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COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT REPORT

Accompanying 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, optimising the trading obligations and prohibiting receiving payments for forwarding client orders

Proposal for a Directive of the European Parliament and of the Council amending Directive 2014/65/EU on markets in financial instruments

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Glossary

Term or acronym	Meaning or definition
15 minutes delayed data rule	According to this rule, trading venues and reporting agencies have to make available their market data free of charge after 15 minutes. The rule is a remnant of a traditional exchange practice of publishing market data after 15 minutes free, essentially because the data has lost its commercial value after that period.
APA	Approved publication arrangement (APA) is a person authorised under MiFID II to provide the service of publishing trade reports on behalf of investment firms (Article (4)(1)(52) MiFID II).
API	Application Programming Interfaces
BBO	Best bid and offer. The best bid price is the highest binding bid price to buy a financial instrument and the best offer price is the lowest binding price to sell a financial instrument.
CLOB	Central Limit Order Book. A transparent system that matches customer orders (e.g. bids and offers) on a 'price time priority' basis. The highest ("best") bid order and the lowest ("cheapest") offer order constitutes the best market or "the touch" in a given financial instrument trades on the CLOB.
CMU	Capital Markets Union
Core market data	Minimum set of trade data to be <i>provided by</i> a consolidated tape. The two main components of core Market Data are pre-trade data (i.e., information about orders or quotations) and post-trade data (i.e., information about executions including (1) financial instrument name (standardized instrument identifier that applies across venues); (2) best bid and offer, (3) transaction price and quantity/size executed at the stated price; (4) standardised code identifying the execution venue; (5) timestamp and (6) trade conditions (execution protocol/execution flag)).
CT	Consolidated Tape
CT Plan	Consolidated Tape Plan. The entity administering the remuneration of the revenue flows generated by the consolidated tape and appointing the technology provider(s) that operate the consolidation of core market data.)
CTP	Consolidated Tape Provider (the entity responsible for administering the tape, notably receiving, consolidating and disseminating the core market data from trading venues and APAs,
DVC	Double Volume Cap. Under MiFID/R, the percentage of trading in a financial instrument carried out on a trading venue under the negotiated trade and the reference price waivers is limited to 4% of the total volume of trading in that financial instrument on that trading venue, calculated over the previous twelve months. Union-wide trading in a financial instrument under those waivers may not exceed 8% of the total volume of trading on all venues throughout the EU over the previous twelve months. These caps are measured over a rolling twelve-month period. ESMA is mandated with publishing and updating this data on a monthly basis.
EBBO	European Best Bid and Offer – the best bid vs best offer spread available at the most competitive trading venue in the Union (identified by the consolidated core market data tape)
ESMA	European Securities and Markets Authority
ESAs Review	Regulation (EU) 2019/2175
ETD	Exchange-traded Derivative means a derivative that is traded on a regulated market or

	on a third-country market considered to be equivalent under MiFIR
ETF	Exchange-traded Fund, a collective (retail) investment vehicle, that issues participation rights (units or shares) that can be traded among investors.
EOD	End-of-day; one of the potential delivery modes for a consolidated tape.
FINRA	Financial Industry Regulatory Authority, a US self-regulatory organisation (SRO).
FIX protocol	The Financial Information eXchange (FIX) protocol is a messaging standard developed specifically for the real-time electronic exchange of securities transactions. FIX is a public-domain specification owned and maintained by FIX Protocol, Ltd (FPL).
HFT	High Frequency Trading
IIA	Inception Impact Assessment
IPO	Initial Public Offering
ISIN	An International Securities Identification Number (ISIN) is a 12-digit alphanumeric code that uniquely identifies a specific security. The organization that allocates ISINs in any particular country is the country's respective National Numbering Agency (NNA).
ISO	International Organisation for Standardisation, the world's largest developer of voluntary international standards, covering inter alia, information technology used in the financial sector (the relevant committee is entitled "information technology" and was created in 1987 to develop information and communication technology standards for business and consumer applications.
Latency	Time required for delivery of a data feed. Low latency denotes a fast delivery speed, whilst high latency denotes a slower delivery speed. Latency is usually measured in milliseconds, microseconds or nanoseconds.
LIS	Large in Scale. The LIS waiver is available where an order is considered to be "large in scale" compared with normal market size. This is the case if it is equal to or larger than the minimum size of order specified in the Annex to the MiFID/R regulatory and implementing technical standards. It allows to waive transparency for what is generally known as block trades or high-volume transactions.
Market data	Market data includes the following elements: Pre-trade data comprises the visible prices and volumes of orders placed in order-driven markets or visible quotes advertised in quote-driven markets. Orders are firm and participants can interact with every order that they can see. Quotes may only be firm up to the advertised size but, even then, may have to be negotiated. Participants are not guaranteed to be able to interact with orders and quotes that are not visible to the market such as for large-sized trades or trades that are subject to other special conditions. Post-trade data comprises the prices and volumes of trades that have been executed against those visible orders or quotes, as well as trades executed against orders and quotes that were not visible to the entire market.
MiFID I	Directive 2004/39/EC (Markets in Financial Instruments Directive)
MiFID II	Directive 2014/65/EU (Markets in Financial Instruments Directive)
MiFIR	Regulation (EU) No 600/2014 (Markets in Financial Instruments Regulation)
MiFID/R	The overall framework comprising MiFID II and MiFIR
MMT	Market Model Typology, an industry data reporting standard
MSP	Market Structure Partners, consultancy that published a report for the EC on the tape
MTF	Multilateral Trading Facility – a MTF offers trading in financial instruments that are listed elsewhere (the "unlisted trading privilege"). The main difference between an

	MTF and an OTF (see below) is that an OTF can only offer trading in non-equities, whereas MTFs can offer equities and non-equities. [MTFs can also be registered as 'SME Growth Markets' in which case they serve as a primary listing venue.]
NAV	Net Asset Value
NCA	National Competent Authority
OTC	Over-the-counter – OTC trades are not executed on a regulated market, MTF or OTF.
OTF	Organised Trading Facility – an OTF is a multilateral system that offers trading in non-equity instruments, such as bonds and derivatives.
PFOF	Payment for order flow (PFOF) is the compensation and benefit a brokerage firm receives for directing orders to different parties for trade execution. The brokerage firm receives a small payment, usually fractions of a penny per share, as compensation for directing the order to a particular market maker or exchange.
PBBO	Primary Best Bid and Offer – the best bid vs best offer spread on the primary (listing) exchange
QuickFIX/J	QuickFIX/J is a full featured messaging engine for the FIX protocol. It is a 100% Java open source implementation of the C++ QuickFIX engine.
RM	According to MiFID/R, a Regulated Market (RM) is a multilateral system that is operated or managed by a market operator and that brings together or facilitates the bringing together of multiple third-party buying and selling interests in financial instruments within the system. RMs are often referred to as “exchanges” or “stock exchanges”.
RPW	Reference Price Waiver. The reference price waiver for MTFs or RMs allows for orders to be matched at the midpoint of the best bid and offer price available on the trading venue where that financial instrument was first admitted to trading or the most relevant market in terms of liquidity.
SEC	Securities Exchange Commission (US securities market regulator)
SI	Systematic Internaliser. MiFID/R defines SIs as “investment firms which, on an organised, frequent, systematic and substantial basis, deal on own account when executing client orders outside a regulated market, an MTF or an OTF”.
TRACE	Trade Reporting and Compliance Engine
UTP	Unlisted Trading Privilege – the ability of an alternative trading venue, such as a MTF or OTF, that have not listed a financial instrument to nevertheless offer trading in that financial instrument in competition with the original listing exchange.

1. INTRODUCTION: POLITICAL AND LEGAL CONTEXT

Political context. This initiative is part of the Commission’s 2020 Work Programme. It is one of the actions proposed by the European Commission to implement the current European Commission’s objective of ensuring An Economy that Works for People implementing the CMU and protecting particularly smaller and retail investors¹ by enabling them to easily access market data and reducing the information asymmetries between different market players. In the 2020 CMU Action Plan² the Commission announced that it would put forward a legislative proposal by the end of 2021 to *create a centralised data base* meant to provide, for equity and equity-like financial instruments, a comprehensive view on market data, that is prices and volume of securities traded throughout the Union across a multitude of trading venues. This centralised data base, also referred to as the ‘consolidated tape’³ would have the objective to “improve overall price transparency across trading venues”. In its roadmap on ‘The European economic and financial system: fostering openness, strength and resilience’ of 19 January 2021,⁴ the European Commission confirmed its intention to propose to improve, simplify and further harmonise capital markets’ transparency, as part of the review of the MiFID II and MiFIR framework (MiFID/R). In the wider context of the efforts aimed at strengthening the international role of the euro, the Commission announced that such reform would include the design and implementation of a consolidated tape, in particular for corporate bond issuances with an aim of increasing the liquidity of secondary trading⁵ in euro-denominated debt instruments.

Legal context. In 2007, MiFID I⁶ introduced competition in the market for equity trading. In later iterations of MiFID, competition was extended to trading in non-equity asset classes, such as bonds and derivatives. The consequence is that, when a broker or investor wants to execute an order to buy or sell an asset, it can choose from different venues, such as regulated markets (RMs), multilateral trading facilities (MTFs), dark pools⁷, and systematic internalisers (SIs). As shown in an Oxera report for the European

¹ Retail investors refers to a large spectrum of investors that are non-professional investors.

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2020:590:FIN>.

³ The concept of a consolidated tape originates from equity markets in the US and dates back to the late 1970s. Magnetic tape is used as a recording medium to store data. Whereas magnetic tape is used today still for long-term data storage (backup and archiving), in the 1970s this was the main storage medium.

⁴ https://ec.europa.eu/info/publications/210119-economic-financial-system-communication_en.

⁵ Secondary trading denotes capital market activity that takes place after the issuance of a financial instrument. The issuance can be done for example by means of an initial public offering (IPO).

⁶ Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EEC (OJ L 145, 30.4.2004, p. 1).

⁷ Dark pools are (dedicated parts of) MTFs or RMs that do not apply pre-trade transparency following the use of pre-trade transparency waivers.

Commission in 2011, the introduction of competition resulted in more choice and reductions in trading fees.⁸ Since MiFID I entered into application, the combined amount of multilateral venues and SIs across all asset classes in the EEA increased by 344, leading to a total of 476.⁹ Each of these trading venues and SIs¹⁰ have to disclose to the public their market data. Across asset classes, this adds up to a total of more than 400 market data sources. Every trading venue is charging a license fee. Soon after MiFID I was implemented, the issue of market data fragmentation¹¹ and market data monopolies^{12,13} came to the fore, primarily in equity markets.

MiFIR,¹⁴ in application since 3 January 2018, recognises the investor benefits of consolidating the market data that is published by the different execution venues. MiFIR therefore comprises the concept of a ‘consolidated tape provider’ (‘CTP’).¹⁵ The idea behind a CTP was simple: exchanges, alternative trading venues and/or their approved publication arrangements (APAs) would send real-time data streams to accredited consolidated tape providers (CTPs). Those CTPs would make available to the public the exact same information, at so-called reasonable cost, using identical data tags and formats. The framework was set up under the assumption that market forces would lead to its creation by private actors (competing consolidators). Based on the MiFIR provisions, there can be multiple competing CTPs, but it is also possible to have one single CTP in case multiple providers do not step up. To date, this has not happened for a variety of reasons. This impact assessment will analyse why no CTP has come forward and assess various options to finally facilitate the emergence of a CTP.

2. PROBLEM DEFINITION

2.1. Main stakeholder views

DG FISMA consulted five stakeholder groups on the initial and revised problem descriptions: 1) stock exchanges, 2) alternative trading venues, 3) asset managers, 4)

⁸ Oxera (2011), ‘Monitoring prices, costs and volumes of trading and post-trading services’, prepared for European Commission. Confirmed in Oxera (2020), ‘Primary and secondary equity markets in the EU’, also prepared for the European Commission.

⁹ Data is based on the 2021 figures from the ESMA register of MiFID entities. See Annex 4 for the picture of the market in the main asset classes.

¹⁰ SIs publish post-trade data via one of the (15) approved publication mechanisms (APAs). Transparency requirements also apply to transactions executed over-the-counter (OTC), as described in Annex 5.1.3.

¹¹ OECD Business and Finance Outlook (2016), Changing business models of stock exchanges and stock market fragmentation

¹² Impact assessment accompanying MiFID/R, SEC(2011) 1226 final, p 322.

¹³ Copenhagen Economics (2018), Pricing of market data

¹⁴ Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012 (OJ L 173, 12.6.2014, p. 84).

¹⁵ Provisions regarding the CTP were initially introduced in MiFID II, but have been replaced to MiFIR, which changes enter into force as of 1 January 2022.

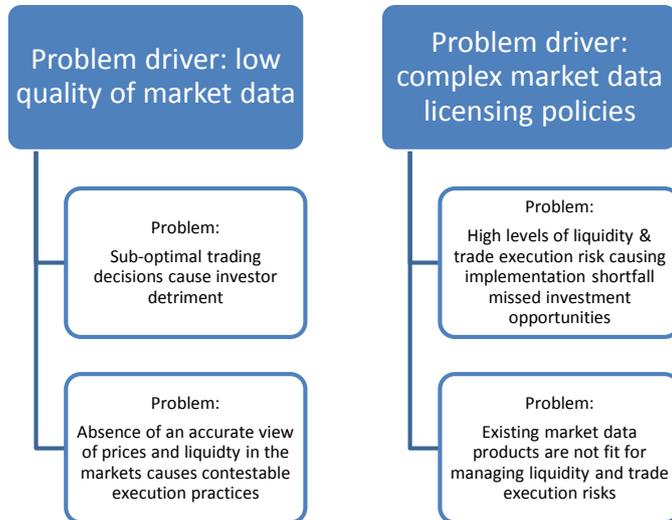
executing brokers, and 5) market data companies. Each of these stakeholder groups put the emphasis on different aspects of the problem definitions, but there is wide agreement that market data fragmentation and market data quality issues cause information deficiencies which are detrimental to an efficient capital market.

Stock exchanges stressed the **lack of uniform market data quality** across trade execution venues, singling out the insufficient quality of market data delivered by investment banks (SIs) that systematically internalise share trades and investment banks trading over-the-counter (OTC). Exchanges do not believe that the need to license market data from individual trading venues causes problems for market data consolidation. Alternative trading venues stressed the need to improve overall market transparency and best execution for professional clients. Asset managers and executing brokers stressed the aspects of **intra-day liquidity and execution risk** that results from fragmented market data sources that are prohibitively expensive to consolidate into an overall view of all execution markets. Asset managers also stressed the lack of clarity or where to locate liquidity to execute their orders throughout the trading day. They stressed that making consolidated market data available with a time-lag or only at the end of the trading day would achieve nothing to reduce their liquidity and trade execution risks. Data companies stressed the impossibility to consolidate market data due to what they perceive as insurmountable **market data licensing obstacles** (both in terms of the amount of licenses required and the high cost of market data licenses). Data companies also stress that market data quality is insufficient to allow for cost-efficient consolidation and that application of the “15 minutes delayed data rule” also to a consolidated market data product leaves no commercial incentives to provide a consolidated market data stream.

Most stakeholders, with the exception of stock exchanges, believe that intra-day liquidity and trade execution risk can only be managed if market data (prices and available volumes) is consolidated and disseminated in as close to “real-time” as possible to the entire market. Stakeholders have also mentioned that opacity on available prices has spawned practices such as **payment for order flow**. Such practices are greatly facilitated by the impossibility for (retail) investors to verify whether a broker that has “sold” their order flow to an execution venue has obtained best execution in return. For stock exchanges and some of the main data vendors there is also the fear that a consolidated market data product might cannibalize the important (and growing) revenue stream of their existing venue-specific **proprietary market data products**.

Most stakeholders are neutral on how many consolidators are active in the market. Small data companies like the competing consolidator model (as they perceive this as an easier path to market entry), while the bigger data companies (and some of the smaller companies) would prefer the single consolidator model as it provides them with exclusivity. For end users (asset managers, brokers) the specific features of the tape operating model are less important than the speed at which the market data is disseminated to the market.

2.2. What are the problems?



2.2.1. *Sub-optimal trading decisions cause investor detriment*

The absence of a consolidated view of prices and liquidity available in all trading markets is a problem when a financial instrument is made available for trading not just on a single listing venue, but across several competing venues. An investor then has, and should have, the choice between competing venues, but currently has to rely on market data that only cover individual venues. As a result, investors have insufficient access to consolidated and comparable market data. This prevents them from holding their securities **brokers and broker-dealers accountable** on whether they achieved the best execution for any given trading order. Securities brokers and broker-dealers are responsible for providing best execution — achieving the most advantageous transaction in terms of price and the lowest total explicit and implicit costs to investors. Best execution means that the broker has to show its customers the prices at which they bought and sold compared with prices and volumes available on different exchanges and alternative trading venues at the time the trade was executed. In the absence of a consolidated view of available prices, this burden of proof cannot be met.

The broad dissemination of market data is essential for all market participants in order to make informed investment decisions. The absence of broadly available market data is detrimental for the operation of securities markets, but especially to retail investors and smaller issuers. A lack of access to data by all market participants is a significant barrier to cross-border investments and is one of the main reasons why national markets remain

fragmented along national lines instead of integrating into a single, globally competitive CMU¹⁶.

The cost to procure market data from multiple trading venues currently accounts for roughly 2/3 of the overall cost of assembling market data.¹⁷ Because of this, data vendors, who make this data available to users, tend to narrow the sources of data sources in assembling their market data products. As a result, investors lack a comprehensive view of liquidity across all trading markets and most investors are unable to afford the cost of obtaining a more comprehensive view.

Who is affected and how? **Data vendors** already offer proprietary versions of consolidated tapes. However, no data vendor has been able to provide a complete picture of EU trading in any asset class. Moreover, as data vendors interpret the data fields and choose the venues they incorporate, they differ not only in terms of market coverage, but also on the level of detail provided or data tags and will provide different results for the same securities. The cost of producing and normalising bad quality data has led to additional expense and **asset and portfolio managers** complain that data providers are charging high fees for their data feeds.¹⁸ As a result it is very costly for **all investors** and their intermediaries to manage their liquidity and trade execution risk and to determine whether they achieved best execution for their trades, as verification of the best price currently requires a subscription to a proprietary market data product produced by a **data vendor** or the proprietary data feed that each **stock exchange** offers for its venue. While some of the big sell-side banks have the resources to subscribe to data flows from many of the execution venues (a practice known as “self-aggregation”), the vast majority of brokers and investors can only afford to subscribe to the data flow of a few of the primary listing exchanges or the most important alternative trading platforms in terms of market share.

2.2.2. *Absence of an accurate view of prices and liquidity in the markets causes contestable execution practices*

A partial view of the market facilitates liquidity risk management and trade execution practices that might not always be in the best interest of **retail investors**, such as online brokers deciding that it is easier to send all of their retail order flow to one particular high-frequency trader or exchange against a remuneration – “payment for order flow” (PFOF). Zero-commission equity (stock and exchange-traded fund) brokerage has brought trade execution practices, such as PFOF, to the fore. PFOF has become a major

¹⁶ European Commission (2019), On the movement of capital and freedom of payments, SWD(2019) 94 final

¹⁷ See footnote 84

¹⁸ EFAMA (2021), Joint statement by EFAMA and EFSA on Consolidated Tape and market data costs, <https://www.efama.org/newsroom/news/joint-statement-efama-and-efsa-consolidated-tape-and-market-data-costs>

revenue source for certain retail brokers.¹⁹ For the retail investor, the problem with PFOF is that the brokerage might be routing orders to a particular market maker or execution venue for their own benefit (to maximise the payment they receive for order routed to an executing broker or venue), and not in the investor's best interest. Retail investors, who tend to trade in smaller order sizes, do not have an objective price benchmark to assess whether PFOF positively or negatively affected the prices they pay for a security or the return they receive by selling a security. **Without an objective price benchmark**, it will be impossible for the retail client to ascertain whether their PFOF recipient broker has achieved "best execution".²⁰

2.2.3. *High levels of liquidity and trade execution risk*

Liquidity and trade execution risk is caused by a lack of correct information on prices and available trading volumes for traded securities²¹. This means that investors do not have an accurate picture of what a security (e.g., a share or a bond) is worth and where an order can be filled at the best price and with minimal risk of not being executed or not being executed in full (implementation shortfall). **Liquidity risk**, as pointed out in the Market Structure Partners (MSP) study 'The study on the creation of an EU consolidated tape'²², is a consequence of the need to navigate the fragmented execution markets in the Union without a comprehensive picture of all available sources of liquidity. The economic cost of imperfect market transparency can be measured, both in terms of "implementation shortfall" (trades are executed at prices that do not reflect the best available sales offer or purchase bid) and in terms of missed trading and investment opportunities. These costs go against the objectives of the CMU, which is to provide well-functioning, liquid and integrated capital markets.

The impact of market fragmentation, especially across national lines, is particularly acute for smaller asset managers and smaller banks that do not have the same possibilities to check accuracy of market data across multiple venues (information on the price of assets and the available amount of liquidity) as sophisticated market participants, such as large "sell-side" investment banks or electronic market makers. Because price and liquidity information for a smaller investor or asset manager are generally incomplete, these investors have a limited view of how much liquidity is "addressable", i.e. how much of the liquidity is available for executing their investment decisions. Without clear and

¹⁹ PFOF implies that the broker, in exchange for aggregating retail orders and sending them for execution to a particular market maker or execution platform, receives a payment from the recipient of the order flow. This may create a conflict of interest, especially if the choice of market maker or venue is influenced by the payment received, rather than the price of execution achieved by the market maker or execution venue.

²⁰ "Time to Reduce Complexity in a Data-Driven Regulatory Agenda – Perspectives on the MiFID II Best Execution Regime" <https://doi.org/10.1515/ecfr-2020-0027>.

²¹ Engle and Ferstenberg (2007), Execution risk, *Journal of Portfolio Management*, 33(2) 34-44. O'hara (2003), Presidential Address: Liquidity and Price Discovery, *Journal of Finance*, 58(3)

²² MSP (2020), The study on the creation of an EU consolidated tape, commissioned by the European Commission. <https://op.europa.eu/en/publication-detail/-/publication/82763219-1cbe-11eb-b57e-01aa75ed71a1/language-en/format-PDF/source-169654830>

complete cross-market information, investors need to base their trading decisions, including brokers' decisions, on which venues they need to be members of, on incomplete market data (prices and/or available supply) which makes the process inefficient and drives the costs up for investors.

In **equities markets**, asset and portfolio managers interviewed as part of the MSP study estimate the annual cost of not having a complete and accurate view of market data (defined as "slippage") as anything in the range of 0 to 1.0 basis points, although some rated it even higher as slippage of above 5.0 bps. The larger the trade to be executed, the higher the liquidity risk (i.e., the risk that there is not enough liquidity to execute at a given limit price or in a given time period). While it is true that on average larger asset managers have higher trade sizes, any asset management firm could face the need to execute a large trade (large investor redemptions or large investment inflows that need to be invested in the capital markets). Intra-day liquidity management needs (for all types and sizes of investment managers) are especially acute in times of price volatility. Executing brokers (investment firms) are equally affected in that, in the absence of reliable market data, they often find it difficult to prove compliance with best execution to their (retail) clients. For retail investors themselves, the impact (in terms of % slippage and/or inferior price taking) is expected to be even larger as they have even less information at hand. In absolute terms, the impact may be small but not as a % on their smaller trades. For investment banks, the impact is expected to be smaller especially when they are large. Respondents to the MSP study make different estimates on the cost inherent in having an imperfect view of the market. The larger the firm and the more extensive the resources available to compile and clean the data, the lower the estimate might be. By applying these estimates to the annual traded value of European equities, the total cost of not having an accurate view of the equities markets can be as high as EUR 10.61 billion annually whereas almost a third of the respondents indicate that the cost is between half and one EUR billion annually (MSP study, Figure 14, p 42). For **bond market data**, asset managers estimated the cost of inefficiencies resulting from a lack of consolidated and accurate market data in basis points to their annual trading strategies of not having complete and accurate data to properly size orders for optimal execution (Figure 16 of the MSP study, p 43). Unlike for shares, retail investors do not invest directly in bonds. As above, for investment banks the impact is expected to be smaller especially when they are large.

Liquidity and trade execution risk due to an incomplete view of the market is also prevalent in the derivatives markets that are not traded on venues but 'over-the-counter' (OTC). Important **OTC derivatives** are euro-denominated interest rates derivatives and credit risk derivatives. OTC derivatives markets are dealer markets, where major swap dealers, mostly international banks, offer bespoke contracts to their clients, e.g., for taking a position to protect against future price movements (hedging). OTC contracts are

mostly not post-trade transparent. The 2020 ESMA annual statistical report²³ shows that OTC derivatives still account for 85% of the notional value of derivatives traded in the Union. Because there is currently no consolidated public view of prices for OTC derivatives, the high percentage of OTC trading contributes to opacity in the pricing of these derivatives and, in consequence, to information asymmetries that primarily hurt smaller market participants.

The absence of consolidated market data also prevents accurate portfolio valuations, reduces the accuracy of indices across all asset classes (European equity, bond and derivatives benchmarks are less reliable). Large cap stocks is favoured by most (retail) trading, as evidenced in the large number of investment indices that focus on the large cap universe of listed companies (e.g., DJ 100, S&P 500, STOXX 600). The economic cost of informational inefficiency results in less investment indices that comprise smaller capitalisation companies and, in consequence, less index-driven funds channelling capital to smaller cap issuers (e.g., by virtue of exchange-traded funds that track a small or midcap index).

Who is affected and how? According to the MSP study (pages 40-45), asset and portfolio managers that are collectively responsible for managing and trading trillions of euros of assets on behalf of individual investors report that the lack of an accurate consolidated view of prices and liquidity available across the Union's trading markets means they currently have to rely on sub-optimal data when seeking to manage and trade investments for their clients. In many interviews leading up to this impact assessment²⁴ it has emerged that almost no market participant has a consolidated view of the entire liquidity available in the Union's trading markets. Conversations that DG FISMA had with smaller, regional banks tend to indicate that some investors and their financial intermediaries may not even realize that they do not have market data covering all liquidity available in the market. Investors are often unaware of the (degree of) fragmentation of the European trading markets and do not know which data they require to make the right choices as to when and where to execute a trade. Investors are also confused about the myriad of data dissemination policies by existing trading venues, while the need to subscribe to a variety of data products in parallel adds to the cost. The largest, most sophisticated investment firms and execution brokers enjoy an informational advantage as a result.

2.2.1. Existing market data products are not fit for managing liquidity and trade execution risks

Existing execution venue specific (proprietary) market data products that have emerged under MiFID I and MiFID/R are not fit for obtaining an overview of prices and liquidity

²³ https://www.esma.europa.eu/sites/default/files/library/esma50-165-1355_mifid_asr.pdf

²⁴ Including asset managers, large and small, as well as brokers and proprietary traders. See annex 2.V for a summary of those stakeholder meetings

available across trading markets. The dispersed proprietary data products are also not fit as raw materials for consolidating market data. Assembling a consolidated tape from proprietary data products obliges a market data consolidator to negotiate market data contributions with potentially over 400 venues and APAs. Negotiation of often very complex licensing arrangements are an obstacle to consolidating dispersed market data. The COBA project²⁵ was released in November 2012 after the FIX Trading Community provided a set of guidelines for how trade reports and market data should be consolidated. The initiative had even established a revenue allocation plan similar to how the consolidated tape operates in the US. In the end, the project did not get the necessary support from data suppliers and data vendors. Without a legal framework that accelerates and facilitates data licensing and data reporting, there was no business case for launching a consolidated tape.²⁶

Who is affected and how? A commercially operated CTP is in the business to make money and, if there is no certainty on how and at what cost the market data “inputs” can be obtained, a commercial entity will have no motivation to enter the market for data consolidation. With the current legal framework, there is no commercial reward for providing a consolidated market data product.²⁷

2.3. What are the problem drivers?

Two main drivers, (1) low quality of market data and (2) complex market data licensing policies imposed by market data suppliers, were most often mentioned as the main obstacles to obtaining a real-time view of prices and liquidity available across the various trading markets in the Union.

2.3.1. Low quality of market data

The ESMA register identifies more than 400 public trading data sources. The more than 400 data contributors currently do not report their market data in the same manner. Each one of these venues, or the APAs mandated by investment firms trading OTC, produce their own proprietary market data feeds, largely using different data reporting standards and often entirely different ways of accessing the data²⁸. For example, current reporting standards leave discretion in the interpretation of various reporting data fields. The consequence is that data contributors report similar transactions using different data

²⁵ <https://www.bloomberg.com/news/articles/2013-03-20/coba-project-drops-plan-to-administer-consolidated-tape>

²⁶ ESMA (2019), MiFID II/MiFIR review report no. 1; MSP (2020), The study on the creation of an EU consolidated tape (p 25)

²⁷ ESMA (2019), MiFID II/MiFIR review report no. 1; meetings with data companies

²⁸ Most venues have their own specific software intermediary (application programming interfaces (API)) for users to access the data feeds. Therefore, any user of the multiple data feeds has to invest in adapting to numerous APIs in order to get all the respective data feeds.

fields and (post-trade) reporting flags. These differences in interpreting prescribed data fields gives rise to low quality market data reports and results in regulatory reporting arbitrage, sometimes even paving the ground for deliberate mis-reporting of trades.²⁹

Different interpretations of data reporting fields have resulted in low quality data reports across multiple execution venues. Low quality data reports have undermined the attempt to consolidate data from various trading markets into a single view of liquidity across the Union. Consolidating the data from the heterogeneous reports, both in terms of substance as well as in terms of format, has proven to be difficult. The principal driver explaining the absence of a consolidated view of liquidity is therefore linked to the way that market data is reported.

Market data licensed by trading venues and APAs for OTC trading (market data contributors) is therefore not easy to produce because the currently applicable market data reporting fields (e.g., type of instrument, price, volume, execution platform or execution protocol) and post-trade reporting flags (order book trade vs. trade executed under a transparency waiver) are interpreted differently by the different market data contributors. Some of the non-exchange data, especially the OTC data, as a consequence, has proven to be inaccurate. The reason for the mis-reporting lies in the fact that the current MiFID/R framework creates ambiguity in how market data originating from trading venues and OTC trading needs to be reported.

