MiFIR review: The right balance

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ABSTRACT

Trading in shares in the European Union (EU) is fragmented across a large number of execution venues applying varying degrees of transparency. The review of the Markets in Financial Instruments Regulation (MiFIR) aims at creating the right conditions for the establishment of an entity, the consolidated tape provider, that provides a consolidated picture of core trading data to the market. Co-legislators principally disagreed on whether or not such a consolidated picture should include close to real-time data on prices and volumes on all pre-trade transparent trading venues (pre-trade data). Authors argue that important use-cases require the inclusion of pre-trade data and that the provisional political agreement reached on 29th June rightly recognises this. The review of MiFIR also includes amendments to the conditions under which individual execution venues are required to publish such pre-trade data. While there are good reasons for allowing 'dark trading', too much dark trading could harm the quality of price formation for shares. There is no strong evidence that the 'volume cap' which caps certain variants of dark trading has positive effects. The authors argue in this paper that a holistic and data-based approach to capping dark trading can contribute to the quality of price formation for shares. The consolidated tape will provide relevant data for such an approach.

Keywords: MiFIR, double volume cap, market structure, capital markets, consolidated tape

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INTRODUCTION

European capital markets remain fragmented along national lines. This excludes local actors from benefits of integration. A well-functioning European capital market ensures that capital can flow where it is most useful.

Businesses, including small and medium-sized companies, should be able to access funding and investors should be able to invest in projects across the Union. Market participants should benefit from *competitive* and *transparent* markets. A capital markets union (CMU) has the potential to make Europe's economy more innovative and competitive on a global scale.

This is the position from the European Commission (EC) in its 2020 CMU action plan.[1] The review of the Markets in Financial Instruments Regulation[2] (MiFIR), as adopted by the EC on 25th November, 2021,[3] aims at delivering on that CMU action plan.[4] Getting the balance right means that the review optimally contributes to achieving a well-functioning European capital market.

Among stakeholders and legislators, transparency and competitiveness are generally accepted as key values; however, how these values should be translated into legislation is a controversial topic. Visions vary from leaving it up to the markets where and how financial instruments should be traded and which information should be publicly provided, to prescribing these matters in detail.

This paper provides a historical overview of the European Union (EU) market structure regulation and of the debate on the MiFIR review on the consolidated tape for shares (and ETFs), as well as that on dark trading. The focus of the paper will be on equity instruments, and in particular on shares. The important topic of non-equity market structure, including the deferral regime and the consolidated tape for bonds, deserves a separate paper.

DEVELOPMENTS IN EQUITY MARKET STRUCTURE REGULATION 1995–2018

Prior to 2006, EU member states were allowed to require that transactions in financial instruments, particularly shares, are carried out on a regulated market.[5] There was no fragmentation of liquidity. For market participants interested in buying or selling shares, they simply relied on their national regulated market to provide them with all the relevant information. There was, however, also no competition in trading. The national discretion to apply the 'concentration rule' was effectively abandoned in 2006 when the first iteration of the Markets in Financial Instruments Directive (MiFID)[6] started applying, in which alternative execution venues, such as multilateral trading facilities (MTFs) that wanted to open the national monopoly markets, were first recognised.

MiFID aimed at introducing a level playing field among execution venues.[7] With regard to shares, MiFID required member states to lay down rules ensuring the 'as close to real-time as possible' publication of pre-trade data, such as price and volume of available orders, and post-trade data, such as prices and volumes of executed transactions (combined or separately also referred to as 'trading data'). The aimed benefits of such transparency included increasing the efficiency of the overall price formation process. There were some exceptions to the rule. It was, for example, allowed to waive pre-trade transparency for large orders and for systems matching orders based on a reference price outside of the trading venue, which are systems that execute transactions between buy orders and sell orders that only specify the volume, while the price is based on the price as displayed on a separate pre-trade transparent trading venue.[8] In addition it was allowed to defer publication of post-trade data of large transactions.[9] There were no regulatory limitations yet to the use of waivers or deferrals or to the method of execution of transactions in shares. Due to the increased competition, all the published trading data related to a particular share would no longer exclusively be published by individual regulated markets, but also by other execution venues. This development created a need for market participants to be able to have access to multiple sources from which they can compare the information. MiFID acknowledged this and recommended member states 'to remove any obstacle which may prevent the consolidation at European level of the relevant information and its publication'.[10]

