European Market Infrastructure Regulation (EMIR)

Regulation of OTC derivatives in the European Union
Derivatives, especially those traded bilaterally, or ‘over-the-counter’ (OTC), played an important role during the 2007-2008 financial crisis. This publication aims to explain derivatives in simple terms, to place them in the context of the financial crisis and to explain the regulatory response initiated at international (G20, USA) and European level.

PE 603.984
doi:10.2861/017300
QA-02-17-724-EN-N

Original manuscript, in English, completed in June 2017.

Disclaimer and Copyright

This document is prepared for, and addressed to, the Members and staff of the European Parliament as background material to assist them in their parliamentary work. The content of the document is the sole responsibility of its author(s) and any opinions expressed herein should not be taken to represent an official position of the Parliament.

Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the European Parliament is given prior notice and sent a copy.


Photo credits: © envfx / Fotolia.

eprs@ep.europa.eu
http://www.eprs.ep.parl.union.eu (intranet)
http://epthinktank.eu (blog)
EXECUTIVE SUMMARY

Derivatives – financial instruments the value of which is based on the performance of underlying assets – have been used for centuries (Aristotle provides one of the earliest accounts). They are principally used by market participants to hedge, i.e. protect a party, from market risk (e.g. forwards, futures, swaps and options), or against credit risk (e.g. credit default swaps), or to speculate.

Derivatives can be traded on a trading venue, or ‘over-the-counter’ (bilaterally). Typically standardised derivatives (e.g. futures) are traded in trading venues where prices are publicly displayed, while non-standardised derivatives (e.g. swaps) are traded over-the-counter (OTC) where they are tailored to the needs of the parties that trade them (the counterparties) and their prices remain private.

Despite the protection they obtain from using derivatives, counterparties, especially those entering OTC contracts, are not immune from another form of risk – counterparty risk – which these instruments present, due to the longevity of the contracts in comparison to ‘traditional’ financial instruments. These risks are managed over time by the clearing function. Clearing can occur at bilateral level between two counterparties to a particular trade, at multilateral level, or through a central counterparty (CCP).

With the technological revolution of the last twenty years and the deregulation of financial markets, derivatives trading quickly grew to astronomical amounts. At the same time, the fact that they were principally traded bilaterally, allowed for their customisation, but preserved their opacity. This, among other things, played a significant role in the 2007 financial crisis and led to an international effort to regulate them. The United States of America (USA) adopted the Dodd-Frank Act in 2012, whilst the European Union (EU) adopted the European Markets Infrastructure Regulation (EMIR) in 2012. At their introduction, it was calculated that these regulations combined would capture close to 90% of the global OTC derivatives market. Both have a broadly similar scope of application and contain similar provisions, which require the clearing of eligible contracts. In addition, they require reporting of OTC derivatives and put in place strict capital and collateral requirements for entities that trade them. Finally, the legislation creates a regulatory framework for trade repositories (TR) – support infrastructures in the form of electronic databases that serve as central registries for all relevant economic and legal information related to derivatives contracts – and upgrade the existing regulatory framework for central counterparties.

In 2015, the European Commission undertook a comprehensive review of EMIR in the context of its Regulatory Fitness and Performance (REFIT). The Commission organised consultations with stakeholders and received reports from the European Systemic Risk Board (ESRB), the European Central Bank (ECB), the European Securities Markets Authority (ESMA), and the European System of Central Banks (ESCB). Following these reports, in May 2017, the Commission proposed amendments to EMIR and adopted a communication, outlining further changes to EMIR and setting out its intentions on how to respond to new emerging challenges in derivatives clearing (including the planned withdrawal of the United Kingdom (UK) from the European Union). These two Commission documents are outlined in more detail in the accompanying 'EU Legislation in progress' briefing, ‘Regulation of OTC derivatives – Amending the European Market Infrastructure Regulation (EMIR)’. (A further proposal to amend EMIR, to ensure more consistent and robust supervision of central counterparties, was adopted on 13 June, and will be covered in a forthcoming briefing.)
# TABLE OF CONTENTS

1. Introduction .................................................................................................................. 3
2. Basics – derivatives and clearing ................................................................................. 3
   2.1. Derivatives ............................................................................................................... 3
   2.2. A stylised life-cycle of a derivatives contract ......................................................... 8
   2.3. Clearing ................................................................................................................... 10
   2.4. Trade repositories ................................................................................................. 13
3. The regulation of OTC derivatives prior to the crisis .................................................... 13
   3.1. Before the 2008 crisis ............................................................................................ 13
   3.2. The 2008 financial crisis ....................................................................................... 14
4. Preliminary work ............................................................................................................ 16
   4.1. Main shortcomings highlighted ............................................................................ 16
   4.2. International developments and commitments ..................................................... 16
   4.3. Reform in Europe – the road to EMIR ................................................................. 17
5. Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories (EMIR) ......................................................................................... 19
   5.1. Summary of Regulation (EU) No 648/2012 ......................................................... 19
   5.2. Subject matter, scope and definitions (Articles 1-3) .............................................. 20
   5.3. Clearing, reporting and risk mitigation of OTC derivatives (Art. 4-13) ............... 20
   5.4. Authorisation and supervision of CCPs (Articles 14-25) ..................................... 22
   5.5. Requirements for CCPs (Articles 26-50) ............................................................. 23
   5.6. Interoperability arrangements (Articles 51-54) ..................................................... 26
   5.7. Registration and supervision of trade repositories (Articles 55-77) .................... 27
   5.8. Requirements for trade repositories (Articles 78-82) .......................................... 28
   5.9. Common provisions (Articles 83-84) ................................................................. 28
6. Subsequent amendments and related delegated acts .................................................... 28
   6.1. Subsequent amendments ....................................................................................... 28
   6.2. Main (technical) delegated acts .......................................................................... 29
   6.3. Other delegated acts ............................................................................................ 31
   6.4. CCP equivalence decisions ................................................................................... 31
7. The 2015 EMIR review ................................................................................................. 31
   7.1. Initial initiatives .................................................................................................... 31
   7.2. Further institutional contributions – the European Central Bank ....................... 33
   7.3. Recent academic work on the subject .................................................................. 34
   7.4. Outlook .................................................................................................................. 35
8. Main references ............................................................................................................ 36
1. Introduction

While many people have heard or read that ‘derivatives are financial weapons of mass destruction’¹ fewer know that derivatives have been around since antiquity. Indeed, as early as 350 BC, Greek philosopher Aristotle relates an anecdote about Thales the Milesian using and profiting from an option-like instrument.² Despite this long history, and the fact that markets in such instruments grew impressively in the last 20 years, derivatives went largely unregulated, until the 2008 financial crisis. The role played by derivatives in the crash led to an international effort to regulate them. While the United States (US) adopted the Dodd-Frank Act in 2012, the European Union (EU) adopted the European Markets Infrastructure Regulation (EMIR) in 2012. When they were introduced, it was calculated that these regulations combined would capture close to 90% of the global OTC derivatives market.³ Both have a broadly similar scope of application and contain similar provisions, which require the reporting of OTC derivatives and the clearing of eligible contracts. Furthermore, they put in place strict capital and collateral requirements for OTC derivatives that remain cleared (i.e. those traded directly between the two parties without using a central counterparty (CCP), to act as an intermediary for the trade). Finally, they create a regulatory framework for trade repositories and upgrade the existing regulatory framework for CCPs. This paper places the various elements of EMIR in their context.

2. Basics – derivatives and clearing

2.1. Derivatives

2.1.1. Definitions and main elements

Financial assets are tangible assets that derive their value from a contractual claim as to what they represent. For example, a security (e.g. a stock), confers a right to income or ownership (e.g. a company’s equity). Financial instruments are tradable financial assets. Derivatives, are financial instruments whose value is based on the performance of underlying assets.

The common elements of most derivatives are: (i) the parties to the agreement – the future buyer and seller, known as counterparties; (ii) the underlier – an asset⁴ or a reference price,⁵; (iii) the future price at which the ‘underlier’ can be sold (specified by

---

¹ In the 2002 annual letter to the shareholders of Berkshire Hathaway, Warren Buffet wrote ‘We try to be alert to any sort of megacatastrophe risk, and that posture may make us unduly apprehensive about the burgeoning quantities of long-term derivatives contracts and the massive amount of uncollateralized receivables that are growing alongside. In our view, however, derivatives are financial weapons of mass destruction, carrying dangers that, while now latent, are potentially lethal’.

² ‘He [Thales the Milesian] was reproached for his poverty, which was supposed to show that philosophy was of no use. According to the story, he knew by his skill in the stars while it was yet winter that there would be a great harvest of olives in the coming year; so, having a little money, he gave deposits for the use of all the olive-presses in Chios and Miletus, which he hired at a low price because no one bid against him. When the harvest-time came, and many were wanted all at once and of a sudden, he let them out at any rate which he pleased, and made a quantity of money. Thus he showed the world that philosophers can easily be rich if they like, but that their ambition is of another sort’. Aristotle ‘Politics’, book 1.


⁴ A commodity, e.g. corn or natural gas, or a security, e.g. stocks or bonds.

⁵ e.g. interest rate, foreign exchange rate.
the counterparties), as well as a **future date**, specified in the contract, before or on which the transaction must occur.⁶

Derivatives are used for four⁷ main reasons: to **hedge** against (reduce or eliminate) a particular risk, to take on additional risk by **speculating** (betting on the direction of future price movements or that of creditworthiness), in **arbitrage** between the derivatives and underlying markets when there are price differences between them, and to **replicate** other financial instruments.⁸

2.1.2. ‘Basic’ derivatives

The first category of derivatives are mainly used to protect a party from **market risk** – the risk that the underlying asset’s value will be impacted by a change in value of the whole market or asset class, because of economic conditions (or other factors). While many derivatives fall into this category, they are usually split, in four main sub-categories.

**Forwards** involve an agreement between two parties to purchase a defined asset at a fixed price in the future.⁹ These derivatives, therefore, oblige one party to buy the underlier (and for the other party to sell it) for a set price – the **delivery price** – at some date in the future – the **delivery date**.

Among the most common forward contracts are: **foreign exchange** contracts, which are agreements on the price of one unit of currency in units of another (e.g. €1 for US$1.25) at some point in the future; contracts in **energy commodities** markets, where buyers and sellers agree in advance on large purchases of commodities (such as oil or gas) in the future; and money itself. In this last case, also known as a **forward rate agreement** (FRA), the underlier and delivery price are a fixed amount of money (e.g. €1 000 at 3.5 %) and the delivery date at a specified time in the future (e.g. 1 year).

### An example of a forward contract

On 10 January, an EU entrepreneur, weary of the effects of possible currency fluctuations on the price of a product, wants to ensure the purchase of 10 000 units of a US product for €100 000, (which, at the 10 January exchange rate, are worth US$125 000) at the end of the year. To do so, she enters into a currency forward contract with the producer, or another party, agreeing to pay €100 000 and receive US$125 000 on 10 December, no matter what the exchange rate is on that date.

The key benefit of such contracts is **mitigation of uncertainty**, as the future price is already agreed the day the contract is agreed. Another, (in contrast with futures), is the **freedom** afforded parties to such a contract to **define its terms**. With benefits, however, also come risks. The main risk in such a contract is that one party cannot honour their commitment. This is an example of **credit risk**. To mitigate that risk, parties can post **collateral** with each other (cash, securities), which the gaining party keeps if the other walks away.¹⁰

---

⁶ Michael Durbin ‘All about derivatives’, 2nd edition. p.1
⁷ European Commission ‘European Financial Stability and Integration Report 2012’, p.32
⁸ Of course, these this is not to say that purchasing any of the above instruments is without cost. Indeed, they come at a **premium** which investors must take into account before entering the contract.
⁹ ‘All about derivatives’, op. cit. p.13-23
¹⁰ With collateralisation, both parties mark-to-market contracts to monitor the build-up of claims as the contract’s value evolves.
Futures are standardised forward contracts, typically traded on a regulated exchange\textsuperscript{11} rather than bilaterally (or ‘over-the-counter’). As a result, futures differ from forwards in three important ways:\textsuperscript{12} (i) typically, the buyer and seller to a futures contract do not know each other;\textsuperscript{13} (ii) the terms\textsuperscript{14} of the contracts are strictly defined and parties must choose from predefined contracts; (iii) parties to a futures contract settle at the end of every trading day, and not on delivery (see text box below).

