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MiFID: One Year On

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Abstract

This position paper looks at the changes that have been effected in the European capital markets more than one year after the implementation of MiFID (Markets in Financial Instruments Directive). These changes are hard to quantify, but initial fears of the rise of so-called dark pools of liquidity have proven well founded. In addition, the best execution obligation remains ambiguous. The paper examines other features of the post-MiFID trade execution landscape and recommends that post-trade reporting be standardised, that a single measure of execution quality be adopted, and that the debate on regulating transactions in less liquid asset classes and giant OTC derivatives markets be re-opened.

We would like to take the opportunity to thank the three sponsors of the EDHEC "MiFID and Best Execution" Research Chair, sponsors that have been supporting EDHEC work over the last year: CACEIS, NYSE Euronext and SunGard.

About the Author

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1. Executive Summary

MiFID (Market in Financial Instruments Directive) is the second step in the harmonisation of the European capital markets industry; its aim is to adapt the first Investment Services Directive (ISD 1, issued in 1993) to the realities of modern financial markets.

In short, MiFID sweeps away the very concept of central exchange and obligation of order concentration as it currently exists in several European countries and recognises the need to include all participants in the execution cycle and all financial instruments in a consistent regulatory framework; it introduces the notions of multilateral trading facilities (MTFs) and systematic internalisation (SI). The long-term consequence of MiFID is undoubtedly the complete break of the existing value chain of execution services, a break stemming from the exchanges' loss of their monopolies, the creation of new opportunities for investment firms, the development of new business models and ultimately cost competition. This desegregation, however, does not come without risks to the quality of services provided to clients and to the financial market structure itself.

MiFID provides some responses to both risks. Indeed, the Directive strikes a balance between the opening of the execution landscape to full competition and a set of obligations meant to increase transparency and investor protection, a balance meant to keep the price-discovery mechanism of European markets efficient and fair and ensure, despite the inevitable fragmentation, the integrity of the market.

This set of obligations rests on three basic pillars:

- Post-trade transparency
- Pre-trade transparency
- Best execution

In a March 2007 position paper entitled "MiFID: The (in)famous European Directive?", EDHEC raised a number of concerns. The first pillar provoked little concern, but neither pre-trade transparency rules nor best execution obligations are likely to be as effective as they should be.

Inappropriately defined obligations and a failure to spell out the means by which they were to be complied with led to this conclusion. On the basis of Level 1 and Level 2 provisions, EDHEC believed that the risk remains high that market fragmentation will result in less efficient markets, thereby adversely affecting the price constitution mechanism, and that investors will feel protected when in fact they are not.

After intense negotiation with industry representatives, the Directive restricted harmonised pre-trade transparency requirements to the most liquid equities only for investment firms that practice systematic internalisation. Hence, MiFID left room for the formation of possibly opaque liquidity pools for non-liquid equities and other financial instruments, with little or no transparency on the order book. And the regulator waived the pre-trade transparency obligation where it was probably the most necessary.

One year and a half after the implementation of MiFID it is hard to quantify its impact on spreads and indirect costs, especially with the recent spikes in intra-day volatility, but it is clear that fears of the formation of so-called dark liquidity pools have proven well founded. With nearly a dozen initiatives from the sell side, technology firms and regulated exchanges to develop and market dark pools of liquidity, order books whose liquidity is not displayed and does not contribute to the price-discovery mechanism have proliferated.

1. Executive Summary

The continuing absence of a global tape and the impossibility of defining a best market offer-bid to assess the quality of the executions render any analysis of the benefits of those dark pools nearly impossible.

As a conclusion to an initial analysis of the European execution landscape eighteen months after the entry into force of MiFID, we can summarise our findings in three main statements:

1. MiFID has liberalised the market for share execution and put an end to "legacy" centralisation, laying the foundations for a more competitive environment and allowing new entrants to seize market share from dominant exchanges. A small number of new entrants have managed to gain market share, a share that ensures that they will not disappear too fast.
2. The formation of dark pools of liquidity and the failure of the systematic internaliser status must be regarded as the result of possible flaws in the newly introduced regulation, as these pools may not contribute to the price-discovery mechanism and will ultimately fail to benefit the investor community.
3. Post-trade reporting and the best execution obligation remain the two key weaknesses in the regulatory framework, weaknesses that are likely to make it impossible to provide the degree of investor protection expected by the regulator or compensate for the risks resulting from a fragmented marketplace.

Current market conditions are unlikely to encourage the industry to remain focused on the issues raised in this position paper, but it seems important to us for both regulators and industry participants to deal with these possible threats to the integrity of the industry.

Not all these issues require the same attention; we make three major recommendations:

1. Post-trade reporting is the only way to determine, *ex post*, whether a market is efficient and functioning properly and to measure the quality of service of market participants. To avoid the adverse effects of regulatory initiatives that too often result in moral hazard, adverse selection and investor overconfidence, post-trade reporting is absolutely necessary. Trade reporting should be standardised and centralised, though it can certainly be handled by commercial parties. Given the current commercial offerings, we strongly believe that standardisation—with, for example, the development of unique transaction identification codes as well as integrity checks that ensure the completeness of the database—is a necessity.
2. We recommend that, rather than attempting to modify article 21, a focus group be created to allow convergence towards a single measure of execution quality that could be adopted by market participants. Peer-group analysis seems to us the most interesting field for development; in the appendix we describe a model that we suggest for this purpose. The acceptance of a BBO price would have similar positive effects.
3. With the recent market turmoil, the focus of the industry has shifted away from MiFID. But the crisis should remind us that the monitoring of financial transactions is a key to market stability. So it seems that the time is right to re-open the debate on regulating transactions in other asset classes such as the less liquid ones or the giant OTC derivatives markets.

