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The challenges and implications of the Markets in Financial Instruments Directive (MiFID) and of its revision (MiFID II, MiFIR) on the efficiency of financial markets

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8.1 Introduction

The Markets in Financial Instruments Directive (MiFID) is a European directive (Directive 2004/39/EC) published on 30 April 2004 in the *Official Journal of the European Union* and implemented since November 2007 across the 31 member states of the European Economic Area (the 28 EU member states plus Iceland, Norway and Liechtenstein). As of the effective date, 1 November 2007, it replaced the Investment Services Directive (ISD) through a framework directive (Directive 2004/39/EC), an implementing directive (Directive 2006/73/EC) and a regulation (Regulation 1287/2006).

This directive is one of the keystones concerning the Financial Services Action Plan (FSAP) set out by the European Commission in 1999. This plan has proposed a set of 42 measures to create an effective single market in the

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financial services. The implemented measures harmonized the member states' rules on banking, securities trading, insurance, old-age pensions and other financial services. The FSAP is an integral part of the Lisbon Agenda, whose successor is the EU 2020 Strategy.[1]

MiFID is also the most significant piece of legislation introduced under the Lamfalussy procedure based on a four-level approach, where each level focuses on a specific stage of the legislation implementation:

1. At the first level, the piece of legislation is adopted by the European Parliament and Council of the European Union (EU)
2. At the second level, the sector-specific committees and regulators advise on technical details, then bring it to a vote in front of member-state representatives.
3. At the third level, the national regulators work on coordinating new regulations with other nations.
4. The fourth level involves compliance and enforcement of the new rules and laws.

This synthesis aims to highlight the challenges and the implications of the Markets in Financial Instruments Directive (MiFID) and of its revision (MiFID II, MiFIR) on the efficiency of financial markets.

In Section 8.2, we underline the context in which MiFID was implemented to understand more broadly its initial objectives. Section 8.3 briefly introduces the concept of financial markets efficiency as a key pillar of modern finance. At this level, the roles of market regulation within this concept will be brought forward. Section 8.4 presents the challenges and the key regulatory contributions of MiFID for the integration of the European financial markets in view of its objectives. Section 8.5 provides a first assessment of MiFID after 2011 to identify the remaining challenges for MiFID II and MiFIR in order to face the G20 requirements after the global crisis of 2008. Section 8.6 studies the implications of MiFID and its revisions (MiFID II and MiFIR) on the efficiency of financial markets through the selection of major academic work undertaken on this subject. Section 8.7 concludes with a discussion on the remaining challenges.

[1] The strategy 2020 is available at the following URL: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF.

8.2 Context in which MiFID was implemented and its first objectives

The London Stock Exchange's Big Bang on 27 October 1986, with the Financial Services Act established under Margaret Thatcher's government, was a rapid and complete deregulatory reform of the City market. The Big Bang was essentially a reprise of the deregulation of Wall Street in the 1970s. The main aims of the Act were to promote internationalization by allowing overseas firms to compete in London's market, making the City more competitive in equity transactions and confirming London's dominance in European markets.

Clemons and Weber (1990) underlines the main changes of this reform. It included an increase in the number of market participants, the opening to outsiders of ownership of stock exchange members, the breaking of the monopoly of brokers and the fixed brokerage commissions rule to make brokers more competitive. Moreover, an electronic dealing system was put in place allowing proprietary transactions, eliminating the separation between brokers and market makers and making trading off the order book possible.

Prior to these reforms, the City of London had difficulties competing with foreign banking. New York became a leading global centre of finance with a deregulation policy, which was at its pinnacle in 1975 with the end of fixed commissions on transferable securities, allowing liquidity on the equity and bond markets. This had to be replaced within the international monetary system context. For Thatcher's government, the two problems behind the decline of London banking were overregulation and the old structure of the financial markets. The solutions chosen were the free market doctrines of competition and meritocracy. The effects of the Big Bang led to significant changes in the structure of the financial markets and their regulatory environment, with the creation of the Financial Services Authority.

In 2007, the Market in Financial Instruments Directive (MiFID) was implemented. MiFID entered into force in November 2007 as a core pillar in European financial markets integration. This directive governs the provision of investment services in financial instruments by banks and investment firms, the operation of traditional stock exchanges and alternative trading venues. By reinforcing and harmonizing the financial regulatory framework at European level, MiFID aims to reinforce the integration of the European financial markets by increasing the competitiveness and the efficiency of European financial markets without neglecting investor protection to reduce the cost of capital and to generate growth.

After 2008, the global financial crisis and the European sovereign debt crisis of 2009 reminded us that the dynamics of financial markets are an ongoing process. Since the crisis, regulation has seemed to take over the vision of market structure itself, with a wide range of regulations impacting market structures all around the globe. The last global regulatory changes in the EU and in the USA are available in Table 8.1 in the Appendix.

The current trend is the reregulation of financial markets. This reregulation has to be placed in the institutional context of the G20 summits (Washington in 2008 and London and Pittsburgh in 2009). G20 was founded in 1999 with the aim of studying, reviewing and promoting high-level discussions on policy issues to promote international financial stability.

The following non-exhaustive list focus on the most significant items for G20 financial reform after 2008. According to Véron (2014), it could be divided into two main following objectives:

1. To tighten or strengthen the regulatory framework applying to entities or activities that had already been regulated before the crisis (a more demanding framework for the Basel III accord since its initial exposition in 2010, special regulatory treatment of systemically important financial institutions (SIFIs) and additional disclosure obligations for banks).
2. To tighten or strengthen the regulatory framework applying to entities or activities that until 2008 were mostly outside the scope of regulators such as the over-the-counter (OTC) derivatives, executive compensation, credit rating agencies, hedge funds, shadow banking and financial benchmarks (LIBOR and other similar reference rates).

In this context, the European Commission proposed to revise MiFID on 20 October 2011 with the aim of making European financial markets more efficient, resilient and transparent to strengthen the protection of investors and to be consistent with the evolution of financial markets after 2008. Consequently, a proposal for a new directive (MiFID II),[2] and a new regulation (MiFIR),[3] has been published to enter into force on 2 July 2014, with rules that should be applicable in 2018. The challenges and implications of MiFID relating to the efficiency of financial markets should be understood within this context.

[2] The directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU is available at: http://eur-lex.europa.eu.

[3] The regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012 is available at: http://eur-lex.europa.eu.

8.3 The efficiency of financial markets

Based on the existing literature, Cobbaut, Gillet, and Hübner (2015) summarize the concept of market efficiency according to three points of view that underlie the role that the capital markets are expected to play in an economy:

1. **Allocation efficiency:** A market is considered as efficient when the price of assets evolves in a way that equates the marginal rates of risk-adjusted return between all savers and investors. The role of a capital market here is to optimally allocate scarce savings to productive investments in a way that benefits everyone, and that no profitable project is given up due to a lack of capital (Bauer 2004).
2. **Informational efficiency:** A market is informationally efficient if the asset prices incorporate, at each moment, all available information in order to reflect their underlying economic values.
3. **Operational efficiency:** A market is said to be operationally efficient if the transaction costs are fixed at a level where the intermediaries (dealers and market makers) provide services at competitive profits.

These three situations of efficiency represented on Fig. 8.1 are interdependent but should not be confused in order to avoid misinterpretations.

8.3.1 Informational efficiency and the Efficient Market Hypothesis (EMH)

Fama (1965, 1970, 1991) has significantly contributed to the definition and empirical testing of the Efficient Informational-Market Hypothesis (EMH),

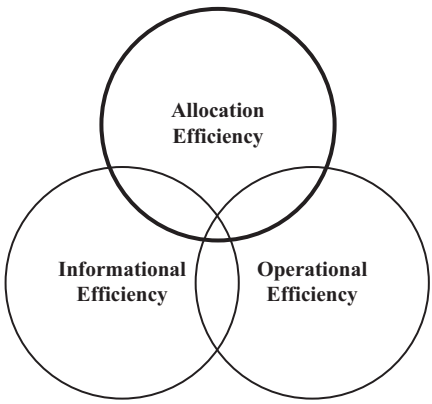

Fig. 8.1 The efficiency of financial markets

which is a key assumption on which modern financial theory relies. This hypothesis is based on the random walk theory of asset prices introduced by Samuelson (1965), where the price changes are unpredictable in an informationally efficient market.

This idea was formerly proposed by Bachelier (1900) in his doctoral thesis. It illustrates that in an efficient market, at any point in time, the actual price of a security will be a good estimate of its intrinsic value and an accurate reflection of all available information. Fama (1991) proposed testing the informational efficiency of a market according to these three types of information:

1. Weak-form tests of return predictability, where it is impossible to systematically beat the market by using historical data.
2. Semi-strong form tests of event studies, where it is impossible to systematically beat the market by using publicly available information.
3. Strong-form tests of confidential information, where it is impossible to systematically beat the market using any information, public or private. This concept is hard to test because it requires access to the private information of all insiders.

Numerous tests of the EMH have suggested that information is reflected quickly and fully in prices confirming the semi-strong form of efficiency. Validation of this hypothesis does not need to confirm an efficient orders process but implies that the stock price movements are unpredictable. An informationally efficient market can have economically inefficient runs and crashes, so long as those crashes are not predictable.

The current paradigm of securities market regulation rests on the EMH, even if this hypothesis has been discredited by behavioural finance. Walter (2012) underlines that the EMH is still a stochastic convention for representing the markets as a martingale through the European prudential norms and in the directive MiFID.

8.3.2 Operational efficiency or the microstructure research area

From the operational efficiency point of view, the microstructure of financial markets has given rise to an abundant literature. O'Hara (1995) defines market microstructure as the study of processes and outcomes of exchanging assets under a specific set of rules. Microstructure theory focus on how the specific trading mechanisms affect the price formation process. According to Schreiber and Schwartz (1986), if the EMH refers to information efficiency

given the design of the market, the price discovery process refers to design efficiency given the frequency with which information arrives. Moreover, the authors underline that the serial dependences in stock price changes do not violate the EMH, if after taking into account the transaction costs, the pattern is not concentrated enough for its exploitation to be economically viable. The autocorrelation of returns could be a manifestation of imperfections in our trading systems. In addition to the information changes and the liquidity trading, the following factors could account for the price changes that we observe: the bid–ask spread, the thin limit orderbook, the market maker interventions and the workings of price discovery process.

When transactions are costly to make and necessitate effort from intermediaries, a market maker or a dealer should be compensated through a bid–ask spread around the underlying value of the asset. The market is still informationally efficient if the underlying value fluctuates randomly, as being the centre of the spread. When information arrives, both the bid and the ask prices should move to different levels, such that their average is the new equilibrium value.

When the conditioning information is "all public information", the conditional expectation is sometimes called the fundamental value or the efficient price of a security, approximated in the long run by random walks. According to Cochrane (2009), the martingale behaviour of asset prices is a classic result, arising in many economic models with individual optimization, absence of arbitrage or security market equilibrium. This result is contingent on assumptions of frictionless trading opportunities.

