OBSERVATOIRE DE L'EPARGNE EUROPÉENNE

The markets in financial instruments directive: A first assessment

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I. Introduction

The Markets in Financial Instruments Directive (MiFID) is a law which provides a harmonized regulatory regime for investment services across the European Union. It was first adopted in April 2004, then implemented in the European Union on November 1, 2007, in replacement of the Investment Services Directive (ISD) which had been adopted in 1993.

The MiFID is a new step in the European Commission's wish to establish an harmonized and transparent financial framework in Europe, and is supposed to put the finishing touches to the liberalization of financial services within the European Union. In particular, it aims at encouraging competition between different places or ways of buy and sell orders' execution, without prejudicing the competitiveness of the European financial institutions.

The main objectives of this regulation, as described by the French Financial Markets Agency (AMF) in May 2006[1], are as follows: i) to guarantee consumer protection in investment services, ii) to guarantee a transparent running of markets, iii) to enhance the control by market authorities. In this briefing paper, we will focus on one specific aspect of the MiFID regulation, namely the suppression of the so-called "concentration rule". What motivates this regulation? What may be its potential drawbacks or limits?

This briefing paper is organized as follows. We first present the nature of liquidity, which is a key element to understand why there exists an academic debate on market fragmentation. We then discuss the drawbacks of the concentration rule, which support and helps understanding the MiFID regulation. We finally analyze the limit of fragmentation, in the European present environment. In conclusion, we propose a tentative first assessment of the MiFID, almost two years after its implementation by financial services providers.

II. The debate on market fragmentation and the nature of market liquidity

Financial markets have three main functions: i) financing the economy, ii) facilitating risk sharing, and iii) pricing assets. Accordingly, the objectives of regulators are to ensure that firms have an easy access to capital markets, while protecting the investors. Any regulation that would reduce transaction costs on financial markets would consequently fit with both objectives: if transaction costs decrease, investors would require a lower return, which would in turn decrease the firms' cost of capital.

Decreasing transaction costs is clearly one of the main aims of the MiFID, which puts an end to the so-called "concentration rule". According to this rule, all financial service providers were supposed to rout their orders and trade in a regulated market. The Investment Services Directive had given to the European Union members a complete freedom on whether to apply the concentration rule, or not. This rule was for instance implemented in France, but not in the United Kingdom, nor in Germany. Such an heterogeneity in regulations within the European Union may be explained by the existence of an academic debate on market fragmentation *versus* consolidation.

To understand the nature of this debate, it is necessary to first discuss the nature of transaction costs in financial markets. These transaction costs can be decomposed into two components.

[1] La directive sur les marchés d'instruments financiers: enjeux et conséquences pour la régulation française, AMF, n°1, Mai 2006.

First, investors have to pay direct transaction costs, like order submission fees, trading fees, clearing and settlement fees, plus intermediation fees charged by brokers. On the top of these fees, there also exist "indirect" transaction costs.

These implicit transaction costs relate to the notion of "market liquidity". The bid-ask spread, which is defined as the difference between the price an investor would pay to buy the asset, and the price he would obtain to sell the asset, is an example of such a cost, as it represents the additional cost an investor would pay if he was to buy a stock and resell it immediately. Liquidity is usually measured by this bid-ask spread, but also by the depth (that is, the quantity which is offered at the best quotes), or, in an order-driven market like Euronext, the resiliency (that is, the speed with which the limit order book replenishes after a large trade). When liquidity improves, traders who want to trade immediately receive better prices, that is, prices which are closer to the mid-quote, even for a large quantity, and even after a large trade.

The traditional view in economic theory is that competition across firms lowers prices by reducing rents. In financial markets as well, enhancing competition across trading platforms should induce these key actors to reduce direct transaction costs.

Still, there exists a debate in the academic literature on market fragmentation, which has been initiated by Hamilton (1989). If fragmentation improves competition, the impact of competition between trading venues on market liquidity is indeed ambiguous. As a consequence, its impact on indirect transactions costs and investors' welfare is not clear. This ambiguity is due to the very specific nature of liquidity, which is characterized by the existence of "network externalities": the trading decision of one investor may impact the welfare of other participants.