2. Introduction

MiFID (Market in Financial Instruments Directive) is the second step in the harmonisation of the European capital markets industry; its aim is to adapt the first Investment Services Directive (ISD I, issued in 1993) to the realities of modern financial markets. Part of the European Financial Services Plan (FSAP), MiFID (Directive 2004/39/EC, formerly known as Investment Services Directive II) was ratified by the European Parliament on April 21, 2004. The "implementing" Directive and Regulation were approved by the Parliament over the summer of 2006 and provide detailed implementation guidelines applicable to all Member States. Local regulatory bodies transposed the Directive into their respective regulation before its entry into force on November 1, 2007.

In a major move towards a more competitive environment, MiFID sweeps away the very concept of central exchange and obligation of order concentration as it had prevailed in several European countries and recognises the need to include all participants in the execution cycle and all financial instruments under a consistent regulatory framework. It therefore goes far beyond equity markets alone and will affect all market participants—buy-side, sell-side and trading venues (exchanges and other so-called liquidity pools). The Directive introduces a "passportable" operating framework for execution services that can be delivered in the context of one of the following three regimes: regulated exchanges (REs), multilateral trading facilities (MTFs),[1] or systematic internalisers (SI).[2]

The long-term implication of MiFID is undoubtedly the complete desegregation of the prevailing execution service value chain; the end of the monopolies enjoyed by exchanges, the creation of new opportunities for investment firms and technology providers, the development of new business models, cost competition, product and service innovation, and so on will lead to this desegregation.

It will not come, however, without risks to the quality of services provided to clients and to the financial market itself. The main issues to consider are market integrity (safety of executed trades and efficiency of prices) and investor protection.

MiFID provides some responses to both risks. Indeed, the Directive strikes a balance between the opening of the execution landscape to full competition and a set of obligations meant to increase transparency and investor protection, a balance meant to keep the price discovery mechanism of European markets efficient and fair and ensure, despite the inevitable fragmentation, the integrity of the market.

This set of obligations rests on three basic pillars:

- Post-trade transparency
- Pre-trade transparency
- Best execution

In a March 2007 position paper entitled "MiFID: The (in)famous European Directive?", EDHEC expressed little concern about the first pillar (imposing stringent harmonised post-trade transparency rules on all execution venues and investment firms is in fact a significant step forward, as we know that no public reporting existed for off-market trades before MiFID); our main concern was with the obligations for pre-trade transparency and best execution, which we thought would fall short of expectations.

In our view, inappropriately defined obligations and a failure to spell out the

1 - MTFs are similar to regulated exchanges in that they allow clients to enter into negotiations without taking part in a transaction as a counterparty. They include all forms of multilateral negotiations such as order books, block trades, periodic auctions, dark pools and any other form or mechanism resulting in negotiations between two counterparties.

2 - This new regime allows investment firms on an organised, frequent and systematic basis to deal on their own account by executing client orders outside an RE or MTF.

means by which they were to be complied with led to the expectation that these pillars were unlikely to be as solid as they should have been. On the basis of Level 1 and Level 2 provisions, EDHEC believed that the risk remains high that market fragmentation will result in less efficient markets, thereby adversely affecting the price-constitution mechanism and, worse, that investors will feel protected when in fact they are not.

After intense negotiation with industry representatives, the Directive restricted harmonised pre-trade transparency requirements to the most liquid equities only for investment firms that practice systematic internalisation. Hence, MiFID left room for the formation of possibly opaque liquidity pools for non-liquid equities and other financial instruments, with little or no transparency on the order book. And the regulator waived the pre-trade transparency obligation where it was probably the most necessary.

Finally, the best execution obligation (article 21) was a key element in the protection of investors in a market now open to competition. Begun as an obligation of result in a principle-based regulatory approach, the best-execution obligation was actively fought by industry representatives and slowly turned into a more modest obligation of means that remains complex and ambiguous, if not overly prescriptive. With such an unbalanced provision, we believed that industry acceptance of the notion—and delivery on the Directive's promises—was highly unlikely. With such a badly drafted article, investors may feel protected by a best execution obligation imposed on their providers, when in reality there is no consensus on what that obligation actually means and no way to ensure that it is complied with.

Eighteen months after the implementation of MiFID, how close are we to meeting the stated objectives of the Directive with regards to competition and innovation?

In this post-implementation review, we will observe industry developments and take a look back at the three dimensions of the problem we raised in our position paper of March 2007, six months before the implementation of the Directive.

For this purpose, we first examine the status of the industry in terms of competition (in terms of market restructuring, price competition and innovation). We then examine the consequences of those changes on the price-discovery mechanism and client protection; we conclude with a number of simple recommendations.

3. A New Competitive Landscape

One of the stated objectives of MiFID was to encourage competition to address pricing concerns and to stimulate innovation. Putting an end to the historical monopolies of some central exchanges in countries where centralisation prevailed and allowing newcomers to compete in the market for providing electronic execution services was likewise a clear element of the European Commission's vision of a pan-European financial market.