2018–today

Over a decade had passed before the second and current iteration of MiFID[11] (MiFID II) and the first and current iteration of MiFIR started applying in 2018. The increased competition led to more choice and a reduction in trading fees,[12] but it made the trading environment more complex, in particular in terms of collection of data. The beforementioned recommendation in MiFID to member states had not been effective and the legislators now conclude that it is *essential* that an effective and comprehensive consolidated tape is in operation as soon as possible.[13] The legal framework built to achieve this accounts for the establishment of a regulated entity collecting post-trade data from trading venues and approved application arrangements (APAs) and subsequently publishing the data as close to real time as is technically possible in a consolidated manner ('consolidated tape provider' [CTP]). In order to obtain the relevant trading data, an authorised CTP would need to enter into individual licensing agreements with all the relevant trading venues and APAs ('data contributors').[14]

In addition, MiFID II and MiFIR aim at increasing the level playing field among various types of trading platforms and at ensuring that more trading takes place on pre-trade transparent trading platforms.[15] This is arranged through, in particular, four interventions. First, via the introduction of the share trading obligation (STO) which prescribes that trading in shares admitted to trading on a regulated market or traded on a trading venue is required to take place on a trading venue, systematic internaliser or a third-country trading venue assessed as equivalent. This practically means that EU investment firms are no longer allowed to execute transactions in (most) shares bilaterally with other investment firms that are not licensed as systematic internalisers, to which no pre-trade transparency requirements apply.

Secondly, the double volume cap (DVC) is created. This system caps the use of certain pre-trade transparency waivers.[16] Whenever the volume executed under these waivers in a particular share on a single trading venue exceeds 4 per cent, or on all trading venues combined exceeds 8 per cent, of total trading on trading venues in that share, the use of the waivers is suspended for the duration of six months. This system is meant to prevent undue harm to price formation. The logic is that the continuous bid and offer prices that market makers on the reference price market are willing to buy or sell a share for, will be influenced by the amount of liquidity available on that market.

Thirdly, based on this same logic, MiFIR contains the prohibition for systematic internalisers to match orders below the size 'large in scale'[17] at midpoint if this means that the execution will not comply with the applicable tick sizes.[18] Finally, the possibility for entities operating in the same way as MTFs or regulated markets, but that remained unlicensed, is addressed.

CONSOLIDATED TAPE FOR SHARES

Current state of play: No CTP exists

There are 436 registered execution venues in the European Economic Area (EEA).[19] All these execution venues publish pre-trade and/or post-trade data. Despite all the increasingly prescriptive efforts of the legislators, there is still no entity operating a consolidated tape provider. Among the main issues preventing the uptake of a CTP, according to a report by the European Securities and Markets Authority (ESMA),[20] a study commissioned by the EC (hereafter: 'the CTP study'),[21] as well as the impact assessment from the EC accompanying the legislative proposal for the MiFIR review (hereafter: 'impact assessment'), are the costs of obtaining a tailor-made licence for the reception of the trading data from all the data contributors and the lack of sufficiently harmonised data quality, which leads to similar transactions being reported in a different manner.

What kind of CTP does the EU need?

In addition to addressing the beforementioned obstacles, which will be described later in the paper, the MiFIR review is an opportunity to assess the type of CTP[22] which brings most benefits to the EU capital market. The known use cases for a consolidated tape are numerous.[23] It depends on the latency of the consolidated tape and on the inclusion or exclusion of pre-trade data which of these use cases can be materialised.