However, as mentioned by Hasbrouck (2006), this result is not appropriate in most microstructure applications. At this level, the improvement of market structures, described as the state of a market with respect to its competition, is necessary to ensure the viability and stability of markets. The technology innovations, market fragmentation or consolidation, costs, volatility, transparency, policy interventions and regulations shape the market structure to ensure the competitiveness and efficiency of financial markets. At this level, the MiFID directive and its revision have key roles to play in the integration of European financial markets around its key objectives: competitiveness and efficiency.

8.3.3 Allocative efficiency

In order to be allocatively efficient, a market must meet the prerequisites of being both informationally efficient and operationally efficient. If all conditions are met, capital flows should direct themselves to the places where they will be the most effective, providing an optimal risk–return scenario for the investors.

An allocation is Pareto efficient if there does not exist a possible redistribution which would make at least one person better off without harming another person. In finance, this idea can be translated by the concept of optimal risk-sharing. The concept of allocative efficiency is related to the investment choices of firms and to the consumption/saving decisions of consumers. The roles of informational and operational efficiencies on allocative efficiency through the study of private information and liquidity on price equilibrium have been studied.

However, it remains difficult to assess the part that is due to the informational component and the part that is due to the liquidity component in the price determination of financial assets. According to Shiller (2003), we should look at the stance we take up in relation to the presumption that financial markets always work well and that price changes always reflect genuine information. Behavioural finance should be integrated in order to understand how human behaviours and arbitrary feedback relations could fuel stock market booms and crashes, which could generate a real and substantial misallocation of resources.

While some economists deny that bubbles occur, it remains difficult to identify them with certainty and this concept could lead to arbitrary judgements. Moreover, the causes of bubbles could be multiple and they often remain disputed. Among them, we could mention liquidity causes, inflation causes and the diverse social psychological factors that affect the behaviour of market participants. In the current non-conventional context, there is a considerable amount of research interest in understanding the interactions between asset prices, monetary policy changes and regulations.

1. From the regulation point of view, financial regulation changes could play a critical role in the severity and consequences of bubbles. Bubbles could lead to the failure of financial regulation by outlining five dynamics (Gerding 2014): the regulatory stimulus cycle, compliance rot, regulatory arbitrage frenzy, procyclical regulation and promotion of investment herding, which could affect the financial institution leverage and the supply of credit-fuelling bubbles, and making the markets vulnerable to a crash.
2. From monetary policy changes, Rigobon and Sack (2004) estimated the response of asset prices to changes in monetary policy through a new estimator that is based on the heteroscedasticity existing in high-frequency data. The results indicate that an increase in short-term interest rates results in a decline in stock prices and in an upward shift in the yield curve that becomes smaller at longer maturities. On the opposite side, a too cheap interest rate could reinforce instabilities with bubbles on the financial markets and real estate markets. The prices of assets could no more reflect their fundamental realities. This situation could become perverse if the central banks have to lead the dance, as

the thoughts of investors themselves should make the market. To make the financial markets efficient, investors need to assess properly their risks instead of believing that the central bank will be their saviour of last resort. To the extent this happens, the markets could fail to provide risk-sharing for individuals and access to risk capital for firms and entrepreneurs in the long run.

However, beyond monetary policy, there are also budgetary and fiscal policies. At European level, most member states of the EU participate in economic and monetary union (EMU) based on the euro, but most fiscal and budgetary decisions remain at national level. Therefore, although the EU has a monetary union, it does not have a fiscal union. At this level, the EU Treaty adopted the Stability and Growth Pact among members of the Eurozone to coordinate the fiscal policies of Member States.

This one defines an excessive budget deficit as one that is greater than 3 % of gross domestic product (GDP) and public debt is considered excessive under the Treaty if it exceeds 60 % of GDP without diminishing at an adequate rate (defined as a decrease of the excess debt by 5 % per year on average over three years). Its extension is the Treaty on Stability, Coordination and Governance (TSCG) signed in March 2012, which introduces a new fiscal discipline through three pillars: the fiscal compact, economic policy coordination and their convergence with the governance of the Eurozone.

8.4 The challenges and the key regulatory contributions of MiFID

MiFID reinforces the competitiveness and the efficiency of European financial markets, as it is a continuation of the Single European Act signed at Luxembourg on 17 February 1986.

This act was the first major revision of the 1957 Treaty of Rome, opening the path to the Treaty on the European Union in 1992, which established a single market through the creation of an area without internal frontiers, thereby ensuring the free movement of persons, goods, services and capital in accordance with the provisions of this Treaty. It came into effect on 1 July 1987 under the Delors Commission.[4]

The launch of the euro at the end of the 1990s, the Council Directive 93/22/EEC on investment services in the securities field and the Financial

[4] For a review of the European challenges post-1992, see Jacquemin, Wright and Silberston (1994)

Services Action Plan of 2005 were major milestones for European economic and financial integration in that they tackled currency and regulatory segmentation. With the euro, the Eurozone is at least an economic and monetary union with an independent monetary policy, which makes fixed exchange rates impossible according to Mundell (1961), but capital can move freely. Mundell developed a theory around optimum currency areas that underlay the key necessary features of a monetary union in order for it to endure. It is necessary to put in place specific mechanisms for adjustments to absorb the asymmetrical shocks that affect only some of its countries. Without a monetary devaluation being possible, the solution proposed by the author is a perfect mobility of production factors. If this solution is not totally possible, the monetary union should make possible budgetary transfers within the union to reduce disequilibria in order to allow the convergence of economic policies and to continue economic and monetary union. What remains needed at this level is the will to accomplish the convergence of economic policies and agreements on those convergences.

In the meantime, financial integration is particularly important within the economic and monetary union. The Eurosystem, according to Praet (2012), defines financial integration as a situation whereby there are no frictions that discriminate between economic agents in their access to the investment of capital, particularly on the basis of their location.

At this level, MiFID plays an important role because it improves the remaining challenges of the Investment Services Directive (ISD) with those of the passport system. We have decided to present the main contributions of MiFID and the main challenges facing it around four pillars: the competitiveness and efficiency of financial markets, the investor protection, the transparency and quality of the markets, and the supervision and enforcement of financial regulations.

8.4.1 Challenges around the competitiveness and the efficiency of financial markets

To face the challenges around the need for more competitiveness and efficiency in the European financial markets, it was necessary to abolish the monopoly of traditional stock exchanges, to remove obstacles to the free circulation of capital among European countries and to encourage the emergence of an integrated and competitive trading infrastructure. At this level, MiFID abolished the possibility for Member States to require all trading in financial instru-

ments to take place on national traditional exchange places by suppressing the rule of national concentration of orders.

Moreover, it introduced new market players with the introduction of alternative venues, such as Multilateral Trading Platforms (MTFs) and Systematic Internalizers (SIs) alongside the traditional exchange places to execute securities transactions. SIs are financial institutions which decide to internalize the matching of client orders without putting out the orders on the regulated market. This change aims to enable European-wide competition between traditional exchange places and alternative venues to eliminate barriers to cross-border trading and to inject competition into the European investment services industry.

8.4.2 Challenges around the investor protection

The challenge was also to grant banks and investment firms a strengthened European passport for providing investment services across the EU in compliance with both organizational and reporting requirements as well as comprehensive rules designed to ensure better investor protection. This change was aimed at improving due diligence through the development of business conduct rules in the internal organization of financial institutions. At this level, some rules concern the definition of a "best execution policy" for the orders of clients and a classification of clients according to their level of financial knowledge in order to provide appropriate financial advice. Investor protection was needed to attract new investors to the EU capital markets and to encourage sustainable growth.

This directive affects the internal organization of financial institutions from the front office to the back office with impact at pre-trade, execution and post-trade levels of the transaction. The organizational requirements concern also the skills of the managerial teams and information on the shareholders and members who exercise a qualifying holding on an investment firm or a significant influence on the management of a regulated market.

The investment firms and the regulated markets must undertake their responsibilities in order to prove their compliance with the directive in their work processes. At this level, the identification of possible conflicts of interest and the procedure to manage them has to be clearly established. A risk management approach must be developed among actors concerned by MiFID in order to identify the significant risks which could impede their appropriate functioning. Investment firms have to organize internal control processes

with an independent internal audit department. Regulated markets have to facilitate the finalization of transactions in an efficient way and with sufficient financial resources. Moreover, MiFID requires firms to categorize clients according to clear procedures to assess their suitability for each type of investment product. The appropriateness of any investment advice or suggested financial transaction must be verified before being given. The different categories are the following:

1. Eligible counterparts are supposed to have expertise in the field of investments as they operate on the financial markets. They do not benefit from specific protection.
2. Professional clients have competences to evaluate the risks and to make their investment decisions. They have to communicate less information and there is less protection than for retail clients.
3. Retail clients benefit from an increasing level of protection.

The investment firm has to assess risk profile through the collection of information on each client in order to propose appropriate products and services. Specific information also has to be communicated to the clients depending on their category.

8.4.3 Challenges around transparency and the quality of markets

The directive requires transparent and non-discretionary rules to ensure a fair and ordered negotiation process through the definition of a best execution policy with objective criteria to obtain the best possible result in the execution of an order for a client, unless there is a specific request from the client. The best possible outcome includes the execution price, cost, speed, likelihood of execution, likelihood of settlement and any other relevant factor. This policy is applicable for orders coming from professional and retail clients.

From the pre-trade transparency point of view, MiFID requires that operators of continuous order matching systems aggregate order information on liquid shares available at the five best price levels on the buy and sell side and that on quote-driven markets, the best bids and offers of market makers are available. From the post-trade transparency point of view, MiFID requires firms to publish the price, volume and time of all trades in listed shares, even if executed outside a regulated market, unless certain requirements are met to allow for deferred publication.

8.4.4 Challenges around the supervision and the enforcement of the financial regulation

Firms willing to benefit from the European passport have to be authorized and regulated by their "home state" competent authority. The firm is then able to use the MiFID passport to provide services to customers in the other European Member States.

The European passport means that the investment firm can exercise its activities within the EU under the permanent control of the home country regulatory authority if the investment firm has an approval from that national authority. The home country is the country where the investment firm, the credit firm or the regulated market has its headquarters or head office. The transparency of transactions will be toward the home country regulatory authority, which will organize information exchanges with other regulatory authorities concerned by the transactions. In order to facilitate and accelerate cooperation and information exchange, the Member States have to choose an authority that will be a contact point for this directive.