As of late April 2009, 123 MTFs were registered on the CESR database,[3] showing that the industry welcomed the concept of regulated liquidity venues. Those MTFs include liquidity venues for securities as well as for energy trading, swap exchanges, and other transactions. Regulated exchanges, securities firms, financial institutions and software firms are behind these initiatives. But beyond this apparently successful increase in competition are three phenomena that have come into view as a consequence of MiFID:

- Lack of interest in the systematic internaliser status
- Rapid and significant formation of dark liquidity pools
- Slow but significant development of MTFs competing with regulated exchanges on the largest market segments.

3.1 Systematic Internalisation

The first clear trend eighteen months after the implementation of the Directive is the apparent failure of the internalisation status. As of April 2009, only thirteen firms had officially registered as SIs. Two of these thirteen registered two legal entities, limiting the total number of SIs to eleven: ABN-AMRO, BNP Paribas Arbitrage, Danske Bank, Deutsche Bank, Goldman Sachs, Nordea Bank, Nomura International, Citigroup, UBS and Credit Suisse.

We have identified two reasons for this lack of interest.

The first is probably that the pre-trade transparency requirement is no different from that of full-feature MTFs, so the offering of an MTF as a middle-tier for matching internal order flows is preferred. Clearly, registering as a systematic internaliser requires the same infrastructure, transparency and infrastructure as running a full MTF. The benefit of being the counterparty to the trade is hence greatly limited by the transparency and probably no different from that of operating an MTF and registering its proprietary trading operations as a member of this MTF.

It must be said that for firms the advantage of acting as primary counterparty to client deals is at its greatest in less liquid markets (large blocks, low liquidity securities); firms active in these segments may have opted to offer or take part in dark pools of liquidity that enjoy similar waivers when it comes to pre- and post-trade transparency.

From an investor's perspective, the notion of systematic internalisation is in itself perhaps not the most appealing; even though transparency requirements provide significant protection, the separation of agency trading and the proprietary business of the firm is always seen as the only way to gain impartiality and access to the best prices and superior service.

The second reason has to do with the time required for changes actually to take place in the industry. As enforcement of the newly introduced regulation is only recent, some firms, though still active in such trading activities, might not yet be in compliance.

As a direct consequence, we have not witnessed any communication or marketing

3 - CESR (The Committee of European Securities Regulators) has organised and provides publicly a database providing an up-to-date view of shares admitted to trading on EU regulated markets but also of firms having registered as central counterparties, systematic internalisers, multilateral trading facilities or regulated markets. This database can be found on http://mifiddatabase.cesr.eu/.

of the systematic internalisation offerings provided by the eleven registered firms; the lack of interest in this model is thus confirmed. Chances are that this regime, which was subject to much debate during the elaboration of the Directive, will simply disappear.

3.2 Dark Liquidity Pools

The second significant development is the tremendous marketing and commercial success of very different forms of so-called dark liquidity pools. Dark pools are MTFs that are designed to fall out of the scope of pre-trade transparency (dealing in blocks, illiquid securities, or matching at prices sourced from regulated exchanges). These MTFs are marketed as offering large amounts of hidden liquidity that market participants are happy to release only because of the discreet nature of the liquidity exchange mechanism.

The number of new entrants (more than twelve) is significant but there is currently very little information on the volumes actually traded on those systems, often available only as sell-side solutions and thus not entirely open to external use. Dark pools already formed or entering the market include ITG Posit, Liquidnet, NYFIX Europe, NYSE Euronext's Smartpool, PlusMarket, Pipeline, as well as a number of proprietary initiatives currently being rolled out.

It is still early to analyse the suitability of such offerings for-end investors, who barely have direct access to those systems (their brokers simply execute trades in such MTFs). But it is striking to find a difference between hidden liquidity and the liquidity available to the trader and not released into the markets for obvious discretion reasons. With the success of dark liquidity pools, brokers and/or algorithms handle hidden liquidity and release it when appropriate in regulated exchanges or MTFs. A dark liquidity pool simply allows this liquidity to be collected without being displayed. One may argue that the collection of available dark liquidity could make it more likely that trades will be executed; at the same time, the fragmentation of this liquidity into more than a dozen dark pools from which information is not leaked could also result in the liquidity remaining spread across these venues. The concept of a central dark pool is appealing in terms of the price-discovery mechanism; its distribution across multiple venues unable to interact raises concerns about the suitability of the final price-discovery system.

Whether or not the formation of these liquidity pools has increased market efficiency has not yet been made clear. The absence of a global European tape making it possible to determine *ex post* the price obtained in each venue renders this analysis pointless. This inability to assess the quality of the prices obtained through dark pools results in increased moral hazard in the marketing of such services. This issue, which is similar to that of the weaknesses of the best execution obligation, can be dealt with only by developing a single consolidated tape and agreeing to a uniform means of analysing transaction performance.

An interesting development is the rise of synthetic block trading, whereby a broker acting as an aggregator will handle the execution of a block synthetically across multiple dark pools. Once again, given the absence of transparency on the quality of prices in these pools, one wonders how it could be possible to comply with a best execution obligation.