The CTP study highlights the importance of the availability of figures on the average daily trading volumes of financial instruments, in particular those in relation to addressable liquidity.[24] Delayed consolidated post-trade and pre-trade data ('historical data') allow for this use case. MiFIR currently prescribes that execution venues should make available pre-trade data and post-trade data after 15 minutes, free of charge.[25] Such data would enable regulators and supervisors to obtain knowledge on how liquidity in financial instruments is split between the various execution venues and between trading protocols, while market participants would have an objective and complete source to check their investment strategies and decisions.

There are various examples, discussed in the next section, that show that there is not a universally agreed consolidated picture of the share market. Due to data quality issues, supervisors and market participants are not able to consolidate data in such a way that it results in a picture of the average daily trading volume which market participants agree on.[26] When the data erroneously shows that the largest pool of liquidity in shares is typically available in a systematic internaliser, or in dark pools, this can lead to increased prioritisation of that systematic internaliser or of dark pools in the trading strategies of asset managers and portfolio managers.

Adding also real-time post-trade data to the consolidated tape adds additional use cases, such as the ability for 'post-trade analysis'. Immediately after executing an order a trader can see if best-execution was achieved and if it is necessary to reallocate assets.

The largest benefit, however, comes with the inclusion of pre-trade data, delivered as close to real time as technically possible. A comprehensive tape would allow asset managers, including those managing retail funds, to execute 'pre-trade analysis'. This is necessary for large orders for which the liquidity is not available on a single execution venue. In this case the asset manager will need to analyse the market at large to conclude how an order can be executed against the lowest cost. This analysis rests on current available prices and volumes, on recently executed transactions as well as on historical data on the evolution of the prices of the instrument. Asset managers estimate the absence of a consolidated tape satisfying this use case to result in losses ranging between 0.5 Bio EUR and 10.61 Bio EUR per asset manager.[27]

Arguments against a consolidated tape for shares including close to real-time data are expressed in the Oliver Wyman study commissioned by FESE.[28] They argue primarily that the collection, consolidation and streaming of such data are problematic due to data quality issues, in particular from off-venue data, and technical complexity, leading to high costs. The CTP study as well as the impact assessment have considered these elements and have found that there are no technical obstacles for performing the required operations and that the cost benefit analysis is positive. Data quality issues do indeed need to be resolved.

Specifically regarding the inclusion of real-time pre-trade data, the Oliver Wyman study commissioned by FESE argues that it could introduce substantial arbitrage risk. This is the case especially for less sophisticated investors, because the latency of a pre-trade consolidate tape will be inferior to the latency of direct (high frequency) feeds offered by the exchanges.[29] This is due to technical limitations and to geographical dispersion of the data sources. This means that the market participants who want to make a decision to trade based on the pre-trade data visible on the on the consolidate tape could be pursuing liquidity which in reality is no longer available because market participants having access to faster data beat them to it. Sophisticated market participants could in turn take advantage of this, to the detriment of the execution quality of retail orders.

The authors argue that in essence this is not different from the current ecological system of a single execution venue, or multiple execution venues, where there are members with access to (ultra) low latency feeds and members with access to standard feeds. More importantly, prices shown on a pre-trade consolidated tape should not be the only criterion against which (retail) brokers would be able to meet the requirements to execute their client orders in the best possible way. The requirements governing best execution with regard to (retail) clients should prevent misuse of trading data.

In conclusion, there are strong arguments for a consolidated tape including close to real-time post-trade as well as close to real-time pre-trade data. The legislation, in the view of the authors, can ensure high-quality data input from all data contributors and protect less-sophisticated investors against arbitrage risks.

