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Regulating Financial Market Infrastructures

Law Working Paper N° 259/2014
June 2014

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This paper can be downloaded without charge from:
https://doi.org/10.67929/ecgi-law-259-2014

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ECGI Working Paper Series in Law

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Abstract

This paper focuses on the impact of financial market infrastructures (FMIs) and of their regulation on the post-crisis transformation of securities and derivatives markets. It examines, in particular, the role that trading and post-trading FMIs, and their new regulatory regime, are playing in the expansion of 'public' securities and derivatives markets, and the progressive shrinkage of 'private' markets (which broadly coincide with the 'unregulated' or 'less regulated' over-the-counter (OTC) markets).

The paper provides an overview of the policy approaches underlying the international crisis-era reforms to FMIs, and focuses on the dichotomy between the 'systemic risk' and 'transaction costs' approaches to financial markets and FMIs regulation. By reviewing the current move from 'private' markets to 'public' markets internationally, and with respect to the EU and US regimes, we analyze the role of trading infrastructures as liquidity providers, both in the securities markets and in the derivatives markets. And, shifting the focus to post-trading infrastructures – central clearing houses (CCPs), central securities depositories (CSDs), and trade repositories (TRs) – we address their role in supporting financial stability and market transparency. We conclude by identifying how regulators are now more deeply involved in FMIs' governance and operation. We argue that such policy approach resulted in regulatory initiatives which move in the direction of increasing the systemic scope of FMIs, introducing elements of publicity in private markets, and calling for higher public supervision.

This paper is a draft chapter for a forthcoming volume, The Oxford Handbook on Financial Regulation, edited by Eilís Ferran, Niamh Moloney, and Jennifer Payne, (Oxford University Press).

Keywords: financial markets; financial market infrastructure; exchange; clearing house; central securities depository; systemic risk; transaction cost; securities market; derivatives market; MiFID II; EMIR; MiFIR; Dodd-Frank Act

JEL Classifications: G15, G18, G21, G23, G28, G38, K22, K23

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REGULATING FINANCIAL MARKET INFRASTRUCTURES

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I. INTRODUCTION

The 2007-2009 financial crisis led to large-scale reforms to the regulation of securities and derivatives markets.[1] Regulators around the world acknowledged the need for structural reforms to the financial system and to market infrastructures in particular.[2] Due to the global dimension of the crisis and the extent to which financial markets had been revealed to be closely interconnected, national regulators moved the related policy debate to the supranational level. This approach led to the international regulatory guidelines and principles adopted by the G20[3] and then developed by the Financial Stability Board (FSB). The new global regulatory framework which has followed has institutionalized financial market infrastructures (FMIs) as key supports for financial stability. The FSB, for example, has highlighted the importance of FMIs to the support of financial stability.

This chapter focuses on the impact of FMIs and of their regulation on the post-crisis transformation of securities and derivatives markets. It examines, in particular, FMIs' role in the expansion of 'public' securities and derivatives markets, and the progressive shrinkage of 'private' markets (which broadly coincide with the 'unregulated' or 'less regulated' over-the-counter (OTC) markets). This section provides an overview of the policy approaches

[1] From the vast array of analysis from independent think tanks and academics on the causes of the financial crisis and on possible regulatory reforms see, eg, Group of Thirty, Financial Reform: A Framework for Financial Stability (2009), available at http://www.group30.org/pubs/pub_1460.htm; Committee on Capital Markets Regulation, The Global Financial Crisis: A Plan for Regulatory Reform (2009); Acharya, V and Richardson, M, *Restoring Financial Stability: How to Repair a Failed System* (2009); and Squam Lake Working Group on Financial Regulation, *Fixing the Financial System* (2010).

[2] The public regulatory debate was very active and took place both at an international level (see FSF, Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience (2008) and FSB, Improving Financial Stability, Report of the Financial Stability Board to the G20 Leaders (2009) at a national level (in the US, eg, US Treasury, The Department do the Treasury Blueprint for a Modernized Financial Regulatory Structure (2008) Treasury, Financial Regulatory Reform a New Foundation, Rebuilding Financial Supervision and Regulation (2009), and Financial Crisis Inquiry Commission, The Financial Crisis Inquiry Report (2011), and – in the EU, eg, The High-Level Group on Financial Supervision in the EU, Report (2009).

[3] The G20 is the premier forum for international economic cooperation and decision-making. It represents the 19 countries (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, United Kingdom, United States of America) plus the European Union. See for more details www.g20.org.

underlying the international crisis-era reforms to FMIs, and focuses on the dichotomy between the 'systemic risk'[4] and 'transaction costs'[5] approaches to financial markets and FMIs regulation. The following sections review the current move from 'private' markets to 'public' markets internationally, and with respect to the EU and US regimes. The second section analyses the role of trading infrastructures as liquidity providers, both in the securities markets and in the derivatives markets. The third section shifts the focus to post-trading infrastructures – central clearing houses (CCPs), central securities depositories (CSDs), and trade repositories (TRs) – and their role in supporting financial stability and market transparency. The fourth section draws some brief conclusions.

1. Policy approaches to the international post-crisis reforms

The 2007-2009 financial crisis, although affecting many sectors of the financial markets, had a severe impact on the derivatives markets, thereby revealing the lack of resilience in the modern financial system and the inadequacy of almost twenty years of deregulatory policies – from the end of the 20th century, regulators – mostly in the US[6] –, for the most part, charged the financial industry with policing private derivatives markets.

The exchange industry, investment intermediaries, and derivatives dealers were the main influences on the self-regulatory mechanisms deployed to police derivatives markets. However, this self-regulation mainly focused on micro-level issues,[7] in order to ensure efficient transactional mechanisms, low entry costs, and high firm profits. Systemic and other

[4] See Schwarcz, S L, Systemic Risk (2008) 97 *Georgetown Law Journal* 193, 197.
[5] Williamson, O E, 'The Economics of Organization: The Transaction Cost Approach' (1981) 87(3) *The American Journal of Sociology* 548.
[6] See Commodity Futures Modernization Act 2000, Publ L No 106-554, 114 Stat 2763 (2002), Reformulation of Commodities Exchange Act; Kloner, D, 'The Commodity Futures Modernization Act of 2000' (2001) 29 *Securities Regulation Law Journal* 286, 293.
[7] See the activity of the International Swaps and Derivatives (ISDA) and the Financial Industry Regulatory Authority (FINRA). On the role of ISDA as a private regulator and private standard-setter body, see Saguato, P, 'Private regulation in the credit default swaps market: the role of ISDA in the new regulatory scenario of CDSs' in Cafaggi, F and Miller, G P (eds), *The Governance and Regulation of International Finance* (2013) 32 (focusing on the role played by ISDA in the aftermath of the 2007 crisis, and the dynamics of private and public regulation of financial markets).

macro-level questions were often left aside. As the financial crisis clearly showed, self-regulating entities had poor incentives to address the externalities generated by these private markets on the rest of the economy. As a result, OTC derivatives markets grew exponentially, with limited public regulation and no effective supervision of the systemic risks created by highly interconnected intermediaries. This unstable equilibrium was shattered by the financial crisis, which generated a loss of confidence in the self-regulatory framework and cast doubts on the ability of private industry actors and markets to assess systemic and counterparty risks. Public regulators were urged to actively engage in structural reforms, so as to re-establish the conventional hierarchy of public financial market regulation and to provide clear and precise responses to market instability.

The financial crisis did not affect the securities market directly, although it provoked regulators – mainly in Europe – into re-evaluating the regulatory framework of securities markets. The crisis exposed policy makers to the complexity and opacity of some financial instruments and activities and this initiated a regulatory debate over the revision of securities market regulation to foster efficiency, transparency and resilience.

A noteworthy feature of the crisis-era policy discussion on FMIs is its international character, which was demanded by the global dimension of many financial institutions and the cross-border nature of financial transactions. Thus, international consensus was reached amongst governments and regulators of the leading economies on key guiding principles, which were adopted by the G20, and on more detailed guidelines, which were issued by other international fora – such as the FSB and the International Organization of Securities Commissions (IOSCO). The role of FMIs as mechanisms for supporting stability was a core element of the policy debate on reform of securities and derivatives markets.

