


Regulating access to and pricing of equity market data

Danish and Swedish Securities Dealers Association
15 October 2012 – Revised 12
September 2013



27.17	38.72	6	28.92	0.1
38.70	28.93	287	21.95	0.1
28.92	21.96	5	29.47	-0.1
21.95	29.47	272	488.06	0.4
29.46	488.19	3	117.02	-0.1
488.07	117.02	9	20.84	-0.8
117.00	20.84	370	21.31	-1.6
20.83	21.32	126	31.66	0.6
21.31	31.66	69	34.51	1.0
31.65	34.52	19	33.43	-1.5
34.51	33.44	32	29.79	-0.4
33.43	29.82	10	21.35	-1.8
29.78	21.37	3	35.87	0.7
21.34	35.87	17	95.72	
35.86	95.76	3		

Authors:
Partner and Director, Sigurd Næss-Schmidt,
Economist, Martin Bo Hansen,
Analyst, Daniel Mekonnen Ali

Table of contents

Preface	4
Executive summary	5
1 MiFID – Aims and results in equity markets	7
1.1 Business models of trading venues	7
1.2 Aims of MiFID	9
1.3 Competition in the market for equity trading has increased	10
1.4 Competition for financial market data has not increased	13
2 Market data – Problems and possible causes	15
2.1 Market data characteristics	15
2.2 Market data is crucial for agents in financial markets	16
2.3 Trading venues hold a monopoly position in market for data	18
2.4 Access to market data at "reasonable cost" increases efficiency	23
2.5 Seven diagnosed problems	24
3 Policy Options	31
References	34

List of tables

Table 1 Different investor and transaction types	18
Table 2 Price of level 1 data in North America and Europe	23
Table 3 Annual distribution fees of BATS/Chi-X	25
Table 4 Increased need to purchase data from more venues.....	26

List of figures

Figure 1 Business model of trading venues	8
Figure 2 Revenue from listing, trading and data sales, 2011	9
Figure 3 Trading is fragmented across venues	11
Figure 4 Commission rates for trade-execution services	12
Figure 5 Average bid/ask spreads post MiFID implementation	13
Figure 6 Price increases from 2004-2012 of real time data products	14
Figure 7 From consideration to execution	17
Figure 8 Increase in revenue from information and technology services	19
Figure 9 Consolidated order book for a liquid stock	22
Figure 10 Value of trade (turnover) 2008 and 2011	27
Figure 11 Information content of data products per EUR.....	28

Preface

The Markets in Financial Instruments Directive (MiFID) is perhaps the most influential piece of financial regulation in European history.¹ One of the major innovations spurred from the legislation has been the increased competition between incumbent exchanges and new alternative trading venues. However, while this has reduced trading costs and most likely increased market efficiency, it has compounded an existing problem in the market for financial market data, namely the lack of competition between the trading venues as providers of raw market data.

The Swedish and Danish Securities Dealers Association has on this background asked Copenhagen Economics to provide a study on the functioning of the market for market data from trading venues, and outline policy options as input to the current review of the MiFID.

¹ See e.g. Davies (2008)

Executive summary

A key objective of the original MiFID has been to increase competition in the market for equity trading by encouraging competition between trading venues. It is safe to say that this has been a success. Competition amongst trading venues with respect to trade executions is now fierce, due to the increased amount of alternative trading venues challenging the position of traditional stock exchanges. Ultimately the most important result being that direct costs of trading have fallen to the benefit of investors.

However, this success is not without downsides. In fact we identify seven problems where the current and proposed legislation is not adequate. The first and most prominent problem is that the very success of MiFID in having more trading venues involved in the trading of the same equities has intensified an already existing problem. As more venues acquire significant market shares, traders and investors face the problem of buying market data from an increasing amount of sellers. As several indications suggest that each trading venue holds a de facto monopoly position with respect to the market data generated as a result of trading at the venue itself, there is strong reason to believe that the total cost of market data for investors is unreasonably high (Problem 1).

The original MiFID reform was based on the premise that exchanges would sell market data on the basis of reasonable costs assessment. However, there are clear indications of trading venues taking advantage of holding a monopoly position with respect to its own trade data, giving it the possibility to charge “unreasonable” price. We identify at least four such indications:

- It can be observed that equivalent packages of market data are priced significantly higher in EU than for comparable markets in the US. The US takes a more active stance in controlling prices which may be the reason for this.
- While the direct costs of trading have gone down, unit costs of data has increased despite continued improvements in technology (Problem 2 and 4).
- At a more micro level, exchanges have tended to bundle together data in packages and increased the complexity and limitation of use of products, while market participants have expressed interests for simpler and unbundled products. This is an indication of a market not responding to customer requirements and preferences (Problem 3 and 7).
- The lack of access to raw price data in comparable technical standards from exchanges have prevented the creation of consolidated and comparable data sets covering trade in the same products across the relevant trading venues. This fragmentation of data makes it more costly to implement strategies which seek out the best prices for clients (Problem 5 and 6).

The current review of MiFID – the so-called MiFID 2.0 – has recognised that MiFID 1.0 had limitations with respect to market data. At least two options are being suggested: *First*, it is proposed that the EU Commission gets the right to clarify what “reasonable commercial basis” means in practice, thus availing itself the right to intervene more di-

rectly in the market for market data. *Second*, it is proposed that post-trade data should be available free of charge 15 minutes after the execution of a trade. While we acknowledge that these suggestions are a step in the right direction, we do not believe that they fully address the challenges with respect to the pricing of market data.

In the work following the MiFID 2.0 proposal, this study therefore highlights three priorities with respect to the regulation of market data:

Firstly, that prices for both pre and post trade data should be regulated due to the uncompetitive nature of trading venues in the market for market data. Such regulation should focus on the (close to) raw data.² It is easier to estimate the costs of transmitting raw (or nearly raw) market data to participants than to estimate the costs of producing and then transmitting bundled products. By creating technical standards for raw data this would also facilitate the creation of new actors that can develop consolidated tapes both for pre and post trade data. The step by the Commission to define “reasonable commercial basis” is crucial in this respect, and should be a priority going forward.

This is consistent with the EU Commission’s own focus: it underlines that market participants should have access to unbundled products and promotes the role that consolidated tape providers can provide in creating an efficient market in equity trading. However, the focus from the Commission on post-trade is not sufficient, as the (at least) equally important pre trade data is not addressed.

Secondly, that the ownership to trade data is clarified. There is a good case for letting market participants get co-ownership to the data associated with the trades they are part of (both order book postings and trades executed). Such data can subsequently be pooled within and between trading firms and investors, most likely with the assistance of specialised data providers as referred to above. This can create an alternative source of consolidated pre trade data to that offered by the exchanges. This could by itself help improve price formation by lowering costs of data purchases for traders while also providing regulators with a good benchmark against which to regulate prices of raw data. However, the current disputes on ownership of data and limitations of the traders’ use of their “own” market data limit this source of competition in the creation of trade data.

Thirdly, that an extensive examination of the pricing behaviour of trading venues is conducted. Currently, the pricing strategy of trading venues is highly complicated, as e.g. products continually are bundled together and new products are created complemented by limitation of use on other products. Such pricing strategies increases the total cost of the same data, however in a non-transparent way. To complement an analysis of what constitutes “reasonable commercial basis”, it is necessary to have a clear description of trading venues’ price increases over time.

² The pure information derived from order book posting and trade executions without bundling or containing any value added services

Chapter 1

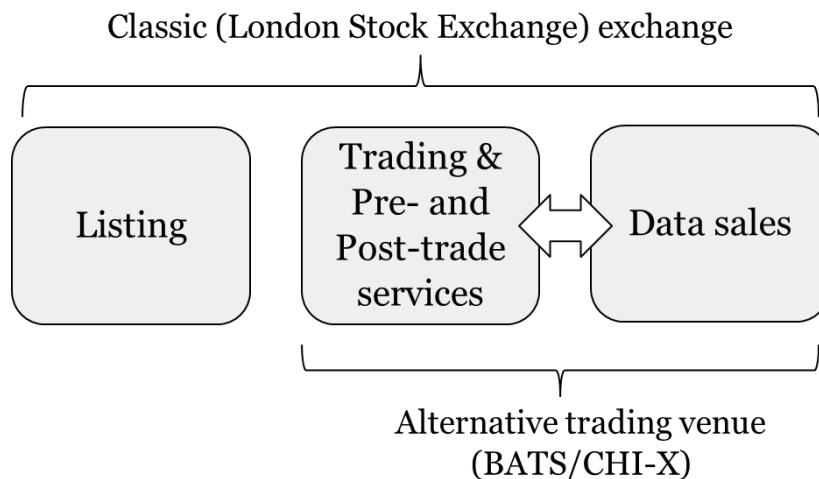
MiFID – Aims and results in equity markets

In this chapter we will describe some of the aims of MiFID, and how this extensive piece of legislation has affected the landscape of executing financial transactions. In Section 1.1 we describe the business model of trading venues, explaining that these venues operate in different product markets. In Section 1.2 we describe the aims of MiFID. In Section 1.3 we show that competition in the trading market has indeed increased, but conversely argue in Section 1.4 that competition in the market for financial market data has not increased. This is leading to increased costs for financial market participants and reduced market efficiency.