In addition the MiFID/R rulebook contains rules and exceptions that govern the transparency around the execution of transactions in equities, bonds and derivatives. The necessary rebalancing between the competing interests of transparency and protection against “price reversion” (when larger orders move the public prices, creating volatility and execution uncertainties) has not only led to a complex system of rules and exceptions, but also created a high level of complexity on how and when trades have to be reported. The proliferation of exceptions to trading on order book has likewise led to uncertainty on how to report certain types of transaction (under which type of “reporting flag”).

For example the French securities markets regulator (AMF) reports that early reports on SI market share in equities volumes were inaccurate because the regulatory data reporting formats were interpreted differently by different market participants. The AMF calculates that by, e.g., excluding mis-reported intra-group SI transactions, the percentage of amounts from SI transactions involved in the price formation process and accessible to clients did not account for more than 8% to 10% of total trading volumes in French equities in the first quarter of 2020 (instead of a previously reported 30%)³⁰.

²⁹ For example, the FCA publishes a list of fines due to transaction mis-reporting: <https://www.fca.org.uk/markets/transaction-reporting/transaction-reporting-fines>.

³⁰ https://www.amf-france.org/sites/default/files/2020-06/202005_etude_internalisateurs_integrale_va.pdf

Uncertainty on market data reporting implies that not all execution venues or APAs take full responsibility for the quality of the reported market data. It also entails that a potential provider of a consolidated tape is not limited to consolidating the data, since currently the market data consolidator would also be responsible for parsing and cleaning-up the data received from the different execution sources. As long as market data contributions are not standardised, the data consolidator cannot publish consolidated data close to the execution venue's time-stamp of the transaction.³¹

Who is affected and how? Market participants have provided examples of low quality of trade reporting data for both for equities and non-equities. For shares, issues have resulted in particular from interpretative differences around the reporting of certain trades, in particular on whether to qualify certain types of transactions as price formative or not.³² This has led to a difficulty to paint a consensual picture of the share trading landscape.³³ For non-equities, data analyses have highlighted insufficient quality in particular for OTC data.³⁴

Securities brokers and broker-dealers are responsible for providing best execution — achieving the most advantageous transaction in terms of price and the lowest total explicit and implicit costs to investors. But to do so, these financial intermediaries need data covering the entire liquidity available in the Union's trading markets. Without mandated common standards for reporting (i.e., tagging, formatting and identifiers), different venues may provide value for their own paying data customers, but present a dilemma for any **data consolidator** tasked with consolidating the market data from multiple markets.

2.3.2. *Complex market data licensing schemes*

Fragmentation of market data sources increases dependency on multiple, venue-specific, proprietary data streams which only cover a partial view of available trading liquidity. Verifying whether all market data sources provide access to their market data in a fair,

³¹ The earliest tape based on current (non-harmonised) market data is made available 24 hours after close of the trading day. It is not a consolidated tape under the MiFID II definition because the current framework provides for a framework “to make the information available to the public as close to real time as is technically possible”.

³² An example for equities is the different interpretation to what extent trades fall into a category of trades that are technical trades which are not informative to the market in terms of both price discovery and volumes (examples of flags are PORT, TNCP and BENC).

³³ Current debate around the size of transparent trading compared to SI/OTC trading, with the Oxera report commissioned by AFME (Oxera (2021), The landscape for European equity trading and liquidity) and FESE's different analysis of ESMA statistics, <https://www.fese.eu/app/uploads/2021/05/An-analysis-on-AFMEs-The-landscape-for-European-equity-trading-and-liquidity-Final.pdf>.

See also Annex 4 for a picture of the trading landscape.

³⁴ AMF (2020), Overview of Bond Market Transparency under MiFID II; where the French market regulator makes a quality analysis on the data of the main APAs for bonds and identifies potential errors in reporting, an example is that it is not possible to isolate the venue where a transaction has been pre-arranged; as well as ESMA (2019), MiFID II/ MiFIR review report no 1, which identifies a number of shortcomings (p.41).

equitable and timely manner is made difficult by the complexity of how proprietary market data is licensed and how compliance with usage restrictions is administered. This complexity includes different pricing tiers; separate charges for connectivity, data, distribution and derived publication; usage or user type based pricing, as well as the complexities and costs of compliance with market data policies and reporting or audit requirements. The following submission of a major asset manager, included in the ESMA ‘MiFID II/MiFIR Review Report No. 1’, sums up the data licensing conundrum that has been raised by many stakeholders:

*“Data licensing agreements in particular are often complex, with subscribers asked to pay for data on the basis of both individual use cases, and for each individual user. The fact that trading data from individual venues is unique and non-substitutable has, in our view, allowed data licensing agreements to become increasingly detailed and onerous. Firms receiving market data therefore face significant complexity in managing ongoing variation in their licensing agreements, incurring operation costs and risks; they also often bear the cost of complex audits of their licenses, imposed by data providers through ex-post fees.”*³⁵ Apart from the heterogeneous quality of market data, the complexity of licensing market data is a major impediment to procuring the data necessary to create a consolidated view of all liquidity in a given financial instrument across the Union

Who is affected and how? In light of the heterogeneous market data pricing policies across the single market, it is difficult for a consolidator of market data to access proprietary market data streams on fair, equitable and timely conditions. In its report on the consolidated tape, ESMA took the view that the current MiFID II rules do not oblige trading venues and APAs to submit market data to a consolidated tape on fair and reasonable terms. ESMA also notes that the current rules do not equip the provider of a consolidated tape with the means to obtain market data in conditions that provide for a viable business model to provide a consolidated tape. Therefore, ESMA suggests that trading venues and APAs should be required to provide data to the consolidated tape either by (i) requesting trading venues and APAs to provide data to the consolidated tape, or, (ii) setting forth criteria to determine the price (and usage terms and conditions) for contributions to the consolidated tape.

According to ESMA, MiFID/R did not deliver on its objective to create more clarity on licensing and pricing of proprietary market data. Prices for market data, in particular for data for which there is high demand, such as non-display data, have increased since 2017.^{36,37} One trade association estimates that the total costs of data for a hypothetical

³⁵ [esma-cost-of-market-data-consolidated-tape-090619.pdf \(blackrock.com\)](#)

³⁶ ESMA (2019), MiFID II /MiFIR review report no 1

³⁷ Financial Times (2019), European investors complain over soaring cost of data, <https://www.ft.com/content/d8c2743e-549f-11e9-91f9-b6515a54c5b1>

small principal trading firm with access to various venues have increased by 27% from EUR 917.000 in 2016 to EUR 1.16 million in 2019.³⁸

2.4. How will the problem evolve?

In the absence of clear data reporting and licensing standards, there will be

... no consolidated view of markets in any of the MiFIR asset classes (Scenario 1: highly likely)

Without further action in amending the MiFIR³⁹ rules on market data reporting, data publication and data consolidation it is highly likely that no provider of a consolidated tape will emerge in any of the three relevant asset classes (equity, bonds or derivatives). ESMA⁴⁰ identified three main deficiencies of the current MiFIR framework: (1) no commercial rewards for consolidating market data that is currently offered by individual trading venues and their APAs; (2) the need to conclude individual licensing arrangements with potentially 400 execution platforms (170 to cover a consolidated tape for equities alone); and (3) insufficient transaction data quality, in particular for OTC and SI transactions.⁴¹

.... one or several “delayed data” tapes (Scenario 2: likely, but not satisfactory)

Market data providers that are currently active in the market for consolidating market data cannot make a consolidated view of even a part of the market available in less than 24 hours. Due to the bad quality of the data currently, these consolidators can only achieve consolidation among a partial set of trading venues in delayed form (T+24 hours). They explain the time lag by the need to “normalize” the various market data reports and employ considerable time and effort in reconciling non-harmonized reports to assemble a coherent data product. That said, even the delayed data stream, due to inconsistent OTC and SI trade-reporting practices, remains inaccurate. It cannot be excluded that, with the progress in data normalisation technologies, this time lag could eventually be reduced to twelve hours or even an end-of-day delivery target.

Financial market participants do not consider that these delayed and partial consolidations represent a complete, timely and accurate view of all of the available liquidity in the market. Due to their delivery speed, they are also not a suitable tool for

³⁸ FIA EPTA response to the ESMA Consultation Paper: MiFID II/MiFIR review report on the development in prices for pre- and post-trade data and on the consolidated tape for equity instruments (ESMA70-156-1065).

³⁹ The legislative framework for data reporting services providers is currently largely in MiFID II, but amendments replacing them into MiFIR will enter into force 1 Jan 2022.

⁴⁰ Report on the development in prices for pre- and post-trade data and on the consolidated tape for equity instruments.

⁴¹ These explanations are shared by many respondents to the EC public consultation (see Annex 2).

most of their intra-day trading needs. A delayed data tape would only be useful for market surveys and academic research into longer-term trends on market infrastructure.

... a voluntary ISO standard for core market data⁴² allows market data to be licensed to several providers of a consolidated tape (Scenario 3: unlikely and unstable)

Trading venues active in a particular asset class agree, among themselves, on a harmonised data reporting standard that covers all core market data to be reported to the market data consolidator.⁴³ The standard would be curated by an industry body set up by its sponsors. The voluntary standard could be endorsed by the International Organisation for Standardisation and thereby evolve into an ISO standard. An entity that wishes to use this harmonised data to provide a consolidated tape would register with that industry body and, in exchange for this registration, would obtain access to the standardised market data from the trading venues that participate in the harmonised data standard. For example, an entity registered for the consolidation of bonds, or a particular sub-category of bonds (e.g., sovereign issuances), would get permission to extract the harmonised bond trading data from the relevant trading venues, using a technology of their choice. Each data consolidator would be free to commercialise the consolidated data stream to clients at a price and quality standard of its choice. Prices and delivery parameters would be determined by the individual data consolidators. Each consolidator would carry out a cost vs revenue projection (individualised break-even analysis) to determine its pricing. Competition would be on price, speed and quality (business continuity, security, avoidance of “downtime” or outages).

Scenario 3 would lead to **competing consolidated tapes** (i.e., several versions of the tape are offered for a particular asset class) that will not differ in terms of instrument coverage, but might well differ in terms of message capacity (measured in millions of messages that can be transmitted per trading day) reliability (measured in % of “uptime” vs “downtime” in a chosen reference period) and speed (measured in nano-, micro-, or millisecond latency). Scenario 3 is highly competitive but potentially unstable as it depends on a data consolidator being able to obtain (license) core market data contributions from potentially 400 trading venues across the Union (as there would be a common reporting standard but no legislation mandating contributions). The model would also be commercially unstable as a system of “competing consolidators” is

⁴² A minimum set of trade data to be provided by a consolidated tape. The two main components of core market data are pre-trade data (i.e., information about orders or quotations) and post-trade data (i.e., information about executions including (1) financial instrument name (standardized instrument identifier that applies across venues); (2) best bid and offer, (3) transaction price and quantity/size executed at the stated price; (4) standardised code identifying the execution venue; (5) timestamp and (6) trade conditions (execution protocol/execution flag)).

⁴³ A voluntary data reporting standard would be very unstable as smaller venues, SIs and OTC traders would see little incentive to adhere to such a standard. Non-adherence by a large part of the execution venues would lead to a continuation of the poor quality and fragmentation of market data reports and that poor quality would prevent consolidation of market data into a single data stream.

expected to drive down the price for a consolidated tape. The competing consolidator model will reach an equilibrium where there are a certain number ‘n’ of CTPs and excess profit is zero. In that equilibrium, every CTP is just able to cover its operating cost and remunerate its cost of capital. In consequence, there is no expectation that a competing consolidator model can generate excess profit that is allocated back to the data contributors. This prospect might dissuade market data contributors from entering into the necessary market data licenses with several competing data consolidators. For example, resistance by market data sources has stopped a previous effort at producing a consolidated tape based on voluntary harmonisation of reporting standards.

... a private initiative for a single tape (Scenario 4: stable, but unlikely)

A single consolidated tape emerges, against all the odds described in the ESMA report, without any further legislative change on the basis of **voluntary industry consensus**. There is no precedent around the world for such an outcome (the US consolidated tape was mandated by Regulation NMS⁴⁴), but it is theoretically possible that an industry consensus on the construction and design of a single consolidated tape emerges, especially for the two non-equity asset classes (bonds and derivatives). The operating model would be that trading venues that offer trading in the selected asset class (e.g., bonds) form a consortium to consolidate their proprietary market data streams into a single consolidated one. This implies that the trading venues participating in the construction of a consolidated tape would agree on a proprietary data reporting standard that each “data source” would voluntarily use to notify the agreed market data contributions to the operator of the consolidated tape.

3. WHY SHOULD THE EU ACT?

3.1. Legal basis

The current MiFID/R framework consists of a directive (Directive 2014/65/EU, MiFID II) and a regulation (Regulation No 600/2014, MiFIR). The legal basis for the adoption of MiFIR is Article 114 of the Treaty on the Functioning of the European Union (TFEU). Article 53 TFEU is the legal basis for amendments to MiFID II. The reform assessed in this report concern the facilitation of market data consolidation and would therefore

⁴⁴ In the United States “Regulation National Market Structure” (NMS) created two essential consumer protection safeguards: The [Order Protection Rule](#) aims to ensure that investors receive the best price when their order is executed by removing the ability to have orders [traded through](#)—executed at a worse price than that displayed on the consolidated tape. This rule requires trading venues to establish, maintain, and enforce written policies and procedures that are reasonably designed to prevent the execution of trades at prices that are inferior to protected quotations displayed by other trading centres on the consolidated tape. It also created the [National Best Bid and Offer](#) (NBBO) requirement that requires brokers to route their orders to the venues offering the best-displayed price.

amend MiFIR. Therefore, the amendments proposed in this report would fall under Article 114 TFEU.

Article 114 TFEU empowers the European Parliament and the Council to adopt measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market. Article 114 TFEU allows the EU to take measures not only to eliminate current obstacles to the exercise of the fundamental freedoms, but also to prevent, if they are sufficiently foreseeable, the emergence of new obstacles. Article 114 TFEU allows for removal of all obstacles which make it difficult for economic operators, including investors, to take full advantage of the benefits of the internal market. Thus, Article 114 TFEU is the appropriate legal basis to address obstacles in data consolidation which result from (1) fragmented market data sources; (2) unclear market data reporting standards and (3) complex data licensing schemes for proprietary market data. These are the main drivers that prevent a consolidated view of trading liquidity across the Union and have to be addressed at Union level.

Furthermore, Article 53 TFEU grants the co-legislators the power to issue directives aimed at making it easier for persons to take up and pursue commercial activities across the EU. MiFIR was already amended via the “ESA review”⁴⁵ in order to include rules on the commercial activities of a consolidated tape provider. The proposed amendments comprise a set of rules governing the activities around consolidation of market data, such as rules on the data formats to be used when reporting data to a consolidator, legal obligation governing the provision of market data and the status and obligations of a market data consolidator. It is important that rules on applicable reporting formats and reporting obligations apply to all market data sources across the Union.

3.2. Subsidiarity: Necessity of EU action

According to the principle of subsidiarity (Article 5.3 of the TFEU), action on EU level should be taken only when the aims envisaged cannot be achieved sufficiently by Member States alone and can therefore, by reason of the scale or effects of the proposed action, be better achieved by the EU.

⁴⁵ Regulation (EU) 2019/2175 of the European Parliament and of the Council of 18 December 2019 amending Regulation (EU) No 1093/2010 establishing a European Supervisory Authority (European Banking Authority), Regulation (EU) No 1094/2010 establishing a European Supervisory Authority (European Insurance and Occupational Pensions Authority), Regulation (EU) No 1095/2010 establishing a European Supervisory Authority (European Securities and Markets Authority), Regulation (EU) No 600/2014 on markets in financial instruments, Regulation (EU) 2016/1011 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds, and Regulation (EU) 2015/847 on information accompanying transfers of funds (Text with EEA relevance) (Text with EEA relevance)

Most of the issues targeted by this initiative aim to amend the existing market infrastructure framework laid down by MiFIR. It was already established at the time of its adoption that the aspects of the Union's market infrastructure such as reporting of transactions and disclosure of trade data should be governed by a regulation. The current MiFIR rules on market data consolidation and the provision of a consolidated tape have not proven sufficient for the successful launch of such a tape for any of the MiFIR asset classes (equities, bonds or derivatives). The report therefore concludes that more precision in the rules governing data consolidation

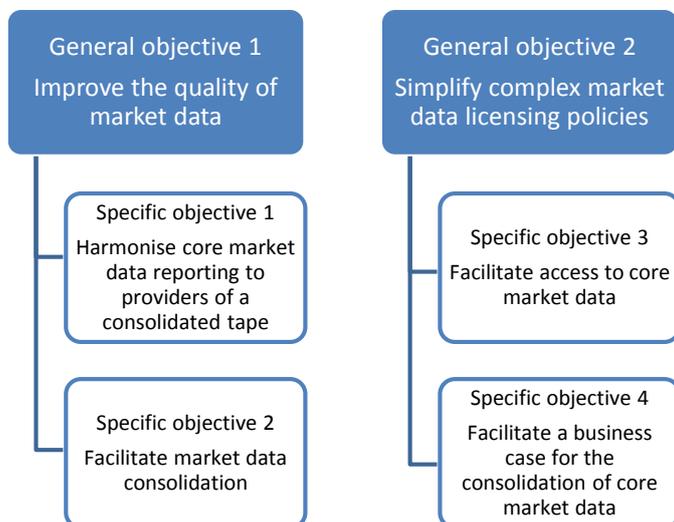
Trading in the main MiFIR asset classes take place across borders. Trading markets for various asset classes are dispersed across the Union and the conditions for executing trades require rules that apply across the Union. This includes, first and foremost, the availability of market data revealing price and liquidity for financial instruments that are traded across the Union.

The above problem drivers could possibly be addressed through individual action by Member States. Member States could attempt to harmonise market data reporting standards and licensing conditions by means of national laws. But such national initiatives would not prove effective in addressing market data quality or licensing conditions. Different Member States might still adopt different standards or licensing conditions and some Member States might not take any action at all. As market data consolidation has to work across the entire Union, it is both more effective and efficient to address reporting standards and data licensing conditions, necessary for the production of a consolidated view of all trading markets at Union level. Standardisation of data reports and licensing conditions would also be strictly confined to reporting to the provider of a consolidated tape. For example, market data licenses that do not pertain to the production of a consolidated tape would not be the subject matter of the proposed rules.

3.3. Subsidiarity: Added value of EU action

The actions needed to address the problems and drivers set out in section 2 can be better implemented at Union level. Because of their direct applicability across the Union, the deployment of policy tools contemplated in this report would clearly be swifter and more efficient than if similar initiatives were undertaken on Member State level. A patchwork of national rules on any of the initiatives analysed in this report would risk undoing the progress already achieved under MiFIR and towards achieving the CMU. Finally, the options considered in this report are calibrated such that they are suitable for reaching their objectives and that they do not go beyond what is necessary to do so.

4. OBJECTIVES: WHAT IS TO BE ACHIEVED?



5. WHAT ARE THE AVAILABLE POLICY OPTIONS?

5.1. What is the baseline from which options are assessed?

Baseline 1 – the lack of a consolidated view of liquidity across trading markets will continue to result in economic cost for European investors. A direct cost of imperfect transparency is suboptimal trading decisions, decisions taken on only a partial view of all available liquidity. As described in Annex 3.1, beyond the actual trading of financial securities, there is a whole array of professionals that have functions such as issuing, asset allocation, portfolio/investment management, pre-trade analysis, in-flight monitoring of trades, post-trade analysis/ best execution and middle and back office processes/valuations that also rely on real time comprehensive market data. The economic cost of not having an accurate and comprehensive view of trading markets are manifold and described in the impact section. The Market Structure Partners study provides further detail⁴⁶.

Baseline 2 – the lack of a consolidated view of liquidity across trading markets will continue to disqualify many small and midcap companies from the investment portfolios of most (retail) investors. The economic cost of informational inefficiencies varies in line with the liquidity of tradeable securities. In the current fragmented trading environment, this creates a tendency for smaller and midcap issuers to be less visible to

⁴⁶ The Study on the Creation of an EU Consolidated Tape, MSP (2020), gives a detailed account of the uses a tape would serve (pp. 28-29). Section 2.1.1 describes the estimates on the costs from the MSP study.

potential investors than large caps. The lack of consolidated and accurate market data effectively disqualifies securities issued by small and midcap companies from the focus of the majority of the investors. Price and volume information is not readily available reducing the interest in those small and midcap companies, often excluding these issuers even from indices that focus on the small and midcap sectors. The incomplete market picture that results from imperfect transparency leaves retail and institutional investors unable to diversify their investment portfolio toward smaller and midcap issuers.

5.2. Options to achieve specific objectives 1 and 2

*This report offers a separate analysis of various options on how to improve market data quality and facilitate market data consolidation (specific objectives 1 and 2– **Options 1.1. to 1.5)** and options on how a market data consolidator can obtain core market data and how to create a business case for market data consolidation (objectives 3 and 4 share - **Options 2.1 to 2.3)**.*

Option 1.1 – Self-aggregation.

Data reporting. Level 2 measures would harmonise the necessary market data fields for reporting of “**reportable securities**” (defined as all securities traded on a trading venue in the Union). Data reports would comprise the best bid and offer on an order book plus last sale (transaction) data from the market data contributor’s order book. These mandatory data fields would have to be used for mandatory contributions by all execution platforms that offer trading in or trade in “reportable securities” to **self-aggregators**.⁴⁷

Operating model. Self-aggregators are defined as market participants that collect and consolidate market data for their own (compliance) needs. Electronic market makers (high-frequency trading firms) or big investment banks have the capacity to become self-aggregators⁴⁸. Self-aggregators will collect market data from execution platforms and consolidate market data directly at a data centre on their own premises (**decentralised consolidation**). With this decentralized consolidation model it will no longer be necessary for market data to be collected at individual data sources and then to travel to a

⁴⁷ The option of self-aggregation would focus on driver 2: unclear market data reporting standards in order to address fragmentation in market data. ESMA would supervise adherence to the harmonised reporting standard. In particular, ESMA would police the correct application of the harmonised “flagging” of trade execution protocols, allowing market participants who self-aggregate the harmonised market data to judge for themselves whether a particular source of liquidity would have been available for them or not. ESMA would have Union-wide sanctioning and enforcement powers to ensure compliance with the harmonised reporting standards. ESMA supervision also requires central sanctioning powers for inappropriate “flagging” of trades.

⁴⁸ The SEC Final Rule on amending Regulation National Market System (“Regulation NMS”) under the Securities Exchange Act of 1934 (“Exchange Act”) defines a self-aggregator as [...] a broker-dealer, exchange, national securities association, or investment adviser registered with the Commission (“RIA”) that receives the NMS information that is necessary to generate consolidated market data from the SROs pursuant to Rule 603(b) [...] for its internal use.

separate central location (the “hub”) from where it will be distributed to data users. Upon registration with ESMA as “**self-aggregators**”, market participants would be allowed to collect all core (harmonised) market data and consolidate the information solely for their internal use (harmonisation of reporting standards diminishes the cost of data consolidation). Self-aggregators would not be allowed to publish a consolidated tape.

Selection of consolidator/exclusivity. There would be no selection process: any entity that wishes to self-aggregate the harmonised market data would have to register with ESMA and would obtain access to standardised core market data from the various trading venues directly (mandatory contributions). ESMA would ensure that self-aggregators comply with their obligations, notably with the obligation not to publish or otherwise commercialise the self-aggregated market data. There would be no exclusivity (no limits on the amount of self-aggregators registered with ESMA).

Contestability of the market for consolidated data. There would be no public market for consolidated data. Self-aggregation would be a tool for market participants to manage their liquidity and trade execution risk “in-house” and to demonstrate their compliance with ‘best execution’ to their clients.

Summary of Option 1.1 key features:

- Data reporting. Harmonised data reports will be made available to self-aggregators registered with ESMA;
- Operating model: decentralised consolidation from data sources directly to the data users’ premises;
- Selection: no formal selection process;
- Exclusivity: No exclusivity, self-aggregation for internal use only;
- Supervision: ESMA registration;
- Contestability: No formal replacement process required.

Option 1.2 – competing consolidators.

Data reporting. As Option 1.1. The mandatory data fields are used for mandatory contributions by all execution platforms that offer trading in or trade in “reportable securities” to **competing market data consolidators**.

Operating model. The competing consolidator model takes a **decentralised approach** to core market data consolidation. Upon registration with ESMA, competing consolidators would be allowed to collect harmonised market data from the individual data sources (trading venues, APAs) and then consolidate this market data at the data centre where its subscribers are located (thus avoiding consolidation at a central hub). The decentralised model aims to avoid the monopoly of a single consolidators. It also aims to increase the speed and precision at which market data is collected and consolidated. A decentralised model for data consolidation (where data is collected across platforms and then consolidated directly at the subscriber’s data centre) aims to address geographical dispersion and latency by showing each market data subscriber its local reality. As a

result, each subscriber will be able to observe the best price available from its geographical location, avoiding or reducing the phenomenon that valuable time is lost by sending the data first to a central “consolidation hub” and then retransmitting it back to the data centres of market data subscribers. Decentralised consolidation would avoid the criticism that the best quote displayed on a consolidated tape will no longer be relevant when a market data subscriber decides to redirect execution flow to the venue that has posted it. The decentralised model also aims to neutralise a common criticism made with respect to a consolidated tape: The fact that “best execution” is a local reality, true at one moment, for one specific location where the executing broker is located.

Selection of consolidator/exclusivity. Any entity that wishes to use the harmonised market data to provide a consolidated tape would have to register with ESMA and would obtain access to standardised core market data from the various trading venues directly (mandatory contributions). For example, an entity registered for the consolidation of bonds, or a particular sub-category of bonds, would get permission to extract the bond trading data from all of the relevant trading venues. With Option 1.2, several competing data consolidators would provide the identical consolidated tape in parallel. They would compete on other services and quality features, e.g., on speed of delivery, maximising “up-time” or data consumption end-user interfaces. The number of competing consolidators would only be limited by the need for each of them to reach a break-even point covering their set-up and operating costs (there is no exclusivity).

Contestability of the market for consolidated data. **Harmonisation of mandatory data reporting standards** for the supply of core market data by the various contributor venues would ensure that many entities could benefit from the harmonised data stream to offer competing products. As several competing consolidators would disseminate consolidated market data in parallel, the competitive process would ensure that the market for consolidated market data **remains contestable**. In order to further enhance the competitive process, competing consolidators would not be considered as “authorised entities” but would only have to register (electronically) with ESMA. The registration particulars would govern the responsibilities of the competing consolidators and contain details on the conduct of their business, fees and services details, and their operational capabilities. The registration would enable ESMA to determine whether a competing consolidator is in compliance with their duties and obligations under the registration scheme. Registration as competing consolidators would entail an obligation for those entities to inform ESMA on changes in their business model and operations prior to implementing a material change, as well as on systems disruptions and intrusions. ESMA will publish these disclosures which could be used by market participants to evaluate the services offered by competing consolidators.

Summary of Option 1.2 key features:

- Data reporting. Harmonised data reports will be made available to market data consolidators registered with ESMA;
- Operating model: decentralised consolidation from data sources directly to the data users’ premises;

- Selection: no formal selection process;
- Exclusivity: No exclusivity;
- Supervision: ESMA registration;
- Contestability: No formal replacement process required;

Option 1.3 – exchange consolidators.

Data reporting. As Option 1.1. The different market data sources that do not act as the listing venue (alternative trading venues, SIs, OTC) provide harmonised core market data to the listing exchange pertaining to all EU ISINs listed on that exchange. This Option does not cover shares that are traded in the Union without a listing on an EU exchange⁴⁹.

Operating model. The exchange-consolidator operates a centralised "hub and spoke model". With this approach, the exclusive data consolidators collect data for specific stocks from geographically separated exchanges, consolidate the data in one centralized data centre, and then disseminate it from the central location to subscribers' data centres that are in other locations.

Selection of consolidator/exclusivity. ESMA would supervise the listing exchanges as far as the consolidation activity is concerned, but there would be no regular re-tendering of the exclusive consolidator function. The result would be that listing exchanges become the consolidators (the "hub") for all market data that involve their listings. In practice, Option 1.3 would lead, e.g., to a separate tape for each European listed exchange (examples are Euronext, Deutsche Börse, NASDAQ OMX, BME, Vienna stock exchange, Warsaw stock exchange, etc.).

For bonds and OTC derivatives, there is no listing exchange. The task of consolidating market data would fall on the MTFs or OTFs that are identified as the primary centres of liquidity for the relevant class of reportable security (e.g., government bonds, investment grade corporate bonds, high yield bonds or even distinct sub-asset classes within the above category of bonds). In order to create legal certainty, ESMA would select the consolidator in line with the determination of the primary centre of liquidity or 'most relevant market in terms of liquidity' in analogy with Article 16 of RTS 22. ESMA would also maintain and update a website comprising these primary centres of liquidity for a particular class of reportable securities. A primary centre of liquidity would be entitled to be the sole recipient of core market data in the identified asset class from all other venues offering trading in that asset class as long as it is not removed from the ESMA list.

⁴⁹ For example, regional exchanges in the Union offer trading in U.S. blue chip companies without being the formal listing venues for these issuers, usually listed on the NYSE or NASDAQ.

Contestability of the market for consolidated data. Due to the **harmonised market data reporting standards**, ESMA could, if need be, replace the exclusive data consolidator and replace it with an alternative provider. Exclusivity also entails that the current 15-minute rule (after which market data has to be made available for free) would not apply to the consolidated tape provider, but would be maintained for the current non-consolidated data feeds. As all the relevant data reporting fields (the “content” to be reported) and an agreed protocol for the delivery of this data (the “transmission” protocol) to the consolidator would be specified, an alternative provider could step in and take over the task of data consolidation, although with the exchange-consolidator model this might be difficult to achieve in practice (for a detailed analysis of ESMA’s powers and potential obstacles in their exercise, see Section 6.2).

Summary of Option 1.3 Key features:

- Data reporting. Harmonised data reports pertaining to EU listed shares will be made available to the listing exchange;
- Operating model: centralised consolidation;
- Selection: no formal selection process, appointment of the listing venue (equities) or primary centre of liquidity (non-equities);
- Exclusivity: Indefinite exclusivity;
- Supervision: ESMA, but confined to the exchange’s consolidator function;
- Contestability: Formal replacement process in case of quality defects.