2. 'Systemic risk' v. 'transaction costs'

From a 'public interest' perspective, crisis-era reforms to FMIs follow two main paths: the micro-level, transaction costs approach, which focuses on transactions and intermediaries; and the macro-level, systemic risk approach, which focuses on market structures and other mechanisms to address systemic risk and transparency.

The first approach, which is examined in the second section of this chapter, has inspired the re-shaping of trading infrastructures. It is directed to promoting trade concentration on formal trading venues and to defining appropriate levels of trade transparency both pre- and post-trade, and should result in a reduction of transaction costs and enhance the liquidity of securities and derivatives markets. The second approach, which is analyzed in the third section, primarily relates to the derivatives markets, which were the main source of market-based systemic stability in the recent crisis. Regulatory reforms in this segment are directed to reducing the scope and impact of systemic risk through mandatory central clearing for eligible derivatives transactions, and to fostering transparency vis-à-vis regulators through mandatory reporting to central TRs.

3. 'Private' v. 'public' markets

This analysis of crisis-era financial reform to FMIs is based on consideration of the role that FMIs currently play both in 'private' and 'public' markets, and also considers how elements of 'publicity' are being injected into 'private' markets.[8]

For the purposes of this discussion, 'private' markets refer to the informal, bilateral, discretionary and 'dark' trading of financial instruments. The informal character of 'private' markets derives from the absence of specific and formal requirements as to access to the relevant venue (or entity) and as to the execution of trades. Access depends on the intermediary's discretion, while trading mainly occurs in bilateral relationships, often through

[8] See Ferrarini, G and Saguato, P, 'Reforming Securities and Derivatives Trading in the EU: From EMIR to MIFIR' (2013) 13(2) *Journal of Corporate Law Studies* 319.

customized transactions. Furthermore 'private' markets are not subject to transparency requirements, so that trades are concluded in an opaque (dark) environment. 'Private' markets are generally associated with the OTC markets and with investments firms and brokers providing execution services directly to their clients.

'Public' markets, on the other hand, are generally represented by either regulated or 'alternative' venues, such as stock exchanges, futures and options exchanges, and more recently multilateral trading facilities (MTFs) and alternative trading systems (ATSs). The public character of these markets resides in their formal, non-discretionary, and multilateral structure. Access to the trading venue is subject to pre-set requirements, which limit the discretion of the venue's operator. In addition, the execution of trades occurs under the rules of the venue, through the matching of multiple parties' orders. 'Public' markets are generally transparent, at least in terms of post-trade transparency.

Mixed organizational models are also emerging – mainly as a result of the crisis-era reforms – and combine, to varying degrees, elements of both private and public markets. As discussed in this chapter, the reforms have partially 'publicized' some private markets, which have become 'semi-private', as a result; OTC derivatives markets – for instance – are now subject to post-trade transparency requirements. Moreover, all derivative transactions must be reported to a TR, while eligible contracts must be centrally cleared through a CCP. Conversely, some markets have become 'semi-public' as a result of the softening of either pre- or post-trade transparency. For example, some trading venues, despite having a formal organization and multilateral structure, are subject only to post-trade transparency requirements, as is the case with respect to 'dark pools' of liquidity which are defined by the

absence of pre-trade transparency but can be constituted as an ATS, MTF, an order-crossing system or even as a stock exchange.[9]

4. The role of FMIs

In the wake of the crisis, FMIs are being subject to new regulatory requirements designed on one hand to create stability buffers and on the other to address the weaknesses which the crisis exposed in private and public markets. FMIs are multilateral systems or networks, which provide trading, clearing, settlement, and reporting services in relation to securities and derivative transactions. They support financial markets by providing essential services, connecting counterparties, reducing transaction costs through economies of scale, managing systemic and counterparty risks, and fostering transparency.[10] An array of new rules now governs FMIs, deriving from the international guidelines set by the G20 and the FSB.[11] This chapter focuses on their implementation in the two largest financial markets globally, i.e. the EU and the US markets. It examines accordingly, with respect to the EU financial market, the European Market Infrastructure Regulation (EMIR),[12] the Market in Financial Instruments Directive and Regulation (MiFID II and MiFIR),[13] and the proposed regulation on improving securities settlement in the EU and on central securities

[9] See IOSCO, Principles for dark liquidity. Final Report (2011) 4.

[10] For a global overview of the governance of infrastructure institutions in the financial markets, see Lee, R, *Running the World's Markets – The Governance of Financial Infrastructure* (2011).

[11] See FSB, Improving financial regulation – Report of the Financial Stability Board to G20 Leaders (2009)

[12] See European Parliament and Council Regulation (EU) 648/2012 on OTC derivatives, central counterparties and trade repositories [2012] OJ L201/1 [hereinafter EMIR].

[13] Both proposals are available at http://ec.europa.eu/internal_market/securities/isd/mifid_en.htm. See Commission Proposal (EU) for a Regulation of the European Parliament and of the Council on markets in financial instruments and amending Regulation [EMIR] on OTC derivatives, central counterparties and trade repositories 2011/0296(COD), COM(2011) 652 final, 20 October 2011 [hereinafter MiFIR proposal]; and Commission Proposal (EU) for a Directive of the European Parliament and of the Council on markets in financial instrument repealing Directive 2004/39/EC of the European Parliament and of the Council' 2011/0298(COD), COM(2011) 652 final, 20 October 2011 [hereinafter MiFID II proposal].

depositories (CSD Proposal).[14] With respect to the US, it considers the 2010 Dodd-Frank Act,[15] and the role played by the Commodity Futures Trading Commission (CFTC) and Securities and Exchange Commission (SEC) in the regulation and supervision of FMIs. Amongst the international initiatives, it refers in particular to the Principles for Financial Market Infrastructures [16] and the related Disclosure Framework and Assessment Methodology,'[17] both issued by the Committee on Payment and Settlement Systems (CPSS) and IOSCO in 2012.

The next two sections analyze the regulation and role of FMIs in today's fragmented markets, considering first securities and derivatives trading infrastructures – such as exchanges, MTFs, OFTs and swap execution facilities (SEFs) – and second post-trading infrastructures – such as CCPs, CSDs, and TRs – with a special emphasis on derivatives markets.

II. MARKET STRUCTURE AND TRADING INFRASTRUCTURES: OLD AND NEW PRINCIPLES

1. Trading venues: concept and organization

a) Definition of a trading venue

The concept of a 'trading venue' encompasses various institutions providing a locus – generally an electronic platform – where either securities or derivatives are traded amongst

[14] See Commission Proposal (EU) for a Regulation of the European Parliament and of the Council on improving securities settlement in the European Union and on central securities depositories and amending Directive 98/26/EC' 2012/0029(COD), COM(2012) 73 final, 7 March 2012 [hereinafter CSD proposal].
[15] See Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, (2010) (to be codified in many dispersed sections of the U.S. Code) (hereinafter 2010 Dodd-Frank Act).
[16] See CPSS, IOSCO, Principles for Financial Market Infrastructures (2012)
[17] See CPSS/IOSCO, Principles for Financial market Infrastructures: Disclosure framework and Assessment methodology, (2012).

market participants.[18] Traditionally, only exchanges offered this type of facility, essentially by providing a location for brokers to meet and execute their trades, and by publicizing the related information concerning the prices of executed transactions, i.e. providing trade transparency. This saved traders the cost of independently searching for potential counterparties.[19] Another benefit of exchanges has long been the production of information as to the prices of the instruments traded.[20] However, exchanges also perform other activities, such as the listing of securities, the regulation and monitoring of issuers and broker-dealers, and market supervision.[21] Moreover, post-trade services are provided either directly by exchanges or by institutions linked to them, such as clearing and settlement agents and CCPs, which facilitate the settlement of exchange transactions and make them safer.[22]

With the development of technology, other firms – usually constituted in the form of an investment intermediary – have been enabled to establish organized markets for the trading of securities.[23] Despite competing with exchanges with respect to the provision of liquidity services, these firms do not perform the listing and self-regulation activities which

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[18] See Macey, J and O'Hara, M, 'From Markets to Venues: Securities Regulation in an Evolving World' (2005) 58 *Stanford Law Review* 563; Ferrarini, G and Moloney, N, 'Reshaping Order Execution in the EU and the Role of Interest Groups' (2012) 13 *EBOR* 557, 565-571.