Positions in the EC, Council of the EU and European Parliament

EC

The introduction in the proposal from the EC of 'mandatory contributions' for trading venues and APAs, which are entities that publish the post-trade data on behalf of investment firms, of all post-trade data to the CTP, addresses the identified obstacle that individual licensing agreements need to be negotiated with all relevant execution platforms. The obstacle created as a consequence of the low quality of data is addressed by the introduction of a dedicated market-led expert group that has the task to advise the EC on the creation of a Delegated Act specifying the harmonised data quality requirements that apply to the input to and output by the CTP. Simultaneously ESMA reviewed the Regulated Technical Standards specifying data quality requirements applicable to post-trade data reports.[30]

The impact assessment from the EC accompanying the MiFIR review, furthermore, estimates that a consolidated tape provider publishing close to real-time post-trade data is commercially viable for all asset classes, while the consolidated tape for shares could be complemented with pre-trade data after an initial set-up phase.[31] The proposal reflects this conclusion by proposing a close to real-time post-trade tape for all asset classes and by adding a review clause for ESMA in relation to the inclusion of pre-trade data at a later stage via a Commission Delegated Act.

Council and European Parliament

The negotiations within Council[32] as well as those within the European Parliament[33] with regard to the CTP for shares show that the opinions differed on if the CTP should publish consolidated post-trade data only or if it should include pre-trade data as well and if the consolidated data should be provided close to real time or with an artificial delay of several minutes. The Council settled for a hybrid version which disseminates real-time post-trade data and, also on a post-trade (delayed) basis, the best bids and offers available on any of the trading venues that were available at the time of any transaction. The Council kept the review clause in relation to inclusion of real-time pre-trade data in the near future but proposed not to allow pre-trade data to be included via a Commission Delegated Act. The European Parliament agreement provided for a consolidated tape including close to real-time post-trade data as well as five layers of close to real-time pre-trade data. Both Council and European Parliament agreed that there should be a single consolidated tape that disseminates data on both shares and ETFs, as opposed to two separate consolidated tapes for these asset classes.

Provisional political agreement

On 29th June, 2023, the negotiations between Council, European Parliament and the EC ('trilogues') have resulted in a provisional agreement on the main political elements of the review, including the requirement for the consolidated tape for shares and exchange-traded funds (ETFs) to disseminate a single layer of close to real-time pre-trade data on an anonymous basis.[34]

DARK TRADING INTERVENTIONS

Current state of play

Due to the beforementioned absence of an accurate consolidated picture of where the liquidity in shares on average can be found, there is no universal consensus on the quality of the liquidity and the price formation on the EU capital markets. When looking at data sourced by market participants, Oxera, while noting that poor data quality of off-venue market data publications is an obstacle for gathering an accurate picture of the liquidity in the EU,[35] makes a comparison between an unfiltered picture of the liquidity and a picture after applying filters eliminating non-addressable liquidity. They find that the liquidity in shares before/after filtering is for 18 per cent/11 per cent at systematic internalisers, 27 per cent/6 per cent over the counter (OTC) and 28 per cent/42 per cent at pre-trade transparent trading venues, 11 per cent/17 per cent auctions, 5 per cent/7 per cent dark venues and 11 per cent/17 per cent is bilaterally negotiated and then, without pre-trade transparency, executed on a trading venue. Underscoring the statement initiating this paragraph, FESE argues that the report by Oxera is significantly flawed due to incorrect filtering and that it does not yield insight on how pre-trade transparent trading has evolved since MiFID II.[36] They argue that in reality the share of pre-trade transparent trading in shares is much lower and declining.

Conditions for healthy equity markets

Dark pools

Refraining from publicly displaying the side at and price against which a trader is willing to execute a transaction protects that trader against market impact as a consequence of adverse selection. Market impact arises when placing or executing an order adversely affects the price of a financial instrument. While there are many factors that contribute to market impact, it typically occurs when an order is larger than the average size of the available orders on the main public order book.

A relevant categorisation to make with regard to traders is that they are either uninformed or informed. Uninformed traders (or 'liquidity traders') make trading decisions on the basis of their liquidity needs, while informed traders trade on the basis of their knowledge regarding the price of a share. Informed traders will buy shares (only) when their valuation of the price of a share is higher than the available price (and vice versa). Uninformed traders will buy shares for other reasons, such as when there is a need for rebalancing of a portfolio in case of a change in listings in an index.

They, or their brokers, will within a given time apply a trading strategy that results in the purchase of the required shares for the best possible price. This means that they will try to limit the market impact by spreading out their orders across the day(s) and across various execution venues, including pre-trade transparent public markets, dark pools and systematic internalisers.