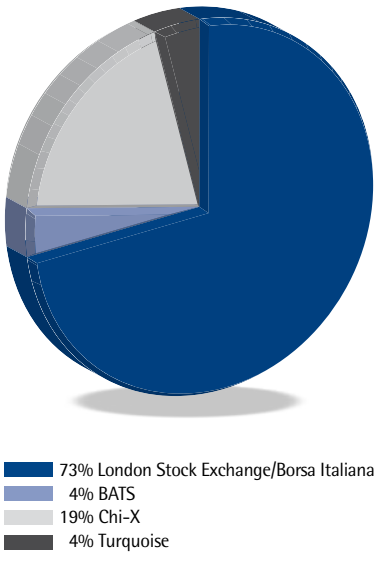
It seems that when it comes to designing and marketing new value-added services there is no limit to the creativity of those in the industry, but the purpose of such developments (to enhance the quality of execution for the benefit of the end-investor) should not be forgotten.

3.3 Fragmentation

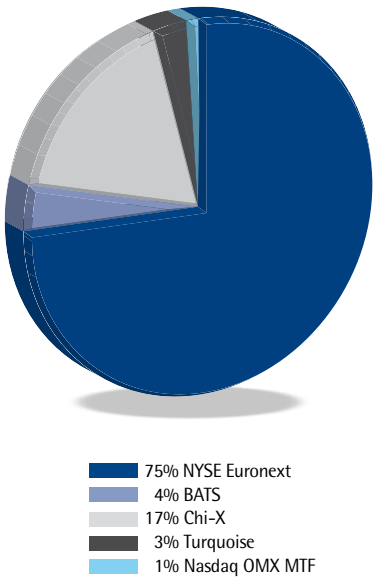
The third trend has to do with fragmentation. Despite the many initiatives designed to compete with regulated exchanges and attract liquidity in the space of central order book technology, only one seems to have attracted enough business to qualify as a rival to prevailing market places: Chi-X, with 25 million trades booked in Q1 2009 (a 15% market share in the markets covered) despite the overall decrease in trading volumes. After Chi-X, there are two other significant providers: BATS and Turquoise, each with a share of less than 5% of their respective markets.

The following graphs compare the market shares of each of these MTFs and of the associated regulated exchange as of end Q1 2009 (trade nominal value):

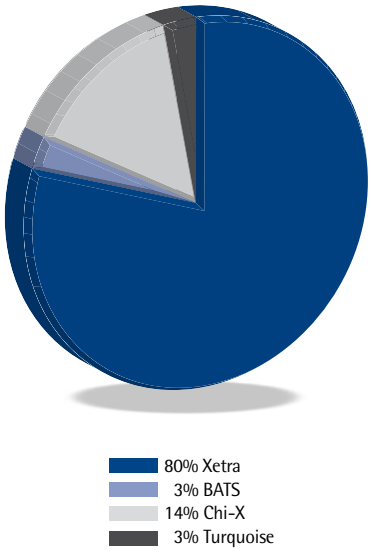
Relative market share for the FTSE100 share trading (1)



Relative market share for the CAC40 share trading (1)



Relative market share for the DAX share trading (1)



(1) - Trade nominal value

On average, legacy exchanges seem to have lost between 15% and 25% of their order flow to new entrants, all else being equal.

In addition to these succesful new entrants, most providers, investment firms and regulated exchanges are currently launching their own pan-European MTF offerings: ARCA Europe, Baikal, Société Générale Alpha-X, and so on.

Of course, to make it possible to comply with the best execution obligation, most providers also propose automated routing of orders on alternative MTFs when a price improvement can be obtained. This development is likely to render the analysis of market share even more complex, with double or triple counting of the trades passed on to the exchanges.

This competition is welcome and it may benefit (price competition mainly) the end-investor, but one wonders if the industry has the capacity to support so many MTFs offering very similar service. These MTFs compete with each other but focus on the same largest markets; the execution services they provide also put them in competition with regulated exchanges.

With the recent market turmoil and the continuous fall in trading volumes, how is it possible to survive in an environment where the price of execution is the main differentiation factor? We suspect that many newcomers will not prove economically viable and, in view of the difficult economic climate, may well very quickly consolidate (for those having acquired sufficient market activity) or simply disappear.

The European industry would then be left with the three main regulated exchanges, each operating a pan-European MTF, accompanied by a couple of additional pan-European MTFs. With all these MTFs interconnected in order to achieve best execution, the competition on price (with new entrants that have developed organisations and infrastructure with extremely low cost bases enjoying a clear edge) and possibly on technical innovation is likely to remain fierce. This could be the second awaited post-MiFID development.

3.3.1 Competition on price

Greater competition may well have led to price changes in certain segments (*e.g.*, high-frequency trading), but significant changes in price structures have not taken place; nor has the dominance of regulated exchanges been seriously threatened. More than 75% of market share is still protected from new entrants such as Turquoise, viewed as a legitimate threat since it is a consortium of the largest investment firms, which have a firm grip on their client order flow.

In sum, changes in price structures have taken three different forms:

- Decrease of execution fees (*e.g.*, fees charged by MTFs)/change of accounting rules (by execution rather than nominal)
- Subsidised trading (discount offered on the regulated exchange in return for volumes executed on the MTF, free execution for liquidity providers)
- Favouring of specific client flow (*e.g.*, frequency trading and algorithms).

But again it will be difficult to assess the overall impact on the end-investor in the absence of a global tape that would make it possible to analyse *ex post* the total costs of execution borne by the buy-side for its trades as most of the rebates are still handed over to the intermediary who remains free to pass it on to the end-investor or not, depending on the value brought to him in addition to the execution service.

