# SETTING EU CCP POLICY -**MUCH MORE THAN MEETS THE EYE**



Apostolos Thomadakis Karel Lannoo





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CEPS and ECMI Place du Congrès 1, B-1000 Brussels Tel: 32 (0) 2 229.39.11 e-mail: <u>info@ceps.eu</u> and <u>ecmi@ceps.eu</u> internet: <u>www.ceps.eu</u> and <u>www.ecmi.eu</u>

# Table of contents

Executiv	e summary	i
1. Intr	roduction	1
1.1	The role of derivatives	1
1.2	Setting the scene	2
2. Cle	aring in derivatives	6
2.1	What is clearing	6
2.2	Benefits of central clearing	8
2.3	Concerns about central clearing	
3. CCI	Prisk management	
3.1	Financial and capital requirements	13
3.2	Margining	14
3.2	.1 Initial margin	14
3.2	.2 Variation margin	16
3.3	Default fund and waterfall	17
3.4	History of CCPs' defaults and their clearing members	20
4. Reg	gulatory issues surrounding derivatives clearing	22
4.1	EU CCP regulation: a brief review in time	22
4.2	EMIR and EMIR 2.2	23
4.3	EMIR 2.2 and the EU supervisory structure of CCPs	24
4.4	Financial services and the EU-UK TCA	25
5. Cur	rrent landscape and evolution of the market	27
5.1	Development of the market	27
5.2	Derivatives trading activity	31
5.3	Authorised and recognised CCPs in the EU	34
5.4	CCPs' clearing members	36
6. Cor	mpetition between CCPs and the role of the City of London	40
6.1	Competition between CCPs	40
6.2	London's dominance?	42
6.3	Splitting a CCP into two CCPs?	44
7. Exa	amples of location policies	46
7.1	Australia	47
7.2	Canada	48
7.3	Japan	50
8. Eur	opean location policy	56
8.1	A global or a local approach?	58
8.2	Financial stability	58

8.2.1	Oversight of UK-based CCPs	59	
8.2.2	Ability to mitigate financial shocks	60	
8.3 Ef	ficiency	60	
8.3.1	Higher costs	60	
8.3.2	Fragmentation and reduced liquidity	61	
8.4 De	evelopment	62	
9. Conclu	sion	63	
References			

# List of figures

Figure 1. CCPs' share of cleared IRS by trade count (lhs) and notional traded (rhs) (% of globally cleared IRD, H1 2021)
Figure 2. Share of LCH's SwapClear IRD notional registered by currency (lhs) and EUR IRD by domicile of firms (rhs) (% of all currencies, 2020)
Figure 3. Payment obligations in an OTC market and a centrally cleared market7
Figure 4. Initial margin for cleared IRD and CDS by location (€ billion)15
Figure 5. Initial margin for cleared IRD by CCP (% of posted margin)
Figure 6. Stages of CCP default waterfall
Figure 7. Global derivatives markets, notional amounts outstanding (€ trillion, 1998 H1-2020 H2)28
Figure 8. Notional amounts outstanding of global OTC derivatives market (€ trillion, 1998 H1-2020 H2)
Figure 9. Share of notional amounts outstanding of IRD by counterparty (%, 1998 H1-2020 H2)30
Figure 10. Notional amounts outstanding of IRD by counterparty (€ trillion, 2016 H1-2020 H2)31
Figure 11. Daily average turnover of OTC IRD by country (€ billion, 2001-2019)
Figure 12. Daily average turnover of OTC IRD by currency (€ billion, 2001-2019)
Figure 13. Share of euro-denominated OTC IRD by country (% of global euro turnover, 2001-2019)33
Figure 14. Execution and clearing of EUR-denominated OTC IRS (% of globally cleared IRD measured in
terms of notional traded, Q2 2021)
Figure 15. Top four US dealers in OTC IRD (% of notional amount, Q1 2021)
Figure 16. EU and UK CCPs' share of cleared EUR IRS by trade count (lhs) and notional traded (rhs) (% of
globally cleared EUR IRD, Jul 2020-Jun 2021)42
Figure 17. Share of notional amounts outstanding of IRD by currency (%, 1999 H1-2020 H2)46
Figure 18. Share of notional amounts outstanding of OTC derivatives by currency (%, June 2021) (lhs)
and share of daily average turnover of AUD IRD by location (%, 2007-2019) (rhs)47
Figure 19. Share of notional amounts outstanding of OTC derivatives by asset class (€ trillion, 2015 H2-
2021 H1) (lhs) and share of daily average turnover of CAD IRD turnover by location (%, 2007-2019) (rhs)
Figure 20. Notional amounts outstanding of OTC derivatives in Japan (€ trillion, 1998 H1-2021 H1)51
Figure 21. Share of notional amounts outstanding of OTC derivatives by currency (%, 2010-2021)51
Figure 22. Execution and clearing of JPY-denominated OTC IRS (% of globally cleared IRD measured in
terms of notional traded, Q2 2021)54
Figure 23. JSCC daily average clearing volume of IRS ( ${\mbox{\sc ts}}$ billion) (lhs) and number of domestic and foreign
clients accessing JSCC (rhs)55