Like forwards, futures have underliers that fall into two groups: commodity underliers, physical goods that can be (but need not be) physically delivered,\textsuperscript{15} and financial underliers, securities, currencies, or even indexes. As with forwards, counterparties in futures contracts face credit risk. Instead of posting collateral, however, counterparties rely on marking-to-market and margins, which play a similar function.

\begin{center}
\textbf{Credit risk mitigation in futures contracts}
\end{center}

\textbf{Mark-to-market (MTM)} involves adjusting the value of an asset portfolio to reflect the latest closing prices and not the price the underlier for which was purchased. At the end of every trading day, all outstanding futures positions are marked-to-market by the exchange markets, to determine each party’s gains or losses. Parties with gains get some money that same day, while those with a loss get a bill. It is also worth noting that parties who lose, do not necessarily need to pay their entire amount of loss every day, which would be impractical. Instead, based on their creditworthiness and on other factors, they may be entitled to pay only a percentage of their obligation into a margin account. If their obligation exceeds a certain threshold, they receive a margin call (a request to place more funds in the account).

\textbf{Swaps} involve an agreement between two parties to exchange one series of cash flows for another.\textsuperscript{16} For example, the two parties might agree to exchange a set of fixed Japanese yen cash flows for a set of US dollar flows (‘currency swap’), or a set based on a fixed interest rate, for those based on a variable rate. This last swap is also known as a ‘plain-vanilla swap’. It is worth noting here that, ‘the key practical difference between a currency swap and a non-currency swap has to do with the notional [value]\textsuperscript{17} (...) in a single-currency swap, the notional amount need not change hands (...) but in a currency swap, we need to think about foreign-exchange rates. The purpose of a currency swap is to remove interest rate uncertainty, so this exchange of notional amounts happens to remove exchange rate uncertainty’.\textsuperscript{18}

Lastly, \textbf{options} are contracts that give the holder the right, but not the obligation, to buy or sell something at a fixed price in the future.\textsuperscript{19} An example here is an investor who would like to invest in a stock, anticipating that the stock’s price will rise, without actually buying and holding the stock itself. In this case, the investor can buy an option on the stock, setting a price (the ‘strike price’) to be paid at a future date (the expiration date).

\begin{flushleft}
\textsuperscript{11} Such as the \textbf{CME Group} in the USA or the \textbf{London Stock Exchange} or \textbf{Deutsche Börse} in the EU.
\end{flushleft}

\begin{flushleft}
\textsuperscript{12} ‘All about derivatives’, op. cit. p.23-28
\end{flushleft}

\begin{flushleft}
\textsuperscript{13} The exchange matches buyers and sellers.
\end{flushleft}

\begin{flushleft}
\textsuperscript{14} The type, quantity and grade of underlier; its delivery price and date; the delivery location, etc.
\end{flushleft}

\begin{flushleft}
\textsuperscript{15} See, in this context, the amusing experiment conducted by two well-known financial journalists.
\end{flushleft}

\begin{flushleft}
\textsuperscript{16} ‘All about derivatives’, op. cit. p.29-37.
\end{flushleft}

\begin{flushleft}
\textsuperscript{17} The notional value is the total amount of a security’s underlying asset current price in the market. If an investor has a €1 000 000 investment in bonds that pay a 2 \% coupon rate (rate of interest) and the investor wishes to swap that with an investor for a variable rate, the notional amount would be €1 000 000.
\end{flushleft}

\begin{flushleft}
\textsuperscript{18} ‘All about derivatives’, op. cit. p.35.
\end{flushleft}

\begin{flushleft}
\textsuperscript{19} ‘All about derivatives’, op. cit. p.37-58.
\end{flushleft}
If, on that date, the price of the stock is higher, the investor can exercise their option and purchase the stock from the option writer at the strike price (say €20) instead of the actual price of the stock (say €25), thus realising a profit. On the other hand, if the actual price is lower than the strike price, the investor can decide not to purchase the stock.

2.1.3. Credit derivatives
While the aforementioned derivatives deal with the market risk associated with the price of some underlier, credit derivatives deal with the credit risk associated with the performance of a party in fulfilling its financial obligations. Their value, in turn, derives only partly from the value of the underlier, that is, only to the extent that this value is affected by a ‘credit event’.  

A credit event is any credit-related event that triggers a contingent payment. In theory, it can be anything to which the counterparties agree. In practice, the International Swaps and Derivatives Association (ISDA) defines a series of events which may serve as a template to the parties: bankruptcy (seeking court protection against creditors when a company can’t pay its bills); failure to pay (missing a payment); obligation default (when the lender declares the borrower in violation of payment terms and demands return of the principal); obligation acceleration (when the terms of a debt call for immediate payment of some or all, of a debt ahead of schedule); repudiation/moratorium (when a firm or governmental authority challenges the validity of the relevant obligation); restructuring and governmental intervention (bail-in; only applicable for financial institutions).

The most common credit derivative is the credit default swap (CDS). Other common credit contracts are the total return swap and the credit linked note. The protection buyer pays a premium (also called a CDS spread), typically expressed in basis points, payable annually, to the protection seller. The value and payoff of the CDS is determined by the creditworthiness of a third party, the reference entity. This entity usually issues some debt security. Should the reference entity experience one or more credit events over the term of the swap, the protection seller agrees to compensate the protection buyer for any loss incurred as a result of the credit event (e.g. by purchasing the debt security at face value).

The primary buyers of CDS are commercial lenders and corporate bondholders. The primary sellers tend to be insurance companies and large financial institutions. CDS can be cash settled (the seller pays the net loss incurred by the buyer) or physically settled (the buyer transfers ownership of a portfolio of debt securities to the seller and receives the face value in return).

2.1.4. Possible benefits and risks
The European Commission notes that, according to traditional financial theory, derivatives provide a number of economic benefits. They facilitate risk-sharing (which in turn should increase market participation) amongst investors, aid price discovery,

---

21 Other common credit contracts are the total return swap and the credit linked note.
22 One basis point is 0.01 %.
23 For example, a Deutsche Bank CDS with a spread of 130 bps means that, to insure €1 000 000 of Deutsche Bank debt, the buyer needs to pay €13 000 annually.
25 The transfer of financial risks to parties who either want or can take on or manage those risks.
26 Price discovery is defined as ‘the process of establishing a market price at which demand and supply for an item are matched’. Derivatives aid price discovery by providing the market’s view on future
thereby assisting managerial decision-making for corporations, and provide leverage. These actions should, in turn, theoretically lead to additional economic activity.27

However, as early as 2004, concerns were raised28 with regards to derivatives. Chief among these was that derivatives can be used to increase speculation or to circumvent prudential market regulations – especially the latter – because the risk shifted is not subject to collateral (or margin) requirements, and can result in new types and levels of credit risk. Derivatives can also be a source of liquidity risk,29 especially in the interest rate swaps market.30 Lastly, derivative can cause systemic risk, arising particularly from the strong linkages between derivatives and underlying asset and commodity markets.

2.1.5. Over-the-counter (OTC) derivatives – market

Derivatives can be traded on a trading venue,31 or ‘over-the-counter’32 (bilaterally). Typically standardised derivatives (e.g. futures) are traded in trading venues where prices are publicly displayed, while non-standardised derivatives (e.g. swaps) are traded over-the-counter (OTC), where prices remain private.

When determining the size of the OTC derivatives market, three figures should be considered. The notional amounts outstanding are the gross notional value of all derivatives contracts concluded and not yet settled on the reporting date. These amounts are used as a point of reference for calculations but are not necessarily actually exchanged. More accurate indicators of actual risk exposures in the derivatives markets are the gross market value (for market risk), which represents the maximum loss that market participants would incur if all counterparties failed to meet their contractual payments and the contracts were replaced at market prices on the reporting date; and the gross credit exposures (for counterparty risk). These deduct from the gross market value the amounts ‘netted’33 with the same counterparty across all risk categories under legally enforceable bilateral netting agreements.34
The difference in amounts traded on exchange and OTC is significant: in a 2009 paper, Lynton Jones noted that, ‘at the start of 2007 the global market value of all OTC derivatives contracts were some eight times greater than the equivalent exchange traded derivatives’. The amounts are indeed impressive: at the end of 2008, OTC derivative contracts had reached $598 trillion (€430 trillion) measured by notional value and US$35 trillion (€25 trillion) by gross market value. By mid-2016, this amount was slightly smaller: US$544 trillion in notional amounts, for US$20.7 trillion in gross market value. CCP clearing also rose to 62 % of the US$544 trillion reported (around US$337.3 trillion) in notional amounts, ‘almost double the percentage in 2009’.37

By end-June 2016, the size of the European OTC derivatives market in terms of notional outstanding was around €460 trillion, according to the EMIR public data for end-June 2016.38 The largest asset class, reaching 85 % of the notional outstanding at end-June, were interest rate swaps (IRS), followed by foreign exchange (FX) derivatives (9 %), while credit, commodity and equity-linked derivatives together made up around 6 %. The largest asset class – interest rate swaps – are used to hedge against the risk of changes in interest rates. For example, a manufacturer with a variable-rate bank loan may seek to swap the variable (and therefore uncertain) interest payments under the loan arrangement for fixed-rate payments, to allow it to better plan its future payment obligations. As for contracts in foreign exchange or credit derivatives, they are used to protect against the default of a particular entity or group of entities to which the contract buyer may be financially exposed. For example, a bank may seek to protect itself against the default of a firm or group of firms to which it has extended loans.40

2.2. A stylised life-cycle of a derivatives contract

Figure 1 – A derivatives transaction from trade to confirmation

A stylised life-cycle of a derivatives contract begins preceding the trade, when an institution will typically conduct credit reviews and establish credit lines and trading limits for its counterparties. This stage will be followed by trade execution, which results in the creation of a derivatives contract and occurs when two parties agree to a

38 European Central Bank ‘Looking back at OTC derivative reforms – objectives, progress and gaps’, Economic Bulletin Issue 8, 2016. Regarding the amounts reported, please note that, according to the ECB ‘In absolute terms, (…), the notional outstanding values of the EMIR public data and the BIS semi-annual survey (global size of around €490 trillion at end-June 2016) cannot be reconciled, which is explained by the methodological differences of the two datasets’.
39 80 % at global level, as reported by BIS. The second category, at global level, amounts to 16 %.
41 ‘Payments, securities and derivatives, and the role of the Eurosystem’, op. cit. p.100
transaction, whether on a trading venue or OTC. In the first case, orders are matched automatically on derivative exchanges’ order books. Over-the-counter execution may take a variety of forms (e.g. over the phone, electronically), depending on the degree of standardisation of the contract and on market preference for the particular contract. Once a trade has been executed, its details are captured. This action signals the end of the trading stage (performed by the traders) and marks the beginning of the ‘post-trade’ stage (performed by administrative support personnel, or ‘back office’). On-exchange, capture is done by the exchange. For OTC, the parties capture the details of the trade in their own internal systems. Following the trade capture, the trade is verified, a process involving trade capture systems or phone confirmations.\(^{42}\) The final stage in the post-trading process, which results in the creation of the final record of the derivatives transaction, is confirmation. Contracts are confirmed in two ways: either through trade affirmation,\(^ {43}\) or trade matching.\(^ {44}\) In both cases, the two parties to the trade are obliged to store all information on the contract in their internal systems and maintain this for the duration of the contract. In addition, depending on the procedures used, the trade may, at the point of confirmation at the latest, also be reported to a trade repository (see point 2.4).\(^ {45}\) Following confirmation, a trade will undergo further processes, which include collateral management,\(^ {46}\) portfolio reconciliation,\(^ {47}\) netting, and portfolio compression (see below).

Finally, counterparties may, for a variety of reasons, wish to terminate a derivative contract before its maturity date. In addition to parties honouring the contract before maturity, a termination can be achieved through portfolio compression, or by the contract being given to another trading party through assignment.\(^ {48}\)

Portfolio compression is the process of cancelling out mutually offsetting contracts. Compression reduces the overall amount of trades and, thus, the notional size of the market, therefore reducing counterparty credit risk, operational risk,\(^ {49}\) and the cost of capital.\(^ {50}\) This first point (risk exposure reduction) was particularly useful in the CDS market during the financial crisis, contributing in removing a notional value of some

\(^{42}\) Essential generic information included in a confirmation includes the deal’s reference number, the type of transaction, the name and location of the counterparty, the price agreed and the currencies involved. ‘Business Knowledge for IT in Investment Banking: A Complete Handbook for IT Professionals’, Essvale Corporation Limited, 2006, p.62.

\(^{43}\) In affirmation, one party provides the relevant details to the other, which then verifies that information, resulting in an agreed trade.

\(^{44}\) Trade matching involves the two parties exchanging their records of the trade or submitting them to a third-party service provider. If the trade details match, the trade is agreed.


\(^{46}\) This process involves calculating collateral requirements and facilitating the transfer of collateral (usually provided in cash, securities or guarantees) between the parties concerned. (Ibid. p.101).