But there is no doubt that the multiplication of trading venues and their competition for market share on the most liquid segments will inevitably lead to lower average execution costs. The next challenge is to make certain the saving is passed to the end-investor.

3.3.2 Competition on innovation

Competition has not yet resulted in significant innovation in trading models and order book technology.

Most new entrants have been constructed as conventional central order books, with the greatest focus on latency, speed and technological aspects of the trading system. But there is a limit to this form of technological innovation, and development costs might well exceed the benefits that the buy-side can expect from this race.

Innovation has led to slight modifications of the market model (tick sizes), but none of the new entrants has taken the opportunity to re-design a complete execution service to include advanced trading tools that could provide clear benefits.

Among these tools are on-the-order-book algorithms that could operate more swiftly and efficiently than algorithms connected to multiple liquidity venues. Other advanced functionalities could consist of offering advanced algorithms providing synthetic access to a number of liquidity venues in one place, or always offering the best bid-ask spread whatever the market conditions on given trade sizes. Similarly, very few systems allow the implementation of new types of orders such as VWAP, close or other instructions to execute at unknown price.

When the dust settles, the few MTFs that remain standing ought to be able to focus on developing the functionalities of their trading books to distinguish themselves from their very close neighbours.

3.3.3 The future is in clearing and settlement

The development of MTFs throughout Europe, accompanied by the recent turmoil in the financial industry, has had a side effect that underscores importance of clearing and settlement. Connecting to half a dozen execution venues via FIX is one thing, but creating the back-end process to clear and settle correctly for all those venues is quite another.

The establishment of those back-end connections is not to be considered only from an operational and technological perspective (project costs can be used to evaluate the feasibility of establishing such connections) but also in view of the counterparty risk for the investment firms. Many banks have recently been driven to the brink of collapse, so how to ensure that the partners chosen for the clearing and settlement of pan-European stocks in different MTFs are the solid partners required to protect the interest of the client?

Not surprisingly, competition in clearing—for example, the aborted tie-up between LCH and Euro DTCC, the attempted takeover of LCH Clearnet by a consortium of banks led by Interdealer-broker Icap, and other competitors looking to provide simpler and more cost-effective clearing–has moved us closer to solving one of the fundamental problems faced by a cohesive European market.

As pure execution costs come down and the services rendered by MTFs are standardised, settlement, which involves a larger proportion of overall costs, will come to the forefront. The most important consequence of the transformation now underway in the execution landscape might well be in clearing and settlement.

4. Other Consequences of MiFID

The desegregation caused by MiFID may well lead to innovation and some economic benefits, but it does not come without risks to the quality of services provided to clients and to the financial market structure itself. The main risks are to the integrity of markets (safety of executed trades and efficiency of prices) and to investor protection. These are two elements that the regulator should aim to protect in a fully liberalised marketplace.

MiFID provides some responses to both risks. Indeed, the Directive strikes a balance between the opening of the execution landscape to full competition and a set of obligations meant to increase transparency and investor protection, a balance meant to keep the price discovery mechanism of European markets efficient and fair and ensure, despite the inevitable fragmentation, the integrity of the market.

This set of obligations rests on three basic pillars:

- Post-trade transparency
- Pre-trade transparency
- Best execution

In its March 2007, position paper, the EDHEC Risk and Asset Management Research Centre raised concerns about the obligations for pre-trade transparency and best execution, which we thought would fall short of expectations.

In an attempt to ensure the high-quality transposition and consistent implementation of MiFID and its implementing Directive, the Commission issued a call for evidence on 1 July 2008 to twenty-five European associations of investment firms, banks, regulated markets and investors. The aim of the call for evidence was to obtain information concerning national implementing measures and practices from categories of market participants affected by the new rules and to identify any possible transposition and implementation problems.

The concerns raised in our March 2007 position paper were among those brought to the attention of the Commission.

4.1 Pre-Trade Transparency

The concerns stem either from an inappropriate definition of the requirements or from a failure to spell out exactly how they should be complied with. On the basis of Level 1 and Level 2 provisions, EDHEC believes that the risk remains high that market fragmentation will result in less efficient markets, thereby adversely affecting the price-constitution mechanism, and that investors will feel that they are protected when in reality they are not.

After intense negotiation with industry representatives, the Directive restricted harmonised pre-trade transparency requirements to the most liquid equities only for investment firms that practice systematic internalisation. Hence, MiFID left room for the formation of possibly opaque liquidity pools for non-liquid equities and other financial instruments, with little or no transparency on the order book. And the regulator waived the pre-trade transparency obligation where it was probably the most necessary.

The newly introduced regulation has led to the rapid formation of dark pools, a phenomenon that casts doubt on the notion that prices obtained through such mechanisms are better than those obtained on exchange. The absence of a global tape that would improve analysis of the price-constitution mechanism is a failure that

calls into question the quality of the new market structure.

With current volatility and spreads, it would be damaging simply to compare current spreads and those prevalent before the implementation of the Directive. But there is no evidence (other than the price improvement in MTFs with different fee structures, such as that proposed by Chi-X) that fragmentation has improved liquidity or the quality of prices. Furthermore, where there is no global tape to assess the total net proceeds of transactions conducted on a pan-European basis, there is no way to determine whether or not the benefits expected by the regulator have been obtained.

