What's the data on market data?

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With the debate about the costs of market data in equity trading markets, this note summarises and clarifies the issues being raised, checks the main facts, and explains how to assess market data from a public policy perspective.[1]

The role of market data in equity trading

To understand the debate on market data, we first need to look at trade execution services.

In 2007, MiFID I introduced competition in the market for equity trading services. Today, when a broker or investor wants to execute a trade order, it can choose from different venues, such as regulated markets (RMs), multilateral trading facilities (MTFs), dark pools, and systematic internalisers (SIs). As shown in an Oxera report for the European Commission in 2011, the introduction of competition resulted in more choice and reductions in trading fees over time.[2]

The role of price formation (the process by which information gets incorporated into prices) in the design of equity trading markets is well documented in the literature, but is sometimes overlooked in the debate on market data. As an information-gathering process, price formation ensures that market participants are sufficiently informed about the prices of the assets being traded such that they can make informed commercial decisions.

A well-functioning price formation process delivers more efficient and fairer markets and lowers the costs of capital for businesses (see Box 1).

Box 1 Benefits of price formation

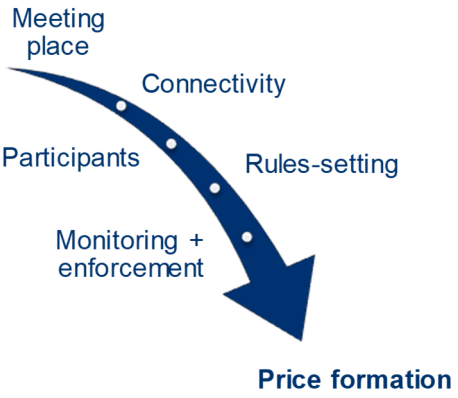
Accurate prices from stock exchanges lead to benefits, including:

- more efficient markets—prices more closely reflect all the available information;
- fairer markets—participants can be confident that trades are executed close to fundamental prices and that the market is free from manipulation;
- lower costs of capital for businesses—both directly and through a reduced illiquidity premium;
- new business models—other participants can offer trade execution services using the price formation provided by stock exchanges;
- for asset valuation—accurate stock prices are used for the pricing of many derivatives, structured products, indices and non-traded assets.

The ultimate beneficiaries are the investors, fund managers, and other users that take decisions based on those prices.

Stock exchanges deliver both trade execution and price formation, through a range of activities (see Figure 1 and Box 2).

Figure 1 Activities contributing to price formation



Source: Oxera.

Box 2 Exchange activities contributing to trading and price formation

- Ensuring that market participants have a meeting place where they can signal their intention to trade—nowadays this is mainly done virtually and involves investing in capacity and maintenance of matching engines, and proactively responding to new threats, from cyber-attacks, fraud, and operational risks, for example. To deliver continuity of service, exchanges invest in hardware and software that can cope with significant over-capacity at all times.
- Ensuring connectivity, in the good times and the bad—this means investing in networks (e.g. fibre-optic lines, microwave towers) to provide users with fast access and reliable connectivity. These costs can be incurred by stock exchanges, third parties, or market participants directly.
- Attracting the right mix of investors to trade—some exchanges provide liquidity programmes to ensure liquidity provision on both sides of the order books, during normal and volatile market periods.
- Setting fair and consistent rules—rules-setting facilitates predictability in the price formation process, constrains fraudulent and manipulative activity, and aims to reduce trading costs.
- Conducting market surveillance and enforcement of the trading rules to ensure the trading intentions being submitted to the order book are reliable and contribute to the price formation process, rather than undermining it.

Many of the new types of trading venue, such as MTFs, dark pools and SIs, do not deliver their own price formation process.[3] These venues can offer trade execution using the price formation delivered by stock exchanges and other regulated markets. Stock exchanges make this available to them via the licensing of market data, which includes pre- and post-trade information on quotes, orders, execution prices and respective volumes.[4] Platforms such as dark pools then use this information to execute trades at the mid-price, while SIs can use it to inform the setting of their own prices, ensuring that these

[1] See also Oxera (2019), 'The design of equity trading markets in Europe', prepared for FESE.

[2] Oxera (2011), 'Monitoring prices, costs and volumes of trading and post-trading services', prepared for European Commission DG Internal Markets.

[3] There is some evidence that new-entrant 'lit' venues also contribute to price formation. See, for example, Ibikunle, G. (2018), 'Trading places: Price leadership and the competition for order flow', *Journal of Empirical Finance*, **49**, pp. 178–200.