8.5 A first assessment of MiFID with the remaining challenges for MiFID II and MiFIR

In 2011, a first assessment of the directive MiFID was achieved. Increasing competition between venues in the trading of financial instruments has occurred, with more choices for investors in terms of service providers and available financial instruments. Moreover, several technological advances with high frequency trading (HFT) and algorithmic trading (AT) have been developed. Finally, transaction costs have decreased and integration has increased. However, this more competitive landscape has given rise to new challenges:

1. The benefits from this increased competition have not flowed equally to all market participants and have not always been passed on to the end investors, retail or wholesale. The market fragmentation implied by competition has also made the trading environment more complex, especially in terms of collection of trade data. The absence of a consolidated tape since MiFID's initial introduction in 2007 has impacted the buy-side traders. They are suffering from a decline in the quality of market data that drives their investment decisions, which could reinforce uncertainty on the

markets. Moreover, the issuers have difficulties in rebuilding their liquidity on the markets.
2. The market and technological developments have outpaced various provisions in MiFID. The common interest in a transparent level playing field between trading venues and investment firms was undermined.
3. The financial crisis of 2008 has exposed weaknesses in the regulation of instruments other than stocks, such as bonds and derivatives, traded mostly between professional investors through Over-The-Counter (OTC) markets. This crisis has also underlined that the challenges concerning the organization of financial markets are beyond the EU and should be studied with a more international approach.
4. The rapid innovations and growing complexity in financial instruments underline the importance of an up-to-date high level of investor protection. As AT and HFT have grown rapidly, they have increased the complexity of the market dynamics. A current controversy concerns the extent to which they improve or degrade the functioning of financial markets and also influence market volatility and the risk of instability.
5. Finally, the sovereign debt crisis of 2009 in the EU has exposed weaknesses in EU governance that affect the viability and the solidarity of the EU. The situation of Cyprus in 2013 and the situation of Greece in 2015 have made us question what has been accomplished around the integration of European financial markets.

In October 2011, owing to the crisis context and to improve the drawbacks of MiFID, the European Commission put forward proposals for revising MiFID, with the aim of establishing a safer, sounder, more transparent and more responsible financial system and more integrated, efficient and competitive European financial markets.[5] A proposal for a new directive (MiFID II) and a new regulation (MiFIR) were published on 20 October 2011. The directive evolved from a set of rules to protect retail investors (MiFID) to a set of proposals to increase transparency among the fragmented European trading venues (MiFID II/MiFIR). The objectives of MiFID II are mainly to:

1. Reinforce supervisory powers.
2. Make financial markets more robust and efficient.
3. Increase transparency of both equity and non-equity markets.
4. Introduce a stricter framework for commodity derivatives markets.
5. Strengthen investor protection.

[5] See the following regulation COM(2010)301 Final. For further details see: http://ec.europa.eu.

The revision of MiFID through MiFID II and MiFIR has been a way of delivering G20 commitments after the crisis of 2008 and tackling the less regulated and more opaque parts of financial systems, improving the organization, transparency and oversight of various market segments, especially in those instruments traded mostly OTC,[6] complementing the legislative proposal on OTC derivatives, central counterparts and trade repositories.[7] Improvements are also required to enhance transparency on commodity derivatives markets in order to ensure their hedging and price discovery functions.[8]

The main modifications covered by MiFID II/ MiFIR are underlined in the factsheet from Linklaters (2014) available in Table 8.2 in the Appendix. Briefly, on one side, MiFID II amends specific requirements regarding the provision of investment services, the scope of exemptions from the current Directive, the organizational requirements for investment firms and trading venues, the authorization and ongoing obligations applicable to the providers of data services, the powers available to competent authorities, and the sanctions and rules applicable to third-country firms operating via a branch. Important parts are dedicated to HFT, to OTC market obligations through Organised Trading Facilities (OTFs) and to supervision mechanisms.

On the other side, MiFIR sets out requirements in relation to the disclosure of trade transparency data to the public and of transaction data to competent authorities and it removes the barriers to non-discriminatory access to clearing facilities. It also sets out requirements in relation to the mandatory trading of derivatives on organized venues, the specific supervisory actions regarding financial instruments, the positions in derivatives and the provision of services by third-country firms without a branch.

In line with recommendations from the de Larosière Group and the conclusions drawn by the ECOFIN Council, the EU has committed to minimize, where appropriate, discretions available to Member States across European financial services directives, in order to establish a single rulebook for European financial markets across all areas covered by the review of MiFID.[9]

[6] See the following regulation COM (2009) 563 Final. For further details see: http://ec.europa.eu.

[7] See the following regulation COM (2010) 484. For further details see: http://ec.europa.eu.

[8] See the following regulation COM (2011) 656. For further details see: http://ec.europa.eu.

[9] See the following regulation COM (2011) 656 Final. For further details see: http://ec.europa.eu.

8.6 The implications of MiFID and MiFID II/MiFIR on the efficiency of financial markets

The implications of MiFID have been studied mainly on the operational efficiency side through the microstructure research area, but this regulation has brought spillovers on the informational and allocative sides of financial market efficiency. The following list of academic research is not exhaustive but helps us to highlight some of the main MiFID efficiency implications. For MiFID II and MiFIR, it is a bit too early to assess their implications, because the rules will be implemented in 2018. Nevertheless, some implications may be anticipated. We have structured these implications around four pillars of market microstructure research: the developments of market structures, the design rules, information and its disclosure, and the interface of microstructure with other areas of finance.

8.6.1 Developments in market structures: The implications of the suppression of the national order flow concentration rule and of the introduction of alternative venues (MTFs, SIs and OTFs) on the liquidity

This directive is related to the introduction of the Regulation of National Market Securities (Reg NMS) in the USA with the objective of enhancing competition on the financial markets. Petrella (2010) presented a comparison of both regulations around microstructure principles to show that the EU and the USA adopt different provisions with respect to the best execution duty, the consolidation of market data and the disclosure of execution quality information. It appears to be more effective for the USA in strengthening competition for order flow among trading venues.

A consolidated tape of transactions has been available in the USA since 1976, whereas the situation is quite different in the EU. This could be because of the structure of the European financial markets, which are diverse in terms of securities exchanges, central securities depositories and central counterparty clearing statistics, as we can observe from the statistics of the European Central Bank (2014) on Fig. 8.2. This diversity represents the different European economies. However, a certain level of consolidation seems apparent through the additional statistics on Securities Exchanges, Central Securities Depositories and Central Counterparty Clearing, available in Fig. 8.5 up to Fig. 8.10 in the Appendix.

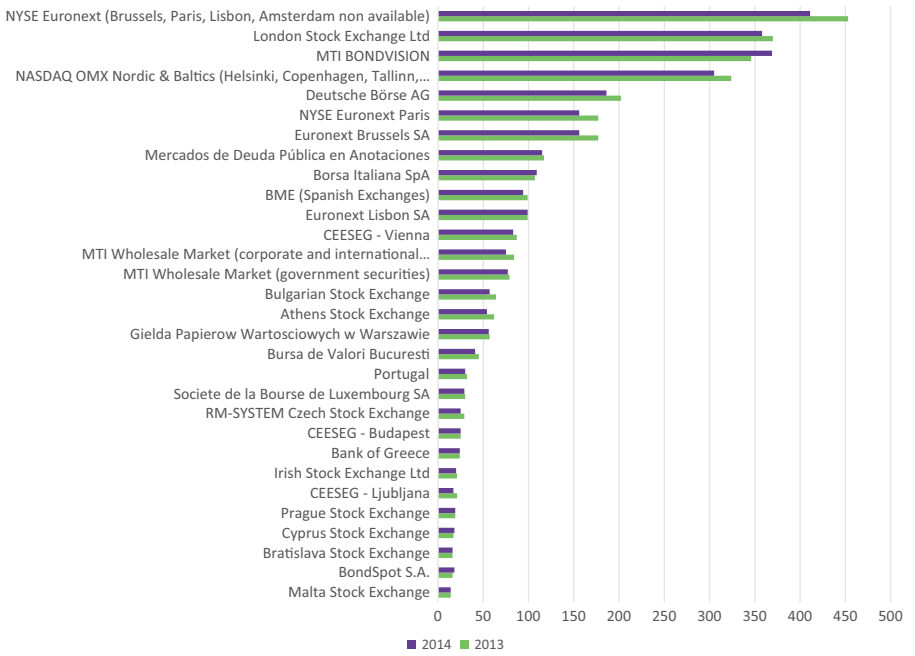

Fig. 8.2 Securities Exchange Statistics: Number of participants (*Source*: ECB - June 2015)

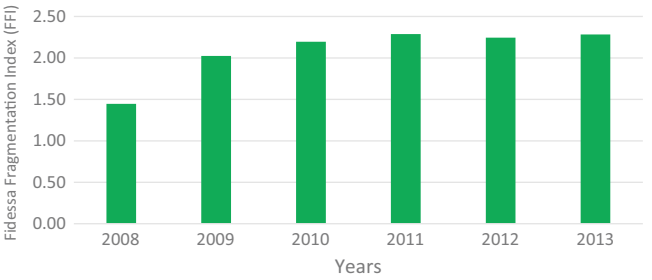

Fig. 8.3 Evolution of the Fidessa Fragmentation Index (FFI) for the CAC40 Index (*Source*: Fidessa)

Market structures and design rules are critical to understanding the price formation process in financial markets. The major objectives of a stock exchange are to provide liquidity and price discovery functions. In this section, we will focus on the implications of market structures changes brought about by MiFID with regard to liquidity. Price discovery implications will be discussed in the following section, through an analysis of developments in design rules.

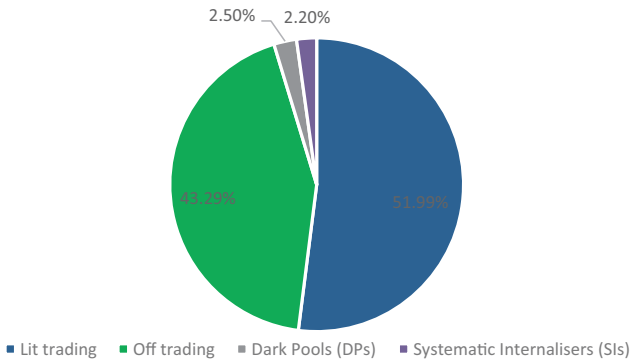

Fig. 8.4 Transaction execution mode for the CAC 40 Index in 2013 (*Source*: Fidessa)

There are several dimensions of liquidity. An asset is considered to be liquid if it can be converted to cash with ease. According to Krishnamurti (2009), liquidity can be measured by the cost of trading an asset for cash immediately, broken down into explicit costs (brokerage commissions and taxes) and implicit costs (rounding of prices, bid–ask spreads, market impact effects and imperfections in the price determination process). A liquid market is characterized by its breadth (existence of orders in substantial volume), its depth (existence of orders on both sides of the market near the current equilibrium price) and its resiliency (responsiveness of new orders to price changes caused by temporary order imbalances). A market is not resilient when the order flow does not quickly adjust to errors in price discovery.

At this level, we can observe that with the introduction of MiFID in 2007, there is a significant evolution of the Fidessa Fragmentation Index (FFI) for the CAC 40 index since 2008 on Fig. 8.3. The FFI is defined as the inverse of the sum of squares of the market shares of each individual trading venue, and it is often used to measure the level of competition in an industry. An index of 1 means that the stock is traded at one venue. Once the FFI of a stock exceeds 2, it means that its liquidity has fragmented to the extent that it no longer belongs to its originating venue. The causes of the fragmentation induced by MiFID are related to the abolition of the national order concentration rule and the introduction of the possibility of executing transactions on alternative venues through the MTFs and the SIs. On Fig. 8.4 and Table 8.1, we can observe the transaction execution mode for the CAC40 Index in 2013.