When it comes to illiquid trades, the rise of dark pools of liquidity does little to buttress the notion that the price-discovery mechanism works better after MiFID.

In fact, with significantly increased fragmentation and an absence of full transparency, total liquidity visible across multiple order books may be greater than that which is actually available, resulting in a false sense of available liquidity; the execution of one order would instantaneously lead to the cancellation of all other related orders across the multiple venues. The automated inventory control process could therefore cause volatility to spread from one marketplace to another.

4.2 Post-Trade Transparency

In the European Commission consultation on post-trade transparency, the two items most frequently mentioned by respondents were:

- First, for the moment harmonised public reporting is only for equities. The European Commission is aware that similar requirements are necessary in other asset classes but so far no legislative action has been taken.
- Second, the conditions under which trade information should be made available are still too vague to limit the risk of market data fragmentation. Infrastructure for disclosing post-trade transaction information already exists and is widely used by exchanges and alternative trading systems to distribute information to major data vendors. But the desire not to legislate on how data should be reported and consolidated may have led to side effects that make existing provisions altogether ineffective.

The recent offerings by data vendors, exchanges and other software providers have shown that the industry has not managed to come up with an effective and unique means of allowing market participants to access transaction data in a single consolidated way. Multiple reporting systems, which result in incomplete or incoherent information, added to the significant increase of nominal access costs, are the result of the Commission's leaving the industry in charge of converging on its own towards a solution rather than offering a structure whereby a natural and obvious source of data can be used in the best interests of transparency, price discovery and efficiency.

Eighteen months after the implementation of the Directive, time has confirmed that the industry has not managed to build the infrastructure required to assess transaction performance *ex post*.

4.3 Best Execution

The best execution obligation is a crucial element of investor protection and must be viewed as the natural counterpart of a full liberalisation of the market.

This obligation is found in the notorious article 21, at the heart of the arguments put forward by many opponents of MiFID. Begun as an obligation of result in a principle-based regulatory approach, the best execution obligation has been actively fought by industry representatives and has slowly turned into a more modest obligation of means that remains complex and ambiguous.

Unsurprisingly, no consensus has been reached on a better definition of best execution, a term which is now a standard marketing come-on for all firms authorised to operate; it reinforces the confidence of end-investors, but in reality article 21 makes no provisions for any form of protection. In other provinces of regulatory intervention—hedge funds, for example—poorly drafted provisions have led to undue confidence, increased moral hazard and, ultimately, adverse selection, with new entrants forcing the most virtuous participants to compromise.

Eighteen months after the implementation of the Directive, there is still no clear definition or supply of the "European best bid-offer", as there is in the United States with the national BBO. This issue in itself has totally overshadowed the debate on transaction cost analysis, which seems now to have been forgotten both by the sell side and, more frighteningly, by the investor. One could argue that, given the overall performances of equity markets in 2008, transaction costs remain a friction cost; we do not believe the industry has actually enhanced the service offered to investors in any way.

5. Conclusion

To conclude this initial analysis of the situation of the European execution landscape eighteen months after the entry into force of MiFID, we summarise our findings in three main statements:

1. MiFID has liberalised the market for execution in shares and put an end to legacy centralisation obligation, and in so doing lays the foundations for a more competitive environment in which newcomers can take market share from dominant exchanges. A few newcomers have managed to secure a large enough share of the market to ensure that they will not disappear too swiftly.
2. The rapid rise of dark pools of liquidity and the failure of the systematic internaliser status must be seen as the result of possible flaws in the newly introduced regulation; these pools are unlikely to contribute to price discovery and may ultimately fail to benefit the investor community.
3. Post-trade reporting and the best execution obligation remain the two major weaknesses in the regulatory framework, weaknesses that mean it will not provide the investor protection expected by the regulator or compensate for the risks resulting from a fragmented market.

Current market conditions may not be ideal for urging the industry to pay heed to the issues raised in this position paper, but it seems important to us that both regulators and industry participants attempt to resolve these problems, which pose a threat to the industry.

Not all these issues pose equally serious threats; we make three major recommendations.

1. Post-trade reporting is the only way to determine *ex post* whether a market is efficient and is functioning smoothly and of measuring the quality of service of market participants. To avoid the adverse effects of regulatory initiatives that too often result in moral hazard, adverse selection and investor overconfidence, post-trade reporting is absolutely necessary. Trade reporting must be standardised and centralised, though it can be handled by commercial parties. Given the current commercial offerings, we strongly believe that standardisation is a must; for example, unique transaction identification codes and integrity controls to ensure the completeness of the database should be developed.
2. We recommend that, instead of attempting to modify article 21, a focus group be created to allow convergence towards a single measure of execution quality that could be adopted by market participants. Peer-group analysis seems to us the most interesting field for development; in the appendix we describe a model we recommend for this purpose. Acceptance of a BBO price would have similar positive effects.
3. With the recent market turmoil, the focus of the industry has shifted away from MiFID. But the crisis should remind us that the monitoring of financial transactions is a key to market stability. So it seems that the time is right to re-open the debate on regulating transactions in less liquid classes or in the giant OTC derivatives markets.