1.1 Business models of trading venues

In general, there are three different markets where a trading venue earns money: listing, trading, and data sales, cf. Figure 1. In the market for *listing*, companies choose an exchange to issue its stock. The exchanges provide ground rules for companies listed on the exchange in order to convey consistent information to the investors. While in practice, most companies choose to be listed at the incumbent national exchange, there is competition between the different exchanges, as companies can freely choose which exchange to be listed at. In the market for *trading*, exchanges and other trading venues compete to attract financial transactions. Important competitive parameters are the cost of transactions, which include explicit trading costs: trading and pre-/post-trading fees per transaction, and implicit trading costs: the bid/ask spread. In the market for *market data sales*, exchanges sell the market data generated by the actions on their platform to financial market agents.

Figure 1 Business model of trading venues



Source: Copenhagen Economics

The classic incumbent exchanges engage in all three markets, while alternative trading venues such as Multilateral Trading Facilities (MTFs) until now have only engaged in trading and data sales. Before MiFID 1.0, listing and trading were closely linked, as trading of a particular stock only took place on the exchange where the stock was listed. With MiFID this direct link has been broken, and trading of a stock can now take place independent of where the stock is listed.³

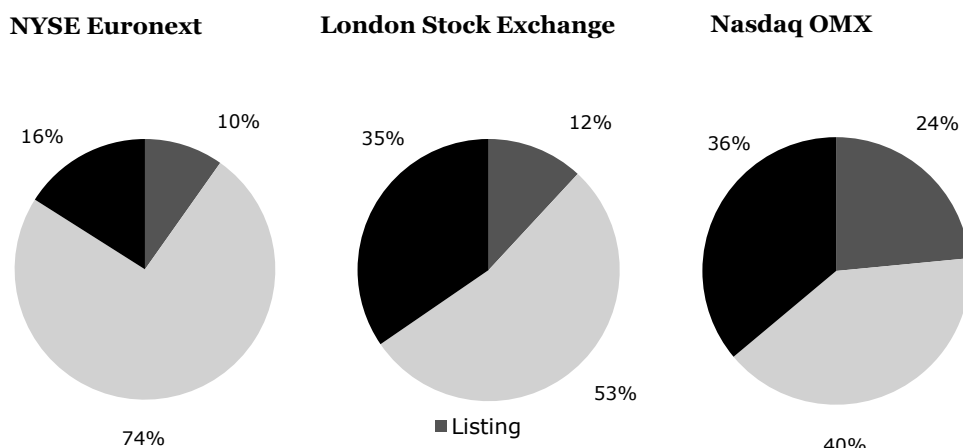
There is a strong link between the market for trading and the market for data sales for at least two reasons: 1) market data is generated as a by-product of the activities taking place in the market for trading, and 2) market data contains fundamental knowledge indispensable for the ability of agents to participate on the market for trading; for example the current market price of a security, and the current orders for a certain security. Competition authorities in fact consider market data as an ancillary market to the market for trading.⁴

Revenues from data and information services form a significant part of overall income for the large exchanges. In 2011, revenue from information and technology services, where market data sales constitutes the bulk of revenues, was the second largest item, constituting 16, 35, and 36 per cent of Euronext, LSE and Nasdaq OMX respectively, cf. Figure 2. This constitutes a significant supplement to income from trading and pre- and post-trade activities such as clearing and settlement services. This picture also applies to the other main trading venues.

³ In practice, liquidity of a particular stock is at present concentrated on the exchange where the stock is listed. This needs not however be the case in the future, especially if alternative trading venues succeed in attracting sufficient liquidity to their markets

⁴ Office of Fair Trading (2011)

Figure 2 Revenue from listing, trading and data sales, 2011



Note: Nasdaq OMX includes revenue from European markets only.

Source: Copenhagen Economics based on annual reports from NYSE Euronext, London Stock Exchange and Nasdaq OMX.

Even though the market for trading and the market for market data are closely linked, they are separate markets. The products supplied in either market are different and the competitive situation is also very different. We will return to this issue in Section 1.3 and 1.4.

1.2 Aims of MiFID

The MiFID is an extensive piece of legislation and covers several different aspects. One of the main aims of the directive has been to encourage competition in the market for trading in order to reduce trading costs.⁵ In order to achieve this aim, several instruments have been put in place. Among the important instruments are inter alia: 1) abolishment of the concentration rule, 2) introducing best execution requirements, and 3) introducing pre- and post- trade transparency.

Abolishing the concentration rule was an important aspect of the directive. The rule allowed national authorities to stipulate that retail investor orders should be executed only on a regulated market.⁶ This, in practice, implied that the incumbent exchanges had a sanctioned monopoly for executing trades (the market for trading) in the stocks listed on its exchange. With MiFID, any stock may now be traded on any trading venue, including the new alternative trading venues.

⁵ Lannoo (2011) and Davies (2008). Another major aim was to improve investor protection by inter alia establishing a common harmonised set of rules for the provision of investment services. This is not however a theme we will go into detail with in this study

⁶ Davies (2008)

MiFID also introduced stricter requirements for best execution policies in order to ensure more investor protection. One aspect of a best execution policy is to execute trades at the best terms possible for investors. The best execution obligation includes that investment firms and broker/dealers must disclose more information about which trading venues that are used for execution, and continue to review and evaluate the performance of the trading on these venues in order to see if the broker/dealers has been able to provide the best outcomes for their clients considering a number of factors.

MiFID also introduced provisions on pre- and post-trade transparency. This originated from concerns related to the fragmentation of liquidity that was foreseen with the repeal of the concentration rule. The provisions included, among others, that trade executions can be reported to other entities than the incumbent exchanges.

Currently the revision of MiFID, the so-called MiFID 2.0 is being discussed. One of the criticisms of MiFID 1.0 has been that obtaining financial market data has been rendered much more difficult and expensive following the fragmentation of liquidity. The draft MiFID 2.0 tries to address this by e.g. creating a license for trade data monitors such as approved publication arrangements (APAs) and consolidated tape providers (CTPs).⁷ APAs are envisaged to function as an entity in which investment firms shall report the price and volume of transactions made on an alternative trading venue or over-the-counter (OTC). CTPs are then authorised to collect trade reports from trading venues and APAs and consolidating this information. APAs and CTPs will most likely play a role with respect to post-trade data, but not for pre-trade data. The proposal also entails that regulated markets, multilateral trading facilities and organised trading facilities will have to make post-trade information available free of charge 15 minutes after the execution. We will return to the MiFID 2.0 when discussing policy options in Chapter 3.

1.3 Competition in the market for equity trading has increased

One of the aims of MiFID was to increase competition in the market for executing trades. By abolishing the concentration rule, MiFID has spurred several new alternative trading venues, which are now competing with incumbent exchanges for trade execution orders. These venues include both e.g. large and small mini-exchanges (multilateral trading facilities) and smaller ad hoc broker crossing networks. The most dominant alternative trading venue is BATS/Chi-X which is currently executing more than 20 per cent of all lit order book equity trading across Europe.⁸

MiFID has been a great success in introducing competition to the positions of incumbent exchanges in the market for trading. This is witnessed by the massive decline of market shares for incumbent exchanges in trade executions. Before MiFID, incumbent exchanges had market shares of almost 100 per cent of trading in major equity indices listed on their

⁷

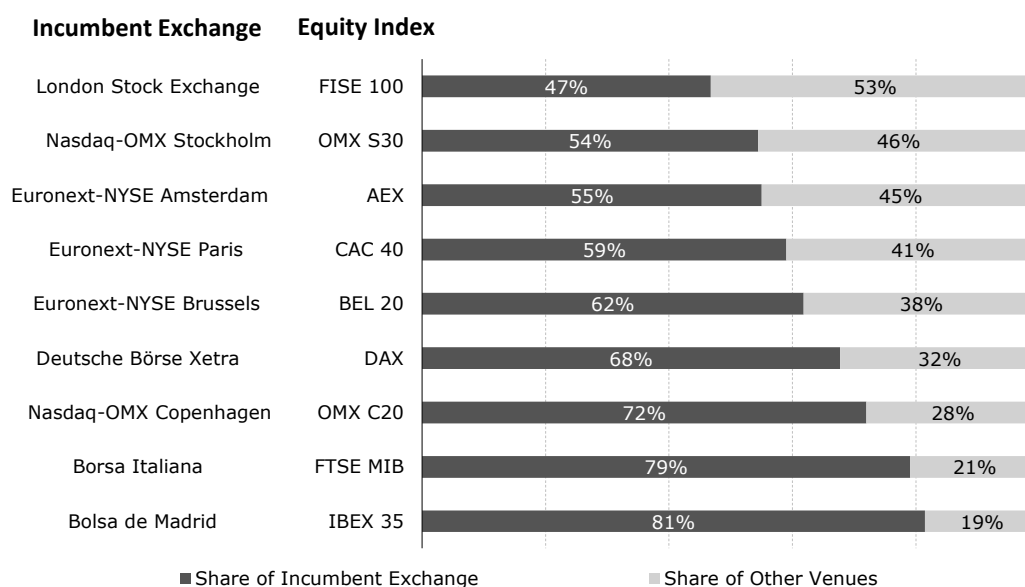
See Lannoo (2011)

⁸

Thomson Reuters Market Share Reports (April 2012). Lit order book trading is trading on venues where traders can see the order book. This is opposite to dark order book trading where it is not possible to see the bids and offers. Dark order book trading is primarily used to execute very large orders (e.g. by institutional investors). Additional alternative trading venues are e.g. Burgundy and Turquoise

own exchange. Today, this market share has declined to between 50-80 per cent, cf. Figure 3.