[19] See Fischel, D, 'Organized Exchanges and the Regulation of Dual Class Common Stock' (1987) 54 *University of Chicago Law Review* 119, 121-123 (arguing that there is little fundamental difference between the economic role of a stock exchange and that of an ordinary shopping centre or flea market); Fischel, D and Grossman, S, 'Customer Protection in Futures and Securities Markets' (1984) 4 *Journal of Futures Markets* 273 (making similar statements for futures exchanges); Lee, R, *What is an Exchange? The Automation, Management, and Regulation of Financial Markets* (1998) 8-33.

[20] See Mulherin, J, Netter, J and Overdahl, J, 'Prices are Property: The Organization of Financial Exchanges from a Transaction Cost Perspective' (1991) 34 *Journal of Law and Economics* 591, arguing that a financial exchange is a firm that creates a market in financial instruments; its product is accurate information as reflected in prices.

[21] See Coase, R, *The Firm, the Market and the Law* (1988) 9, arguing that 'exchanges, often used by economists as examples of a perfect market and perfect competition, are markets in which transactions are highly regulated and suggesting that 'for anything approaching perfect competition to exist, an intricate system of rules and regulations would normally be needed'. For a defence of exchanges as effective self-regulators, see Mahoney, P, 'The Exchange as Regulator' (1997) 83 *Virginia Law Review* 1453.

[22] Harris, L, *Trading and Exchanges. Market Microstructure for Practitioners (*2003) 35-36.

[23] See Macey, J and O'Hara, M, 'Regulating Exchanges and Alternative Trading Systems: A Law and Economics Perspective' (1999) 28 *Journal of Legal Studies* 17.

characterize exchanges. The facilities managed by these new entrants are typically termed ATSs in the US[24] and MTFs in Europe. The definition of an MTF under the EU regulatory regime underlines that trading occurs under non-discretionary rules amongst a plurality of market participants, rather than on a discretionary basis between an intermediary and its individual clients.[25] However, 'bilateral' facilities are also included in the EU definition of a trading venue, in the form of the 'systematic internaliser', i.e. 'an investment firm which, on an organized, frequent and systematic basis, deals on own account by executing client orders outside a regulated market or an MTF'.[26]

b) The governance of trading venues

The governance of trading venues has evolved substantially following technological and competitive developments.[27] Firstly, exchanges, run in the form of either a cooperative or membership association, were generally demutualized, while public exchanges – trading

[24] SEC, Regulation of Exchanges and Alternative Trading Systems (2000) available at http://www.sec.gov/rules/final/34-40760.txt). The Regulation exempts most alternative trading systems from the definition of 'exchange.' and therefore the requirement to register as an exchange, if they comply with Regulation ATS. However, any system exercising self-regulatory powers, such as regulating its members' or subscribers' conduct when engaged in activities outside of that trading system, must register as an exchange or be operated by a national securities association. This is because self-regulatory activities in the securities markets must be subject to Commission oversight under sect. 19 of the 1934 Securities Exchange Act. SEC, *ibidem*, allows most alternative trading systems to choose to be regulated either as exchanges or as broker-dealers.

[25] Art 4 (1) 15) MiFID defines an MTF as 'a multilateral system, operated by an investment firm or a market operator, which brings together multiple third-party buying and selling interests in financial instruments – in the system and in accordance with non-discretionary rules – in a way that results in a contract in accordance with the provisions of Title II'. See European Parliament and Council Directive (EC) 39/2004 on markets in financial instruments amending Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC and repealing Council Directive 93/22/EEC [2004] OJ L145/1. See also Commission Directive (EC) 73/2006 of 10 August 2006 implementing Directive 2004/39/EC as regards organizational requirements and operating conditions for investment firms and defined terms for the purposes of that Directive [2006] OJ L/241/26.

[26] Art 4 (1) 7) MiFID, nt 26 above. For the definition of 'trading venue' as including 'a regulated market, MTF or systematic internalizer acting in its capacity as such' see Art 2 (8) Commission Regulation (EC) 1287/2006 implementing Directive 2004/39/EC of the European Parliament and of the Council as regards record-keeping obligations for investment firms, transaction reporting, market transparency, admission of financial instruments to trading, and defined terms for the purposes of that Directive [2006] OJ L241/1.

[27] See Cybo-Ottone, A, Di Noia, C and Murgia, M, 'Recent Developments in the Structure of Securities Markets' (2000) Brookings-Wharton Papers on Financial Services 223; Macey, J, and O'Hara, M, 'Globalisation, Exchange Governance, and the Future of Exchanges' (1999) Brookings-Wharton Papers on Financial Services 1.

venues open to all interested parties and run by a third entity – were often privatized.[28] The resulting firms became public companies with diffuse shareholders or were merged into or acquired by other exchanges.[29] Secondly, exchanges mainly focused on the development of electronic platforms and the offer of liquidity services, becoming more similar to their competitors, such as ATSs/MTFs and internalizing firms. They correspondingly became less (or poorly) incentivized to perform self-regulatory activities, to the extent that they generated positive externalities to competing platforms, and powerful conflicts of interest were created between exchange's regulatory and business activities.[30]

Regulators highlighted these conflicts as problematic and as sufficient to justify regulatory reform.[31] However, they also took the opportunity to expand their regulatory turf and to undertake some of the traditional rulemaking and monitoring functions of exchanges. In 2000, for example, the UK Listing Authority was transferred from the demutualized London Stock Exchange to the Financial Services Authority (FSA), now Financial Conduct Authority (FCA);[32] leaving the Listing Authority to a for-profit firm like the LSE, competing in the international market for trading services, would have raised concerns as to its independence and incentives to efficiently perform the relevant function.

More generally, two types of re-regulation followed the demutualization and privatization of exchanges. Firstly, the governance of trading venue operators generally has

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[28] On the choice between members' ownership/governance and investor ownership/governance in this area see Hart O and Moore, J, 'The Governance of Exchanges: Members' Cooperatives versus Outside Ownership' (1996) 12 *Oxford Review of Economic Policy* 53. See also Ferrarini, G, 'Stock Exchange Governance in the European Union', in Balling, M, Hennessy, E and O'Brien, R (eds) *Corporate Governance, Financial Markets and Global Convergence* (1998).

[29] See Lee, n 10 above, 169-200.

[30] See Macey and O'Hara, n 18 above, 582, arguing that 'when exchanges engage in self-regulation they generate and enforce rules that directly affect their own commercial interests'.

[31] See IOSCO, Regulatory Issues Arising from Exchange Evolution. Consultation Report (2006) 7, arguing that 'the move by many exchanges to a for-profit business model, together with increased competition in the provision of market services in most markets, raises a number of questions about the appropriate regulatory role of exchanges. These issues run from the compatibility of for-profit operation with public interest objectives to the adequacy and efficiency of regulation'.

[32] See FSA, Review of the Listing Regime (2003).

been regulated to reflect the governing policy view that exchanges and other trading venues run by market operators are firms offering transaction services to intermediaries and investors in a competitive setting.[33] Both in the US and the EU, the various types of trading venues (including ATSs and MTFs) are subject to rules that are increasingly similar across the sector given that these venues perform similar functions.[34] Secondly, the role of exchanges in the regulation and supervision of listed issuers has been reduced and replaced by public regulation and supervision, which has correspondingly widened its scope of application. This is also the result of the corporate scandals which at the beginning of this century led to extensive reforms of corporate governance and securities regulation, such as the Sarbanes Oxley Act in the US and similar legislation in Europe.[35]

2. Regulatory responses to market fragmentation

a) Fragmentation of markets

As a result of increased competition between trading venues, securities markets have tended to fragment. Indeed, it is common today for securities to trade in several venues.[36] For instance, shares of blue-chip companies are usually listed in one or more stock exchanges (say the LSE and NYSE), but are often traded also in MTFs (like Chi-X and BATS). Similarly, corporate bonds are often listed on a regulated market – regulated markets are trading venues subject to a level of control by a public entity –, but also traded on MTFs,