A market seems *a priori* more liquid if all the orders, each expressing a desire to trade, are routed towards a single trading venue, than if they are spread across different platforms. As suggested by Mendelson (1987), liquidity indeed increases with the number of participants, as the number of possible matches between buying and selling interests increases with the number of buyers and sellers. But in the presence of network externalities, the economic theory suggests that, potentially after some time, all orders should converge to a single platform: concentration is natural. Pagano (1989), Admati and Pfleiderer (1988) and Chowdry and Nanda (1991) illustrate this phenomenon. In the presence of two markets, if investors anticipate that one market will be more liquid, they rout their orders towards this market to benefit from lower implicit trading costs. As a consequence, this market is in the end the more liquid one, and the initial expectation is rational. Accordingly, Pagano (1989) shows that concentration improves risk sharing, while Admati and Pfleiderer (1988) and Chowdry and Nanda (1991) show that it decreases the adverse selection risk. Besides, Glosten (1989) reports that competition may not be desirable under extreme adverse selection, as it may lead to a market breakdown.

Why, in this case, did the MiFID establish a competitive environment in Europe, leading to the fragmentation of financial markets? The development, and the success, of electronic communication networks in the United States in the late 1980 seemed to contradict the conclusions above. What if fragmentation could benefit investors, under some circumstances? What would be these circumstances?

III. What motivated the end of the concentration rule?

Four arguments may be developed to justify the end of the concentration rule.

III.A. Natural obstacles to consolidation

Although liquidity is characterized by network externalities, there seems to exist natural obstacles to consolidation, as illustrated by recent empirical papers (see for instance Halling *et al*., 2005, or Levine and Schmukler, 2006). The viability of competitive markets may rely on some complementarities between the platforms.

First, there is a large heterogeneity across investors. Some are willing to trade small quantities (retail), some others large quantities (institutional investors). Some may be more informed than others on the value of securities. Some may be patient, while some others may be willing to trade immediately. This heterogeneity in investors' preferences or characteristics may lead to fragmentation, as investors may search for different trading systems to satisfy their needs. Seppi (1997) for instance finds that large institutional and small retail investors get better execution on hybrid markets, while investors trading intermediate-size orders may prefer a pure limit order market. Competing exchanges may cater to specific clienteles. Parlour and Seppi (2003) also show the possible coexistence between markets when liquidity providers have heterogeneous costs.

Second, trading venues may choose a vertical differentiation. Foucault and Parlour (2004) show that two markets may co-exist by charging different fees for different services (trading fees, listing fees, *versus* liquidity).

III.B. Fragmentation fosters inter-market competition and innovation

By definition, the concentration rule imposes the presence of a monopoly. Monopoly situations may yield distortions. The MiFID, by fixing the conditions to access trading systems, and by organizing competition within Europe, is supposed to prevent the abuses which usually characterize dominant market positions.

First, fragmentation induces incumbent trading platforms to implement or maintain a competitive fees' structure. The entry of EuroSETS in 2004 as a competitor of Euronext for the trading of the largest Dutch caps has for instance induced the regulated market Euronext to decrease its order submission fees and its transaction fees. The pressure of brokers and asset managers has indeed led to various changes on the fees' structure of Euronext Amsterdam in 2004. Declerck and Moinas (2009) empirically analyze this series of modifications. They show that, if a decrease in trading fees does not significantly increase the trading volume, it does significantly improve liquidity. Competition has therefore decreased not only direct, but also, by a snowballing effect, indirect transaction costs.

Accordingly, we observe that a fraction of the volume traded in Euronext has fled to alternative platforms. About one-fifth of average daily stock volume would now be transacted through dark pools, also known as alternative trading systems. As a reaction to its new competitors, Euronext has proposed many changes in its fees' structure in 2008-2009.

