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Looking back at OTC derivative reforms – objectives, progress and gaps

At the Pittsburgh summit in 2009, G20 leaders pledged to reform over-the-counter derivatives markets to improve their transparency, prevent market abuse and reduce systemic risks. Focusing on Europe, this article recalls the objectives of the Pittsburgh reforms, reviews the progress made since their adoption, in particular with regard to trade reporting and central clearing, and identifies remaining gaps and issues for policymakers. The latter relate mainly to: (i) the resilience, recovery and resolution of central counterparties, given their growing systemic importance as a result of the reforms; (ii) the need to strengthen the stability of derivatives markets; and (iii) the still insufficient data quality and transparency of OTC derivative transactions, despite the considerable progress already made.

1 Introduction: the Pittsburgh reforms of OTC derivatives

Owing to their size, inherent risks and lack of transparency, global over-the-counter (OTC) derivatives markets came into the focus of policymakers after the crisis. As at end-2008, they had reached USD 598 trillion (EUR 430 trillion) measured by notional value and USD 35 trillion (EUR 25 trillion) by gross market value (see Chart 1). In response to the global financial crisis, G20 leaders pledged at the Pittsburgh summit in September 2009 to reform OTC derivatives markets to improve their transparency, prevent market abuse and reduce systemic risks. Seven years later, it is apt to review the progress in implementing the Pittsburgh commitment at the global and in particular the European level and the remaining gaps.

A derivative is a contract which “derives” its value from an asset or a reference price and is used for hedging or speculative purposes. The most basic types of derivative are forwards, options and swaps.¹ In terms of underlying asset classes, commodity, equity, foreign exchange, credit and interest rate derivatives can be distinguished, with the latter being by far the largest class, both in terms of notional principal and gross market value (see Chart 1). Derivative contracts can either be traded on a regulated exchange or a trading platform (“exchange-traded derivatives”, or ETDs, which are usually highly standardised) or agreed over the counter, i.e. bilaterally between counterparties on tailor-made terms. Derivatives are not necessarily as dangerous as some have suggested – perhaps most notably Warren Buffet who in 2002 called credit default swaps “financial weapons of mass destruction”.² They do, however, create counterparty risk and have a higher leverage

¹ Forwards are agreements between two parties whereby the seller/buyer has the obligation to deliver/pay for an asset at a fixed price at an agreed future date. Futures are standardised forwards. Options are contracts that give the buyer the right but not the obligation to buy or sell an asset at a fixed price in the future. Swaps involve an obligation to exchange future cash flows over an agreed term, e.g. a set of cash flows based on a fixed interest rate for those based on a floating rate.

² See Helen Simon’s article in Investopedia, entitled “Are derivatives a disaster waiting to happen?”

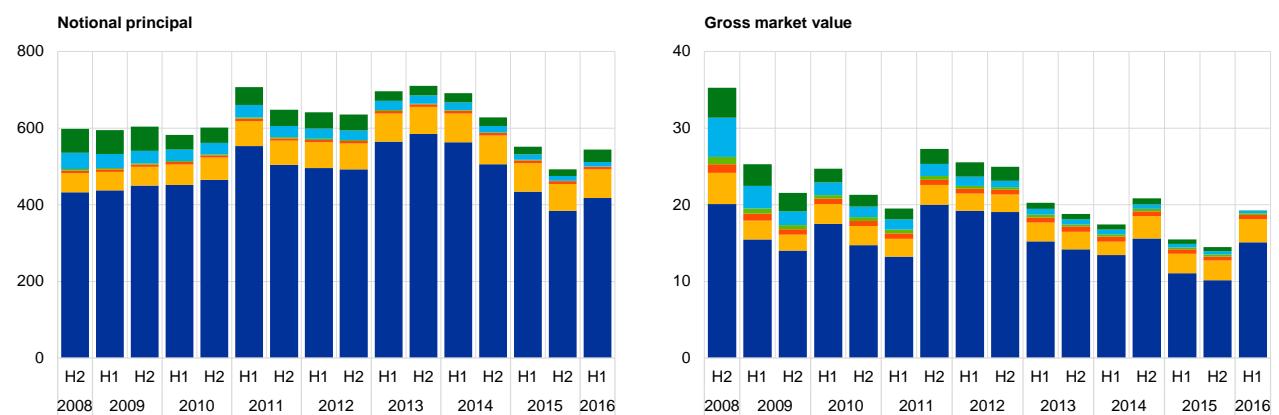
than other financial instruments, due to their gearing effect that can magnify gains and losses.

Derivatives and especially credit default swaps (CDS) were a main factor behind the problems of Lehman Brothers and AIG. It is therefore not a coincidence that in November 2008, two months after the collapse of Lehman Brothers, the Washington G20 summit listed “increasingly complex and opaque financial products, and consequent excessive leverage” as one of the root causes of the global financial crisis. Supervisors and regulators were therefore asked to “speed efforts to reduce the systemic risks of CDS and over-the-counter (OTC) derivatives transactions and expand OTC derivatives market transparency”.³ The latter was even a high-priority action to be completed prior to 31 March 2009.

Chart 1 Global OTC derivatives markets

(USD trillions; half-year data)

- interest rate derivatives
- FX derivatives
- equity derivatives
- commodity derivatives
- CDS
- unallocated



Source: Bank for International Settlements (BIS) semi-annual OTC derivatives survey data.

At the Pittsburgh summit in September 2009, G20 leaders committed to increase the resilience and transparency of OTC derivatives markets. In the Leader’s Statement, they called on the G20 Finance Ministers and Central Bank Governors “to reach agreement on an international framework of reform in the following critical areas”, including:

“Improving over-the-counter derivatives markets: All standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties⁴ by end-2012 at the latest. OTC derivative contracts should be reported to trade repositories. Non-centrally

³ Declaration of the Summit on Financial Markets and the World Economy, Group of Twenty (G20), 2008, p. 1, and Action Plan, p. 3, respectively.

⁴ The part of the OTC derivatives market served by central counterparties performed better during the crisis due to their stronger risk management and higher transparency of members’ exposures.

cleared contracts should be subject to higher capital requirements. We ask the FSB and its relevant members to assess regularly implementation and whether it is sufficient to improve transparency in the derivatives markets, mitigate systemic risk, and protect against market abuse.”⁵

There have rarely been so few lines that have kept so many busy for so long, as those of the Pittsburgh commitment on OTC derivatives. The implementation of this mandate resulted in an unprecedented wave of new standards and regulations, and led to extensive industry adaptations, both at the global level and in individual jurisdictions, with the ultimate aim of improving transparency, avoiding market abuse and reducing systemic risks of OTC derivatives markets.

This article focuses on assessing the current situation in the European Union (EU) against the original objectives of the Pittsburgh agenda. It takes stock of the progress made and identifies remaining gaps with regard to the five elements of the bold Pittsburgh reform agenda⁶:

- reporting all OTC derivative contracts to trade repositories;
- bringing all standardised OTC derivative contracts on exchange; and
- clearing them through central counterparties;
- introducing higher capital requirements for non-centrally cleared contracts;
- regularly assessing whether those four measures are sufficient to “improve market transparency, mitigate systemic risk, and protect against market abuse”.

Central counterparties (CCPs) and trade repositories (TRs) are financial market infrastructures (FMIs) that have become more prominent with respect to OTC derivatives markets as a result of the Pittsburgh reforms. A CCP interposes itself between the two parties of a securities or derivative trade, becoming the buyer to the seller and vice versa, and taking on the counterparty credit risk (i.e. the risk that one party to the contract defaults).⁷ Through this process, as well as through multilateral netting (see Figure 1), the CCP reduces overall credit and liquidity risk and replaces bilateral exposures by a centralised network of exposures between clearing members and the CCP. While the CCP removes members’ counterparty risk towards each other, the members are – in addition to their principal positions – exposed to the CCP through their margin payments and contributions to the default fund, which the CCP might use as part of its waterfall of resources if other members default (Figure 2). The risk management tools of a CCP include “initial margin” (a pre-set

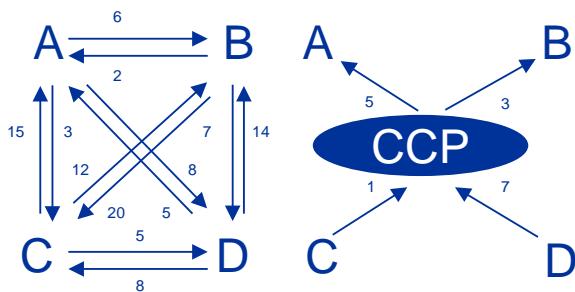
⁵ Leaders' Statement – The Pittsburgh Summit, G20, 2009, pp. 8-9.