# List of tables

Table 1. Global notional amount outstanding of OTC IRD, by currency (€ billion)	3
Table 2. Clearing members' default history in CCPs	20
Table 3. Default history of LCH.Clearnet's clearing members	21
Table 4. List of European CCPs authorised to offer services and activities in the EU	35
Table 5. List of third-country CCPs recognised to clear IRD in the EU	36
Table 6. Number of participants in CCPs	36
Table 7. Membership/participation of SIBs in CCPs authorised/recognised to clear IRD in the EU	37

# List of abbreviations

AIG	American International Group
APRA	Australian Prudential Regulation Authority
ASIC	Australian Securities and Investments Commission
AUD	Australian Dollar
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BoC	Bank of Canada
BoE	Bank of England
BoJ	Bank of Japan
BRRD	Bank Recovery and Resolution Directive
BU	Banking Union
CBI	Central Bank of Issue
CBOT	Chicago Board of Trade
CCG	Cassa di Compensazione e Garanzia
ССР	Central Counterparty Clearing House
CCP SC	CCP Supervisory Committee
CDS	Credit Default Swap
CEPS	Centre for European Policy Studies
CESR	Committee of European Securities Regulators
CFTC	Commodity Futures Trading Commission
CLAM	Caisse de Liquidation des Affaires en Marchandises
CME	Chicago Mercantile Exchange
CMG	Crisis Management Group
CMU	Capital Markets Union
CoAg	Cooperation Agreement
CPMI	Committee on Payments and Market Infrastructures
CPSS	Committee on Payment and Settlement Systems
CSD	Central Securities Depository
CSDR	Central Securities Depositories Regulation
CSF	Clearing and Settlement Facility
DG FISMA	Directorate-General for Financial Stability, Financial Services and Capital Markets Union
DTCC	Depository Trust & Clearing Corporation
EA	Euro Area
EACH	European Association of CCP Clearing Houses
EBF	European Banking Federation
EC	European Commission
ECB	European Central Bank
ECMI	European Capital Markets Institute

EFAMA	European Fund and Asset Management Association
EIB	European Investment Bank
EMIR	European Market Infrastructure Regulation
EPTF	European Post Trade Forum
ESA	Exchange Settlement Account
ESAs	European Supervisory Authorities
ESF	European Securities Forum
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
ETD	Exchange-Traded Derivative
EU	European Union
EUR	Euro
FCA	Financial Conduct Authority
Fed	Federal Reserve System
FIA	Futures Industry Association
FIBO	Financial Institution Business Operator
FIEA	Financial Instruments and Exchange Act
FRA	Forward Rate Agreement
FSAP	Financial Services Action Plan
FSB	Financial Stability Board
FSOC	Financial Stability Oversight Council
FTA	Free Trade Agreement
FX	Foreign Exchange
GBP	Great British Pound
GCEU	General Court of the European Union
GFC	Global Financial Crisis
GG	Giovannini Group
G-SIB	Global Systemically Important Bank
G-SIFI	Global Systemically Important Financial Institution
HKFE	Hong Kong Futures Exchange
HQLA	High Quality Liquid Asset
ICE	Intercontinental Exchange
IM	Initial Margin
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
IRD	Interest Rate Derivative
IRS	Interest Rate Swap
ISDA	International Swaps and Derivatives Association
JFSA	Japanese Financial Services Authority
JGB	Japanese Government Bond

JPY	Japanese Yen
JSCC	Japan Securities Clearing Corporation
KRX	Korea Exchange
LCH	London Clearing House
LEI	Legal Entity Identifier
LME	London Metal Exchange
LSE	London Stock Exchange
MTF	Multilateral Trading Facility
NCA	National Competent Authority
NCWO	No Creditor Worse Off
NYCC	New York Clearing Corporation
NYSE	New York Stock Exchange
NZD	New Zealand Dollar
NZFOE	New Zealand Futures and Options Exchange
OCC	Options Clearing Corporation
OIS	Overnight Index Swap
OSE	Osaka Securities Exchange
отс	Over-The-Counter
OTF	Organised Trading Facility
O-SIB	Oher Systemically Important Bank
PCSA	Payment Clearing and Settlement Act
PFMI	Principles for Financial Market Infrastructures
PTRR	Post-Trade Risk Reduction
R&D	Research and Development
R&R	Recovery and Resolution
RBA	Reserve Bank of Australia
RFI	Registered Financial Institution
SEC	US Securities and Exchange Commission
SEF	Swap Execution Facility
SI	Systemically Important
SIMEX	Singapore International Monetary Exchange
SSS	Securities Settlement System
T2S	TARGET2-Securities
TCA	Trade and Cooperation Agreement
UK	United Kingdom
US	United States
USD	US Dollar
VM	Variation Margin
VMGH	Variation Margin Gains Haircutting
V-SIFI	Very Systemically Important Financial Institution
WA	Withdrawal Agreement