Option 1.4 – single consolidator.

Data reporting. As Option 1.1. The mandatory data fields would have to be used for mandatory contributions by all execution platforms that offer trading in or trade in “reportable securities” to a **single consolidator**.

Operating model. The single consolidator could operate either a decentralised or a centralised “hub and spoke model”⁵⁰. With the “hub-and-spoke” approach, the exclusive data consolidator would collect data for specific stocks from geographically separated venues, consolidate the data in one centralized (cloud-based) data centre, and then either disseminate it from such central location to subscribers or allow other market data publishers to tap into the cloud based data repository to disseminate the data to their subscribers. Compared to a decentralised operating model, a centralised model would be slightly less accurate in terms of the timeliness of the data provided on the consolidated tape.

⁵⁰ A single consolidator can collect data and consolidate directly at the customers data centre, avoiding the hub-and-spoke induced latency. To that extent, there is no fundamental difference between the single consolidator and the competing consolidators. However, to our knowledge, no single existing entity (the tape consolidators in the US and Canada) has decentralised consolidation. As it is not clear what the reason is for not using the decentralised model, the more prudent approach seems to base this assessment on actual stakeholder feedback and experience in the U.S. markets to date (see Annex 5.6 for further details).

Selection of the consolidator/exclusivity. ESMA would be tasked to run an open tender to select a single provider of the data consolidation infrastructure necessary as the backbone for a consolidated tape. Regular re-tendering of the single tape infrastructure aims to avoid entrenching an infrastructure monopoly. The data infrastructure provider would be selected and authorised by ESMA.

Contestability of the market for consolidated data. Due to the **harmonised market data reporting standards** which would ease the consolidation, ESMA could, if need be, replace the exclusive data infrastructure and replace it with an alternative provider (even in between regular tenders). As all the relevant data reporting fields (the “content” to be reported) and an agreed protocol for the delivery of this data (the “transmission” protocol) to the consolidator would be harmonised, an alternative provider could easily step in and take over the task of data consolidation. In addition, an authorisation requirement for the single consolidator would enable ESMA to determine whether the single consolidator remains in compliance with its duties and obligations throughout the period of exclusivity in the provision of consolidated market data. As with the registration of competing consolidators, the single consolidator would be obliged to inform ESMA of all changes in its business model prior to implementing them. The single consolidator would also be obliged to file regular information relating to **systems disruptions and intrusions**. ESMA would publish all disclosure made by the single consolidator so that market participants can use this information to evaluate the services offered by the single consolidator.

Summary of Option 1.4 key features:

- Data reporting. Harmonised data reports will be made available to the single market data consolidator registered with ESMA;
- Operating model: centralised consolidation;
- Selection: formal tendering process for build and operation of a single “data ingestion infrastructure”;
- Exclusivity: Five year exclusivity for the infrastructure;
- Supervision: ESMA authorisation;
- Contestability: Regular re-tendering and formal replacement process in case of quality defects.

Option 1.5 – the concentration rule.

All trading in listed shares is concentrated on the **listing exchange** (for non-equities on the existing primary centre of liquidity), there is no need for consolidation of core market data with an exclusive or non-exclusive securities market data consolidator. This option would not involve the creation of a consolidated tape. This option would rather aim to consolidate the flow of market data (indirectly) by concentrating trading in certain asset classes on designated execution platforms. As trading practices differ among asset classes, this option would be asset-class specific:

Listed instruments. Option 1.5 would entail that European market participants are restricted to where they can trade share listed on an EU **exchange**. This option contains a “concentration rule” that market participants can only trade shares below the current large-in-scale threshold on the “**listing exchange**” of the share. Likewise, only the **exchange** that designed and listed an exchange-traded derivative (ETD) can offer trading in that contract.⁵¹ The contract is then centrally cleared in a clearinghouse designated by the exchange.

Unlisted instruments. For unlisted instruments (bonds and OTC derivatives) ESMA would need to designate the primary centre of liquidity in a certain asset class (e.g., government bonds, corporate investment grade or high yield bonds or any sub-categories thereof) as the **sole execution platform** for this asset class.

Summary of Option 1.5 key features:

- Data reporting. No harmonised data reports;
- Operating model: centralisation of trading on a listing exchange;
- Selection: no formal tendering process;
- Exclusivity: Indefinite exclusivity for the listing exchange;
- Supervision: National exchange supervision applies;
- Contestability: No contestability.

5.3. Options to achieve specific objectives 3 and 4

All options to achieve the specific objectives 3 and 4 can be combined with Options 1.1 to 1.4 on the operating model for the consolidation of core market data. Options on how to achieve consolidation of data and on how to generate revenue for compensating market data contributors are therefore separate and distinct.

The decisive factor determining whether the provision of a consolidated tape generates revenue to be allocated to market data contributors is therefore not the chosen operating model, but whether the mandatory contributions are accompanied with either a minimum revenue target to be achieved with the sale of consolidated market data, a statutory subscription fee or a fee for “dark pool” trades.

As a consequence of their distinct nature, the operation of the market data consolidation can be undertaken by entity that is separate and distinct from the entity that administers the allocation of tape revenues.

⁵¹ The rationale of Option 1.5 in the area of ETDs is that no other trading venue, which has not designed and listed its own ETD could offer trading in a “copy” of the ETD that is listed on an exchange. Allowing other trading venues to copy an ETD would fragment ETD trading volumes which are currently concentrated on the listing exchange. The approach to ensure concentration of an ETD on its listing exchange is further described in Annex 5.3.

Option 2.1 – Mandatory contributions with “minimum revenue targets” incumbent on market data consolidators. In order to avoid complex, individual market data licensing arrangements with often hundreds of execution platforms or their APAs that act as data contributors, all market data sources would have to make standardised core market data available to self-aggregators (mandatory contribution). Mandatory contribution of core market data would apply to all operating models that aim to consolidate core market data, be it self-aggregation, competing consolidators, exchange-consolidators or a single consolidator. Each of these consolidators would aim to cover operating and capital costs. In order to create additional revenue for allocation to market data contributors, there would be “minimum revenue targets” that form part of the selection process for a single consolidator (Option 1.4) or part of the registration process for competing consolidators (Option 1.2). The system of minimum revenue targets would not work for self-aggregators, as these entities do not publish data for third parties. The regulatory establishment of minimum revenue targets aims to avoid a situation in which the making available of the consolidated core market data streams will not produce revenue beyond the consolidators operating cost and the cost of their capital invested⁵².

The minimum revenue targets would be established and regularly reviewed by an independent operating committee. The operating committee would be comprised of industry stakeholders – both market data contributors, redistributors and market data consumers, with both retail and institutional representation. The operating committee could be structured as a body that advises the European Commission in the formulation of delegated legislation, along the lines of the technical expert group that advised the EC on climate change benchmarks. The operating committee would have responsibility for the revenue target as well as for the revenue allocation methodology. Participants in the operating committee should require the proof of relevant qualifications in economics and accountancy.

The revenue targets would take into account various uses that subscribers make of the consolidated tape and take into account relevant parameters such as commercial redistribution, price referencing, indexing, syndication, sales of market data to media outlets. The revenue targets with respect to professional users could be set at levels sufficient to largely subsidize the cost of granting retail access for minimal or no cost.

Several models can be envisaged on how to organise revenue allocations among market data contributors. A data contributor’s revenue share could be calculated as the arithmetic average of its percentage share of overall value traded in a particular financial

⁵² Without a statutory revenue target of floor for subscription fees for accessing consolidated market data and the existing measures around the reasonable commercial basis, excess revenue for re-allocation to market data contributors is expected to be low, or even non-existent. In the case of competing consolidators, any supra-competitive profit is expected to attract new market entrants, a potential maximum of competing consolidators will ensure that there is no excess revenue to be distributed after each consolidator has covered its operating and capital costs. In the case of a single consolidator (option 1.1), the alternative to self-aggregate would further limit the potential for supra-competitive profits.

instrument. The allocation formula would then simply be the contributor's total value reported as a percentage of the total value of trading across the Union in that share. Hence, a participating venue that traded 3% of all reported value in a share traded on that day would receive 3% of that share's total revenue. Additional modulations could be provided to avoid that market data contributors that offer trading in heavily traded "blue chip" issuances reap the main benefit from the allocation scheme. One option would be a **preferential weighting** for trading platforms that list thinly traded shares. As small cap stocks listed on smaller exchanges typically have wider spreads and lower trading volumes, incentives for smaller exchanges would mean allocating revenue based on the square root of the value reported to the CTP. That means a stock with 10 times the notional liquidity only counts for three times the revenues⁵³. Another approach would be to reserve a **preferential tranche** for smaller exchanges. In this option a "small" exchange is objectively defined as an operator that assembles more than a given percentage (e.g., more than 80%) of trading value on the original listing exchange, as a higher level of "concentration" in trade executions is a defining feature of smaller exchanges. The consequence would be that the bigger exchange operators would only get access to the tape revenue once the smaller exchanges have received revenue that corresponds to the reserved tranche. As mentioned above, the revenue allocation could be undertaken by an entity that is distinct from the operator of the consolidated tape.

Summary of Option 2.1 main features

Data licensing: Mandatory contributions to either a self-aggregator, competing consolidators, or a single consolidator

Compensation for market data contributors: Minimum revenue target incorporated into the operating conditions of the market data consolidator

Revenue allocation: allocation weighting in favour of less liquid shares or exchanges that assemble a high percentage of trading on the listing platform.

Separate data consolidator and revenue allocation functions: yes

Option 2.2 – Mandatory contributions with statutory subscription fees. In addition to mandatory contributions, Option 2.2 would comprise statutory minimum subscription fees for consolidated market data feeds. Option 2.2 expresses a clear choice to regulate minimum levels data usage fees at the data consumer level. Option 2.2 is based on the assumption that market data contributors are adequately remunerated based on a participation in the profits of a consolidated market data feed. Making mandatory contributions contingent on a "revenue participation model" aims to create a commonality of interest between market data contributors and market data consolidators. By setting fee floors for the use of core market data, market data contributors participate in the commercial success of consolidated market data streams and share the risk of success of the consolidated market data product with market data consolidators.

⁵³ <https://www.nasdaq.com/articles/sip-accounting-101-2021-03-25>

The subscription fees would be designed and regularly reviewed by an independent operating committee. The operating committee would be comprised of industry stakeholders – both market data contributors, redistributors and market data consumers, with both retail and institutional representation. The operating committee could be structured as a body that advises the European Commission in the formulation of delegated legislation, along the lines of the technical expert group that advised the EC on climate change benchmarks. The operating committee would have responsibility for fee management as well as for the revenue allocation methodology. Participants in the operating committee should require the proof of relevant qualifications in economics and accountancy.

The appropriate subscription fees should take into account various uses that subscribers make of the consolidated tape and take into account relevant parameters such as commercial redistribution, price referencing, indexing, syndication, sales to media outlets. The various subscription fees should be set at levels sufficient to largely subsidize the cost of granting retail access for minimal or no cost.

Rules on minimum end-user (and self-allocator) subscription fees would aim to cover the set up and operating cost of the chosen model for data consolidation and to create excess revenue to operate a **revenue allocation scheme** to remunerate core market data contributors (the allocation criteria would be the same as in Option 2.1 above). All forms of market data consolidators would be subject to a legal obligation to allocate revenue in excess of their operating cost to core market data contributors⁵⁴. Revenue to be generated would depend on the statutory fees that the regulation chooses to impose on consolidators for the provision of the consolidated data: (1) One choice would be to establish an annual statutory subscription fee of e.g., EUR 25 per month per professional market data user. Non-professional users (defined as retail clients who subscribe to the data for personal use only and upon evidence of their status of non-professional users) would either obtain access to the tape via their brokers (indirect access) or would obtain direct access to core market data at an annual subscription fee for direct access by non-professional users. Due to their non-professional (private) usage, this fee would be significantly lower than the fee that market professionals would need to pay, e.g., maximum EUR 1/month^{55,56}. If an

⁵⁴ Every market data consolidator will have to determine its operating cost and cost of capital and then allocate excess revenue from the sale of the tape back to market data contributors in accordance with the legally mandated value-based allocation method.

⁵⁵ This would be a significant improvement for the retail investors compared to the 15 minutes delayed data rule. Retail investors would for private use obtain market data for EUR 1/month not only real time instead of after 15 minutes but get in one single point a complete picture based of all trading in the EU.

⁵⁶ A good proxy for a reasonably priced retail tape would be the US retail access model. In the U.S. all online brokers offer their retail clients access to the US consolidated tape. This is how retail consumers get a comprehensive view of all U.S. markets that execute trades in a share that they are interested in. The three US tapes together have 5.4 million non-professional subscribers. When US non-professional subscribers (retail) consume the consolidated tape through retail brokerage websites, they effectively pay a maximum of \$ 1/month.

investor would deem the cost of the CT too high, she can still choose to go to the respective venues for 15 minutes delayed data which remains free.

Summary of Option 2.2 main features

Data licensing: Mandatory contributions to either a self-aggregator, competing consolidators, or a single consolidator

Compensation for market data contributors: Statutory subscription fess applicable to all categories of market data disseminators

Revenue allocation: allocation weighting in favour of less liquid shares or exchanges that assemble a high percentage of trading on the listing platform.

Separate data consolidator and revenue allocation functions: yes

Option 2.3 – Mandatory contributions with compensation by means of a “reference price usage fee”. Option 2.3 envisages to ensure compensation for market data contributors by means of a usage fee for all execution venues that do not contribute to price formation in the equity markets (“dark trading”). Technically “dark trading” would be defined as offering trading in EU ISIN using a “reference price” established at the original listing venue for the relevant EU ISIN⁵⁷. In order to continue offering this form of trading that is not pre-trade transparent – no quotes are published and trades are executed at the reference price set at the primary market (either the “listing exchange” or the “most relevant market in terms of liquidity”), execution platforms that match trades using an a reference price “imported” from the listing exchange would need to “buy” the reference price by means of a monthly “ad valorem” fee, to be paid (for rebating back to the listing exchange) to the operator of the consolidated tape.

The reference price usage fee would be designed and regularly reviewed by an independent operating committee set up in line with the committees described in Options 2.1 and 2.2. In addition to the possibility to separate the data consolidation from the revenue allocation function, this option would allow an even clearer separation between the data consolidation and the collection and administration of the “dark pool” fee.

Summary of Option 2.3 main features

Data licensing: Mandatory contributions to either a self-aggregator, competing consolidators, or a single consolidator

Compensation for market data contributors: Statutory “reference price usage fee” to be paid by all market data contributors who operate a “dark pool”

Revenue allocation: allocation weighting in favour of less liquid shares or exchanges that assemble a high percentage of trading on the listing platform.

Separate data consolidator and dark pool fee administrator: yes.

⁵⁷ As all EU ISIN would form part of the “reportable universe” of an EU consolidated tape, provisions would have to be made that all trading venues that offer trading in EU ISIN report to the tape and, when using the RPW exemption, pay the “RPW fee” to the provider of a consolidated tape.

5.4. Options discarded at an early stage

Due to the rapid evolution of technology in collecting and storing market data no option on either the organisation of data consolidation or on the organisation of data licensing should be discarded upfront. Preference should be given to operational and market data licensing approaches that serve as a reliable **price benchmark** against which to manage their intra-day liquidity risk throughout the entire trading day⁵⁸. At a time when continuous intra-day trading is already under pressure on account of a significant shift towards trading “at the close (up to 25% of daily volume is currently transacted in the closing auction), promoting more intra-day order execution outside of the end-of-day closing auctions should guide the choice of options on market data consolidation and market data licensing.

6. WHAT ARE THE IMPACTS OF THE POLICY OPTIONS?

6.1. Impacts of options to achieve specific objectives 1 & 2

6.1.1. *Impacts of Option 1.1 – self-aggregation*

Data contributors. Standardisation of market data reporting formats will facilitate self-aggregation of market data; most costs incurred by data contributors in the harmonisation of data reports are one off investments.

The Oliver Wyman reports presents various estimates of the connection cost of delivering standardised data by stock exchanges: (1) EUR 10.000 per venue for an end-of-day tape; (2) EUR 50.000 per venue for a 15 minute delayed tape; (3) EUR 75.000 per venue for a real time transaction tape and (4) EUR 100.000 for a real-time pre-trade tape⁵⁹. On the basis that there are 15 exchanges that still operate separate platforms in each Member States (despite some exchanges forming part of a group, such as Euronext or NASDAQ), annual cost of harmonised data reporting across all stock exchanges would vary between EUR 270.000 and EUR 2.7 million.

Other market data contributors (alternative venues, SIs and OTC traders⁶⁰) indicate a likely spend between EUR 500 000 – EUR 1 million (varying with size and data volume)

⁵⁸ A clear majority of respondents to the European Commission’s public consultation and workshop supported a real-time tape (see Annex 2), as it was the case in the answer’s to ESMA’s public consultation in 2019.

⁵⁹ Oliver Wyman, *Caught on Tape*, a consolidated tape for Europe (2021).

⁶⁰ Some of the main data contributors, next to the regulated markets, would include the following entities: the Aquis Exchange, CBOE, Turquoise/LSEG, Virtu, UBS, Liquidnet, Tradeweb, GS Sigma, Morgan Stanley, Instinet, Equiduct. Assuming that APAs would consolidate the SIs trading data, there would be three main APA contributors for equity: the CBOE APA, the LSEG/Turquoise APA and the Tradeweb APA. Should APAs not continue to consolidate SI trading, all equity SIs operated by the main investment firms would need to contribute market data individually.

in one-off costs to implement reporting systems that comply with the harmonised data reporting standards, which leads to an industry-wide switching or adaption cost of between EUR 85 and EUR 170 million⁶¹. The industry-wide annual market data reporting cost would amount to between EUR 34 and EUR 67 million.⁶² It is possible that many of the venues and APAs, as specialists earning significant revenue from data resale and aggregation, could implement adaptations necessary to harmonise data formats at a lower cost, especially if market data is provided by an API directly to the various self-aggregators.⁶³ These adaptation costs are deemed manageable for large market data contributors as they would amount to a maximum of EUR 1 million annually with a one-off cost between EUR 500 000 and EUR 1 million⁶⁴.

On the other hand, self-aggregation does not produce a commercial product available to the wider market. However, alternative venues (MTFs that offer additional trading in shares listed on an exchange) would benefit from this option most as more professional and non-professional investors would become aware of the additional execution options they offer. It is likely that the increased Union-wide visibility of alternative venues for executing trades will increase competition, which they could benefit from. Exchanges would most likely benefit least from self-aggregation as most market participants already subscribe to the proprietary data feeds supplied by the principal listing exchange, including the data feeds provided by smaller exchanges⁶⁵.

Data users. Data users having the resources to register as self-aggregators would benefit from a **decentralized consolidation model**, because they would not need to rely on market data which is collected and consolidated in a single hub before being disseminated to data users, a process which introduces additional latency into the data consolidation process⁶⁶. Instead self-aggregators would collect market data from the various data sources and consolidate the data in their own data centre. Accordingly, each of the self-aggregated data sets would show the information more accurately from each self-aggregators' geographical perspective, which would narrow the "latency gap" that

⁶¹ Technology provider Finbourne explained that based on past experience of implementing technology at large financial institutions and market data providers, a technology provider submits that the upper bound of a cost estimate would be 6 months' work for 5 FTE. On the assumption that roughly 300 Trading Venues and APAs offer trading in reportable bonds, this could result in costs in the region of EUR 250 000 per firm or a total of roughly EUR 75 million across the industry.

In addition, GreenBirch also provided a cost estimate for the costs to report and transmit data, whereby the development, testing and commissioning is estimated at EUR 150 000 for smaller contributors.

However, as both estimates are lower than the estimate received from an association representing sell side firms, it is chosen to go for the more conservative approach with high cost estimates.

⁶² These estimates were provided by an association representing sell side firms. More details can be found in Annex 3.

⁶³ Assessment supplied by Finbourne, 21 May 2021.

⁶⁴ Figures obtained from large data contributors through stakeholder meetings.

⁶⁵ Source: DG FISMA interviews with Baltic and CEE exchange operators.

⁶⁶ The self-aggregators would be paying the same statutory subscription fees for their internal users as the professional users.

results from a centralised hub delivering market data to geographically dispersed data users.

Latency benefits from decentralised self-aggregation would, however, not benefit all market data users. The population of self-aggregators would very likely comprise only large market data consumers, such as electronic market makers or the big investment banks. Smaller market participants would, at least not in the immediate and medium-term, have the capacity and resources necessary to self-aggregate. In this immediate or medium term, self-aggregation would therefore consolidate the bifurcation of the market between participants who have a complete overview of the market, delivered at low latency, and those who do not. For example, the MSP study identifies a handful of financial intermediaries that benefit from the current fragmentation of market data – large banks and HFTs/latency arbitrageurs.⁶⁷ Self-aggregation would solidify these operators' business model and entrench some of the informational advantages they currently enjoy. Self-aggregation would therefore increase information asymmetry.

Retail investors. Benefits for retail investors would largely be indirect on account of the better liquidity risk management and trade execution achieved by the financial intermediaries who self-aggregate. The retail benefit would be increased if regulation made self-aggregation mandatory for all intermediaries in order to demonstrate compliance with 'best execution'.

Competition in the market for consolidated data. There would not be a public version of a consolidated tape, but many "internal" versions of such a tape established through the process of self-aggregation. The multitude of self-aggregated (consolidated) data flows would ensure that there is no monopoly for consolidated market data.

6.1.2. *Impacts of Option 1.2 – competing consolidators*

Data contributors. Same as Option 1.1.

Data users. Competing consolidators would collect market data from the various data sources and consolidate the data directly at their customer's data centre. Accordingly, a direct venue-to-subscriber model will show the best bid and offer more accurately from each data users' geographical perspective. Data users would get more a precise picture of the liquidity as the best bid and offer is provided from their individual geographical perspective, which narrows the "latency gap" that results from a centralised hub delivering data to geographically dispersed data centres (users)⁶⁸. In addition, several

⁶⁷ MSP (2020), The Study on the Creation of an EU Consolidated Tape, p. 50.

⁶⁸ While a decentralised venue-to-customer model will close the latency gap presented by the hub-and-spoke model of a centralised consolidator, decentralised consolidation will not automatically ensure that the consolidated tape will evolve into an "order routing tape" that is delivered within nano- or microseconds. In the European Union, data centres are dispersed (Euronext even plans to move its data

competing consolidated tapes would give market data users a choice between competing versions of the single consolidated tape at the lowest possible latency; this means that a system of competing consolidators would reach the largest group of (geographically dispersed) investors. Competition between consolidators would focus on delivery speed, business continuity or the avoidance of “downtime”. Competing consolidators have the ability to compete on how to collect and transmit the market data to data consumers, resulting in different transmission latencies, throughput capacities, and data-feed protocols.⁶⁹

Investors (the buy side) would be the main beneficiaries of a competing consolidator model. For the buy-side, in general, the consolidated tape will have the advantage that they will be able to get a complete overview of the entire liquidity in any given financial instrument. The tape will incentivize asset and portfolio managers to include in the portfolios they manage the most optimal (combination of) instruments available in the Union and not just the instrument available on the (few) venues whose market data they currently subscribe to. They would have the information allowing them to decide if they need to become member of (other) venues, when these venues provide the most optimal products for their purpose. It will function as an important guide to the buy-side trader on assessing and making their trading decisions and setting up their algorithmic parameters.⁷⁰

The main investor (buy-side manager) benefit of a consolidated tape is the avoidance of liquidity risk and slippage. For equities, 56% of asset managers that participated in a survey conducted by MSP⁷¹ identified slippage of between 0-0.5 basis points as the main consequence of a lack of transparency with respect to liquidity in the market. Avoidance of this slippage would result in investor gains of up to EUR 1.06 billion. 11% of asset managers estimated slippage of between 0.5 up to 1 basis point. If this slippage could be avoided, investors stand to gain up to EUR 2.12 billion due to better trade execution results. 7% of asset managers estimated slippage between 1 of up to 1.5 basis points, the avoidance of this slippage would yield investor gains of up to 3.18 billion. 10% of asset managers estimated slippage of between 1.5 to 2 basis points, the avoidance of this slippage could yield investor gains of EUR 4.24 billion. Finally, 4% of asset managers

centre to Bergamo, while all other exchanges have their data centres in the Benelux, Germany or the U.K) making any effort at data consolidation, even with a direct venue-to-subscriber model, too slow to be meaningful for algorithmic trading or order routing.

⁶⁹ It is important to note, however, that the centralised vs decentralised approach to data consolidation has no repercussions on the “greenfield” set-up or operating cost estimates. The cost estimates made available to DG FISMA indicate that the competing consolidator model does not have set up and operating costs that differ from the hub-and-spoke approach inherent in Options 2.2 and 2.3 (see Section 5.3, above). On the other hand, many of the entities that are expected to act as competing consolidators, investment banks and data companies, would not need to set up a data collection, consolidation and dissemination infrastructure, but could leverage existing infrastructures.

⁷⁰ <https://www.fixglobal.com/real-time-tca-the-next-frontier-in-trading-analytics>.

⁷¹ MSP (2019), The Study on the Creation of an EU Consolidated Tape, Figure 14.

estimated slippage at above 5 basis points. Avoiding this slippage could potentially yield EUR 10.6 billion for investors.

For bonds, potential gains from a consolidated view of the markets would be even greater. This is because the estimated losses due to slippage by far exceed the above estimates for shares. 60% of bond asset managers interviewed for the MSP study estimated slippage costs of up to 5 basis points, 25% estimated slippage cost of up to 10 basis points, while 11% estimated slippage of up to 50 basis points. The absence of any reliable data for the traded value in bonds makes it impossible to quantify slippage in absolute terms.

In terms of potential market data **cost savings**, large data consumers stand to benefit from competing consolidated tapes. For an average-sized investment firm (with 50 human users), current annual costs for “piecing together” a multitude of venue-specific market data products (including level 1, i.e., the first level of best bids and offers)⁷² are estimated at around EUR 300 000. Replacing this by a consolidated tape at a subscription fee of EUR 600 per user/year would result in annual cost of 30 000 per investment firm. In such a scenario each firm would be able to save 270 000 per year. On the basis that there are 6 501 registered investment firms in the Union, industry-wide savings for data consumers could potentially amount to EUR 1.75 billion per year. When looking at “winners and losers”, Option 1.2 favours most market participants other than market data contributors as the consolidated tape allows for lower market data prices.

Retail investors. Benefits for retail investors would largely be indirect on account of the better liquidity risk management and trade execution achieved by their financial intermediaries. Nevertheless, a free or reasonably priced single tape could have positive impacts on more sophisticated retail investors who wish to diversify their investment portfolios and branch out into shares not listed on their local exchange. This is because Option 1.2 will lead to a complete and real-time view of price and liquidity for the entire market in shares or bonds in the Union. It is currently especially retail investors that have only access to 15 minutes delayed prices displayed by primary markets.^{73,74} The broader

⁷² Data packages vary by the depth of financial information included, and generally there is a distinction made between post-trade data (transaction information, defined in the rest of the present document as core market data), level 1 data (the best bid and offer in addition to transaction), but also potentially level 2 data (not only the best bid and offer, but several layers of bids and offers, usually 5 to 10), and full order book. As an example, HFTs generally do not use simple level 1 data, and they pay for direct proprietary feeds. For more information, see “The design of equity trading markets in Europe”, Oxera, 2019, p.61.

⁷³ According to Better Finance in a Letter to Commissioner McGuinness, June 2021, the primary focus for retail investors should be on increasing data quality and accessibility to data from alternative venues. Should a tape arise, it should in their view focus first on bonds and be easy and free to access.

⁷⁴ ESMA and the MSP study found considerable benefits for retail investors of a model featuring a single consolidator: ESMA70-156-1606 and “The Study on the Creation of an EU Consolidated Tape”, MSP, October 2020 ESMA notes that the CT could be used for supplementing best execution policies, in particular for retail investors. The MSP study mentions that the US bond tape has had an impact on

availability of at least core market data would make these markets, including the non-equities markets, more accessible (and, in consequence, more “tradeable”) for all types of retail market participants. The main advantage of a consolidated tape is therefore that a retail investor gets the comprehensive view of markets that currently only the largest market makers have. This knowledge would allow the retail investor to be aware of the best prices and liquidity in the entire Union. The consolidated tape would for those retail investors likely become a reference price benchmark (to measure best execution)⁷⁵. It would hence provide retail investors with a powerful “private enforcement” tool. The democratisation of liquidity insight will create a more level playing field for all participants in the equity, bond and derivative markets.

Consolidated tape providers. Standard market data reporting formats will lower barriers to entry into the market for data consolidation. Several competing consolidated tapes will create opportunities for more than one entity to enter the market for data consolidation, creating opportunities for fintech and data companies. In order to allow for a break-even analysis for the provision of a consolidated tape, several entities submitted cost projections for setting up and operating a consolidated tape in the European topography⁷⁶.

Box 1– Cost projections for a consolidated tape (relevant for Options 1.2, 1.3 and 1.4)

The projected cost for the provider of a consolidated equities tape⁷⁷ (assuming a five year pay-back period range within the following estimates:

Build/Setup costs⁷⁸: EUR 4-12 million = EUR 0.8-2.4 million annually;

lowering transaction costs for investors, particularly retail investors. Another example is the Exchange-Trade Funds (ETFs) that have become increasingly popular with retail investors. The CT would positively affect the supply of ETFs to retail investors.

⁷⁵ The expectation is not that retail investors are going to do the number crunching themselves but that the market data will be used to provide user friendly applications that will allow the retail investor to make better informed decisions.

⁷⁶ All of the cost estimates were required to take into account the following assumptions: (1) The EU consolidated tape has to operate with significantly more contribution venues (150-200) than the three US tapes (22 exchanges each); (2) Physical or cloud-based data-centre space required for the European environment is larger than the US tape model; (3) the U.S. has ~5,000 tradeable securities in a single country while the EU assumption is there are slightly less than 9000 tradeable securities, listed across 27 EU listing venues (the FESE Statistics identify 8800 listed securities across EU27 exchanges, FESE Statistics, last accessed on 9 August 2021); (4) EU Message formats will be required to carry additional data content not necessary for the US tapes (currency, unique venue symbol identifiers, etc.); (5) Larger message formats require additional bandwidth, processing code and storage of the information; (6) Staff levels, diverse language skills needed to facilitate client communications and interactions.