⁶ The G20 summits in Cannes (November 2011) and St. Petersburg (September 2013) added additional aspects to the OTC derivative reform agenda, notably margining requirements for non-centrally cleared derivatives in the case of the former, and the agreement that jurisdictions should defer to the CCP rules of other jurisdictions in the case of the latter, but the gist of the agenda stems from Pittsburgh.

⁷ For more detailed explanations of the functioning of CCPs, see for example the webpages of the Deutsche Bundesbank on [oversight of central counterparties](#); “OTC derivatives: new rules, new actors, new risks”, *Financial Stability Review*, No 17, Banque de France, 2013; and Nixon, D. and Rehlon, A., “Central counterparties: what are they, why do they matter and how does the Bank supervise them?”, *Bank of England Quarterly Bulletin*, Q2 2013.

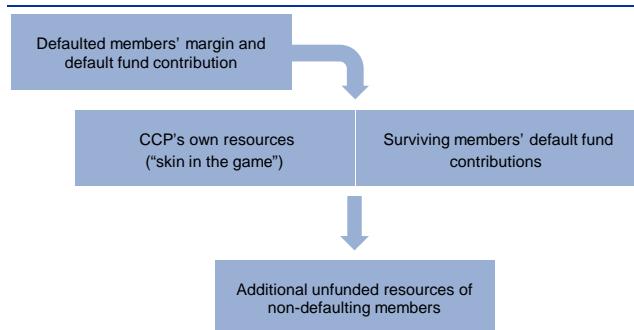
amount of collateral posted to the CCP), “variation margin” (payments that become due as a result of changes in market prices) and haircuts applied to collateral. A trade repository is a centralised electronic registry for storing details of individual derivative trades, both cleared and non-cleared (see Section 3.1).

Figure 1
Multilateral netting of CCPs



Source: ECB.
Note: CCP calculates and records net obligations from trades (“multilateral netting”).

Figure 2
Waterfall of financial resources if a clearing member defaults on its obligations



Source: ECB.

The remainder of this article is organised as follows: Section 2 describes the Principles for financial market infrastructures (PFMIs), a key set of global standards influenced by the Pittsburgh commitment as regards CCPs and TRs, and other global guidance and ongoing reform work. Section 3 reviews where Europe stands with regard to the reporting obligation, the clearing obligation and the other elements of the Pittsburgh reforms, which were to a large extent implemented via the European Market Infrastructure Regulation. Section 4 identifies remaining gaps and issues for further reform, in particular in relation to making CCPs more resilient and easier to recover and resolve, strengthening the stability of derivatives markets, and further improving the transparency of OTC derivatives markets. Section 5 concludes.

2 Global guidance

2.1 Global standards

As part of a wider regulatory response to the crisis, enhanced standards for FMI have been adopted around the globe. On a global level, these include notably the Principles for financial market infrastructures of the Committee on Payment and Settlement Systems (CPSS)⁸ and the International Organization of Securities Commissions (IOSCO). In February 2010, the CPSS and IOSCO launched a comprehensive review of three existing sets of standards for systemically important payment systems, securities settlement systems and CCPs, “in support of

⁸ The former CPSS was renamed the Committee on Payments and Market Infrastructures (CPMI) in September 2014 and is currently chaired by Benoît Cœuré, Member of the Executive Board of the ECB. See the [BIS website](#) for an overview of the role and work of the CPMI.

the FSB's broader efforts to strengthen core financial infrastructures and markets by ensuring that gaps in international standards are identified and addressed"⁹. The ECB and some Eurosystem central banks were closely involved in this review and the definition of the PFMIs.

Published in April 2012, the PFMIs took the lessons learnt from the financial crisis into account. This applies in particular to the need to mitigate risks arising from centrally cleared OTC derivatives. Six out of the 24 principles specifically address CCPs (Principles 4, 6, 7, 13, 14 and 20). TRs are also mentioned, and under "Access to FMIs", the introduction makes explicit reference to the Pittsburgh reform agenda: "Access to CCPs in particular is even more important in light of the 2009 G20 commitment to centrally clear all standardised OTC derivatives by the end of 2012."¹⁰

Inter alia, the PFMIs set strong risk management standards for CCPs, and for the first time also create a framework for TRs.¹¹ To increase the resilience of CCPs, the Principles set stronger requirements for CCPs' credit and liquidity risk management, as well as their investment and custody risk management. For example, CCPs need to cover credit exposures to their members for all products through an effective margin system that is risk-based and regularly reviewed and tested (Principle 6), and to maintain financial resources sufficient to cover the default of the largest member (or in the case of globally active CCPs the two largest members) in extreme but plausible market conditions (Principle 4). The PFMIs also outline responsibilities for central banks, market regulators and other relevant authorities responsible for FMIs in implementing the standards ("Responsibilities A to E"). Although the Principles are not legally binding, all Financial Stability Board (FSB), IOSCO and CPMI member jurisdictions have committed to implement them and the CPMI and IOSCO are monitoring progress in this respect.

Under "Responsibility D" of the PFMIs, relevant authorities are asked to adopt and apply the Principles consistently. In Europe, the PFMIs were implemented by the European Market Infrastructure Regulation (EMIR), which entered into force in August 2012 and for the first time introduced a common EU regulatory and supervisory framework for CCPs and TRs (for the latter, see Section 3.3.1).¹² In June 2013, the Governing Council of the ECB adopted the PFMIs as Eurosystem oversight standards for all FMIs in the euro area under Eurosystem responsibility.

2.2 Ongoing global reform work

The FSB has been tasked with regularly assessing the implementation of the Pittsburgh reform agenda. The FSB progress reports on the implementation of

⁹ [Principles for financial market infrastructures](#), CPSS-IOSCO, 2012, p. 6.

¹⁰ Ibid, p. 15.

¹¹ The PFMIs also cover other types of FMI such as payment systems and central securities depositories.

¹² In this article, the focus is on the process, not the content of EMIR. It should be noted that the CPMI and IOSCO did not find EMIR to be fully compliant with the PFMIs.

OTC derivative reforms, the latest of which was published in August 2016¹³, provide a good overview of the numerous ongoing global workstreams triggered by Pittsburgh. Beyond the PFMs, these include other relevant work and guidance by the CPMI and IOSCO, the Basel Committee on Banking Supervision (BCBS) and the FSB itself. The reform activities, many of which are also pursued at national level, range from trading-related aspects, capital and margin requirements for non-centrally cleared derivatives, central clearing and trade reporting, to cross-border issues, which also mainly relate to CCPs and TRs.

The Eurosystem is involved in several global workstreams stemming from Pittsburgh. These include in particular the work on CCP resilience, recovery and resolution, which became crucial due to the increased concentration of business and risk within CCPs resulting from the clearing mandate (see Section 4.1). Other international workstreams, to which the ECB and some Eurosystem central banks contribute, relate for example to the Legal Entity Identifier (LEI), the removal of legal barriers to trade reporting and access to TR-held data¹⁴, as well as to the harmonisation and aggregation of OTC derivatives data (see Box 1).