# **Executive summary**

Derivatives markets have grown significantly over the last two decades. The global aggregate size of the over-the-counter (OTC) and exchange-traded derivatives (ETD) markets grew from €78 trillion to €528 trillion between 1998 and 2020, in terms of notional amounts outstanding. The OTC segment accounts for 90% of that, of which interest rate derivatives (IRD) make up the vast majority (80%). Central clearing in derivatives markets has advanced enormously since the global financial crisis (GFC) and the G20 commitments (in particular the requirement that all standardised OTC derivatives should be centrally cleared). From 2008 to 2020, the share of derivatives contracts that were centrally cleared rose from 50% to 83%, while for certain asset classes like IRD it reached 91%.

In an EU context, the largest derivatives central counterparty clearing houses (CCPs) developed in the City of London, a leading global central clearing hub of OTC derivatives of all asset classes and currencies. Currently, three UK-based CCPs dominate the (European) market for swaps and futures clearing. More than €3.2 trillion notional outstanding of interest rate swaps (IRS) are cleared in the City of London per day across all currencies, and about 94% of all euro-denominated IRS are traded globally. On the other hand, EU-based CCPs account for 6% of the global euro-denominated IRS market.

Since the departure of the United Kingdom (UK) from the European Union (EU), European policymakers have encouraged EU clearing members and market participants to reduce their exposure to systemically important (SI) UK CCPs. In order to reduce exposure to third-country CCPs, EU policymakers have also encouraged the further development of EU derivatives clearing capabilities. Potential benefits of increased use of EU CCPs could include cross-product netting with listed derivatives, which could promote trading within the EU. This could also stimulate the creation of legal, economic and operational expertise that could spur the development of EU financial centres.

UK-based CCPs serve a global market, not only a European one. A requirement by EU authorities for EUbased firms to move away from UK CCPs will restrict those firms' access to liquidity, increase their clearing costs and negatively affect the competitive position of EU companies internationally. It will create two distinct marketplaces, one for EU firms and another for non-EU firms, which will disadvantage EU banks compared to their international counterparts. It will become more expensive for EU-based operators to clear their positions at UK CCPs, and will impact their client-clearing and marketmaking activities with non-EU clients and counterparties. At the same time, non-EU banks will preserve their ability to offer their services to non-EU clients and counterparties.

In the short term, the best way forward to address potential EU concerns around the exposure of EU firms to UK CCPs is to implement appropriate supervisory and regulatory cooperation between both jurisdictions. Adequate arrangements exist in general provisions and in the specific rules of the EU's European Market Infrastructure Regulation (specifically EMIR 2.2) to ensure orderly cooperation between the EU and the UK, and to allow for hands-on supervision by the European Securities and Markets Authority (ESMA) of UK-based CCPs deemed systemically important to the EU. Moreover, central banks – the Bank of England (BoE), the European Central Bank (ECB) and other Central Banks of Issue (CBIs) – are fully involved in the supervisory structure and form part of the supervisory colleges. The new supervisory structure needs to be given time to function properly before any more radical changes are introduced, given their significant potential negative consequences on EU firms.

Any EU policy to further develop central clearing in the EU should be part of a clear long-term strategy in the context of the Capital Markets Union (CMU). The current concentration of derivatives clearing in

the UK has developed over a long period as part of the single market, and thus – even if pursued as an EU policy objective – restricting access by EU firms cannot be achieved easily, or without collateral damage for EU banks and end users. Moreover, central clearing is integrally connected with other building blocks of a large financial centre, such as the presence of intermediaries and end users, widespread subject matter expertise, a suitably adapted legal framework and strong underlying infrastructures.

There is currently a high degree of concentration on clearing for most derivative products, due to the efficiencies that this can create for the market. One would argue that greater competition between CCPs would promote market efficiency and transparency, and thus benefit market participants in terms of greater choice and lower prices, as well as stimulating innovations in markets. However, as it relates to central clearing, market fragmentation can actually create inefficiencies through fragmentation of market liquidity and loss of netting benefits, and lead to a 'race to the bottom' with regard to CCP risk management practices, thus compromising safety and the ability to control systemic risk.

EU market participants should be able to retain the flexibility to continue to clear their transactions through the CCP of their choice or the choice of their clients and counterparties, and benefit from access to global pools of liquidity and product ranges that meet their needs. This is even more the case when their regulatory and supervisory regimes are equivalent to the EU one. Enabling participants in the marketplace to determine the optimal market structure based on their trading needs and objectives will allow for a more organic, market-led and customer-driven development of EU derivatives market infrastructure. This will keep the EU financial markets open, global and attractive, while strengthening the international role of the euro.