[33] See Ferrarini, n 28 above, 139 ff.
[34] See Coffee, J C jr and Sale, H A Securities Regulation (12th ed 2012); Moloney, N, *EC Securities Regulation* (2nd ed 2008) 763 ff. For a comparative survey, see IOSCO, Regulatory Issues Raised by Changes in Market Structure. Consultation Report (2013), noting that in most jurisdictions similar rules apply for exchange trading market systems as a 'market place'. However, considerable differences appear to remain as regards OTC trading. For instance, several jurisdictions stated that most of the trading which takes place OTC is not subject to any pre-trade transparency requirement or fair access rule.
[35] See Bainbridge, S, *Corporate Governance after the Financial Crisis* (2012) 3 ff; Belcredi, M and Ferrarini, G (eds), *Boards and Shareholders in Listed Companies* (2013) 3 ff.
[36] See Foucault, T, Pagano, M and Röell, A, *Market Liquidity* (2013) 236 ff.

internalizing systems, and OTC.[37] This phenomenon has been observed in the EU since the implementation of MiFID in 2007. Prior to MiFID, Member States could require all trading in domestically listed stocks to be executed on a national exchange. Several Member States enacted related 'concentration rules' which, however, were abolished by MiFID.[38] As a result, MTFs can now compete with exchanges, and new platforms have successfully emerged for the trading of blue-chip stocks, while incumbent exchanges have lost trading activity.[39]

Market fragmentation raises various concerns. Firstly, it may lead to excessive 'price dispersion' (the same security trades at different prices at the same moment in time), which is a form of market inefficiency. Arbitrageurs can exploit the opportunities created by differences in prices, buying in one market and reselling in another at a profit, which makes prices in the two markets converge. However, arbitrage may be costly and arbitrageurs do not always monitor the relevant trades, so that price differences remain in place.[40] Secondly, market fragmentation raises trading costs for several reasons: (1) 'informed' investors can hide more easily by transacting in different venues, which leads traders to widen spreads for fear of transacting with counterparties possessing superior information; (2) in fragmented markets investors carry search costs in identifying the best price; (3) in addition, they cannot take advantage of the liquidity externalities of centralized markets.[41]

b) International principles

[37] See Ferrarini, G, 'Market Transparency and Best Execution: Bond Trading under MiFID', in Tison, M, et al (eds), *Perspectives in Company Law and Financial Regulation. Essays in honour of Eddy Wymeersch* (2009), 477.
[38] Ferrarini, G, and Recine, F, 'The MiFID and Internalisation', in Ferrarini, G and Wymeersch, E (eds), *Investor Protection in Europe. Corporate Law Making, the MiFID and Beyond* (2006) 235.
[39] See Foucault, Pagano, and Röell, n 36 above, 237, arguing that as of February 2012 Euronext retained only 60.5 percent of the trading activity in the CAC40 stocks and the LSE retained only 54.77 percent of trading activity in the FTSE 100 stocks. See also Ferrarini, G, 'Best Execution and Competition between Trading Venues – MiFID's Likely Impact' 2 *Capital Markets Law Journal* (2007) 404.
[40] See Foucault, Pagano and Röell, n 36 above, 238.
[41] *Ibid*, 238-239, noting that fragmentation also brings benefits, such as competition among trading venues which lowers fees and fosters innovation, while different trading functionalities better serve the interests of investors. See also IOSCO, Transparency and Market Fragmentation Report (2001).

A recent IOSCO Consultation document analyzing changes in market structure and their policy implications argued: 'Securities regulators bear the responsibility for striking an appropriate balance between a market structure that promotes competition among markets, and one that minimizes the potentially adverse effects of fragmentation on market integrity and efficiency, price formation, and best execution of investor orders'.[42] The same document formulates a number of recommendations to promote market liquidity and efficiency, price transparency and execution quality in a fragmented environment.[43] Firstly, regulators should monitor the impact of fragmentation on market integrity and efficiency across different trading spaces and seek to ensure that the applicable regulatory requirements are still appropriate. Secondly, they should ensure that proper arrangements are in place in order to facilitate the consolidation and dissemination of information as close to real time as technically possible and reasonable. Thirdly, regulators should consider the potential impact of fragmentation on the ability of intermediaries to comply with applicable order handling rules, including best execution obligations. Fourthly, they should regularly monitor the impact of fragmentation on liquidity across trading spaces and ensure that applicable regulatory requirements provide for fair and reasonable access to significant sources of market liquidity on the trading market systems. Fifthly, they should monitor for novel forms or variations of market abuse that may arise as a result of technological developments.[44]

3. Current trends in the EU

a) The regulation of securities markets

[42] See IOSCO, Regulatory Issues, n 31 above, 17
[43] *Ibid* 18-23.
[44] On similar issues, see IOSCO, Technological Challenges to Effective Market Surveillance and Regulatory Tools. Consultation Report (2012), considering the challenges posed by increased speed of trading and difficulties in gathering the increased volume of trading data.

The application of MiFID[45] to the EU's equity trading markets in November 2007 heralded a new era for the EU's financial markets.[46] MiFID's securities trading rules were designed to reshape the EU trading market. The abolition of national 'concentration rules' in particular, while contributing to the fragmentation of securities markets (see the preceding paragraph), enhanced competition between trading venues in the EU, harnessing industry innovation and technological advances. The MiFID is presently undergoing a review procedure that will soon come to an end through the enactment of two pieces of legislation. The first will be a Regulation (MiFIR) imposing common rules that will apply directly in all EU Member States and which will be mainly focused on the mandatory trading of derivatives, disclosure of trade transparency data, and non-discriminatory access to clearing facilities and trading venues. The second will be a new Directive (MiFID II), which will modify MiFID mainly with respect to investment services trading rules and internal and external governance requirements for investment firms and trading venues.[47]

In proposing the new texts, the Commission suggested that MiFID had led to more competition, wider investor choice, a decrease in transaction costs, and deeper integration. It also suggested that the financial crisis experience had 'largely vindicated' MiFID's design. However, the Commission highlighted four difficulties. The benefits of competition were not flowing efficiently to all market participants and were not always passed on to end users, while market fragmentation had made the trading environment more complex and opaque. MiFID's classification of trading venues had been outpaced by innovation. The financial crisis had exposed weaknesses in the regulation of non-equity instruments. Finally, rapid

[45] See MiFID, n 25 above.
[46] See Ferrarini and Moloney, n 18 above.
[47] Ferrarini and Moloney, n 18 above, 560.

innovation and increasing market complexity called for higher levels of investor protection and for a 'safer, sounder, more transparent and more responsible financial system'. [48]

In support of this objective, and at the core of the related MiFID Review, is the concern to extend the EU's regulatory perimeter around trading venues to encompass a wider range of venues, and to apply the same set of rules to this wider set of venues. In this direction moves the requirement on firms to trade securities on organized venues, such as RMs and MTFs. The most radical proposal involving the non-equity assets market – derivatives and bonds- is the introduction of the new Organized Trading Facility (OTF) regime, which is designed to capture all non-regulated market (RM)/MTF trading on organized venues, such as broker-crossing systems and new systems for the trading of clearing-eligible and sufficiently liquid derivatives. The same set of equity transparency rules (pre- and post-trade) will apply to RMs and to operators of MTFs and OTFs.

The MiFIR Proposal also includes a set of rules on transparency for non-equity instruments, based on the premise that the financial crisis exposed weaknesses in the way information on trading opportunities and prices in financial instruments other than shares is available to market participants. The proposed new rules will also introduce a transparency regime in markets for bonds and structured financial products, so to help the valuation of the same and the efficiency of price discovery.[49]

b) The regulation of derivatives markets: EMIR and MiFIR

Mandatory trading of eligible derivatives on either exchanges or electronic platforms is one of the four pillars of the international OTC derivatives market reform agenda – the others being standardization, central clearing, and reporting. Whereas the central clearing and trade reporting reforms primarily aim to reduce systemic risk – by respectively managing

[48] See MiFIR Proposal, n 13 above, 2-3.
[49] See Ferrarini and Saguato, n 8 above, 345 ff.

financial market exposure and increasing the transparency of OTC derivatives vis-à-vis regulators – exchange trading and trading through electronic platforms primarily aim to increase the efficiency of derivatives markets, while contributing to financial stability.