Box 1

Global work on harmonising and aggregating OTC derivatives data

Data reported to TRs on OTC derivatives need to be harmonised to better serve global data aggregation. Global aggregation of the data reported to TRs helps authorities to obtain a comprehensive view of the OTC derivatives market, thereby facilitating authorities' understanding of global exposures of large financial institutions operating in more than one jurisdiction. In September 2014, the FSB published a feasibility study on options to produce and share global aggregated OTC derivatives TR data. This "Aggregation Feasibility Study"¹⁵ concluded that "it is critical for any aggregation option that the work on standardisation and harmonisation of important data elements be completed, including in particular through the global introduction of the LEI, and the creation of a Unique Transaction Identifier (UTI) and Unique Product Identifier (UPI)". The FSB asked the CPMI and IOSCO to develop global guidance on the harmonisation of data elements reported to TRs as a prerequisite for data aggregation by authorities. In November 2014, the CPMI and IOSCO established a joint working group for the harmonisation of key OTC derivatives data elements (Harmonisation Group, HG) with a mandate to develop guidance regarding the definition, format and usage of the UTI, the UPI and other critical OTC derivatives data elements (CDEs). The HG is co-chaired by representatives of the ECB and the US Commodity Futures Trading Commission.

Global work on harmonising the structure, content and format of reported data elements is in progress and expected to be finalised by end-2017. The HG published a consultative report on the UTI in August 2015¹⁶, two consultative reports on the UPI (December 2015 and August

¹³ See [OTC Derivatives Market Reforms – Eleventh Progress Report on Implementation](#), FSB, 2016.

¹⁴ In several jurisdictions, effective access to the details of OTC derivative transactions is restricted by data protection laws, bank secrecy laws and indemnification clauses. See [Thematic Review on OTC Derivatives Trade Reporting](#), FSB, 2015.

¹⁵ [Feasibility study on approaches to aggregate OTC derivatives data](#), FSB, 2014.

¹⁶ [Consultative report – Harmonisation of the Unique Transaction Identifier](#), CPMI-IOSCO, 2015.

2016)¹⁷ and, so far, two consultative reports on the CDEs (September 2015 and October 2016)¹⁸. In addition, the HG held workshops involving industry stakeholders to discuss the harmonisation of these data elements. The target date for publishing the final UTI technical guidance to authorities is December 2016.¹⁹ It is intended to provide guidance *inter alia* on the circumstances in which a UTI is required, which entities should be responsible for generating UTIs, and the UTI's structure and format. As regards the UPI technical guidance, special attention is given to the mapping of the UPI code to the UPI reference data, which contain the bulk of the information about the products and their underlying assets or instruments. The target date for publishing the final UPI technical guidance to authorities is mid-2017. The CDE technical guidance work has been focusing on the identification and harmonisation of data elements other than the UTI and UPI that are critical for reporting and for effective global aggregation. In total, some 80 CDEs are being worked on. An important aspect of the CDE harmonisation work is to make use of existing industry standards, in particular the ISO 20022 standard, whenever possible. The aim is to publish the final CDE technical guidance to authorities by end-2017.

In addition to technical guidance to authorities, work is also ongoing on the governance of the critical data elements. The HG is developing a governance framework for the CDEs. A dedicated FSB working group was established in March 2016 to elaborate governance frameworks for the UTI and UPI (the 'GUUG'). The GUUG has already established criteria for and functions to be performed by the UTI and UPI governance frameworks, and aims to publish a consultative report on the UTI governance arrangement soon after the publication of the UTI technical guidance. As regards the UPI, the GUUG aims to finalise its work and make recommendations to the FSB after completion of the work of the HG on the UPI, i.e. currently scheduled towards the end of 2017.

However, further steps will be needed to facilitate global aggregation. Implementation of the technical guidance on uniform global identifiers, i.e. the UTI, UPI and other CDEs, the definition of efficient and effective governance arrangements as well as the adoption of the LEI are important steps towards, and prerequisites for, creating a global data aggregation mechanism and ensuring that OTC derivatives data can be adequately aggregated. The ECB expects that internationally coordinated work will start in 2017 to develop and implement an efficient and effective mechanism for global data aggregation.

3 Review of the situation and progress in Europe

In Europe, a large part of the Pittsburgh reform initiative was formalised in 2012 in the European Market Infrastructure Regulation (EMIR). Formally known as "Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories"²⁰,

¹⁷ Consultative report – Harmonisation of the Unique Product Identifier, CPMI-IOSCO, 2015, and Second consultative report – Harmonisation of the Unique Product Identifier, CPMI-IOSCO, 2016.

¹⁸ Consultative report – Harmonisation of key OTC derivatives data elements (*other than UTI and UPI*) – first batch, CPMI-IOSCO, 2015, and Consultative report – Harmonisation of critical OTC derivatives data elements (*other than UTI and UPI*) – second batch, CPMI-IOSCO, 2016.

¹⁹ The cut-off date for data and sources used in this article was 2 December 2016.

²⁰ See the Regulation published in the Official Journal of the European Union on 27 July 2012.

EMIR for the first time set regulatory and supervisory standards in the EU for CCPs and TRs, which have been further detailed in regulatory technical standards (RTS). While Recital 5 of EMIR refers to the Pittsburgh agreement, there was an even stronger link to the financial crisis and the G20 commitment in the press release of 15 September 2010 accompanying the European Commission's draft proposal:

"As part of its ongoing work in creating a sounder financial system, the European Commission has tabled today a proposal for a regulation aimed at bringing more safety and more transparency to the over-the-counter (OTC) derivatives market. [...] The near-collapse of Bear Sterns in March 2008, the default of Lehman Brothers on 15 September 2008 and the bail-out of AIG the following day started to highlight the shortcomings in the functioning of the OTC derivatives market, where 80% of derivatives are traded. [...] The Commission's proposal, fully in line with the EU's G20 commitments and the approach adopted by the United States, now passes to the European Parliament and the EU Member States for consideration."²¹

3.1 Where Europe stands with regard to the reporting obligation

EMIR introduces the mandatory reporting of all derivative contracts to TRs, which started in February 2014. This "reporting obligation" applies to both OTC and exchange-traded derivatives in all five main asset classes, i.e. commodity, equity, foreign exchange, credit and interest rate derivatives. Trades cleared via CCPs are also included. 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 underlying, the price, the amount outstanding, the execution and clearing venue of the contract, the valuation, the collateral and life-cycle events (e.g. compression, cancellation, termination). Some of these characteristics, notably price or life-cycle events, change over the life cycle of a derivative trade.

According to EMIR, all EU-located counterparties to a derivative contract must report the contract details to a TR authorised by the European Securities and Markets Authority (ESMA). Pursuant to EMIR Articles 55 and 77, TRs to which the contracts are reported need to be registered with, or in the case of third-country TRs, recognised by ESMA. Currently there are six TRs authorised by ESMA, which are CME, DDRL²², ICE, KDPW, Regis-TR and UnaVista.²³ 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. Only the European

²¹ [Making derivatives markets in Europe safer and more transparent](#), European Commission, 2010.

²² The DTCC Derivatives Repository Ltd. (DDRL), sometimes also just referred to as DTCC, is a London subsidiary of DTCC Global Trade Repository (GTR).

²³ See [List of registered trade repositories](#), ESMA.

Systemic Risk Board (ESRB) and ESMA have access to the full EU-wide dataset.²⁴ ESMA also directly supervises the TRs and can impose sanctions in case of non-compliance with EMIR requirements. In March 2016, ESMA took for the first time such an enforcement action against a TR registered in the EU.²⁵

One characteristic of EMIR reporting is the “double-reporting obligation”.²⁶

Unlike the single-sided reporting under the US regime, under EMIR both counterparties to a derivative transaction have to report it, if they are located in the EU. As there are multiple TRs in the EU, trades are often reported to two different TRs. Hence, any data aggregation requires the reconciliation of the information on the two sides of a trade within and across TRs. This reconciliation relies in principle on the use of the UTI, but its definition is still under development at the global level (see Box 1).