Given that the EU's objective, as stated by Commissioner McGuinness, '... is not to move or steal business away from London but rather to build our own infrastructures', then let the focus be on the latter.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> See <u>keynote address by Commissioner McGuinness</u> at FIA Boca International Futures Industry Conference, 16 March, 2021.

# 1. Introduction

The central role of the City in euro-denominated derivatives has been a focal issue for EU policymakers and central bankers for quite some time. As a large and global financial centre, London is active in several segments of the derivatives market, a role that has continued to grow since the global financial crisis (GFC) and its regulatory actions.

The departure of the United Kingdom (UK) from the European Union (EU) has raised questions around the continuity of this central role and the cooperation arrangements between supervisory authorities on both sides (to further enhance clearing), and on how to appropriately engage and intervene in a crisis situation. Central counterparty clearing houses (CCPs) offer operational efficiencies that will have to be enhanced continually, but market fragmentation will add significant limitations to these efficiencies.

This study consists of eight main chapters (Chapters 2 to 9). <u>Chapter 2</u> sets the stage by introducing the reader to what clearing is, the value added of CCP clearing, its advantages and potential concerns. <u>Chapter 3</u> presents the risk management tools (e.g. financial and capital requirements, margining, default fund and waterfall) that CCPs employ in order to manage effectively the risks to which they are exposed, before listing a brief history of CCPs' defaults and their clearing members. <u>Chapter 4</u> discusses the regulatory framework surrounding central clearing and third-country CCPs, taking into account the equivalence framework of the European Commission (EC), the relevant provisions of the European Market Infrastructure Regulation (EMIR) and EMIR 2.2, as well as the Trade and Cooperation Agreement (TCA) between the EU and the UK.

<u>Chapter 5</u> analyses the evolution of the derivatives market over the years and the structure of the CCP market in Europe. <u>Chapter 6</u> argues the pros and cons of competition among CCPs, looks at London's dominance in derivatives and central clearing, and considers the potential implications of splitting clearing activity across CCPs. <u>Chapter 7</u> presents three case studies where 'location policies' have been considered (Australia, Canada and Japan), their impact on the local market and the useful lessons to learned. <u>Chapter 8</u> endeavours to set a long-term vision for the future of the European clearing market, taking financial stability, efficiency and the development of Europe's financial markets into account. Last, <u>Chapter 9</u> recapitulates the main findings of this study and concludes.

The study makes ample use of the available academic literature on central clearing and the policy issues it raises, and of the market data available concerning the relevant products and actors. It has largely benefited from a series of 17 informal interviews conducted during May-October 2021 with European and international clearing experts (e.g. market participants, regulators and academics). The integration of theoretical findings with data, insights and case studies provides the basis upon which conclusions for the future development of the European clearing industry post Brexit are drawn.

## 1.1 The role of derivatives

A derivative is a financial instrument that derives its value over time from the performance of an underlying asset. These instruments are traded between two parties (the counterparties) who enter into an agreement that creates rights and obligations relative to some underlying asset. Derivatives can be classified by the type of contract payment flows between the counterparties (e.g. options, futures,

forwards or swaps),<sup>2</sup> the type of underlying asset (e.g. equity, interest rate, commodity, foreign exchange (FX) or credit/bond), whether they are traded on venue (e.g. in a trading platform or exchange, exchange-traded derivatives (ETDs)) or off venue (bilaterally, over-the-counter (OTC)),<sup>3</sup> or by their clearing status (cleared and non-cleared derivatives).

Derivatives are an effective tool for risk management purposes, allowing market participants to hedge against the various types of common financial risks (e.g. currency, credit and interest rate risks). They perform a critical role in economic activity by enabling and helping businesses and investors to better manage the risks to which they are exposed, and to align their exposures more effectively with risk tolerance and risk management requirements.<sup>4</sup> Moreover, derivatives serve vital liquidity and price discovery functions, while enabling users to benefit from advantageous price movements in the underlying assets.

Derivatives markets have grown significantly in recent decades (mainly due to the development of the OTC segment of the market) and constitute a systemically important component of financial services activity. By far the largest proportion of activity is in interest rate derivatives (IRD), which are contracts used to hedge against the risk of changes in interest rates for the benefit of global and European economies. Furthermore, the use of CCPs in OTC derivatives markets has also increased over this period; CCPs have become systemically important infrastructures and now play a key role in managing post-trade risk in financial markets.