Zhu[37] finds that dark pool trading, defined as trading where the execution takes place at the midpoint between the bid and offer spread of a reference market, which is typically the primary market, is particularly attractive for uninformed traders, to execute parts of their orders on.[38] Uninformed traders are not looking to make a profit on the bid-ask spread, nor do they necessarily have all the information to assess what the price of a share should be. They do not require immediacy and accept to share the bid-ask spread with their counterparty. Recourse to trading in dark pools comes with lower execution certainty as a consequence of the absence of market makers to guarantee execution. While trading strategies of uninformed traders include executing orders on pre-trade transparent markets, informed traders looking for fast and certain execution rely particularly on such pre-trade transparent markets.

The literature shows a mixed picture[39] on the consequences of dark pool trading for price discovery and liquidity.[40] Zhu was the first to find that the move from uninformed traders away from the pre-trade transparent execution venues is beneficial for price discovery because the prices are set to a larger degree by those traders that have information on the value of a share, and to a lesser degree by those traders that do not have such information, but that it is detrimental for liquidity in a pre-trade transparent market. Comerton-Forde and Putnins[41] find that dark pool trading up to 10 per cent of total trading is harmless or beneficial for price discovery and bid-ask spreads on the pre-trade transparent markets. Foley and Putnins[42] do not observe benefits, or adverse effects, in the case of systems matching orders at mid-point.[43] Hatheway *et al.*[44] conclude that dark pools and pre-trade transparent markets can coexist, allowing a degree of segregation, but that too much segregation of uninformed order flow away from the pre-trade transparent markets leads to inferior price discovery, and that more research on market quality is needed.

A recent study by Ibikunle *et al.*[45] aims at reconciling the mixed results by showing that trading in dark pools is beneficial for the price discovery and liquidity in the *aggregate* market. This is, however, only true when the levels of dark trading do not exceed 9 per cent of total trading in the most liquid shares and 25 per cent for the most illiquid shares. Dark trading results in a decrease of adverse selection risk and an increase of liquidity. They find that the 'safe haven' that dark pools provide for uninformed traders lead to the provision of liquidity which in the absence of the dark pools would not have been executed on the pre-trade transparent trading venues, thereby on an aggregate level changing the ratio between uninformed and informed order flow. In line with Zhu, they conclude that segregation of uninformed order flow to dark pools leads to enhanced price discovery.

Effects of the DVC

The research on dark pool trading seems to support the existence of the introduction of a cap on the level of dark pool trading via a mechanism such as the DVC. Some research has also been done into the effects of the DVC. Prior to its application Petrescu *et al.*[46] express the expectation that it is unlikely that the DVC will dramatically reduce the aggregated market presence of dark pools, since at that time dark pools already do not significantly breach the levels of the DVC.[47]

In research performed after the introduction of the DVC, Johann *et al.*[48] observe that the European equity markets are characterised by dark pools, quasi-dark venues and pre-trade transparent markets. In their article quasi-dark venues are the over-the-counter market, auction markets and internalisation systems.[49] The article addresses the question of what happens to the market quality during continuous trading sessions on pre-trade transparent markets in liquid shares, when only a subset of dark pool trading, as opposed to all dark pool and quasi-dark pool trading, is capped, such as is the case for the DVC which only caps two types of dark trading. The article concludes that there is some migration towards the pre-trade transparent markets following a breach of the 8 per cent cap, but almost three times as much volume is migrated towards periodic auctions, systematic internalisers and order books applying a waiver based on the large size of orders ('large in scale' [LIS]).[50] They find no significant effect on the market quality, measured as the bid-ask spread and the top-of-book depth, with a slight deterioration of price efficiency, on the primary listing venue for the banned shares and recommend a better understanding of competition between public markets and quasi-dark markets.[51]

ESMA also found a relation between the DVC and the development of 'frequent batch auctions' and an increase in trading under the LIS waiver. The turnover of suspended shares in auctions and continuous trading increased by 10 per cent upon suspension. ESMA concludes, while recognising that the system is complex, that the DVC has some positive effects by resulting in decreased spreads and a larger average trading sizes for affected shares.[52,53]

A study from Ibikunle *et al.* concludes that following a breach of the DVC, the transaction costs increase and liquidity suffers in the affected share.[54] They argue that suffering of liquidity is consistent with the finding that dark pools offer a 'safe haven' to uninformed traders that would in the absence of a dark pool not execute their trade. The widening of the spread is caused by limiting inter-venue competition.