Figure 3 Trading is fragmented across venues



Note: Data is from April 2012, and shows turnover value from share in a number of different equity indices.
 Source: Thomson Reuters Market Share Reports. Data from 2012, and Fidessa <http://fragmentation.fidessa.com/europe/>

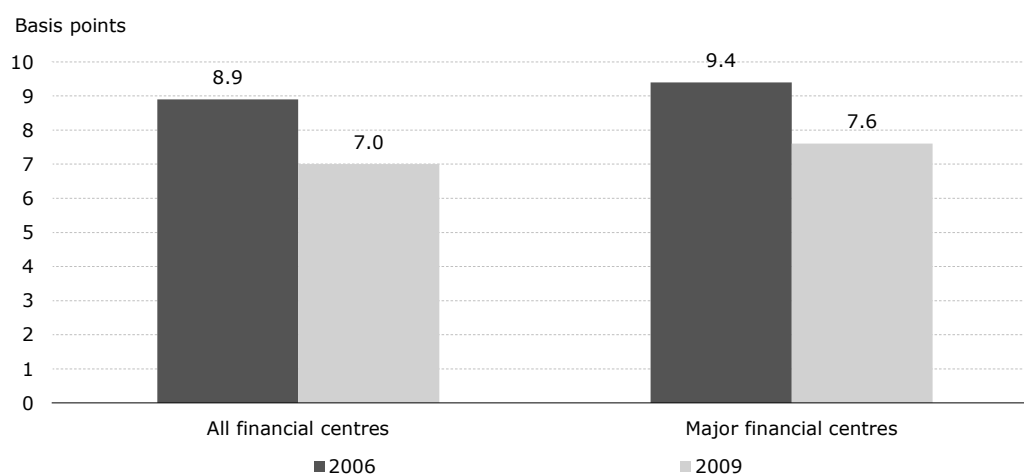
In order to attract order flow, the trading venues must have a certain amount of liquidity in its order books. Otherwise implicit costs of trading (e.g. bid/ask spreads) will be too high compared to trading venues with higher liquidity. On this basis, the new alternative trading venues are primarily active in the most liquid equities.⁹ For the less liquid equities, market shares have not changed much, and the majority of the trading still takes place at incumbent exchanges. Out of the 6,750 stocks on CESR’s list of “Shares admitted to Trading on EU Regulated Markets” approximately 900 were traded on a multilateral trading facility in addition to the incumbent exchange in 2010.¹⁰

By increasing the competition between trading venues, MiFID has affected both the explicit costs and the implicit costs of executing a trade. Firstly, there is evidence that the fees charged for executing trades (explicit costs) have been reduced post- MiFID. Several exchanges have changed the pricing structure of their execution fees making it difficult to make a comparison over time for each exchange. Instead, as indirect evidence it has been shown that the commission rates charged by institutional brokerage firms for trade execution services declined app. 2 basis points on average in all financial centres and major

⁹ Office of Fair Trading (2011)
¹⁰ Thomson Reuters (2010)

financial centres, cf. Figure 4. This corresponds to a reduction of about 20 per cent, and is a reflection of the execution costs at trading venues being reduced.¹¹

Figure 4 Commission rates for trade-execution services



Note: Commission rates for institutional brokerage firms. Weighted average across different financial centres.

Source: Oxera (2011).

Secondly, there is less agreement on the developments in the costs related to the (lack of) liquidity in a market (implicit costs). As liquidity becomes more fragmented across trading venues, one might expect that bid/ask spreads would increase in response to lower liquidity at a given market. However, one study finds that the bid/ask spreads weighted across trading venues have actually been reduced with 6 per cent in the period after MiFID implementation compared with the period before MiFID implementation.¹² The authors note that this may be explained by the greater competition amongst trading venues introduced under MiFID, which may encourage liquidity suppliers to post narrower spreads in order to attract order flow. Another study finds the bid/ask spreads in 2009 to be higher than pre MiFID,¹³ however the authors note that the effects of MiFID are very difficult to disentangle from the general effects of the economic and financial crisis. Data from 2010 seem to suggest that bid/ask spreads have gradually declined below pre MiFID levels, cf. Figure 5.¹⁴

¹¹ See also e.g. Davies (2008) that argues that MiFID has reduced trading costs

¹² See CFA Institute (2009), page 36

¹³ London Economics (2010)

¹⁴ ECMI-CEPS Task Force (2011), page 32

Figure 5 Average bid/ask spreads post MiFID implementation



Note: Bid/ask average spread and implicit volatility on EuroSTOXX, FTSE100 and CAC40

Source: ECMI-CEPS Task Force (2011), page 33, quoting Credit Suisse (2011).

In sum, MiFID has succeeded in increasing competition between trading venues for executing financial transactions. This has lowered explicit trading cost, and possibly also implicit trading costs.

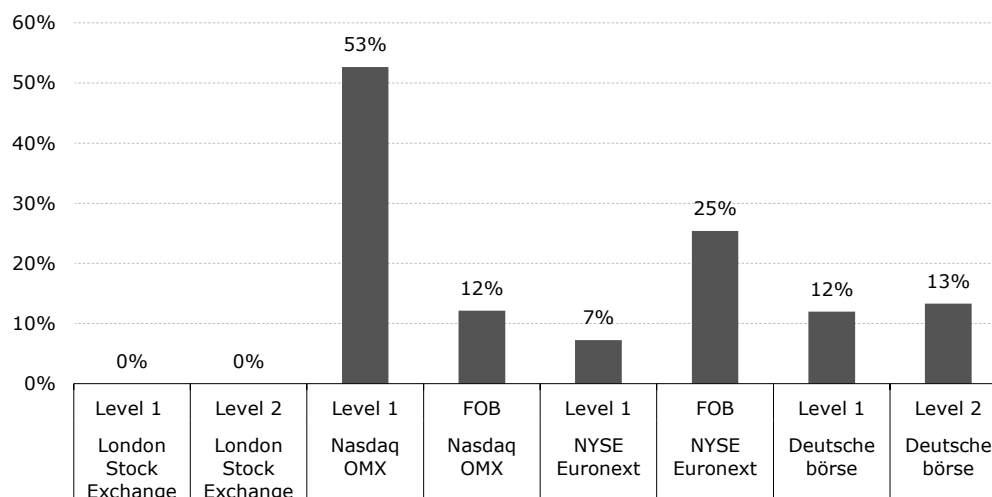
1.4 Competition for financial market data has not increased

Contrary to the market for equity trading, MiFID has not increased competition in the market for financial market data.

As we will explain in the following chapter, each trading venue holds a de facto monopoly position over the financial market data generated at the specific venue, to the detriment of cost to consumers of market data and to market efficiency. This uncompetitive position has not been challenged by MiFID. This is witnessed for example by the fact that the cost of financial market data has not been reduced in response to MiFID, like for example the cost of trading has. In fact, the price of most financial market data products has increased from 2004-2012, cf. Figure 6.¹⁵

¹⁵ Please note that Figure 6 has been updated since the publication on 11 September 2012. The price increase of NYSE Euronext's level 1 product has been revised down from 247 per cent to 7 per cent. During the time span from 2004-2012 NYSE Euronext significantly changed the product with the label 'level 1' from a 'last price' product to a 'BBO1' product, implying that the two level 1 products could not be directly compared. In the updated Figure 6, we compare the current level 1 product (BBO1) with the previous level 2 product (BBO5) which is more accurate than comparing a BBO1 product with a last price product. This shows a price increase of 7 per cent, from the BBO5 product to the BBO1 product with lower market depth.

Figure 6 Price increases from 2004-2012 of real time data products



Note: The price for professional users, and non-members of the exchange where relevant.
 Level 1 and Level 2 data products may not necessarily be the same products across exchanges. Direct comparisons between exchanges should be applied with caution.
 Level 1 data products are typically the top-of-book bids and ask bids.
 Level 2 data products are typically depth-of-book bids and ask bids, and occasionally full order book products.
 FOB stands for Full Order Book.
 Price of Nasdaq's products are from 2006 to 2012
 Price of Deutsche Börse's Level 1 product is from 2004-2009.
 Price of NYSE Euronext is from 2003-2012. Note that the level 1 product of NYSE Euronext has been reduced from BBO5 to BBO1 and indices have been taken out of the product. This implies that the shown price increase is a low estimate of the actual price increase

Source: Price lists from the different exchanges.

The price increases do not just take place on market data products offering access to real time data. Fees for distributing data purchased from the exchange to other users are regularly increased as well. As an example, NASDAQ OMX has recently announced a price increase in its distribution fee for level 1 and 2 data, rising from €2,500 per month to €4,000 per month.¹⁶ This is an increase of 60 per cent.