Several studies had been undertaken to study the implications of the abolition of the national order concentration rule and the introduction of alternative trading venues on the operational efficiency of financial markets, and

Table 8.1 Transaction execution mode for the CAC40 Index in 2013 (*Source*: Fidessa)

Lit trading	**2013 (%)**
Euronext Paris	32,29
BATS Chi-X CXE	10,75
BATS Chi-X BXE	1,69
Turquoise	4,63
Euronext Amsterdam	0,93
Off trading	**2013 (%)**
Boat Xoff	28,24
Swiss Exchange	7,41
Euronext OTC	3,78
LSE Xoff	2,97
LSE	0,45
Dark pools	**2013 (%)**
Instinet BlockMatch	0,25
Posit	0,36
BATS Chi-X BXE	0,41
BATS Chi-X CXE	0,44
UBS MTF	0,63
Systematic internalisers	**2013 (%)**
OMX OTC SI	0,02
Boat SI	2,15
SI	0,07

more specifically on the improvements in market liquidity. According to Doumayrou (2008), the effects of MiFID on liquidity could be difficult to anticipate. On one hand, the increased competition could decrease transactions costs but on the other hand, the order flow fragmentation could decrease liquidity. Fleuriot (2010) underlines that the impacts on liquidity should be mitigated owing to the global financial crisis of 2008 and the fact that a multitude of factors could impact the liquidity of markets.

According to Cherbonnier and Vandelanoite (2008), the number of SIs on liquid securities listed on Euronext Paris could be between five and ten in the medium term, and represented 5 % of turnover on CAC 40 securities per annum. Moreover, the institutional investors could carry out around 6 % of their annual turnover on MTFs organized as crossing systems. However, this analysis underestimates the volume likely to be lost by Euronext owing to the block trades executed in the orderbook and those executed outside the orderbook by non-residents (not subject to reporting requirements) or by residents on another regulated market (such as SEAQI) not being included.

Gresse (2010a) looked at four monthly periods to compare market liquidity before and after the entry into effect of MiFID, based on two samples of non-financial large caps from the FTSE 100 and the CAC 40 and a third sample

of non-financial mid-caps from the SBF 120. The order-flow fragmentation reached substantial levels but it was less pronounced among the mid-caps of the SBF 120. The results of this paper underline that the primary markets continue to dominate the European securities trading landscape with a significant decline in price spreads among trading venues, which is relatively proportionate to the strength of competition at the cost of a reduced depth at best limits. According to Gresse (2010a), competition and the rise in AT have resulted in orders being more broken up, reducing the average transaction size and the frequency of trading, whereas the quote changes have increased greatly.

Gresse (2014b) underlines that in Europe three trading platforms have become significant players. Their joint market share exceeds 30 % of lit trading volumes. Regulated dark pools do not execute more than some 5 % of total trading volumes and OTC trading makes a large share of total volumes. According to Gresse (2014b), price quality does not appear to be significantly affected by market fragmentation in the European stock markets, which improves liquidity for global traders who connect to several platforms and provides greater liquidity gains on large capitalization stocks.

Foucault and Menkveld (2008) study the rivalry between Euronext and the London Stock Exchange (LSE) in the Dutch stock market. Their main findings are that the consolidated limit order book is deeper after entry of the LSE and a higher trade-through rate in the entrant market coincides with less liquidity supply in this market cross-sectionally. The fragmentation of order flow can enhance liquidity supply, and protecting limit orders against trade-throughs is important.

Schacht, Cronin, Allen, and Preece (2009) also find that fragmentation has not had a detrimental effect on markets overall, based on a sample of 44 stocks issued by Europe-based companies in the Dow Jones Stoxx 50 index. The average bid–ask spreads have slightly fallen at the aggregate level, in particular amongst the UK stocks. However, according to Fleuriot (2010), we should be prudent when assessing changes in spreads because they could be contradictory. The Federation of European Securities Exchanges (FESE) observed a widening of spreads in 2008 and 2009. In fact, according to Fleuriot (2010), the spreads both grew and narrowed over the period. Spreads narrowed slightly over the period as a whole since November 2007. The key question is whether the widening of spreads between September 2008 and January 2009 was an exceptional event or the result of an increase in volatility, which doubled over the period from November 2007 to June 2009, compared to the period from the beginning of 2006 to November 2007.

8.6.2 Developments in the design rules: The implications of the Best Execution policy and financial innnovations on price formation and the price discovery process

8.6.2.1 *Developments in the design rules and the Best execution policy*

As set out in Schreiber and Schwartz (1986), the major regulatory objectives for a securities market are:

1. To assure a fair and honest market.
2. To increase competitive efficiency in the provision and pricing of broker/dealer services.
3. To enhance market efficiency with regard to the price discovery function.

A major securities market regulatory problem is that, in large part, the three regulatory objectives are not mutually consistent. This conflict of objectives is closely related to the regulatory dilemma noted by Bloch and Schwartz (1978), where enhancing the efficiency of competition in the market for broker/dealer services can impair the efficiency of competition in the market for the stocks that are traded and vice versa. As underlined by Schwartz (2013), achieving a price discovery of high quality has remained a woefully neglected regulatory goal, while considerations such as providing transparency on transactions and competition in the marketplace have received the lion's share of regulators' attention.

For any financial marketplace, a key economic function is to find the price of a security; this function is reinforced with the mark-to-market accounting requirements. Markets are known for providing liquidity and price discovery, as mentioned by O'Hara (2003). If liquidity refers to the matching of buyers and sellers and the emergence of a spread to compensate the middleman, it is largely accepted that the price discovery process involves the incorporation of new information into the asset prices as defined by Schreiber and Schwartz (1986).

This definition of the price discovery process is completed by the market search for a new equilibrium price. The price that should be discovered is defined as a value that best reflects a broad array of buy and sell desires, namely an equilibrium value. This function of price discovery for a market has attributes of "public good." The question of how the fragmentation in

its temporal and spatial aspects impacts the accuracy of the price discovery process is an interesting one, and remains a big challenge for the integration of European financial markets.

From the spatial fragmentation point of view, some studies have studied the contribution of trading venues to price discovery for cross-listed stocks in the EU after the implementation of MiFID. Harris and Di Marco (2012) underline that the price discovery efficiency in London and Paris has declined with the fragmentation of order flow post-MiFID. However, according to Aitken, Sensenbrenner, and Harris (2010), there is no price discovery migration away from the central exchange with the fragmentation of financial markets in London. After a stark clearing and settlement fee schedule change by Chi-X, a surprisingly large information impounding was attributable to the migration of high-frequency traders to Chi-X. At this level, it should be interesting to study the parameters that influence these changes.

The CFA underlines, through a survey, the difficulty in obtaining a complete and clear picture of market prices in the EU. Of the survey respondents, 70 % concluded that dark pools are problematic for price discovery, while 68 % agreed that market fragmentation has created difficulties in trade reporting obligations. According to the CFA, these results support the necessity of a consolidated tape for quote and trade data for the European equity markets.

The impact of temporal fragmentation, known as order fracturing, on the price discovery process has been less studied in the post-MiFID context. However, this fragmentation could increase the informational non-fulfilment and runaways, particularly with the arrival of HFT and AT.

In absence of a consolidated tape for the European financial markets, it is particularly difficult to assess the best execution policy duty required by MiFID. Moreover, its multicriterion approach makes its evaluation more complex. However, this approach is important to permit the channelling of orders to the most efficient market.

8.6.2.2 *Developments in design rules and financial innovations*

Under MiFID II, the rules designed to address the financial stability risks posed by the HFT and AT will also require investment firms and the operators of trading venues to enhance their systems, processes and controls. One of the key areas that MiFID II will address at this level is the so-called flash crashes for which the regulators are asked to investigate market abuses related to HFT. A flash crash is a very rapid, deep and volatile fall in security prices

occurring within an extremely short time period as defined by Bozdog, Florescu, Khashanah, and Wang (2011).

Two notable flash crashes in the current decade took place on 6 May 2010 and 23 April 2013. HFT is an algorithmic form of trading which entails using extraordinarily high-speed order systems and algorithms for automated decision-making. All processes in HFT should be operated in a short period of time. HFT could be considered as one reason for flash crashes, but there are some studies which show that other factors can be regarded as the main reasons. Cohen and Schwartz (2001) underlined the importance of call auctions as a mechanism to equalize informational sources and time reactions in order to determine a unique price. This point is particularly important with the HFT phenomenon, where speed is an advantage in the trading.

There are two different views towards HFT. One group, supporters of HFT, argues that it provides liquidity to markets, reduces volatility in most circumstances and enhances the price discovery process. The other group, more sceptical, argues that the liquidity provided by HFT is false and that it can vanish during periods of market stress. Zhang (2010) finds that HFT is negatively associated with the market's ability to incorporate news about a firm's fundamentals into asset prices by exaggerating otherwise sound price reaction and by increasing the stock price volatility. While the HFT may reduce volatility most of the time, it is also responsible for periodic flash crashes, brief periods of extremely high volatility (Brogaard, Hendershott, and Riordan 2014). One of the risks in the HFT environment that market makers have to face is the risk of adverse selection.

Adverse selection refers to a market process in which undesired results occur when buyers and sellers have asymmetric information. In Easley, Lopez de Prado, and O'Hara (2012a), the authors introduce the concept of order flow toxicity, which helps to study the risk of adverse selection within the HFT context. In this paper, it is stated that the order flow is toxic when it adversely selects market makers, who may be unaware that they are providing liquidity at a loss. To measure the order flow toxicity, Easley, Lopez de Prado, and O'Hara (2012a) and Easley, Lopez de Prado, and O'Hara (2012b) present the Volume Synchronized Probability of Informed Trading (VPIN) metric.

This metric is a new procedure to estimate the probability of informed trading based on volume imbalance and trade intensity. VPIN is an update of the well-known PIN model of Easley, Kiefer, O'Hara, and Paperman (1996) with four main characteristics: the broader definition of information, sampling in volume-time, bulk classification of buys and sells and the incorporation of trade size according to Abad and Yague (2012). Some interesting results obtained in Easley, Lopez de Prado, and O'Hara(2012a) are the following:

1. When the VPIN is low, the subsequent absolute returns are also low (when absolute returns are large the immediately preceding VPIN was rarely small).
2. When VPIN is high, the conditional distribution of subsequent returns is much more dispersed. It takes persistently high levels of VPIN to reliably generate large absolute returns.
3. VPIN anticipates a large proportion of extreme volatility events, and toxicity-induced volatility seems to be a significant source of overall volatility.
4. High levels of VPIN signify a high risk of subsequent large price movements, deriving from the effects of toxicity on liquidity provision.