## 1.2 Setting the scene

The UK's departure from the EU has raised questions about the future of EU OTC derivatives markets. This is because more derivatives are cleared in London than in any other location. There are currently three UK-based CCPs: the London Clearing House Ltd (LCH Ltd), the Intercontinental Exchange (ICE) Clear Europe and the London Metal Exchange Clear (LME Clear). The biggest of three, LCH Ltd, clears a range of asset classes such as equities, fixed income, FX, repos and interest rates. Its largest service focusing on OTC interest rate swaps (IRS), SwapClear, clears more than €3.2 trillion notional outstanding per day. This is the total underlying amount of all derivatives traded.<sup>5</sup> ICE Clear Europe, the second largest UK CCP, clears daily over five million futures and options derivatives contracts for

<sup>&</sup>lt;sup>2</sup> Options are exchange-traded standardised contracts whereby one party has the right – but not the obligation – to purchase (call option) or sell (put option) something at a pre-agreed strike price at some point in the future. *Futures* are exchange-traded standardised contracts for a pre-determined asset (e.g. currencies, bonds, agricultural and other commodities such as gold) to be delivered at a pre-agreed point in the future at a price agreed today. *Forwards* are non-standardised contracts between two parties to buy or sell an asset at a specified future time at a price agreed today. A forward is the over-the-counter (OTC) equivalent of a future, or, to put it differently, a futures contract is functionally the equivalent of a forward but without regulatory treatment. A *swap* is an agreement to exchange one series of future cash flows for another.

<sup>&</sup>lt;sup>3</sup> In contrast to exchanges and exchange trading (a rules-based endeavour), decentralisation is the hallmark of the OTC derivatives market. In the OTC market, counterparties trade with one another directly using individually negotiated agreements. Whereas exchanges provide for inflexible rules regarding membership and trading activities, participants in the OTC market are free to make their own assessments of which parties to trade with, what types of margin requirements to impose, and how to structure a particular transaction.

<sup>&</sup>lt;sup>4</sup> If businesses and investors cannot insure themselves against unexpected outcomes, they cannot invest or consume, and thus the economy will grow at a slower pace than it should. For example, a business will not innovate or invest in research and development (R&D) if it cannot hedge against the risk of exchange rate or interest rate swings that might render the investment unprofitable.

<sup>&</sup>lt;sup>5</sup> See LCH's SwapClear volumes <u>here</u>.

interest rates, equity index futures, energy and agricultural products, as well as credit default swaps (CDS).<sup>6</sup> The third CCP, LME Clear, clears an average of 600,000 commodity derivatives contracts per day, with annual trades worth more than \$12 trillion.<sup>7</sup> According to the European Securities and Markets Authority (ESMA), LME Clear is determined not to be a systemically important (SI) CCP (Tier 1 CCP), while LCH Ltd and ICE Clear Europe are Tier 2 CCPs, therefore classified as deemed to be SI or likely to become SI CCPs.<sup>8</sup> Thus, the latter are subject to additional requirements, including compliance with all CCP requirements under EMIR, and direct supervision by ESMA.

Both the European Commission (EC) and the European Central Bank (ECB) have expressed concerns about EU exposures to UK CCPs. In particular they are concerned about the volume of eurodenominated derivatives that are currently cleared by UK-based CCPs, which, since January 2021, are no longer EU authorised but recognised third-country CCPs under EMIR Article 25. The EC has adopted a time-limited equivalence decision with respect to UK CCPs until 30 June 2022.<sup>9</sup>

Therefore, the current euro clearing debate centres around two issues: first, whether the exposure of European firms to UK CCPs needs to be reduced; and second, whether the relocation of these exposures is a viable way forward to address EU financial stability concerns. Presently, the notional outstanding of EUR IRD at LCH Ltd, the largest CCP, is at  $\notin$ 79.4 trillion, down by only 1.5% compared to the  $\notin$ 80.6 trillion at the end of 2017. During the same period, the notional outstanding in Eurex Clearing – the second largest CCP – grew significantly, from  $\notin$ 1.4 trillion to  $\notin$ 21 trillion.<sup>10</sup>

	Total	USD	EUR	GBP	JPY	Other
LCH Ltd	300,463	111,751	79,432	45,738	6,786	2,361
Eurex Clearing	21,306	31	21,038	49	0	185
CME Group	10,190	5,601	440	341	245	45
JSCC	8,796	-	-	-	8,796	-
Nasdaq OMX Clearing	277	-	-	-	-	277
OTC Clearing HK	102	38	0	-	-	64
BME Clearing	1	-	1	-	-	-

Table 1. Global notional amount outstanding of OTC IRD, by currency ( $\notin$  billion)

*Notes*: The figures presented here might not be directly comparable, as each CCP has different abilities and levels of compression (one CCP could be more efficient in compressing members' transactions than another CCP). Notional outstanding is a gross 'stock' metric that may include offsetting risk positions. In order to be fully understood, notional outstanding has to be read alongside compression data: it is not a proxy for either risk or liquidity.

'Other' includes CHF, HKD, CNY and SEK. For LCH Ltd, Eurex Clearing and Nasdaq OMX Clearing, figures as at COB 14 June 2021. For CME Group, figures as at COB 18 June 2021. For Japan Securities Clearing Corporation (JSCC) figures as at COB 30 June 2021. For OTC Clearing HK and BME Clearing, figures as at COB 31 May 2021 and COB 30 April 2021 respectively. *Sources*: SwapClear, Eurex Clearing, CME Group, JSCC, Nasdaq OMX Clearing, Hong Kong Exchange, BME Clearing and Eurostat.