The MiFIR Proposal includes an obligation to trade certain derivatives on regulated markets, MTFs or OTFs, reflecting the agreement reached at the G20 Pittsburgh summit on 25 September 2009 to move trading on standardized OTC derivatives, which are not intra-group transactions, to exchange or electronic trading venues where appropriate.[50] This agreement foresaw that a formal regulatory procedure should be defined for mandating trading between financial counterparties and large non-financial counterparties in all derivatives that are clearing eligible and sufficiently liquid to be traded on a trading venue. The agreement requires the movement of trading on standardized OTC derivatives to either exchanges or electronic platforms where appropriate – a suitable range of eligible venues should be provided, given the lower liquidity of various OTC derivatives.[51] Moving derivatives to trading venues will increase post-trade transparency, given that Article 9 of the MiFIR Proposal requires market operators and investment firms operating trading venues to make public the price, volume and time of the transactions executed in respect of derivatives.[52]

4. Current trends in the US: The 2010 Dodd-Frank Act and its implementing regulations

[50] See the G20, Leaders Statement: The Pittsburgh Summit, para 13, available at http://www.g20.utoronto.ca/2009/2009communique0925.html#system.

[51] See MiFIR proposal, n 13 above, recitals 21–23. The Proposal assigns wide regulatory powers to the European Securities and Markets Authority (ESMA) – ESMA is the European financial regulatory institution –, which would be asked to develop draft implementing technical standards, ie 'administrative rules', to determine which classes of derivatives (subject to clearing obligations) should be traded on RMs, MTS, OTFs or third country trading venues.

[52] See Ferrarini and Saguato, n 8 above, also for a comparison with EMIR's reporting obligations.

The repatriation of derivative trading on to trading venues is also a feature of the US reforms. Section 732(a)(8) and Section 764 of the Dodd-Frank Act require counterparties to execute all swaps, which are subject to the mandatory clearing requirement, on a regulated exchange or on a trading platform. Each trading eligible derivative has to be executed on a registered trading venue, approved by the competent regulator (CFTC for swap and SEC for securities-based swaps), unless no trading venue is able to or has accepted the contract for trading.

More precisely, eligible swaps – ie non-security-based-swaps – must be traded on a 'board of trade'[53] which includes two types of trading venues registered with the CFTC: Designated Contract Market (DCM) – the traditional exchanges trading futures and options – and the newly introduced Swap Execution Facility (SEF),[54] which includes smaller electronic swap facilities. Similarly, security-based-swaps must be traded on a securities exchange or on the new Security-Based Swap Execution Facility (SBSEF), which broadly defines a regulated multilateral trading systems or platform.[55]

SEFs and SBSEFs are also subject to specific regulations and administrative responsibilities. SEFs must ensure the effectiveness of the market by preventing trading abuses, price distortion, and manipulation, by guaranteeing an impartial and fair access to the trading facility, providing and publishing timely data on prices and trading volume, and – from an accountability perspective – having a stable compliance structure and providing emergency rules for liquidation or transfer of trading positions of defaulting participants.

[53] See Commodity Exchange Act (CEA), §1a(27), 7 USC §1a(27), which defines 'board of trade' as 'any organized exchange or other trading facility'.
[54] See § 733 Dodd Frank Act, n 15 above; new §5h CEA, n 54 above.
[55] See § 763 Dodd Frank Act, n 15 above.

III. POST-TRADING INFRASTRUCTURES: A NEW INTERNATIONAL FRAMEWORK

1. Post-trading infrastructures as stability and transparency providers

a) Systemic impact of post-trading infrastructures

As analyzed in the previous section, trading infrastructures operate in the bid and offer world, matching opposite positions. They contribute to the efficiency of financial market transactions and to the liquidity of markets, by executing orders in an orderly manner and providing pre- and post-trade information. Trading venues act at a transactional level by offering services to buyers and sellers interested in concluding deals. Post-trading infrastructures, conversely, supply clearing, settlement, and reporting services to the trading markets, and perform a systemic function by operating as risk management and oversight mechanisms. In a sense, post-trading infrastructures are not only counterparties to financial institutions and investors, but also respond to the public interest as guardians of financial markets: they contribute to financial stability by providing network services and facilitating connections among market participants.

This section examines three levels of post-trade services, clearing, settlement, and reporting, and the three infrastructures that provide such services: CCPs, CSDs, and TRs. Each post-trading service is aimed at reducing or more generally managing a separate aspect of systemic risk. A CCP interposes between counterparties becoming the 'seller to every buyer and the buyer to every seller'.[56] By netting the opposite positions of its members, a CCP mitigates the overall counterparty credit risk, creates more effective mechanisms to assess potential default risk of its members, and ultimately contributes to the reduction of

[56] CPSS, IOSCO, Recommendations for Central Counterparties (2004) 1.

systemic risk.[57] A CSD traditionally operates in the settlement phase of cash transactions, by holding the securities of listed entities – either in certificate form or dematerialized – and managing the transfer of the same from the seller to the buyer; a new and growing function of CSDs relates to the management and transfer of collateral. A CSD plays an important role in containing the operational risk of securities markets (CSDs are not active in the derivatives market). Finally, TRs, whose role as a FMI has been officially acknowledged by post-crisis regulation, makes the relevant market more transparent, providing regulators with information on relevant transactions, and market participants with aggregated data on concluded deals.

b) The international regulation of post-trading infrastructures: a global governance perspective

Systemic counterparty risk and the opacity of derivatives markets were the key triggers of the crisis-era reforms to post-trading. The G20 and the FSB, by requiring all derivatives transactions to be reported to TRs, and all standardized and eligible derivatives to be cleared via CCPs, emphasized the role of the related FMIs as providers of stability and efficiency to the financial system.[58] In particular, policy makers stressed the importance of public regulation in modeling prudential and corporate governance standards for FMIs, given the 'public' nature of their services.

While a broad definition of the role, structure and governance of CCPs and TRs is included in the FSB's key policy document 'Implementing OTC Derivatives Market

[57] For a pre-crisis analysis of derivatives clearing houses, see Dale, R, 'Derivatives Clearing Houses: The Regulatory Challenge', in Ferrarini, G (ed), *European Securities Markets, The Investment Services Directive and Beyond* (1998) 295. The post-crisis academic debate on CCPs addresses in particular the effectiveness of CCPs as mitigators of systemic risk. See, among others, Pirrong, C, The Economics of Clearing in Derivatives Markets: Netting, Asymmetric Information, and the Sharing of Default Risk Through a Central Counterparty (January 2009) University of Houston, Working Paper, available at http://ssrn.com/abstract=1340660; *Id.*, 'The Clearinghouse Cure' (2008) *Regulation* 44. Yadav, Y, 'The Problematic Case of Clearinghouses in Complex Markets' (2013) 101 *Georgetown Law Journal* 387. Squire, R, 'Clearinghouses as Liquidity Partitioning' (October 12, 2013) (forthcoming. *Cornell Law Review*, available at http://ssrn.com/abstract=2185064 and Roe, M J, 'Clearinghouse Overconfidence' (2013) 101 *California Law Review* 1641.

[58] See FSB, Improving financial regulation, n 11 above.

Reforms',[59] more detailed policy recommendations were jointly drafted by the CPSS and IOSCO in their 'Principles for financial market infrastructures'.[60] These international guidelines apply solely to post-trading infrastructures, and do not cover trading venues.

These documents formulate a number of recommendations aimed at achieving safety and efficiency in the financial markets by containing and reducing systemic risk. In this direction, the CPSS-IOSCO principles recognize the systemic importance of FMIs and the two essential public policy objectives they perform: safety and financial stability, and market efficiency. The twenty six principles regulators should follow to build the regulatory infrastructure for FMIs can be grouped in four main categories. First regulators should consider the general organizational structure of the FMI, its legal basis, the governance arrangements (ie ownership structure, governance policies – composition and responsibilities of the board of directors –, internal controls and audit),[61] and the risk-management framework (ie risk-management policies, procedures, and systems).[62] Second, and addressing in more details the risk-management framework, regulators should ensure that FMIs have in place effective credit risk and liquidity risk management mechanisms (ie collateral and margin) aimed at mitigating and managing counterparty credit risk, limiting procyclicality in collateral and margin arrangements, and maintaining sufficient liquid resources. Third regulators should ensure that FMI establishes default management strategies that guarantee orderly activities of the FMI even in case of participants default or insolvency (ie default funds, waterfall plans, segregation and portability arrangements).[63] Fourth, regulators should impose transparency requirements on FMIs, which ensure that market participants and

[59] *Ibid*, 1.
[60] See CPSS-IOSCO, n 16 above.
[61] See CPSS-IOSCO, n 16 above, 21-35; 101-115.
[62] *Ibid*, 88-94
[63] *Ibid*, 78-82

authorities are informed both on the internal structure, rules and procedures of the FMIs, and on market data.[64] The following subsections analyze the crisis-era regulatory reforms in the post-trading area, and both the EU' and US' reforms – as it is going to emerge – conform with the CPSS-IOSCO principles for FMIs.