This liquidity-based risk is important for market makers who directly bear the effects of potential toxicity, but it is also significant for traders who face the prospect of toxicity-induced large price movements. One important consequence of using the VPIN metric is the possibility of reducing volatility clustering. Since large price moves are associated with large volumes, sampling by volume, which is an important characteristic of VPIN metric, can therefore be viewed as a proxy for sampling by volatility.

Easley, Lopez de Prado, and O'Hara (2012a) have shown that with volume sampling we get a collection of observations whose distribution is closer to the normal and is less heteroskedastic than it would be if we sampled uniformly in clock-time. Therefore, this approach can be seen as an alternative to GARCH models in capturing volatility clustering. The VPIN metric could be a useful tool to help to reduce and capture market risk for market makers and traders in a context of HFT and AT. The authors also believe that the VPIN could alert market regulators to an impending flash crash. However, not everyone agrees (Andersen and Bondarenko 2014).

Nevertheless, the debate around VPIN or no VPIN should be useful as MiFID II introduces closer regulation and monitoring of algorithmic trading, imposing new and detailed requirements on algorithmic traders and the trading venues on which they trade.

8.6.3 Information and disclosure: The implications for the transparency and the quality of markets

Madhavan (2000) defines market transparency as the ability of market participants to observe information about the trading process. Differences in trade disclosure across markets may induce order flow migration, affecting

the liquidity and price discovery functions of the markets. Transparency is a major factor for electronic dealing systems in ensuring the quality of financial markets. However, as transparency rules change, it could impact the behaviour of market participants and affect the degree of market informational efficiency. As mentioned by Harris (2003): "the traders are often ambivalent about transparency because they favour transparency when it allows them to see more of what other traders are doing, but they oppose it when it requires that they reveal more of what they are doing. Generally, those who know the least about market conditions most favour transparency. Those who know the most oppose transparency because they do not want to give up their informational advantages."

From the regulation point of view, the art is finding the degree of transparency on the markets that is compatible with the consolidation of transactions and the fragmentation of markets and players, and thereby encourages competition. To address the impacts of fragmentation on market quality issues in the USA, O'Hara and Ye (2011) use the SEC Rule 605 data, which is a set of execution metrics that must be reported monthly on a per stock basis by all execution venues in the USA. It allows comparison of execution quality (effective spreads, realized spreads and execution speeds) and price efficiency quality (short-term return volatility, variance ratio tests and return autocorrelations).

In Europe, Gresse (2014a) presents an empirical analysis of the effects of market fragmentation on price quality, which is measured by price inefficiency coefficients (PICs) based on the variance ratios for a sample of European large and medium capitalization stocks. Gresse (2014a) underlines that there is no clearly significant impact of market fragmentation observed on the price quality, except for the PICs based on 1-s to 5-s return variance ratios.

Boneva, Linton, and Vogt (2015) investigate the effects of fragmentation of equity trading on the quality of trading with a focus on volatility, liquidity and volume for the FTSE 350 stocks over the period 2008–2011, following the implementation of MiFID. They find that volatility is lower in a fragmented market when compared to a monopoly, and that trading volume at the LSE is lower but global trading volume is higher if order flow is fragmented across multiple venues. According to these authors, the decline in LSE volume can be attributed to the visible fragmentation, while the increase in global volume is down to dark trading.

With MiFID II, no more than 8 % of an individual stock in the EU should be traded in dark pools. The issue is that it could potentially impede trading of large institutional orders in Europe. Pricing behaviour of SIs introduced in the post-MiFID context have been little studied from the market quality improvement point of view. Hautcoeur, Lagneau-Ymonet, and Riva (2010)

underline that regulated markets should be entrusted at European level with a general interest mission of centralization, consolidation and publication of the post- and pre-trade information considered as a public good, without the possibility that economic development will be harmed.

From the transparency and the quality of markets points of view, MiFID II and MiFIR have a specific mission in order to tackle the G20 commitments. The biggest change will be on the derivatives markets and on the bonds markets, with the introduction of OTFs in order to move more OTC derivatives and bonds trading on to these trading venues. Consequently, the OTC trading or off-trading without any supervision of the exchange should be significantly reduced. Moreover, MiFID II will increase transparency for derivatives commodities in order to reduce speculation on these markets, with new disclosures, position reporting rules and quantitative limits on positions for both investment firms and the operators of trading venues.

Lastly, MiFID II should establish a regime for a European consolidated tape. One of the aims of MiFID II and MiFIR is to ensure that Regulated Markets (RMs), MTFs and OTFs have the same transparent rules and procedures, in order to build a fair and orderly trading environment with the setting of objective criteria for an efficient execution of orders and an obligation of a transparent, fair and non-discriminatory fee structure for these trading venues.

At this level, the European Securities and Markets Authority (ESMA), created in 2010 in Paris, aims to safeguard the stability of European financial markets and to address shortcomings in European financial supervision. This European supervisory authority comprises the market regulators of the Member States of the European Economic Area, a European Commission representative, a representative of the European Banking Authority (EBA) and a representative of the European Insurance and Occupational Pensions Authority (EIOPA).

This new European authority has key roles to play in the regulation and supervision of financial markets and is involved in setting common standards and practices in regulation and supervision, in issuing opinions for regulation and in building shared interpretations of European legislation through its recommendations and guidelines for national regulators. The aim is to harmonize regulation on the financial markets with specific missions around investor protection and to monitor the development of innovative financial solutions. At this level, it is important to maintain independent supervision.

8.6.4 Market microstructure interfaces with the other areas of finance

As underlined by Madhavan (2000), the market microstructure affects asset values and price efficiency, and it also has important implications for the other areas of finance: asset pricing (through liquidity as a factor in expected returns and other behavioural explanations), corporate finance (through pricing of initial public offerings (IPOs) and stock splits) and international finance (through American depositary receipts (ADRs) and multiple share classes, cross-border flows and the microstructure of foreign exchanges markets with the hot potato models and the exchange rates movements).

8.7 Conclusion : United in diversity after the Big Bang and the crisis of 2008 ?

This widening of the European markets could be quite risky from the investor protection and efficiency points of view in the current context facing the Member States of the EU. The fragmentation of liquidity within the European markets may be a reality and causes some damage. At this level, Modigliani and Perotti (2000) underline that when the minority investors rights are poorly protected, the ability of firms to raise equity capital is impaired, leading to less finance for new ventures, and the provision of funding shifts from risk capital to debt and to a predominance of intermediated over market finance.

According to Hamon, Jacquillat and Saint Étienne (2007), stock exchange consolidation is an inevitable process in a globalized world where capital flows are at the forefront of globalization through the increase in liquidity and the decrease in transaction costs. They mention that the development of communication and information technology is important at this level because it makes possible the electronic interconnection of order books to organize a system of competing markets that most effectively replicates the impact of consolidation of supply within a single market. Therefore, compatibility is possible between the consolidation of transactions and the fragmentation of markets and players, which encourages competition. However, Hamon, Jacquillat and Saint Étienne (2007) stress the importance of having appropriate supervision; otherwise the concentration of orders is detrimental to com-

petition and leads to an increase in the margins of stock exchange operators, which in turn restricts the growth in volume of transactions.

As for the efficiency of financial markets, the key question is whether the best execution policy introduced under MiFID allows the channelling of orders to the most efficient market. At this level, few studies have been undertaken. This is perhaps because it is extremely difficult to test it in the current pre- and post-trading environment with no consolidated tape and an increasing level of HFT and AT. At this level, the organization of the post-trading environment will have important implications.

With the crisis of 2008 and the European sovereign debt crisis of 2009, we have seen that the EU has some problems of governance to overcome in order to ensure the viability and the stability of the EU, composed as it is of 28 Member States. Consolidating financial integration and enhancing the future financial stability of European financial markets remain big challenges for the future.

"United in Diversity" is the official motto of the EU, adopted in 2000, and this is a perfect representation of a game where cooperation is possible despite the existence of diverging preferences. It means unity without uniformity and diversity without fragmentation. Let us hope that Europe will find its path to more integrated and efficient European financial markets in order to reduce the cost of capital, to generate growth and to reinforce international competitiveness within the EU without neglecting the rights and duties of its citizens and investors.

8.8 Appendix

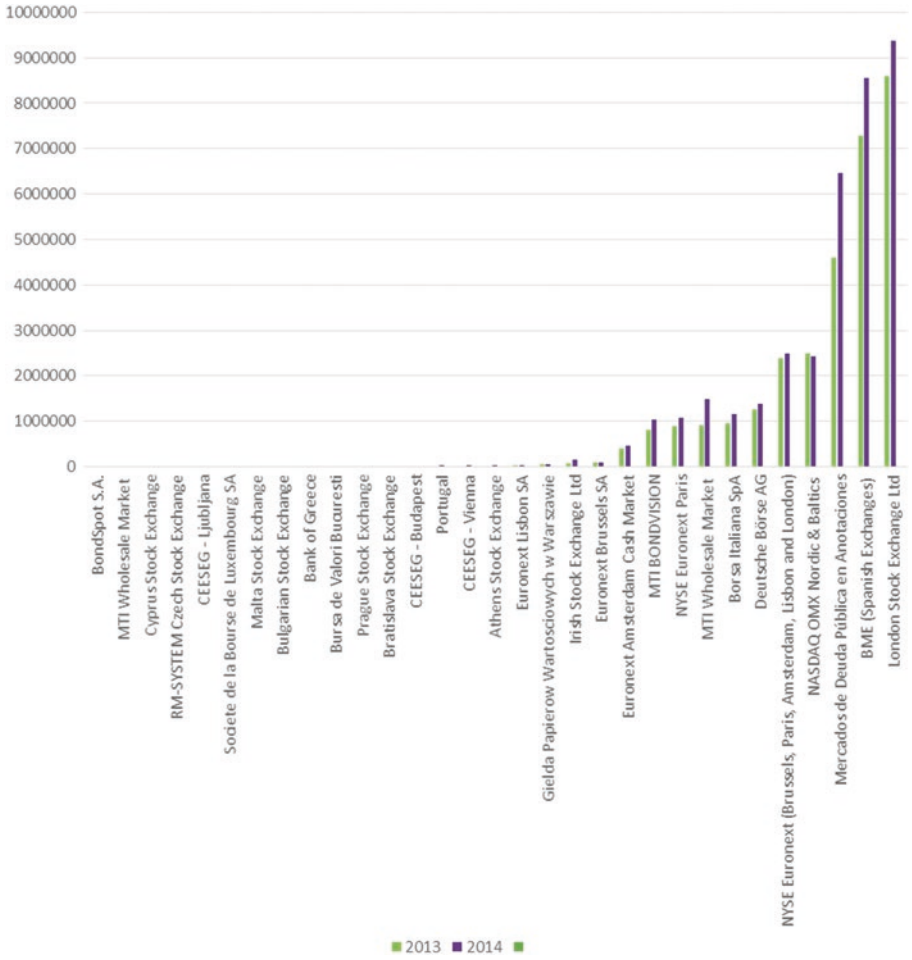

Fig. 8.5 Securities Exchange Statistics: Value of executed trades in millions of Euros (*Source*: ECB - June 2015)