<sup>&</sup>lt;sup>6</sup> See ICE Clear Europe's <u>website</u>.

<sup>&</sup>lt;sup>7</sup> See LME Clear's monthly trading volumes here.

<sup>&</sup>lt;sup>8</sup> See ESMA's decision of 28 September, 2020.

<sup>&</sup>lt;sup>9</sup> See the EC's decision <u>here</u>.

<sup>&</sup>lt;sup>10</sup> This development could largely be attributed to Eurex Clearing's Partnership Programme, which was launched in October 2017. The programme aimed to create a liquid EU-based alternative for the clearing of OTC IRD denominated in euro. In addition, it created a level playing field in terms of execution prices, with an increasing number of banks now quoting the same bid-offer spread for swaps cleared at Eurex Clearing and LCH, thus improving price quality and reducing overall costs for market participants.

The dominance of UK-based CCPs is also evident when looking at the global trading activity of cleared IRS (which represent the great majority of IRD contracts) (Figure 1). In the first half of 2021, 91% of all EUR IRS trades that took place globally were cleared in the UK, with the remaining 9% in the EU. Similarly, and in terms of traded notional, 94% of total EUR IRS was cleared by LCH. On the other hand, EU-based CCPs accounted for 6% of the global EU IRD market.





*Notes*: The figure on the left-hand side refers to new transactions trade count, while the one on the right-hand side refers to new transactions aggregate notional traded. The products considered are all new cleared single currency swaps, meaning fixed-for-fixed, fixed-for-floating and floating-for-floating (i.e. basis), but no cross currency, options (i.e. swaptions) or forward rate agreements (FRAs). Data include all new cleared IRS trades executed globally in a given month, including on venue (e.g. swap execution facility (SEF), multilateral trading facility (MTF) and organised trading facility (OTF)) and those executed off venue (i.e. off facility) that are cleared via MarkitSERV's CCP connectivity service, or where MarkitSERV receives a copy of the trade.

Source: OSTTRA.

Digging deeper into the currency composition of IRD activity in LCH reveals that 76% of the daily cleared activity is in currencies other than the euro (Figure 2, left-hand side). This is split between the US dollar (42%), British pound (19%) and other currencies (14%). Of the remaining 24% of EUR-denominated IRD, 73% is cleared by firms located outside the EU, while EU firms' activity in EUR IRD amounts to 27% (Figure 2, right-hand side). In fact, EU firms are more active in non-EUR IRD (53%) than in EUR IRD (47%).<sup>11</sup> This illustrates the need for EU firms to have access to deep and liquid markets in all IRD currencies in which they trade and clear, and not just in euro.

<sup>&</sup>lt;sup>11</sup> According to ESMA's 2020 EU Derivatives Markets Annual Statistical Report (ESMA, 2020), EU firms clear more OTC derivatives denominated in USD (39%) than EUR (33%).



Figure 2. Share of LCH's SwapClear IRD notional registered by currency (lhs) and EUR IRD by domicile of firms (rhs) (% of all currencies, 2020)

In addition, an area in which the removal of equivalence might have a significant impact and is expected to affect EU firms' activities is commodity derivatives trading.<sup>12</sup> London dominates European trading in commodity derivatives, holding a notional value of  $\notin$ 7 trillion in 2019 according to ESMA (2020). There is nothing really comparable in the EU. In relation to oil for example, in 2019 the total volume of exchange-traded contracts in the UK was in the region of  $\notin$ 25 trillion, with none in the EU. With regard to metals, in 2020, LME – the largest marketplace for trading base metals – transacted about 155 million lots of metals, equating to about  $\notin$ 9.5 trillion.<sup>13</sup> Oil, coal and metals are no longer traded on EU venues, while other asset are only traded marginally.

Lack of equivalence and recognition would be particularly harmful for EU firms trading energy and other commodities contracts accustomed to using LME and ICE Futures Europe.<sup>14</sup> It would disable effective client position risk management on commodity and financial risk exposures, while cutting off EU firms from large pools of liquidity, potentially increasing trading and hedging costs. Although commodity derivatives are not subject to the clearing obligation, and EU firms would be able to continue to (indirectly) clear those through UK CCPs,<sup>15</sup> the regulatory capital costs of exposures to non-recognised UK CCPs would raise the cost of clearing for those products. As a result, it may reduce access for EU firms to deeper liquidity pools located in the UK for those products.