2. Current trends in the EU' regulation of post-trading FMIs: EMIR and the Proposed Regulation on CSDs

The EU responded to the crisis with a package of regulatory measures aimed at rebuilding confidence in the financial markets and creating a sounder financial system, and which included post-trading reforms. The reforms targeted four main objectives: increasing transparency, managing counterparty credit risk, reducing systemic risk, and fostering operational efficiency. Each of these tasks has been assigned to a specific type of FMI, subject to governance and prudential regulation. The following subsections evaluate the role and governance of CCPs, TRs, and CSDs in the EU context.

a) The regulation of CCPs and TRs

EMIR and its detailed administrative rules, despite being mainly focused on OTC derivatives, are the primary sources for the EU's regulation of CCPs and TRs in general. The vulnerability of the OTC markets to systemic shocks was accordingly the trigger for a wider reshaping of EU FMIs,[65] with TRs and CCPs the infrastructures tasked, at macro level, with providing systemic stability and transparency.

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[64] *Ibid*, 121-125

[65] The crisis-era regulatory reforms mainly focused on the OTC derivatives markets because of their role in the financial crisis as accelerators of contagion and as incubators of uncontrolled risk exposures. The pre-crisis market was characterized by self-regulation. The new international guidelines on OTC regulation now provide a common and harmonized framework, based on four pillars:
1) OTC derivatives standardization,
2) trading on exchanges and electronic platforms,
3) central clearing systems, and
4) mandatory trade reporting.

Clearing activity, due to its unique role in mitigating and reducing counterparty credit risk, is subject to extensive regulation. Title III of EMIR contains the relevant rules. CCPs must be either authorized by the competent authority of the Member State, i.e. the relevant national regulator, where they intend to provide clearing services,[66] or recognized – if already existing and operating in a third country – by the EU's new regulator for securities markets, the European Securities and Markets Authority (ESMA).[67] They are, for example required to have a solid capital base – with a minimum permanent and available capital of 7.5 million euro – which must be always proportionate to the risk deriving from clearing activities. [68] In this regard ESMA has adopted fixed calculation mechanisms to evaluate capital adequacy with regard to specific forms of risk. In addition, a CCP must always be adequately capitalized against credit risks, counterparty risks, market risks, operational risks, and legal and business risks. Furthermore, it must hold enough financial resources to ensure an effective restructuring procedure, where required, and must be subject to periodic stress-testing, back-testing and sensitivity analysis, to ensure its financial stability and reliability.[69]

EMIR and its administrative rules also impose many detailed requirements on CCP corporate governance, aimed at increasing transparency, avoiding conflicts of interest, and

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[66] For the authorization process, see EMIR, n 10 above, art 14, 17, 18, 19, 20. The European Association of CCP Clearing Houses (EACH), representing the CCPs operating in Europe, has 22 members, among which CME Clearing Europe (UK), EuroCCP (The Netherlands, UK, Sweden) Eurex Clearing AG (Germany), ICE Clear Europe (UK), LCH.Clearnet Ltd (UK), LCH.Clearnet SA (France); data available at http://www.eachorg.com/en/home.html (last accessed January 30 2014).

[67] On recognition as a third-country CCP, see art 25, *id.* ESMA has received – as of January 30 2014 – 32 applications for recognition as third-country CCP under Article 25 of EMIR. Among the applicants to operate in the EU are: the Chicago Mercantile Exchange (US), ICE Clear Credit and ICE Clear US (US), LCH.Clearnet (US), Hong Kong Securities Clearing Company and OTC Clearing Hong Kong (Hong Kong), Japan Commodity Clearing House, Japan Securities Clearing Corporation and Tokyo Financial Exchange (Japan), Singapore Exchange Derivatives Clearing and the Central Depository (Pte) (Singapore), SIX x-clear (Switzerland); data available at http://www.esma.europa.eu/system/files/list_of_applicant_tc-ccps_version_30_january_2014.pdf (last access January 30 2014).

[68] Art 16 EMIR, n 10 above.

[69] See Commission Delegated Regulation (EU) 152/2013 on supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on capital requirements for central counterparties [2013] OJ L52/37.

ensuring accountability.[70] A CCP's ownership structure, for example, must be transparent and every change in qualifying ownership holdings must be reported to ESMA.[71] Strict conflict of interest requirements must be complied with, and sound remuneration policies must be adopted.[72] Due to the importance of supervising and managing CCPs' risks, each CCP must adopt sound risk management practices and internal control mechanisms.[73] In addition, a risk committee must operate in every CCP. Within this committee, independent directors sit together with clearing members and client representatives to ensure higher expertise and efficiency. The risk committee is asked to advise the board on any arrangements that may impact the risk management of the CCP.[74]

To ensure the financial stability of CCPs and protect them from the risks of their counterparties' exposures, specific prudential requirements are imposed, which mandate CCPs to call and collect from their members initial and variation margins covering the exposures resulting from market movements and potential defaults.[75] CCPs are also entitled, when necessary, to determine prudent 'haircuts' of the collateral value and consequently to ask for additional guarantees, such as variation margins.[76]

Finally, to ensure the financial robustness of CCPs, CCP members must provide financial resources in the form of capital, default funds, and collateral for cleared transactions, although members' liability is limited with respect to CCPs' obligations. These

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[70] Title IV, EMIR, n 10 above, and Commission Delegated Regulation (EU) 152/2013 on supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on requirements for central counterparties [2013] OJ L52/41 [hereinafter Del Reg CCP]
[71] Art 30-31, EMIR, n 10 above; and Del Reg CCP, n 64 above, Art 10.
[72] Art 33, EMIR, n 10 above.
[73] Del Reg CCP, n 64 above, Art 4.
[74] Art 28, EMIR, n 10 above.
[75] A 'margin' is the financial guarantee a party provides to its counterparty as a security against losses deriving from an underlying transaction. Collateral generally refers to any property or assets (ie securities or cash) pledge as a guarantee for an open exposure, or more broadly is the asset used as a margin. Finally, an 'haircut' is the percentage by which the market value of a security or more generally of an asset used as collateral is reduced to reflect the degree of risk – ie legal risk, market risk and liquidity risk – underlying it. See Reuters, *Financial Glossary*, available at http://glossary.reuters.com/index.php?title=Main_Page.
[76] Del Reg CCP, n 64 above, Arts 17-31.

mechanisms and financial requirements are designed to mutualize the risk of counterparty default among clearing members, thus avoiding the risk of a systemic collapse.[77] The total amount of 'prudential resources' available is designed to enable the CCP to withstand the default of at least two clearing members to which it has the largest exposure.[78] In the event of a clearing member's default, the CCP must follow the so-called 'default waterfall' procedure to cover its exposure. Firstly, the CCP must look to the margins posted by the defaulting member to cover its outstanding positions. Secondly, if these margins are not sufficient, it must look to the default fund contributions of the defaulting member and, thirdly, at the contributions to the default fund of the non-defaulting members. The CCP can also require non-defaulting clearing members to provide additional funds to ensure the CCP's business continuity. The CCP can never use margins posted by non-defaulting members to cover losses of another member. Margins are managed in segregated accounts distinct from the CCP's assets.