\(^{47}\) The verification of the existence of outstanding contracts between counterparties and the comparison of their principal economic terms. If disputes arise regarding collateral (or payment) obligations, reconciliation provides means of resolving them. (Ibid. p.101).

\(^{48}\) Assignment is the process in which one counterparty (the transferor) exits a trade contract and is replaced by another party (the transferee), which becomes the new counterparty to the remaining original party. Assignment is also called ‘novation’ (see footnote 51).

\(^{49}\) Given there are fewer processing steps from execution to termination, and that during that stage, less collateral management and settlement of cash payments than if the trade was held to maturity.

US$50 trillion from the market and from parties’ balance sheets by means of compression between the beginning of 2008 and spring 2010. While additional trading has taken place in the meantime, this compression saw the notional size of the market halved to some US$30 trillion, from its peak of over US$60 trillion.51

2.3. Clearing

Counterparty risk is present in derivatives, due to the longevity of the contracts (in comparison to traditional financial instruments): post-trade aspects (e.g. exchange of cash and transfer of ownership) under derivative contracts may last up to several years.52 In case a party defaults, the non-defaulting party can be exposed to losses due to adverse price movements in the value of the portfolio until it is able to replace the defaulter with a new counterparty.53 These risks are managed over time by the clearing function. Clearing can occur at bilateral level between two counterparties to a particular trade, at multilateral level, or through a central counterparty (CCP).

2.3.1. Historical evolution

James T. Moser54 outlines three steps in the historical evolution of clearing systems: direct settlement (bilateral reconciliation of contractual commitments through delivery or by offset); (multilateral) settlement ‘by ringing’ – involving arrangements between three or more counterparties with interests to settle, which allows multilateral netting by extending the set of counterparties that can settle a single contract;55 and settlement with complete clearing, in which a central counterparty (CCP) intervenes as counterparty to each side in exchange-traded contracts. The evolution from direct settlement to ringing resulted from the need for mitigation of counterparty risk, while ringing evolved to ‘complete clearing’ to mitigate certain inherent drawbacks.56

2.3.2. Central counterparty clearing

By replacing agreements between buyers and sellers with contracts between these buyers and sellers and the central counterparty (CCP) through a process known as novation,57 the CCP can ‘net out’58 these offsetting transactions.

Any position a CCP takes with a counterparty must always be offset by an opposite position with a second counterparty (‘matched book’). This way, the CCPs do not accept

---


53 ‘Over-the-counter (OTC) derivatives, central clearing and financial stability’ op. cit. p. 3.


56 In ringing (i) each member must monitor all of the others (since any member may become a substitute for the original counterparty); (ii) traders cannot keep their positions secret (since ring members may have to monitor each other’s positions), and by revealing this information they allow others to copy their trades or to profit by trading against them; and (iii) rings can be fragile and susceptible to systemic failure. ‘Let’s Make It Clear: How Central Counterparties Save(d) the Day’, op. cit. p. 4.

57 Novation is a process through which the original obligation between a buyer and a seller is discharged through the substitution of the CCP as seller to the buyer and buyer to the seller, creating two new contracts. The CCP becomes ‘buyer to every seller and seller to every buyer’.

58 See footnote 34.
market risk, since they have no exposure regarding the changes in market value of the trades into which they enter.\textsuperscript{59} They further preserve trading anonymity (only the CCP knows the overall positions of every trader); (indirectly) foster market liquidity; and reduce monitoring costs (since only the CCP has to monitor traders).\textsuperscript{60}

Nonetheless, CCPs are exposed to counterparty risk. They attempt to reduce this risk, by reallocating it through netting, collateralisation (margining), insurance, equity, and mutualisation.\textsuperscript{61}

**Figure 2 – Multilateral netting vs CCP clearing**

![Diagram showing multilateral netting vs CCP clearing](image)

Source: European Central Bank.

As seen earlier, contracting parties post collateral when entering into derivatives transactions so that, in case of a default, the losing side can seize the collateral posted to cover part or all of the amount owed. Parties in bilateral over-the-counter contracts can negotiate collateral details.\textsuperscript{62} In contrast, CCPs require firms entering into derivatives transactions to post margin:\textsuperscript{63} **initial margin**, collected when the contract is made, is intended to ensure that sufficient funds are held on behalf of each clearing member to cover losses between the time of a counterparty's default and the time the position is closed out, known as the **margin period of risk (MPOR)**;\textsuperscript{64} and **variation margin**, which is assessed and collected on a daily basis and represents profits and losses on open positions. CCPs set those margins with the aim of minimising (less than 1\%) the likelihood that any derivatives trader they clear for will suffer a loss on its cleared position that exceeds the amount of margin held. To do this, they typically set initial margin to reflect their estimate of the riskiness of the underlying transaction.\textsuperscript{65}

Nevertheless, CCPs cannot only rely on margins. Firstly because real world complications make them difficult to model, and because, while CCPs can adjust margins in response...
to changes in market conditions, margin changes can themselves be destabilising.\textsuperscript{66} For this reason, central counterparties also rely on other measures.

Historically, some CCPs purchased \textit{insurance} that covered some losses in the event of a default in excess of the defaulter’s margins. Insurance reallocates default losses from derivatives counterparties to the insurer’s equity holders.\textsuperscript{67}

As for-profit corporations (or subsidiaries of such corporations), CCPs hold equity they can use to absorb default losses.

In addition, CCPs typically require members to contribute to a \textit{mutualised default fund}, which protects the CCP in the event that the margin it holds is insufficient to cover losses on the positions of a defaulting member.\textsuperscript{68} Losses in excess of those covered by the defaulter’s margin and default fund contributions are drawn from the general default fund. If losses exhaust the fund, CCPs typically oblige members to make additional contributions, \textit{capital calls}, which are typically capped, often at an amount equal to the original contribution to the CCP default fund.\textsuperscript{69}

CCPs impose a range of \textit{risk-management} obligations on their members and undertake various related risk-management functions for the valuation of margin and collateral, monitoring the credit-worthiness of clearing members, and supporting orderly default.\textsuperscript{70}

\subsection*{2.3.3. An example of a trade cleared by a central counterparty}

An example of a CCP cleared trade\textsuperscript{71} would be a non-financial company that wishes to swap a variable interest rate on a loan with a fixed rate, and contacts its financial institution to arrange the swap. The bank finds a counterparty to trade with and contacts the CCP, who becomes a buyer for the bank and seller for the other counterparty. The risk of default of the counterparties is mitigated through the means detailed above.

If, despite the measures taken above, one of the parties defaults before the end of the contract, the CCP intervenes, for example by finding another counterparty to take on the swap contract. The CCP will offset this cost using the initial and variation margins. Should those be insufficient to cover the costs, CCPs have other financial resources at their disposal. The order in which these resources are used is known as the \textit{default waterfall}.

\subsection*{2.3.4. The default waterfall}

Initially, the defaulter’s resources are used, namely its margin and its contribution to the default fund. Once those resources are exhausted, CCPs can use their own equity or the default fund contributions of non-defaulting members. Lastly, some CCPs, under some circumstances, may utilise the margins of non-defaulting customers (usually limited to their initial contribution to the default fund) of a defaulting clearing member firm to satisfy the obligations of any defaulting customers.

\begin{footnotes}
\item\textsuperscript{66} C. Pirrong notes in this regard that large changes in margin can lead to liquidations of positions that influence prices, especially during unsettled periods.
\item\textsuperscript{67} Most CCPs have insurance against some operational risks because losses arising from such risks cannot be assigned to CCP default or guaranty funds’. ibid. p.9.
\item\textsuperscript{68} ‘Over-the-counter (OTC) derivatives, central clearing and financial stability’ op. cit. p.3.
\item\textsuperscript{69} ‘The Economics of Central Clearing: Theory and Practice’, op. cit. p. 10.
\item\textsuperscript{70} Niamh Moloney, EU securities and financial markets regulation, Oxford University Press, 2014, p. 576.
\item\textsuperscript{71} Example taken from ‘Central counterparties: what are they, why do they matter and how does the Bank supervise them?’ op. cit. p. 3.
\end{footnotes}
The various elements of the waterfall can be ordered in a variety of ways. Similarly, the proportion of each element varies according to the CCP.\(^\text{72}\) Ordering affects the incidence of loss, and can also affect its magnitude via its effect on incentives. For instance, putting CCP capital at risk at the first stage of the waterfall (after the defaulter’s resources) provides the CCP with a strong incentive to control risk, monitor its members, and choose margin levels prudently.

### 2.4. Trade repositories

When derivatives are traded in a trading venue, or cleared in a CCP, information about the contract is available at the trading venue or the CCP. On the contrary, in bilaterally cleared OTC derivatives, information on the contracts is usually stored in individual systems, which aren’t necessarily compatible, nor always updated. This creates uncertainty about counterparties and their exposures, and makes it difficult for risks to be monitored.

A **trade repository** (TR) is a support infrastructure (in the form of an electronic database) that serves as a central registry for all relevant economic and legal information related to derivatives contracts. It is a key means of storing and aggregating relevant information and making it available to authorities, market participants and other interested parties (such as CCPs). Trade repository services are a recent innovation, first being used in 2006 for credit derivatives. However, particularly given the lessons learned by market participants and public authorities as a result of the financial crisis that erupted in 2007, trade repository services are now being introduced for other OTC derivatives.

In 2016, six TRs were registered and supervised by ESMA. By the end of the year, they had collected nearly 44 billion reports in total, which included not only new trades but also their modifications and other lifecycle events.\(^\text{73}\)

### 3. The regulation of OTC derivatives prior to the crisis

#### 3.1. Before the 2008 crisis

Throughout financial history, derivatives have often been at the heart of financial scandals, leading in the significance of their losses and often causing defaults and bankruptcies. In many cases, operational risk was not properly managed, resulting in trading losses that were hidden from the risk management function of the financial institution and had accumulated over a period of up to several years.\(^\text{74}\)

Despite this, regulation in the run-up to the financial crisis was neither similar (in the EU and the USA) nor, most importantly, adequate—as was proven ex-post.

In the USA, prior to the Dodd-Frank Act of 2010, the main legislative act governing OTC derivative markets was the Commodity Exchange Act of 1936,\(^\text{75}\) as amended in 1974. While the amended act required nearly all futures and options to be traded on regulated exchanges and created a market regulator and supervisor (the Commodity Futures Trading Commission), it did not apply to over-the-counter derivatives.

---

72 See OFR ‘*New Public Disclosures Shed Light on Central Counterparties*’, March 2017, pp. 4-5.

73 ESMA’s supervision of credit rating agencies, trade repositories and monitoring of third country central counterparties *2016 annual report and 2017 work programme*.


75 Originally applied only to derivatives on domestic agricultural products.
Trading Commission (CFTC)), it was short-lived, as the 2000 Commodity Futures Modernization Act (and subsequent laws) all but deregulated the OTC derivatives market and weakened the regulatory and supervisory powers of the CFTC. This deregulation led to a sevenfold increase in OTC derivatives.

In the EU, the traditional view that OTC derivatives are financial instruments for professional use and thus require only light regulation also prevailed prior to the crisis. The principal regulation to which OTC derivatives were subject was the Basel framework for regulatory capital requirements. This viewpoint changed after the financial crisis.  

3.2. The 2008 financial crisis

The financial crisis was exacerbated by derivatives markets in various ways: first, ‘insurance companies such as AIG, (...) used CDS to sell protection on CDOs’ backed by sub-prime mortgages to such an extent that they were severely impaired when those CDOs experienced large losses from mortgage defaults. This in turn contributed to the weaknesses of the banks that had bought and relied upon the protection’ of these CDS. Also, ‘the failures of (...) Bear Stearns and Lehman Brothers were exacerbated by a run of their OTC derivatives counterparties’. Lastly, ‘CDS were deemed to be so risk-free (...) that financial institutions began to write ‘naked’ CDS, (...) offering the guarantee against default to investors who had no risk in any underlying mortgage backed instruments or CDOs. (...) these instruments allowed speculators to place the perfectly logical bet for little consideration (...) that those who could not afford mortgages would not pay them off’.

3.2.1. American International Group (AIG) near-collapse and bail-out

Investors investing in various types of debt obligations before the financial crisis used to protect themselves from counterparty risk by buying CDSs. This way, they transferred the default risk of the underlying debt to a CDS seller in a similar way to how the risk of an insurable event is transferred under an insurance contract.

However, despite this conceptual similarity, CDSs were much less regulated than insurance contracts. This led to two substantial disparities in the legal status of these instruments. First, CDS could be used not only to hedge against counterparty risk, but also to speculate on the default of debts owned by third parties. In addition, while insurance companies are required to set aside reserves in case of loss, firms selling CDSs

---


77 Collateralised Debt Obligations (CDO) are securities whose collateral pool is composed, among others, by bonds, loans, or other types of debt, as well as by asset-backed securities. See EPRS, ‘Understanding securitisation background – benefits – risks’, 2016.