Besides, competition between trading platforms stimulates innovation. The "big bang" of 1986 in Europe is said to be one of the main determinants of the modernism of European

financial markets. This modernism may be characterized by the creation of an electronic limit order book in the Paris Bourse in the late 1980s. In comparison, the Nasdaq initiated electronic trading only in the late 1990s, and the NYSE only in the early 2000s, while electronic communication networks like Instinet or Archipelago were much more advanced. In particular, the competition between Nasdaq and ECNs increased execution speeds.

The nature of innovation stimulated by competition is not only technical. Alternative trading venues like Chi-X in Europe, introduced in November 2007, offer an innovative fees' structure, as market orders are charged, while limit orders, which are supplying liquidity, are subsidized. This asymmetric fees' structure had already been used on derivatives' markets when Euronext was trying to compete with Chicago on the euro-dollar contract.

III.C. Fragmentation fosters intra-market competition

The coexistence of multiple trading venues could not only improve competition across trading platforms, but also across liquidity suppliers within a trading platform. This may occur when there is initially an imperfect competition between liquidity suppliers, leading to positive expected profits.

Researchers have identified three sources of imperfection competition. First, most of the models developed to analyze market fragmentation implicitly assume that the number of liquidity suppliers is independent from the number of markets. This assumption is violated when entry in one market is restricted by a *numerus closus* for instance. In the later case, the entry of an alternative trading venue may increase liquidity. In the same vein, Hendershott and Mendelson (2000), or Degryse et al. (2009) report the existence of an "order creation effect" with the introduction of a crossing network. Different empirical studies confirm this intuition. In particular, Defontnouvelle et *al.* (2003) report an increase in trading volumes of the options which become multi-listed. They explain this phenomenon by an increase in the number of market makers with the multi-listing.

Second, limit order markets usually introduce a tick size, and a price then time priority. The combination of both elements may induce imperfect competition. As Glosten (1994) shows, this time priority induces competitive liquidity suppliers to post orders such that the marginal profit of the last unit of these orders is equal to zero. Any liquidity supplier willing to complement the limit order book would therefore incur a loss (in expectation), which would prevent them to do so. As a consequence, liquidity suppliers' expected profits are not equal to zero even if they compete with each other, condition which usually characterizes competitive markets. In such circumstances, Foucault and Menkveld (2008) show that the coexistence of multiple limit order books may increase the consolidated depth in the market. A limit order may be executed in one system before another order submitted at the same price in the alternative venue, which enables liquidity suppliers to circumvent time priority, and drive expected profits to a more competitive level.

Third, there may be collusive behaviors in financial markets. This was first illustrated by Christie and Shultz (1994), who show that Nasdaq dealers avoided odd-eighth quotes. In the same vein, Biais, Bisière and Spatt (2008) report that liquidity suppliers in Island earned rents in 2000. They analyze the impact of a reduction in the coarse tick size prevailing on Nasdaq in 2000, which was considerably reduced in 2001, while the Island tick remained very thin. This resulted in tighter spreads on both markets. These findings are inconsistent with the perfect competition hypothesis, under which Island traders should undercut each others as

much as Nasdaq quotes, and quote zero-profits spreads, unaffected by a drop in the Nasdaq tick.

III.D. Technology may consolidate markets

Glosten (1994) or Biais, Martimort and Rochet (2000) show that fragmentation would have no impact in an environment where limit order markets compete, if brokers can freely access all markets, if *ex ante* transparency prevails, and if traders can freely split their orders across markets. In this situation indeed, the market is *de facto* consolidated. One may argue that this is actually the situation prevailing in Europe, where there is no excessive fragmentation. Indeed, the regulated exchanges Xetra (Frankfurt), Euronext (Paris, Brussels, Amsterdam and Lisbon), SETS (London), as new MTF like Chi-X are transparent limit order books, characterized by an easy and cheap access. Liquidity demanders consequently have the possibility to arbitrage across markets by splitting their orders.

Besides, as Lescourret and Moinas (2007) show, if liquidity suppliers have the opportunity to submit quotes or limit orders in multiple markets, their inventory management induces them to *de facto* consolidate markets. Consolidation of multiple markets would therefore arise not only thanks to liquidity demanders who would monitor all markets to seize profit opportunities, but also thanks to liquidity suppliers, who would manage their position.