The MiFID has tried to address this problem by stipulating that pricing of market information should “be made available to the public on reasonable commercial terms...”.¹⁷ We believe that this approach is not sufficient, as there is effectively no competition between trading venues regarding the sale of market data. Consequently, commercial terms is not a meaningful concept in this respect. We will go into detail with this in Chapter 2.

¹⁶ NASDAQ OMX (2012). Note that there is a membership discount of 50 per cent
¹⁷ European Commission (2004)

Chapter 2

Market data – Problems and possible causes

2.1 Market data characteristics

Financial market data is basically produced by actions of the parties operating on financial trading venues. When these parties submit bids and offers on the trading venue, or agree to conduct a transaction on the venue, data on this behaviour is stored by the exchange.¹⁸ This raw information is then processed by the trading venues, consolidated with other parties' actions, and packaged into different types of financial market data products.¹⁹

There exist a large number of different market data products. Different users have different market data needs, and the several different products have been created to reflect this. Basically there are two overall classes of data: pre- and post-trade data. In addition, market data can either reflect real time actions or historic actions.

Post-trade data is information about the price and size of a given financial transaction. This data is typically used to assess the current market price of a given security. Post-trade data are typically sold as one product. *Pre-trade data* is information about the bids and offers for a particular security at a particular point in time. This data is also known as order book data, as it conveys information about the supply and demand at a given point in time. Pre-trade data is among others used to assess the market impact a given transaction would have. Pre-trade data is typically sold in differentiated products according to the depth of the order book included. Three common product classes are: 1) Level 1 (top of book): only the best bid/offer, 2) Level 2 (depth of book): the 5-10 best bids/offers, and 3) Full order book: All bids/offers at a current point in time.

Market data products typically convey information about real time developments. This is very useful for financial market agents who need to act according to current developments. Data products that contain historic data are also available but usually at a highly discounted price. In fact, several trading venues currently give market data away for free after 15 minutes.²⁰ Historic market data is not used actively in the day-to-day trading, but may be used to construct trading benchmarks, or evaluate a specific trading strategy (this will be developed in the section below).

Financial data products are typically also divided into security type, so that trade data for equities, bonds, and derivatives are sold in different products. There may also be a geo-

¹⁸ With MiFID, data generated by a transaction (post-trade data) can also be reported to other parties than stock exchanges, e.g. investment firms

¹⁹ In addition to this, there is a secondary market for market data, where data vendors such as Bloomberg and Thomson Reuters consolidate data across trading venues and create different types of value added services. In this report we focus only on the primary market for data that is data sold by the trading venues

²⁰ With the proposed MiFID 2.0 it is proposed to regulate that all market data should be free after 15 minutes

graphical dimension in the data products for example so that European markets and international markets are sold in two different products.

The price for financial market data products is highly dependent on the type of consumer, and the type of consumption. The classic difference is that professional users pay a substantially higher fee than non-professional (private) users. In addition, there is typically a high one-time fixed fee for being able to distribute the data. The typical real time data products, which are used by e.g. financial traders, are often priced per user or per workstation.

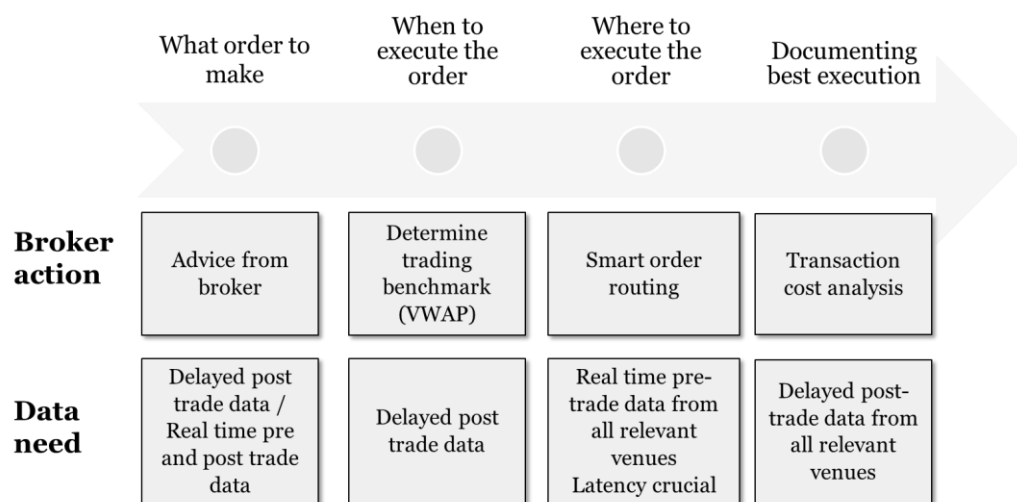
2.2 Market data is crucial for agents in financial markets

Having access to real time market data from multiple trading venues is crucial for agents acting in financial markets on their own behalf and on behalf of clients. We will illustrate this point by an example of a broker/dealer dealing on behalf of a client. In order to ensure best execution for a client, it must in general decide on two issues:²¹ 1) When to trade an order during the day, and 2) Where to execute an order at the lowest/highest price. To determine these two issues, the broker/dealer must have access to a variety of different market data, including both pre- and post-trade data. If not, the execution of the trade will not be optimal, and therefore not fulfil the broker/dealer's requirements to its client.

Take as an example a large order for an institutional client. For such an order to be executed optimally, there are several steps and several data requirements that need to be fulfilled. The process can basically be divided into four steps, cf. Figure 7: 1) what order to make, 2) what benchmark to trade against, 3) which venue to execute the order at, and 4) was the order executed optimally.

²¹ Best execution is defined here both as the legal requirement in MiFID, and the brokers own best execution standard which typically is more comprehensive than the MiFID requirement

Figure 7 From consideration to execution



Source: Copenhagen Economics.

Step 1: What order to make?

Before there is agreement between the client and the broker to execute a trade, there has most likely been correspondence between the broker’s sales office and the client. This could for example be general discussions about market developments, or strategies about how to deal with specific stocks. For the general discussions, delayed information about historic post-trade data is sufficient; however for discussions about day-to-day trading of specific stocks, the broker and the client would need access to real time pre- and post-trade data.

Step 2: What benchmark to trade against?

When a large transaction is about to be conducted by a broker, avoiding market impact is crucial for profitability for the client. One strategy to avoid market impact is to split out the order over time. As liquidity typically follows certain patterns over the day, a trading benchmark can be constructed that takes advantage of this pattern. A volume weighted average price (VWAP) is such a benchmark, and it determines how trading should be executed over time (e.g. over the day). In order to construct such a benchmark, extensive post-trade data is needed. Delayed data is sufficient for this purpose.

Step 3: Which venue to execute the order?

Once a trading benchmark has been determined, it must be decided in which venue to execute the order. Several brokers do this through a smart order routing system, which directs the order to the trading venue with the highest bid/offer. Such a system takes into account the depth of the order book and may split up the total order into smaller orders at

different trading venues. Brokers that trade manually essentially performs the same task as a smart order routing system. In order to achieve this, it is necessary to have a deep order book overview in real time for all venues where the stock is traded, covered by its best execution policy.

Step 4: Was the order executed optimally?

For most especially large orders, brokers must compile a transaction cost analysis (TCA) to determine how effective the execution strategy has been. This analysis compares the timing and the venue of the actual trading with alternative behaviour. In order to compile such an analysis, post-trade data from all venues where the stock might have been traded is required. Delayed data is sufficient for this purpose.

While this description is generic to a large extent, different investor and transaction types will have different requirements for data. The requirement for institutional fund managers and large broker firms are described in Table 1.

Table 1 Different investor and transaction types

Type of investor/transaction	Transaction characteristics	Data requirements	Transaction cost analysis (TCA)
Institutional fund management	Large orders	Liquidity crucial. Current prices and traded activity in order to avoid market impact. Desktop applications, low-latency not required	Sophisticated TCA tools. Monitor execution performance across brokers, trading desks etc. Real time delivery not required. Full tick data across all relevant markers is essential
Large broker firm	Both retail and institutional orders	Full ticks, low-latency data feeds from all relevant exchanges and venues (and data vendors). Often generate their own consolidated data for consumption and display	Own TCA tools (both low-latency real time analytics and next trading day analytics). Use TCA to monitor execution performance of algorithms, trading desks and execution venues. Competitive parameter to have low TCA

Note: Transaction cost analysis (TCA) is when investors monitor their actual trading behaviour against market benchmarks. Such analyses is typically used to document well executed orders, or improve on trading behaviour e.g. through the use of algorithms.

Source: Copenhagen Economics based on inter alia Thomson Reuters (2010).