78 Darrell Duffie ‘How Should We Regulate Derivatives Markets?’ The Pew Financial Reform Project, 2009. With regards to Bear Stearns, Duffie notes that, when in March 2008, the counterparties to Bear Stearns reduced their exposures to them as news of the bank’s weakness spread, they withdrew the cash collateral they had posted with Bear Stearns, thus reducing the bank’s liquidity and accelerating its failure.


81 In their 2009 paper ‘How Much Do Banks Use Credit Derivatives to Hedge Loans?’ Bernadette A. Minton, René Stulz and Rohan Williamson found that ‘Only 23 large banks out of 395 use credit derivatives and most of their derivatives positions are held for dealer activities rather than for hedging of loans’.
were exempt from such a requirement and thus failed to set aside reserves or collateral. This is what happened with the insurance company American International Group (AIG).

The collapse and near-failure of AIG on 16 September 2008 was a major event in the recent financial crisis. AIG, a global insurance and financial company with US$1 trillion in assets, lost US$99.3 billion during 2008 and was rescued with the coordinated help of the Federal Reserve Bank of New York, the US Federal Reserve System, and the Treasury. A large part of those losses (around US$50 billion) are attributable to two AIG activities, one of which was writing credit default swaps on over US$527 billion of assets (in notional amounts),\(^82\) which resulted in losses of US$33.9 billion by 16 September 2017.\(^83\)

For a long period before the financial crisis, AIG had an AAA credit rating. While, as seen above, during the life of a contract, parties post margin/collateral to mitigate counterparty risk, CDS issued by AIG were exempt from providing adequate collateral due to a special clause in the CDS agreements, based on (i) AIG’s high credit rating,\(^84\) and (ii) the fact that it only sold CDS on security tranches that were perceived to be very safe.\(^85\) Furthermore, due to the opaque nature of OTC derivatives, neither AIG’s counterparties knew its total exposure, nor were regulators able to detect the build-up of risk on its balance sheet.\(^86\)

When the subprime market led to counterparties making losses, AIG was asked to compensate them. Already in 2007, the company reported a loss on CDS, losing US$11.1 billion on CDS in the fourth quarter alone. With losses continuing in 2008, its credit rating was downgraded, which in turn triggered the special clauses in its CDS and prompted its counterparties to ask for collateral\(^87\) that AIG had not put aside. This resulted in its near-collapse, but also resulted in its counterparties coming under strain, as they no longer received protection payments. This strain, in turn, caused the same spiral as seen with AIG, that is, the counterparties came under pressure, their credit ratings were downgraded and they faced liquidity problems.

3.2.2. ‘Naked’ credit default swaps

Another problem pre-crisis was that purchasing CDS against assets, without having actual credit exposures to them, was possible. This allowed protection buyers to literally ‘bet’ on the default of the debts in which they had no direct interest\(^88\) – eloquently described as ‘buying life insurance on someone else’s life, and owning a license to kill.’\(^89\)

---

\(^82\) ‘These swaps were written on corporate loans (US$230 billion), prime residential mortgages (US$149 billion), corporate debt/collateralized loan obligations (CLOs) (US$70 billion) and multi-sector CDOs (US$78 billion)’ Robert L. McDonald and Anna Paulson ‘AIG in Hindsight’, NBER Working Paper No. 21108, 2015, p.18.

\(^83\) The other activity was the use by AIG ‘of insurance subsidiary assets to finance the outright purchase of Residential Mortgage-Backed Securities (RMBS) and real-estate-related CDOs’. ibid. p. 4.

\(^84\) This meant that a corporate ratings downgrade could lead to a large required collateral payment, but such a downgrade seems not to have been perceived as probable risk.


\(^87\) McDonald and Paulson note that between September 12th and September 15th, ‘Total collateral calls increased by US$8.6 billion, with Société Générale alone accounting for more than half of that increase’.


Furthermore, this entitled market participants to use CDS to manipulate financial markets,\textsuperscript{90} thus increasing market instability.

\textbf{4. Preliminary work}

\textbf{4.1. Main shortcomings highlighted}

The above issues highlighted two important aspects of CDS markets specifically and OTC derivatives markets broadly, that did not receive enough attention prior to the financial crisis: on the one hand OTC derivatives markets were opaque, which led to less than optimal monitoring, supervision and management of counterparty risk;\textsuperscript{91} and on the other, trading OTCs potentially creates instability in the markets for the underliers. Despite the fact that most OTC derivatives other than in the credit segment appeared less risky (as pay-out structures for e.g. IRS are more continuous in nature, the underlying markets are more liquid and the underlying risks more observable, risk management measures more solid and electronic systems more developed,)\textsuperscript{92} regulators deemed that all market segments should be strengthened to safeguard financial stability.

\textbf{4.2. International developments and commitments}

\textbf{4.2.1. The G20 summits}

In November 2008, two months after the collapse of Lehman Brothers, the \textbf{Washington G20 summit}\textsuperscript{93} listed ‘increasingly complex and opaque financial products’ as one of the root causes of the global financial crisis and asked ‘supervisors and regulators, building on the imminent launch of central counterparty services for credit default swaps (CDS) in some countries’ to ‘speed efforts to reduce the systemic risks of CDS and over-the-counter (OTC) derivatives transactions; that market participants support exchange traded or electronic trading platforms for CDS contracts; expand OTC derivatives market transparency; and ensure that the infrastructure for OTC derivatives can support growing volumes’. These demands became more specific at the \textbf{Pittsburgh summit} in September 2009, where G20 leaders called\textsuperscript{94} on the G20 Finance Ministers and Central Bank Governors ‘to reach agreement on an international framework of reform in the following critical areas’. The commitments, which were materialised in the EU through EMIR, were: (i) ‘all standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties’ by the end of 2012 at the latest; (ii) ‘OTC derivative contracts should be reported to trade repositories’ and (iii) non-centrally cleared contracts should be subject to higher capital requirements’. They reflected the fact that the part of the OTC derivatives market served by central counterparties performed better during the crisis

---


\textsuperscript{91} While regulators can obtain detailed information about the individual positions of the entities they regulate (they normally have the right to request any information from them), they cannot know either the exact size of the individual OTC derivatives market segments, or the detailed breakdown of the counterparty positions. This prevents them both from estimating the regulated entities’ magnitude of risks and from gaining a clear picture of their interconnectedness.

\textsuperscript{92} European Financial Stability and Integration Report, op. cit. p.53.


\textsuperscript{94} Pittsburgh summit 24-25 September 2009 – \href{https://www.g20.org/2009/09/25/leaders-statement/}{Leaders’ statement}. 
due to their stronger risk management and higher transparency of members’ exposures.\textsuperscript{95}

4.2.2. The Financial Stability Board recommendations

In an October 2010 report,\textsuperscript{96} the Financial Stability Board (FSB) made 21 recommendations, addressing practical issues that authorities could encounter in implementing their commitments. In short, the report asked for the standardised proportion of the market to be substantially increased; for authorities to identify factors to be taken into account when determining whether a derivative contract is standardised and therefore suitable for clearing, and to address the requirements relating to mandatory clearing, to risk management and to the supervision of CCPs; and for trade repository data to be comprehensive, uniform and reliable, to provide authorities with a global view of the OTC derivatives markets.

4.2.3. The Dodd-Frank Act

On 21 July 2010, President Obama signed into law the Dodd-Frank Wall Street Reform and Consumer Protection Act. The purpose of the Act (with a broader scope than EMIR) was to restructure the financial regulatory system to restore public confidence following the financial crisis and to prevent another crisis from occurring. OTC derivatives markets are regulated by Title VII\textsuperscript{97} of the Act, which aims at minimising the systemic risk of derivatives trading, creating transparency in derivatives markets and prohibiting entities holding customer deposits from engaging in speculative derivatives activity.

The regulatory authority over swap agreements is divided between the Security and Exchange Commission (SEC) – which has authority over ‘security-based swaps’ – and the CFTC – which has authority over all other swaps.\textsuperscript{98} With regards to clearing, all ‘standard’ swaps must be cleared and exchanged on trading venues. Lastly, regulators have set extensive reporting data obligations for parties to swap agreements.

4.3. Reform in Europe – the road to EMIR

4.3.1. Commission consultations and communications

The European Union was very quick to react to the issue of OTC derivatives regulation. A report published in February 2009 (only three months after the 2008 Washington summit) by a high-level group of experts\textsuperscript{99} chaired by Jacques de Larosière noted that ‘the present crisis results from the complex interaction of market failures, global financial and monetary imbalances, inappropriate regulation, weak supervision and poor macro-prudential oversight’ and proposed a set of recommendations in three main areas: a new regulatory agenda (correcting weaknesses, equipping Europe with a consistent set of rules, as well as measures relating to corporate governance and crisis management and resolution); stronger coordinated supervision (replacing the EU’s existing supervisory architecture with a European system of financial supervisors (ESFS), consisting of three

\textsuperscript{95} ‘Looking back at OTC derivative reforms – objectives, progress and gaps’, p.2 footnote 4.

\textsuperscript{96} Financial Stability Board report ‘Implementing OTC Derivatives Market Reforms.

\textsuperscript{97} Title VII (Wall Street transparency and accountability) – subtitle A: regulation of over-the-counter swaps markets.

\textsuperscript{98} i.e. interest rate swaps, FX or currency swaps, CDS, or agricultural commodities swaps. Securities and Exchange Commission Dodd-Frank spotlight.

\textsuperscript{99} Including Leszek Balcerowicz, Otmar Issing, Rainer Masera, Callum Mc Carthy, Lars Nyberg, José Pérez, and Onno Ruding.
European Supervisory Authorities\(^{100}\) and a European Systemic Risk Board (ESRB) and global coordination/cooperation (including ensuring regulatory consistency and enhancing cooperation among supervisors).

The report fed into a Commission communication published one month later,\(^{101}\) which presented an ambitious programme aiming to (i) restore and maintain the stability of the financial sector through the aforementioned supervisory framework, ensure sector security,\(^{102}\) support the real economy\(^{103}\) and the population.\(^{104}\)

This communication, in turn, as well as the G20 Summit in London in April and the European Council of 19 June of that same year, fed into a \textit{July 2009 communication}\(^{105}\) – in which the Commission, after briefly introducing prudential measures already taken or in the process of being adopted,\(^{106}\) discussed possible new initiatives (standardisation, or the broader use of CCP clearing and trade execution) to improve financial stability in derivatives markets.

A public consultation,\(^{107}\) was launched which led to a public hearing. Both of those, in turn, fed into the second Commission communication, published in October 2009.\(^{108}\) The Commission proposed measures to shift derivative markets to more centralised clearing and trading. With regards to central clearing, the Commission announced that it intended to propose legislation concerning CCP activity, focusing on rules relating to conduct of business and governance, risk-management standards, legal protection to collateral and positions, authorisation granted to CCPs and finally the recognition of third-country CCPs. Furthermore, it noted that it would propose making it mandatory to clear standardised derivatives through CCPs. With regards to bilateral clearing, it announced that it would propose legislation on collateralisation (obligation to post initial and variation margins) and capital charges (higher capital charges in the Capital Requirements Directive). Lastly, in the area of transparency, the Commission announced that it intended to propose legislation governing trade repositories as well as new

---

\(^{100}\) The European Banking Authority, the European Securities and Markets Authority, and the European Insurance and Occupational Pensions Authority.

\(^{101}\) Communication for the spring European Council ‘Driving European recovery’, 4 March 2009.

\(^{102}\) Through measures such as regulatory and supervisory standards for hedge funds and private equity, legislation to increase the quality and quantity of prudential capital, to address liquidity risk and limit excessive leverage, measures to rebuild the confidence of investors, consumers and SME in their economies and to harmonised sanctions to prevent market abuse.

\(^{103}\) By the elimination of barriers to the free movement of goods and services; the implementation of structural changes which meet climate and energy challenges through the promotion of a low carbon economy, or the promotion of the exchange of good practices and synergies in terms of EU cooperation.

\(^{104}\) Via actions to invest in re-training and skills upgrading, to prevent over-indebtedness and maintain access to financial services, or to guarantee the free movement of workers.

\(^{105}\) Communication from the Commission ‘Ensuring efficient, safe and sound derivatives markets’ COM(2009) 332 final. See also the useful accompanying staff working paper SEC(2009)905, which gives a thorough presentation of derivatives markets and the different types of OTC derivatives.