*Notes*: Data refer to notional registered, computed as % of \$ equivalent. Notional registered is a better measure than notional outstanding to indicate IRD liquidity, as it is a direct function of trading activity. Greater notional registered represents greater trading activity, which is associated with lower bid/offer spreads and in turn, lower transaction costs and best execution. 'Other' includes AUD, CAD, CHF, CZK, DKK, HKD, HUF, ILS, JPY, MXN, NOK, NZD, PLN, SEK, SGD, and ZAR. EU firms identified by Legal Entity Identifier (LEI) applied to Member House and End Client LEI (fund level). *Source*: LCH SwapClear.

<sup>&</sup>lt;sup>12</sup> In simple terms, a commodity can be described as a physical good attributable to a natural resource that can be traded and supplied (Clark *et al.*, 2001). There are two ways to trade commodities: in physical (spot) markets and in futures and forward markets. The former involves the physical transfer of goods between buyers and sellers, in prices that reflect the current (or very near term) supply and demand conditions. The latter constitutes the financial exchange of standardised futures contracts, in a price established today for the sale of a defined quantity and quality of a commodity at a future date of delivery.

<sup>&</sup>lt;sup>13</sup> See LME's <u>website</u>. LME is a USD-denominated market. Whilst there are some contracts that trade in euros, this is very limited and counts for a very small percentage of overall volumes.

<sup>&</sup>lt;sup>14</sup> It is important here to highlight that contrary to OTC derivatives which should be cleared through a CCP, ETD contracts traded on organised exchanges are automatically cleared. As a result a clearing location policy or derecognition of UK-based CCP will also affect ETD.

<sup>&</sup>lt;sup>15</sup> But not via EU clearing brokers, as the costs to clear through them will be much higher (compared to non-EU brokers).

# 2. Clearing in derivatives

#### **KEY FINDINGS**

- Clearing constitutes the core of modern financial market infrastructure. It is a vital part of the life cycle of a trade, and occurs in the period between the execution and settlement of a trade.
- Clearing of OTC derivatives transactions through CCPs has clear advantages. Risk mitigation, increased efficiency and enhanced transparency bring substantial benefits to the marketplace as a whole.
- However, the centralisation of risks in CCPs since the GFC has brought concerns with regard to financial stability, the concentration of credit risk, the impact of a member's default, and high costs.

Mandatory central clearing is a key aspect of the G20 reform plan for OTC derivatives. To reduce the large bilateral derivatives exposures that came into focus during the GFC, policymakers decided to mandate and incentivise change, bringing greater transparency and stability, better management of counterparty risk through clearing houses for standardised products, and better risk practices for non-cleared products.

## 2.1 What is clearing

Clearing denotes all activities from the time a commitment for a transaction is made until it is ready to be settled. In other words, it is a post-trade, pre-settlement process containing various procedures such as trade capture, matching and confirmation, position netting and obligation calculation for trade counterparties. Clearing in this context is the process of guaranteeing the payment and exchange of assets (i.e. settlement) for derivatives transactions between the counterparties of the transaction.<sup>16</sup>

Clearing is performed by CCPs. A CCP is an organisation that serves as a central counterparty to the transacting institutions, meaning that it interposes itself between the buyer and seller, acting as a seller to the buyer and a buyer to the seller. As an illustration using a simple example, imagine that financial institutions (e.g. dealers) A, B and C wish to buy and sell derivatives contracts (e.g. a commodity forward) from each other (Figure 3).

The first option is for the financial institutions to trade bilaterally in the OTC market, which means that they initiate trades directly with each other, and each pair manages payments on its respective contract. The numbers in Figure 3 illustrate hypothetical payments due between dealers. For example, the payment for dealers A and B is 8, while the total payment between all dealers is 42. In the second option, and assuming that the counterparties have a payment netting agreement, this amount can be further reduced between pairs of counterparties. As a result, the payment between dealers A and B is now 4, while the total payment between all dealers is 20.

<sup>&</sup>lt;sup>16</sup> Technically, clearing is the process of establishing positions – including the calculation of net obligations – and ensuring that financial instruments, cash, or both, are available to secure the exposures arising from those positions.



Figure 3. Payment obligations in an OTC market and a centrally cleared market

Source: Glasserman et al. (2016).

By introducing a CCP into the transaction – the third option – dealers A, B and C are now going to be facing the CCP instead of each other.<sup>17</sup> This means that each bilateral contract between dealers is replaced by two mirror-image contracts running though the CCP.<sup>18</sup> The clearinghouse interposes itself between the parties, serving as the counterparty to each. So in this example, instead of selling the forward contract to the buyer, the seller sells it to the clearinghouse, which sells an identical contract to the buyer. In this way, the clearinghouse is – within the circle of its members – the seller to every buyer and the buyer to every seller (BIS, 2004). In essence, the clearinghouse steps into the middle of an OTC derivatives trade and creates two new transactions through a legal process known as novation.<sup>19</sup> In doing so, central clearing achieves maximal netting in our example, thus reducing the total payments due between all dealers to 8.<sup>20</sup>

An important distinction should be made here with regard to central clearing in terms of direct (house) and indirect (client) clearing. Direct clearing occurs when a clearing member clears its own 'house' trades (pure own-account activities) through the CCP. On the other hand, client clearing is the service provided by the clearing member to its client, under which said clearing member agrees to clear that client's trades through a CCP. The latter is significant in terms of net exposures, and dominates the IRD market.