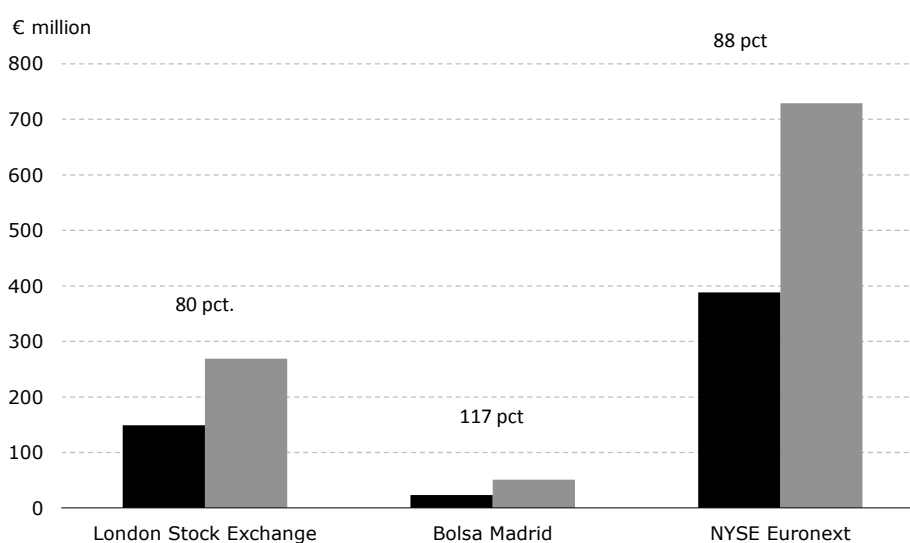
2.3 Trading venues hold a monopoly position in market for data

While there has been an increase in competition between trading venues for executing trading orders, the level of competition has not increased in the market for financial market data. In fact, there are several indications that each trading venue holds an effective monopoly position with respect to the financial market data generated on that particular trading venue.

In order to hold a monopoly position it requires that the product sold is unique, and that consumers are not very responsive to price changes (price inelastic). If consumers could change to a similar product or choose to consume much less of the product, then it would not be possible to exert pricing power. However, for market data products, the product is both unique, and the consumers are very price inelastic. This implies that trading venues are in a position of de facto monopoly pricing power.

One indication that exchanges have been able to assert monopoly pricing behaviour, is that revenue from information and technology services - where the sale of market data constitutes a very significant share - has increased quite significantly at a number of exchanges from 2004-2011, cf. Figure 8.²²

Figure 8 Increase in revenue from information and technology services



Note: The figure depicts the revenue from information and technology services, where market data sales typically constitute a very significant share.

For several exchanges it has not been possible to construct a coherent picture, as the definition of revenue categories have changed up to several times over the time span.

Source: FESE Annual reports supplemented by information from the exchanges' respective annual reports

Uniqueness of data products and price responsiveness of consumers

Financial market data generated from a trading venue is a unique product. Both the order books (pre-trade data), and the execution history (post-trade data) cannot be produced and sold by any other trading venue, since these orders and trades only take place on (or are reported to) one particular venue. Trading of a particular stock on an alternative trad-

²² Over the same time period, exchanges' total revenue has also increased approximately with the same percentage as revenue from information and technology services. However, as we expect that a significant share of this revenue increase can be attributed to an increase in the amount of transactions and turnover from high frequency trading, this does not imply that revenue from market data should increase in the same pace

ing venue such as BATS Chi-X may to some extent mimic the trading of the same stock on an incumbent exchange. Nevertheless, offered liquidity, bid-ask spreads, and actual trade executions are very specific to the concrete trading venue, and the market data generated by this venue therefore makes up a unique product. This means that no competitor is in a good position to bid down the price of this product through competition, since they cannot offer a substitute to the product.

If the consumers of market data products are not very responsive to price increases, there is a large room for the trading venues (producers of market data products) to increase the prices of their products. And several indicators suggests that market data consumers are in fact not very price responsive:²³ As financial market data is such a crucial parameter in conducting financial trades, any financial market agent have very little choice than to obtain access to the data products. If e.g. a financial market investor considers to stop consuming market data products from a particular trading venue in response to a large increase in the price of market data, the investor will basically have two hypothetical possibilities: 1) trade on the trading venue without knowing the real time order book and the executed trades, and 2) shift its trading activities to alternative trading venues that offer market data at lower prices.²⁴ We argue that these two possibilities are only hypothetical and that the vast majority (if not all) investors and trading firms would choose to continue trading on a trading venue which held liquidity in a stock of importance.

1. Ordering trades on a venue without knowing the real time executions and the current order book is an obviously poor strategy. An investor who places orders based on delayed information is effectively participating in a lottery with only downside risks. Consider for example an investor placing a sale-bid at a price which is based on 15 minutes delayed information. If the current bid-price for the stock is higher than expected, the agent will sell the stock with a loss, because the price could have been higher. On the other hand, if the current bid-price is lower than expected, there will be no trade, as no one will pay the higher sales-price. Such a strategy will quickly render this strategy unprofitable compared to trading with access to real time data.

2. A trader or an investor can essentially decide to stop using a particular trading venue in response to a substantial increase in market data costs. Even if the venue is included in a trading firms' best execution policy, it has a choice of not including this venue in the policy. Whether it will be a good idea to do so will depend on the different cost elements associated with trading on the venue. These costs can be divided into fixed and variable costs. The fixed costs are typically the market data fees (or membership fees), which must be paid to gain information about trading. The variable costs are the costs associated with each transaction, and consist mainly of three elements:

- Transaction costs (direct costs): Trading fees and clearing/settlement fees
- Price and liquidity (indirect costs): Bid-ask-spread, market impact

²³ See e.g. SLCG (2011)

²⁴ Discontinuing data purchases will also reduce the value of ancillary services that a financial market agent may provide to its clients such as online data access for retail investors, newsletters, investment advice etc.

- Effectiveness of the venue (speed of execution, likelihood of execution, clearing and settlement arrangements).

The choice to stop using a venue will depend on the trade-off between the lower fixed cost due to the saved market data fees, and the increase in variable costs (per transaction) that will occur from not utilising a trading venue that used to provide benefits to the agent. To illustrate, if market data costs increased indefinitely, it would be beneficial for investors and trading firms to avoid that cost and instead trade on other venues even though their variable costs are higher.

Variable costs are typically not very high for each transaction, however the sheer amount of transactions that takes place in the financial markets may transform even small variable cost differentials between trading venues into significant cost savings. This becomes increasingly important for broker/dealers conducting large orders, where avoiding market impact is of the essence for profitability. Such clients may be reluctant to use broker/dealers that do not offer trading at certain venues with substantial liquidity, as market impact is less easily avoided. For the vast majority of turnover, the variable costs are likely to be substantially higher than the fixed costs. Consequently, it would take an incredibly large increase in market data prices in order to make it profitable for investors and trading firms to give up trading on a particular venue.

Since investors and trading firms are unlikely to find it profitable to pursue either option 1 or option 2, this implies that they are very price inelastic, and are not likely to stop purchasing market data in response to a price increase. This finding is consistent with findings in other studies.²⁵

Consumers of market data products from incumbent exchanges are particularly price inelastic, as the incumbent exchanges still account for the majority share of the liquidity in the market. This makes the information value of their data products higher (see more on this below). In addition, the more liquidity there is in a market, the more valuable this market will be since a trading decision on this market will be more lucrative due to the lower market impact.

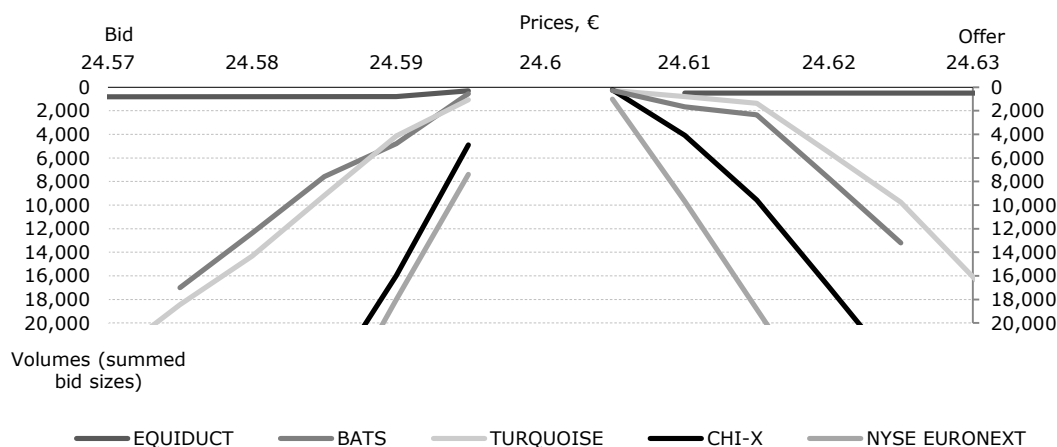
However, even though the data products of incumbent exchanges may be more valuable, alternative trading venues are still likely to hold a monopoly position with respect to its own data production, as long as a small but significant amount of trading of particular stocks takes place on these venues. In theory, when trading a particular stock, market data is needed not only for the most important venue, but for all the venues where this stock is traded.²⁶ This can be illustrated by looking at the depth of the order books of the different trading venues. For smaller orders, the choice of venue is less important, since the variation in best bid and ask orders across venues is very limited due to effective arbitrage trading across venues. However, for larger orders, the choice of venue becomes much more important. If a broker is to conduct a large deal for a sell-side client, it is cru-

²⁵ See e.g. SLCG (2011)

²⁶ ESME (2009b). Even though a trading firm is only obliged to access the venues stated in its execution policy, it will have a strong incentive to expand its execution policy if an excluded venue would offer better prices

cial for his execution performance that he has access to a variety of trading venues in order to execute at the highest bid price possible. As Figure 9 shows, the bids at different trading venue become increasingly dissimilar the further down the order book one looks. This makes it important to hold information about the different venues. If an investor e.g. only looks to Turquoise and not Chi-X to save market data fees, the bid prices would be much lower for large orders.