[4] Market trading data offered by exchanges, on a fair and non-discriminatory basis, includes: Level 1 data—best bid and offer prices, and executed trades, with respective volumes; Level 2 data—Level 1 plus typically the 5 best bid and offers from the order book; and full order book data—Level 2 plus all individual orders on the book.

make sense from a commercial perspective and are attractive to their clients.

Due to this important piece of 'market design', these alternative venues do not need to invest in the systems and human resources required to deliver robust price formation processes themselves, thereby saving costs.

Market data is also used by fund management and brokerage firms to inform their trading and execution strategies. Other users of market data include index providers, retail investors, regulators and researchers.

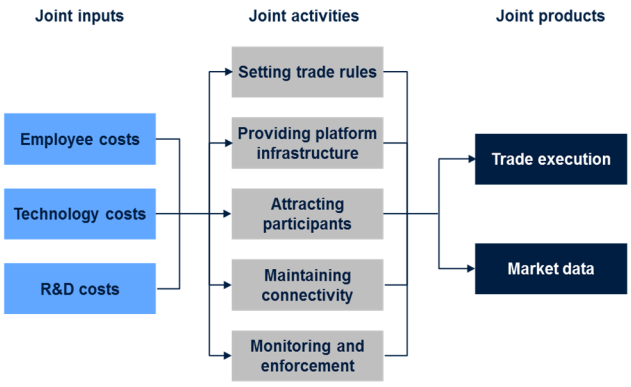
The amount and type of data consumed varies from user to user—some demand low-latency, full order book data, while others use delayed or historical data. For example, high-frequency traders (HFTs) tend to seek real-time data feeds and co-location services, while some fund managers and brokers may use more limited datasets.

Why do stock exchanges charge for market data?

Data more than 15 minutes old is made available free of charge to end-users by stock exchanges. This means that retail investors who want to know what their portfolio is worth, fund managers who need to value their funds at the end of the day, and many other professionals who use share prices for financial or economic analysis can receive the high-quality market data from exchanges without paying any exchange fees.

So, why do stock exchanges charge for real-time data? There are costs to delivering a high-quality price formation process, and, as also mentioned by ESMA, trade execution and price formation are 'joint products' (see Figure 2): most activities undertaken by a stock exchange are integral to the delivery of both. This means that it is more efficient to recover some of the costs of operating a trading venue through trade execution fees and some through market data fees. It also means that a broader group of market participants (i.e. including those who do not trade but do benefit from the price formation process, such as SIs and dark pools) contribute to covering some of the costs of price formation.

Figure 2 Joint products



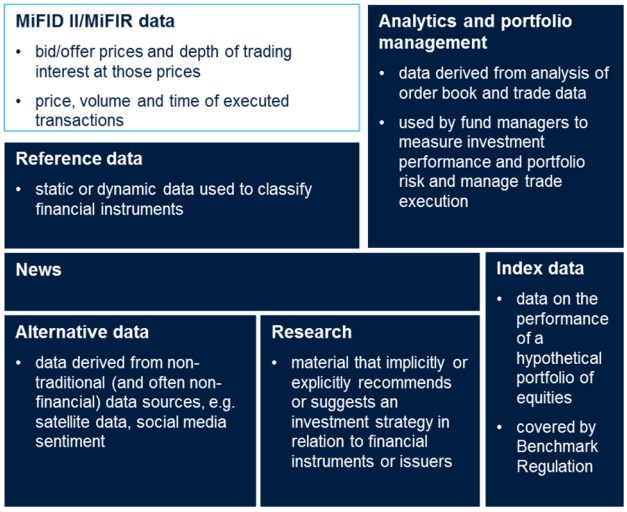
Source: Oxera.

Has there been a significant increase in the fees charged by stock exchanges for market data and their associated revenues?

There has been much debate about whether market data fees have increased over time, prompted by two points of confusion.

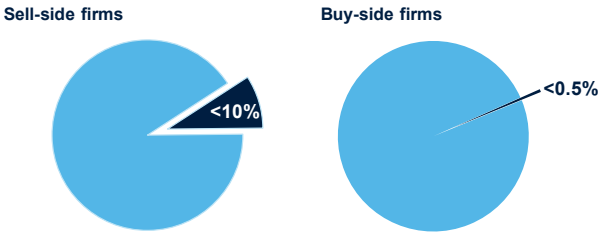
First, the fact that stock exchanges' market data revenue is a small proportion of total spending on market data is often overlooked. Stock exchange market data is only a small part of the market data used by market participants, which also includes news, alternative data, research, ratings, valuation data, reference data, and so on (Figure 3). Empirical analysis indicates that exchange market data fees account for less than 10% and 0.5% of total sell- and buy-side data spend respectively (see Figure 4).[5] Some of the claims about significant increases in market data fees or expenditure refer to the rise in general spending on market data, rather than expenditure on stock exchanges' market data fees.