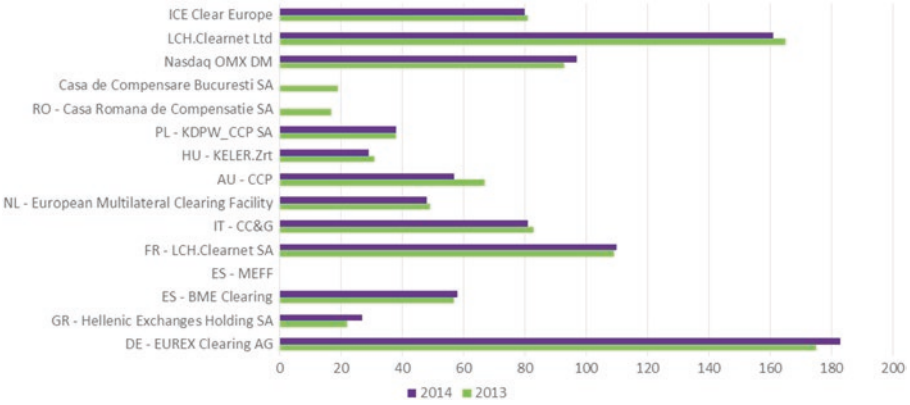

Fig. 8.6 Central Counterparty Clearing: Number of participants (*Source*: ECB - 2015)

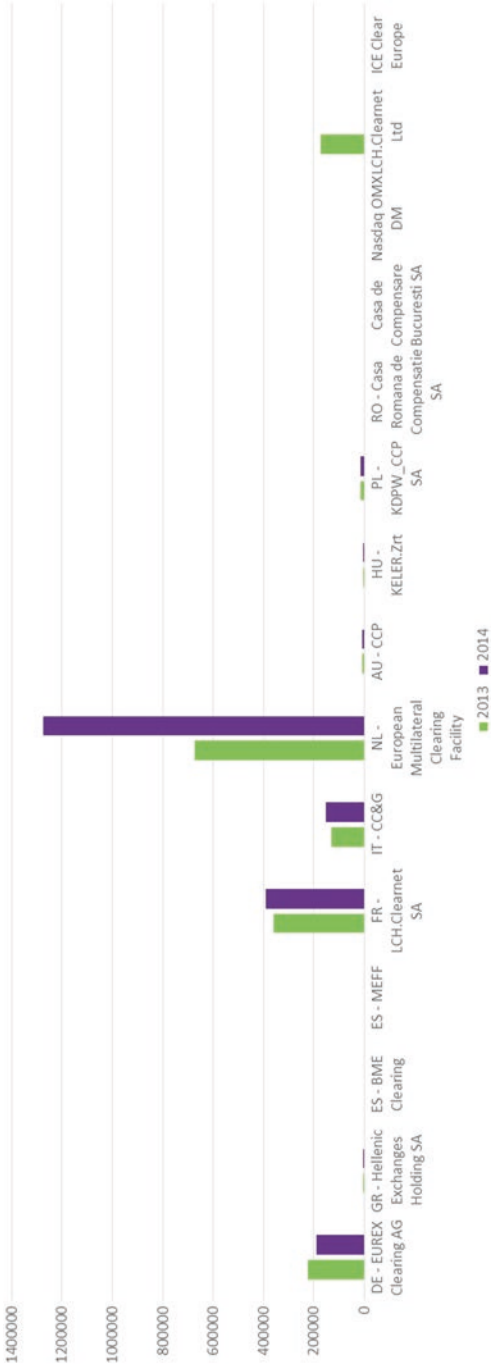

Fig. 8.7 Central Counterparty Clearing: Number of cash (outright) securities transactions in thousands (*Source*: ECB - 2015)

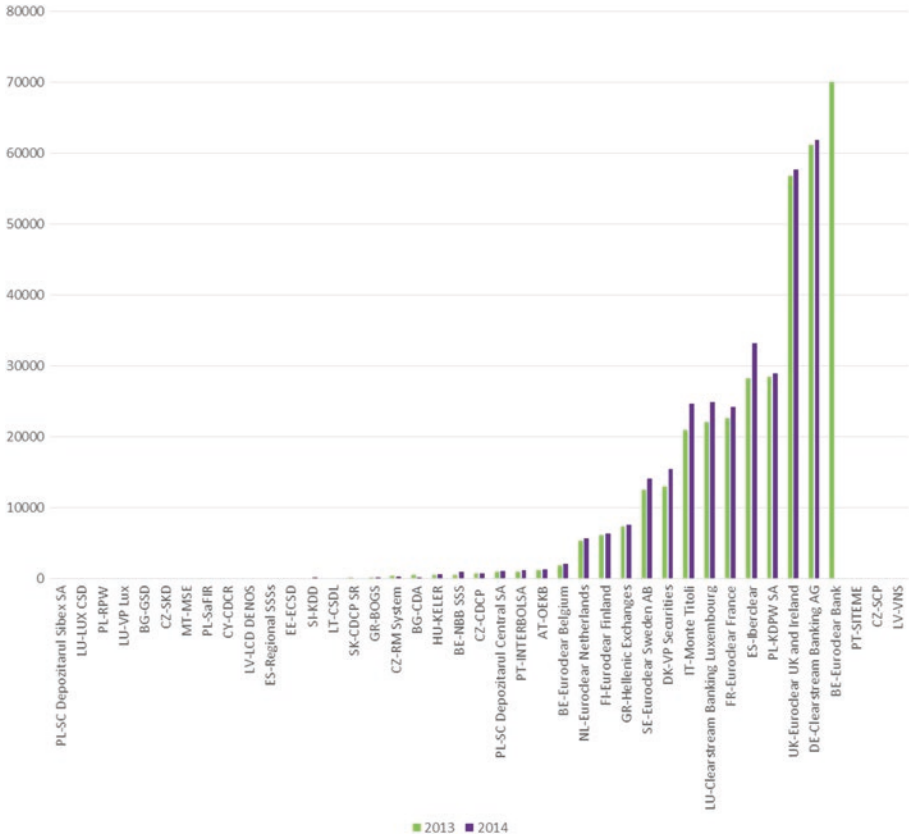

Fig. 8.8 Central Securities Depositories: Number of transactions in thousands (*Source*: ECB - 2015)

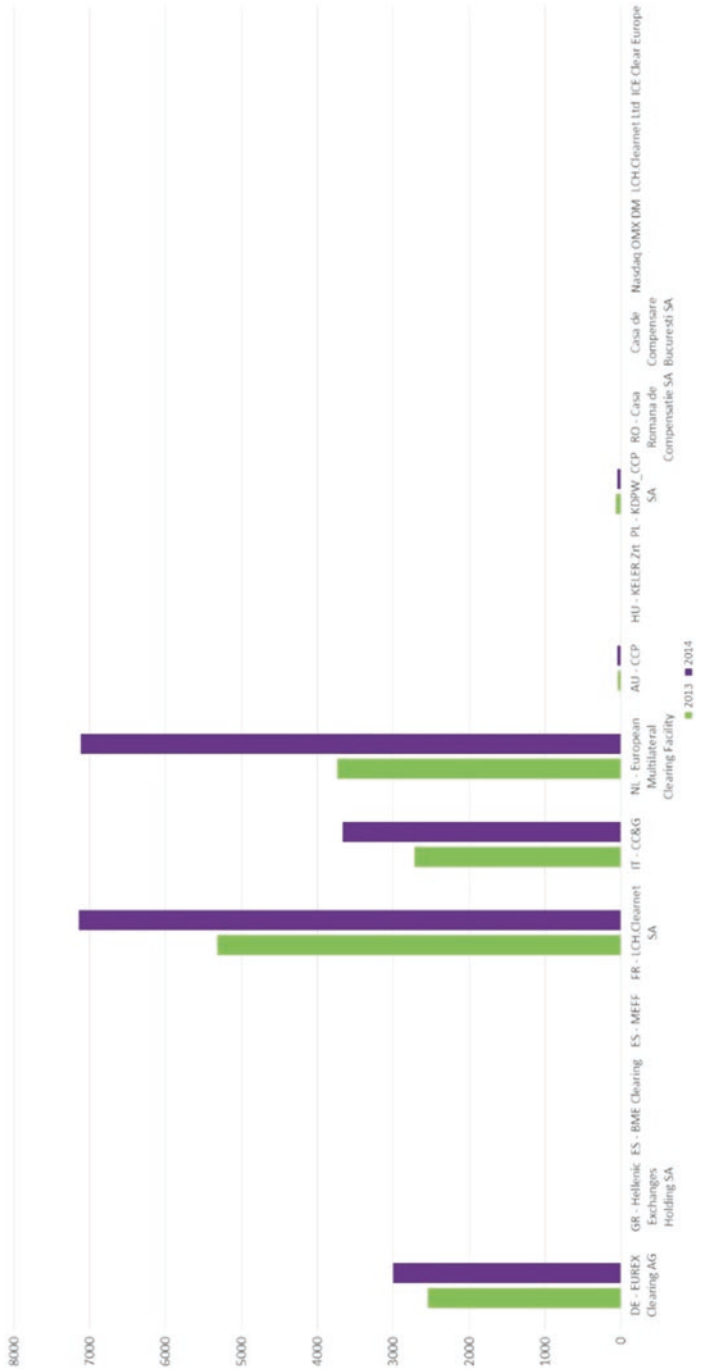

Fig. 8.9 Central Counterpart Clearing: Value of cash (outright) securities transactions in billions of Euros (*Source*: ECB - 2015)

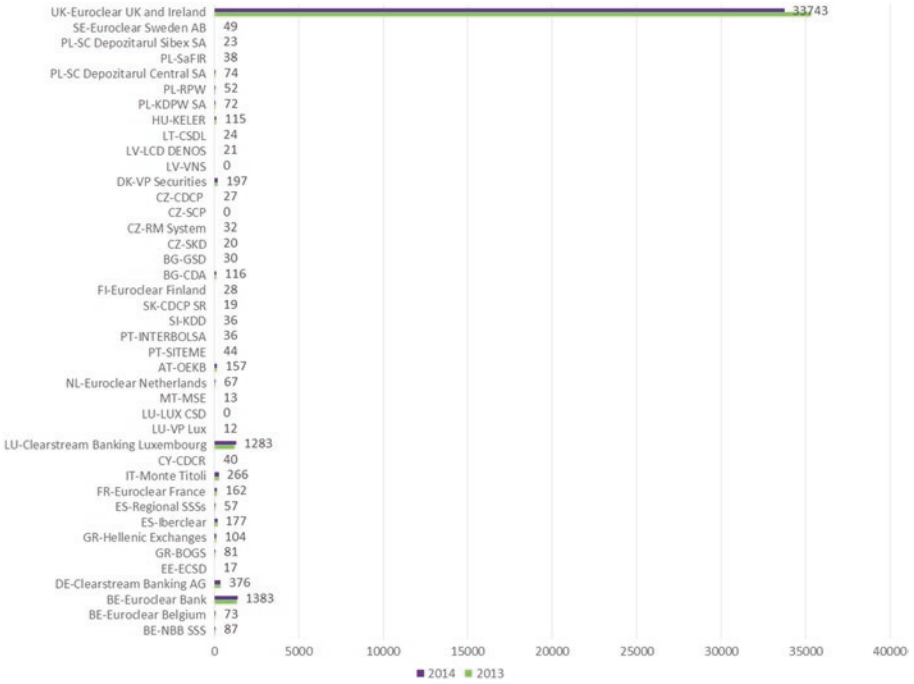

Fig. 8.10 Central Securities Depositories: Participation (End of period) (*Source*: ECB - 2015)

Table 8.2 Global regulatory changes

Date	Status of (de) regulatory change	Regulatory change description
1986	London Big Bang	Deregulation of the UK financial markets
1988	First Basel Accord signed	Publication of a set of minimum capital requirements for banks
1994	Riegel-Niel Interstate banking and branching efficiency Act	Restore the laws' competitiveness with the recently relaxed laws governing state chartered banks.
1996	FED reinterprets Glass-Steagall Act	Allowing bank holding companies to own investment bank affiliates with up to 25 % of their business in securities underwriting.
1999	European Financial services action plan (FSAP)	The Financial Services Action Plan (FSAP) is a key component of the European Union's attempt to create a single market for financial services.