\(^{106}\) Among other things, the review of the Capital Requirements Directive (CRD), a proposal on the capital requirements applied to the trading book of financial institutions and to securitisation and re-securitisation positions, a proposal for the creation of a European macro-financial supervisor, the CRA Regulation, as well as the proposal for a directive on alternative investment fund managers (AIFMD).

\(^{107}\) Commission consultation ‘Possible initiatives to enhance the resilience of OTC Derivatives Markets’ SEC(2009) 914 final.

reporting obligations on market participants, measures intended to ensure that eligible trades for exchange-trading take place on organised markets, as well as measures enhancing both pre- and post-trade transparency.

Another consultation was launched in June 2010. In the context of the Commission finalising its draft legislative proposals, the consultation asked for stakeholders’ views on the clearing and risk mitigation of OTC derivatives, requirements for CCPs, interoperability, reporting obligation and requirements for trade repositories.

The Commission, in its diagnosis, focused on three main problems related to the functioning of the OTC derivatives market: (i) the lack of transparency on positions and exposures which hampers early detection of risks by regulators, but also prevents other market participants from knowing the total exposure from an OTC contract; (ii) insufficient mitigation of counterparty credit risk, due to insufficient collateral, varying frequency of collateral valuation among market participants and risk models that were not robust enough; and (iii) insufficient mitigation of operational risks due to the important growth of the market and to the low level of product standardisation.

5. Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories (EMIR)

5.1. Summary of Regulation (EU) No 648/2012

Regulation (EU) No 648/2012 is an infrastructure-related measure, designed to reduce risk and strengthen derivatives market resiliency, as well as to support market discipline and regulatory oversight through the imposition of six core requirements, namely: (i) the central counterparty (CCP) clearing obligation for specific categories of financial OTC derivatives; (ii) the reporting obligation to trade repositories (TRs) of any information concerning OTC derivatives trading; (iii) margin requirements for OTC derivative contracts that are not centrally cleared; (iv) operational bilateral risk mitigation requirements for OTC derivative contracts that are not centrally cleared by a CCP; strict organisational, business conduct and prudential obligations for central counterparties (CCPs); and requirements for trade repositories. The regulation has nine titles and two annexes.

109 Commission consultation on Derivatives and Market Infrastructures.
111 While parties know their direct exposures, they cannot know their indirect exposure, i.e. the exposure their counterparties to other market participants. As a result, the collateral used to secure their own exposure is not enough to cover for the aggregate counterparty risk of their trading party. The AIG case presents an extreme version of this situation.
112 In 2012, ISDA estimated that some US$1.1-$1.8 trillion of the total gross credit exposure in OTC derivatives remained uncollateralised. European Financial Stability and Integration Report, op. cit. p. 56.
114 Whereas in the United States the Dodd-Frank Act deals with trading and clearing of OTC derivatives, in Europe EMIR only covers clearing, while trading aspects are dealt with by the revised directive and new regulation on markets in financial instruments (MiFID II and MiFIR).
115 Namely those that are ‘standardized, safe and sound’. Niamh Moloney, op. cit. p.577.
5.2. Subject matter, scope and definitions (Articles 1-3)

Regulation (EU) No 648/2012 lays down clearing and bilateral risk-management requirements for OTC derivative contracts,\(^{116}\) reporting requirements for derivative contracts and uniform requirements for the performance of activities of central counterparties and trade repositories.

The regulation applies to CCPs and their clearing members, to financial counterparties (FCs)\(^{117}\) and to trade repositories (TRs). In addition, it applies to non-financial counterparties (NFCs)\(^{118}\) and trading venues, albeit only where it is so provided specifically. It does not apply to the members of the European System of Central Banks (ESCB), to EU public bodies intervening in the management of the public debt, to the Bank for International Settlements, to multilateral development banks, or to the European Financial Stability Facility and the European Stability Mechanism.

5.3. Clearing, reporting and risk mitigation of OTC derivatives (Art. 4-13)

Counterparties must clear all OTC derivative contracts pertaining to a class of OTC derivatives that has been declared subject to the clearing obligation with a CCP,\(^{119}\) if those contracts fulfil certain conditions. The regulation imposes the clearing obligation on interest rate swaps and basis swaps in dollars, euro, pounds sterling and yen, forward rate agreements and overnight index swaps in dollars, euro and pounds and CDS indices in euro. OTC derivative contracts that are intragroup transactions\(^{120}\) are exempted (under specific conditions) from the clearing obligation.

ESMA must establish, maintain and keep up to date a public register – available on its website – to identify the classes of OTC derivatives subject to the clearing obligation. This register must include, among other things, the classes of OTC derivatives subject to the clearing obligation, the authorised or recognised CCP and the dates from which the clearing obligation takes effect. CCPs no longer authorised or recognised must be removed from the register.

CCPs can accept or refuse a formal request for access by a trading venue (TV) within three months (but in cases of refusal, they must justify their decision to the trading venue). Competent authorities can refuse access to the CCP only when it would threaten the functioning of the markets or affect adversely systemic risk. Similarly, trading venues can accept or refuse a formal request to access by a CCP within three months (they also need to justify their decision). CCP access to a trading venue can be granted only if interoperability\(^{121}\) is not required and the access poses no threat to market functioning.

---

\(^{116}\) The regulation defines OTC derivatives contracts as derivative contracts the execution of which does not take place on a regulated market or on a third country market considered to be equivalent.

\(^{117}\) Financial counterparties include investment firms, credit institutions, assurance, insurance and reinsurance undertakings UCITS and their management companies, institutions for occupational retirement provision and alternative investment funds.

\(^{118}\) The Regulation defines NFCs as undertakings not belonging to the aforementioned categories, i.e. FCs, CCPs, TRs and trading venues.

\(^{119}\) The CCP must be authorised under Article 14 or recognised under Article 25 to clear that class of OTC derivatives and listed in the register in accordance with Article 6(2)(b).

\(^{120}\) Intragroup transactions are defined in the first chapter.

\(^{121}\) Article 2 of EMIR defines an interoperability arrangement as an arrangement between two or more CCPs that involves a cross-system execution of transactions. The reference to cross-system implies that there should be a reciprocal link (peer-to-peer link) between the CCPs which would allow one to clear trades through the other and vice-versa. This allows access to any local market without having to become
Authorised CCPs must clear OTC derivative contracts and trading venues must provide trade feeds on a non-discriminatory and transparent basis to any authorised CCP.

Counterparties and CCPs must make sure that the details of any derivative contract they have concluded and of any modification or termination of the contract are reported to a trade repository (or to ESMA in case no TR is available), at the latest the working day after the conclusion, modification or termination of the contract. Counterparties must keep records of those derivative contracts for at least five years after their termination.

In the context of this mandatory reporting, which began in February 2014, ‘for each derivative transaction around 85 data fields have to be reported, which are divided into two groups: the first group contains information on the counterparties involved, which usually remain static over the life cycle of a trade; the second group provides details on the characteristics of the contract, such as the type of derivative, the underlier, the price, the amount outstanding, the execution and clearing venue of the contract, the valuation, the collateral and lifecycle events (e.g. compression, cancellation, termination)’.\(^\text{122}\) TRs to which the contracts are reported need to be registered with (or in the case of third-country TRs, recognised by) ESMA.\(^\text{123}\)

NFCs that take positions in OTC derivative contracts and whose positions exceed the clearing threshold, must notify ESMA and the competent authority. If their rolling average position over 30 working days exceeds that threshold they become subject to the clearing obligation (if not, they are no longer subject) and must clear all relevant future contracts within four months of becoming subject to the clearing obligation.

FCs must ensure that appropriate procedures and arrangements are in place to measure, monitor and mitigate operational risk and counterparty credit risk.\(^\text{124}\) Further, they must hold an appropriate and proportionate amount of capital to manage the risk not covered by appropriate exchange of collateral. In addition, FCs and some NFCs\(^\text{125}\) must mark-to-market daily the value of outstanding contracts and have risk-management procedures that require the timely, accurate and appropriately segregated exchange of collateral with respect to OTC derivative contracts entered into.\(^\text{126}\) Intra-group transactions are exempted under specific conditions which vary according to whether the counterparties are FCs or NFCs and to whether they are established in the same Member State, in the EU, or in the EU and in a third country.

---

\(^\text{122}\) Linda Fache Rousová, Kirsi-Maria Kulmala, Małgorzata Osiewicz ‘Reporting of derivatives transactions in Europe – Exploring the potential of EMIR micro data against the challenges of aggregation across six trade repositories’, paper published in the context of the IFC workshop on ‘Combining micro and macro statistical data for financial stability analysis. Experiences, opportunities and challenges’ that took place in Warsaw, Poland, on 14-15 December 2015.

\(^\text{123}\) Currently there are six TRs authorised by ESMA, which are CME, DDRL22, ICE, KDPW, Regis-TR and UnaVista. The list of trade depositaries registered by ESMA in accordance with EMIR can be found on the website of the authority. Together, they provide daily derivatives data to over 60 authorities in the EU, which in accordance with their mandate have access to the respective data of their jurisdiction.

\(^\text{124}\) The same applies to NFCs that enter into an OTC derivative contract not cleared by a CCP.

\(^\text{125}\) Those who have become subject to the clearing obligation or those taking positions exceeding the clearing threshold in OTC derivative contracts.

\(^\text{126}\) (although dates vary for FCs and NFCs).
Infringement of the rules of this title neither affect the validity of an OTC derivative contract, nor give rise to any right to compensation from a party to an OTC derivative contract. However, Member States must lay down rules on effective, proportionate and dissuasive penalties – at least administrative fines – applicable to infringements of the rules and take all measures necessary to ensure that they are implemented. They must further ensure that competent authorities responsible for the supervision of FCs, and, where appropriate, non-FCs disclose to the public every penalty that has been imposed for infringements, unless such disclosure would seriously jeopardise the financial markets or cause disproportionate damage to the parties involved.

Lastly, the Commission – assisted by ESMA – must monitor and report potential duplicate or conflicting requirements on market participants, and recommend possible action.

### 5.4. Authorisation and supervision of CCPs (Articles 14-25)

A CCP’s authorisation application must be made to the competent authority of the Member States in which the CCP is established. In the application, the CCP must provide all information necessary to satisfy the competent authority that it has established all the necessary arrangements to meet the requirements laid down in EMIR. In addition, it must have permanent and available initial capital to protect itself against various categories of risks.\(^{127}\) Once granted, the authorisation is effective for the whole of the EU. However, the authorisation is granted only for activities linked to clearing.\(^{128}\) Those CCPs that wish to extend their business to additional services or activities not covered by the initial authorisation must submit a request for extension to their competent authority. Lastly, in case a CCP extends its business to another Member State, its competent authority must immediately notify the competent authority there.

Competent authorities are designated by each Member State to carry out the duties for the authorisation and supervision of CCPs established on its territory. When multiple competent authorities are designated, the Member State must clearly determine their respective roles and designate one of them to be responsible for coordinating cooperation and exchange of information with the Commission, ESMA and other National Competent Authorities (NCAs). Competent authorities must cooperate closely with each other, ESMA and the ESCB and must duly consider the potential impact of their decisions on the stability of the financial system in all other Member States concerned.

Once an authorisation application is submitted, a college of supervisors is established, managed and chaired by the CCP’s NCA.\(^{129}\) The NCA must transmit all information

---

\(^{127}\) More specifically, the article states that, to be authorised, the CCP must have initial capital of €7.5 million. In addition, its capital must be proportionate to the risk stemming from its activities and must be sufficient at all times to ensure an orderly winding-down or restructuring of the CCPs activities over an appropriate time span and its adequate protection against credit, counterparty, market, operational, legal and business risks which are not already covered by specific financial resources.

\(^{128}\) This, according to Niamh Moloney, is common across EU securities and markets regulation, and is further needed to mitigate risks.

\(^{129}\) Consisting of: ESMA; the NCA; the NCAs responsible for the supervision of the clearing members of the CCP that are established in the three Member States making the largest contributions to the default fund of the CCP; the NCAs responsible for the supervision of trading venues served by the CCP; the NCAs supervising CCPs with which interoperability arrangements have been established; the NCAs supervising central securities depositories to which the CCP is linked; the relevant members of the ESCB responsible for the oversight of the CCP, and of the CCPs with which interoperability arrangements have been established; and the central banks of issue of the most relevant Union currencies of the financial instruments cleared.
received from the CCP to ESMA and to the college and, after assessing that the application is complete, notify them and the applicant. The NCA may grant authorisation only where it is fully satisfied that the CCP complies with all the requirements laid down under EMIR and where the college has not exercised its veto. In case it disagrees with a positive opinion of the college, it must provide reasons and explanation. ESMA is empowered to mediate in case joint opinions are not reached and to take enforcement actions in cases where the CCP’s NCA has not applied EMIR or has applied it in a way which appears to be in breach of Union law.  