Moving to TRs, they are data warehouses,[79] which centrally collect and maintain information and records on all derivatives transactions concluded on trading venues or OTC.[80] TRs accordingly provide a 'transparency' service to regulators, by making all data and information reported accessible to ESMA, national supervisory authorities, the European central banks and the ECB, and the European Systemic Risk Board. In addition, TRs periodically publish aggregate data on concluded transactions and make such information

[77] See Roe, n 55 above, 1676 ff, taking a more sceptical position on the role of risk mutualization mechanisms as effective strategies to reduce systemic risk.
[78] EMIR, n 10 above, Art 43.
[79] EMIR, n 10 above, Art 9 imposes a reporting obligation to a registered TR – within a working day form the conclusion, modification or termination of a derivative – on all counterparties and CCPs that conclude a derivative contract,
[80] With regard to the content of the TR reports, see Commission Implementing Regulation (EU) 1247/2012 laying down implementing technical standards with regard to the format and frequency of trade reports to trade repositories according to Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories [2012] OJ L352/20. For securities markets, by contrast, post-trade transparency is supported by the pre- and/or post-trade transparency requirements imposed by trading venues and governed by MiFID II/MiFIR.

available to the public.[81] Despite their crucial role in providing transparency to the market, TRs are subject to lighter regulation than are CCPs, as they pose lower risks to the financial system.

TR regulation is concentrated in three main and related areas: authorization and recognition, governance, and continuity.[82] A TR must be either authorized or recognized by ESMA,[83] provided that the structure of the TR's internal controls and the independence of its governing bodies ensure the independence and effectiveness of its services. In terms of governance, TRs are subject to strict disclosure rules concerning their ownership structure,[84] and are required to have adequate internal control systems, and efficient administrative mechanisms to detect potential conflict of interests related to management and employees. Furthermore, TRs must guarantee the continuity and orderly functioning of their activities and services. TRs are also required to provide ESMA with detailed descriptions of the financial resources available for the performance of their activities and for the management of operational risk.[85] TRs must 'establish, implement, and maintain' a 'business continuity policy' and a 'disaster recovery plan' aimed to ensure the smooth continuity of their services and to ease their resolution in the event of financial distress or failure.[86] The main concerns

[81] EMIR, n 10 above, Art 81.
[82] See Commission Delegated Regulation (EU) 150/2013 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories with regard to regulatory technical standards specifying the details of the application for registration as a trade repository [2013] OJ L52/25 [hereinafter sup Reg TR].
[83] The latest official data from ESMA shows that, as of November 2013, six TRs have been registered with ESMA: DTCC Derivatives Repository Ltd. (DDRL) [reporting services for all asset classes], Krajowy Depozyt Papierów Wartosciowych S.A. (KDPW) [reporting services for all asset classes], Regis-TR S.A. [reporting services for all asset classes], UnaVista Limited [reporting services for all asset classes], CME Trade Repository Ltd. (CME TR) [reporting services for all asset classes], ICE Trade Vault Europe Ltd. (ICE TVEL) [reporting services for commodities, credit, equities, interest rates instruments]; data available at http://www.esma.europa.eu/page/Registered-Trade-Repositories (last access January 30 2014).
[84] A TR, in order to be registered with ESMA, must disclose its ownership structure, by disclosing all holdings equal or higher than 5% of its capital or voting rights or any holding which provides the power to exercise a significant influence on the TR. See sup Reg TR, n 78 above, Art 3.
[85] See Art 6, 7, 13, *ibidem*.
[86] Art 78-79 EMIR, n 10 above.

in regulating TRs, therefore, are transparency and continuity in the processing and publication of the stream of information concerning derivative markets.

b) The regulation of CSDs

The proposed regulation on securities settlement and CSDs completes the framework of post-crisis reforms to FMIs in the EU.[87] Like CCPs, CSDs play an important role in securities transactions and are expanding their business activities to cover the settlement of collateral in the newly re-configured derivatives markets. CSDs operate in the post-trading phase, enabling either the transfer of securities against cash flows or the transfer of collateral against an open exposure. Settlement and clearing are the crucial post-trading activities directed at supporting the stability and clarity of securities transactions.

The proposed regulation focuses on two issues: the efficiency and safety of settlement mechanisms, and the regulation of CSDs. To provide more efficient and safe settlement, the regulation promotes the dematerialization of securities and requires the harmonization of settlement periods and settlement mechanisms across the EU.[88] With respect to the structure of CSDs, the proposed regulation provides a common regulatory framework for CSDs, in order to more effectively address the cross-border nature of financial markets and the systemic nature of CSDs. Because of their systemic and essential role in securities, and potentially in collateral, markets, CSDs must comply with prudential standards that should ensure the stability and continuity of their activities. Like CCPs and TRs, CSDs are subject to prudential regulation and capital requirements, transparent governance rules, and disclosure obligations for both relevant ownership holdings and with respect to potential conflicts of interests.[89]

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[87] CSD Proposal, n 14 above.
[88] Art 5-7, CSD Proposal, n 14 above.
[89] Title III, *ibidem*.

3. Current trends in the US: The 2010 Dodd-Frank Act and the implementing regulation

As shown in the previous paragraph, the EU is re-regulating post-trade FMIs in order to attain a higher level of harmonization, reduce the risk of cross-Member-State barriers to market transactions, mitigate systemic risk, and ensure the stability of EU financial markets. The US pre-crisis regulation of post-trade FMIs was characterized by industry self-regulation; public regulatory agencies exercised, however, authorization and supervisory powers. The Dodd-Frank Act introduced great changes in this respect, especially with regard to derivatives, pushing the market toward higher levels of transparency and institutionalizing the role of FMIs as stability mechanisms. However, the US approach differs from the EU approach: EMIR (and MiFIR) specifically address the regulation of FMIs, while the Dodd-Frank Act tackles the financial industry in general, focusing on financial institutions and on providing a new architecture for the OTC derivatives markets.

a) The regulation of CCPs and CSDs

In the US, both the CFTC and the SEC are involved in the regulation and supervision of financial markets. This dual organizational structure has shaped the Dodd-Frank Act's approach to derivatives markets. The CFTC has been asked to reorganize the 'swap' markets, by setting-up a new regime for regulating derivatives CCPs and TRs, but the regime for 'security-based swaps' falls under the authority of the SEC.[90]

CCPs operating in the derivative markets are now subject to strict rules concerning their financial stability, internal and external accountability, and clearing organization

[90] The 2010 Dodd-Frank Act distinguishes between 'swaps' and 'securities-based swaps', see §721(a)(19), Dodd-Frank Act, n 15 above. For the purpose of this chapter, the discussion refers to derivatives generally.

transparency.[91] CCPs must be registered as derivatives clearing organizations (DCOs)[92] with the CFTC in order to clear futures and swaps;[93] or as clearing agencies (CAs) with the SEC – if they intend to clear security-based swaps.[94] Non-US CCPs may be considered eligible to operate as clearing organizations in the US, without registering with the SEC and the CFTC, if they are subject to comparable comprehensive regulation in their home country.[95]

A second set of CCP rules address internal accountability and corporate governance and try to mitigate potential conflicts of interests within the CCP and to promote competition in the clearing market.[96] Both DCOs and CAs are subject to ownership limits. The Dodd-Frank Act empowers the CFTC and SEC to adopt limits on the control and voting rights that CCP members may hold in the CCP, to avoid the creation of blocks of controlling shareholders.[97] The CFTC and SEC, for example, gives DCOs and CAs – i.e. CCPs – the option to choose between one of two alternative limits on the ownership of voting equity or the exercise of voting power. First, a CCP may require that any individual members does not beneficially own more than 20% of any class of voting equity in the CCP or vote (directly or indirectly) an interest exceeding 20% of voting power of any class of equity interest in the CCP. Further, enumerated entities – such as swap dealers, major swap

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[91] Rules for the registration and regulation of derivatives clearing organizations are to be adopted under §725 and §734, *ibidem*. The spirit of the Dodd-Frank creates a market environment where swap users have 'fair and open access' to DCOs and to SEFs and DCMs – see §275(c). The CFTC has implemented this provision, defining the entities that can be considered DCOs. 76 Fed. Reg. 69334, available at http://www.cftc.gov/LawRegulation/FederalRegister/FinalRules/2011-27536.

[92] See 7 USC §7a-1.

[93] Currently there are 15 registered DCOs, among them: ICE Clear Europe Limited, ICE Clear Credit, ICE Clear US, Clearing Corporation, Chicago Mercantile Exchange, LCH.Clearnet Ltd., LCH.Clearnet SA, Singapore Exchange Derivatives Clearing Limited.

[94] In the US there are four main clearing corporations: the National Securities Clearing Corporation, the Fixed Income Clearing Corporation, and The Options Clearing Corporation; and one primary security depository, The Depository Trust Company is the primary U.S. securities depository. Data from the SEC website, available at http://www.sec.gov/divisions/marketreg/mrclearing.shtml (last access January 30th 2014).