⁷⁷ For the provision of a consolidated equities tape with level 1 quotes/post-trade transactions, made available intra-day within a range of 200 to 300 milliseconds of the quotes/trades being “time-stamped” at the execution venue. Level 1 quotes supply “top of the order book” basic information that, for the most part, is more than sufficient for most investors. These ranges are the result of two separate costed estimates provided to DG FISMA.

Running cost⁷⁹: EUR 7-27 million = EUR 1.4-5.4 million annually;

Total cost: EUR 11-39 million = **EUR 2.2-7.8 million annually.**

The projected cost (assuming a five year payback period for the provider of a consolidated **bond tape/derivatives tape**⁸⁰ would be:^{81,82}

Build/Setup costs: EUR 0.8-7 million = EUR 0.16-1.4 million annually;

Running costs: EUR 6.5-20 million = EUR 1.3-4 million annually;

Total cost: EUR 7.3-27 million = **EUR 1.46-5.4million annually.**

According to the providers of the estimates,⁸³ there are no fundamental difference in the costs of data consolidation between a competing consolidator model and a centralised “hub-and-spoke” model⁸⁴. Differences in cost estimates would rather vary in line with assumptions on the specifications that the tape has to comply with (see Annex 3 for a description of the main cost drivers). The basic requirement for the equities tape is that it will collect, store and disseminate market data within 200 to 300 milliseconds of the timestamp of the execution venue. Data consolidators could be able to achieve additional efficiencies by selecting third party data services, such as ingesting, processing and storing the market data via the cloud.

Speed of delivery was deemed a driver of cost only for with very low latency data feeds and connectivity. The incremental costs of reducing from low to very low latency increases exponentially. But speed would not be a main driver with a millisecond or as close to real-time as technologically possible delivery frame⁸⁵. The main cost driver is connectivity to data sources.

⁷⁸ The build/setup cost contains the following products and services: (1) Technology: setting up dedicated lines and data feeds; (2) Infrastructure cost; (3) Software licensing; (4) Establishment of connections to 170 equity trading venues; and (5) Project and account management.

⁷⁹ Running cost comprise administrative functions of the CTP (controlling data quality, billing tape consumers and sharing back revenues to market data contributors).

⁸⁰ The range of cost estimates is based on separate cost estimates provided to DG FISMA by the following entities: Greenbirch, Ediphy Markets, DXC Technology, NASDAQ, Finbourne. Additional estimates are also presented in the Market Structure Partners study.

⁸¹ The estimate that makes up the higher end of this cost range concerns an intra-day bond tape. Because of many common cost drivers, the estimate is extendable to an equity tape.

⁸² See Annex 3.2 for further details, including real-life costing examples.

⁸³ All cost estimates were provided on the basis of mandatory contributions and harmonised reporting standards. If these conditions were not met, the additional cost of having to conclude over 170 market data licenses for shares alone would make the consolidated tape non-viable.

⁸⁴ For example, one data company (Finbourne) states that the infrastructural set up costs are pretty much the same no matter what model is used. The operating costs would be a function of some of the following elements: AWS cloud storage costs, personnel, offices, administration and some R&D/investment. However, if any model did not contain mandatory contributions, the requirement to pay up-front data licensing fees this would drive up costs as the data providers will either demand an upfront fee or create a situation where large incumbents could use their current position and licensing arrangements with data providers to either 'crowd out' new entrants through a 'race to the bottom' or price the licencing fee at a level that would effectively make a project led by a new entrant unviable.

⁸⁵ This is in contrast to the conclusions by Oliver Wyman, Caught on Tape (October 2021) who estimate that there is a huge cost differential between a 15-minute delayed tape and a real-time tape (€ 50 vs 77

The use of cloud-based data collection would, however, avoid the majority of the cost of connectivity and would support close to real-time delivery. Basing the operation of the consolidated market data on the cloud would align with major investment firms moving their own data collection and processing activities to the cloud. A cloud-based consolidated tape would therefore not only be cheaper than an operation based on physical private networks, but would also be more future-proof.

The cloud was generally deemed as a core element to make market data consolidation viable. The cloud can avoid the creation of dedicated physical infrastructure. Building new physical infrastructure adds unnecessary build and switching cost and would pose a risk to market data consolidation. Cloud-based contribution mandates, harmonized input specifications and a common consolidation and output specification were seen as key factors **reducing the cost** of market data consolidation.

All of the estimates assumed an initial roll out of post-trade followed by pre-trade at least a year later. This is deemed the most cost effective approach. If the tape were limited to only post-trade, then the reduction in overall cost would only be moderate. In the **build phase**, most of the cost is driven from the infrastructure cost (networking, establishing connectivity for data ingestion and the staff costs of on-boarding the data contributors as well as ongoing 'account management' activities. All of these areas have considerable economies of scale that would apply across a pre- and post-trade equity tape but also to different asset classes. In the **operating phase**, networking is again the principle single cost. Data storage would be significantly cheaper for a post-trade only tape, but storage represents only a small part of the total costs. As a rough estimate, the total cost would reduce by 20-30% for a post-trade tape.

Mandating contributions would play a role in reducing the cost of operating a consolidated tape. Receiving core market data from execution platforms under a mandatory contribution scheme would avoid the market data consolidator having to negotiate data licenses with over 170 contributors, reducing the costs and risks associated with consolidating market data.

Remuneration for core market data providers is not considered as part of the operating cost of a consolidated, as market data contributors are remunerated with a share of the profit achieved with the sale of consolidated core market data.

The **break-even point** for competing consolidators depends on the combination of the level of subscription fees and the number of subscribers to the tapes that competing consolidators can achieve in the market for consolidated data. On the basis of a competitive market that would allow for coverage of operating and capital cost only (no remuneration for market data contributors), the following break-even scenarios would apply: Break-even for a market data consolidator with **only professional subscribers** would require the following combinations of subscribers and fees:

million). A large portion of this cost difference is due to assumptions on the cost of connectivity (€ 33 vs 49 million) and third party vendor support (€ 10 vs 20 million).

Scenario	Number of professional subscribers (Number of Investment firms)	Annual fee	Percentage of investment professionals in the Union
1	6 500 (130)	EUR 1 200	2%
2	7 800 (156)	EUR 1 000	2.4%
3	15 600 (312)	EUR 500	5%
4	78 000 (1560)	EUR 100	24%
5	162 500 (3250)	EUR 48	50%
6	325 000 (6500)	EUR 24	100%

In a **mixed professional plus non-professional subscription fee scenario**, a market data consolidator could achieve break-even at even lower levels, for example with only 5000 professional subscribers at EUR 1200/year and 150.000 retail investors (at EUR 12 each). The consolidated tape would therefore break even with 1.5% of investment professionals and 0.03% of potential retail users.

Competition in the market for consolidated data. In terms of maintaining competition in the market for consolidated data, a **professional subscriber** model at EUR 600/year with 100% of investment professionals subscribing would create revenue of EUR 195 million and would support 25 competing consolidators. At EUR 600/year, with 50% of investment professionals subscribing, a revenue of EUR 97.5 million would support 12 competing consolidators. Even if only 25% of investment professionals subscribed to the tape (at EUR 600/year), a revenue of EUR 48.7 million would support six competing consolidators. A mixed professional/non-professional model would yield higher numbers of competing consolidators. The market would most likely support far more competing consolidators as the above figures are based on the conservative assumption that setting up a competing consolidator is a “greenfield” operation in which each competitor has the same set-up and operating cost as a new market entrant that starts a “greenfield” operation (i.e., max. 7.8 million annually). For many of the competing consolidators this will not be the case, as existing self-aggregators and data companies could leverage established infrastructures to enter the market for consolidated market data that is disseminated to the public markets.

The above break-even analysis demonstrates that the number of potential competing suppliers of consolidated market data will increase in line with the revenues to be generated in this market. With increased subscription fee levels, the revenue can increase from EUR 48.7 to almost EUR 200 million. In a competing consolidator model, the additional revenue to be gained from an increased subscriber base will attract new entry, from an initial base of six competitors to potentially 25 competitors. It is, however, unlikely that a “real-life” market would sustain 25 competitors, as a stable price of EUR 600/year will not be maintained in competition. Should market entry occur at levels predicted in the above scenario analysis, the price per user will decrease with the consequence that each competing consolidator model will just cover operating and capital cost. Their individual excess profit will be zero. In consequence, there is an expectation that a competing consolidator model (with discretionary end user pricing) will lead to better (and cheaper) consolidated data products but no expectation that a competing consolidator model can generate excess profit that is allocated back to the data contributors.

Some stakeholders (notably technology and fintech companies) have expressed the fear that the competing consolidator model could actually raise barriers to entry to the market for consolidated data. This is because the mission critical infrastructure to facilitate the secure transmission, receipt and cleaning of the core market data feeds would be technically complex and require highly sought after technical skills to build and maintain. As existing market data providers would have core components of the required infrastructure in place already this would deter new market entrants.

With a competitive field of consolidated data providers the issue of replacing an existing provider would not arise, as several providers deliver competing consolidated tapes, allowing consumers to switch in case one of the consolidated tapes encounters quality of service issues or is priced in an uncompetitive manner. In addition, allowing **self-aggregation** of core market data, either in conjunction with Option 1.2, 1.3 or 1.4, would end up in increased competitive pressure compared to a model that solely consists of competing consolidators⁸⁶.

Other impacts. In terms of social impacts, the competing consolidator option would lead to increased ‘democratisation’ of access to market data. Furthermore it would have impacts of an indirect nature as a consequence of more efficient financial markets. Social impacts can therefore be deemed positive, though difficult to quantify. This option might have negative environmental impacts as reporting market data to multiple consolidators increases the amount of data that needs to be processed electronically. Compared to the exchange consolidation, the consolidation of all market data in one (or more) single tape(s) (option 1.1, 1.2 and 1.4) would have a positive impact on listed SMEs stocks would have a wider visibility than their own local markets and a consequential increase in liquidity.

6.1.3. Impacts of Option 1.3 – exchange consolidators

Data contributors. Standardisation of market data formats for reporting to a consolidated tape will facilitate data contributions to the consolidator listing exchange from other platforms, SIs and APAs; most of the standardisation costs are one off investments (see Option 1.1 above). Market data contributors would be remunerated on the basis of a revenue allocation model chosen by the listing exchanges that consolidate market data pertaining to their own listings.

Data users. With the exchange consolidator model, the national securities exchanges, the alternative trading venues, SIs and OTC traders would report all their trading in shares

⁸⁶ The **regulatory burden** incumbent on ESMA registering competing consolidators and self-aggregators would depend on the number of such entities. The cost of registering competing entities would, however be carried by the registration fees applicable to any data service provider. Therefore, each new applicant would also generate additional fee income appropriate to proceed with the application and ongoing supervision. Compared to the current fully-fledged authorisation scheme for market data service providers, the registration scheme would generate less administrative burden.

listed on an exchange (exchange X) to a central consolidator operated by exchange X⁸⁷. This will lead to several exchange-specific consolidated tapes, with no tape reflective of the entire market. Due to the heterogeneous listing market in the Union, individual exchange-specific consolidated tapes will likely vary greatly in terms of instruments covered, latency and price. A necessary implication in an exchange-consolidator model is that there would be 15 different exchange-consolidators, producing 15 different “listing” tapes covering a total of 8.804 listed companies⁸⁸. Each of the tapes would cover a distinct population of listed companies (one tape will comprise as little as 28 companies while others will cover over 1000 listed companies⁸⁹). Investors wishing to have a consolidated view of the entire market would need to subscribe to the following 15 consolidated tapes as their content would not overlap (there are hardly any dual listings within the Union): (1) Athens Stock Exchange (163 listings); (2) BME (Madrid) (2.642); (3) Bucharest Stock Exchange (83); (4) Budapest Stock Exchange (45); (5) Bulgarian Stock Exchange (257); (6) Cyprus Stock Exchange (106); (7) Deutsche Börse (496); (8) Euronext (1.935); (9) Luxembourg Stock Exchange (136); (10) Malta Stock Exchange (28); (11) Nasdaq Nordics & Baltics (1.152); (12) Prague Stock Exchange (56); (13) Vienna Stock Exchange (814); (14) Warsaw Stock Exchange (791); (15) Zagreb Stock Exchange (100).

Especially **small data users**, such as smaller or mid-tier asset managers, pension funds and investment insurers would be losers with Option 1.3. An exchange-consolidator would, by implication, only provide **a partial view** of the relevant trading markets. Users would still need to assemble a view of the entire Union trading markets by subscribing to 15 distinct consolidated tapes (as there are 15 exchanges listing non-substitutable shares). Due to budget constraints, small data consumers will still have to make a choice and limit the number of data sources (venues and APAs) to which they subscribe. This form of “optimisation” of market data consumption will likely result in less subscriptions to the tapes consolidating the issuances of smaller exchanges in the Union. For example, one budget optimisation strategy would be for a data user to only subscribe to the Euronext, Nasdaq and Deutsche Börse tapes. This would result in market data covering 40% of the most frequently traded Union issuers. While adding the BME tape would bring coverage up to 70% of Union issuers, these cost savings would not show the market data user any

⁸⁷ Apart from the exchanges and alternative trading platforms, data contributors are investment firms (SIs) or market operators who are required to provide pre-and post-trade data relating to transactions taking place on their markets. All market data consolidation options operating a “hub-and-spoke” model would require all market data sources (including APAs and SIs this would amount to around 170 data contributors for equities) to implement new data standards as set by the consolidating venue. Implementation of these new standards will bring about **one-off costs** between EUR 500k and EUR 1 million per contributor. Industry wide this would cost somewhere between EUR 85 and EUR 170 million. Industry-wide **annual market data reporting costs** are expected to amount to between EUR 34 and EUR 67 million.

⁸⁸ Source: FESE Statistics, accessed on 9 August 2021.

⁸⁹ Obviously the bigger exchanges will have more of their shares traded on the above-mentioned alternative trading venues (MTFs) or with SIs.

trading that takes place in ISIN (shares) issued on the remaining 11 exchanges. This would also mean that issuers on those exchanges would face less investment flows and therefore less secondary market liquidity for their issuances.

For an investor that is interested in prices and liquidity of all of the Union's issuers, Option 1.3 will not replace the need for data consumers to subscribe to 15 consolidated data feeds. This option will, with regard to all classes, furthermore not incentivise small data consumers to include new markets in their portfolio because they likely still will not have access to data relating to these markets due to the fact that the impact on the costs of getting the full market picture will be limited.

Large data users, such as electronic market makers, SIs and high frequency traders might, on the other hand, actually benefit from the partial consolidation implied by the exchange-consolidator model. These market participants have the means to obtain a fairly complete overview of the market across all instruments by subscribing to the products offered by the individual exchange-consolidators. This would provide them with an advantage over smaller market participants who cannot subscribe to all the exchange-consolidator feeds. By virtue of their better view of the markets, electronic market makers and the big investment banks can access more markets and more liquidity than their smaller peers. Any investor with multi-market exposure will therefore have to choose to execute trades through one of the big electronic market makers or internalising investment firm. Retail brokers will also have to continue to rely on the bigger firm's superior knowledge of the markets, and will continue to be inclined to route all of their retail orders through the main electronic market makers (payment for order flow). In terms of "winners and losers" Option 1.3 would favour the revenue interest of exchanges, exchange-consolidators and electronic market makers over broadening access to market data for smaller market data users.

Retail investors. The continued fragmentation of market data inherent in Option 1.3 would negatively affect those retail investors invested in a cross-border portfolio of listed instruments. For example, retail investors that invest beyond national borders (i.e., beyond what is listed on their national exchange) would be affected more negatively than those that invest only locally. In addition, it would not be realistic to expect that all retail investors have the financial means would take the necessary steps to subscribe to several tapes to obtain a full picture of prices for all the shares in their investment portfolio, as these portfolios are rarely confined to the listing on a single exchange. For example, it is not realistic to expect a retail trader to subscribe to a Euronext, NASDAQ, BME or Deutsche Börse tape to obtain prices available for a portfolio of shares that comprises shares listed on all of these main exchanges⁹⁰. It is even less realistic if a retail investor

⁹⁰ This aspect is overlooked in a submission of Better Finance of June 2021, where Better Finance advocated that the primary focus for retail investors should be on aggregating trade execution on a national exchange instead of consolidating data from competing execution sources.

also wants exposure to the remaining 11 national exchanges. Option 1.3 will therefore not serve the needs of an even moderately diversified retail investor. Option 1.3 would, on the contrary, favour a myopic view that prevents retail investors from investing across the Union.

Retail investors from smaller markets would not gain insight in the rest of the Union's markets and investors from larger markets would not gain insight in the smaller markets because they would still need to subscribe to these markets in addition to the tape provided by the stock "exchange group" of their 'home' markets. The fact that the tape pertaining to the national exchanges home markets would need to be made available for free within a 15 minute delay is not a remedy as the delayed data is (1) not timely to influence an informed investment decision and (2) not reflective of all liquidity in a financial instrument that is not solely traded on its listing exchange.

From a retail investor perspective, Option 1.3 is therefore not compatible with the creation of a capital market union that benefits also the less sophisticated segments of the market.

Consolidated tape providers. As the above data demonstrates, the exchange-consolidator model will not create a single consolidated view of all shares listed on any one of the EU exchanges. It will most likely result in 15 consolidated tapes, each covering a different population of listed shares. On the other hand, exchange-specific consolidation would provide exchanges with a large degree of control over the parameters of their tapes and the rates at which consolidated data relating to their listings is released to the market. The exchange-consolidator tapes would most likely also look very different in terms of: (1) contributing venues; (2) instrument coverage; (3) latency; (4) message capacity; and (5) performance in term of "uptime" vs "downtime". Essential issues to promote best execution, such as speed of delivery, coverage and quality will need to be addressed by the competitive process and might require potentially very detailed regulation of a consolidated tape provider. In terms of "winners and losers", Option 1.3 favours the listing exchanges, as it entails that exchanges control the operation of the consolidated tapes. This control would enable exchanges to ensure that tape revenue flows back to their order books. As each exchange-consolidator would be able to modulate revenue allocation to favour its own pre-trade quotation data and be granted the power to charge a "dark pool" levy for transactions that were not pre-trade transparent, this would generate revenue, mostly for the larger exchanges, whose shares are often traded under the reference price waiver.

Competition in the market for consolidated data. It would be a difficult process for ESMA to replace a listing exchange in its role as the exclusive data consolidator for the equity instruments it lists. Competition would be the most acute challenge with the exchange-consolidator model. Entrusting the consolidation of core market data to an entity that is also an important data contributor gives rise to conflicts of interest. A large part of the supervision of an exchange-consolidator would therefore focus on preventing or managing conflicts of interests (CoI) when a large data provider is also in charge of

collecting market data from competitors. Policies would need to address how data from competing venues is obtained, remunerated and how harmonised data reporting standards are enforced. A registration or authorisation with ESMA would therefore have to be designed in a way that enables ESMA to determine whether exchange consolidators are in compliance with their CoI-related duties and obligations under the registration or authorisation scheme. Supervising an exchange-consolidator model will, in consequence, be more costly for ESMA than registering independent entities, such as competing consolidators (Option 1.2) or a single consolidator (Option 1.4). Competition issues would also arise because the exchange-consolidator will operate a consolidated tape alongside the listing exchange's own proprietary market data products (that are not centrally supervised).⁹¹ This option furthermore requires the central supervisor to maintain a register of consolidating venues and to police the application of the correct data standards for market data trade execution protocols⁹².

The potential of lower barriers to entry into the market for data consolidation (brought about by standardisation of market data reporting formats) will therefore be largely neutralised by the market power that the exchange-consolidator model provides to the listing exchanges.

Other impacts. In terms of social impact the competing consolidator option would lead to a marginal increase in 'democratisation' of access to market data, as the need to self-aggregate data from several sources is only reduced but not eliminated. Due to the duplication of reporting that an exchange-consolidator model would imply, this option might have negative environmental impacts as reporting to multiple consolidators increases the amount data that needs to be processed electronically.

6.1.4. Impacts of Option 1.4 – single consolidator

Data contributors. Same as Options 1.1 and 1.2, standardisation of market data formats for reporting to a consolidated tape will facilitate data contributions; as with the other options, most adaptation costs are one off investments. Alternative venues (MTFs that offer additional trading in shares listed on an exchange) would benefit from Option 1.4, as more professional and non-professional investors would become aware of the additional execution options they offer. It is likely that the increased Union-wide

⁹¹ See, for example, the following stakeholder statement: "Lack of regulatory enforcement means there is no incentive for venues and APAs to improve quality – on the contrary, most have an incentive to keep the data quality poor to discourage consumption of public data and force consumption of their high margin commercial data products."

⁹² According to a stakeholder submission the absence of enforceable data standards leads to the following consequences: "Raw data quality will only improve once people are looking at the data and a mechanism exists whereby the producers of the data are required to correct identified issues – most producers are ignoring feedback provided by those of us analysing the data."

visibility of alternative venues for executing trades will increase competition, which they could benefit from.

Data users. Same as Option 1.2. In contrast with Option 1.2, market data supplied by the hub-and-spoke model would be slightly less precise and less reflective of the user's geographical location, as the centralised consolidation process introduces additional latency. While not tested in practice, a single consolidator could also employ the more accurate decentralised model to avoid that the prices it displays are not an appropriate reference price for geographically dispersed users.

Retail investors. Retail investor benefits would reflect those described for Option 1.2.

Consolidated tape provider. Break-even for a single consolidator with **only professional subscribers** would reflect the break-even point for each single competing consolidator, as described above. The same applies in a **mixed professional plus non-professional subscription fee scenario**, see above Section 6.1.2 above.

Competition in the market for consolidated market data. The potential of lower barriers to entry (due to harmonised data reports) would only be partially seized, as an exclusive consolidator is appointed, albeit for a limited time period. Essential issues for best execution, such as speed of delivery and quality would therefore need to be addressed by EU supervision and regulation (and potentially require an early re-tender). ESMA would be under the obligation to re-tender the provision of the consolidated tape every five years. ESMA, in its role as the supervisor of the single consolidator, would be empowered to require remedies or to replace the chosen operator of the consolidated tape even before the expiry of the allotted term of exclusivity in case of insufficient quality, non-compliance with service level commitments or monopolistic pricing.

Allowing **self-aggregation** of core market data in parallel to the single consolidator model would have the positive effect to increase competitive pressure on the performance of the single consolidator. Should service quality or speed of the single consolidator deteriorate, market participants could have recourse to self-aggregating core market data for their own internal use. On the other hand, self-aggregation would perpetuate current information asymmetries between well-equipped market participants and those that cannot afford to self-aggregate.

Other impacts. In terms of **social impact**, both Options 1.2 and 1.4 would contribute to democratise the access to market data and thus potentially favour the participation in markets from a larger section of the population. It would also have impacts of an **indirect** nature as a consequence of more efficient and competitive financial markets. Although the social impacts cannot be quantified they are deemed to be positive.

Option 1.4 (along with option 1.1 and 1.2) would furthermore have the benefit that **SME shares** that are listed on only one or a few regulated markets or SME Growth Markets become visible to (non-local) investors and brokers in the Union, without the need to

subscribe to potentially 15 listing-specific consolidated tapes. This increased visibility increases the attractiveness of investments and the possibilities of the shares being included in investment funds or investment portfolios. As a consequence of increased attractiveness of SME shares it could therefore also increase the effectiveness of raising capital for SMEs.

6.1.5. *Impacts of Option 1.5 – concentration rule*

Data contributors. Option 1.5 favours incumbent exchanges alone as it concentrates trading on a single national exchange-operated order book. There would be no other market data contributors. In terms of “winners and losers”, Option 1.5 would favour exchanges over all other market participants, not just data users, but also competing execution venues.

Data users. Trade concentration will provide end users with a good view of only one segment of the market (its listings). From the perspective of data users, Option 1.5 amounts to the same result as Option 1.3, it provides them a consolidated view of a part of the market. The main difference with Option 1.3 is that Option 1.5 provides a **partial consolidation** not of market data but of trading (trade execution) itself.

The downside for data users is that the concentration rule is not comprehensive when it comes to solving for market data fragmentation. The lack of comprehensive coverage would still force data users to piece together a picture of the entire market by subscribing to multiple exchange-specific data feeds. Market data users have not endorsed the concentration model as they believe that this would lead to higher transaction fees and data costs charged by the exchanges and a wider bid offer spread because there would be less choice and competition.

Data users would be losers in Option 1.5, as this option would, in terms of instrument coverage, only provide a **partial view** of the relevant trading markets. They would also be losers in terms of having less choice and higher costs in executing a trade.

Retail investors. Option 1.5 would have the consequence that a larger portion of the trading in financial instruments would take place on the listing exchange, decreasing the need to obtain core market data from other competing execution venues. At first sight, this seems to facilitate access to core market data for retail investors (reduced search costs). But there would still be the various listing exchanges in which the data is concentrated. In order for retail investors, or their brokers, to have an overview of the available liquidity in other shares listed on other markets than the one they are connected to they would still need to subscribe to the data feeds of all the exchanges (no consolidation effect between shares listed on different stock exchanges).

The main disadvantage of Option 1.5 for retail investors is that reduced competition in trade execution is expected to increase exchange fees (transaction costs) and execution spreads would increase back to the levels that existed pre-MiFID I.

Competition. Quality and delivery issues would not be addressed through the competitive process (neither at trade nor at market data level). Barriers to entry will protect the incumbent as market data consolidation is achieved by consolidation of trade execution on a single (listing) exchange. Essential issues around speed of delivery and quality will need to be addressed by national supervision and regulation (and even then will be difficult to address as a trading monopoly cannot be replaced easily)

Other impacts. In terms of social impact the trade concentration rule would lead to some level of increased ‘democratisation’ of access to market data, although at the cost of eliminating competition between execution venues. Due to the fact that trading and data reporting would be integrated, this option might have positive environmental impacts as reporting to external consolidators is avoided altogether.

6.2. Impacts of options to achieve specific objectives 3 & 4

6.2.1. Impacts of Option 2.1 – Mandatory contributions with “minimum revenue targets”

Data users. Data users would be best served by Option 2.1 as, without any statutory floor for subscription fees, it is incumbent on the market data consolidator to design a pricing and subscription model that allows flexibility in how to achieve the legally binding “minimum revenue targets”. This level of commercial freedom would incentivise the market data consolidators the freedom to set differential subscription fees in line with the use that individual subscribers (or categories of subscribers) make of the core market data. It would also allow commercial freedom to design a fee and usage schedule that could generate enough revenue to offer the core market data to retail users at low or no cost.

Data contributors. Depending on the legal enforcement mechanism associated with the “minimum revenue target”, either as part of the data consolidator’s operating conditions (Option 1.2) or as part of the selection process (Option 1.4) data contributors would be remunerated for the mandatory supply of core market data.

In order to establish appropriate levels of remuneration, the operating committee that is tasked with establishing and reviewing the level of the “minimum revenue targets” would have to assess the concerns of potential market data revenue displacement effects to the detriment of listing exchanges that currently derive revenue from the sale of non-consolidated market data. In this context, the operating committee will be tasked with the verification of a series of assumptions: (1) does the consolidated market data feed automatically replace so-called low latency proprietary data feeds of the exchanges or (2) does the consolidated market data entirely or partially replace existing intra-day data non-consolidated data feeds offered by individual exchanges?

The operating committee would therefore have to assess the level of the minimum revenue target in close alignment with the features of current non-consolidated market

data products when compared with the consolidated market data offered by the consolidated tape. The operating committee would need to establish the extent to which the consolidated tape is a substitute for exchange-specific non-consolidated data feeds and whether both products form part of the same or different markets. In order to strike the right balance between the interests of market data contributors and market data users, the operating committee would need to analyse the relevant market both from a demand and a supply side perspective:

Demand for latency. The operating committee would need to establish whether the consolidated tape, even if delivered as close to the execution venue's time stamp as technologically possible, would replace a nano-second low latency proprietary data feed. If the consolidated tape is not expected to displace any exchange revenue from the sale of low latency proprietary data feeds, revenue generated in this market is not displaced and would therefore have to be excluded from the minimum revenue target.

Demand for scope. A large broker or a retail broker active in several jurisdictions would want a view of the entire range of options available for executing a trade in a particular financial instrument (to comply with best execution). On the other hand, a (local) broker highly specialised in executing trades in local small caps would be content with the feed of its local exchange (assuming that small cap listings of that exchange are not traded, or traded to a significant extent, in any of the alternative execution venues).

Product features. Proprietary data products sold by exchanges contain more than core market data. For example, exchange-specific proprietary data feeds contain pre-trade quotation data reflecting several layers of the order book and last sales (transaction) data while the core market data on a consolidated tape would be confined to only the best bid and offer on an order book ("top of book") plus last sale (transaction) data.

Important caveat: As long as none of the above determinations have been made, no forecast as to the precise amount of the required minimum revenue target can be made.

Smaller stock exchanges. In case there would be a **preferential weighting** for thinly traded instruments or a **preferential tranche** for smaller listing venues in the revenue allocation scheme to smaller exchanges, each one of the smaller exchanges would potentially receive a higher percentage of the revenue produced than reflected by the value of their market data contributions. While preferential weighting would "overweight" a lower value contribution vis-à-vis a higher value one, a preferential tranche would work more in the sense of a risk rebalancing in favour of smaller listing venues. As the preferential tranche will be paid out to smaller listing venues before payment is made to bigger ones, the risk of a shortfall in the minimum target revenue is shifted to the bigger market data contributors.

Consolidated tape provider. Option 2.1 is the easiest option for one or several providers of a consolidated tape, as they are free to design their own subscription fee schedules as long as they meet the goal to cover the pre-established minimum revenue target that forms part of their operating conditions. There might be uncertainties for the consolidated tape operator, if the operating committee does not manage to find a consensus on the requirements that need to be verified in order to establish the appropriate level of the minimum revenue target.

6.2.2. *Impacts of Option 2.2 – Mandatory contributions with statutory subscription fees*

Data users. Option 2.2 would be more intrusive in terms of commercial freedom as market data users would be subject to statutory minimum subscription fees. There are two choices: a statutory fee for professional users only or a statutory fee for professional and non-professional users.