In some cases, the NCA must withdraw a CCP’s authorisation – although it can also decide to limit its withdrawal to a particular service, activity, or class of financial instruments. In those cases, it must notify ESMA and the members of the college within five days and must consult them, except in urgent situations. Once taken, the authorisation decision takes effect throughout the EU.

NCAs must review the arrangements, strategies, processes and mechanisms implemented by CCPs to comply with EMIR and evaluate the risks to which CCPs are exposed. In addition, they must cooperate closely with each other and with ESMA, but also with the ESCB.

Third country CCPs can also provide clearing services to clearing members or trading venues in the EU, if they are recognised by ESMA. Before taking a decision, ESMA must verify that certain conditions are met and must consult stakeholders. The CCP must follow a specific procedure. ESMA has a set time within which to deliver a decision, although this can be prolonged. Lastly, ESMA will establish cooperation arrangements with the relevant competent authorities of third countries whose legal and supervisory frameworks have been recognised as equivalent to EMIR.

5.5. Requirements for CCPs (Articles 26-50)

A CCP must have robust governance arrangements, adopt policies and procedures which are sufficiently effective so as to ensure compliance with EMIR, maintain and operate an organisational structure that ensures continuity and orderly functioning in the performance of its services and activities and separate clearly between reporting lines for risk management and those for other operations, In addition, it must adopt, implement and maintain a remuneration policy which promotes sound and effective risk management and which does not create incentives to relax risk standards, maintain IT systems adequate to deal with the complexity, variety and type of services and activities

---

130 A CCP may not be authorised when all members of the college (except the NCA of the Member State where the CCP is established) have reached a unanimous opinion that the CCP not be authorised.

131 This, according to Niamh Moloney, ‘underlines the pivotal nature of the authorisation decision’. The author adds that ‘the sensitivity of these unusually intrusive college powers is well illustrated by the voting thresholds specified and by the graduated consequences which follow, as well by the requirement for college members not to directly or indirectly discriminate against any Member State as a venue for clearing services in any currency’.

132 This review obligation, reflects, according to Niamh Moloney ‘the emphasis across EMIR on supervisory review and monitoring of CCP resilience’.

133 This, according to Niamh Moloney, reflects ‘the potential for systemic risk’. This also seems reflected in the regulation, specifying that NCAs ‘duly consider the potential impact of their decisions on the stability of the financial system in all other Member States concerned’.

134 The information that the applicant CCP must provide ESMA with in its application for recognition are specified in regulatory technical standards (RTS).
performed so as to ensure high standards of security and the integrity and confidentiality of the information maintained and be subject to frequent and independent audits.

A CCP’s **senior management** must be reputable and possess sufficient experience. In addition, the CCP must have a **board**. Its members must include at least two independent members, be of good repute and have adequate expertise. The role of the board and its responsibilities are determined by the CCP. A CCP must also establish a **risk committee** – composed of representatives of its clearing members, independent members of the board and clients’ representatives – and clearly determine its mandate, governance arrangements to ensure its independence, operational procedures, admission criteria and election mechanism for risk-committee members. The risk committee must advise the board on any arrangements that may impact the CCP’s risk management and, if the board decides not to follow its advice, it must promptly inform the competent authority.

A CCP must maintain – for at least 10 years – all the records on the services and activity provided, as well as all information on all contracts it has processed, so as to enable the competent authority to monitor its compliance with EMIR. Those records must be made available, upon request, to the competent authority, ESMA and the relevant members of the ESCB.

A CCP’s **shareholders and members with qualifying holdings**, as well as the amounts of those holdings, must be known by the NCA. If the NCA deems that the shareholders are not suitable, or that links between the CCP and natural/legal persons prevent it from adequately supervising the CCP, it can refuse to authorise or withdraw authorisation from a CCP. When a natural or legal person decides either to acquire/increase a qualifying holding in a CCP or, on the opposite, dispose, of a qualifying holding in a CCP, the CCP must provide information to competent authorities and to the NCAs must perform an assessment.\(^\text{135}\) Rules relating to the appraisal of the suitability of the proposed acquisition are also provided for.

CCPs must maintain and operate effective written organisational and administrative arrangements to identify and manage any potential **conflicts of interest** between themselves and their clearing members/clients. When those arrangements are not sufficient to prevent risks of damage, the CCPs must disclose the nature and source of conflict of interest to clearing members before they accept to transact with them.

CCPs must establish, implement and maintain a **business continuity** policy and disaster recovery plan, to ensure the preservation of their functions, the timely recovery of operations and the fulfilment of their obligations.

When a CCP **outsources** operational functions, services or activities, it remains fully responsible for discharging all of its obligations under EMIR and must ensure at all times that, among other things, outsourcing does not result in the delegation of its responsibility; it does not alter the relationship and obligations of the CCP towards its clearing members or clients; it does not change the conditions for authorisation of the CCP; and it does not prevent the exercise of supervisory and oversight functions.

\(^{135}\) The same applies when the person’s decision to acquire or dispose of a holding, results in the proportion of the voting rights or of the capital held reaching or exceeding/falling below 10 %, 20 %, 30 % or 50 % or should the CCP become/cease to be the person’s subsidiary.
5.5.1. Conduct of business rules
CCPs must abide with general conduct of business rules, among other things, they must act fairly and professionally, and must have accessible, transparent and fair rules for the prompt handling of complaints.

They must establish, where relevant, per type of product cleared, the categories of admissible clearing members and non-discriminatory, transparent and objective admission criteria. They may also impose specific additional obligations on clearing members, which nonetheless must be proportional to the risk brought by those members. Lastly, they must set objective and transparent procedures for the suspension and orderly exit of clearing members that no longer meet the criteria.

CCPs must also comply with transparency requirements, such as publicly disclosing the prices and fees associated with the services provided, or divulging any breaches by clearing members of the participation requirements.

Lastly, the assets of clearing members must be clearly distinguishable, so that in a default the affected assets can be identified and losses contained.

5.5.2. Prudential requirements
CCPs must measure and assess their liquidity and credit exposures to their clearing members/other CCPs with interoperability arrangements on a near to real-time basis.

CCPs must impose, call and collect margins to limit their credit exposures until the liquidation of the relevant positions. Such margins must be sufficient to cover losses that result from at least 99% of the exposures movements over an appropriate time horizon and must ensure that a CCP fully collateralises its exposures daily with all its clearing members and with CCPs with which it has interoperability arrangements. Losses that exceed those covered by the above requirements and arise from the default or insolvency of the CCPs clearing members are to be covered by a pre-funded default fund, maintained by the CCP. The CCPs must establish a minimum amount for the fund and minimum size of contributions, which should enable it to, at least, withstand under extreme but plausible market conditions, the default of the clearing member to which it has the largest exposures, or of the second and third largest clearing members, if the sum of their exposures is larger. Further to the margin requirements and to the default fund, CCPs must maintain sufficient pre-funded and freely available financial resources, to cover potential losses that exceed the two aforementioned ‘protections’. CCPs also have the power to require non-defaulting clearing members to provide additional funds in the event of a default of another clearing member (although their exposures to the CCP are capped).

A CCP must at all times have access to adequate liquidity to perform its services and activities. To that end, it shall obtain the necessary credit lines or similar arrangements to cover its liquidity needs in case the financial resources at its disposal are not immediately available. Furthermore, it must measure, on a daily basis, its potential liquidity needs.

CCPs must use the margins posted by a defaulting clearing member prior to other financial resources in covering losses. If those margins are not sufficient to cover the losses incurred, CCPs must use the default fund contribution of the defaulting member to cover those losses. Further, CCPs can use contributions to the default fund of the non-defaulting clearing members and any other financial resources, only after having exhausted the contributions of the defaulting clearing member. Additionally, CCPs must use dedicated own resources before using the default fund contributions of non-
defaulting clearing members and cannot use the margins posted by non-defaulting clearing members to cover the losses resulting from the default of another clearing member (default waterfall).

With regards to collateral, CCPs must accept highly liquid collateral with minimal credit and market risk to cover their initial and ongoing exposure to its clearing members.\footnote{136} In addition, they must apply adequate haircuts\footnote{137} to asset values that reflect the potential for their value to decline over the interval between their last revaluation and the time by which they can reasonably be assumed to be liquidated. It must also take into account the liquidity risk following the default of a market participant and the concentration risk on certain assets that may result in establishing the acceptable collateral and the relevant haircuts. Lastly, a CCP may accept – where appropriate and sufficiently prudent – the underlier of the derivative contract or the financial instrument that originates the CCP exposure as collateral to cover its margin requirements.

CCPs must invest their financial resources only in cash or in highly liquid financial instruments with minimal market and credit risk (investment policy). Financial instruments posted as margins or as default fund contributions must be deposited with operators of securities settlement systems that ensure the full protection of those financial instruments.

CCPs must review their models and parameters, subject them to rigorous and frequent stress tests and perform back tests to assess the reliability of the methodology adopted. In addition, they must have enforceable default procedures in place.

The requirements also specify a role for central banks, in two ways. Firstly, the deposits of a CCP must be made through highly secure arrangements with authorised financial institutions or, through the use of the standing deposit facilities of central banks. And secondly, CCPs must use Central Bank money to settle their transactions.\footnote{138}

5.6. Interoperability arrangements (Articles 51-54)

Provisions under this title establish the possibility for a CCP to enter into an interoperability arrangement\footnote{139} with another CCP, under the conditions that the CCPs entering this arrangement put in place adequate risk management procedures,\footnote{140} that they distinguish in their accounts the assets and positions held for the account of CCPs with whom they have such arrangements, and that the arrangement be approved by the competent authorities of the CCPs involved. In this context, the provisions recognise its right to non-discriminatory access both to the data that it needs for the performance of its functions from that particular trading venue and to the relevant settlement system and the conditions under which that right can be restricted.

\begin{itemize}
  \item For NFCs, CCPs may accept bank guarantees.
  \item A haircut is a reduction applied to the value of an asset, expressed as a percentage. See ECB explainer.
  \item When they do not, they are required to take steps to limit cash settlement risks and that, when they are obliged to make or receive deliveries of financial instruments, they should eliminate principal risk, by making delivery-vs-payment mechanisms.
  \item According to Niamh Moloney, this regime is designed ‘to support interconnectivity between CCPs and thus the EU’s related wider financial market integration agenda, although there is some industry scepticism as to the feasibility of large-scale CCP interconnectivity, given that OTC derivatives CCP clearing is at an embryonic stage’.
  \item For those with different risk-management models, they will identify these differences and take measures to limit their impact to the interoperability arrangement.
\end{itemize}
5.7. Registration and supervision of trade repositories (Articles 55-77)

5.7.1. Conditions and procedures for registration of a trade repository
This chapter establishes the obligation for trade repositories to register with ESMA, setting conditions for that registration and noting that their registration is effective for the entire EU. It details the procedure of application for a registration and details the notification procedures with NCAs.

A text in this chapter confers significant powers to ESMA:\(^{141}\) it can require a TR to bring an infringement to an end; impose fines; issue public notices and, as a last resort, withdraw the TRs registration. As a counterweight, it must notify TRs when it adopts a positive or negative decision with regards to registration and must fully explain its decision. It can ask TRs for information under specific conditions. The framework for general investigations conducted by ESMA is established, its powers are set and so are the requirements for TRs to submit to such investigations and obligations for it to notify national competent authorities of such investigations. Further, ESMA may accordingly conduct on-site inspections.\(^{142}\)

Further to the above, the chapter sets procedural rules for taking supervisory measures and imposing fines, when ESMA finds that there are ‘serious indications of the possible existence of facts liable to constitute one or more of the infringements’ listed in Annex I of the regulation.\(^{143}\) It sets their limits, as well as aggravating or mitigating factors and establishes a cap at 20% of the annual turnover of the trade repository concerned. In specific cases, ESMA can also impose effective and proportionate periodic penalty payments. However, in any of the cases above, ESMA must give the persons subject to the proceedings the opportunity to be heard on its findings, before taking any decision. The Court of Justice has unlimited jurisdiction to review decisions whereby ESMA has imposed a fine or a periodic penalty payment and to annul, reduce or increase the fine or periodic penalty payment imposed.

Lastly, under certain conditions,\(^{144}\) ESMA can withdraw a TR’s registration. When it does, it must notify the relevant competent authority of its decision. Furthermore, the NCA can request ESMA to examine whether the conditions for the withdrawal of registration of the trade repository concerned are met. To cover the necessary expenditure for the registration and supervision of TRs and the costs NCAs may incur carrying out work pursuant to EMIR, ESMA can charge supervisory fees.