(*continued*)

Table 8.2 (continued)

Date	Status of (de) regulatory change	Regulatory change description
1999	Gramm-Leach-Bliley Act	An Act to enhance competition in the financial services industry by providing a prudential framework for the affiliation of banks securities firms and other financial service providers and for other purposes
2000	Commodities futures modernization Act	Modernization regulation of financial products known as over-the-counter derivatives.
2004	Basel II published	Amend international standards that controlled how much capital banks need to hold to guard against the financial and operational risks banks face.
2004	Regulatory National Market System – Reg NMS	Set of rules proposed by the SEC to modernize and strengthen the regulatory structure of the U.S. equity markets adopted under Section 11A of the Securities Exchange Act of 1934.
2007	Markets in Financial Instruments Directive published	This directive governs the provision of investment services in financial instruments by banks and investment firms and the operation of traditional stock exchanges and alternative trading venues.
2008	On set of global recession	Reregulation move of the financial markets
2009	G20 meeting in Pittsburgh	It commits governments to improve transparency of the OTC Derivatives Markets
2010	Dodd – Frank Wall Street Reform and Consumer Protection Act signed	An Act to promote the financial stability of the United States by improving accountability and transparency in the financial system to end too big to fail to protect the American taxpayer by ending bailouts to protect consumers from abusive financial services practices and for other purposes.
2012	Volcker rule published	The rule is often referred to as a ban on proprietary trading by commercial banks whereby deposits are used to trade on the bank's own account, although a number of exceptions to this ban were included in the Dodd-Frank law
2012	European Market Infrastructure regulation (EMIR) passed into law	A European Union regulation designed to increase the stability of the over-the-counter (OTC) derivative markets throughout the EU states

(*continued*)

Table 8.2 (continued)

Date	Status of (de) regulatory change	Regulatory change description
2013	Dood – Frank swap dealer registration and swap data repository deadlines	Swap data repositories (SDRs) are new entities created by the Dodd – Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) in order to provide a central facility for swap data reporting and recordkeeping where all swaps whether cleared or uncleared are required to be reported to registered SDRs
2013	Phased implementation of rules for Basel III begins	Basel III is a global voluntary regulatory framework on bank capital adequacy stress testing and market liquidity risk.
2014	FATCA withholding begins	The Foreign Account Tax Compliance Act (FATCA) is a United States federal law requiring United States persons (including those living outside the U.S.) to have yearly reported themselves and their non-U.S. financial accounts to the Financial Crimes Enforcement Network (FINCEN) and requires all non-US (Foreign) Financial Institutions (FFI's) to search their records for suspected US persons for reporting their assets and identities to the US Treasury.
2017/2018	MiFID II/MiFIR implementation expected	The legislation in the form of a Directive that recasts MiFID (MiFID II) and a new Regulation (MiFIR) is one of the most important pieces of the post crisis regulatory reform puzzle.
2019	Vickers reforms deadline	With the Liikanen report, one of three proposed models for changing the structure of banks: Volcker in the US, Vickers in the UK and Liikanen in the European Union. Liikanen proposes that banks' trading business should be placed in separate subsidiaries.
2019	Basel III	Capital, leverage and liquidity requirements effective

Table 8.3 Broad overview of the key changes set out in MiFID II/MiFIR (*Source*: Linklaters – Factsheet 03 July 2014)

MiFID II/MiFIR	Key change	Description
MiFID II, Recitals 9–11, 39, 40, 87–89, Annex I, Sections A,B,C	Scope of MiFID	The entities, activities, and instruments to which MiFID will apply have been amended. The operation of an OTF, emission allowances and commodity derivatives have been added. Moreover, some provisions of MiFID have been extended to credit institutions and investment firms when selling or advising clients is in relation to structured deposits.
MiFID II, Recitals 53–55, Articles 9,45,63	Corporate governance	MiFID II includes new requirements for management bodies of investment firms, RMs, and data reporting services providers. RMs are subject to governance requirements similar to those for investment firms, including with regard to numerical limits on directorships, diversity, and nomination committees. Data reporting services providers are subject to more limited governance requirements, with no numerical limits on directorships or requirements for diversity or nomination committees.
MiFID II, Recitals 141–150, Articles 69–75	Supervisory Power and Sanctions	More defined measures have been introduced giving Member States less flexibility with regard to powers, remedies and sanctions. The main changes to the current regime include the following: *Competent authorities will be given the power to suspend the marketing or sale of investment products in certain circumstances, and require the removal of a person from the management board of an investment firm or market operator. *In the case of a breach, sanctions and other measures can be applied to members of the management body and other responsible persons, subject to national law. *Sanctions or measures imposed by competent authorities must be published and reported to ESMA, though this does not apply to sanctions of an investigatory nature. *When determining the type and level of sanctions, competent authorities must take specified factors (including turnover or income and net assets of the responsible person) into account. *Competent authorities may exercise their sanctioning powers directly, in collaboration with other authorities, by delegation to other entities and by application to judicial authorities. *With regard to agricultural commodity derivatives, competent authorities should cooperate with and report to public bodies responsible for regulating physical agricultural markets. *Competent authorities must implement effective mechanisms to encourage reporting of potential or actual breaches, including protections for whistle blowers. *Member States may decide not to impose administrative sanctions on infringements which are already subject to national criminal law as long as Member States communicate to the Commission the relevant criminal law provisions and measures are in place to cooperate and exchange information with other Member States and with ESMA.

(*continued*)

Table 8.3 (continued)

MiFID II/MiFIR	Key change	Description
MiFID II, Recitals 52,57,71, Article 16	Organisational requirements	*Organisational requirements have been expanded to include an approval process for new financial instruments and adaptations of existing financial instruments before they are marketed or distributed to clients, specifying the target market and ensuring that risks to the target market have been identified and that the distribution strategy is consistent with the target market. *Information security, recording of telephone conversations and electronic communications and the safeguarding of client assets are concerned by organisational requirements.
MiFIR, Article 23	Trading Rules for Equity instruments	*Transactions in shares admitted to trading on an RM or traded on a trading venue must take place on an RM, MTF or SI, or an equivalent third country trading venue, unless they are non-systematic, ad-hoc, irregular and infrequent, or carried out between eligible and/or professional counterparts and do not contribute to the price discovery process. *Investment firms that operate an internal matching system which executes client orders in shares and other equity instruments on a multilateral basis must be authorised as an MTF. These provisions were not included in the Commission's proposal.
MiFID II, Recitals 70–106, Articles 24–30	Investor protection	*A number of amendments and additions have been made to the investor protectionprovisions of MiFID. *The design, marketing, and distribution of products by investment firms must be tailored to the target market. Remuneration and sales targets should not incentivise staff to recommend inappropriate financial instruments to retail clients. *Member States may impose additional requirements in exceptional circumstances. *Best execution for retail clients will be determined based on total consideration, including the price of the financial instrument and all costs and expenses related to execution. *When assessing different execution venues, firms must take into account their owncommissions and costs for executing the order on different venues. *Firms may not receive any remuneration, discount or non-monetary benefit for routing orders to a particular venue that would be in breach of requirements on conflicts of interest or inducements. *Trading venues, SIs and execution venues must publish at least annually data relating to the quality of execution of transactions on that venue. *Investment firms must inform clients where orders have been executed. *Firms that execute client orders must also publish annually, for each class of financial instrument, the top five execution venues in terms of client orders, as well as information on quality of execution.

MiFID II, Recitals13,14, 112, Articles 4(1) (22), 4(1) (23),18–20; MiFIR, Recitals 7–9, Article 23	Trading venues: OTFs and MTFs	*An organised trading facility is a multilateral system in which mul tiple third-party buying and selling interests are able to interact in the system in a way that results in a contract under MiFID (limited OTFs to bonds, structured finance products, emission allowances and derivatives). *OTFs will have discretion as to how to execute orders, subject to pre-transparency and best execution obligations. OTFs are prohibited from executing client orders against their proprietary capital, which distinguishes them from SIs. *The requirements for MTFs have been aligned with those of RMs so that investment firms and market operators operating an MTF will be required to have (a) systems and measures in place to manage, identify and mitigate risks, (b) effective arrangements for the efficient and timely finalisation of transactions executed under its systems and (c) sufficient financial resources for its orderly functioning. *OTFs and MTFs must set arrangements in place to identify and manage conflicts of interest.
MiFIR, Recital 29, Articles 39–43	Product Intervention	*Nationalregulators, ESMA, and the European Banking Authority (EBA) will have new product intervention powers. ESMA and national regulators will monitor the market for financial instruments and, where appropriate, ban or restrict financial instruments, activities or practices. A competent authority must notify ESMA and other Member State regulators before it takes action, though it may take urgent action with less notice in exceptional circumstances. ESMA will play a coordinating role. *ESMA or the EBA may take action to address a significant investor protection concern or a threat to markets or to the stability of the financial system in the EU if applicable regulatory requirements do not address the threat and competent authorities have not taken adequate action. *In the case of agricultural commodities derivatives, ESMA will be required to consult with the regulators of physical agricultural markets before taking action.