Professional market data consumers pay an annual subscription fee, established, and regularly updated, by regulation. The European Union has 6501 registered investment firms⁹³. According to a trade body representing major market data users, Union-registered investment firms have, on average, 50 users. This would amount to 325 000 professional users in the Union (50*6 500). The estimate that there are 325 000 professional users is a rather conservative point of departure as it only counts professionals in registered MiFID firms (on the conservative assumption that there will be 50 per registered investment firm). UCITS management companies, pension fund administrators, AIFM and brokers from third country jurisdictions are not included in this estimate. By comparison the US the CTA Plan reports 5.4 million non-professional subscribers and 290.000 professional subscribers; the professional subscriber figure for the US comprises firms and individual brokers so the actual number of individual users per “professional subscriber” (firm) will be much higher.

If each user paid a monthly subscription fee of EUR 50⁹⁴ (EUR 600/year)⁹⁵, a professional subscription model could generate annual revenues of EUR 97.5 million

⁹³ In the projections, only registered MiFID investment firms are taken into account. However, in several member states asset managers do not trade via a MiFID investment firms. Similarly, pension funds are not MiFID investment firms. Therefore, the projections are deemed to be rather conservative. Finally, it can be assumed that the improved transparency of the EU financial markets 6500 will attract additional subscribers from outside of the Union.

⁹⁴ In a public letter, several of Europe’s most important asset managers and investment firms suggested that access fees to a consolidated market data feed should be no more than €50 per user per calendar month with separate fees for direct access feeds. <https://www.thetradejournal.com/plato-partnership-implores-regulators-to-implement-real-time-single-post-trade-consolidated-tape-for-equities/>

⁹⁵ The € 50 per user/month figure would only apply to a real-time intra-day tape that contains all transactions on any of the Union’s execution platform with a precise time-stamp of the execution platform.

(Scenario 1A). In the alternative, if only 50 % of the registered 6 500 investment firms subscribed to the consolidated tape, Option 2.2 would generate revenues of EUR 97.5 million (Scenario 1B). The same result would apply if the subscription fee would be lowered to € 25 (€ 300/year) for each professional user.

Again, these assumptions are very conservative when compared to the fees applicable for the three tapes (Tapes A, B and C) that currently make up the US consolidated tape. The total cost for professional users in the US comprises a monthly \$ 7500 fixed direct access fee (\$ 3500) and a monthly per user variable fee of \$ 66-92. Data shows that the US consolidated tape revenue pool is around \$400 million each year, and that has been relatively stable over the past decade⁹⁶.

A study commissioned by FESE comes to a comparable result. Participants in a study carried out by Oliver Wyman indicated a willingness to pay a €10–15.000 in annual subscription fee, even for a post-trade 15 minute delayed tape. With around 15,000 trading participants in Europe, Oliver Wyman estimates that a subscription model would result in a potential revenue of €150–225 million⁹⁷. The Wyman study also underlines that the willingness to pay diminishes with a less timely delivery modus: respondents to the Wyman study expressed a willingness to pay € 10-15.000 for a delayed 15 minute post trade tape, while the interviews conducted by FISMA revealed a willingness to pay between € 15.000 and 30.000 (€ 300/600 x 50) per investment firm for a real-time, intra-day transaction tape.

In addition to professional users, 4.5 million non-professional data consumers pay a maximum annual subscription fee data (EUR 1 per month so EUR 12 per year). The Union has approximately 450 million citizens. On the assumption that 1% of the Union's population subscribes to the tape (in the US 2% of the population, i.e., 5.4 million households, subscribe to the US tape at either a monthly fee of \$ 1 or a per-query fee of \$ 0.0075⁹⁸), non-professional subscribers would generate another EUR 54 million in revenue per year (EUR 12 * 1% of the Union population) (Scenario 2A). If only 0.5% of the Union's population subscribe to the tape, the total revenue would be EUR 27 million attributable to retail subscriptions (Scenario 2B).

Data contributors. Regardless of how many consolidators operate in the market, the amount of fees to be generated by commercialisation of a consolidated tape depends on

A consolidated tape delivered with a greater time lag would not give rise to a willingness to pay this level of subscription fees.

⁹⁶ Source: <https://www.nasdaq.com/articles/sip-accounting-101-2021-03-25>

⁹⁷ Oliver Wyman, Caught on tape — A consolidated tape for Europe

⁹⁸ Non-professional and per query fees are usually paid by the end users broker and not by the end users themselves. Source: <https://www.nasdaq.com/articles/sip-accounting-101-2021-03-25>

two factors (1) subscription levels and (2) the (scalable) user fees per subscriber that the regulator establishes. For example, a tape displaying real-time transactions continuously throughout the trading day will generate most subscriber interest whereas an end-of-day tape would generate almost no subscriber interest (section 5.4, footnote 63). In addition, user fees capped at € 25 per user/month will generate less revenue than a consolidated market data feed sold at € 50 per user/month.

The table below summarises potential revenue scenarios from a consolidated tape that charges subscription fees from professional and retail users, comparing a competing vs a single consolidator operating model. The assumptions on revenue to be achieved with a competing consolidator model are extremely conservative, as they are based on the assumption that each competing consolidator would have the same (high) set up and operating cost as a “greenfield” new market entrant (€ 7.8 million). Bases on interviews with data experts, competing consolidators are expected to be large data companies that would be able to leverage existing infrastructure in order to enter the market at much lower cost.

Annual revenue expectations, in EUR millions	Option 2.2 Scenario 1A/2A (best case)	Option 2.2 Scenario 1B/2B (worst case)	Option 2.2 Scenario 1A/2B (intermediate)	Option 2.2 Scenario 1B/2A (intermediate)
Gross revenue/year in EUR million	195+54=249	97.5+27=124.5	195+27=222	97.5+54=151.5
Net revenue with a single consolidator	241.2 (3.13%)	116.7 (6.26%)	214.2 (3.5%)	143.7 (5.1%)
... with two consolidators	233.4 (6.26%)	108.9 (12.5%)	206.4 (7.0%)	135.9 (10.2%)
... with four consolidators	217.8 (12.5%)	93.3 (25%)	190.8 (14.0%)	120.3 (20.5%)

The table above shows a wide variety of outcomes, depending on a modulation of the underlying assumptions. The highest revenue (€241.2 million/year) and lowest operating cost (3.1% of revenue) can be achieved with a single consolidator charging a € 50 per user/month subscription fee, based on the assumption that all firms registered with ESMA will find it useful to subscribe to the tape and a 1% retail subscription at € 1 per user/month. The lowest revenue (€ 93.3 million/year) and highest operating cost (25%) is achieved with four consolidators and only 50% of investment firms and 0.5% of the European population find subscribing to the tapes. Revenue expectations are higher when taking into account additional operators that are not MiFID investment firms, such as UCITS managers and alternative investment fund managers (AIFMs), as well as third country investment firms. Due to the premise that each competing consolidator incurs the cost as if it were a “greenfield” operation (see above), the highest revenue can be achieved with a single consolidator. With a single consolidator operating costs would

vary between 3.1% and 6.26% of expected revenue, which is percentage very much in line with the US experience⁹⁹.

Smaller stock exchanges. In case there would be a **preferential weighting** for thinly traded instruments or a **preferential tranche** for smaller listing venues in the revenue allocation scheme to smaller exchanges, each one of the smaller exchanges would potentially receive a higher percentage of the revenue produced than reflected by the value of their market data contributions. While preferential weighting would “overweight” a lower value contribution vis-à-vis a higher value one, a preferential tranche would work more in the sense of a risk rebalancing in favour of smaller listing venues. As the preferential tranche will be paid out to smaller listing venues before payment is made to bigger ones, the risk of revenue shortfall is shifted to the bigger market data contributors.

Consolidated tape providers. All market data consolidators would be obliged to sell their consolidated market data stream at the statutory subscription fee. Self-aggregators would also have to pay the per user/month statutory subscription fee depending on the number of “internal” users. For a market data consolidator, Option 2.2 would entail additional billing and invoicing effort, although the administration of the statutory subscription fee could be delegated to a separate entity. These administrative costs could be minimised further if by self-aggregators, competing or single consolidators outsource the redistribution of their collective excess revenue pool to a single entity.

6.2.1. Impacts of Option 2.3 – Mandatory contributions with a reference price usage fee

Data users. A “dark pool” fee would dramatically shift the burden of covering the minimum revenue for allocation to market data contributors away from the users of the consolidated tape to the venues that use the reference price waiver to avoid pre-trade transparent order matching.

Data contributors. A reference price usage fee could, on an extremely conservative estimate, generate EUR 230 million (based on an ad valorem levy of 0.1% on 230 billion in annual trades that reference an external price relating to EU ISIN.¹⁰⁰)The table below

⁹⁹ “The data also shows that the majority of SIP revenues are shared back to those providing the actual data in the first place. In fact, we estimate the SIP infrastructure costs at just \$27 million, or 6% of total revenues” SIP Accounting 101, NASDAQ, <https://www.nasdaq.com/articles/sip-accounting-101-2021-03-25>.

¹⁰⁰ According to data made available to DG FISMA by Rosenblatt Securities, post Brexit dark pool transactions conducted under the reference price waiver (RPW) in EU ISIN amounted to roughly EUR 230 billion (2021). The Rosenblatt sample includes a sample of nine major dark pools operating in the Union and might not reflect all trades conducted under the RPW in the Union. These figures are on the

summarises potential revenue scenarios from a consolidated tape that charges a dark pool fee but no additional subscription fee to market data users.

Gross revenue/year (EUR million)	230
Net revenue with a single consolidator	222.2 (3.3%)
... with two consolidators	214.4 (6.78%)
.... With four consolidators	198.8 (13.5%)

The table above shows that even a moderately priced “dark pool” fee has a significant revenue generation capacity and would allow the consolidated tape to be offered to users at cost of production, which can result in subscription fees as low as EUR 24 up to a maximum of EUR 1200/year per investment firm (see break even analysis in Section 6.1.2). In terms of “per user fees” Option 2.3 would therefore allow annual fees of EUR 0.50 up to a maximum of EUR 24, while still producing more around EUR 200 million in revenue for allocation to exchanges.

Smaller stock exchanges. As Option 2.2., as the amounts for distribution to market data contributors would be roughly the same.

Consolidated tape providers. As Option 2.2. with a slight advantage that the administration of the dark pool fee can be more easily separated to a specialised entity that would centralise all the dark pool trading reports, including the collection and distribution of the proceeds.

7. HOW DO THE POLICY OPTIONS COMPARE?

7.1. Options to address specific objectives 1 & 2

Option 1.1 – self-aggregation. Depending on the ability of enforcing adherence to the mandated reporting standard, Option 1.1 is efficient at improving market data quality (specific objective 1). Self-aggregation is also a very efficient tool to facilitate market data consolidation (specific objective 2). Its main drawback is that the market data consolidation will not directly benefit market participants other than those that have the means to self-aggregate. Only the self-aggregator and its clients of will benefit from the enhanced view of liquidity in the market that self-aggregation provides. Self-aggregation would therefore perpetuate existing information asymmetries. Option 1.1 would therefore fall almost completely short of achieving the general objective of reducing liquidity and trade execution risk across the wider market.

conservative side when compared to ESMA’s assessment. The ESMA Annual Statistical Report 2020 states that equity trading volume in 2019 amounted to 28.6 trillion in 2019. According to ESMA, dark pool trading amounted to 8% of this amount (8% * 28.6 trillion = 2,288 trillion). The levy is calculated on the more conservative assessment as the ESMA data also contains large-in-scale and other pre-trade transparency waivers.

Option 1.2 – competing consolidators. Depending on the ability of enforcing adherence to the mandated reporting standard, Option 1.2 is efficient at improving market data quality (specific objective 1). Competing consolidators are also a very efficient tool to facilitate market data consolidation as well as the precision and accuracy of the consolidated data provided (specific objective 2). The main advantage for Option 1.2 is that it operates a decentralised (direct) consolidation model. The decentralised model cuts out the central data hub, which saves transmission time. This means that each subscriber sees the data from its own geographical perspective which cuts out the argument that the tape shows ‘phantom liquidity’.

Another advantage of Option 1.2 (compared to Option 1.1) is that consolidated market data will be provided to a wider range of market participants and will have wider benefits in reducing information asymmetries than Option 1.1. On the other hand, the population of potential self-aggregators (electronic market makers (high-frequency trading firms) or incumbent market data companies that have the capacity to become self-aggregators) will also produce the most likely candidates for the provision of competing consolidated tapes, thereby entailing a slight risk that the market for consolidated data will be captured by incumbent operators or their affiliates, not leaving space for new entrants. Option 1.2 would therefore be effective in terms of achieving the general objective of reducing liquidity and trade execution risk across the board, but potentially less so at attracting new entrants in the market for consolidating market data.

Option 1.3 – exchange consolidator. Depending on the ability of enforcing adherence to the mandated reporting standard, Option 1.3 is efficient at improving market data quality (specific objective 1). Exchange-consolidators would, however, not be an efficient tool to facilitate market data consolidation (specific objective 2). The above impact analysis shows that Option 1.3 achieves only a very limited degree of market data consolidation. A full view of liquidity in all Union listings still requires access to 15 separate consolidated data products (each representing a different population of financial instruments). This means that 15 data licenses need to be negotiated separately with individual price negotiations, as not all consolidated data flows are of comparable economic importance. Option 1.3 is also not efficient in ensuring that consolidated market data remains of the highest possible quality and is provided at the lowest possible price. Option 1.3 entails a strong risk that a sub-optimal consolidator cannot be replaced easily. Option 1.3 would therefore not be very effective in achieving the general objective of reducing liquidity and trade execution risk across the board.

Option 1.4 – single consolidator. Depending on the ability of enforcing adherence to the mandated reporting standard, Option 1.4 is efficient at improving market data quality (specific objective 1). A single consolidator for all Union listings is also a very efficient tool to facilitate market data consolidation (specific objective 2). The main advantage of Option 1.4 (compared to Option 1.1) is that consolidated market data will be provided to the entire market participants and will therefore benefit a wider range of market participants than Option 1.1. A slight disadvantage of Option 1.4 (compared to Options 1.1 and 1.2) is that an exclusive provider of consolidated market data might be less

inclined to upgrade the consolidation infrastructure as new technologies become available. On the other hand, this slight disadvantage could be mitigated by means of the competitive tender process that designates a single and exclusive provider of the consolidated tape for a defined “concession period” (5 years). By virtue of the tender, Option 1.4 could be more effective in attracting entirely new innovators to the market for consolidated data: a competitive tender could be a tool to mitigate the risk that established data companies leverage current their infrastructure advantage into the new market for consolidated data. Option 1.4 would therefore be effective in achieving the general objective of reducing liquidity and trade execution risk across the board, but very effective in attracting innovative new market entrants.

Option 1.5 – concentration rule. Option 1.5 is not effective at improving market data quality (specific objective 1). Concentrating trading on a single “listing” exchange does nothing to improve data reports. A concentration rule would, as Option 1.3, only achieve a very limited degree of market data consolidation. A full view of liquidity in all Union listings would require access to 15 separate proprietary data products (each representing a different population of financial instruments). This means that 15 data licenses need to be negotiated separately with individual price negotiations, as not all consolidated data flows are of comparable economic importance. Option 1.5 would therefore not be effective in facilitating market data consolidation (specific objective 2). Option 1.5 is also not efficient in ensuring that market data remains of the highest possible quality and is provided at the lowest possible price. This is because Option 1.5 entails a strong risk of a trading monopoly which automatically also leads to a monopoly in market data. Option 1.5 would therefore not be very effective nor efficient in achieving the general objective of reducing liquidity and trade execution risk across the board.

7.2. Options to address specific objectives 3 & 4

Option 2.1 – Mandatory contributions with “minimum revenue targets”. Option 2.1 is very effective and the most efficient option in order to facilitate market data licensing as, at least core market data, would be made available to all types of consolidation ventures at the lowest possible cost (specific objective 3). Option 2.1 is therefore also very efficient, from the market data consolidator’s perspective, at creating a business case for consolidation of market data (specific objective 4). Depending on the appropriate calibration of the minimum revenue targets, Option 2.1 ensures that the consolidated tape “ecosystem” remains sustainable in the medium to long-term, as the expected revenue participation for contributors of core market data creates an incentive to invest in maintaining data quality standards. An appropriate revenue generation and revenue allocation model would therefore ensure that the intended improvement of market data quality (specific objective 1) is maintained in a sustainable fashion. A slight downside of Option 2.1 is that it would be very complex to administer and enforce a minimum revenue target across several competing consolidators. Option 2.1 would therefore set in motion a trend toward selecting a single consolidator (Option 1.4).

Option 2.2 – Mandatory contributions with statutory subscription fees. Option 2.2 is effective, but less efficient than option 2.1 in order to facilitate market data licensing (specific objective 3). While core market data would still need to be made available to all types of consolidation ventures, there would be the need to administer a statutory subscription scheme to generate income, mainly from professional end users. On the other hand, as end user subscriptions fees would be mandated by regulation, Option 2.2 remains effective at creating a business case for consolidation of market data that works both for the consolidator and the market data contributors (specific objective 4). A further efficiency advantage of a generally applicable subscription fee is that it would allow for either competing consolidators (Option 1.2) or a hybrid of a single ingestion infrastructure and competing data publishers that access the single (cloud-based) infrastructure to procure data for dissemination – as all competing market data publishers would have to respect the same subscription fee.

Option 2.3 – Mandatory contributions and a reference price usage fee. Option 2.3 is very effective, in order to facilitate market data licensing (specific objective 3). If the reference price usage fee is calculated as a monthly or annual flat fee, administration of this additional revenue source is just as efficient as the administration of the subscription fee. Additional efficiency gains can be obtained by separating the market data consolidation function from the administration of the reference price waiver usage fee. This would imply that Option 2.3 is at least as efficient in administrative terms as Option 2.2. Option 2.3 would be most effective at ensuring the broadest possible access to core market data at very low cost (cost of consolidation), but at the price of instituting a “cross-subsidy” from the operators of “dark pools” to the wider community of market data users and listing exchanges.

8. PREFERRED OPTION

When it comes to **market data consolidation**, Consolidation Options 1.3 and 1.5 should be discarded as they are not effective in facilitating market data consolidation across all relevant trade execution markets. Consolidation Option 1.1 should also be discarded as it does not generate a consolidated market data product that is made available to public markets (it is an “in-house” aggregation tool).

In terms of achieving optimal combination ensuring high market data quality and timely delivery, the competitive tender process on Option 1.4 is the most appropriate method to ensure competition for the new market of **establishing the essential infrastructure** necessary for market data consolidation. On the other hand, many of the positive features of Option 1.2 can be maintained by creating a new “downstream” market for market **data publication** and data advanced analytics, a market that is open to competition. These would be the procedural steps necessary to achieve the optimal combination of Options 1.4 and 1.2:

A competitive tender will determine the data collection, **storage and dissemination infrastructure**. This infrastructure will be tendered as it is “mission critical” to ensure

the secure transmission, receipt and cleaning of the core market data feeds. The successful bidder will build and maintain this “ingestion infrastructure” (preferably using cloud-based technologies). This entails responsibility for the build and maintenance of the connectivity between the CT and the market data contributors, receiving data, screening data for errors, consolidating the data into a single stream (Section 6.1.2, Box 1 provides estimated of the set-up and operating cost for such an infrastructure).

In a second phase, there can be competing **core market data publishers**. These (competing) entities take the core market data from the infrastructure builder and publish a consolidated tape. They may also add value to the core market data they obtain from the infrastructure through the provision of data analytics.

In this two-step compromise between Options 1.4 and 1.2, the competitive tender process ensures that barriers to entry relating to the mission critical infrastructure are kept low. A competitive tender for the mission critical “ingestion infrastructure” would best ensure that this technically complex infrastructure (in terms of security, regulatory requirements, latency and number of connection points to be established) is awarded to the best provider available. A competitive tender would ensure that existing data providers that have components of the infrastructure required in place already would not be able to deter new market entrants. A single ingestion infrastructure with resilience built in (Option 1.4) would therefore be the most economical and practical option¹⁰¹.

Once the data has been ingested the dissemination of core market data would not necessarily have to be done by the infrastructure CTP (although it could initially). Market data publication could be an activity left open to market forces (Option 1.2). For example, the core market data could be used to form market-wide asset pricing or used to draw other inferences with a richer dataset. This market data analytics activity will attract innovative start-ups and we expect the availability of consolidated core market data from the CTP to accelerate competition (new products) in this “downstream” market.

The policy preference on **market data consolidation** therefore is: (1) the creation of an utility backbone for the consolidated tape selected through a competitive tender (Option 1.4) and (2) the opening up of the market data publication market to several competing providers that tap into the data assembled by the utility provider. The first tender would be for the build and initial run of the (preferably cloud-based) infrastructure. When the initial concession comes to an end after five year a new tender process should choose a supplier to continue the maintenance of the infrastructure. Steps 1 and 2 can be concurrent or take the form of a later phase-in of step 2.

¹⁰¹ While this impact assessment has identified some benefit in having more than one version of the “ingestion infrastructure” (Option 1.2), there are major disadvantages associated with this option as well. Multiple suppliers of competing infrastructures would add complexity to the process. Market data contributors would have more consolidators to engage with and the cost of all the additional infrastructure would, in the end, be passed on to market data users, increasing the cost of market data.

When it comes to the preferred choice for **market data licensing arrangements**, Licensing Option 2.1 is the least intrusive on the consolidator’s business model, while ensuring a revenue stream in line with that that can be generated with either Options 2.2 or 2.3. When compared to the complexity of setting individual subscription fees centrally, Option 2.1 allows for more commercial freedom in establishing and revising subscription fees. The same is true when competing Option 2.1 with Option 2.3.

The policy choice on **market data licensing** would therefore be a licensing model that maximises the sources of licensing income with the aim to create a commonality of interest between market data providers and market data consolidators. This can best be achieved by setting a minimum revenue target for all types of market data consolidators, either as part of their operating conditions or as part of the tenders to select a single provider of the consolidated tape. Licensing Option 2.1 is therefore the chosen option.

The **overall policy choice** therefore is the organisation of an open tender for the establishment of an utility backbone for the consolidated tape selected through a competitive tender (Option 1.4), combined with a non-intrusive commercial licensing model that establishes a minimum revenue target to be met by the operation of this infrastructure (Option 2.1).

9. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?

Monitoring of the evolution of the Union’s market for consolidated data will comprise both the evolution of operating models used to consolidate market data and the success of the preferred market data licensing arrangements:

Monitoring of :	The market for consolidated data	Consolidated market data licensing arrangements
Market data users	<ul style="list-style-type: none"> - How many providers of consolidated market data products have emerged? - Which markets are covered by a consolidated market data product? - If there is no consolidated market data product for a particular market (e.g., equities) what are the reasons that such a product has not emerged? - How accurate and timely are the consolidated data products on offer? - Has self-aggregation served as a competitive constraint in the market for consolidated data? - Is there a measurable reduction in implementation shortfall (slippage) post making available of a consolidated market data product? <p><u>Source:</u> EC survey of buy-side users & ESMA statistics on registered consolidated market data providers</p>	<ul style="list-style-type: none"> Has a single & scalable “per user” subscription fee emerged and been successful with market data users? How many data users have decided to subscribe to a consolidated view of the Union’s capital market? How many market data users have subscribed to an equities tape? How many market data users have subscribed to a bond tape? How many market data users have subscribed to a derivatives tape? <p>Source: EC or ESMA market data user survey</p>
Market data	How are the mandatory contributors of market data remunerated?	Has a single & scalable subscription fee for consolidated market data produced

contributors	<p>Has the emergence of several, competing consolidators been detrimental or beneficial for the levels of remuneration achieved by market data contributors?</p> <p>Source: EC or ESMA market survey</p>	<p>the expected revenue for market data contributors?</p> <p>Has the reference price usage fee led to the expected increase in revenue allocations to market data sources?</p> <p>Has the reference price usage fee led to an increase of trades that are executed on pre-trade transparent order books?</p> <p>Source: EC or ESMA market survey</p>
Market data consolidators	<p>Has the market for consolidated market data remained contestable?</p> <p>Has there been competition in the market for consolidated data or have economies of scale (also due to the chosen data licensing options) resulted in a single provider or in an oligopolistic market structure?</p> <p>Source: EC (COMP) survey</p>	<p>Has the administration of a single & scalable subscription fee proven relatively straightforward for the consolidated data providers to administer?</p> <p>If not, what administrative obstacles have emerged?</p> <p>Has the administration of a reference price usage fee proven to be feasible?</p> <p>If not, what administrative obstacles have emerged?</p> <p>Source: ESMA</p>
SME issuers	<p>Is there (post introduction of a consolidated view of trading markets) an increase in investment flows to SME issuers?</p> <p>Source: EC survey of asset managers and SME trade associations</p>	

10. ANNEXES

ANNEX 1: Procedural information

1.1 Lead DG, Decide Planning/CWP references

Lead DG: FISMA

Decide planning: PLAN/2019/6173

CWP reference 2021: Annex I initiative No. 14. c)

1.2 Organisation and timing

The IIA and public consultation were published in Q1 2020 with the initial goal to come forward with a legislative proposal in Q4 2020. However, due to the Covid-19 crisis, a Recovery Package was deemed necessary, including certain areas on MiFID. After the finalisation of the Recovery Package in December 2020, the IA specifying the changes in MiFIR was finalised for submission to the RSB in June 2021.

During the whole phase, six ISSG meetings were held on 12 December 2019, 2 March 2020, 23 March 2021, 13 April 2021, 12 May 2021 and 11 October 2021. DGs that participated in the ISSG are: AGRI, CLIMA, CNECT, COMP, ECFIN, ENER, GROW, JUST, SG, SJ, TAXUD, and TRADE.

1.3 Consultation of the RSB

The RSB delivered its second (positive) opinion with reservations on 8 October 2021. In its opinion the RSB requested the following clarifications:

<p>(1) The report should better explain the degree of relevance of the problem for different types of investors and intermediaries.</p>	<p>The report clarifies that the problem of market data fragmentation/access to core market data is extremely relevant for professional investors (asset and portfolio managers) who need to manage intra-day liquidity and trade execution risk. The second stakeholder group directly affected are executing brokers (investment firms) that, in the absence of reliable market data, often find it difficult to prove compliance with best execution to their (retail) clients. The third group affected are retail clients who have no view of the overall market in order to hold their brokers accountable for best execution.</p>
<p>(2) The report should better clarify the</p>	

functioning of some of the proposed options:	
(i) The report should explain why it considers that competing consolidators would only offer decentralised consolidation and why a single consolidator would necessarily apply centralised consolidation. It should also better explain the possible role of cloud-based consolidation.	(i) The report clarifies that it is not impossible for a single consolidator to operate a decentralised model and Option 1.4 is amended accordingly [Section 5.2.]. As explained in the box on cost estimates for the establishment and provision of a consolidated tape (Box 1), the cloud is a storage medium for data and in only a very minor part of these data consolidation costs.
(ii) The report should better explain that self-aggregation is not considered as a feasible self-standing option, but that it would co-exist with a single or competing consolidator(s). It should clarify whether self-aggregators would have to pay data access fees, although the data contributors would always be obliged to provide the data.	(ii) The report explains that self-aggregation is not a desirable stand-alone option as it does not produce a consolidated market data product for market participants other than the self-aggregator (it is confined to in-house use) [Section 7.1]. Self-aggregation can, however, serve as an accompanying measure to any of the other consolidator options (Options 1.2, 1.3 and 1.4) as it provides an alternative to the potentially monopolistic data streams offered by exchange consolidators or a single, exclusive consolidator.
(iii) The report should clarify that the consolidated tape providers would be legally obliged to distribute revenues in excess of their costs to data contributors. It needs to specify how this would work in practice.	(iii) The report clarifies that all forms of market data consolidators would be subject to a legal obligation to allocate revenue in excess of their operating cost to market data contributors. In practice this means that every market data consolidator has to determine its operating cost and cost of capital and then allocate excess revenue from the sale of the tape back to market data contributors in accordance with the legally mandated value-based allocation method [Section 5.3].
(iv) The report should clarify what will happen with the existing free data provision after 15 minutes.	(iv) The report clarifies in several places that the existing 15 minutes delayed data provision remains in place for non-consolidated data. Whenever this was clarified in a footnote, it has been moved to the main text.
(3) The report should consider and analyse all relevant options. This should include exploring the feasibility of a hybrid option that combines competing consolidators with the possibility for the supervisor to	The report clearly opts for a phased approach, giving initial preference to competing consolidators. If this model should not work in practice (and the result may be different for shares vs bonds), then

organise a competitive tender when there is a lack of effective competition.	ESMA would be tasked with organising a competitive tender to select an exclusive consolidator for a limited time period [Section 8].
(4) The report should improve the impact analysis:	
(i) The report should demonstrate the robustness of the estimates of the revenue of a consolidated tape and how the level of the usage fees was determined.	(i) The report clarifies the robustness of estimates on possible revenue of a consolidated tape has been tested with potential users of the tape and that this market-testing has revealed that the revenue estimates can only be achieved with a real time intra-day tape. The reports also cites relevant (public sources)[Section 6.1.2]
(ii) The report should analyse the excess revenue that could be generated by a single consolidator when there is no statutory contribution for the use of the consolidated tape.	ii) The report, in Option 2.1 states clearly that no excess revenue can be expected when the operator of any of the options for a consolidated tape is not subject to a statutory subscription fees and the statutory revenue allocation scheme. [Section 6.1.2].The report clarifies that both the self-aggregators, competing consolidators and the single consolidator would need to be bound by a statutory minimum subscription fee in order to generate revenue to be distributed to market data contributors
(iii) The report should analyse the costs for ESMA of managing and supervising the system under the different options.	(iii) The report clarifies that ESMA's cost of supervision comprises registering market data consolidators and developing the technical standards on harmonised core market data reporting to the tape. The cost of registration: (EUR 20 000 for a market data consolidator) will be borne by the applicant. While the development of technical standards on market data reporting is a core competence for ESMA, the report points out that the cost of registering competing consolidators would increase with the numbers of entities that need to be registered, but this would be neutral on the ESMA budget as the cost is borne by the applicants.
(iv) The report should re-assess the relative performance on market access of the options with a single consolidator and with competing consolidators.	(iv)the report clarifies that market access for new (fintech) start-ups might at first sight be better served with a model of competing consolidators, but acknowledges that this model would also provide a strong incentive for incumbent market data

	companies to gain control of this emerging market [Section 8].
(5) The report should draw clear conclusions from its analysis to support the decision-making process. It should better establish the strengths and weaknesses of the combinations of options and of the two scenarios for the fees for private use of the consolidated tape by retail clients.	The report clarifies that all options on the operating model for market data consolidation, whether a single consolidator or multiple consolidators, would need to respect the policy choice on how to remunerate market data contributors. The report expresses a clear preference for a competing consolidator model that is, however, associated with an equally clear need to respect a statutory subscription fee with mandatory allocation of excess revenue back to market data consolidators [Section 8]. While this revenue model will entail monthly fees of potentially € 50 per professional user, the report clarifies that retail clients will obtain access to the consolidated tape at a preferential fee not exceeding €1/month [Section 6.2.2].
(6) The report should present the views of different stakeholder groups on the revised problem description and options.	DG FISMA consulted five stakeholder groups on the initial and revised problem description: 1) stock exchanges, 2) alternative trading venues, 3) asset managers, 4) executing brokers, and 5) market data companies. Stock exchanges stressed the lack of market data quality, especially data delivered by investment banks (SIs) and put less emphasis on market data licensing. Alternative trading venues stressed the need to improve overall market transparency and best execution for professional clients. Asset managers and executing brokers stressed the aspects on liquidity and execution risk management and the lack of clarity on where to locate liquidity to execute their orders. Data companies stressed the impossibility to consolidate market data due to what they perceive as insurmountable market data licensing obstacles. , Most stakeholders, with the exception of stock exchanges, advocate for a real-time transaction tape. They are relatively neutral on how many consolidators are in the market. Small data companies like the competing consolidator model (as they perceive this as an easier path to market

	<p>entry), while the bigger data companies (and some of the smaller companies) would prefer the single consolidator model as it provides them with exclusivity. For end users (asset managers, brokers) the specific features of the tape operating model are not that important.</p>
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1.4 Evidence, sources and quality

DG FISMA has benefited from multiple external sources. First, the Expert Group of the ESC was involved to hear Member State views. Multiple stakeholder meetings, both with industry, trade organisations and supervisors took place in order to receive evidence. Both the public consultation held in Q1/Q2 2020 and the ESMA review reports received in 2020-2021 provided additional input for the IA. Further the Commission performed a study, and two workshops, on the development of a consolidated tape. MSP delivered this study for DG FISMA, which can be found at <https://op.europa.eu/en/publication-detail/-/publication/82763219-1cbe-11eb-b57e-01aa75ed71a1/language-en/format-PDF/source-169654830>.