In addition to the mandatory reporting of transaction-level data, EMIR also requires TRs to publish aggregated figures. On their websites the TRs publish the number of trades, their notional and market value, and other indicators. Due to the double-reporting regime, the transactions are divided into dual-sided and single-sided trades, depending on whether the other leg of the transaction is reported to the same TR or not. The public TR data are characterised by structural breaks, related to differences and changes in reporting or incorrectly submitted trades. Despite these open issues (see also Section 4.3), within certain limits the EMIR data allow some conclusions to be drawn on the characteristics of the European derivatives market (see Box 2). In line with the CPMI-IOSCO public disclosure framework, European CCPs also publish a wide range of quantitative data, e.g. related to credit and liquidity risk, margin and collateral.²⁷

Box 2

Characteristics of the European derivatives market based on EMIR data

The size of the European OTC derivatives market in terms of notional outstanding was around EUR 460 trillion according to the EMIR public data for end-June 2016. By far 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% (see Chart A). These shares are broadly consistent with the semi-annual global OTC derivatives survey of the BIS, on which Chart 1 is based. In absolute terms, however, the notional outstanding values of the EMIR public data and the BIS semi-

²⁴ See Fache-Rousová, L., Kulmala, K.-M. and Osiewicz, M., “[Reporting of derivatives transactions in Europe – Exploring the potential of EMIR micro data against the challenges of aggregation across six trade repositories](#)”, 2015, for a description of the reporting under EMIR and related issues such as data quality and the methodology for aggregating data across TRs.

²⁵ See [ESMA fines DTCC Derivatives Repository Limited €64,000 for data access failures](#), 2016.

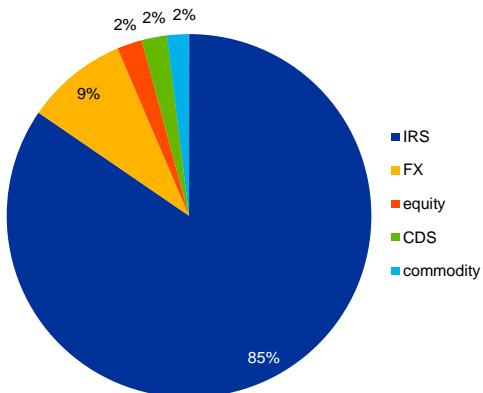
²⁶ When creating the framework for EMIR, ESMA’s rationale for dual-sided reporting was that if both counterparties are required to report their valuations of a derivative position, it allows for a clearer process for discovering pricing mismatches and an easier detection of potential sources of risk. In addition, authorities come to know about a derivative trade even if one counterparty fails to report it.

²⁷ The European Association of CCP Clearing Houses (EACH) maintains a [list](#) of these public disclosures.

annual survey (global size of around EUR 490 trillion at end-June 2016²⁸) cannot be reconciled, which is explained by the methodological differences of the two datasets.²⁹

Chart A European OTC derivatives market by asset class

(percentage of notional amount outstanding on 1 July 2016)



Sources: EMIR public data, published on TRs' websites.

The EMIR data also provide first insights into the structure of the derivatives market in Europe. In the analysis, the focus is on data from three individual TRs connected to European CCPs (see Table 2) authorised to clear the largest asset class IRS. These are Regis-TR, CME and DDRL. In addition to their use in the analysis, data reported to DDRL are particularly interesting given their large and diversified coverage of asset classes. The choice of the TRs for analytical purposes is also dictated by the availability of trade state reports, as opposed to trade activity reports. The former contain all outstanding trades at the end of the day and allow positions to be derived and data to be aggregated. However, trade state reports are currently not mandatory under EMIR and not all TRs provide them.³⁰

The analysis of EMIR data shows that for IRS, the share of cleared OTC trades has increased steadily since the introduction of the clearing obligation. Chart B depicts cleared versus non-cleared OTC IRS transactions since January 2015 for two TRs which provide trade state reports, DDRL and Regis-TR. The focus is on the number of trades, as this measure is less prone to outliers or misreporting than notional or market values. The share was stable at around 25% in 2015, while it increased to around 35% in the first three quarters of 2016, i.e. after the entry into force of the first RTS on the clearing obligation in December 2015 (see Section 3.3).

The EMIR data also shed light on the short-term effects of the introduction of the clearing obligation for IRS and of the so-called “frontloading” (see Section 3.3). Chart C depicts the developments in the number and notional values of new cleared trades reported to CME. In the week including the frontloading deadline of 21 May 2016, there is a noticeable one-off increase in the trading volumes, both in terms of notional values and of the number of trades, due to the clearing of the trades outstanding before the frontloading deadline. After the start of the clearing obligation (i.e. for Category 1 counterparties) on 21 June 2016 (see Table 1 below), a significant

²⁸ At end-June 2016, the total global notional value stood at USD 544 trillion (USD 1 = EUR 1.1102).

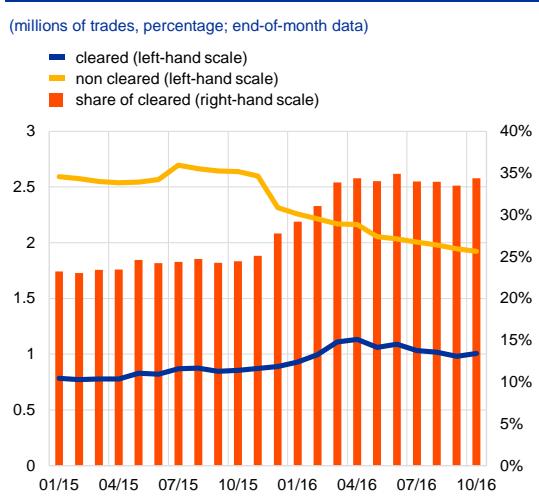
²⁹ The BIS surveys a limited set of derivative dealers, which report their aggregate derivative positions on a global consolidated basis. About 70 major derivative dealers from 13 countries participate in the BIS semi-annual survey; despite the limited sample, the semi-annual survey captures a large portion of the global OTC market as the BIS triennial survey, which covers many more institutions (around 400) from many more countries (47), confirms (a comparison between the two BIS surveys suggests that the market share of the semi-annual reporters is about 97% for interest rate and credit derivatives). See Abad et al., “[Shedding light on dark markets: First insights from the new EU-wide OTC derivatives dataset](#)”, 2016.

³⁰ In the future, trade state reports are envisaged to become a mandatory output by TRs. For more details, see ESMA’s consultation paper [Draft technical standards on access to data and aggregation and comparison of data across TR under Article 81 of EMIR](#), 2015.

shift in the level of weekly trading can be observed for all OTC IRS contracts between Category 1 counterparties, which then had to be centrally cleared.

Chart B

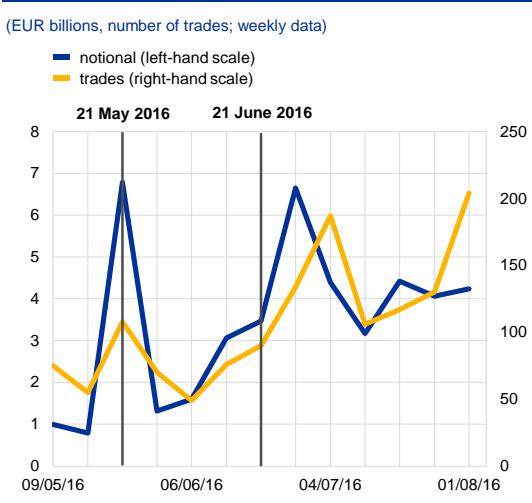
Cleared versus non-cleared outstanding OTC IRS trades for DDRL and Regis-TR



Sources: EMIR data, DDRL and Regis-TR.

Chart C

Number and notional values of cleared OTC IRS trades reported to CME



Sources: EMIR data and CME activity reports.

3.2 Trading requirements for OTC derivatives

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). Published in the Official Journal of the European Union on 12 June 2014, the combined legislation will, after transposition of MiFID II into national law, enter into force on 3 January 2018 within Member States. Its aim is to ensure fairer, safer and more efficient markets, as well as a high degree of harmonised protection for investors in financial instruments. More specifically, the revised Directive and new Regulation include authorisation requirements for regulated markets, rules on the admission of financial instruments to trading, transparency obligations for trading shares, requirements for investment firms, rules for transaction reporting, and most relevant in relation to OTC derivatives, rules for OTC derivatives to be traded on exchanges or electronic trading platforms, so-called “organised trading facilities” (OTFs). One important requirement for example is that OTFs must remain market risk neutral and cannot take on positions themselves. The requirements apply to OTC derivatives, which are subject to mandatory clearing, which creates a link to EMIR. Like for EMIR, ESMA is responsible for drafting regulatory and implementing technical standards (ITS) in relation to MiFID II and MiFIR.