(*continued*)

Table 8.3 (continued)

MiFID II/MiFIR	Key change	Description
MiFID II, Recitals 59–68, Articles 18(5), 48, 49, 50	Trading venues: Systems resilience, circuit breakers and electronic-trading	*RMs, MTFs, and OTFs will be required to implement systems, procedures andarrangements to ensure that their trading systems are resilient, have sufficient capacity, are able to ensure orderly trading under conditions of severe market stress, are fully tested, and are subject to business continuity arrangements and to reject orders that exceed pre-determined volume and price thresholds or are clearly erroneous. *Trading venues must have systems, procedures and arrangements in place to prevent and manage disorderly trading conditions arising from algorithmic trading systems, including by limiting the ratio of unexecuted orders, slowing order flow, enforcing minimum tick sizes, and requiring members or participants to test algorithms. *Trading venues must be able to halt or constrain transactions if there is a significant price movement in a short period and, in exceptional cases, to cancel, vary or correct transactions. *Parameters for halting trading must be reported to competent authorities. *Trading venues must have systems, procedures and arrangements in place to ensure that only authorised investment firms and credit institutions are able to provide direct electronic access, that they retain responsibility for trades executed using that service, and that they assess the suitability of persons to whom access is provided. *Trading venues must enter into agreements with market makers and have schemes in place to ensure a sufficient level of liquidity. The content of such agreements must be notified to competent authorities, and trading venues must monitor and enforce compliance by investment firms. Rules on co-location services must be transparent, fair, and non-discriminatory. *Fee structures must be transparent, fair, and non-discriminatory and must not create incentives for disorderly trading or market abuse. Venues must impose market making obligations in individual shares or a suitable basket of shares in exchange for any rebates and may impose higher fees on cancelled orders and high frequency traders. It has also been agreed that trading venues and their participants must synchronise the business clocks they use to record the date and time of reportable event.

MiFIR, Recitals 1,5,10, 12–18, 22,23, 26, Articles 3–22; MiFIDII, Recitals 117–119, Articles 64,65	Pre- and Post-trading: Transparency requirements	*The current requirements under MiFID, which are limited to shares, will be extended to cover other equity-like instruments such as depositary receipts and exchange-traded funds, as well as non-equity instruments including bonds, structured finance products, emission allowances, and derivatives, in each case including actionable indications of interest. *Pre-trade transparency may be waived, and post-trade disclosures deferred, in certain circumstances. Pre- and post-trade transparency for non-equity instruments may also be temporarily suspended if liquidity falls below a given threshold. While identical transparency requirements will apply to all trading venues, SIs will be subject to a different, tailored pre-trade transparency regime. *The agreed version of MiFID II also includes an amended version of the Commission's proposals for a consolidated tape provider (CTP), which will consolidate post-trade information into a continuous electronic data stream and made it publicly available as close to real time as technologically possible on a reasonable commercial basis and free of charge after 15 minutes. Both APAs and CTPs are new concepts under MiFID II and MiFIR. As of yet, no CTP has been identified.
MiFID II, Recitals 125–131, Articles 57, 58,69(2)(j), (o), (p); MiFIR, Recitals 30, 31,Articles 44, 45	Commodity derivative position, limits and reporting	*Member State regulators will set limits on the size of a net position that a person can hold at all times in commodity derivatives traded on trading venues as well as economically equivalent OTC contracts. *Limits will not apply to positions held by or on behalf of non-financial entities for hedging purposes. The limits will be established in accordance with a methodology for calculation determined by ESMA, on the basis of all positions held by a person individually and on its behalf at aggregate group level, in order to prevent market abuse and support orderly pricing and settlement conditions. *The methodology will take a number of factors into account, including maturity of the contracts, the deliverable supply of the underlying commodities, the overall open interest in the contract and other financial instruments having the same underlying, market volatility, the number and size of market participants, the characteristics of the underlying commodity market, and the development of new contracts. *Member States can apply stricter limits on a temporary basis in exceptional cases. The limits will be intended to ensure, in particular, the convergence between prices of derivatives in the delivery month and spot prices for the underlying commodity. * Trading venues will be required to publish aggregate positions in commodity derivatives or emission allowances or derivatives thereof by category of person on a weekly basis, but only when the number of persons and their open positions exceed minimum thresholds.

(*continued*)

Table 8.3 (continued)

MiFID II/MiFIR	Key change	Description
MiFIR, Recitals 25–27, Articles 28–34	Derivatives Trading	*In order to meet G20 commitments, derivative contracts declared subject to the trading obligation by ESMA will be required to be traded on an RM, MTF, or OTF. *The trading obligation will only apply where both counterparts are subject to clearing obligations under EMIR, and excludes intra-group transactions and portfolio compression exercises. *ESMA will determine which classes of derivatives are subject to the trading obligation. In order for the trading obligation to take effect, the class of derivatives must be sufficiently liquid. *MiFIR also includes a new requirement that transactions in cleared derivatives must be submitted and accepted for clearing as quickly as technologically practicable using automated systems, including derivatives not subject to the clearing obligation under EMIR.
MiFID II, Recitals 109–111, Articles 39–43; MiFIR, Recitals 41–44, Articles 46–49, 54	Third Country Firms	The Commission had proposed a passporting regime for third country firms providing services to retail clients from a branch in a Member State as well as those providing services to eligible counterparties (ECPs) and professional clients (PCs) without a branch. In each case, the Commission would have required a determination that the firm was subject to equivalent supervision in its home jurisdiction.
MiFID II, Recitals 132–135, Article 33	SME growth markets	*In order to help small and medium-sized entities access capital, MiFID II introduces a new category of MTFs known as SME growth markets. At least 50 % of the issuers whose financial inst ruments are traded on an SME growth market should be SMEs. *For these purposes, an SME is defined as a company that had an average market capitalisation of less than EUR 200,000,000 on the basis of end-year quotes for the previous three calendar years.

MiFIR, Recitals 32–36, Articles 24–27; MiFID II, Article 66	Transaction Reporting and recordkeeping	*While investment firms will still have to report details of their transactions in instruments admitted to trading or traded on an RM or MTF (and now also an OTF) to their national competent authorities, they will now also have to report transactions in financial instruments (a) where admission to trading has been requested, and (b) where the underlying is a financial instrument (or an index or basket of financial instruments) traded on a trading venue. The reporting obligation applies regardless of whether the transaction is carried out on the trading venue. *The reported information must include the identity of the client (using legal entityidentifiers where appropriate) and the person or algorithm responsible for the investment decision and execution. Short sales and any applicable waivers must also be identified. In the case of commodity derivatives, the report must indicate whether the transaction reduces risk in an objectively measurable way in accordance with MiFID II. *Recordkeeping requirements for investment firms will be extended to trading venues, and ESMA will be able to access investment firm records. Investment firms must keep data relating to all orders (as well as transactions). Records maintained by trading venues must include data that constitute the characteristics of an order, including data that link orders to executed transactions.
MiFID II, Recitals 59–68, Article 17	Investment Firms: Algorithmic Trading and Direct Electronic Access	*Investment firms that engage in algorithmic trading must have in place suitable systems and controls to ensure their trading systems are resilient and have sufficient capacity, are subject to appropriate trading thresholds and limits, and prevent erroneous orders or the system otherwise functioning in a way that could create or contribute to a disorderly market.

(*continued*)

Table 8.3 (continued)

MiFID II/MiFIR	Key change	Description
		*Firms must have business continuity arrangements in place and ensure that their systems are tested and monitored. They must also have systems and risk controls to ensure that their trading systems cannot be used in any way that is contrary to the Market Abuse Regulation or the rules of a trading venue to which they are connected. *A firm which provides direct electronic access to a trading venue must have systems and controls in place to review the suitability of clients using the service, to prevent clients from exceeding pre-set trading and credit thresholds, to monitor trading, and to implement appropriate risk controls. Direct electronic access without these controls is prohibited. *The investment firm will be responsible for ensuring that its clients comply with the requirements of MiFID II and the rules of the trading venue. Rights and obligations must be set out in a binding written agreement between the firm and the client, under which the firm retains responsibility under MiFID. *Firms that act as a general clearing member for their clients must have systems and controls in place to ensure that clearing services are only provided to suitable persons who meet clear criteria and that requirements are imposed on these persons to reduce risks to the firm and the market. Rights and obligations must be set out in a binding written agreement.
MiFID II, Recitals 29,42, Article 3	Optional Exemptions	The scope of optional exemptions by Member States has been extended to include persons who provide investment services exclusively in (a) commodities, emission allowances and/or derivatives thereof for the sole purpose of hedging the commercial risks of local electricity undertakings and/or natural gas undertakings or (b) emission allowances and/or derivatives thereof for the sole purpose of hedging the commercial risks of operators of installations subject to the EU directive on emissions trading (2003/87/EC), provided in each case that these clients jointly hold 100 % of the capital or of the voting rights of such persons, exercise joint control and would be exempt under the ancillary business exemption if they carried out the investment services themselves.
MiFID II, recitals 18–25, 35, 41, Article 2(1)	MiFID Exemptions	A number of changes have been made to the list of MiFID exemptions. *Dealing on own account exemption: Currently, persons who do not provide investment services other than dealing on own account are exempt, unless they are (a) market makers or (b) deal on own account outside an RM or MTF on an organised, frequent and systematic basis by providing a system accessible to third parties. This exemption has been amended so that it will not apply to dealing on own account in commodity derivatives, emission allowances or derivatives thereof. Members of and participants in an RM or MTF, persons who have direct market access to a trading venue, and persons engaged in high frequency trading will also be excluded from the exemption.

*Emission allowances trading by installation operators: MiFID II will not apply tooperators with compliance obligations under the EU directive on emissions trading(2003/87/EC) who, when dealing in emission allowances, do not execute client orders or provide any investment services or perform any investment activities other than dealing on own account, provided they do not apply a high frequency trading technique.

*Ancillary business exemption: The dealing on own account limb of this exemption will be restricted to commodity derivatives, emission allowances or derivatives thereof, and will include market makers (provided that market making in commodity derivatives is not their main business). As proposed by the Commission, it will exclude persons who deal on own account by executing client orders. The exemption also applies to persons who provide investment services (other than dealing on own account) in commodity derivatives, emissionallowances or derivatives thereof to the customers or suppliers of their main business. The activity must be ancillary on an individual and group basis, and high frequency traders will not be able to use the exemption. Firms will be required to notify regulators annually that they are using the exemption and, upon request, report the basis on which they consider an activity to be ancillary.

*Commodities dealer exemption: As proposed by the Commission, the exemption for persons who deal on own account in commodities and commodities derivatives has been deleted.

*Locals exemption: The exemption for locals (i.e. those who exclusively deal on own account on derivatives and cash markets for hedging purposes or who deal for accounts of other market members or make prices for them, where performance is guaranteed by clearing members) has been deleted. Commodity related systems The Commission's proposed new exemption for transmission system operators has been amended to include persons acting as service providers on behalf of transmission system operators, as well as certain other persons, and limited to relevant activities in commodity derivatives. The exemption will not apply to the operation of a secondary market.

*Central Securities Depositaries: Central Securities Depositaries (CSDs) will be authorised under the CSD Regulation, which was agreed in trilogue in December 2013. They will be subject to MiFID rules where they carry out MiFID services or activities that are not expressly mentioned in the Annex to the CSD Regulation.

Source: Linklaters – Factsheet 03 July 2014

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