ANNEX 2: Stakeholder consultation

The consultation activities of the Commission with regard to the review of MiFIR has centred on the organisation of a workshop and a public consultation. They are presented in more detail in section 2.1 and 2.2 below. Beyond these, the Commission has been actively studying the issue at hand, mandating an extensive study for assessing and defining it ex-ante, with the final goal of supporting an informed decision-making process. Finally, DG FISMA staff has had many bilateral contacts with a broad spectrum of stakeholders in order to further refine its analysis and policy approach.

2.1 Workshop

On 28 June 2019, the Commission organised a workshop intended to engage stakeholders on an interactive discussion about the creation of an EU consolidated tape, bringing together around 80 market participants to debate the merits and technical characteristics of an EU CT, as well as the obstacles to its creation. The participants were experts in trading or market data from the buy-side, data vendors, trading venues, and on the regulatory side, ESMA and several NCAs. Generally, participants of all types agreed that such a tool could be useful, even if there were different views as to the characteristics of a tape.

The workshop focused around two main topics:

1) The first working session discussed the different users' needs that the EU consolidated tape should serve, together with its intended use, functionalities, scope, and associated data quality and best practices. Market participants agreed that no consolidated tape provider (CTP) has materialised yet, despite MiFID II provisions and arrangements for its creation, due to the geographically dispersed fragmentation of EU trading venues and lack of data standardisation, making it difficult the development of competing consolidation initiatives.

Several stakeholders noted that there should be mandatory use of the CT in order to provide economic incentives for its creation. There were diverging views as to what the market coverage should be and whether there are merits in having almost 100% market coverage.

The participants were in agreement that the starting point of the tape should be post-trade data. There was overall consensus among the participants that a post-trade equity tape would provide significant added value if the tool provides a high-quality consolidated view on the venues, volumes and prices equities are traded at. In general, participants agreed that a CTP could bring value for asset classes other than equity, including ETFs, fixed income and derivatives. Out of these non-equity instruments, participants saw most urgency for fixed income.

Regarding its functionalities, most participants indicated that a consolidated tape would be used for evaluation of post-trade best execution. Some argued that even a post-trade tape could be used for trade execution and making informed trade decisions. Some participants want the tape to be as close to real-time as possible to add most value, with fragmented opinions from the actors involved.

Most participants see data latency as an important issue. However, poor data quality and inconsistency are considered even more important problems to be tackled first.

With reference to the creation of a non-equity CTP, participants cited the following as obstacles that need to be overcome: (i) data quality needs to be improved along the chain of transmission (venues, Approved Publication Arrangements-APAs), (ii) errors in reference data such as in FITRS and FIRDS (CFI codes especially), (iii) data deferrals on the post-trade, which are applied differently across Member States, (iv) lack of moderation in the number of data fields that should be reported to the CTP. On debating on the data quality to be deployed for ensuring a useful CTP, the panel delved into the use of Market Model Typology (MMT) as foundation system for the CTP. There is consensus among participants that someone needs to be responsible for the data quality. ESMA is deemed to be best placed for the oversight of data quality.

2) The second working session delved into the optimal design of the EU consolidated tape, discussing the operational design, the technical architecture, its governance model and the issues associated with data quality. The consolidated tape should be industry funded, in particular by the users. There should be a standardised, simple pricing model (several participants favoured a cost-plus model). The consolidated tape should create the least possible cost to the financial system. On remuneration for providing data to the tape, data vendors suggested that the system should remunerate for valuable contributions and/or price formation, and possibly allow to fine participants that would “pollute” the system. Regarding the accessibility to the tape, the discussants were sceptical about the service being free of charge, considering that creating and operating the consolidated tape will require significant investment.

In addressing the technical aspects associated with the tape, a large majority of participants favoured one or more private entities to act as CTPs. The main arguments were efficiency, innovation and quality improvements. A few participants preferred a public utility and argued that there should not be any rent extraction because a CT is a (quasi)-public good. There was a general consensus amongst participants that the envisioned CTP (or CTPs) should operate on a cost-plus approach. Several stakeholders supported the idea of tendering out the CT provision with regular renewals every 3-10 years. Exchange operators argued that the set up costs would be too costly for providers if they could not rely on acting as CTP provider for a longer period of time. Users noted that implied technical challenges are actually not very expensive to overcome (figures noted for set-up costs: € 5-20 million).

In terms of governance, although no consensus appeared on the structure to be implemented, it was generally argued that all market participants should be

represented/take part in the decision making process in order to ensure that the CT remains “neutral”. The governance should depend on the use case, mandatory use and mandatory contribution. There was no clear consensus as to how many CTPs there should be. Several participants encouraged the EC to find a solution that would enable real market driven competition amongst multiple CTPs.

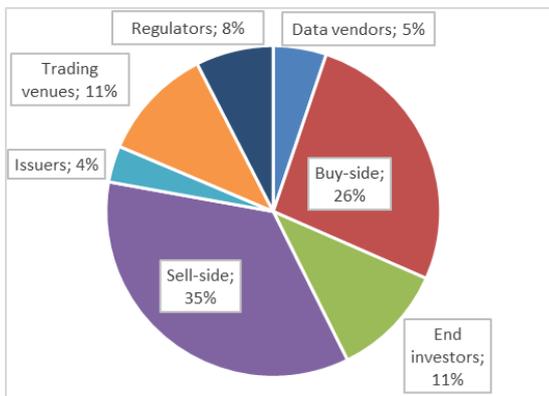
In considering whether pure OTC and SIs data should be included in the CT, stakeholders view the inclusion of pure OTC and SIs data as a key element of a successful post-trade tape. The table agreed that only the price forming flow of trades is relevant. It was noted that as long as non-addressable liquidity is not reported to the tape, this may act as an incentive to keep some liquidity non-addressable. According to some participants, it should be up to industry to come up with a suitable distinction between the two and a way forward.

In addressing in further detail the issue of data quality, market participants commended MiFID II for lifting the veil on the lacklustre quality of trade data. In respect to this, participants agreed that a CTP would not be the answer to Europe’s data quality issues. Rather, improving data quality is the precondition for having a functioning CTP. There is however a point in the process where data is of sufficient quality and can be improved further by putting it out there for public scrutiny, subject to the requisite disclaimer that it is a work in progress.

2.2 Public Consultation

On 17 February 2020, DG FISMA published a public consultation on MiFID/R review intended to gather evidence from stakeholders, and more generally from EU citizens, on the overall functioning of the regime after two years of application. Stakeholders had until 18 May 2020 to express their views via the online EU Survey portal. The CT was a prominent topic of such public consultation. 458 stakeholders replied to the open consultation. This feedback statement provides a factual summary of the 253 unique responses received during this period coming from sell side, buy side, trading venues, data providers, end users as well as regulators.

Respondent’s main activity



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I. Current state of play

The reasons why an EU consolidated tape has not yet emerged: reasons ordered from highest to lowest in terms of respondents' perceived importance (fully agree & rather agree vs disagree & rather not agree; neutral in brackets):

1. Lack of financial incentives for the running a CT: 102 vs 5 (11)
2. Lack of sufficient data quality, in particular for OTC transactions and transactions on systematic internalisers: 89 vs 19 (11)
3. Competition by non-regulated entities such as data vendors: 66 vs 21 (29)
4. Overly strict regulatory requirements for providing a CT: 56 vs 16 (44).

The majority of respondents identified the lack of financial incentives for running the CT and the lack of sufficient data quality (in particular for OTC and SIs transactions) for being the reasons why an EU consolidated tape has not emerged under the current consolidated tape framework as defined by Article 65 of MiFID II.

Use cases ordered from highest to lowest in terms of respondents' perceived importance (fully agree & rather agree vs disagree & rather not agree; neutral in brackets):

1. Documenting best execution: 77 vs 17 (19)
2. Transaction cost analysis (TCA): 67 vs 22 (19)
3. Market surveillance: 64 vs 26 (21)
4. Making market data accessible at a reasonable cost: 64 vs 28 (15)
5. Identify available liquidity: 58 vs 35 (15)
6. Ensuring best execution: 54 vs 39 (17)
7. Portfolio valuation: 50 vs 19 (36)

8. Better control of order & execution management: 49 vs 34 (26)
9. Liquidity risk management: 45 vs 26 (27)
10. Regulatory reporting requirements: 42 vs 30 (35)

Many respondents identified the EU consolidated tape as the integral mechanism for delivering the Capital Markets Union and increasing the efficiency of EU financial markets since more symmetric information ensures that shifts in supply and demand are more efficiently reflected in current price levels, improving the price discovery process and allowing for an efficient capital allocation and a decrease in the level of fragmentation of the EU capital markets. Other use cases pointed out by respondents:

- Order routing, ensuring that trades are made in the correct size and right price;
- Boost retail participation in European markets, particularly across instruments such as ETFs, for which there is currently little retail adoption compared to other markets like the U.S., where the ETFs market represents a key part of the retail equities trading alternatives;
- Provide clients (retail and small/medium firms) with comprehensive data to challenge their service providers.

II. General features of the consolidated tape

Features ordered from highest to lowest in terms of respondents' perceived importance (fully agree & rather agree vs disagree & rather not agree; neutral in brackets):

1. High level of data quality: 115 vs 6 (3)
2. Mandatory contributions: 97 vs 5 (13)
3. Strong governance framework: 97 vs 8 (10)
4. Very high coverage (not lower than 90% of the market): 75 vs 25 (7)
5. Full coverage: 64 vs 40 (14)
6. Real-time (minimum standards on latency): 61 vs 30 (22)
7. Single provider per asset class: 38 vs 30 (34)
8. Mandatory consumption: 23 vs 72 (17)
9. The existence of an order protection rule: 17 vs 51 (27)

The majority of respondents pointed out that a high level of data quality, mandatory contributions, strong governance framework and a very high coverage are all critical features for a successful implementation of an EU consolidated tape.

With regards to the level of quality, respondents identify the quality of data as being a key success factor underneath the emergence of a CT.

The majority of respondents advocate for mandatory contributions to the tape but not mandatory consumption. Several respondents noted that exchanges and APAs must be mandated to contribute quality data to the consolidated tape, noting that this is a key requirement for the CT, and that in the current market, the CT cannot be formed without

this, since exchanges would have insufficient motivation to contribute. On the mandatory consumption feature, majority of respondents do not see it as needed, given that the usefulness of the tape should emerge over time if properly constructed. Few participants also noted that, from a governance perspective, the mandatory consumption feature could dis-incentivise the CT provider in monitoring and assessing whether the consolidated tape answers the needs of its forced clients.

Majority of respondents identified a strong governance framework to be a fundamental feature of the CT.

Majority of respondents expressed preference for a high coverage of the tape rather than a full coverage, although diverging views exist between stakeholders. Multiple respondents see full coverage as a long-term objective, stating that kicking off the CT with a full coverage would pose too burden. Multiple respondents advocate for a phased/staggered approach in the level of CT coverage, starting from post-trade data for those asset classes with a high level of standardisation.

On the link between the CT and best execution obligations, the general view expressed by the majority of respondents is that, although the CT could be used for promoting better execution practices, performing Transaction Cost Analysis (TCA) and enabling all investors who do not necessarily have access to market data to better evaluate the service they receive, the tape should not prohibit flexibility in execution practices, particularly for wholesale firms where flexibility is necessary in order to offer a broader range of investment strategies for clients in cases where price is not the only key factor. In particular, the majority of respondents noted that the introduction of the European CT should not lead to changes in the current best execution framework, where price is only one factor of the multi-faceted approach used for meeting best execution obligations.

Despite the general opposition towards a change in best execution obligations, the majority of participants noted that a post-trade CT could facilitate more accurate assessments of execution quality and enable end-clients to more easily verify whether best execution has been satisfied by providing an impartial and reliable picture of trading patterns, volumes and pricing. Participants also noted that a CT would allow < to a single point of collection of information, hopefully standardised, supporting the collection of data for the purpose of ex-post execution monitoring and Transaction Cost Analysis.

Provision, governance and funding of the tape: features ordered from highest to lowest in terms of respondents' perceived importance (fully agree & rather agree vs disagree & rather not agree; neutral in brackets):

1. The CT should be funded on the basis of user fees: 84 vs 12 (13);
2. Fees should be differentiated according to type of use: 65 vs 23 (18);
3. Revenue should be redistributed among contributing venues: 53 vs 24 (27);
4. The position of CTP should be put up for tender every 5-7 years: 42 vs 18 (40);
5. In redistributing revenue, price forming trades should be compensated at a higher rate than other trades: 36 vs 31 (36).

Majority of respondents advocate for a CT funding based on user fees, with several stakeholders pointing out that the setting up of the funding framework of the CT needs to go hand in hand with the governance structure to be implemented. From this perspective, several respondents argue that market data provided for free or at discount could lead trading venues to increase their trading fees in order to make up for the lost data revenue, highlighting the link between funding and governance.

In considering whether revenue should be redistributed among contributing venues, there is general consensus on the importance of having trading venues on-board in order to achieve a sufficient level of data quality and completeness, although several stakeholders raised concerns about the nature of such redistribution provisions. Several respondents advocate that, independently from which methodology is going to be used to redistribute CT revenue, such redistribution should be tied up and contingent to certain service levels to be met on the side of the data providers, so to align their incentives and reduce free-riding practices that could undermine the value of the tape. On the same view, one stakeholder advocated for a bonus-malus mechanism, where a data provider reporting data of bad quality would then be penalised.

In considering the funding model to be applied, views put forward by stakeholders are mixed between a not-for-profit/at-cost model, and cost-plus-margin approach. Several respondents advocate for a not-for-profit funding model where the CT is operated by an industry body, given that the tape can be considered as a valuable piece of market infrastructure that provides a public good, and as such its incentives should be aligned to serve the market as a whole rather than generate profits.

On the differentiation of user fee, majority of respondents are in favour to calibrate the fees according to the type of use. Several stakeholders pointed out that when consuming the CT, users must be able to buy disaggregated sections of the tape based on those streams of data they need, keeping in mind that there is a practical limit to how far the data set can be broken down.

On the frequency with which the position of the CT should be put up for tender, respondents provided mixed views. Majority of respondents provided positive feedback in tendering the CTP position with a predefined frequency. Several stakeholders expressed the need for having a clear assessment on the costs and the business model to be implemented.

III. The scope of the consolidated tape

The scope of the consolidated tape: assets classes ordered from highest to lowest in terms of respondents' perceived importance (fully agree & rather agree vs disagree & rather not agree; neutral in brackets):

1. Shares post-trade: 101 vs 8 (8)
2. Corporate bonds post-trade: 93 vs 13 (11)
3. Government bonds post-trade: 91 vs 11 (14)
4. ETFs post-trade: 90 vs 13 (14)

5. Interest rate swaps post-trade: 48 vs 35 (23)
6. Shares pre-trade: 46 vs 53 (17)
7. Credit default swaps post-trade: 43 vs 36 (24)
8. ETFs pre-trade: 33 vs 63 (20)
9. Government bonds pre-trade: 29 vs 71 (14)
10. Corporate bonds pre-trade: 29 vs 72 (15)
11. Interest rate swaps pre-trade: 15 vs 73 (18)
12. Credit default swaps pre-trade: 14 vs 75 (16)

Majority of respondents advocate for a post-trade consolidated tape, with equity, corporate bonds and government bonds representing the most important asset classes to be included. Several respondents noted that due to the complexities entailed with a pre-trade tape, a phased approach should be followed, where priority is given to the post-trade tape. In considering non-equity asset classes, the majority of respondents highlighted the general opacity that is associated with non-equity instruments, stating that a European tape could deliver benefits and reduce asymmetries. From this perspective, respondents expressed a remarkable support for a bond CT. One respondent suggests to start with the most liquid sub-asset classes, such as liquid government bonds, where the demand to consume such data could be relevant. On a ETFs tape, one respondent noted that it could have the potential for boosting retail participation in the European markets.

In considering which information published under the MiFID/R pre- and post-trade transparency should be consolidated in an equity tape, there is a general consensus on the need of having a standardised data format with standardised data fields to be included.

In assessing what shares should be included in the Official List of shares defining the scope of the EU consolidated tape, the respondents expressed the following views (fully agree & rather agree vs disagree & rather not agree; neutral in brackets):

1. Shares admitted to trading on a RM: 84 vs 5 (10)
2. Shares admitted to trading on an MTF with a prospectus approved in an EU Member State: 81 vs 9 (8)
3. Other: 20 vs 10 (5)

Majority of respondents believe that a comprehensive coverage is central to the success of a CT, and therefore support the inclusion of all the shares in the Official List of shares defining the scope of the EU CT, namely, not only shares with an approved prospectus in an EU Member State that trade on a regulated market, but also those shares which are traded on an MTF or an SI. These proponents suggest to use proper tagging criteria so to allow clear identification. The rationale put forward for such a comprehensive approach is that excluding those shares would provide a partial picture of the trading activities taking place within the EU.

IV. Other MiFID/R provisions with a link to the consolidated tape

In considering whether additional measures need to be taken to further promote the price discovery process in the equity trading, the majority of respondents say that current price

formation process works fine, adding that the current MiFID/R framework is sufficiently conducive of the price discovery process and has a good balance between the benefits of transparency and the importance of market liquidity. Few respondents noted that a consolidated tape with mandatory contribution would enhance the price discovery process in equity trading and would contribute in solving the current data quality issues.

In considering what is the appropriate measure to ensure the availability of data of sufficient value and quality to create a consolidated tape for bonds, the respondents expressed the following views (fully agree & rather agree vs disagree & rather not agree; neutral in brackets):

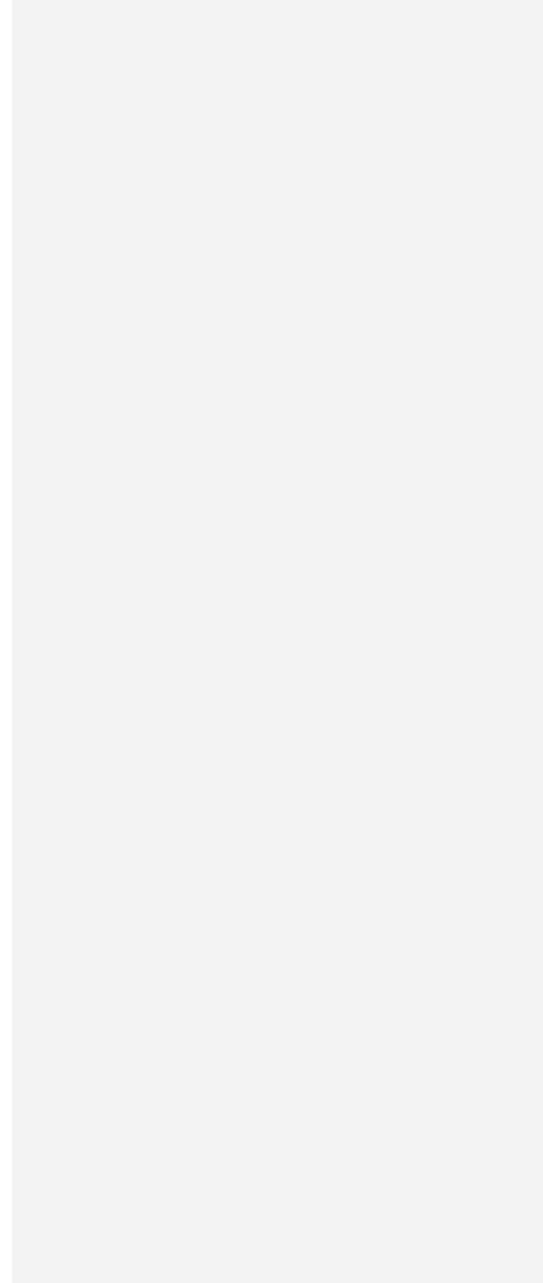
1. Harmonisation of national deferral regimes: 90 vs 4 (9)
2. Shortening of the 4-week deferral period for the volume information: 30 vs 50 (17)
3. Shortening of the 2-day deferral period for the price information: 27 vs 52 (17)
4. Abolition of post-trade transparency deferrals: 18 vs 70 (13)
5. Keeping the current regime: 17 vs 54 (25).

The majority of respondents consider the harmonisation of national deferral regimes as the most appropriate measure for improving consistency of the regimes across different Member States and ensuring the availability of data of sufficient value and quality for the creation of a non-equity tape, given that only a very limited amount of post-trade data is currently made available.

V. Summary of stakeholder discussions on the tape

This table summarises the positions on the consolidated tape of the stakeholders met by DG FISMA since mid-2020.

VI.	Data Standardisation		Type of tape				Time stamp				Governance			Asset classes			Target of the consolidation		Contribution to the tape		Consumption		Remuneration model		Deferral harmonisation			
	Existing	Higher	Pre-trade equity	Post-trade equity	both pre/post equity	Pre-trade bond	Post-trade bond	Real time equity	End of day equity	End of day bond	Longer latency bond	Exchange model	Single	Public provider (e.g. ESMA)	equity	bonds	derivatives	Full/high coverage (all available venues)	De minimis market	Mandatory	Non-mandatory	Mandatory	Non mandatory	based on pre-trade transparency	Different basis	yes	no	
Sell side 1	x													x	x													
Sell side 2		x		x					x				x															
Trade association 1		x																		x				x				
Non-equity trading venue 1		x					x	x					x			x			x									
Non-equity trading venue 2		x					x	x					x			x			x									
Non-equity trading venue 3		x					x	x					x			x			x									
Buy side 1		x																x	x						x			
Trade association 2			x	x	x	x	x								x	x	x			x		x						
Exchange 1										x																		
Trade association 3						x	x	x						x	x													
Sell side					x		x								x													x
Buy side 2										x					x						x						x	
Alternative venue 1					x		x																	x				



ANNEX 3: Who is affected and how?

3.1 Practical implications of the initiative

It is estimated that tens of thousands of market participants would use the data if it were available.¹⁰² In most financial markets firms, groups of users can be broadly split into functions that align with the three lines of defence risk management principles. Consolidated Tape (CT) Data is therefore required by these different functions in each organisation's lifecycle: (i) functions that own and manage risk; (ii) functions that oversee risks and challenge the front line; and (iii) functions that provide independent assurance. As a result, multiple functions across organisations require data. Each function and each line of defence may use different sets of data or different calculations, at different times, to create, monitor and challenge processes or results. CT data would reduce the need for each function and then each line of defence to process and clean data for their use, which currently requires considerable resources.

Functions are similar across asset classes and there are multiple underlying use cases for CT data within each function:

- Issuing
- Asset Allocation
- Portfolio/Investment Management
- Pre-Trade Analysis
- In-flight Monitoring of trades
- Post-Trade Analysis/ Best Execution
- Middle and Back Office Processes/Valuations
- Funding and Collateral Management/Securities Lending
- Market Surveillance
- Risk Management
- Performance Measurement
- Regulatory Oversight
- Audit

¹⁰² MSP (2020), The study on the creation of an EU consolidated tape, p. 31.

Figure 1 - Use of Consolidated Data by Functions Organised by the Three Lines of Defence

Role		Consolidated data would be used to:	
Front-Line Roles	Own and manage risk	<ul style="list-style-type: none"> • Help make better investment and trading decisions. • Increase the accuracy of information to investors. • optimise capital usage. 	<p>Reduce reliance by all functions on the need for multiple, expensive, technical solutions or cumbersome manual processes to consume, manipulate, clean, and manage data across pan-European markets.</p> <p>This takes skill and resources that many stakeholders do not have.</p>
Second-Line Roles	Oversee and challenge the front line	<ul style="list-style-type: none"> • Support challenge of the front line through risk management models and improved cross-market surveillance. 	
Third-Line Roles	Provide wider independent assurance to the market	<ul style="list-style-type: none"> • Improve regulatory oversight. • Support policy decisions. • Simplify audit processes. 	

Source: Market Structure Partners

3.2 Summary of costs and benefits

Benefits and costs of option 1.2 and 1.4 for each category of stakeholders have been summarized in the below table. The main beneficiary of this option is the retail investor, either through the smaller data consumers (asset managers, pension funds, insurance companies) that invest their savings or as direct investors, who would benefit from a coherent overall picture of trading in the EU by making better investment and trading decisions, improve the oversight of their broker’s performance, and reduce the administrative burden to manage data across pan-European markets.

Table 1 - Impacts on different stakeholders of Option 1.2 and 1.4

	Retail investor	Data users (small/large)	Data contributors (small/large)	CTP	Supervision
Benefits	↑↑↑	↑↑↑/↑↑	↑↑↑/↑↑	↑↑	↑↑
Costs	NA	↑/↑↑	↑/↑↑	↑↑	↑

Tables 8 and 9 below, present the typical costs and benefits deriving from the specific actions to be undertaken for each of the main policy areas in order to implement option 1.2 and 1.4. In several instances, it is not possible to quantify impact at a high level of detail. In addition, for some policy areas in the baseline, current costs are not available/disclosed due to the sensitivity of market data and contractual obligations¹⁰³. On the benefits side, most impact descriptions are of a qualitative nature.

¹⁰³ As has been noted for instance in the ESMA report on market data, the license agreement signed by the market participants do not allow them to make public what they have to pay for market data.