3.3 Where Europe stands with regard to the clearing obligation

Japan and the United States were the first to implement the clearing obligation agreed on in Pittsburgh for certain OTC derivative contracts. The clearing obligation was first introduced in Japan for yen-denominated IRS and CDS indices in November 2012, and for yen-euro IRS in July 2014. In the United States, where the Pittsburgh agenda was enshrined in the Dodd-Frank Act, the clearing obligation kicked in in March 2013 for a wider range of contracts including IRS, basis swaps and forward rate agreements (FRAs) in any of the most liquid currencies (US dollar, euro, pound sterling and yen), as well as CDS indices and overnight index swaps (OIS) in US dollars, euro and pounds sterling.³¹

In the EU, the phasing-in of the clearing obligation started in June 2016 and will continue until 2018, covering an even wider range of contracts and currencies than in the United States and Japan. ESMA is responsible for proposing which contracts should be subject to the clearing obligation via RTS, which are then approved by the European Commission, Council and Parliament. A first RTS entered into force on 21 December 2015, which mandates the central clearing of fixed-to-float IRS and basis swaps in euro, pounds sterling, yen and US dollars, and of FRAs and OIS in euro, pounds sterling and US dollars. Depending on the type of counterparty, the implementation of the clearing obligation is phased in. It started on 21 June 2016 for CCP clearing members, and on 21 December 2016 for financial counterparties and alternative investment funds that are not clearing members but are above a certain threshold³² (see Table 1). For financial counterparties and alternative investment funds below that clearing threshold, and for non-financial counterparties, the obligation will start on 21 June 2017 and 21 December 2018 respectively.³³ In addition, the European Commission has published a second and third RTS, which entered into force on 9 May and 9 August 2016 and mandate the clearing of certain index CDS in euro (e.g. "iTraxx Europe Main" five-year portfolio CDS) and fixed-to-float IRS and FRAs in Norwegian krone, Polish zloty and Swedish krona. Depending on the type of counterparty, the implementation of these mandates will start on 9 February 2017 and continue until 9 May 2017 for the index CDS, and until 9 July 2019 for the derivative classes in the three non-euro currencies.³⁴

Under EMIR, there is also an obligation to centrally clear certain contracts that counterparties have entered into with each other before the clearing obligation takes effect ("frontloading"). The frontloading obligation only applies to Category 1 and Category 2 counterparties (see the frontloading dates in Table 1). All contracts

³¹ See Rahman, A., "[Over-the-counter \(OTC\) derivatives, central clearing and financial stability](#)", *Bank of England Quarterly Bulletin*, Q3 2015, for an overview of the clearing obligation in the United States, Japan and the EU, and the different types of contracts that are or have the potential to become subject to it.

³² The threshold of EUR 8 billion needs to be computed at group level, as the month-end average of the group's outstanding gross notional amount of non-centrally cleared derivatives for January, February and March 2016. A number of exceptions apply, e.g. in the case of non-EU counterparties.

³³ For more information, see the first [RTS on the clearing obligation](#) published in the Official Journal of the European Union.

³⁴ See [ESMA's webpages on the clearing obligation](#), and the [second RTS](#) and [third RTS](#).

subject to clearing obligations, frontloaded or not, must be cleared through a CCP only once the clearing obligations take effect. However, counterparties may choose to start clearing these derivatives already during the frontloading period.

Table 1

Timeline for the clearing obligation by counterparty type and asset class

Counterparties	Category number	IRS in G4 currencies	Index CDS	IRS and FRAs in NOK, PLN and SEK
Clearing obligation starting dates				
CCP clearing members	Cat. 1	21/06/2016	09/02/2017	09/02/2017
Other financial counterparties and alternative investment funds above the group-level threshold of non-cleared derivative positions (EUR 8 billion)	Cat. 2	21/12/2016	09/08/2017	09/07/2017
Other financial counterparties and alternative investment funds below the EUR 8 billion threshold	Cat. 3	21/06/2017	09/02/2018	09/02/2018
Other non-financial counterparties	Cat. 4	21/12/2018	09/05/2019	09/07/2019
Frontloading dates				
CCP clearing members	Cat. 1	21/02/2016	09/10/2016	09/10/2016
Other financial counterparties and alternative investment funds above the group-level threshold of non-cleared derivative positions (EUR 8 billion)	Cat. 2	21/05/2016	09/10/2016	09/10/2016

Sources: First, second and third RTS on the clearing obligation (see footnotes 33 and 34).

3.3.1 Supervisory framework for CCPs

Pursuant to EMIR Article 18, supervisory colleges have been established for all CCPs operating in the EU. During the authorisation phase, these CCP colleges have focused on assessing the CCPs' compliance with EMIR. In doing so, the national competent authorities for each CCP have conducted a risk assessment of the extent to which the CCP complies with all the requirements set in EMIR and the accompanying RTS. Based on this assessment, Eurosystem college members in their roles as, inter alia, oversight and central bank of issue (CBI)³⁵ representative have been assessing areas such as the CCP's clearing and settlement process, liquidity risk management, stress testing and interoperability arrangements with other CCPs. During its elaborations in the college and when forming its opinion regarding the authorisation of the CCPs, the Eurosystem provided recommendations and induced changes in these key areas, and thus achieved improvements in the ultimate CCP risk management design.

The Eurosystem and the Single Supervisory Mechanism (SSM) are represented in colleges of euro area CCPs and non-euro area CCPs. Two functions of the ECB/Eurosystem participate in the EMIR CCP colleges: the SSM, as the supervisor of the significant clearing members participating in the CCPs (EMIR Article 18.2 (c)); and the Eurosystem, as CBI for the euro, for those CCPs where the euro is one of

³⁵ While the oversight function primarily looks at the CCP itself, the CBI function focuses on potential risks for the currency, which may emanate from the CCP's activities. Both functions share the concern for the CCP's systemic implications in view of its central role and limited substitutability in the markets served and its interdependencies with other CCPs and FMs.

the most significant currencies cleared (see Table 2). Pursuant to EMIR Article 18.2 (g) and (h), relevant members of the Eurosystem participate in EMIR colleges in their oversight capacity and as CBI for CCPs where the euro is one of the most relevant currencies cleared, notably – besides euro area CCPs – offshore CCPs which clear a significant share of financial instruments denominated in euro. For the CBI function, the Governing Council decided in December 2012 that, as a general rule, the Eurosystem is represented by the relevant euro area NCBs when the CCP is established within the euro area, and by the ECB for non- euro area CCPs.

Table 2

List of EU CCPs showing Eurosystem CBI college representation and TR connection

Country	CCP	Connected TR
Euro area		
Austria	CCP Austria Abwicklungsstelle für Börsengeschäfte GmbH (CCP.A)	N/A*
France	LCH.Clearnet SA	UnaVista
Germany	Eurex Clearing AG European Commodity Clearing AG (ECC)	Regis-TR Regis-TR
Greece	Athens Exchange Clearing House (Athex Clear)	UnaVista
Italy	Cassa di Compensazione e Garanzia S.p.A.(CCG)	UnaVista
Netherlands	European Central Counterparty N.V. (EuroCCP) ICE Clear Netherlands B.V.	DDRL ICE
Portugal	OMIClear	DDRL
Spain	BME Clearing	Regis-TR
Non-euro area EU		
Sweden	Nasdaq OMX Clearing AB	Regis-TR
United Kingdom	CME Clearing Europe ICE Clear Europe LCH.Clearnet Limited LME Clear Limited (observer status)	CME ICE UnaVista DDRL

Sources: CCP websites.

* CCP.A no longer clears derivatives; it now mostly clears equities.

In addition, the Eurosystem is – albeit only to a limited extent – involved in the recognition of third-country (i.e. non-EU) CCPs. Pursuant to Article 25.3 (f) of EMIR, ESMA consults the Eurosystem as central bank of issue in cases where the euro is one of the most relevant currencies cleared by the CCP. However, the recognition procedure under EMIR leaves room for improvement, and the ECB sees the review of EMIR as an opportunity to rethink it. In particular, the conditions which ESMA has to consider when taking its recognition decision are limited to matters of regulatory and supervisory equivalence and supervisory cooperation. This may not provide sufficient leeway to ESMA to take into account significant concerns raised by the consulted authorities, where the current conditions for recognition are met.