In conclusion, there is evidence that some levels of dark trading can be beneficial, or non-detrimental, for price discovery and for the quality of the liquidity on the pre-trade transparent trading venues and on the aggregate markets, but that excess dark trading has negative consequences. Furthermore, the restriction of dark trading leads to some increase of trading on the pre-trade transparent trading venues, but potentially leads to a larger increase of trading on other 'hybrid' venues. The results are not unanimous in the consequences for the quality of the liquidity, with evidence showing limited improvement as well as evidence showing no improvement or even a deterioration.

UK

The UK has put forward their Financial Services and Markets Bill in which they abolish the DVC entirely and empower the Financial Conduct Agency (FCA) to intervene in the interest of the quality of the price formation. They argue in their explanatory notes to the Bill that dark pools can reduce transaction costs and that trading in suspended shares moves to systems without full transparency.[55] Effectively, as of their departure from the EU, the double volume cap in the UK is already no longer applied.[56]

Positions in the EC, Council of the EU and European Parliament

EC

On the STO, the EC proposed it should apply exclusively to shares that are issued in the EU, which can be identified by their EU ISIN (International Securities Identification Number). This means that the scope will be more limited, since currently also shares with third country ISINs are included if they are traded on an EU trading venue.[57] The benefit of this approach is that it results in legal certainty. Regarding the DVC, the proposal removes one of the two caps (while lowering the remaining cap from 8 per cent to 7 per cent) in order to reduce burdens for market participants and competent authorities. ESMA found that a breach of the cap that applies to the individual venues leads to redistribution of dark trading among other dark pools, which then leads to a breach of the EU wide cap. This cap therefore has very limited effects. Finally, the EC proposed to only allow mid-point matching between ticks for orders above a certain size. This follows ESMA advice which concluded that waivers are meant to prevent that the publication of an order leads to a movement of the price ('price impact'), and that they are therefore important for large orders, but less so for small orders.[58]

Council and European Parliament

In Council the compromise went into a different direction. While the single volume cap was maintained, the threshold above which it is breached was increased from 7 per cent to 10 per cent, and the types of dark trading that can be capped were further limited. In addition, Council did not introduce a minimum size threshold for the application of the waiver for trading at midpoint in a dark pool but maintains that all sizes may benefit from it. Finally, Council proposed to remove any restriction for systematic internalisers to trade at mid-point between ticks. The European Parliament compromise largely followed the EC's proposal.

Provisional political agreement

The provisional agreement between the co-legislators on the main political elements of the review, referred to previously, did not yet specify the compromise position on dark trading interventions.[59]

CONCLUDING REMARKS

The MiFIR review is about getting the market structure right, including about which trading data should be consolidated by a CTP. It is the authors' view that the agreement reached in the trilogues rightly reflects that inclusion of close to real-time pre-trade data to the consolidated tape for shares (and ETFs) will create significant benefits to the EU capital markets. The MiFID II/R provisions governing the quality of execution of retail orders provide for the parameters to avoid unintended consequences.

Regarding dark trading there is evidence that a certain amount is not harmful or can even be beneficial. Excess dark trading, however, can be detrimental. Therefore, a mechanism capping the amount of dark trading, via a mechanism such as the DVC in the EU, is logical. This paper argues, however, based on available studies, that it can be questioned if the DVC leads to positive results. While the move from the DVC to a single volume cap is a clear improvement, there are good reasons to more thoroughly amend the system to ensure that it is effective in its aim to prevent undue harm to price formation, without unnecessarily negatively affecting (global) competitiveness, in particular in light of the changes made in the UK. The authors argue that introducing flexibility to allow intervention on any trading system, as opposed to only a subset thereof, that negatively affects the price formation on the pre-trade transparent markets, when the data, including those showed by the consolidated tape, merits intervention, could lead to a more effective and efficient approach to dark trading.