---

\(^{141}\) The regulation specifies, however, that the powers conferred on ESMA must not be used to require the disclosure of information or documents which are subject to legal privilege.

\(^{142}\) The provisions set the obligations for TRs to submit to such inspections upon the production of a written authorisation specifying the subject matter and the purpose of the inspection from ESMA officials, or other persons authorised by it.

\(^{143}\) These infringements can relate to organisational requirements or conflicts of interest; to operational requirements; to transparency and the availability of information; or to obstacles to the supervisory activities.

\(^{144}\) e.g. when the trade repository obtained the registration by making false statements or by any other irregular means.
5.7.2. Relations with third countries
This chapter deals with relations with third countries, namely equivalence\(^{145}\) and international agreements (Article 75), cooperation agreements (Article 76) and the recognition of TRs (Article 77).

5.8. Requirements for trade repositories (Articles 78-82)
EMIR establishes general requirements for TRs – relative to their governance, organisational and administrative arrangements, policies and procedures, organisational structure, ancillary services, the senior management and members of the board, requirements for access by undertakings subject to the reporting obligation and the prices and fees associated with services. To be operationally reliable, a TR must identify sources of operational risk and minimise them through the development of appropriate systems, controls and procedures; it must maintain an adequate business continuity policy and disaster recovery plan and that it must ensure orderly substitution to other trade repositories, in case its registration is withdrawn. TRs must ensure the confidentiality, integrity and protection of the information received. In addition, they must promptly record the information received and maintain it for at least 10 years following the termination of the relevant contracts and lastly, must employ timely and efficient record-keeping procedures to document changes to recorded information. Lastly, they must abide by transparency and data availability\(^{146}\) obligations.

5.9. Common provisions (Articles 83-84)
Title VIII incorporates common provisions – the obligation of professional secrecy (Article 83) and the exchange of information between NCAs, ESMA and other relevant authorities (Article 84).

6. Subsequent amendments and related delegated acts
After its publication in the Official Journal, EMIR was amended both by other pieces of European legislation, and by delegated acts.

6.1. Subsequent amendments
EMIR was amended by four texts.

The Capital Requirements Regulation\(^{147}\) added a new chapter to the requirements for CCPs, relative to the calculation of the hypothetical capital ($K_{CCP}$)\(^ {148}\) and the reporting of information (including information relating to the hypothetical capital, its pre-funded contributions and financial resources and the number of its clearing members, as well as their calculation).

---

\(^{145}\) For more information on equivalence, see Marcin Szczepański ‘Understanding equivalence and the single passport in financial services’, EPRS briefing, February 2017.

\(^{146}\) TRs must publish specified aggregated position information and ensure that identified regulatory authorities and public authorities have direct and immediate access to their data.


\(^{148}\) The ‘hypothetical capital’ of a CCP is a variable needed to determine the own funds requirement for a clearing member’s exposures from its contributions to a CCP’s default fund. (Regulation (EU) No 575/2013).
The **Bank Recovery and Resolution Directive**,\(^{149}\) amended the requirements for trade repositories, with regards to the transparency and data availability requirements, adding the resolution authorities of Article 3 of the directive to the list of entities to which the TR must make information available.\(^{150}\)

The fourth **Anti-Money Laundering Directive**\(^{151}\) amended the EMIR article on the recognition of third-country CCPs by providing that ESMA may recognise a CCP established in a third country, if that country is not considered, according to the directive, to have ‘strategic deficiencies in its national anti-money laundering and counter financing of terrorism regime that poses significant threats to the financial system of the Union’.\(^{152}\)

Lastly, the Regulation on the **transparency of securities financing transactions**\(^{153}\) amended EMIR with regards to the definition of OTC derivatives,\(^{154}\) inserted an article on equivalence decisions for third-country markets, and added entities to the list to which a trade repository must add the necessary information, to enable them to fulfil their respective responsibilities and mandates (see point 5.8).

### 6.2. Main (technical) delegated acts

On 19 December 2012, the European Commission adopted nine regulatory and implementing technical standards (RTS)\(^{155}\) to complement the obligations defined under the Regulation on OTC derivatives, central counterparties (CCPs) and trade. With regard to **OTC derivatives**, the RTS specify the provisions of EMIR related to: indirect clearing arrangements; the clearing obligation procedure; the public register; access to a trading venue, non-financial counterparties, and risk mitigation techniques for OTC derivatives contracts not cleared by a CCP. With regard to **central counterparties**, the regulatory technical standards specify the provisions of EMIR related to the requirements for CCPs, as well as the capital, retained earnings and reserves of a CCP. The implementing technical standards specify the format of the records to be maintained by CCPs.

---


150 A list which includes central banks, competent ministries or other public administrative authorities or authorities entrusted with public administrative powers.


152 Previously, the article provided that the third country where the CCP was established ‘is considered as having equivalent systems for anti-money laundering and combating the financing of terrorism to those of the Union in accordance with the criteria set out in the common understanding between Member States on third-country equivalence under Directive 2005/60/EC’ (the third Anti-money Laundering Directive).


154 ‘"OTC derivative” (...) means a derivative contract the execution of which does not take place on a regulated market within the meaning of Article 4(1)(14) of Directive 2004/39/EC or on a third-country market considered to be equivalent to a regulated market in accordance with Article 2a of this Regulation’.

155 RTS on capital requirements for central counterparties; on requirements for central counterparties; on indirect clearing arrangements, the clearing obligation, the public register, access to a trading venue, non-financial counterparties, risk mitigation techniques for OTC derivatives contracts not cleared by a CCP; on the minimum details of the data to be reported to trade repositories; RTS specifying the details of the application for registration as a trade repository, and RTS specifying the data to be published and made available by trade repositories and operational standards for aggregating, comparing and accessing the data. ITS on requirements for central counterparties; on the minimum details of the data to be reported to trade repositories; and ITS specifying the details of the application for registration as a trade repository.
with regard to trade repositories, the regulatory technical standards specify the provisions of EMIR related to the minimum details of the data to be reported to trade repositories, the details of the application for registration as a trade repository, as well as the data to be published and made available by trade repositories and operational standards for aggregating, comparing and accessing the data. The implementing technical standards specify the format and frequency of trade reports to trade repositories and the format of applications for registration of trade repositories.

On 13 February 2014, the Commission adopted regulatory technical standards\(^\text{156}\) specifying the contracts that are considered to have a direct, substantial and foreseeable effect within the Union, as well as the cases where it is necessary or appropriate to prevent the evasion of rules or obligations provided for in Regulation (EU) No 648/2012.

On 6 August 2015, the Commission adopted a delegated regulation\(^\text{157}\) that makes it mandatory for certain over-the-counter (OTC) interest rate derivative contracts (i.e. ‘plain vanilla’ IRS, basis swaps, forward rate agreements and overnight index swaps) to be cleared through CCPs.

On 1 March 2016, it adopted a delegated regulation\(^\text{158}\) that makes it mandatory for certain over-the-counter credit default derivative contracts (CDS denominated in euro and covering some European corporates) to be cleared through central counterparties.

On 21 April 2016, it adopted a delegated regulation\(^\text{159}\) amending the technical standards for requirements for CCPs related to the margin period of risk (‘MPOR’)\(^\text{160}\) for client accounts (i.e. five business days for OTC derivatives, one business day for financial instruments other than OTC derivatives held in omnibus client accounts\(^\text{161}\) or in individual client accounts, under some conditions, and two business days for financial instruments other than OTC derivatives held in accounts not meeting those conditions).

On 10 June 2016, it adopted a delegated regulation\(^\text{162}\) that makes it mandatory for certain over-the-counter (OTC) interest rate derivative contracts (namely the Norwegian Krone (NOK), Polish Zloty (PLN) and Swedish Krona (SEK)) to be cleared through central counterparties.

Finally, on 28 July 2016, the Commission endorsed draft regulatory technical standards\(^\text{163}\) that specify how margin should be exchanged for OTC derivatives contracts that are not cleared by a CCP.

---

\(^\text{156}\) Delegated Regulation (EU) No 285/2014 with regard to RTS on direct, substantial and foreseeable effect of contracts within the Union and to prevent the evasion of rules and obligations.


\(^\text{159}\) Delegated Regulation (EU) 2016/822 amending Delegated Regulation (EU) No 153/2013 as regards the time horizons for the liquidation period to be considered for the different classes of financial instruments.

\(^\text{160}\) The time period from the last exchange of collateral covering a netting set of transactions with a defaulting counterpart until that counterpart is closed out and the resulting market risk is re-hedged.

\(^\text{161}\) An ‘omnibus’ account is an account opened in the name of an account provider, the securities credited to which belong to several clients of the account provider.


\(^\text{163}\) Delegated Regulation supplementing Regulation (EU) No 648/2012 with regard to regulatory technical standards for risk-mitigation techniques for OTC derivative contracts not cleared by a central counterparty.
6.3. Other delegated acts

On 12 July 2013, the European Commission adopted a delegated regulation\textsuperscript{164} to include the central banks and debt management offices of Japan and the United States in the list of exempted entities under Article 1(4) of EMIR, in line with the report\textsuperscript{165} adopted by the European Commission on 22 March 2013. The same day, another delegated regulation\textsuperscript{166} was adopted, specifying the fees to be charged to trade repositories by the European Securities and Markets Authority (ESMA).

On 28 May 2013, the European Commission adopted a delegated regulation\textsuperscript{167} on colleges for central counterparties. On 13 March 2014, the European Commission adopted a delegated regulation\textsuperscript{168} specifying the rules of procedure for penalties imposed on trade repositories by the European Securities and Markets Authority (ESMA). Finally, on 5 June 2015, the European Commission adopted a delegated act\textsuperscript{169} in accordance with Article 85(2) of EMIR, extending transitional relief from central clearing requirements for pension scheme arrangements until 16 August 2017.

6.4. CCP equivalence decisions

The European Commission also adopted ‘equivalence’ decisions (implementing acts), recognising the following regulatory regimes: on 30 October 2014, for the regulatory regimes for CCPs in Australia, Hong Kong, Japan and Singapore.\textsuperscript{170} On 13 November 2015, for the regulatory regimes for CCPs in Canada, Mexico, South Africa, Switzerland and Republic of Korea.\textsuperscript{171} And on 15 March 2016, for the regulatory regime for CCPs of the United States Commodity Futures Trading Commission (CFTC).\textsuperscript{172}

7. The 2015 EMIR review

7.1. Initial initiatives

On 8 January 2015, the European Securities and Markets Authority (ESMA) published a review ‘of CCP colleges under EMIR’.\textsuperscript{173} ESMA identifies some cases where common approaches should be developed, in particular to the application of the processes envisaged in Article 15 and 49 of EMIR.

\textsuperscript{164} Delegated Regulation (EU) No 1002/2013.
\textsuperscript{165} Commission report ‘The International Treatment of Central Banks and Public Entities Managing Public Debt with regard to OTC Derivatives Transactions’ COM/2013/0158 final
\textsuperscript{166} Delegated Regulation (EU) No 1003/2013.
\textsuperscript{167} Delegated Regulation (EU) No 876/2013.
\textsuperscript{168} Delegated Regulation (EU) No 667/2014.
\textsuperscript{169} Delegated Regulation (EU) 2015/1515.
\textsuperscript{172} Commission implementing Decision (EU) 2016/377.
\textsuperscript{173} European Securities and Markets Authority ‘ESMA review of CCP colleges under EMIR’.
On 21 May 2015, the European Commission published a consultation paper, the EMIR Review. This review was required pursuant to Article 85(1) of EMIR and considered matters including CCP liquidity and the impact of EMIR on non-financial firms as well clearing obligations, risk mitigation and trade reporting. It did not deal with any regulatory technical standards that were not finalised when the review opened (e.g. RTS on interest rate swaps or margin for uncleared derivatives).

On 29 July 2015, the European Systemic Risk Board (ESRB) reported on specific issues related to the clearing obligation procedure, to (prudential and transparency) requirements on CCPs and to the access to trade repository data.

ESMA contributed to the review of EMIR on 13 August 2015, with four reports: the review on the use of OTC derivatives by non-financial counterparties; the review on the efficiency of margining requirements to limit procyclicality; the review on the segregation and portability requirements; and ESMA input as part of the Commission consultation on the EMIR Review.

On 25 August 2015, the European System of Central Banks (ESCB) reported on possible measures to facilitate the access of CCPs to central bank liquidity facilities. In its assessment, the ESCB considered that, while competent authorities should continue to examine CCPs’ liquidity risk management frameworks, no provisions for central bank liquidity access should be introduced in EMIR. The ESCB considers that this could undermine central bank independence, guaranteed in Article 130 of Treaty of the Functioning of the European Union, and create moral hazard on a large scale.