Figure 3 Types of market data services



Source: Oxera.

Figure 4 Exchange data fees as a proportion of total market data spending



Note: Other market data covers a broad set of categories including terminal subscriptions, research, reference pricing data, news mutual fund/ETF data, index ratings, analytics etc.

Source: Oxera, based on analysis of data on market data spending (for 2019) provided by market data consultancies.

[5] Market data revenues from stock exchanges account for around 15% of the total value chain. This has been estimated by dividing the total market data revenue of exchanges that are members of FESE by an estimate of the total European spending on market data. The estimate on market data spending is based on Burton-Taylor International Consulting (2017), excluding commodities & energy, fixed income sales & trading and FX/Treasury sales & trading segments.

Second, what individual market participants and trading venues spend on market data (from stock exchanges) can vary over time due to changes in prices, the amount of data consumed, and usage patterns.

It is well understood that there has been an upward trend in market data consumption. This has been driven by a rise in trading strategies that require more data (in particular due to the significant growth in electronic trading), and an increase in data used to inform commercial decisions and regulatory assessments.

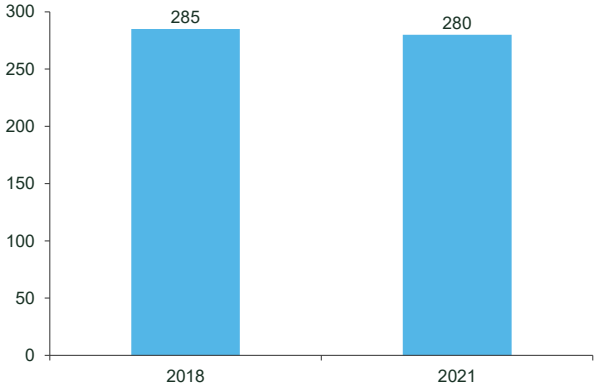
Changes in usage patterns refer to users changing the type of data package. For example, partly as a result of the growth of high-frequency and algorithmic trading, there has been a shift of market data consumption away from terminals and towards direct and low-latency (non-display) data products for automated applications.

Aggregate expenditure on market data has been fairly stable

To understand the overall changes in the expenditure on stock exchanges' market data, it is best to look at the revenues that the exchanges generate from the MiFID II/MiFIR market data. These revenues give us the complete picture of what all users together (e.g. fund managers, brokers, MTFs, SIs, dark pools, retail investors etc.) spend on cash equity market data from exchanges. They capture the combined effect of changes in prices, amount of data consumed and usage patterns for all users.

Our analysis shows that revenues from stock exchanges have remained fairly stable. Overall aggregate revenues (of stock exchanges that are members of FESE) amounted to €280m in 2021, compared with €285m in 2018.[6] There is some variation across exchanges; for some, market data revenues fell over the period, while for others revenues increased.

Figure 5 MiFID II/R market data revenues from FESE exchanges, 2018–21 (€m)



Source: Oxera, based on confidential data from FESE exchanges.

How to assess market data fees?

In 2019, ESMA summarised the debate as follows:

> While it appears that the price of market data may not have increased overall, there are some indications that in areas and for use cases where there is high demand for market data, fees have increased.[7]

In other words, although the price (i.e. stock exchanges' market data revenues) may not have increased overall, they might have done in some, specific, areas.

How do we then assess whether fees for specific use cases are reasonable?

From a public policy perspective, the question is whether market data fees result in a distortion in market functioning (for example, in terms of efficiency and/or competition), or more generally in poor outcomes for the end-users of equity trading markets. Would having some types of user substantially contributing to exchanges' market data revenues, and perhaps more so than others (due to higher fees and/or consuming more data), be a concern from a public policy perspective? This question is analysed in the Oxera report. We found no detrimental effects on market outcomes for end-users. In fact, recovering some costs through market data fees (on average, 24% of the joint product revenues come from market data fees) is efficient from an economics perspective.

The impact of market data fees on market functioning and end-investors can be assessed by, for example, examining the impact on efficiency and competition.