3.3.2 Capital charges for exposures to non-qualified CCPs

The Basel III framework and its EU implementation via the Capital Requirements Regulation (CRR) grants EU banks lower capital requirements

for their exposures to a qualified CCP (or QCCP), compared with a non-QCCP.

Basel III introduced a capital requirement for the exposures of EU banks and their foreign subsidiaries to a CCP. A CCP gains QCCP status in the EU if it has been authorised (in the case of EU CCPs) or recognised (in the case of non-EU CCPs) under EMIR.³⁶ Foreign CCPs can only be recognised by ESMA if the European Commission has taken a positive equivalence decision on the foreign regulatory regime for CCPs. However, the CRR also includes a transitional provision that allows CCPs not yet authorised/recognised to be treated as QCCPs by EU Member States until a given deadline (re-extended by the European Commission to 15 December 2016), unless they receive EU recognition earlier.³⁷ The higher capital charges for exposures to non-QCCPs create incentives for banks to use QCCPs and for CCPs to seek this status if they are not yet authorised or recognised under EMIR. As regards default fund contributions and trade exposures to non-QCCPs, the capital requirement under Basel III is as follows:³⁸

- banks must apply a risk weight of 1,250% to their default fund contributions to a non-qualifying CCP;
- banks must apply the standardised approach for credit risk in the main framework, according to the category of the counterparty, to their trade exposure to a non-qualifying CCP.

3.4 Requirements for non-centrally cleared derivatives

EMIR requires counterparties to apply risk mitigation techniques to their non-centrally cleared derivatives, including the exchange of collateral and bilateral margining. Article 11.3 of EMIR specifies that “financial counterparties shall have risk-management procedures that require the timely, accurate and appropriately segregated exchange of collateral with respect to OTC derivative contracts that are entered into on or after 16 August 2012”. The same applies for non-financial counterparties exceeding the clearing threshold.

ESMA, the European Banking Authority (EBA) and the European Insurance and Occupational Pensions Authority (EIOPA) have jointly issued an RTS on these risk mitigation techniques. On 4 October 2016, the European Commission adopted a delegated regulation that specifies how margin should be exchanged for OTC derivative contracts that are not cleared by a CCP.³⁹ It foresees a staggered implementation, starting with the entities with the largest derivative portfolios. The standard foresees a mandatory exchange of variation margin (VM) and of initial margin (IM) between the two counterparties, to protect against the default of the other counterparty, and to reflect changes in the value of the derivative position.

³⁶ See e.g. Article 301 of the CRR.

³⁷ ICE Clear Europe, the last EU CCP not to be authorised under EMIR, had benefited from this extension when it was finally authorised in September 2016.

³⁸ Capital requirements for bank exposures to central counterparties, BCBS, 2014, and CRR, Articles 306 to 311.

³⁹ See Technical Standard supplementing Regulation (EU) No 648/2012, European Commission, 2016.

Market participants may either use an internal model or standardised margin and haircut schedules to calculate initial margin requirements for their non-centrally cleared derivatives. Currently, standard models for the calculation of initial margin are developed by the industry.⁴⁰ For internal margin models, while VM is based only on past price performance and therefore objective, IM is an estimate of future potential losses based on two parameters: the number of days required to replace or re-hedge positions, known as the “margin period of risk” (MPOR), and the volatility of the underlying asset during the MPOR. The RTS prescribes both parameters: a minimum ten-day MPOR and a 99% confidence interval. The standards also specify the criteria concerning intragroup exemptions from the requirements. In developing these standards, the three European Supervisory Authorities took into account the framework developed by IOSCO and the BCBS for margining requirements for non-centrally cleared derivatives, as well as the BCBS supervisory guidance for managing risks associated with the settlement of foreign exchange transactions, while also considering the specific features of European financial markets.

The international framework for margin requirements for non-centrally cleared derivatives was finalised in March 2015. The BCBS-IOSCO framework requires market participants either to use an internal model or a standard method to calculate margin requirements for their non-centrally cleared derivatives. It foresees a phased-in implementation, which started in a number of countries on 1 September 2016 with the entities with the largest derivative portfolios.⁴¹

4 Remaining gaps and issues

Clearly there was a need to act at the time of the Pittsburgh summit, and a lot has been achieved since then in terms of regulatory reforms. At the global level, the 11th progress report of the FSB concludes that “overall, progress continues to be made across the OTC derivatives reform agenda”. Although since the Washington summit delays seem to be characteristic of the implementation of that agenda, in the EU today, legislative frameworks are in place in the areas of trade reporting, central clearing, and capital requirements for non-centrally cleared trades. Margin requirements for non-centrally cleared derivatives, strictly speaking not a part of the Pittsburgh commitment, are expected to come into force in 2017, and trading requirements for OTC derivatives will enter into force in January 2018.

Work remains to be done to meet the G20 objective of making OTC derivatives markets more transparent and resilient.⁴² The FSB report states that “authorities continue to note a range of implementation challenges, though international

⁴⁰ See, for example, the [Standard Initial Margin Model \(SIMM\)](#) developed by the International Swaps and Derivatives Association (ISDA).

⁴¹ See [Margin requirements for non-centrally cleared derivatives](#), BCBS-IOSCO, 2015. Canada, the United States and some other jurisdictions started implementing the new regime on 1 September 2016, while in Europe it is now expected to be phased in from 2017. The main new feature of the framework is the exchange of initial margin (previously only variation margin had been exchanged).

⁴² Benoît Cœuré, ECB Executive Board member, came to the same conclusion in September 2013. See [Four years after Pittsburgh: What has OTC derivatives reform achieved so far](#), speech given at a joint Banque de France, Bank of England and ECB conference on OTC derivative reforms, Paris, 2013.

workstreams that aim to address many of these challenges are underway". In Europe these challenges relate for example to trade reporting (see Section 4.3) as a result of insufficient clarity with respect to reporting, the double-reporting regime and the multiplicity of TRs. A TR is essentially a library and competition among libraries can create unnecessary complications. From this perspective, an aggregator of European TRs with access by all relevant authorities could help overcome some of the current quality and aggregation challenges. Alternatively, the challenges could be addressed by a full European harmonisation of the reporting of OTC derivatives data to TRs and by making such data available to authorities. From an ECB perspective, the lack of progress in meeting the trading requirements globally is also a concern.

With the increasing concentration of risks in CCPs and their growing systemic importance, efforts are needed to ensure that these risks are effectively managed. While CCPs eliminate counterparty risk among their members, their increasing use concentrates systemic risk⁴³ and increases interlinkages between the CCP, its members and their clients. CCPs are thus becoming "magnets of risk", and increasingly so with the clearing obligation covering more and more derivative products (see Section 3.3). This may create "single points of failure" and "buffer the system against relatively small shocks, at the risk of potentially amplifying larger ones", as some have observed⁴⁴. Because of this growing systemic importance of CCPs, particularly robust arrangements must be in place to ensure that they prudently manage the increasing risks. Ongoing global and European work on CCP resilience, recovery and resolution (see Section 4.1) addresses these concerns. Additional work is also being undertaken to strengthen the stability of derivatives markets, including a further analysis of the different regulatory requirements affecting CCPs (see Section 4.2).

4.1 Making CCPs more resilient and easier to recover and resolve

In order to ensure that the increased risks of CCPs are prudently managed, they must be subject to strong requirements for resilience, recovery and resolution.⁴⁵ In concrete terms, this means that:

- As set out in the PFMIs, CCPs must be sufficiently resilient in the sense that financial resources (including margins, pre-funded default funds, and liquid resources) allow CCPs to withstand with a very high probability clearing member defaults and other extreme but plausible stress events.
- As also set out in the PFMIs and the supplementing CPMI-IOSCO guidance on the recovery of FMIs⁴⁶, CCPs must have recovery plans for market conditions

⁴³ See also Lieven, H., McGoldrick, P. and Schmiedel, H., "[Central counterparties and systemic risk](#)", *ESRB Macro-prudential Commentaries*, Issue No 6, 2013.