Based on the aforementioned contributions, the Commission published a report to the European Parliament and the Council on 23 November 2016. The Commission noted that, at this stage, certain core requirements have yet to be implemented or completed and, therefore, it was not possible to review the impact of EMIR comprehensively. It went on to say that, while ‘no fundamental change should be made...

---

174 European Commission - ‘Public consultation on Regulation (EU) NO 648/2012 on OTC derivatives, central counterparties and trade repositories’.
175 ‘ESRB report on the efficiency of margining requirements to limit pro-cyclicality and the need to define additional intervention capacity in this area’.
176 The procedure for lifting the clearing obligation and the EU-wide and national perspective on systemic risk evaluation.
178 ‘EMIR Review Report no.2 - Review on the efficiency of margining requirements to limit pro-cyclicality’.
179 Maintaining separate records and accounts (article 39).
180 In the event of default of one of its clearing members, a CCP must ‘contractually commit itself to trigger the procedures for the transfer of the assets and positions held by the defaulting clearing member for the account of its clients to another clearing member designated by all of those clients’ (Article 48 (5)).
181 ‘EMIR Review Report no.3 - Review on the segregation and portability requirements’. According to the report, ‘The rationale behind the provisions on segregation and portability is to ensure some level of protection for clients of clearing member through specific records of positions and assets given as collateral (except for default fund contribution).’
182 ‘EMIR Review Report no 4 - ESMA input as part of the Commission consultation on the EMIR Review’.
183 ‘Report of the ESCB on the need for any measure to facilitate the access of CCPs to central bank liquidity facilities’.
185 Namely ‘clearing obligations and margin requirements in respect of non-cleared OTC derivatives transactions are not yet fully applicable’.
to the nature of the core requirements of EMIR, which are integral to ensuring transparency and mitigating systemic risks in the derivatives markets', its requirements could be adjusted in a number of areas, in order to (i) simplify and increase the efficiency of the requirements; and (ii) reduce disproportionate costs and burdens.\textsuperscript{186}

The ESRB, in an April 2017 report,\textsuperscript{187} shared the Commission’s assessment that no fundamental changes are needed at this time, and also considered the review as an opportunity to improve on certain aspects of the regulation. More specifically: in relation to procyclicality, it proposes to include a specific definition in the text of the regulation, to have more granular requirements for EMIR tools destined to limit procyclicality, and would welcome the mandatory adoption by CCPs of a holistic approach to procyclicality. In addition, it reaffirms its proposal for a legal obligation for all CCPs to publish quantitative and qualitative information consistent with the CPMI-IOSCO public disclosure framework.\textsuperscript{188} Interestingly, while agreeing with the Commission that disproportionate costs and burdens linked to central clearing need to be reduced, it supports a broad application of the clearing obligation, including for pension schemes and NFCs active in the derivatives market. Lastly, it acknowledges that some of its proposals (‘skin in the game’, interoperability) do not currently fall under the scope of the Commission and will evaluate whether they can be better considered in the context of the discussion of other legislation, such as CCP recovery and resolution.

### 7.2. Further institutional contributions – the European Central Bank

Although legislative frameworks are in place in the areas of trade reporting, central clearing, and capital requirements for non-centrally cleared trades, the ECB, in its December 2016 Economic Bulletin,\textsuperscript{189} is of the view that ‘work remains to be done to meet the G20 objective of making OTC derivatives markets more transparent and resilient’, by tackling challenges in the areas of trade reporting and the increasing use of CCPs. Trade reporting challenges stem from insufficient clarity with respect to reporting, the double-reporting regime and the multiplicity of TRs. The ECB is of the view that this challenge could be partially overcome either through aggregating European TRs and providing access to all relevant authorities, or by a full European harmonisation of the reporting of OTC derivatives data to TRs and by making such data available to authorities.

The increasing use of CCPs similarly creates challenges, as it increases inter-linkages between the CCP, its members and their clients and can potentially concentrate systemic risk. Further, the ECB notes that ‘it is possible that CCPs can buffer the system against relatively small shocks, at the risk of potentially amplifying larger ones’.\textsuperscript{190} The ECB is of the view that, to overcome this challenge, \textbf{CCPs must be made more resilient and easier to recover and resolve} (this point chimes with the Commission initiatives – see below) and that, the \textbf{stability of derivatives markets needs to be strengthened}. Here the ECB notes that ‘ongoing measures under the CCP work plan will further enhance the macroprudential safeguards for central clearing’\textsuperscript{191} and that that ‘there could be benefits in enabling macroprudential authorities to introduce requirements for conservative

---

\textsuperscript{186} Commission 	extit{Inception impact assessment} – EMIR amendment. 21 November 2016.

\textsuperscript{187} ESRB report ‘Revision of the European Market Infrastructure Regulation’ April 2017.

\textsuperscript{188} See CPMI-IOSCO ‘Public quantitative disclosure standards for central counterparties’.

\textsuperscript{189} ‘Looking back at OTC derivative reforms – objectives, progress and gaps’, op. cit. p. 16.

\textsuperscript{190} ‘Central clearing: trends and current issues’, op. cit. p. 15.

\textsuperscript{191} Measures such as requirements for anti-cyclical behaviour or more stringent provisions on stress testing, and the work on central clearing interdependencies.
margins and collateral haircuts for OTC derivative transactions to pre-emptively address the build-up of systemic risks, including the build-up of excessive leverage in this growing market segment’. Finally, the transparency of derivatives markets must be further improved. While data collected by TRs can provide useful insights, there are data quality problems, which can be grouped into two main categories: (i) issues that are due to misreporting by the counterparties or the TRs\(^{192}\) and problems that are caused by a lack of standardisation and harmonisation.\(^{193}\)

7.3. Recent academic work on the subject

Researchers from the US Office for Financial Research have examined the new environment and have reached some insightful conclusions.

In a first paper, Paul Glasserman et al.\(^{194}\) show that (i) liquidity costs increase disproportionately, the larger the position size (so margin requirements should also increase); and that (ii) CCPs face a ‘hidden illiquidity’ problem,\(^{195}\) which should be taken into account when incorporating liquidity costs into margin requirements and which should be included by regulators in the CCP stress tests.

In another paper, Agostino Capponi, et al.\(^{196}\) find that the capital cost of members’ hedging positions depends on those of all other members; further, hedging is increasingly costly and, while risk-mitigating on an individual level, contributes to the emergence of size externalities on a systemic level. To limit concentration risk, the authors propose a self-financing charge, directed by the regulatory authorities and enforced by the CCPs that consists in a fee, proportional to the charge of each member’s margin trading account at the CCP and in a rebate, the same for all clearing members, which relates to the aggregate margin trading account across clearing members.

In a third paper, Paul Glasserman and Qi Wu\(^{197}\) investigate the potentially procyclical character of margin requirements for CCPs. They note that, in times of higher market volatility, price changes are larger, so the minimum level of margin required to cover potential price changes with high confidence must also be larger. This, they continue, can potentially have a destabilising effect on financial markets.\(^{198}\) Risk-sensitive margin requirements are thus procyclical (they can amplify shocks). To mitigate this, the authors propose to set ‘through-the-cycle’ margin levels. Those levels would be less sensitive to

\[\text{A significant number of outstanding trades do not have an assigned MTM value, despite the fact that most counterparties must provide daily updates for this field. This is due to (i) counterparties failing to submit cancellation messages for cancelled trades, and (ii) TRs not incorporating cancellation messages.}\]

\[\text{Practice has shown that some of the 85 variables reported by counterparties – e.g. a single field for a maturity date, despite the fact that some important derivative contracts such as FRAs have two maturity dates – need to be revised. The revised RTS on the minimum details of the data to be reported to TRs, which the European Commission adopted on 19 October 2016, are expected to help resolve these issues.}\]

\[\text{Paul Glasserman, Ciamac C. Moallemi and Kai Yuan ‘Hidden Illiquidity with Multiple Central Counterparties’ OFR, 2015, p. 2.}\]

\[\text{The problem can be summarised as such: given that the same dealer may have similar positions in more than one CCPs, if each CCP sets its margin requirements based only on the positions it sees, it will underestimate the margin it needs (as market prices are driven by the combined effect from all CCPs and therefore will be larger than expected).}\]

\[\text{Agostino Capponi, Allen Cheng and Sriam Rajan ‘Systemic Risk: The Dynamics under Central Clearing’.}\]

\[\text{Paul Glasserman and Qi Wu ‘Persistence and Procyclicality in Margin Requirements’.}\]

\[\text{An increase in volatility may force these firms to post additional collateral precisely when it becomes most difficult to raise cash or other liquid assets; thus, firms short on cash may be forced to sell assets, driving down prices, or pull back funding to other firms, spreading a liquidity shortage.}\]
current conditions and therefore less correlated to market stress; on the other hand, they would need to be ‘higher in quiet times’ and, thus, may be difficult to implement.

Lastly, Stathis Tompaidis\(^{199}\) examines the issue of stress tests, used to evaluate the CCP’s resilience in the face of losses due to defaults of their clearing members (which include the largest and most systemically important banks). The author proposes to go further than what actual stress tests capture, through a different methodology than that used previously, namely: (i) generating a large number of scenarios using a factor analysis technique, (ii) using existing stress test results to calculate profits and losses for a clearing member’s portfolio for each scenario, and (iii) using a structural default model to determine defaults consistent with the stress scenarios.

### 7.4. Outlook

In May 2017, in the framework of the REFIT exercise the Commission proposed a regulation\(^{200}\) amending parts of EMIR. The proposal was accompanied by a communication,\(^{201}\) in which the Commission notes that, apart from the amendments introduced in the context of the REFIT ‘further changes will be necessary to improve the current framework that ensures financial stability and supports the further development and deepening of the Capital Markets Union’. In this context, the Commission notes that the withdrawal of the United Kingdom from the European Union, is expected to have a significant impact on the regulation and supervision of clearing in Europe, given that ‘a substantial volume of transactions denominated in euro would cease to be cleared in the EU and would no longer be subject to EMIR and the EU supervisory architecture’ and ‘Derivatives denominated in some other Member States’ currencies are also cleared in the UK’. Therefore, it will present another proposal in June ‘to ensure financial stability and the safety and soundness of CCPs that are of systemic relevance for financial markets across the EU and to support the further development of the Capital Markets Union’.

Finally, ESMA will conduct a second series of stress tests in 2017 (the first were carried out in 2014). While the first exercise conducted by ESMA was focused solely on the counterparty risk that EU CCPs would face as a result of clearing member defaults and simultaneous market price shocks, this new stress test – which will be performed on the 17 EU CCPs\(^{202}\) supervised by ESMA – will assess (i) the sufficiency of CCPs’ resources to absorb losses under a combination of market price shocks and member default scenarios (credit stress); and (ii) the sufficiency of CCPs’ liquid resources under a combination of market price shocks, member/liquidity provider default scenarios and additional liquidity stress assumptions (liquidity stress). Further, it will increase the number of defaulting entities and level of shocks to identify at which point resources are exhausted (reverse credit stress).\(^{203}\) In addition, ESMA will assess (i) the impact of the loss sharing mechanism of CCPs (default fund contributions and power of assessments) on the capital of the non-defaulting clearing members (CM knock-on analysis); the degree of concentration of CCPs exposures (concentration analysis) and the degree of interconnectedness of CCPs through common clearing member groups.

---

\(^{199}\) Stathis Tompaidis ‘Measuring System-wide Resilience of Central Counterparties’.

\(^{200}\) See A. Delivorias ‘Regulation of OTC derivatives – Amending EMIR’, EPRS briefing, June 2017

\(^{201}\) Commission communication ‘Responding to challenges for critical financial market infrastructures and further developing the Capital Markets Union’.

\(^{202}\) For a list of the CCPs included in the scope of the exercise, see above, p. 15.

\(^{203}\) ESMA ‘Methodological Framework for the 2017 EU-wide CCP Stress Test Exercise’.
8. Main references


Benoît Coeuré ‘Reforme des marches de produits dérivés de gré à gré: la position de la Banque Centrale Europeenne’ Revue d’économie financière, 2013/1 N° 109, 16p.


European Securities and Markets Authority – EMIR Review Reports no 1-4, 2015.


Guido Ferrarini and Paolo Saguato ‘Regulating Financial Market Infrastructures’ European Corporate Governance Institute, June 2014, 43p.


‘Derivatives’, ‘central counterparties’ and ‘trade repositories’. What are they and how are they inter-related? Why was regulation necessary, and how does the European Market Infrastructure Regulation (EMIR) regulate? This paper places these elements in context and provides an introduction to the subject of over-the-counter derivatives, as well as the developments that led to the Commission’s proposals for revision of the legislation in 2017.