Both arguments should be more accurate with the development of smart order routing systems, and of trading algorithms which arbitrage and supply liquidity in different trading venues. This is confirmed by Foucault and Menkveld (2008), who show that spreads are lower on EuroSETS for stocks exhibiting more smart routers.

IV. The potential limits of the MiFID regulation ?

Most of the arguments developed in the previous section rely on a very important assumption: fragmentation may improve liquidity if markets are transparent. This assumption is necessary for brokers to split their orders across markets to ensure the lowest possible transaction costs. Two conditions therefore emerge for fragmentation to benefit investors: transparency, and best execution. Both are part of the MiFID regulation.

IV.A. Transparency

O'Hara (1995) defines transparency as the traders' ability to observed the information content during the trading process. *Ex post* transparency refers to the information content of trades (that is, time, prices, quantities, identities of traders), which may have an impact on market efficiency. *Ex ante* transparency refers to the quality of the piece of information that is available to participants prior their trades. In a limit order market, it refers to the visibility of liquidity supply, that is, to what part of the limit order book is displayed to the participants, and to the degree of detail on limit orders which is adopted.

In consolidated markets, *ex ante* transparency may have opposite effects on liquidity. On the one hand, a high transparency lowers search costs for liquidity demanders (see Flood et al., 1999), and enables them to better evaluate the expected transaction price and the price impact of their trades (see Baruch, 2005). Besides, transparency may decrease information asymmetries and improve market efficiency. On the other hand, transparency increases the exposure of limit orders, therefore increasing the risks faced by liquidity suppliers (that is, adverse selection risk, risk of being picked off), which in turn induces them to quote higher

spreads. Madhavan, Porter and Weaver (2005) and Bortoli *et al.* (2006) empirically find that an increase in the degree of transparency negatively impacts liquidity.

In this respect, the emergence of dark pools in Europe like Turquoise, LiquidNet, SmartPool by Euronext or Chi-Delta by Chi-X, enabled by the MiFID regulation, is perfectly understandable. Still, when it comes to competition across trading platforms, transparency matters, and opacity may be detrimental to (at least some) investors.

First, as explained by Degryse (2009), if the competition between Nasdaq and ECNs is proven to have improve liquidity; the results of the impact of the competition with an opaque Crossing Network are mixed.

Second, unequal transparency may impact inter-market competition. In particular, opaque platforms could free-ride price discovery on transparent trading venues.

Third, in the absence of *ex ante* transparency, brokers cannot strategically split their orders across trading venues. This was however one of the main conditions of the model developed Glosten (1994), to ensure that the fragmentation of limit order markets was equivalent to a consolidated limit order market. MiFID ensures post-trade transparency, but *de facto* waives pre-trade transparency. The pre-trade transparency issue has recently been a concern for regulators, both in the U.S. and in Europe, with the emergence of dark pools. Mary Schapiro, SEC chairman, told a New York Financial Writers Association dinner on June 18, 2009 that she had asked the agency's staff to take "a serious look at what regulatory actions may be warranted in order to respond to the potential investor protection and market integrity concerns raised by dark pools". On June 22, 2009, the Financial Times as well reported that "Dark pools, a rapidly growing type of share trading facility, are to be reviewed by the European Commission amid signs that financial regulators are turning their attention to transparency in global equity markets.[2]

The opacity which characterizes some of the trading venues indeed drastically increases the search costs of brokers, who look for the better prices. On the top of this, one may therefore wonder whether it does not create a distortion in the competition in the brokerage industry, leading to a different treatment of orders depending on the investors' characteristics, and in particular, depending on their size. This issue would call for an appropriate investigation on the impact of the MiFID on different categories of investors. In any case, as Biais (2007) suggests, transparency should be enhanced so as to enable traders to arbitrage between different offers which would in turn improve competition across trading venues.

For Oriol (2008), this issue is even more important in Europe than in the U.S.. First, there is no detailed regulation on the trading and price formation in Europe. Second, there exist different inter-connection and order routing systems in the U.S. and in Europe. The existence of the Consolidated Tape, the Consolidated Quotation System, the Intermarket Trading System in the U.S. enables exchanges to re-rout their orders to any market that would offer better execution conditions. Conversely in Europe, the consolidation of infrastructures and information is let to private initiative.