Impact on market efficiency—the concern would be that charging for market data would reduce the amount of data consumed and ultimately have a negative impact on price formation. There is some academic literature on the impact on wider market efficiency.[8] These theoretical contributions suggest that, under certain, very specific, conditions (e.g. no competition in equity trading), charging for market data could impair price formation, but that, as competition for equity trading is present, the stock exchange has an incentive to maximise order flow, which in turn prevents it from setting market data fees at a level that would negatively affect the price formation process.

In practice, the share of revenues coming from market data services ranges from 15% to 49% of joint (trade execution and market data) revenues across exchanges, with an average of 24% for 2021. This suggests that the optimal balance between trade execution and market data revenues may vary by exchange. Some of the smaller exchanges tend to recover more costs through market data fees than larger exchanges.

In assessing the overall impact of market data fees on market functioning and end-investors, it is also helpful to bear in mind that exchange market data fees are a

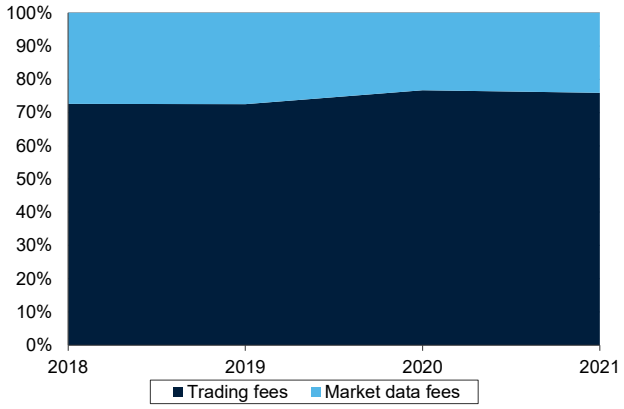
[6] We previously reported a lower figure for the aggregate exchanges' revenues from market data in 2018. We considered the revenues of the exchanges that were members of FESE, which at that time did not include Borsa Italiana. Following Euronext's acquisition of Borsa Italiana in 2021, we have now also included Borsa Italiana in our assessment.

[7] ESMA (2019) op. cit, para. 32. According to ESMA, 'Moreover, it seems that currently market data prices are not only charged on the basis of the costs for producing and disseminating market data but also reflect the value of the data for data users.' It is indeed likely that market data fees are based on the costs of producing and disseminating market data, but also that they reflect the value of the data for data users. Exchanges are likely to allocate the fixed costs on the basis of the value that users may derive from the data. Thus, users who value the data more will also contribute more to the recovery of the fixed costs, which is efficient from an economics perspective.

[8] See, for example, Easley, D., O'Hara, M. and Yang, L. (2016), 'Differential Access to Price Information in Financial Markets', *Journal of Financial and Quantitative Analysis*, **51**:4, pp. 1071–1110; and Cespa, G. and Foucault, T. (2014), 'Sale of Price Information by Exchanges: Does It Promote Price Discovery?', *Management Science*, **60**:1, pp. 148–165.

relatively small proportion of total costs incurred by fund management and brokerage firms. Exchange data fees account for around 1% of the fees typically charged by a large broker, and less than 0.015% for a typical fund management firm.[9]

Figure 6 Revenue shares from delivering equity trading and price formation, 2018–21 (weighted average of FESE exchanges)



Source: Oxera.

Impact on competition—for example, in theory, if market data fees were very high, this could affect the viability of new trading venues that do not have their own price formation process and use market data from stock exchanges as an input. However, the significant growth in dark trading, SIs and new entrant trading venues suggests that their business models are not being undermined, and that current market data fee levels enable them to operate effectively.

Conclusion: no detrimental effect on market functioning

In sum, the economic analysis does not provide evidence that the current charging structures for market data are leading to detrimental market outcomes for investors.

The significant growth in dark trading, SIs and other trading venues indicates that their business models are not being undermined by market data fees.

If there were concerns about these fees being too high for certain use cases, these cases could be assessed under competition law. Such an evaluation would be informed by an empirical analysis of any distortionary impact of the fees.

Although the responses to the ESMA consultation contained analyses of market data expenditure and fees, there was no evidence of any distortionary impact on market functioning and/or poor outcomes for end-investors.

[9] We estimate market data costs as a proportion of fees charged for brokerage and fund management services based on stock exchange revenues and trading activity data. We estimate broker and fund manager revenues based on assumed fees of 2bp of trading value for a broker and 0.3-1.5% AUM for a fund manager. Additional analysis based on actual exchange data costs and broker/buy-side revenues provided by market data consultancies are consistent with these estimates. See also Table 4.3 in Oxera (2019), 'The design of equity trading markets in Europe', prepared for FESE.