Figure 9 Consolidated order book for a liquid stock



Note: Consolidated order book for Royal Dutch Shell A (EUR) on 21 May 2012 14:20.

Source: Marketviewer.Equiduct.com.

Monopoly pricing

A simple definition of monopoly power is the ability to set prices above marginal – or incremental – costs. In the case of trading venues it is difficult to measure the incremental costs associated with producing market data. Market data is basically a by-product of the financial trades taking place at the venue. However, additional services are provided by the venue in order to collect the information, repackage, and distribute the information with a very low latency. The incremental cost associated with market data is the costs associated with this additional value added, e.g. hardware and software capable of delivering the collection, repackaging and distributing service. The costs associated with running a trading platform, which essentially generates the market data through trade executions and order flow should not be considered incremental costs. The reason is that these costs would have been held even without the market data business in place, as they are held to service the financial trading business.

It is very difficult to uncover the exact incremental costs associated with the production of market data, as information in trading venues' financial accounts is not detailed enough. This makes it very difficult to calculate how excessive the pricing of market data is. Instead, we can compare the prices among the European trading venues with those of American trading venues. The US has chosen a different model for collecting and distrib-

uting market than in EU.²⁷ This model implies that the collection, processing and distribution of market data is done by a regulated administrator.²⁸ The revenue generated by market data sales is then distributed back to the trading venues according to a revenue-allocation rule linked to objective criteria. This regulated environment has resulted in prices of market data that are significantly lower than in Europe. The average price of a relatively similar data product in the US is €17, while it is €41 in Europe, cf. Table 2. Since incremental costs for market data are not expected to be significantly higher in Europe than in USA, this difference indicates that market data producers in Europe may in fact abuse their unique position as monopoly providers of market information to charge prices well in excess of their total costs, including return on investment in trading and information systems.

Table 2 Price of level 1 data in North America and Europe

Trading venue	Price of Level 1-comparable data (€)
<u>North America</u>	
NYSE (Network A)	22
NYSE MKT (Network B)	14
Nasdaq (Network C)	14
Average	17
<u>Europe</u>	
LSE Group	45
NYSE Euronext	59
Deutsche Börse	56
Nasdaq OMX Nordic	29
Bolsa Madrid	16
Average	41

Note: Prices are from 2012, except Deutsche Börse which is from 2009.
 In North America, the data product compared contains BBO and last price.
 The average is a simple average.
 Level 1 data in Europe is typically a limited dataset consisting of the top of the order book instead of a full depth.

Source: Information price lists from the exchanges' websites.

2.4 Access to market data at "reasonable cost" increases efficiency

The importance of market data for financial market agents and for well-functioning financial markets is well known in the economic literature. The MiFID 1.0 recognises the benefits of easy access to financial market data, and stipulates that both pre- and post-

²⁷ See e.g. Caglio (2008)

²⁸ There are two networks and hence two administrators in the US. The administrators are currently New York Stock Exchange and American Stock Exchange respectively. See more <http://www.nyxdata.com/cta>

trade information should be “made available to the public on reasonable commercial terms”.²⁹ This is especially important in light of the substantial fragmentation of liquidity across venues. In order to reap the benefits of the increased competition in the market for trading, and contribute to an efficiently functioning single market for equities, market transparency is key.³⁰

The discussion of providing easy access to market data is strongly related to the general discussion on market transparency. As market data provides agents with information needed to participate in the market, lack of market data significantly reduces transparency. Indeed, if a market participant only has access to market data from one trading venue, trading possibilities on all other relevant trading venues becomes opaque. Full transparency indeed reduces search costs and promotes a more efficient price formation and discovery.³¹ Moreover, theoretical studies show that by increasing the cost of market data, the cost of capital may also be increased.³² These considerations were strongly related when the Danish Competition Authority concluded in 2003 that lowering the price of market data at the Copenhagen Stock Exchange would increase market efficiency.³³

High costs of market data also restrain competition between financial broker/dealers. For a broker/dealer that typically deals with local stocks, high market data costs may be an effective impediment for trading non-local stocks. If e.g. a Spanish broker/dealer would like to trade a stock, which is very liquid at Deutsche Börse, the Spanish broker/dealer either needs to buy the market data products from the exchange or go through a local broker/dealers office, where it will pay for the data cost indirectly through commission fees. If this cost is sufficiently high, the Spanish broker/dealer will choose not to engage in competition with local German brokers/dealers.

Provision of market transparency in the securities trading market has public good characteristics. This is so, since market participants gain from transparent markets, however it appears rational from each individual investors’ point not to contribute to it.³⁴ From an individual investor’s point it is beneficial not to display his own trading interest to the market, while each investor wants to learn about the trading intentions of others. This makes it more suitable for regulation as regulation of a public good industry will increase the total value to the market participants.

2.5 Seven diagnosed problems

We have identified seven problems with the current framework for financial market data:

1. Fragmentation of liquidity increases costs of data purchase

As liquidity fragments across different market, more and more venues are becoming increasingly important in the trading decisions of market participants. This implies that the

²⁹ See European Commission (2004), Article 29 and 30 (page 24) for MTFs, and article 44 and 45 (page 30-31) for Regulated Markets

³⁰ See e.g. ESME (2009b) and CFA Institute (2009)

³¹ ECMI-CEPS Task Force (2011)

³² Easley et al. (2011)

³³ Danish Competition Authority (2003)

³⁴ ESME (2009b)

market data products supplied by the new trading venues become prerequisites for financial market agents. This is especially so for broker/dealers trying to achieve best execution for their clients.³⁵ As the costs of data increase so will the cost for investors.

Most of the new trading venues are currently operating with a so-called *fee holiday*, where market data products are given away for free. To market participants, this is seen as a way to attract liquidity to the new venue. Once a sufficient amount of liquidity is attracted, the venue develops to be an important player, and market data becomes an important prerequisite in financial market agents' business models. Consequently, the fee holiday can be taken to an end.

That fee holidays are coming to an end can for example be seen with the recent price increases by BATS/Chi-X on its distribution fees. Until 2009, distribution of market data from BATS/Chi-X was free. From 2009, the price has been increased continually over the years, and was increased from £25,000 to its current level of £30,000 for level 2 data in 2012, cf. Table 3.

Table 3 Annual distribution fees of BATS/Chi-X

Year	Level 2 data (£) real-time data and public display	Level 1 data (£) limited public displayed info
2012	30,000	15,000
2011	25,000	9,000
2010	18,000	6,000
2009	0	0

Note: Level 1 data is typically a limited dataset consisting of the top of the order book. Level 2 data is typically the complete pre- and post- data available containing information on the order book in full depth.

Source: <http://www.chi-xeurope.com/get-connected/document-library.asp>
http://www.thetradenews.com/news/Asset_Classes/Equities/Chi-X_Europe_to_charge_non-members_for_data_from_2010.aspx

In addition, BATS/Chi-X is from October 2012 now also charging regular monthly display fees for real time data access. The fee structure implies that the price per end user is between €20 – 125 per month for level 2 data, with an average price of app. €46 per user per month.

Prior to MiFID, all trading took place at the incumbent exchange. Today, as liquidity is fragmented, the cost of obtaining a full order book is increased. This is illustrated in Table 4, where the total cost of accessing market data is increased for three relatively fragmented stocks.

³⁵ See e.g. CFA Institute (2009) finding that 64 per cent of surveyed firms indicate that fragmentation may have increased the cost of data access

Table 4 Increased need to purchase data from more venues

BNP PARIBAS	Share of trading		Price of market data access Level 2 (Monthly)	
	2006	2012	2006	2012
Incumbent venue (NYSE Euronext)	100	68.8	58 - 61	84
BATS/CHI	0	21.1	0	56
Equiduct	0	4.4	0	50
Turquoise	0	3.5	0	12*
London Stock Exchange Group (Milan)	0	2.3	N/A	N/A

LUFTHANSA	Share of trading		Price of market data access Level 2 (Monthly)	
	2006	2012	2006	2012
Incumbent venue (Deutsche Börse)	100	68.1	60	68
BATS/CHI	0	26.6	0	56
Turquoise	0	4.5	0	12*

Novo Nordisk	Share of trading		Price of market data access Level 2 (Monthly)	
	2006	2012	2006	2012
Incumbent venue (Nasdaq OMX)	100	85.5	53	56
BATS/CHI	0	13.9	0	56
Turquoise	0	0.6	0	12*
Burgundy	0	0.0	0	0

Note: Pricing of market data from Turquoise is introduced from 1 November 2012.