AUTHORS' NOTE

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper. Views expressed in the paper are those of the authors and not those of the EC.

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(18) Article 17a of MiFIR as introduced by Regulation (EU) 2019/2033 of the European Parliament and of the Council of 27 November 2019 on the prudential requirements of investment firms and amending Regulations (EU) No 1093/2010, (EU) No 575/2013, (EU) No 600/2014 and (EU) No 806/2014, OJ L 314, 5.12.2019, p. 1.

(19) This data is based on the ESMA register in January 2023 and includes the types of execution venues in the EEA that are eligible for trading of shares. Some of them only offer other financial instruments. OTFs are categorically excluded since they are not allowed to offer trading in shares.

(20) ESMA, MiFID II/MiFIR Review Report No. 1, On the development in prices for pre- and post-trade data and on the consolidated tape for equity instruments, paragraph 4.2.2.

(21) Market Structure Partners (September 2020), 'The Study on the Creation of an EU Consolidated Tape, Final Report', Ch. 6.

(22) See for a comprehensive description of the consolidated tapes in all asset classes: Rogge, E. (May 2023), 'The MiFIR Review and a European Consolidated Tape: The next step towards a Capital Markets Union', *Journal of the Academy of European Law*.

(23) CTP Study, Ch. 4, identifies more than 50 use cases.

(24) CTP study, para. 2.3.2 and 6.4.

(25) MiFIR, Article 13.

(26) For example: Oxera (May 2021), 'The landscape for European equity trading and liquidity, the importance of utilizing accurate data for assessing equity market structure', prepared for the Association for Financial Markets in Europe (AFME); and FESE (June 2021), 'An analysis of AFME's report "The landscape for European equity trading and liquidity": FESE calls for greater transparency in a now overly complex European market infrastructure'.

(27) CTP study, p. 40.

(28) Peterhoff, D., Wuergler, T. and Burkl, M. (2021), 'Caught on tape, A consolidated tape for Europe', Oliver Wyman, available at https://www.fese.eu/app/uploads/2021/10/Caught-on-Tape-a-consolidated-tape-for-Europe.pdf (accessed 3rd July, 2023).

(29) *Ibid*., p. 21.

(30) European Commission (EC) (2023) '245 final, Commission Delegated Regulation of 17.1.2023 amending and correcting the regulatory technical standards laid down in Delegated Regulation (EU) 2017/587 as regards certain transparency requirements applicable to transactions in equity instruments, main Act and Annexes (RTS 1 review)'; and European Commission (EC) (2023) '246, Commission Delegated Regulation of 17.1.2023 amending the regulatory technical standards laid down in Delegated Regulation (EU) 2017/583 as regards certain transparency requirements applicable to transactions in non-equity instruments, main Act and Annexes (RTS 2 review)'.

(31) Impact assessment, p. 40.

(32) ECOFIN 1342, Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 600/2014 as regards enhancing market data transparency, removing obstacles to the emergence of a consolidated tape, optimizing the trading obligations and amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012, 16.12.2022.

(33) REPORT A9-0040/2023, on the

proposal for a regulation of the European Parliament and of the Council amending Regulation (EU) No 600/2014 as regards enhancing market data transparency, removing obstacles to the emergence of a consolidated tape, optimizing the trading obligations and prohibiting receiving payments for forwarding client orders, Committee on Economic and Monetary Affairs, Rapporteur: Danuta Maria Hübner, 2.3.2023.

(34) Council of the EU (June 2023), 'Capital markets union: Council and Parliament agree on proposal to strengthen market data transparency', Press Release, available at https://www.consilium.europa.eu/en/press/press-releases/2023/06/29/capital-markets-union-council-and-parliament-agree-on-proposal-to-strengthen-market-data-transparency/ (accessed 3rd July, 2023).