Table 2 – Overview of Benefits – Preferred option

I. Overview of Benefits (total for all provisions) – Preferred Option		
Description	Amount	Comments
Direct benefits		
Access to core market data through statutory subscription fee to competing tapes or a single consolidated tape	<p>Ca. EUR billions annually</p> <p>This is an estimate of the direct cost saved by obtaining better execution quality in the equity and bond markets. This figure is based on market participants' estimates of the loss they suffer due to slippage (adverse price movement between a trading decision and the execution of a trade), which could be avoided if a consolidated tape was available. It represents the complement of the cost incurred by large dealers currently benefiting from a better view of the market.¹⁰⁴ A consolidated tape should therefore be seen as a measure redistributing from larger to smaller market participants.</p>	<p><i>Main recipient of the benefit:</i> Retail investors and small market data users</p>
Client-facing intermediaries: easier compliance with best execution requirement	<p>Considering a hypothetical firm with 50 data consumers, the current annual costs for the market data would be €300,000. Replacing this by a tape costing €5,000 a year and €300 per user per year, would equate to a €265,000 saving, or 88% cost reduction. For a large banks there could be up to 20 times as many users of the market data¹⁰⁵.</p> <p>There are 10,925 active regulated entities (including 6501 Investment Firms, 127 Regulated Markets, and 145 MTFs). If we assume that the average investment firm equals the hypothetical firm above the overall cost saving across the Union for investment firms alone would be EUR 1.8 billion annually.</p>	<p><i>Main recipient of the benefit:</i> All data users</p>
More share trading on most transparent markets	<p>The remuneration model would reward operators that contribute to price formation through pre-trade-transparent execution. If well-calibrated the proposal might also feed through to incentives for participants to post smaller orders to lit venues rather than place them into non-displayed venues and support distributed (and therefore more resilient) price formation and competitive markets</p>	<p><i>Main recipient of the benefit:</i> Most transparent markets</p>
Pan European financial market	<p>Easy access to pan European data would encourage the development of a robust pan European retail market.</p>	<p><i>Main recipient of the benefit:</i> Retail investors</p>
Indirect benefits		
View of all EU markets	<p>The smaller and less developed markets would become a lot more visible as at the moment only local investors and niche investors go through the trouble of obtaining the market data</p>	<p><i>Main recipient of the benefit:</i> Smaller and less developed markets</p>
5 year tender period for the single consolidated tape	<p>The CTP would enjoy a five year period where it would be the sole provider of the consolidated market data. This period should allow the CTP to recoup its initial investments.</p>	<p><i>Main recipient of the benefit:</i> CTP</p>
Product innovation	<p>More competition in the market for data consolidation</p>	<p><i>Main recipient of the benefit:</i></p>

¹⁰⁴ MSP (2020), The study on the creation of an EU consolidated tape, p50

¹⁰⁵ These estimates have been provided by an association representing financial institutions.

	with competing data consolidators keeps this market contestable and stimulates product innovation, requiring less supervision and oversight	All data users
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Table 3 – Overview of costs – preferred option

II. Overview of costs – Preferred option											
		Retail investors		Data users		Data Contributors		Consolidated tape provider		Supervision	
		One-off	Recurrent	One-off	Recurrent	One-off	Recurrent	One-off	Recurrent	One-off	Recurrent
Standardised data format	Direct costs	NA	NA	All data users will have to make changes to their systems to integrate the consolidated data feed into their systems <u>Small</u> EUR 250k	<u>Small</u> EUR 50k <u>Large</u> EUR 150k – 1 million	Each trading venue and APA would need to establish a data feed to the consolidator (this is 'Business as Usual' from a technical perspective) <u>Small</u> EUR 250k <u>Large</u> EUR 500k – 1 million ¹⁰⁶ An initial tape would cover only large contributors (around 170 data contributors). The industry-wide cost of adapting data reporting standards is	<u>Small</u> EUR 200k-300k absent material changes in compliance requirements, which would generate additional costs. <u>Large</u> EUR 1million for the largest contributors (SIs) Industry-wide annual market data reporting cost would therefore amount to between 34-50 million with an add-on to account for the higher cost of the G10 banks of 17	NA	NA	All NCAs and ESMA will have to make changes to their systems to integrate the consolidated data feed <u>NCA</u> EUR 150k <u>ESMA</u> EUR 150k	<u>NCA</u> EUR 50k <u>ESMA</u> EUR 50k

¹⁰⁶ Large contributors with complex and diverse data reporting arrangements could face a higher annual compliance cost with big (G10) investment banks (SIs) likely to spend EUR 2-3 million in one-off cost to comply with their market data reporting obligations.

						estimated at between € 85 and 170 million	million				
	Indirect costs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mandatory contribution	Direct costs	NA	NA	NA	NA	The initial cost estimate is included in the cost above to produce the standardised data format	Ca. EUR 2000 / month. Contributors pay only for connectivity to local cloud-based presence	NA	NA	NA	NA
	Indirect costs	NA	NA	NA	NA			NA	NA	NA	NA
Setting up and running of a tape	Direct costs	NA	NA	NA	NA	NAdf	NA	<u>Equity</u> ¹⁰⁷ : EUR 4 – 12 million	<u>Equity</u> : EUR 1.4-5.5	<u>ESMA</u> IT spend of 2	<u>ESMA</u> 4 FTE ^b IT spend

¹⁰⁷ Range based on two separate estimates provided to DG FISMA. The key assumptions behind the estimate are as follows: (i) the operation of the consolidated tape is awarded for a period of five years;(ii) build of the tape will take place over 18-24 months in order to give exchanges and other data sources time to adapt to the prescribed reporting standard and make the required reporting changes (if necessary);(iii) the CT provider will receive data for equity and equity-like instruments from around 170 sources across the EU; and (iv) the required security and latency specifications exclude a (cheaper) cloud solution. The build and operating cost in estimate 1 contains the following products and services: (a) Technology: setting up dedicated lines and data feeds;(b) Infrastructure cost; (c) Software licensing; (d) Establishment of connections; (e) Project and account management, and (f) Administrative functions of the CTP (controlling data quality, billing tape consumers and sharing back revenues to market data contributors).

								<u>Bonds/Derivatives</u> ¹⁰⁸ : EUR 0.8 – 7 million	million/yr <u>Bonds/Derivatives</u> : EUR 1.3 – 4 ¹⁰⁹ million/yr	million (already accounted for and for all DRSPs) ¹¹⁰	of EUR 400 000 (already accounted for and for all DRSPs) ^b
	Indirect costs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tape statutory subscription fee / consumption ¹¹¹	Direct costs	NA	Maximum EUR 1/month	NA	EUR 100 per individual user/month	NA	NA	NA	NA	NA	NA
Data revenue	Direct costs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

¹⁰⁸ The cost figures for a bonds / derivatives tape are based on three separate estimates provided to DG FISMA. The estimate that makes up the higher end of the spectrum concerns a proposal for an intra-day bond CT, which shares many cost drivers of an equity CT.

¹⁰⁹ For this specific higher-end figure, please see a detailed breakdown of the running costs in table 10 where the five year running cost boils down to EUR 3.8 million.

¹¹⁰ Following the ESA review, ESMA will be in charge of registering data reporting services providers (DRSPs) including consolidated tape providers (CTPs) that are new types of entities. ESMA will also ensure their ongoing supervision and it will be empowered to conduct investigations. This will necessitate additional specialised staff estimated at 4 FTEs. Given the large number of data managed by those entities, a large IT system is needed to assess their quality, the way they are processed and published. Those IT costs are estimated at EUR 2 million (one-off costs) as well as EUR 400 000 per year (maintenance costs).

¹¹¹ DG FISMA proposed amounts, based on a number of 10,925 active regulated entities (including 6501 Investment Firms). It is assumed that all 6501 investment firms subscribe to the tape to prove “best execution” and that 1% of the EU population would subscribe to the CT as retail users for a fee capped at EUR 1/month. In the US, 5.4 million non-professionals (2% of the US population) subscribe to the CT.

lost by data contributors	Indirect costs	NA	NA	NA	NA	NA	<u>Exchanges:</u> max one third of EUR 245 million annually ¹¹²	NA	NA	NA	NA
							<u>Bond data contributors:</u> NA				

¹¹² A 2018 industry estimate puts the market data revenue of all FESE exchanges at EUR 245 million annually. Since this also incorporates revenue from pre-trade data streams and proprietary, low-latency feeds that are geared specifically to highly sophisticated market data users, this can be seen as a considerable overestimation of the revenue loss they would incur as a result of the proposed CT.

Table 4 – Breakdown of operating costs for the operation of a consolidated tape ¹¹³

Item	Description	Cost (EUR thousands)
Governance	To manage board and senior management oversight	150
Secretariat	To manage product and technical committees with industry participation	200
Regulatory compliance and relationship management	To manage engagement with ESMA, Commission, NCAs and other regulatory stakeholders. ESMA compliance obligations and inbound requests and questions from ESMA	400
ESMA ongoing supervisory fees	tbc by ESMA budget	250
Legal	Legal resources	150
Product and Tech	Resource to manage product build and maintenance	500
Infrastructure	Costs including personnel and 3rd party costs	800
Technical account management	Manage submitters and users	200
On-boarding / KYC	For submitters and user's	200
Customer support		250
Application support	Support IT services delivered to users, enabling the operational processes	200
Sales and Account management	Manage user contracts and billing	250
Billing, Finance and Accounting	Support revenue collection and production of accounts for cost recovery and revenue share model	300
3rd party 'Audit costs'	PEN tests, statutory audits, SOC 1 style audits, ISO certification etc.....	150
TOTAL		3800

Table 5 – A real-life example of setting up a service for non-equity post trade aggregation¹¹⁴

Number of data sources	12: 1 RM, 4 MTFs, 1 OTF, 6 APAs
Time required for on boarding per feed	3 weeks for FIX feed, 6 weeks for binary feed. If all users used the same FIX protocol, 5-10 days to on-board
Target latency across platform	< 300 ms
Output Format API	Service provided a real-time stream of data out in FIX Protocol. Clients could also request historical data using a REST API

¹¹³ Estimate of operating costs provided to DG FISMA by a specialist market information company

¹¹⁴ Information submitted by Alex Wolcough, Greenbitch. All of the costs are on the assumption that a pre-existing organisation that is already in the business of providing data services builds and runs the CT. E.g., it supposes a pre-existing management team, pre-existing operational and support structures. The cost estimate is for adding the extra staff and resources to build and manage CT service from a technical perspective.

Output format user interface	Data available on web page HTML5 interface – allows user to query individual instruments by ISIN and depth of History. An important feature of this historical display was being able to sort by publication time or execution time (so delayed data could be listed in the correct chronological order amongst trades reported without delay)
Data points	All data points in RTS 2, including flags
Architecture	Built on cloud platform, with nearshore low cost development centre for components
Cost	EUR 800,000 one-off, EUR 1,300,000/annum (operational staff, support, infrastructure) + Significant costs to redistribute data are charged by TVs, APAs

ANNEX 4: Picture of European markets in financial instruments

Due to the iterative market infrastructure reforms (MiFID I and II), Europe has a very fragmented markets for trading in shares, bonds and derivatives. Investors now have the choice to trade on (1) regulated markets (RMs) or (2) alternative trading venues such as multilateral trading facilities (MTFs) which are comparable to stock exchanges, but do not have a listing function and, specifically for bonds and derivatives, organised trading facilities (OTFs).¹¹⁵ In the current framework, investors can also trade (3) through the balance sheet of investment banks that act as dealers and trade bilaterally (also known as ‘systematic internalisers’).¹¹⁶ Apart from these more or less formal execution venues, the European trading landscape, both for equities (such as shares and ETFs) and non-equities (such as bonds and derivatives), is also characterised (4) by a large segment of so-called “over-the-counter” (OTC) trading.

Fragmentation increased in share trading already before the entry into force of MiFID I in 2007, but this development has accelerated significantly after entry into force of MiFID II. For non-equity instruments (bonds and derivatives), trading has historically been decentralised around dealers, with certain exceptions for liquid segments. ESMA data shows that by the end of 2019 there were 262 trading venues (RMs, MTFs and OTFs) and 147 SIs, in the EU27. A large amount of these venues are relatively new. In 2018 there were 197 admissions of new venues and SIs and 87 in 2019.

Bonds

Bond trading volumes in the EEA amounted to EUR 101tn in 2019 versus EUR 27tn for equity and equity-like instruments according to ESMA data. The European trading landscape in this universe is also characterised by fragmentation. According to the mentioned ESMA Annual Statistical Report, in 2019 the majority of bond trading remained “off-exchange”, with OTC accounting for 50% and trading through internalising investment banks for 26%. However, the introduction of alternative trading systems (MTFs) is beginning to show positive effects in reducing trading cost and increasing execution quality. Thus, many sovereign, and a certain number of corporate bond issuances, can now be traded on MTFs. Exchange trading for bonds is split among traditional stock exchanges, which merely account for 1% of bond transactions, MTFs accounting for 15%, and OTFs accounting for 8%. On-exchange trading volumes in 2019 were concentrated in the UK, with more than 80% of on-exchange trading on UK trading

¹¹⁵ These different venues can operate different trading protocols, offering a different level of pre-trade transparency. These range from an open order book (that displays all bids and offers and market depth underpinning these quotes), to an intraday or end of day (closing) auctions, a request for quote (RFQ) or on so-called “dark pools” (where orders are matched without pre-trade bids and offers being shown to the rest of the market).

¹¹⁶ SIs are investment firms that frequently and substantially deal with clients from their own inventory.

venues (EUR 20 tn). At the moment, less than 0.5% of European bonds are liquid which means in practice that more than 99.5% of bonds are not subject to pre-trade transparency.

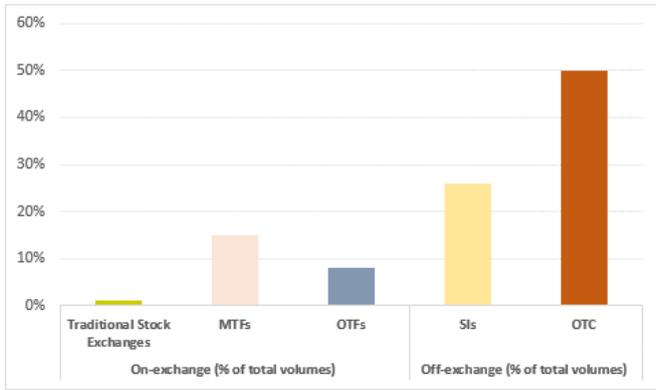


Table 2. Bond trading in the EEA in 2019.

Derivatives

OTC contracts still account for the most outstanding notional amount in 2019 according to ESMA data. Exchange traded derivatives (standardised contracts listed on an exchange – ETDs) accounted for only 8% of notional amount in 2019, and OTC on venue derivatives for 7%. Bilateral OTC trading took up 85% of total notional amount, which is a (slight decrease) from the year before.

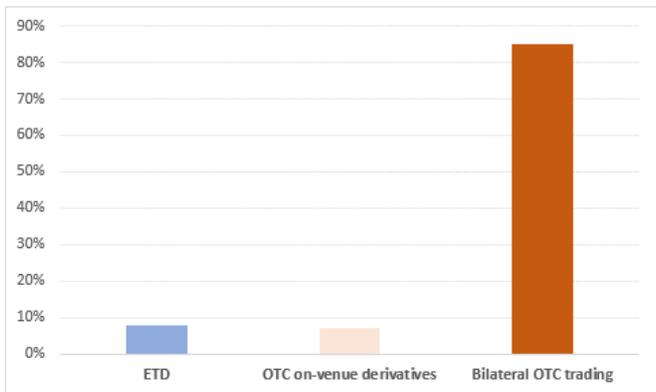


Table 3. Derivative trading in the EEA in 2019

ANNEX 5: other initiative specific annexes

ANNEX 5.1 Current framework on consolidated tape providers and transparency waivers and deferrals

5.1.1 Applicable framework for consolidated tape providers

MiFID/R introduced a consolidated tape framework for equity and non-equity instruments. Consolidated tape providers (CTPs) constitute one of the three types of so-called Data Reporting Services Providers (DRSPs), alongside Approved Publication Arrangements (APAs) and Approved Reporting Mechanisms (ARMs) that aggregate data, respectively for the purpose of trade reporting and transaction reporting. For a number of reasons analysed by ESMA in their report (to be found in Annex 5.4.1), after more than three years of implementation, no entity has requested this CTP status, neither in equity nor on non-equity instruments.

As envisaged under MiFID II, the operation of a CTP is subject to authorisation. In the original framework, this authorisation was granted by the NCA but following the review of the ESAs, ESMA will be in charge from 2022.¹¹⁷ This authorisation is granted when the CTP satisfies with all the requirements set forth by MiFID II (originally Articles 59, 61 and 62 of the directive, rules that are supplemented by RTS 13),¹¹⁸ with a possibility of withdrawal when the conditions are no longer met. ESMA has to publish a list of authorised CTPs.

The core requirements concern the consolidation of post-trade transparency data into a continuous electronic data stream from all the trading venues and APAs, and the publication of this information as close to real time as technically possible, on a reasonable commercial basis. **The minimum set of information should include, among other things, the ISIN, transaction price and volume, the transaction time, the relevant venue.**¹¹⁹ This information shall be made available free of charge 15 minutes after the CTP has published it, and the CTP should disseminate such information in a

¹¹⁷ The ESAs review has moved the provisions on DRSPs from MiFID II to MiFIR. These changes in the ESAs review to not impact the content of these provisions as presented in this section

¹¹⁸ Commission Delegated Regulation (EU) 2017/571 of 2 June 2016: This provides rules on authorisation, including the information on organisation and corporate governance, as well as a number of specification in terms of organisational requirements, with regard to conflict of interest rules, outsourcing, and business continuity, testing and capacity, security and management of incomplete or potentially erroneous data.

¹¹⁹ (i) the identifier of the financial instrument (in practice the ISIN code), (ii) the price at which the transaction was concluded, (iii) the volume of the transaction, (iv) the time of the transaction, (v) the time the transaction was reported, (vi) the price notation of the transaction, (vii) the code for the execution venue where the transaction was executed, (viii) the indication whether an algorithm is responsible for the investment decision and the execution of the transaction, (ix) an indicator on whether the transaction was subject to specific conditions and for equity instruments (x) an indication on whether the transaction was concluded by using a RPW or a negotiated trade waiver.

way that ensures fast access to the information, on a non-discriminatory basis and in formats that are easily accessible and utilisable for market participants.

A number of **organisational requirements** exist in the current CTP framework, with requirements in relation to the members of the management body. They also comprise **administrative arrangements designed to prevent conflicts of interest**, in particular in the case where a market operator or an APA also operate a CT, since it specifies that in such a situation, all information collected shall be treated in a non-discriminatory way and the CTP must ensure through arrangements a separation of different business functions. Finally, the framework also provides for the need to have **sound security mechanisms** in place.

The regulation also opened the possibility for the European Commission to step in if no tape has been created and ask ESMA to appoint an exclusive tape through a public procurement.¹²⁰ In such a case, the framework empowered the European Commission to adopt delegated acts specifying measures in order to determine the contract-duration of the commercial entity operation the CT on an exclusive basis, as well as ensuring that post-trade information would be provided at a high-quality, in appropriate format and at a reasonable cost to the CT.

5.1.2 Transparency waivers and deferrals applicable to trading venues

MiFID introduced pre-trade and post-trade transparency requirements for shares, with a number of exemptions to pre-trade transparency, namely waivers, as well as different possibilities to delay the publication of post-trade information, namely deferrals. This set of rules with its exceptions is often called the “transparency regime”. In MiFIR, this system of waivers and deferrals remains and is extended to other equity instruments as well as to non-equity instruments, with certain adaptations.

Waivers for trading venues in relation to equity instruments

Article 4 MiFIR contains exemptions (‘waivers’) for **trading venues** (regulated markets or multilateral trading facilities) to publish current bids and offers from the members or participants on their platform in relation to **shares, depository receipts, ETFs, certificates and other similar financial instruments**. Such waivers are available in the following cases:

¹²⁰ These powers have not been exercised. Instead, the European Commission has chosen to review the framework applicable to CTPs at the occasion of the proposed MiFIR review so that the conditions are rightly set to ensure the emergence and functioning of a tape.

1. *RPW* – When the trading venue operates a system that matches the bids and offers from their members or participants on the basis of prices that are referred from the midpoint of the best bids and offers on the primary market (the exchange where the instrument was first listed) or the most relevant market in terms of liquidity, it does not need to publish information on the available buying and selling interest. This system is commonly referred to as a dark pool. Recourse to this waiver is limited by the **DVC** (Article 5 MiFIR). The DVC aims to ensure that the amount of trading that occurs under such a waiver in any instrument on 1) that specific venue may not exceed 4% on all trading on venues in the EU, and 2) all venues combined in the EU may not exceed 8% of all trading in that instrument on venues in the EU.
2. *Negotiated trade waiver* – Some venues allow for the possibilities that pre-negotiated transactions are formalised on their venue. In this case the venue does not match the bid and offer based on their algorithm, because this has been done bilaterally already. This buying and selling interest does not need to be made public by the venue if: 1) the price reflects the ‘volume weighted spread’ on the order book, in which case the usage of waiver is capped by the DVC, or 2) if it concerns an illiquid instrument and the agreed price is close to a suitable reference price, or 3) if the conditions are different than the current market price of that instrument. This last type of waiver applies to so called ‘technical trades’, such as the delivery of shares following the call of an options contract.
3. *Large in scale waiver* – Orders that are ‘large in scale’ compared with the normal market size do not need to be published. When an order is large in scale is calculated by the competent authorities following the requirements set in level 2 (EU 2017/587, or RTS 1). E.g. when the average daily turnover of a share is between 1 million and 5 million EUR, the large in scale threshold is EUR 200.000.
4. *Order management facility waiver* – When an order is too large to be executed at once on an order book, it can be divided in separate smaller batches. A single batch will be made public by placing it on the order book and when it is executed the following batch will be made public. All the other batches remain hidden to the public, and may not interact with other orders, until they are put on the order book. This type of waiver allows the volume of an order to be hidden.

Waivers for trading venues in relation to non-equity instruments

Likewise, Article 9 MiFIR contains exemptions (‘waivers’) for **trading venues** (regulated markets, multilateral trading facilities or organised trading facilities) to publish current bids and offers from the members or participants on their platform in relation to **bonds, structured finance products, emission allowances and derivatives traded on a trading venue and package orders**. Such waivers are available in the following cases:

1. *Large in scale waiver* – Orders that are ‘large in scale’ compared with the normal market size do not need to be published. When an order is large in scale is calculated by the competent authorities following the requirements set in level 2 (EU 2017/583, or RTS 2).
2. *Order management facility waiver* – When an order is too large to be executed at once on an order book, it can be divided in separate smaller batches. A single batch will be made public by placing it on the order book and when it is executed the following batch will be made public. All the other batches remain hidden to the public, and may not interact with other orders, until they are put on the order book. This type of waiver allows the volume of an order to be hidden.
3. *Size specific to the instrument (SSTI) waiver* – Specifically in ‘request for quote’ and ‘voice trading’ systems on trading venues any actionable indication of interest may be waived if its size is larger than the SSTI and publication would expose liquidity providers to undue risk. A request for quote system is a system whereby one or more members or participants of the venue provides a quote in response to a request for a quote submitted by one or more other members. The SSTI is calculated by the competent authorities based on criteria set in RTS 2.
4. *Illiquid instruments waiver* – buying and selling interest in derivatives that are not subject to the derivatives trading obligation in Article 28 MiFIR, and all other non-equity instruments, that do not have a liquid market may be waived.
5. *Exchange for physical waiver* – Buying and selling interest in a derivative contract or other financial instrument contingent on the execution of an equivalent quantity of an underlying physical asset may be waived.
6. *Package order waiver* – In case an order consists out of a package of multiple financial instruments, the order may be waived in case any of its instruments is illiquid or large in scale, unless the entire package is liquid, or if all components are individually eligible SSTI waiver.

Deferrals for trading venues in relation to equity instruments

Article 7 MiFIR arranges that publication of transactions, once executed on a **trading venue**, may be deferred from 60 minutes up to maximally two trading days (depending on the average daily turnover and the size of the transaction), if they are large in scale compared to the normal market size for that **(class of) share, depositary receipt, ETF, certificate or other similar financial instrument** in case the transaction is executed between an investment firm dealing on own account and another counterparty. Based on article 20 these deferrals also apply to investment firms, such as systematic internalisers when they execute transactions outside of a trading venue.

Deferrals for trading venues in relation to non-equity instruments

Article 11 MiFIR arranges that publication of transactions in **bonds, structured finance products, emission allowances or derivatives**, once executed on a **trading venue**, may be deferred from two working days up to four weeks, or for sovereign bonds indefinitely when the transaction is large in scale compared to the normal market size, related to an illiquid instrument or is above SSTI and publication would risk expose liquidity providers to undue risk. Based on article 21 these deferrals also apply to investment firms, such as systematic internalisers when they execute transactions outside of a trading venue. In combination with a deferral, competent authorities may:

1. Request the publication of limited details of a transaction (such as price) during the time of the deferral;
2. Allow masking of the volume of a transaction during an extended time period of four weeks;
3. Allow aggregated publication of several transactions during an extended deferral time period of four weeks, with regard to all non-equity instruments, except sovereign bonds;
4. Allow aggregated publication of several transactions during an extended deferral time period of indefinite duration, with regard to sovereign bonds.

5.1.3. Transparency requirements for investment firms, in particular systematic internalisers

All investment firms are subject to post-trade transparency requirements when trading over the counter in instruments that are **traded on a trading venue (ToTV)**. The publication of the information is carried out by APAs.

When investment firms qualify as systematic internalisers, either because they reach the quantitative thresholds or voluntarily, they are subject to pre-trade transparency requirements on these ToTV instruments.

With regard to instruments that are not also traded on a trading venue, no transparency requirements apply.

Pre-trade transparency with regard to equity ToTV

Article 14 MiFIR prescribes that systematic internalisers are required to continuously publish firm quotes on both sides in liquid equity instruments for a minimum of 10% of the standard market size. In addition any quote they provide voluntarily needs to be made public as well, up to standard market size. The standard market size is calculated according to a methodology set out in a regulatory technical standard and depends on the

average value of transactions in the financial instruments. According to ESMA¹²¹ SIs mainly limit their public quotes to the minimum required size. With regard to illiquid equity instruments systematic internalisers only need to provide firm quotes on request of a client.

Pre-trade transparency with regard to non-equity ToTV

Article 18 MiFIR arranges that with regard to liquid non-equity instruments systematic internalisers are required to publish firm quotes with regard to non-equity instruments up to a size specific to the instrument and make them available to (a selection of) their clients if they are prompted for a quote and they agree to provide a quote. The size specific to the instrument is determined based on level 2 regulatory technical standards. In case there is not a liquid market such quotes merely need to be made available to their clients, unless a waiver applies.

Post-trade transparency with regard to equity ToTV

Article 20 MiFIR requires that transactions in equity need to be made public through an approved application arrangement (APA). The same requirements and deferrals apply as for trading venues (see 5.1.2).

Post-trade transparency with regard to non-equity ToTV

Article 21 MiFIR requires that transactions in non-equity need to be made public through an approved application arrangement (APA). The same requirements and deferrals apply as for trading venues (see 5.1.2).

¹²¹https://www.esma.europa.eu/sites/default/files/library/esma70-156-3329_mifid_ii_mifir_review_report_on_the_transparency_regime_for_non-equity_instruments.pdf, p.27.

ANNEX 5.2 International environment

Changes in MiFID and especially in MiFIR have to be apprehended in an international context. Many rules in the Impact Assessment of MiFID/R in 2011 were born out of G20 proposals to make financial markets more robust after the crisis. This leads to measures such as trading standardised derivatives on exchange, let them be centrally cleared and collateralise risky transactions. Since then, markets have become even more global and trading does not stop at the European Union border.

In addition, the UK the largest financial centre of Europe, left the Union. This has caused certain changes in trading structures, client relationships and physical presence. Many financial market participants have both local and global presence. Company structures do not always fit within a single financial legislation framework. Different rules in different jurisdictions can be comparable but sometimes also overlap.

This international environment cannot be ignored when adjustments to the trading regime of MiFIR are made. Any changes to MiFIR should enhance the EU capital markets and support the international competitiveness of European market participants.

With regard to derivatives, European companies are very dependent on the large investment banks for their hedging of interest, credit, commodity and foreign exchange risk. Although a lot has happened to encourage central clearing of derivatives and trading on venue, little development took place to limit the dependence on large dealers. By e.g. encouraging more trading of derivatives on European lit exchanges, markets would be more transparent, more liquid and hedging could become less expensive.

ANNEX 5.3 Open access for ETDs

Open access rules essentially mandate the operators of vertically integrated trading and clearing infrastructures to also clear transactions that did not originate within the vertically integrated trading platform. Open access provisions already apply to OTC derivatives, transferable securities and money market instruments (under MiFIR or the regulatory framework for clearing EMIR). Open access remains highly controversial with respect to exchange-traded derivatives (ETDs) as these are standardized contracts designed by the trading platforms to facilitate trading and spur liquidity, with subsequent clearing in a fully integrated silo.

Due to longstanding concerns and uncertainties also at legislator level on how open access for ETDs would affect the current and efficient ETD market, MiFIR open access rules also added multiple temporary transition periods and opt-outs for an exception from the application of the open access rights. Many exchanges have taken advantage of these transitional arrangements as the initial application (3 January 2018) has been initially postponed for 30 months and it has been further postponed due to Covid-19 pandemic, meaning that the ETD open access regime is largely not up-and-running. The opt-outs will end on 3 July 2021.

ETDs are often the benchmark (reference price) indices for a broad range of underlying assets (e.g. bonds, shares, commodities such as energy or oil and soft commodities such as coffee or sugar), **including the wider OTC derivatives associated with those assets. ETDs are derivative contracts offered for trading on stock exchanges, characterised by a high degree of standardisation as they are created by and are specific to an exchange, traded under the rules of that exchange and cleared in the clearing infrastructure (CCP) used by that exchange.** ETD trading ensures liquidity while ETD clearing facilitates management of counterparty risk over the life of the contract, which can span several years or more. The value of the derivative fluctuates with the price of the underlying of the contract.

The opponents of open access (large exchanges federated in FESE) strongly argue that breaking the links between the trading venue and its integrated CCP would disrupt the seamless operation of trading and clearing processes. Above all, they argue, open access would drive liquidity fragmentation which would negatively impact the price discovery process. It is stated that resulting weakening of an accurate reference price could ultimately lead to serious financial stability risks. These risks would be compounded by the pooling of open interest from economically equivalent – but not identical – ETD contracts in the same CCP as a result of multiple trading venues gaining access to the CCP.

ETDs take the form of futures (i.e. a contract to buy or sell a particular financial instrument at the agreed price at a certain point in the future) and options (i.e. a contract that allows the holder the possibility to buy or sell a particular financial instrument at the agreed price at a certain point in the future). **ETDs, especially futures on government debts, equity indices and commodities, reflect the market's expectations of future fluctuations of these underlying markets.**

ETDs are designed and put on the market by exchanges. The most salient common feature of ETDs is **their standardisation at exchange level**. This is because a derivatives exchange creates a contract that is specific to that exchange with its own rules, and that contract is cleared by a CCP used by that exchange. Another exchange may separately create an equivalent contract on the same underlying which will be traded under the rules of that exchange and cleared by another CCP used by the other exchange. Thus derivative contracts with the same underlying may be priced differently and therefore not considered as the same contract. However, market participants can use ETDs from different exchanges to hedge the same economic risk (e.g. energy or other commodity price uncertainty). On the other hand, precisely because of their standardization, ETDs are inflexible instruments that cannot cater to more custom exposure needs of market participants – which are normally serviced by OTC derivatives offered by dealers on alternative trading venues or bilaterally. The latter are customized to a varying degree. The fact that it takes time for an exchange to design and develop a standardized (ETD) contract means that those markets take longer time to develop. On the other hand, OTC markets are driven by a rich universe of dealers which respond to bespoke customer needs and have large pricing power because of the custom nature of contracts – which means that OTC derivatives markets tend to develop more quickly.

The opponents of open access also argue that open access provisions would not result in fair competition – but in unfairly forced, artificial competition via regulatory intervention. In this context, it must also be noted that no other jurisdiction in the world has decided to implement open access provisions for ETDs. This global trend confirms the specific features of ETDs, and imposing open access in EU could potentially affect the international competitiveness of Union infrastructures. Existing provisions in MiFIR could potentially enable third country venues to offer trading of ETDs products based on EU benchmarks.