⁴⁴ See Domanski, D., Gambacorta, L. and Picillo, C., "[Central clearing: trends and current issues](#)", *BIS Quarterly Review*, December 2015, p. 73.

⁴⁵ In his speeches, Benoît Cœuré has repeatedly stressed this point; see for example "[Ensuring an adequate loss-absorbing capacity of central counterparties](#)", Chicago, 2015, and "[Central counterparty recovery and resolution](#)", London, 2014.

⁴⁶ [Recovery of financial market infrastructures](#), CPMI-IOSCO, 2014.

which are more severe than “extreme but plausible conditions”. The recovery plans should allow CCPs to address uncovered losses and liquidity shortages comprehensively and without putting an excessive or unpredictable burden on clearing members and other financial institutions, many of whom are likely to be systemically important in their own right.

- Finally, in line with the FSB framework on FMI resolution published in 2014⁴⁷, authorities must develop resolution plans for CCPs to ensure that, in cases where the execution of the recovery plan may fail, is likely to fail or could endanger financial stability, the continuity of the CCPs’ critical functions can be ensured with minimal systemic externalities and without using taxpayers’ money.

In April 2015 the FSB, the CPMI, IOSCO and the BCBS agreed on a wide-ranging work plan to further strengthen CCP resilience, recovery planning and resolution. This work plan consists of: (i) an evaluation of existing standards related to CCP resilience and in particular loss-absorption capacity, liquidity and stress testing; (ii) a stock-take of existing CCP recovery mechanisms, including loss allocation tools, and an assessment of the need for more granular standards; (iii) a review of the existing CCP resolution regimes and resolution planning arrangements, and an assessment of the need for more granular standards; and (iv) an analysis of the interdependencies between CCPs and the banks that are their major clearing members, and of potential channels for the transmission of risk.

All workstreams of the global CCP work plan have in the meantime advanced significantly and, with regard to resilience and recovery, the CPMI and IOSCO have published two reports in August 2016.⁴⁸ The first report assesses the implementation of the PFMLs by ten selected CCPs with respect to financial risk management and recovery practices.⁴⁹ It finds that while CCPs have made meaningful progress in implementing the PFMLs, some gaps remain and should be promptly addressed, notably in the areas of recovery planning and credit and liquidity risk management. The CPMI and IOSCO intend to follow up on the findings in 2017. The second report is a consultative report, which sets out proposals for more granular guidance on several key aspects of the PFMLs, including governance, credit and liquidity stress testing, coverage of financial resources, margin, and a CCP’s contribution of its financial resources to losses.⁵⁰ Taking into account the feedback received in the public consultation, the CPMI and IOSCO will finalise its proposals for more granular guidance in these areas by mid-2017.

With regard to resolution, the FSB has issued in August 2016 a discussion note on essential aspects of CCP resolution planning, and specific EU legislation has also been proposed. The FSB note focuses on: (i) the timing of

⁴⁷ [Key Attributes of Effective Resolution Regimes for Financial Institutions](#), FSB, FMI Annex, 2014.

⁴⁸ See their press release dated 16 August 2016 “[Reports from CPMI-IOSCO advance regulatory agenda on central counterparties](#)”.

⁴⁹ [Implementation monitoring of PFMI: Level 3 assessment - Report on the financial risk management and recovery practices of 10 derivatives CCPs](#), CPMI-IOSCO, 2016.

⁵⁰ [Resilience and recovery of central counterparties \(CCPs\): Further guidance on the PFMI – consultative report](#), CPMI-IOSCO, 2016.

entry into resolution; (ii) the adequacy of financial resources in resolution; (iii) the choice of the appropriate tools to return a CCP to a matched book; (iv) the order for allocating losses in resolution and the application of the “no creditor worse off” (NCWO) safeguard; (v) cross-border cooperation in resolution; and (vi) the overall effects of the resolution strategy on the incentives of the various stakeholders of a CCP.⁵¹ The FSB will publish a proposal for more specific guidance on CCP resolution in early 2017, with the aim of finalising the guidance by the G20 Summit in July 2017. In parallel, the European Commission has issued a legislative proposal on recovery and resolution of EU CCPs, which has been developed and will be further fine-tuned in line with the international work.⁵²

Work on the identification, quantification and analysis of interdependencies between CCPs and major clearing members and related systemic externalities is also progressing. For this purpose, a joint BCBS, CPMI, FSB and IOSCO study group was established in July 2015. The group has collected data from around 20 CCPs to capture interconnections between CCPs and their direct members, indirect members, investment counterparties, liquidity providers as well as other financial institutions, and will report its findings to the parent committees in early 2017.

While current efforts focus on the full and timely implementation of the CCP work plan, the global standard-setting bodies are already launching work to further improve the robustness of central clearing in the medium term. In particular, in addition to the proposed further guidance on internal stress testing for CCPs, the CPMI and IOSCO have started work on conceptualising a framework for supervisory stress testing of CCPs. The aim of the exercise is to assess the collective response of a set of CCPs to the same stress event. Furthermore, the CPMI and IOSCO are developing criteria and a process for identifying CCPs that are systemically relevant in more than one jurisdiction, with the objective of setting up adequate cooperative arrangements among authorities for all relevant cross-border CCPs. Close cooperation of authorities throughout the potential lifecycle of a CCP – i.e. from ongoing risk management to potential recovery and even resolution – will provide an additional important element in ensuring that the systemic risk externalities of CCPs can be fully identified and effectively addressed.

4.2 Strengthening the stability of derivatives markets

Given the central role of CCPs in the financial system, requirements are in place to not only ensure their microprudential robustness but also strengthen the macroprudential safeguards for central clearing. The PFMIs already require CCPs to adopt countercyclical margin and collateral haircut practices, notably to avoid sudden and steep increases of the respective requirements during an economic downturn. The PFMIs also provide that CCPs with cross-border systemic relevance or a more complex risk profile need to comply with more stringent

⁵¹ [Essential Aspects of CCP Resolution Planning, Discussion Note](#), FSB, 2016.

⁵² See the proposal for the [recovery and resolution of CCPs](#) published by the European Commission on 28 November 2016.

requirements for financial resources, in particular by covering with prefunded or liquid financial resources the potential default of the two participants giving rise to the largest aggregate credit or liquidity exposure.⁵³

Ongoing measures under the CCP work plan will further enhance the macroprudential safeguards for central clearing. For instance, forthcoming CPMI-IOSCO guidance on CCP resilience will strengthen requirements for anti-procyclical behaviour by requiring CCPs to adopt a holistic approach in addressing these issues, using quantitative metrics and considering this aspect during the model validation process. Similarly, more stringent provisions on stress testing will introduce additional prudence in preparing for stressed market conditions. CCP recovery and resolution plans are being developed to ensure that CCPs are able to withstand even extreme market situations in a predictable and orderly fashion. Finally, the work on central clearing interdependencies will play a key role in better understanding how CCPs could propagate financial risks, while progress in cross-border cooperation among authorities will help to devise effective action to address these vulnerabilities. In the medium term, progress in supervisory stress testing, combined with regular global data collections on CCP interdependencies, could support top-down (model-based) stress testing of the central clearing network.

In addition, there could be benefits in enabling macroprudential authorities to introduce requirements for conservative 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. In its response to the public consultation on the review of EMIR, the ECB has proposed including minimum floors and time-varying add-ons to haircuts and margins in the macroprudential toolkit.⁵⁴ This proposal would apply at the transaction level, regardless of whether the concerned trades are centrally cleared or not.

Recent theoretical and empirical evidence supports the introduction of such tools with a broad scope.⁵⁵ The recent academic work suggests using a broad scope for a macroprudential framework to be effective.⁵⁶ Furthermore, it is argued that countercyclical tools may be more effective than static tools in addressing the build-up of leverage in the financial system and the procyclicality of margins and haircuts.

The interplay between the various regulatory requirements applied to the central clearing ecosystem also needs to be further assessed. Having resilient clearing members and clients is important for the CCP, and a robust CCP is crucial for the clearing members and their clients. The international workstreams mentioned

⁵³ As explained in Section 2.1, the PFMIs generally require CCPs to cover the potential default of one member (i.e. the “cover-one requirement”), but the bar is raised to two members for CCPs with cross-border systemic relevance or a more complex risk profile (i.e. the “cover-two requirement”).