6. Appendix: The EBEX Indicators

a) General presentation

The EDHEC approach provides a simple answer to the following question:

> *"Given a transaction handed over to a broker, trader or algorithm, and executed for a given price at times that are recorded under given time constraints, to what extent have other brokers, traders or algorithms executed comparable volumes to this transaction, either before or after this transaction, at a better or equal price?"*

The answer to this question can be split into four important elements:

- The time at which the order is handed over (release time) to an intermediary (a broker, a trader or an algorithm) is the first point of reference, while the time at which the order is entirely filled (execution time of the last lot in the event of a split order) is the second point of reference.
- The size of competing trades is not important as such; the relevant measure is the number of times a volume comparable to that of the order was executed at a better or equal price; it is an initial measure of the quality of the price obtained. The price must be compared to that of small trades executed at equal or better prices (the broker, trader or algorithm could have split the order better) and to that of larger trades (the order could have been grouped with a larger flow of orders to be executed in block if such trading is offered).
- Volumes traded earlier at a better or equal price allow one to measure whether the broker, trader or algorithm has been too patient.
- Volumes traded at a later stage at a better or equal price allow one to measure whether the broker, trader or algorithm has been too aggressive.

Based on these elements, the EBEX methodology measures the quality of execution as part of a peer group review and identifies whether the broker, trader or algorithm has implemented the execution too aggressively or too slowly. Specifically, this approach relies on a couple of indicators. The Absolute EBEX indicator measures the quality of execution in a peer group review. The Directional EBEX indicator identifies whether the broker, trader or algorithm has implemented the execution too slowly or too aggressively. In other words, the first indicator assesses the quality of execution itself, while the second indicator provides information about why the quality of execution is as observed.

b) Detailed presentation of the indicators

Our two indicators rely on the same philosophy and are easy to compute and interpret. For the sake of convenience, we will begin with the presentation of the second indicator.

Directional EBEX

(1) Definition and components

Directional Estimated Best Execution for an order indicates how the broker or any other intermediary could have traded over time to provide better execution. This indicator results from the combination of two sub-indicators that measure the volumes traded at a better or equal price before and after the trade was executed. Specifically, the directional EBEX indicator for order *i* is computed as follows:

$$EBEX_{dir,i} = NBBEX_{i,j} - NABEX_{i,t}$$

$NBBEX_{i,j}$ stands for Number of Before-Better Executions for order *i* over the time interval *j*. This component can be defined as

a ratio of the aggregate volumes traded at a price equal to or better than the average trade price of order *i* divided by the size of order *i* to the aggregate volumes without consideration of price divided by the size of order *i*. This ratio is computed over the interval *j* which goes from the time the broker receives order *i* (release time) to the time order *i* is completely filled (execution time).

The mathematical notations referring to $NBBEX_{i,j}$ are provided below, for both sell and buy orders.

$NBBEX_{i,j}$

$NBBEX_{i,j}$ stands for **N**umber of **B**efore-**B**etter **E**xecutions for order *i* over the time interval *j*. This component can be defined as a ratio of the aggregate volumes traded at a price better than the average trade price of order *i* divided by the size of order *i* to the aggregate volumes without consideration of price divided by the size of order *i*. This ratio is computed over the interval *j*, which goes from the time the broker receives order *i* (release time) to the time order *i* is completely filled (execution time).

The mathematical notations referring to $NBBEX_{i,j}$ are given below (first for sell orders, then for buy orders):

$$NBBEX_{ij} = \frac{\sum_{n=1}^{N} V_{n,j}^{P>AP_i}}{\frac{(S_i)}{\sum_{m=1}^{M} V_{m,j}}{(S_i)}}$$

$$NBBEX_{ij} = \frac{\sum_{n=1}^{N} V_{n,j}^{P<AP_i}}{\frac{(S_i)}{\sum_{m=1}^{M} V_{m,j}}{(S_i)}}$$

In both equations, each element is defined as follows:

- $NBBEX_{i,j}$ is the number of better executions for order *i* during the interval *j*
- *j* is the interval between the time the broker receives order *i* and the time order *i* is completely filled
- S_i[4] is the size of order *i*
- AP_i is the average trade price obtained for order *i*
- *N* is the number of trades at a price better than AP_i during time interval *j*
- $V_{n,j}^{P \geq (\leq) AP_i}$ is the size of trade *n* at a price equal to or higher (lower) than AP_i during interval *j*
- *M* is the total number of trades during the time interval *j*; $M \geq N$
- $V_{m,j}$ is the size of trade *m* during time interval *j*

$NABEX_{i,t}$

$NABEX_{i,t}$ stands for **N**umber of **A**fter-**B**etter **E**xecutions for order *i* over the time interval *t*. This component can be defined as a ratio of the aggregate volumes traded at a price equal to or better than the average trade price of order *i* divided by the size of order *i* to the aggregate volumes without consideration of price divided by the size of order *i*. This ratio is computed over the interval *t* which starts at the time order *i* is completely filled (execution time) and which ends at the market close of the day.