As already explained above **a transparent and resilient price discovery for ETDs is crucial for financial markets as a whole given that ETD markets serve as benchmark for a broad range of underlying and related assets, including the relevant OTC derivatives associated with those assets.**

Equally, within the EU, open access would allow competing EU-based trading venues to replicate an ETD contract that the listing exchange designed and put on the market, and also enable those trading venues to have the replicated contract cleared at the clearing house integrated with the exchange that designed the original

contract. The regime is therefore conducive to creating multiple (albeit probably much smaller) liquidity pools, resulting in a fragmented trading landscape.

ANNEX 5.4 ESMA's recommendations for legislative L1 amendments

ESMA performed in-depth analyses of the MiFID/R framework primarily focussing on the topics addressed in the review clauses in Article 90 MiFID and Article 52 MiFIR and published review reports containing recommendations for changes in the legal framework. These review reports followed public consultations. The following recommendations relate to market structure topics, in particular the current complex transparency regime. They are often of a very detailed and specific nature, but may be pursued in the light of the evolution of a consolidated tape's establishment project with which they may have more or less direct interactions. In particular, the ones related to the equity consolidated tape have already been included in the models proposed in Option 1.2 and 1.4.

5.4.1 Cost of market data and the equity consolidated tape¹²²

Cost of market data

Cost basis principle for the provision of market data: Trading venues in accordance with Article 13 of MiFIR, SIs in accordance with Articles 15 and 18 as well as APAs and CTPs in accordance with Articles 64 and 65 of MiFID II¹²³ have to make trading information public on a reasonable commercial basis (RCB principle). This notion is not defined in the L1, so ESMA proposes to indicate that the provision of market data should be carried out on the basis of costs as it is currently specified in L2 measures.

Information on costs of production and dissemination of market data: ESMA suggests for trading venues, APAs, SIs and CTPs to share information on the actual costs for producing and disseminating market data as well as on the margins with CAs and ESMA together, so as to enable supervisors to better understand the pricing of market data and assess whether it is provided on an RCB.

Rules on access and formatting for TVs: The current framework provides that APAs and CTPs have to provide market data, real-time and delayed, allowing for fast access and in easily accessible and usable formats. There is no similar provision for trading venues so ESMA proposes to add such requirement in Article 13 of MiFIR.

Mandate on L2 measures specifying the content, format and terminology of the RCB information: ESMA considers that such an empowerment would allow to transform the supervisory guidance into binding Union law, thereby further strengthening the

¹²² [mifid ii mifir review report no 1 on prices for market data and the equity ct.pdf \(europa.eu\)](#).

¹²³ Provision moved to Articles 27(g) and 27(h) of MiFIR under the ESA review, applicable from 1s January 2022.

harmonised and consistent application of the RCB provisions applicable to TVs, APAs, CTPs and SIs.

Equity consolidated tape

High-level data quality: ESMA suggests that in the context of the setting-up of an equity tape the L1 is amended to ensure data quality, this being accompanied by L2 and supervisory guidance.

Mandatory contribution to the CT: ESMA considers that trading venues and APAs should provide post-trade data to the CT free of charge. ESMA considers that this is a key factor for the successful establishment of a CT that would need L1 change accompanied by L2 measures further specifying the revenue formula.

Revenue sharing with contributing entities to the CT: ESMA suggests that the CTP charges for its data on an RCB and shares part or all of its revenues with contributing entities on basis of an allocation key that rewards price forming trades.

Contribution of users to the funding of the CT, through for instance mandatory consumption: ESMA thinks that mandatory consumption of the tape would make the successful establishment of a CT more likely, and suggests that if such a model is chosen, a proportionate fee key is developed to reflect that not all firms will use the CT in the same manner and to the same extent.

Full coverage by the CT: ESMA considers that the CT should consolidate 100% of the transactions across all equity and equity-like instruments and that this should be included in L1, with however, under clearly specified conditions, limited exceptions.

Operation of the CT on an exclusive basis: ESMA is of the view that a single tape would provide the most cost-efficient solution but that, in the meantime, in order to limit the market power of such a CT, competition should be a major driver for the appointment of the CT. Hence, ESMA recommends that a CT is appointed for a period of 5-7 years and to structure the appointment process in a fully-competitive manner.

Strong governance framework: ESMA considers that the CTP should be framed by a strong governance framework established at L1 that should ensure, in particular, the neutrality of the CTP, a high level of transparency and accountability and include provisions ensuring the continuity of service.

5.4.2 Equity (e.g. shares and ETFs) transparency requirements for trading venues¹²⁴

¹²⁴ Esma70-156-2682_mifidii_mifir_report_on_transparency_equity_dvc_tos.pdf (europa.eu).

Liquidity determination Article 2(1)(17)(b) MiFIR: Application of certain MiFIR provisions, such the negotiated trade waiver in Article 4(1)(b)(ii), the DVC in Article 5(1)(b) and the requirement for systematic internalisers to make public firm quotes in Article 14(1) depend on whether or not an equity instrument is considered liquid. ESMA recommends to determine liquidity based on only the average daily number of transactions and the average daily turnover and no longer also on the free float and on the requirement that instrument need to be traded daily.

RPW Article 4 MiFIR: Trading venues that match orders based on a price that is the midpoint of the bid-offer spread on the primary market may waive the pre-trade transparency requirements. Currently there is no order size threshold connected to the use of this waiver. ESMA recommends to exclude small orders from the use of this waiver.

List of non-price forming transaction Article 4 MiFIR: Currently there are three L2 lists defining non-price forming transactions based on different delegating provisions in MiFIR (Articles 4(1)(b), 20 and 23). Non-price forming transactions are transactions that do not contribute to price formation. This can for example be the case when a transaction results in the delivery of a share in the context of the exercise of an option. ESMA recommends to clarify that trading models that execute non-price forming transaction should only be operated under a waiver and to include a delegation for ESMA to define what constitutes a non-price forming transaction.

Simplify the DVC Article 5 MiFIR: The use of the RPW in Article 4(1)(a) and of the negotiated trade waiver in Article 4(1)(b)(i) MiFIR are capped at 4% of total on-venue trading in the Union on a specific venue and at 8% of total on-venue trading in the Union on all venues. ESMA recommends to limit capping to the EU wide cap and to decrease the threshold from 8% to 7%. ESMA furthermore recommends to include infringement of the cap in the sanctions list in Article 70 MiFID.

Based on Article 5(4) MiFIR ESMA shall publish within five working days of each new calendar month the total volume of Union trading per financial instrument carried out under one of the two waivers in the last 12 calendar months. In case the report identifies that the caps are almost reached ESMA shall publish an additional report within five working days after the middle of the month. ESMA recommends to increase the 5 day period to a 7 day period and to abolish the requirement to publish the mid-month report.

5.4.3 Non-equity (e.g. bonds and derivatives) transparency for trading venues¹²⁵

Liquidity determination for bonds Article 2(17)(a) MiFIR: Non-equity instruments (including bonds) are considered 'liquid' based on the average frequency and size of

¹²⁵Esma70-156-3329_mifid_ii_mifir_review_report_on_the_transparency_regime_for_non-equity_instruments.pdf (europa.eu).

transactions, the number and type of market participants and the average size of spread. With regard to illiquid instruments less stringent transparency requirements apply (e.g. because waivers and deferrals become available). Currently a very small percentage of bonds are considered liquid and transparent. ESMA suggests to no longer rely on the liquidity requirement to determine transparency for bonds, but only on the large in scale requirement.

Standardize pre-trade transparency information Article 8 MiFIR: Venues are required to make public current bid and offer prices and the depth of trading interests at those prices for non-equity instruments traded on their systems. This information should be made available to the public on reasonable commercial basis and free of charge after 15 minutes. ESMA recommends to introduce a delegation for an RTS in order to harmonize the content and format of pre-trade transparency.

Delete SSTI waiver and deferral Art 9(1), 11(1) MiFIR: Requests for quote (RFQ) and voice trading orders (pre-trade) or, regardless of the trading protocol, transactions (post-trade), that are above the size specific to the instrument may receive a waiver or deferral from transparency to prevent liquidity providers from undue risk, taking into account whether market participants are retail or wholesale investors. ESMA suggests to delete this waiver and deferral and compensate this by lowering the large in scale (LIS) threshold.

Simplify deferral regime Article 11 MiFIR: Transactions that are large in scale, illiquid or above a size specific to the instrument *and* expose liquidity providers to undue risk are eligible for deferred publication of post-trade information for two days. This duration can be prolonged by national competent authorities up to four weeks or indefinitely with regard to transactions in sovereign debt, in which case only limited details, aggregated transaction data need to be published or volume masking is allowed. ESMA suggests to replace this regime by only allowing deferred publication in case of transactions that are large in scale or relate to illiquid instruments and only with regard to the volume of the transaction.

Introduce possibility for EU wide transparency suspension Article 9(4), 11(2) and 21(4) MiFIR: When liquidity falls below a threshold NCAs may suspend transparency requirements. ESMA suggests to replace this provision with an ESMA mandate to suspend transparency in a specific instrument.

5.4.4. Transparency for systematic internalisers¹²⁶

¹²⁶ Esma70-156-2756_mifidii_mifir_report_on_systematic_internalisers.pdf (europa.eu).

Minimum quoting size for transactions in equities Article 14(3) MiFIR:¹²⁷ Systematic internalisers are required to continuously provide and publish quotes on both sides in respect of the equity instruments (e.g. shares and ETFs) for which they are registered. They are required to be continuously present on the public book for *in total (all the bids and offers combined)* at least 10% of the standard market size. ESMA recommends to require systematic internalisers to be continuously present on the public book for in total at least 100% of standard market size.

Delete requirement to make firm quotes in respect of non-equities available to any client Article 18(2),(3),(5-7) MiFIR: Systematic internalisers are required to publish firm quotes in respect of non-equity (e.g. bonds and derivatives) if they are asked to provide a quote by a client and if they have agreed to do so. Systematic internalisers must enter into transactions with any other client that wants to do so unless the quote is for a price higher than the so called ‘size specific to the instrument’. Currently systematic internalisers may only withdraw these quotes under exceptional market conditions. ESMA recommends to delete the requirement that the quotes provided to one client should also be accessible to other clients and the requirement that only exceptional market conditions justify withdrawing published quotes. With regard to illiquid instruments SIs should not need to provide quotes on request.

Replacing the ‘traded on a trading venue’ (ToTV) requirement for transactions in derivatives Article 18(1) and 21(1):¹²⁸ Systematic internalisers are required to make public firm quotes (pre-trade) and price and volume of transactions (post-trade) in financial instruments for which they are systematic internaliser that are traded on a trading venue. With regard to derivatives ESMA clarified that an OTC derivative is considered to be traded on a trading venue if it shares the same reference data details as a derivative that is actually traded on a trading venue. This means that the mandatory instrument data fields as required by table 3 in the Annex of RTS 23¹²⁹, except the fields relating to the venue, need to match. ESMA recommends to replace this requirement with the requirement to publish pre-trade and post-trade data relating to transactions in the (class of) derivatives for which the investment firm is a systematic internaliser and derivatives in the same sub-asset class.

¹²⁷ This recommendation can be found in ESMA's report on equity transparency as referred to in Annex 5.4.1.

¹²⁸ This recommendation can be found in ESMA's report on transaction and reference data reporting: [Esma74-362-1013_final_report_mifir_review_-_data_reporting.pdf](#) (europa.eu).

¹²⁹ Commission delegated regulation (EU) 2017/585 of 14 July 2016 supplementing Regulation (EU) No 600/2014 of the European Parliament and of the Council with regard to regulatory technical standards for the data standards and formats for financial instrument reference data and technical measures in relation to arrangements to be made by the European Securities and Markets Authority and competent authorities.

Replacing the SSTI threshold for LIS threshold Art 18(10): Systematic internalisers do not need to apply transparency requirements when they deal in sizes above the size specific to the instrument (SSTI). In line with the adaption of references to the SSTI threshold in other provisions, ESMA suggests to replace the SSTI threshold with a recalibrated LIS threshold.

5.4.5. Multilateral systems¹³⁰

Move Article 1(7) MiFID II to MiFIR: Article 4(1)(19) defines a multilateral system as a system in which multiple third-party buying and selling trading interests in financial instruments are able to interact in the system. The operator of a multilateral system is based on 1(7) MiFID II required to operate in line with the requirements for MTFs, OTFs or regulated markets. ESMA suggests to move Article 1(7) MiFID to MiFIR.

Clarify non-multilateral status of bulletin boards Article 4(1)(tbd): Bulletin boards are systems that display multiple prices and volumes and contact details. ESMA suggests to clarify that such systems are not considered multilateral systems because there is no interaction taking place on the system.

Clarify prohibition to deal on own account for operators of MTFs and RMs Article 19(5) and 47(2) MiFID: Operators of MTFs and RMs are currently not allowed to deal on own account with clients or to engage in matched principle trading (unlike operators of OTFs in some cases). ESMA proposes to clarify that this only applies to the MTF/RM activities.

¹³⁰ Esma70-156-4225_mifid_ii_final_report_on_functioning_of_otf.pdf(europa.eu).

ANNEX 5.5 Governance Framework of a future consolidated tape

The governance framework will be a very important element for the correct functioning of the consolidated tape provider. This has not only been acknowledged by ESMA in its MiFID II review report no. 1¹³¹ and by the Market Structure Partners study¹³² but also systematically in any consultation with stakeholders (workshop, public consultation and numerous bilateral meetings).

Through numerous bilateral meetings, FISMA services have come to understand that there are several entities that have expressed interest and willingness with running the technical side of the operation. These entities already perform highly complicated and large scale operations for their clients and state that the IT aspect of consolidated tape is manageable. The technical side entails aspects such as the connections with contributors and users, the collection of the market data, the consolidation of the market data and the distribution of the market data (in the following called *technical aspects*).

There is a unanimous view by those technical entities that they do **not** have the expertise **nor** the willingness to ensure the client facing activities. Importantly, technology alone cannot deliver the consolidated market data. The gap between the market requirements, challenges and the technology available has to be bridged by a single, organisational layer; the CT entity. The activities of such a CT entity include policing that the contributors use this standard; billing the users of the consolidated market data; checking if all users use the consolidated market data for the right ends; setting the remuneration key for the contributors; ensuring that each contributor receives the correct remuneration; and could include the data standard to which the contributors have to adhere; (in the following called *governance aspects*).¹³³ As the CT entity would set certain standards, it seems appropriate to have a single CT entity for each asset class (equity, bonds, derivatives). However, there could be several technical entities that would compete with each other or focus on a particular niche of the market. The CT entity would have to ensure that the certain users such as retail investors and certain data users such as best execution are certainly catered for.

¹³¹ ESMA70-156-1606

¹³²<https://op.europa.eu/en/publication-detail/-/publication/82763219-1cbe-11eb-b57e-01aa75ed71a1/language-en/format-PDF/source-169654830>

¹³³ This bifurcation between 'technical' and 'governance' aspects is also how the consolidated tapes are run in the US. The governance aspects of the consolidate tape are respectively run by a 'Plan' for the equity consolidated tapes. These 'Plans' have respectively service level agreements (SLA) with entities who are responsible for the technical aspects. The importance of the governance framework is shown by the Final Rule by the US Securities and Exchange Commission (SEC) (Release No. 34-90610, File No. S7-03-20) where the Plans have been required to come up with a modernised governance structure.

For the purpose of the EU consolidated tape provider (CTP), the governance framework should address the neutrality of the CTP by making sure that mechanisms are in place to manage conflicts of interest if they were to arise. Otherwise the CTP would only work in the interest of a subset of stakeholders. The conflicts of interest would be best managed if there is a high level of transparency, in particular around the decision-making process of the CTP and disclosure of relevant information to the public. Another element to properly address conflicts of interest would be close involvement of contributing entities as well as users. Such an involvement would ensure that the views of different types of market participants are taken into consideration. In order to ensure that the operation of the consolidated tape is not stifled by a deadlock between the opposing views of the different stakeholders, there would have to an important role for a chair or arbitration body. An example of a broad representation of the industry is the consultative working group of the secondary markets standing committee.¹³⁴ The term of reference of this consultative working group have been approved by the Board of Supervisors of ESMA and are renewed every two years.¹³⁵ Another example is the euro Risk-Free Rate working group, an industry group established by the public sector to accompany the transition of interest rates in the euro area chaired by a representative from the private sector¹³⁶. Firms are granted membership only at the invitation of the establishing public institutions and were selected ensuring broad geographical coverage of the euro area. Individual representatives are appointed by member institutions as senior officials with relevant expertise. Certain relevant industry associations (e.g. ISDA, AFME, ICMA) or relevant institutions (*i.e.* European Investment Bank) have been invited to participate as nonvoting members. Representatives from the public institutions participate as observers and the ECB provides Secretariat to the group.

Finally, there should be a high level of accountability of the CTP and provisions ensuring the continuity of service provision in case of a change of the entity operating the CT. How the CT entity would be set up will also have an impact on the governance framework. It appears that a joint venture would be needed as no market participant has expressed interest in setting up a CTP on its own.¹³⁷ However, to the extent that all

¹³⁴ <https://www.esma.europa.eu/about-esma/working-methods/standing-committees-and-other-bodies#title-paragraph-14>

¹³⁵ https://www.esma.europa.eu/system/files_force/library/esma70-154-555_smsc_tor.pdf?download=1

¹³⁶ Notably the euro Risk-Free Rate Working Group was jointly established in 2017 by the European Commission, the ECB, ESMA and the Belgian securities market authority (FSMA as the national authority competent for the supervision of the administrator of the most widely used interest rate benchmarks for financial contracts denominated in euro: the Euro Interbank Offered Rate (Euribor) and the Euro Overnight Index Average (EONIA). https://www.ecb.europa.eu/paym/interest_rate_benchmarks/WG_euro_risk-free_rates/shared/pdf/2017_11_29_terms_of_reference.pdf.

¹³⁷ The possibility of a public entity as CT entity has been widely rejected by the industry. Market participants are of the opinion that an industry led initiative would be more efficient and more effective. Few stakeholders did suggest that ESMA should take up the role of the CT entity, however this would mean that ESMA would no longer be able to supervise the CT entity. An example of a public entity is the

founding members are from the same type of industry, be it sell side, buy side or exchanges, the conflict of interest would emerge as has been evidenced from the US experience and the need for correction afterwards. Therefore, any endeavour would have to provide comfort to the regulator that their organisation is independent from the founding entities. This would not only be in terms of resources but also in terms of staff.

European Datawarehouse. This entity has banks as shareholders who also funded the setup of the entity as the European Central Bank (ECB) required an entity to provide reliable data for the ABS market. Otherwise the ECB could not provide funding to those banks in this market. This kind of incentive has not been identified for the project at hand.

ANNEX 5.6 Data consolidation in other jurisdictions

5.6.1. The US equity tape

The first prototype of a consolidated tape dates back to 1975 in the United States when, due to the proliferation of regional exchanges with the same stock sometimes trading at different prices across various trading venues¹³⁸, there was growing concern in Congress and in the Securities Exchange Commission (“SEC”, US market regulator) about the lack of efficiencies and competition in the markets, particularly regarding whether investors were getting the best price to transact at. Through an amendment to the Securities Exchange Act¹³⁹, Congress directed the SEC to facilitate the establishment of a “national market system” (NMS) to link together the multiple individual markets that trade securities.¹⁴⁰

There are **three aggregators** responsible for different data sets, i.e. they do not compete to aggregate the same data. The management of the consolidated tape, also known as the “**SIP**” (Securities Information Processor)¹⁴¹, is overseen by the Consolidated Tape Association (“**CTA**”). The Consolidated Tape Association (CTA) sits underneath the SEC and oversees the dissemination of real-time trade and quote information. The CTA runs Plans that govern the collection, processing and dissemination of trade and quote data. Two Plans exist for listed securities data, the Consolidated Tape System (CTS) Plan and the Consolidated Quote System (CQS) Plan. There is also a third Plan for Unlisted Trading Privileges (UTP). The CTA is run by representatives from the exchanges and the Financial Industry Regulatory Authority (**FINRA**), a self-regulated organisation, which is owned and funded by dealers.¹⁴² FINRA aggregates and cleans off-venue post-trade data. FINRA acts as the single technical consolidator of the on- and off-venue data.

¹³⁸ In the US there are currently 17 exchanges, 32 alternative trading systems (ATSs) and numerous dealers reporting trades. A full description of the US equity data consolidation is given in Appendix 7, 8 and 9 of the MSP study.

¹³⁹ Section 11A.

¹⁴⁰ In 2005 the SEC adopted the Regulation National Market System (Reg NMS) requiring self-regulated organisations (SROs) and now FINRA (formed from NASD and NYSE Member Regulation), to provide certain quotation and transaction data for each NMS stock to so-called securities information processors (SIPs) who are responsible for the “dissemination of consolidated information” of “**core data**”.

¹⁴¹ The purpose of the SIP is to aggregate the best bid and offer quotes and trades for all US exchanges and to create a universal public feed. It is also relied upon for certain regulatory information such as trading halts and short sale restrictions. As a result of the legislative changes in 1975, the market has been organised into a number of plans and tapes that organise, aggregate, publish and govern the collection and dissemination of data.

¹⁴² Nasdaq and NYSE, the most historically prominent commercial stock exchanges, were originally appointed to run the technical aggregation of different sets of listed securities pre and post-trade data from across the TVs into one official set of data for each underlying instrument and continue to do so today, although this could be changed by the CTA.

FINRA also undertakes cross-market surveillance of transactions for the whole market. Use of the tape is mandated for best execution and for display to retail investors at the point of trade.

FINRA requires member firms to report one side of over-the-counter (OTC) transactions in NMS securities to a trade reporting facility (“TRF”) for FINRA regulatory compliance and data dissemination. Specifically, members must submit trade reports as soon as practicable, but no later than 10 seconds, following the trade execution during market hours. Participants have the option to report to a number of TRFs.

Core data for each NMS security consists of three components (it is then different from the ‘core data’ notion used in the body of this impact assessment which is close to the 1) of the below list, while 2) and 3) corresponds to pre-trade information):

- 1) last sale reports, which include the price at which the latest sale of the security occurred, the size of the sale and the exchange where the execution took place;
- 2) the current highest bid and lowest offer for the security, along with the number of share available at those prices, at each exchange; and
- 3) the “national best bid and offer”, or NBBO, which is the highest bid and lowest offer currently available on a US exchange and the exchange(s) where those prices are available.

All other data distributed by exchanges is considered “**non-core data**.” Exchanges are currently not required to make non-core data available for consolidation and are permitted to sell directly to participants for a fee.

Operational Framework

From an operating perspective, **three separate networks or tapes** currently collect, consolidate and disseminate SIP Data: Tape A, Tape B and Tape C.

- Tape A is comprised of NYSE listed securities.
- Tape B is primarily all corporate stocks and ETFs listed outside of NYSE and Nasdaq.
- Tape C consists of Nasdaq-listed stocks.

The aggregation of the data on behalf of the plans is managed by two exchanges/self-regulated organisations (SROs): (i) NYSE (now owned by Intercontinental Exchange, ICE) which operates Tape A and Tape B and (ii) Nasdaq which operates Tape C.

Costs and revenues model

In US exchanges are mandated to send data to a tape in return for a share of the revenue generated by that tape on the basis of a revenue allocation model which encourages certain types of liquidity and discourage certain behaviours¹⁴³. The market data income from the US Consolidated Tape is allocated amongst CTA and UTP plan participants based on a two-step process:

- a) Determine revenue attributable to each eligible security; termed “Security Income Allocation” (SIA)
- b) Determine participant’s share of revenue in an eligible security based on “Trading Share” and “Quoting Share”. Quoting share actually refers to the firm orders being shown in the order book.

Review of the US Tape

Market structure in the US has changed substantially since 2005 which has compelled, in January 2020, the SEC to propose the **review** certain elements of the consolidated tape framework. In particular, it was recommended that the exchanges and FINRA work together to come up with a **single tape plan** and governing body: the “New Consolidated Plan”. The proposal aims to re-structure the governance framework by reducing the influence of exchange groups by capping their voting rights and by giving non-exchange entities one-third of the vote.

It suggested amending the method by which ‘consolidated market data’ is collected, calculated and disseminated by introducing a **decentralized consolidation model**. This would have **competing consolidators** replace the exclusive securities information processors. The model would in effect **replace the ‘exclusive SIP’ model with a competing ‘decentralized model’**. It would require each self-regulatory organization, like FINRA and the exchanges, to make available its NMS data in the same manner and using the same methods needed to generate NMS market data to two new categories of entities: (1) competing consolidators responsible for collecting, consolidating and disseminating consolidated market data to the public; and (2) self-aggregators, brokers or dealers that elect to collect and consolidate market data solely for internal use.

At the time of finalising this report, these new SEC rules, adopted by the end of 2020 by the US regulator, were subject to legal challenges and their application is still uncertain.

5.6.2. The US bond tape

In the US, there is no bond trading on registered exchanges, all trading is over-the-counter (OTC). As a result, historically there was little to no transparency in the bond

¹⁴³ A9 / US equity market data revenue allocation model is described in further detail in Appendix 9 of the MSP study.

market. From the early 1990s, the US bond market had a program known as the “Fixed Income Pricing System” (FIPS) but around the year 2000 the SEC wanted to bring greater transparency to the market and created new rules.¹⁴⁴ In 2002 FINRA created the Trade Reporting and Compliance Engine (TRACE) with TRACE Rules requiring virtually all transaction information in TRACE-eligible securities to be reported to FINRA. TRACE manages reporting of over-the-counter (OTC) transactions. Brokers, who are FINRA members and deal with specific fixed-income securities, are required to report their transactions by the Securities and Exchange Commission (SEC) rules. Some of this data is then disseminated publicly.¹⁴⁵

To promote transparency without negatively impacting liquidity, FINRA adopted a **measured approach** and **phased-in** the reporting time and public dissemination requirements over several years to ensure there was minimal impact on reporting firms. This also allowed FINRA to study the impact of transparency on market liquidity. At launch, approximately 520 securities were publicly disseminated via TRACE. This included primarily investment-grade debt securities having an initial issue of \$1 billion or greater, but it also included 50 noninvestment-grade (high-yield) securities that had previously been disseminated under NASD’s FIPS2 system.

There is no revenue sharing model agreement in North American bond markets where CLOB markets do not exist and participants pay to report trades without taking a share in any revenue.

5.6.3 The Canada equity tape

In Canada, there are currently 6 exchange groups and 5 alternative trading systems (ATSs). Each trading venue acts as the aggregator of its own data. The legislation provides for the existence of consolidators, known as Information Processors (IP). They must satisfy certain criteria and be approved by the regulator. In 2007 the Canadian Supervisory Authority (CSA) conducted a procurement process for an information processor (data consolidator) for the entire market. The Toronto Stock Exchange (TSX) was designated in 2009 subsequently selected as the IP (TSX is a subsidiary of TMX Group and operates TMX IP), and its term was recently extended to June 2022. The TMX IP acts as the sole consolidator of market data for exchange-traded instruments in equities it consolidates of pre- and post-trade data. However, the use of its data by the market for best execution or other purposes is not mandated through regulation and this IP does not mandate technical standards. Although the legislation does allow for more

¹⁴⁴ All firms dealing in securities that are not regulated by another SRO (including equity exchanges), are required to be member firms of FINRA. FINRA is the modern evolution of the original SROs in US markets, the National Association of Securities Dealers (NASD) and the member regulation and enforcement operations of NYSE. In July 2007, the SEC approved the formation of the new SRO, FINRA.

¹⁴⁵ A full description of the US bond data consolidation is given in Appendix 11 of the MSP study.

than one IP, there is little incentive for competition due to the cost/benefit of operating it and there is no public benefit justification for operating more than one.

TMX IP offers six types of consolidated feeds. The Consolidated Data Feed is the most popular feed because it runs on a common protocol and users save money on connectivity and programming costs. The law requires timely, reliable and accurate publication of information but it does not mandate or provide any guidance on fees charged to the users of the data, other than that the IP must disclose all fees that they charge for consolidated data on its website. User fees for the IP are set through negotiation between the IP and the CSA.

Feed	TMX IP Distribution Charge Per User
Consolidated Data Feed (CDF)	\$ 200
Canadian Best Bid and Offer for Protected Markets Only	\$ 500
Canadian Best Bid and Offer	\$ 500
Consolidated Last Sale	\$ 500
Consolidated Depth of Book for Protect Markets Only	\$ 750
Consolidated Depth of Book	\$ 750

The TMX IP operates a **pass-through model** when it comes to market data fees, meaning that in addition to the TMX IP distribution fee, the market data fees (for Level 1 and Level 2, as applicable) and the costs of data policies (including access fees of the contributing marketplaces) are passed through to the client. This system is perceived as very burdensome for retail which are reported not to subscribe to the tape.

The Investment Industry Regulatory Organisation of Canada (IIROC), which is a dealer-funded, self-regulated entity, undertakes cross-market surveillance for the whole market.¹⁴⁶

5.6.4 Canada bond tape

IIROC was designated by the CSA to be the information processor for corporate debt in July 2016 and has been providing transparency to the public regarding all trades in corporate debt securities¹⁴⁷ then extended to government bonds. Unlike equities, there is only one post-trade data feed for corporate bonds (The TMX IP has 6 feed options) and it is available **free of charge**. The public can access a public website and search online data relating to corporate debt securities two days after a trade occurs (**T+2**). Users can look up summary and transaction-level data by issuer name or by CUSIP/ISIN number.

¹⁴⁶ A full description of Canadian equity data consolidation is given in Appendix 10 of the MSP study.

¹⁴⁷ A full description of Canadian bond data consolidation is given in Appendix 12 of the MSP study.

While, in equities, post-trade data must be submitted in real-time and the onus for sending post-trade data is on marketplaces, for bonds, dealers are also required to submit trade information at the **end of the day**.

Costs and revenues

IIROC operates on a **cost recovery basis** so although access to data is free of charge, the cost to operate the IP is ultimately paid by dealer member firms. IIROC developed a fee model where the operating cost is shared among the dealers based on the contributing dealer member's proportion of publicly reported debt transactions.

The debt operating **expense** for the year ending March 31, 2019 was \$458,000, down from \$570,000 the year before. The cost to build the IP was approximately \$2.5million and is amortized at \$461,000 per year over 5 years. Overall market debt regulation operating expenses accounted for approximately \$2.5 million of the 2019 budget.