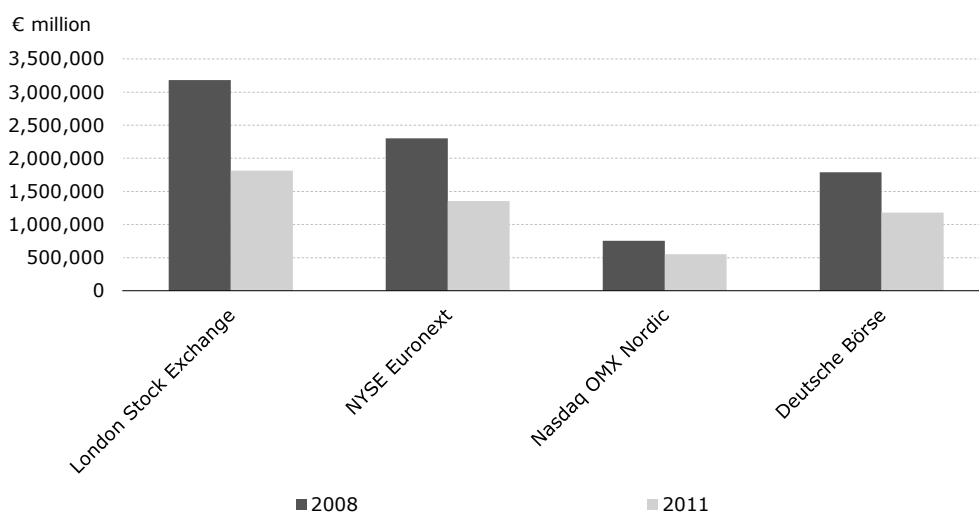
Source: Fidessa Fragmentation Index, and price lists from each trading venue

The development of higher data costs is also induced by EU regulation by increasing requirements on financial market participants. Requirements on e.g. ensuring best execution for customers and providing information to customers and authorities implied by both MiFID, Basel II and Basel III, entail that financial market agents are effectively required to purchase market data in order to comply with regulative requirements. The increased cost of market data from liquidity fragmentation should also be seen in context of the general increase in prices of specific market data products, cf. Figure 6.

2. Information content in exchanges' data products is decreasing

Before implementation of MiFID 1.0, when national exchanges had monopoly in the trading market, financial market agents was sufficed to buy market data products only from the incumbent exchange. Such a data product constituted all relevant information on the order book and on actual trading. Currently, liquidity is much more fragmented, and less trading takes place on the incumbent exchanges. From 2008 to 2011 the value of trades taking place at a number of large European incumbent exchanges has declined significantly, cf. Figure 10.

Figure 10 Value of trade (turnover) 2008 and 2011

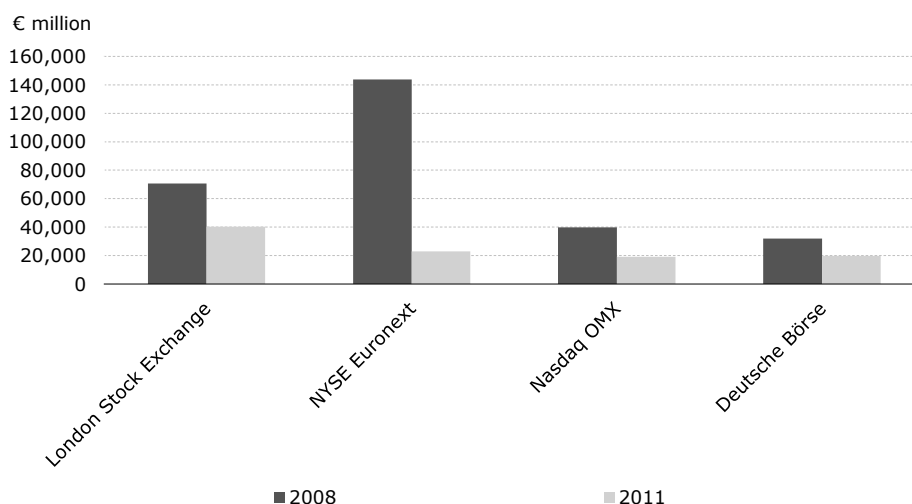


Source: Copenhagen Economics, based on Thomson Reuters Market Share Report 2008 and 2011.

As less trading takes place on the incumbent exchanges, the information content of these data products are being reduced. One way to measure the information content of data products is to measure the ratio of euro value traded on an exchange to the fees for the data product.³⁶ This ratio measures how many trades (measured by value) that you gain access to from purchasing the data product of a given exchange. As liquidity has been more fragmented, and the fees for data products has increased, the information content of these data products has been reduced, cf. Figure 11. Basically, this means that the unit cost of data has gone up, and that consumers of market data are now paying more for less informative data products than earlier.

³⁶ See e.g. SLCG (2011), page 67, where this measure is calculated for a set of Canadian, American and European data products.

Figure 11 Information content of data products per EUR



Note: The figure shows the information content of level 1 products for the various exchanges. The same picture applies for level 2 data products.

Source: Copenhagen Economics based on Thomson Reuters Market Share Report 2008 and 2011, and price lists of the selected venues.

3. Forced bundling of data

When trading venues sell financial market data, they are grouping various data into data products. The venues typically offer a selection of data products, however the number of products is still fairly limited compared to the variation in the collected data. It is for example not possible to buy information related only to the trading of one particular stock to a discounted price, instead of buying the whole selection of European stocks. This bundling is to some extent necessary. It would for example be quite expensive in terms of administration if a trading venue should offer one data product for each security trading on the venue. However, as the practice of bundling data may be used to make data consumers pay a relatively higher price for a product that includes much more information than the consumer would like to purchase, it must be addressed with caution. In fact, bundling of data products takes place continually at various exchanges, as new data products are constructed, or existing products are randomly extended and made more expensive.

As an illustrative example, we have considered an example from Nasdaq OMX Copenhagen from 2006.³⁷ OMX offered a data product that was bundled with respect to different financial instruments. That is, a consumer who was only interested in data for stock trading would also have to buy data for bonds and derivatives trading to get the stock trading data. Moreover, prior to 2006, all trades (both stock, bonds and derivatives) were geographically limited to one Nordic capital. That meant that traders interested in information about activity in Stockholm could buy one data product, while traders interested

³⁷ In 2006 the exchange's name was OMX Copenhagen

in Copenhagen could buy a different product. In 2006, OMX changed this structure and unbundled the data products with respect to the type of financial instrument, so equity, bonds and derivatives could be bought in different products. Instead however, OMX chose to bundle all Nordic stocks (or bonds or derivatives) into one product. This meant that financial market agents that needed data for Danish stocks in Copenhagen now should buy data for all Nordic stocks. For financial market participants who were only interested in Danish products, this involved a major price increase.

It has also been observed that exchanges bundle *blue chip* data with small and mid-cap data, which is significantly less demanded in order to take a higher price for the total product. Other examples include bundling of on-exchange and off-exchange data, and bundling important indices together with less important indices.

4. Cost of data products should follow technological progress

Market data products consisting of raw data are essentially by-products of a well-functioning trading venue. As orders are placed in the market, and trades are executed, financial market data is automatically produced. This implies that the incremental costs associated with producing data products are limited to collecting the information and distributing it to consumers. This is not a negligible cost, as consumers place high demands on low latency distribution, but it is substantially lower than the total cost of running a framework capable of generating the raw data.

The incremental cost of market data products is primarily attributed to running computer systems capable of collecting and distributing the information generated in the market. As technological progress occurs, the costs of keeping such systems are significantly reduced. This suggests that the cost of market data products should decrease concurrently with technological progress. On the other hand, there is an increased demand from consumers of receiving data with lower latency. Moreover, as the volume of trading is increased due to e.g. the increased amount of algorithmic trading, this places demands on the capacity of the computer systems. This puts an upwards pressure on the total cost of generating market data, but certainly not the unit costs of data which may well decrease due to economics of scale and scope.

5. Fragmentation of reporting increases the cost of collecting consolidated data

One element of MiFID allowed e.g. investment firms to choose where to publish their transparency information. This implies that different post-trade datasets are now available from a number of different sources. As these datasets are unique products and not substitutes for each other, this has increased the cost for collecting data.³⁸

³⁸ CESR (2010), Technical Advice to European Commission, 29 July 2010, page 28

6. Lack of common data formats limits construction of comprehensive data sets

One potential solution to the fragmentation of market data suggested in numerous papers is the creation of consolidated datasets across trading venues.³⁹ This would imply that market participants would not need to compile data from numerous different sources. Currently there exist several challenges to the creation of consolidated quotes (pre-trade data) and consolidated tapes (post-trade data). One important challenge stems from the fact that transactions are not necessarily reported in the same data format. Stock identifiers for instance, do not reveal the same information, and one ISIN code (identifying the same line of stock) may give rise to two different SEDOL codes (if they are traded in different currencies).⁴⁰ Moreover, there is no obligation on firms to classify the nature of the trades they publish. This has meant that specific types of trades, such as broker internal crossings cannot be distinguished from other types of trades.⁴¹ In addition, most venues provide a time stamp to the execution order at the time of publicising the transaction. As the time of publication may vary from the time of execution this implies that seemingly similar orders may have been executed at different times, and therefore cannot always be compared.

7. Increasing complexity of data-“terms of use”

There has been a general trend that exchanges continually increase the number of data products they offer. If this trend was an indication of an increased selection of data products, this would be beneficial to financial investors as they could better structure their data consumption to their individual needs. However, the increasing number of market data products typically does not add any new content or introduces cheaper subsets of more comprehensive products. Instead, these products are being defined in rules and limitations in the usage. That is; data products which can only be utilised for e.g. internal use, external use, application use, delayed use, automated trading, black box use, non-display use, end-user use, enterprise use, private use, professional use etc.