The mathematical notations referring to $NABEX_{i,t}$ are provided below, for both buy and sell orders.

$$NABEX_{i,t} = \frac{\sum_{n=1}^{N} V_{n,t}^{P>AP_i}}{\frac{(S_i)}{\sum_{m=1}^{M} V_{m,t}}{(S_i)}}$$

4 - S_i can be simplified but is displayed for purposes of clarity.

$$NABEX_{i,t} = \frac{\sum_{n=1}^{N} V_{n,t}^{P<AP_i}}{(S_i)} \Big/ \frac{\sum_{m=1}^{M} V_{m,t}}{(S_i)}$$

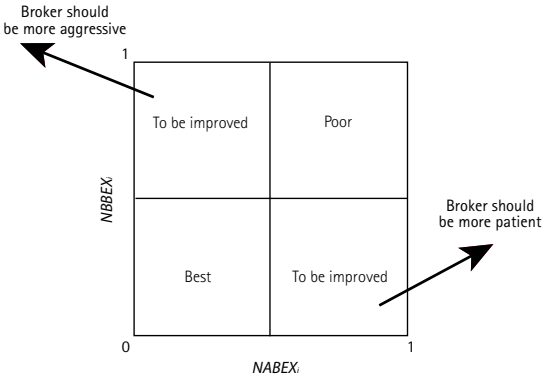
In both equations, each element is defined as follows:

- $NABEX_{i,t}$ is the number of better executions for order i during the interval t
- t is the interval between the time order i is completely filled and the next market close
- S_i [5] is the size of order i
- AP_i is the average trade price obtained for order i
- N is the number of trades at a price better than AP_i during time interval t
- $V_{n,t}^{P>(<)AP_i}$ is the size of trade n at a price higher (lower) than AP_i during the interval t
- M is the total number of trades during the time interval t; $M \geq N$
- $V_{m,t}$ is the size of trade m during time interval t

(2) Interpretation

Now that both components of the directional EBEX indicator have been presented, we can focus on how they can be interpreted to characterise the timing of the trade. This interpretation is very easy because both range from 0 to 1, given the way they are built. Figure 1 will help understand how to interpret the results.

Figure 1: Interpretation of directional EBEX components

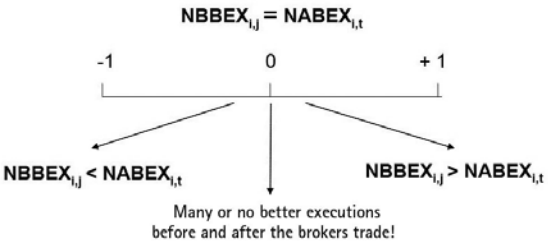


A direct comparison of both indicators delivers our directional EBEX indicator, the interpretation of which is even easier. The goal of this indicator is to show how the intermediary could have traded to provide better execution.

Because EBEX is the difference between NBBEX and NABEX, this indicator will range from -1 to +1. Figure 2 summarises the interpretation of the directional EBEX indicator.

Figure 2: Interpretation of the directional EBEX indicator

$$EBEX_{dir,i} = NBBEX_{i,j} - NABEX_{i,t}$$



Absolute EBEX

(1) Definition

The absolute indicator of Estimated Best Execution for an order is defined as the difference between one and a ratio of the aggregate volumes traded at a price equal to or better than the average trade price obtained for the order divided by the order size to the aggregate volumes without consideration of price divided by the size of the order. The ratio is then computed over the interval from the time the broker receives the order (release time) to the next market close. Specifically, the absolute EBEX indicator for order i is calculated as follows, for a buy or a sell respectively.

5 - Si can be simplified but is displayed for the purpose of clarity.

6. Appendix: The EBEX Indicators

$$EBEX_{abs,i} = 1 - \frac{\sum_{n=1}^{N} V_{n,day}^{P \le AP_i}}{\frac{S_i}{\sum_{m=1}^{M} V_{m,day}}}$$

$$EBEX_{abs,i} = 1 - \frac{\sum_{n=1}^{N} V_{n,day}^{P \ge AP_i}}{\frac{S_i}{\sum_{m=1}^{M} V_{m,day}}}$$

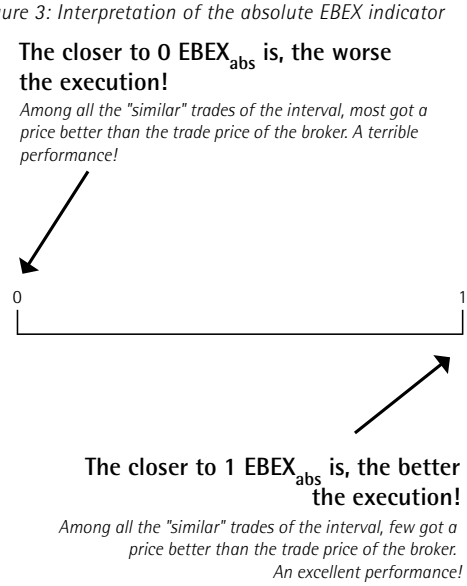
In both equations, each element is defined as follows:

- $EBEX_{abs,\,i}$ is the absolute best execution indicator for order *i* during the trading day;
- *day* is the interval between the time the broker receives order *i* and the next market close;
- S_i[6] s the size of order *i*;
- AP_i is the average trade price obtained for order *i*;
- *N* is the number of trades at a price equal to or better than AP_i during the time interval;
- $V_{n,day}^{P \ge (\le) AP_i}$ is the size of trade *n* at a price equal to or higher (lower) than AP_i during interval day;
- *M* is the total number of trades during the time interval *day*; $M \ge N$;
- $V_{m,day}$ is the size of trade *m* during the time interval *day*.

(2) Interpretation

Because of the way it is built, the absolute EBEX indicator can only take values between zero and one. This makes interpretation very easy, as illustrated in figure 3.

Figure 3: Interpretation of the absolute EBEX indicator



6 - S_i can be simplified but is displayed for purposes of clarity.

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