(35) Oxera, ref. 23 above, p. 11.

(36) *Ibid*.

(37) Zhu, H. (2014), 'Do dark pools harm price discovery?', *Review of Financial Studies*, Vol. 27, No. 3, pp. 747–789.

(38) This finding is later confirmed empirically by Comerton-Forde, C. and Putnins, T. (June 2015), 'Dark trading and price discovery', *Journal of Financial Economics*, Vol. 118, No. 1, pp. 70–92.

(39) For a more encompassing overview, please see the introductory paragraph in Ibikunle, G., Li, Y., Mare, D. and Sun, Y. (2021), 'Dark matters: The effects of dark trading restrictions on liquidity and informational efficiency', *Journal of International Financial Markets, Institutions & Money*, Vol. 75, 101435.

(40) Dark limit orders and large dark orders are generally not connected to negative consequences. See for example Foley, S. and Putnins, T. J. (2016), 'Should we be afraid of the dark? Dark trading and market quality', *Journal of Financial Economics*, Vol. 122, No. 3, pp. 456–481.

(41) Comerton-Forde and Putnins, ref. 38 above, found that dark trading reduces noise and enhances price-discovery in the non-aggregate markets, but that deterioration in informational efficiency starts to take place when dark trading reaches levels of 10 per cent or higher of total volume in a specific share.

(42) Foley and Putnins, ref. 40 above.

(43) They do find that hiding limit orders encourages informed traders to provide liquidity since they do not have to reveal private information and that this increases competition with the pre-trade transparent trading venue as a result of which spreads become narrower.

(44) Hatheway, F., Kwan, A. and Zheng, H. (December 2017), 'An empirical analysis of market segmentation on US equity markets', *Journal of Financial and Quantitative Analysis*, Vol. 52, No. 6, pp. 2399–2427.

(45) Ibikunle, G., Aquilina, M., Diaz-Rainey, I. and Sun, Y. (December 2021), 'City goes dark: Dark trading and adverse selection in *aggregate* markets', *Journal of Empirical Finance*, Vol. 64, pp. 1–22.

(46) European Central Bank, Occasional Paper Series, Dark pools in European equity markets: emergence, competition and implications, M. Petrescu and M. Wedow, No 193, July 2017.

(47) See paragraph 2.2. of ECB paper.

(48) Johann, T., Putnins, T., Sagade, S. and Westheide, C. (2019), 'Quasi-Dark Trading: The Effects of Banning Dark Pools in a World of Many Alternatives', SAFE Working Paper no. 253.

(49) *Ibid*., para. 2.1.

(50) *Ibid*., para. 6.2.

(51) *Ibid*., para. 6.3.

(52) ESMA (February 20202), 'MiFID II/MiFIR review report on the transparency regime for equity and equity-like instruments, the double volume cap mechanism and the trading obligation for shares', Consultation Paper, para. 3.3.

(53) Johan *et al*., ref 48 above, did not include opening and closing auction to measure the effects on market quality on the pre-trade transparent market. This may have contributed to the different results.

(54) Ibikunle *et al*., ref. 39 above.

(55) Explanatory notes to UK FSMB No. 74.

(56) Clancy and Tipping conclude that the abolishment of the double volume cap in

the UK did not result in a boost to dark trading: Clancy, L. and Tipping, N. (May 2023), 'No big boost to UK dark trading after Brexit, Expected explosion in hidden equity liquidity has failed to materialise', Risk.net, available at https://www.risk.net/investing/7956694/no-big-boost-to-uk-dark-trading-after-brexit (accessed 3rd July, 2023).

(57) Unless an exemptions in Article 23, paragraph 1, MiFIR, applies.

(58) See paragraph 3.1. of the ESMA equity transparency report.

(59) At the time of the submission of the final version of this paper to the journal, there is not yet a published version of the full text of the MiFIR review and certain details still need to be resolved.