality in a Fragmented Market Structure (19 May 2011), <http://ssrn.com/abstract=1846470> (Downloaded: 10 April 2014)

WHITE, M. J. (2014): Speech at Sandler O’Neill & Partners, L.P. Global Exchange and Brokerage Con-

ference New York, N.Y., 5 June, <http://www.sec.gov/News/Speech/Detail/Speech/1370542004312#.U6C-qGRYxHIK> (Downloaded: 12 June 2014)

ZHU, H. (2013): Do Dark Pools Harm Price Discovery? (16 November 2013). Forthcoming, Review of Financial Studies, <http://ssrn.com/abstract=1712173> (Downloaded: 10 April 2014)

Australian Securities & Investments Commission (“ASIC”), 2013, Report 331: Dark liquidity and high-frequency trading, <http://www.asic.gov.au/asic/asic.nsf/byheadline/Dark-liquidity-and-high-frequency-trading-INFO-178?openDocument> (Downloaded: 20 June 2014)

CESR (2010): Waivers from Pre-trade Transparency Obligations under the Markets in Financial Instruments Directive (MiFID) – Updated - [http://www.esma.europa.eu/system/files/09\\_324\\_Update\\_22102010.pdf](http://www.esma.europa.eu/system/files/09_324_Update_22102010.pdf) (Downloaded: 26 June 2014)

CFA Institute (2012a) Magazine Nov/Dec 2012: Is “Dark Pool” Trading Hurting Market Quality? pp. 51–52, <http://www.cfapubs.org/doi/pdf/10.2469/cfm.v23.n6.11> (Downloaded: 14 April 2014)

CFA Institute (2012b): Dark Pools, Internalization, and Equity Market Quality, Codes, Standards, and Position Papers, October 2012, Vol. 2012, No. 5, <http://www.cfapubs.org/doi/pdf/10.2469/ccb.v2012.n5.1> (Downloaded: 18 March 2014)

IOSCO (2010a): IOSCO Proposes Regulatory Oversight Principles for Dark Liquidity,

27 October 2010, <http://www.iosco.org/news/pdf/IOSCONEWS194.pdf> (Downloaded: 20 May 2014)

IOSCO (2010b): Chapter 4: Regulatory Concerns in Issues Raised by Dark Liquidity – Consultation Report, Technical Committee of the IOSCO, October 2010, <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD336.pdf> (Downloaded: 20 May 2014)



HFSA (2006a): Internalizáció, avagy a tőzsdékényszer megszűnése (Internalisation or the elimination of the concentration rule). Consultation material, October 2006, [http://www.bszsz.hu/mifid\\_anyag\\_internalization.pdf](http://www.bszsz.hu/mifid_anyag_internalization.pdf) (Downloaded: 23 May 2014)

HFSA (2006b): Hatékony legjobb teljesítés (best execution) a MiFID rezsimben (Best execution in the MiFID regime). October 2006, [http://www.bszsz.hu/mifid\\_anyag\\_bestexecution.pdf](http://www.bszsz.hu/mifid_anyag_bestexecution.pdf) (Downloaded: 23 May 2014)

HFSA (2011): Annual Report [http://felugyelet.mnb.hu/data/cms2371931/PSZAF\\_eves\\_jelentes\\_2011.pdf](http://felugyelet.mnb.hu/data/cms2371931/PSZAF_eves_jelentes_2011.pdf) (Downloaded: 30 June 2014)

SEC (U.S. Securities and Exchange Commission) (2014): Trade Execution, <https://www.sec.gov/investor/pubs/tradexec.htm> (Downloaded: 20 April 2014)

SEC (2013): Staff of the Division of Trading and Markets, U.S. Securities and Exchange Commission, “Equity Market Structure Literature Review, Part I: Market Fragmentation.” (7 October 2013) (“Fragmentation Literature Review”),

<http://www.sec.gov/marketstructure/research/fragmentation-lit-review-100713.pdf> (Downloaded: 20 May 2014)

#### DATABASES

<http://thomsonreuters.com/monthly-market-share-reports/>

[http://www.batstrading.co.uk/market\\_data/market\\_share/market/](http://www.batstrading.co.uk/market_data/market_share/market/)

<http://www.if5.com/LiquidMetrix/Battlemap>

[www.lavatrading.com](http://www.lavatrading.com)