⁵⁴ ECB response to the European Commission’s consultation on the review of the European Market Infrastructure Regulation (EMIR), ECB, 2015.

⁵⁵ See Battistini, N., Grill, M., van der Veer, K. and Marmara, P., “A case for macroprudential margins and haircuts”, *Financial Stability Review*, ECB, May 2016.

⁵⁶ Brumm, J., Grill, M., Kubler, F. and Schmedders, K., “Margin regulation and volatility”, *Journal of Monetary Economics*, Vol. 75, 2015.

in Section 4.1 in relation to central clearing interdependencies and multi-CCP supervisory stress testing will provide useful insights into the overall robustness of the central clearing ecosystem. At the same time, further (data-driven) analysis is needed to better understand how the different regulatory – mainly prudential – requirements have been summing up and how they are impacting the incentives for central clearing as well as the traditional ways of providing CCP services (for example, the shift to direct client clearing services).

4.3 Further improving the transparency of derivatives markets

The mandatory reporting of derivative transactions to authorised TRs marks an important step towards more transparency in the traditionally opaque OTC derivatives market. EMIR data have the potential to provide regulators, supervisors and central banks with valuable input for key policy functions such as the microprudential supervision of financial institutions, supervision and oversight of market infrastructures, the design of macroprudential policies and the assessment of systemic risk. The experiences of users show, however, that gaps and shortcomings remain in the EMIR data (see Box 3), despite the progress already made.

Box 3

User experiences and remaining shortcomings of EMIR data

In close collaboration, experts of the ECB and the European Systemic Risk Board (ESRB) are analysing EMIR data.⁵⁷ The findings show that the data collected by TRs can indeed provide useful insights into the structure of derivatives markets and the underlying risk exposures of market participants. However, at the same time, the work has highlighted a number of important shortcomings that still need to be addressed.

The biggest remaining shortcoming relates to data quality. Given the complexity of modern financial markets, it is of paramount importance that the data designated to help policymakers in safeguarding financial stability are accurate and meaningful. With this in mind, ESMA has at several points in time introduced validation rules that impose so-called “hard checks” on the data submitted to TRs. Chart A shows that the rules introduced in December 2014 were indeed successful in reducing the number of reports with missing observations for key variables. However, the ESRB/ECB experience has shown that the EMIR data continue to suffer from a number of significant quality problems that remain to be tackled in the future.

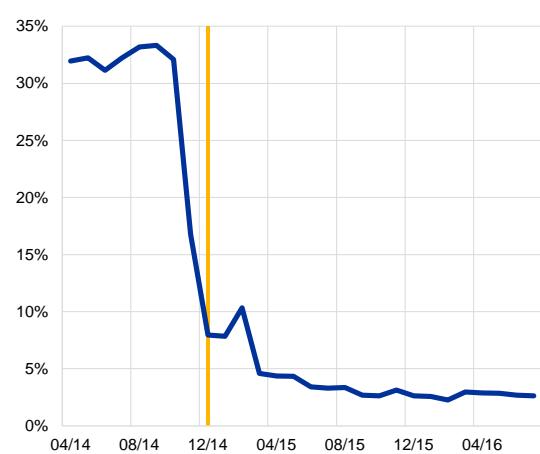
The data quality problems can be grouped into two main categories: the first category includes issues that are due to misreporting by the counterparties or the TRs, whereas the second category includes problems that are caused by a lack of standardisation and harmonisation. One of the main issues detected in the first category is related to the mark-to-market value of the reported contracts: a significant number of outstanding trades do not have an assigned mark-to-market value, despite the fact that most counterparties are required to provide daily updates for this field. An investigation by the ESRB/ECB, in collaboration with TRs, ESMA and

⁵⁷ See, for example, Abad et al., [Shedding light on dark markets: First insights from the new EU-wide OTC derivatives dataset](#), 2016.

national competent authorities, revealed that this issue is mainly due to (i) counterparties failing to submit cancellation messages for cancelled trades, and (ii) TRs failing to incorporate cancellation messages. While this issue can be locally addressed by the authorities analysing the data in an ad hoc fashion by eliminating the relevant observations, it highlights the fact that both TRs and counterparties (including key market players) still have considerable room to improve the underlying procedures, despite EMIR reporting having been in force for more than two years.

Chart A

Percentage of missing observations for selected variables in EMIR trade state reports



Source: ECB calculations based on month-end trade state reports provided by DTCC. See Abad et al., *Shedding light on dark markets: First insights from the new EU-wide OTC derivatives dataset*, 2016, for further details. Notes: The chart shows the average percentage of missing observations across four variables: beneficiary ID, notional amount, effective date and price multiplier. The yellow vertical line refers to the first introduction in December 2014 of ESMA validation rules for the data reported to TRs.

Regarding the lack of standardisation and harmonisation, a distinction can be made between local issues and global problems.

At the European level, key issues relate to the comprehensiveness of the existing RTS/ITS. Under EMIR, counterparties are required to report around 85 variables. Practice has shown that some variables need to be revised. For example, there is a single field for a maturity date, despite the fact that some important derivative contracts such as forward rate agreements and swaptions have two maturity dates. This makes it impossible to meaningfully analyse these contracts under the current reporting regime. Similarly, there is a single field for initial and variation margin, which some analysts perceive as an important shortcoming. 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.⁵⁸

Further issues relate to the harmonisation of EMIR data, both across different TRs and across the individual reports by different counterparties. Currently, each of the six TRs authorised by ESMA provides its own set of reports to regulators, which leaves a considerable burden for end-users in terms of data consolidation (e.g. as a result of the non-mandatory provision of trade state reports mentioned in Box 2). The revised RTS/ITS put forward by ESMA on what TRs are supposed to report to authorities⁵⁹ will address some of these issues, but they first need to be endorsed by the European Commission.

At the global level, the lack of harmonisation of several data elements⁶⁰ does not allow the reporting agents to correctly fulfil their obligations and the authorities to properly aggregate and analyse the data. For example, the interest rate benchmarks pertaining to interest rate swaps are provided in a free-text field under EMIR. Accordingly, the two counterparties involved in a trade often provide slightly different inputs. These shortcomings are likely to be addressed by the CPMI-IOSCO work on the UPI, UTI and other data elements (see Box 1). Another key aspect that will

⁵⁸ See Technical Standard supplementing Regulation (EU) No 648/2012, European Commission, 2016.

⁵⁹ See the [Consultation Paper on the review of the technical standards on reporting under Article 9 of EMIR](#), ESMA, 2014.

⁶⁰ The lack of harmonisation of these data elements partly also stems from the lack of standardisation of the traded derivative products.

benefit from this work is the lack of harmonisation in the way the life-cycle events of a contract are reported. Currently, the difficulties in identifying compression, cancellation and other life-cycle events seriously hamper the ability of authorities to aggregate data and identify the effective notional amount that needs to be counted, while at the same time avoiding double-counting.

5 Conclusion

Since the Pittsburgh commitment, considerable progress has been made in making OTC derivatives markets more transparent and resilient. It took the European Union longer than Japan and the United States to implement the reporting and clearing obligations and the other elements of the Pittsburgh agenda, but – with the exception of trading requirements – all legislative frameworks are now in force.

However, several gaps remain in comparison with the Pittsburgh objectives, and further work will be required to close them. From the perspective of the ECB, the following three gaps remain, which partly have a global dimension, but should mainly be addressed via further reform of the respective parts of the regulatory framework in the EU:

- making CCPs even more resilient and easier to recover and resolve, in particular via a full and timely implementation of the global CCP work plan;
- strengthening the stability of derivatives markets, including through a further analysis of how the various regulatory (prudential) requirements come together and impact the incentives for central clearing;
- further improving the transparency of OTC derivatives markets, in particular by enhancing the data quality and creating effective mechanisms for European and global data aggregation, which are currently missing, but for which the ongoing data harmonisation work is an important prerequisite.

The ECB and the Eurosystem have been active in the post-Pittsburgh reforms and will continue to closely monitor developments in OTC derivatives markets and infrastructures, and to contribute to improving their transparency and resilience.