[95] As of January 2014, neither the CFTC nor the SEC has adopted any guidance on recognition of non-US CCPs.

[96] See §765, Dodd-Frank Act, n 15 above.

[97] *Ibidem* §726(a),

participants and big financial institutions (either i.e. bank holding companies with $50 billion in consolidated assets or nonbank financial companies supervised by the Board of Governors of the Federal Reserve Systems),[98] regardless of whether they are CCP members, may not collectively beneficially own more than 40% any class of voting equity in a CCP or directly or indirectly vote an interest exceeding 40% percent of the voting power of any class of equity interest in the CCP. Second, a CCP may require to CCP members and to the enumerated entities a 5% individual limit on beneficial ownership of any class of its voting equity or an identical 5% limit on voting power of any class of equity interest in the CCP.[99] The rationale for the ownership requirements is twofold: firstly, to avoid the risk of concentrated ownership and that of oligopolistic positions being created in the CCP market and thus to foster competition in the clearing market; secondly, to mitigate potential conflict of interests in the operation of CCPs.

The risk committee plays a crucial role in the oversight of CCPs' risk management and compliance functions under the new regulatory regime, but the CFTC and SEC have adopted different approaches. In a CFTC-supervised DCO, the risk management committee must be composed of at least 35% independent – 'public' – directors – directors who do not have any material relation with the CCP or its members –, and at least 10% customers' representatives must sit in either the risk management committee or the governing board. A specular composition – with at least 35% independent director and 10% customer representatives, is required for the board of directors.

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[98] See §750, Dodd-Frank Act, n 15 above. The CFTC and the SEC agreed to adopt same criteria to fix the limitation on ownership interests for both DCOs and CAs.

[99] See CFTC 'Governance Requirements for Derivatives Clearing Organizations, Designated Contract Markets, and Swap Execution Facilities; Additional Requirements Regarding', available at http://www.cftc.gov/ucm/groups/public/@lrfederalregister/documents/file/2010-31898a.pdf; see SEC, 'Ownership Limitations and Governance Requirements for Security-Based Swap Clearing Agencies, Security-Based Swap Execution Facilities, and National Securities Exchanges with Respect to Security-Based Swaps under Regulation MC', available at http://www.sec.gov/rules/final/2012/34-68080.pdf.

On the other hand, in a SEC-supervised CA, two different governance models may be deployed, depending on the ownership structure adopted. If the CA opted for first ownership structure, 35% of the directors must be independent, with no material relations with the CCP and its members, the nominating committee must be composed of a majority of independent directors and any other committee that has the authority to act on behalf of the board must be composed of at least 35% independent directors. If it opted for the second ownership structure, the majority of the directors must be independent, the nominating committee must be composed solely of independent directors and any other committee that has the authority to act on behalf of the board must be composed of a majority of independent directors.

As in the EU regime, margin and capital requirements are the basis for CCP financial stability regulation under the new regime. Initial and variation margin must be collected by CCPs for each cleared transaction in order to guarantee the risk of underlying open exposures, and are the first available resources that a CCP can use in the case of default by a clearing member – margins must be managed by CCPs in segregated accounts and refer to specific clearing members. In addition, capital requirements, including a minimum capital requirement and a mandatory default fund, are designed to provide the CCP with the financial strength needed to deal with the potential defaults of its members or with stressed situations in the financial markets.

With respect to clearing in the securities markets, the SEC, as already noted, is responsible for the oversight of CAs, which must be registered with the Commission as self-regulatory organizations. The SEC distinguishes between two types of CAs: clearing corporations – CCPs in a strict sense, which provide clearing, setting and novation services and which are subject to Dodd-Frank Act regulation; and clearing depositories – CSDs

which provide settlement and depositary functions for securities transactions. In the latter case, regulators have left some space for private regulation, empowering CSDs to decide on their internal governance structure.

b) The regulation of TRs

With respect to TRs, the 2010 Dodd Frank Act requires any swap, whether cleared or not, to be reported to a 'swap data repository', or if no trade repositories are available, to the relevant regulator: either the CFTC or the SEC. Reporting information must include both creation data (the primary economic terms of the transaction: price, amount, volume, parties, duration, and initial margins) and continuation data (any variation to economic terms, including margin variation – both in real-time and on a daily basis).[100] TRs, like CCPs, must be authorized by and registered with the relevant authority – the SEC or CFTC – which has extensive powers to regulate their activities.[101] TRs are also required to publicize data on swap transactions and on formal request, to share and disclose this data with domestic and foreign regulators.[102]

IV. CONCLUSIONS

FMIs are one of the cornerstones of the crisis-era regulatory reform agenda for financial markets. This chapter examines the role that trading and post-trading FMIs, and their new regulatory regimes, are playing in the related expansion of 'public' securities and derivatives markets and shrinkage of 'private' markets.

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[100] With regard to transparency, the 2010 Dodd-Frank Wall Street Act contains a a modification of §13(d), 13(f), and 13(g) concerning disclosure rules of relevant holding [it is not entirely clear what this is referring to – the 1934 Act?] Perhaps it could be removed?. More precisely the Dodd-Frank expressly includes within the beneficial ownership reporting requirements the market participant who become or is deemed to become a beneficial power of a security upon the conclusion (assuming a long or short position) of a security based swap under the SEC rules.

[101] The 2010 Dodd-Frank Act does not contain any provisions on the recognition of non-US TRs.

[102] See §727 of the 2010 Dodd-Frank Act

The crisis had a profound impact on the policy/regulatory discussion on FMI regulation, leading to direct public intervention and a restructuring of securities and derivatives markets, and to a withdrawal from self-regulation, particularly in the derivatives segment. The guiding principles for these reforms were set at international level, while implementation of these principles has occurred at national level. The four pillars set by the FSB – standardization, mandatory trading, mandatory clearing, and mandatory reporting – were the common bases for the national regulatory initiatives, which, although sharing the same principles and aiming at the same results, adopted similar, but different solutions. For instance, both the EU and US regulation focuses the new derivative scenario on the role of CCPs: standardized derivatives must be centrally cleared; CCPs must be authorized by the competent regulatory authorities; CCPs must have sound risk management practices, they must have a solid capital structure, etc. However analyzing the single norms, there are differences and nuances in the final solution adopted. For instance, the EU regulation does not provide for any ownership limits on CCP's members, while, as described above, both the CFTC and the SEC has set up stringent limits for CCP members' ownership and voting powers. On the other, the approach adopted on structuring the risk management committee, despite differing in small details, share the same spirit of having a committee composed both by a third of independent directors and also representatives of customers.

The analysis in this chapter started with developments in the trading venues FMI segment and moved on to FMIs in the post-trading segment (CCPs, CSDs, and TRs), and showed that regulators are now more deeply involved in FMIs' governance and operation. Regulators acknowledged the importance of FMS as systemic mechanisms to ensure stability and to foster efficiency in the financial market. This resulted in regulatory initiatives, either in the form of recommendations for FMIs or as strict rules, which move in the direction of

increasing the systemic scope of FMIs, introducing elements of publicity in private markets, and calling for higher public supervision. The new regulatory regime and the related move towards making FMIs more public in nature reflects the current characterization of FMIs as potential sources of liquidity and as transparency providers to the markets, and as mechanisms to mitigate systemic risk. The crisis-era regulation of FMIs is supporting the current trends from private to public markets, through intermediate and hybrid forms of semi-public markets. Regulators, by operating on trading infrastructures and focusing on transactions and intermediaries, intervene at a micro-level. They promote trades concentration on formal trading venues with appropriate level of pre and post trade transparency with the aim of increasing market efficiency, reducing transaction costs, and enhancing liquidity in the market. On the other hand, at a macro-level, regulators reshaped the FMI's scenario institutionalizing the role of CCPs, TRs, and CSDs as mechanisms to mitigate systemic risk, foster transparency vis-à-vis regulators, and promoting stability.

This market and regulatory trends have a global dimension: the review in this chapter of the EU and US implementation of international guidelines with respect to FMIs, and the related global market' reaction has revealed that regulators are moving uniformly in setting-up the new regulatory framework for FMIs, and that the FMIs' phenomenon is becoming really transnational with respect to regulation and to its participants.

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