The limitations and restrictions imposed by these new data products has implies large cost-intensive administrative burdens on investors and brokers, as the correct use and administration of the data use becomes increasingly complicated. This problem is accentuated by the fact that each exchange typically has its own individual definition of how these limitations should be interpreted.

³⁹ See e.g. ECMI-CEPS (2011), CESR (2010) and Thomson Reuters (2010)

⁴⁰ Thomson Reuters (2010), page 11

⁴¹ Thomson Reuters (2010), page 10

Chapter 3

Policy Options

As discussed in previous chapters, there is a clear indication that the current system for collecting and disseminating market data information is inadequate. While the MiFID has been successful in encouraging competition for trading and execution, and driving down costs of trading, the objective of ensuring access to market data at a "reasonable commercial basis" and preparing the path for consolidated data has not been achieved. It is difficult to quantify the exact amount of overcharging taking place, however comparisons of price data for the US and the EU, as well as pricing practices such as forced bundling, suggest that the dominant exchanges are using their crucial position of having indispensable data to charge excessive prices.

Reading across the literature and in reviews of MiFID, we also find that there is a consensus that reforms are needed to deal with this issue. We will outline two main options available: 1) price regulation and 2) defining rights of ownership

Price regulation

The classical regulatory approach to monopolies and semi-monopolies is price regulation, which we recommend in this situation. In its proposal for a revision of the MiFID – the MiFID 2.0 -,⁴² the European Commission goes down that route by suggesting that it should be given direct regulatory right to “clarify by delegated acts what constitutes a *reasonable* commercial basis” to set prices against. This would displace the present more general presumption in the current MiFID that prices should be based on reasonable commercial basis without this being specified further. In fact, the MiFID 2.0 introduces price regulation, however only for the very limited market: post trade data delayed by more than 15 minutes. Here, it introduces a legal obligatory price of zero.

This is a step in the right direction, but it still leaves a number of issues unresolved. *First*, releasing post trade data free of charge is helpful for firms and investors to develop their understanding of how trading and liquidity evolves more generally across exchanges during the day, week and month. But 15 minutes delayed is too late to understand the real time liquidity and pricing of products across different trading venues and hence also the consequence of placing orders. Consequently, while this is a fine suggestion it adds only limited value to traders and investors who needs post trade data closer to real time.

Second, it leaves open how to regulate pricing of pre trade data. Defining this price would necessarily require some sort of benchmark analysis of incremental costs of producing the market data from the raw execution data. Based on cost estimates from benchmarks, regulators could define the price of the products leaving room for a reasonable earnings margin. Such a framework could include expected yearly improvements in efficiency from a given base year, leading to declining prices over time as technology improves.

⁴² European Commission (2011), article 12, see page 9 and 34

While price regulation should be pursued, the actual model of regulation is not straight forward. There are at least two challenges related to defining proper cost-benchmarks for market data products. First, for other price-regulated sectors in network industries such as energy distributors, telecommunication companies, water suppliers, the price regulation relates to products which are core business for the company. Conversely for trading venues, the sale of market data is an ancillary activity to the core activity: financial trading. In other words, it is easier to define the total amount of costs to be included in benchmark analysis for the typical network industries than it is for trading venues. Second, the actual product to be price-regulated is relatively straightforward in the area of classical network industries. This could e.g. be the tariff fees charged for the distribution of electricity, water, or telecom signals. However, for trading venues, the present market data is not a uniform product across venues due to bundling, different technical standards etc. Consequently, a regulation model is needed that can deal with incremental costs for presently non-homogenous products.

A significantly cleaner approach would be to focus the price regulation on the (close to) raw data instead of the non-homogenous products. By raw data we mean the pure information contained in bid and ask orders (pre trade) and the price and time stamp of a trade execution (post trade). By compelling trading venues to sell this raw data in agreed technical standards instead of selling a myriad of different products with more or less clear value added and at different technical standards, price regulation could be induced at the actual source, namely the production of market data. Subsequently, this data could be processed into value-added products such as consolidated tapes, indices etc., by any actors wishing to do so, e.g. professional traders or new (or existing) data vendors. The advantage of this approach is that the price regulated activity is a very narrow and well identified activity which should have essentially the same costs across trading venues.

In fact, such an approach fits nicely with another part of the MiFID 2.0 which stipulates that market data should be easily and readily available to users in a format as “disaggregated as possible” in order to allow “customised data solutions”.⁴³ In order to regulate raw data, it is essential to define one standard technical definition. Currently, several data formats exist, and these could with benefit be harmonised.

This type of price regulation has substantial attractions. First, by focusing the regulation on access to raw data, it makes the task of assessing production costs more easy; it is easier to assess production costs for a commodity than the costs of producing the data packages actually sold by exchanges. Secondly, it provides a better platform for the creation of data vendors that can generate the consolidated data sources that has been identified as lacking. Indeed, it can be described as the completely unbundled system (1) raw data is being made available to all (2) a new competitive market can be created by new data vendors using alternative platforms and bundled/unbundled products defined by customer demands.

This option has some similarities with the US model. In the US, specific data vendors have been created who get data from all exchanges and then distribute revenue from their

⁴³ European Commission (2011), page 18, and article 11, page 34

own sales back to the exchanges based on an objective revenue-distribution formula. This distribution-formula is among others based on the specific exchanges' share of total trading, such that the larger the share of trading, the larger the share of the revenue pool.

The US model in principle avoids the need to make an assessment of the true cost of providing raw data, which may be complicated. While this thus avoids some administrative costs, the design has on the other hand proved open to manipulation. Since exchanges receive revenue according to a specific formula, there is a strong incentive to try and affect the relevant parameters. One example in the US has been that the exchanges provided their customers with financial incentives to slice up their orders in smaller bits. This gave the exchanges an artificially higher market share measured by number of trades, and therefore increased their slice of the total revenue pool.

This example illustrates that while it may be cumbersome to construct a proper assessment of the trading venues' costs of providing raw market data as we suggest should be done, it may also be a more robust approach. Moreover, the US example shows that to avoid manipulation, the revenue-distribution formula should in any case be based on some cost principles for producing and disseminating raw data to avoid exchanges manipulating trading patterns to get a larger share of the revenue pool.

Defining ownership of data

In addition to such price regulation reforms, competition in the market for data services could be strengthened by allowing market participants the right to use and sell data about their own trades. The ownership would relate to data on confirmed orders for a given trade and subsequently on the actual trade transaction. Such information can then be pooled either within the firm or between firms. But the basic idea is that the firms engaged in the trade get ownership (both parts in the transaction can dispose of the data). The present lack of clarify/dispute on ownership impedes this market-driven generation of trade data.

Such a move could have two advantages. First, it will generate an alternative primary source of data for consolidated tapes, based on traders reporting rather than the exchanges. Secondly, and perhaps as importantly, the prices set in this market for buying and selling of market data could be used as an important benchmark for the price regulation foreseen in MiFID 2.0 for the sales of (close to) raw data from the exchanges as discussed above.

References

- Atradia (2010), The cost of access to real time pre- and post- trade order book data in Europe
- Caglio, Cecilia (2008), Equity Trading and the Allocation of Market Data Revenue
- CFA Institute (2009), Market Microstructure, The Impact of Fragmentation under the Markets in Financial Instruments Directive
- Committee of European Securities Regulators (CESR) (2010), CESR Technical Advice to the European Commission in the Context of the MiFID Review and Responses to the European Commission Request for Additional Information
- Danish Competition Authority (2003), Konkurrenceregulering 2003, Chapter 6: Handel med værdipapirer
- Davies, Ryan J. (2008), MiFID and a changing competitive landscape
- Easley, David, Maureen O'Hara and Liyan Yang (2011), Differential Access to Price Information in Financial Markets
- ECMI-CEPS Task Force (2011), MiFID 2.0, Casting New Light on Europe's Capital Markets
- European Securities Markets Expert Group (ESME) (2009a), Fact finding regarding the availability of post-trade data in equities in the EU
- European Securities Markets Expert Group (ESME) (2009b), Fact finding regarding the developments of certain aspects of pre-trade transparency in equities under MiFID
- European Commission (2004), Directive (2004/39/EC) on markets in financial instruments (MiFID). Official Journal of the European Union 30.4.2004

- European Commission (2011), Proposal for a regulation on markets in financial instruments (MiFID 2.0), COM (2011) 652
- Lannoo, Karel (2011), MiFID 2.0 Unveiled
- London Economics (2010), Understanding the Impact of MiFID
- The Market Structure Practice (2011), Information Post MiFID – How far are we? A presentation by Niki Beattie
- The Melbourne Group LLC (2011), The Winds of Change in Market Data. Winning Cloud Strategies for Exchanges and Trading Venues
- NASDAQ OMX (2012), Global Data Products, Nordic Newsletter #19, 28 September 2012
- Office of Fair Trading (2011), Anticipated acquisition by BATS Trading Limited of Chi-X Europe Limited
- Oxera (2011), Monitoring prices, costs and volumes of trading and post-trading services
- SLCG (2011), An Economic Study of Securities Market Data Pricing by Canadian Trading Venues
- Thomson Reuters Market Share Reports
http://thomsonreuters.com/products_services/financial/financial_products/az/market_share_reports/