[2] "Europe to review 'dark pool' trading", by Jeremy Grant, Financial Times, June 22, 2009.

IV.B. Best execution

Transparency is necessary for brokers to be able to split their orders so as to lower transaction costs. Nothing however insure that this would be their objective. As Foucault (2007) suggested, this may not necessarily be the case, as there may be a moral hazard risk faced by customers in their relationship with the brokers, as in any agency relation. For the broker, looking for the best price in multiple markets is costly (it requires an "effort"). In order to avoid incurring this cost, the broker may choose not to execute the customer's order in the best conditions. This is where the best execution rules implemented by regulators kick in.

Foucault and Menkveld (2008) indeed find many violations to best practices in fragmented markets. They report that in the presence of better prices in EuroSETS than in Euronext for Dutch stocks in 2004, only 27% of the market orders yielding to a trade are routed to EuroSETS.

Best execution rules exist for a long time in the U.S. and are as well defined in the MiFID. The notion of best execution is however difficult to define, and its application is difficult to monitor. In the MiFID, best execution is defined in terms of total costs, to induce decreases in transaction costs at different levels of trading, from order submission to clearing and settlement. MiFID requires an obligation of results, but also an obligation of means. Both obligations seem necessary as best execution covers dimensions which may not be compatible, such as execution price and execution speed. For the same reason, it is difficult to control whether it has been implemented.

For D'Hondt and Giraud (2007), the best execution rule in the MiFID, which is a key element for investor protection in a market that is open to competition, has resulted in a modest obligation of means that remains complex and ambiguous.

In particular, best execution is complex to implement in Europe due to i) a lack of *ex ante* transparency, which, as we discussed, makes it difficult for brokers to easily identify the best offers, and ii) the fragmentation of clearing and settlement systems. While there essentially exist one clearing house in the U.S., namely DTCC, Oriol (2008) reports the existence of 13 clearing houses in Europe. Similarly for settlement, she reports the existence of 33 different settlement systems in Europe. This generates additional costs for any cross-border transaction.

Besides, clearing houses which are clearing trades for a given venue may influence traders' choice for the routing of their orders. By routing their orders to Euronext even if this platform does not offer the best price, they would be able to net their trades at the end of the day and benefit from a rebate from the corresponding clearing house, therefore reducing their total transaction costs. Similarly, many brokers report that they were reluctant to trade in Chi-X which clearing system was offered by Fortis Bank, as they were afraid to expose to an additional counterparty risk. Finally, the fragmentation of clearing and settlement in Europe impose additional costs, as traders must deposit and open an account in different systems.

V. Conclusion

MiFID regulation was introduced on November 1, 2007. Almost two years after its implementation, it seems necessary to try to assess whether it has reached its objectives, which are to organize competition in Europe and to protect investors. A deeper analysis is necessary, and this reports only proposes some arguments that could help in this respect, in order to improve investors' protection.

The end of the concentration rule fosters competition, whether inter-markets or intra-market, and innovation. However, this is only shown to occur when i) pre-trade transparency and ii) best execution practices prevail. This suggests first that a closer examination of the impact of opacity should be engaged, not only on equity markets, but on bond markets as well. Second, a potential consolidation of clearing and settlement systems in Europe should be discussed.

Two elements though suggest that it may be too early to clearly understand the impact of the MiFID. First, financial markets have gone through a very instable period, starting with the subprime crisis in 2007, and facing one of the largest financial crisis by the end of 2008. Such crisis has modified the environment of the financial industry, which would certainly have impacted the traders' behavior. Second, some empirical studies of market fragmentation, like Halling *et al*. (2005), suggest that the market share of a new competing platform increases right after the multi-listing, but decreases to 5% after some time. This phenomenon, named "flow back", is in line with the network externalities characteristics of liquidity. It suggests that volume may shift once entrant modify their fees' structures or the advantages which had initially been proposed to traders to attract them on the new platform.

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