<sup>&</sup>lt;sup>17</sup> For example, if all dealers are members of the same exchange, e.g. the Chicago Mercantile Exchange (CME), they will contract through the clearinghouse that backs that exchange (CME Clearing).

<sup>&</sup>lt;sup>18</sup> Only clearing members of a CCP can trade through the CCP. Most or all major derivatives dealers are clearing members of the relevant CCP. An end user can trade through such dealers, unless the end user is itself allowed to become a clearing member and is willing to devote the necessary resources to membership.

<sup>&</sup>lt;sup>19</sup> Novation is the process by which a bilateral derivatives contract between two market participants is replaced by two bilateral contracts between each of the market participants and a CCP. The implication of this is that each counterparty is only exposed to the CCP's credit risk.

<sup>&</sup>lt;sup>20</sup> Theoretically, the CCP always has a net risk of zero in the sense that the total payments it needs to make are equal to the total payments it is owed.

Client clearing affects the systemic risk exposure of CCPs (and thus the rank ordering of the systemic importance of institutions), even though these are not directly linked (Ali *et al.*, 2016). For example, given that almost all insurance companies in the EU clear their derivatives contracts indirectly via a clearing member, focusing only on direct clearing would result in underestimating the systemic risk of CCPs (Fiedor *et al.*, 2017). Thus, taking into account client clearing is crucial for understanding financial stability and contagion effects within the financial system. We will first discuss the benefits of central clearing and then examine the drawbacks.

## 2.2 Benefits of central clearing

Clearing OTC derivatives transactions through CCPs has clear advantages. Apart from the payment netting process described above (i.e. multilateral netting), one very important benefit relates to the fact that the CCP guarantees all future exchanges of payments between the market participants. This limiting of financial institutions' exposures to one another by replacing them with exposures to CCPs reduces counterparty credit risk, liquidity risk and systemic risk, thus providing more stability to markets (Greenberger, 2012; Acharya and Bisin, 2014; Ruffini, 2015; Peirce, 2016; Bernstein *et al.*, 2019). The outcome of this counterparty substitution process is that each original counterparty (i.e. buyer and seller) is now only directly exposed to the counterparty credit risk of the clearinghouse. However, netting benefits largely depend upon a clearinghouse's scale (i.e. how much of the market it clears) and scope (i.e. the number of market products it clears) (Baker, 2016). For example, the more (comparable) contracts a CCP clears, the more its costs can decrease,<sup>21</sup> and consequently the more efficient it is.<sup>22</sup>

The use of a CCP can substantially reduce (but not eliminate) the systemic risk posed by OTC derivatives.<sup>23</sup> Given the fact that a CCP interposes itself between both counterparties, the failure of any one of the clearing members does not directly affect other members, who will continue to receive and make payments on their contracts

A CCP facilitates the transfer of a defaulted clearing member's client positions and collateral to another (Miller, 2011). The portability of positions enables client positions to be transferred to non-defaulted clearing members rather than being closed out, thus affecting clients' vulnerability to losses (arising from the member's default). In doing so, portability reduces transaction costs, prevents adverse pricing impacts associated with a large default, decreases the possibility of runs on a clearing member,<sup>24</sup> shields clients' positions and collateral from the default of their clearing member, and promotes market and price stability. As a result, the risk of contagion decreases (at least temporarily).<sup>25</sup>

<sup>&</sup>lt;sup>21</sup> These are cost decreases both in terms of allocation of fixed cost across more transactions, and better netting and margin efficiencies.

<sup>&</sup>lt;sup>22</sup> However, this may raise questions in terms of CCPs' competition. Negative effects arising from monopoly should not be ignored. We will discuss these issues in more detail in Chapter 6.

<sup>&</sup>lt;sup>23</sup> Along the lines of Alan Greenspan, who argued that the optimal number of bank failures is not zero (Greenspan, 1996), a CCP's function is to manage risk and not to eliminate it.

<sup>&</sup>lt;sup>24</sup> If a client is confident that portability will provide protection against the default of its clearing member, there is less incentive to 'run' when the financial condition of its clearing member falls under suspicion (Pirrong, 2011).

<sup>&</sup>lt;sup>25</sup> Moreover, CCPs may replace defaulted contracts by buying/selling replacement contracts in an auction to the market, using the so-called initial margin (IM) to offset any costs. Such auction might be more liquid and promote market and price stability, compared to an uncoordinated replacement of positions during periods of pronounced uncertainty (Pirrong, 2011).

Furthermore, central clearing facilitates clearing members' ability to exit positions by entering offsetting trades (Bliss and Steigerwald, 2006), introduces margin uniformity and discipline, mutualises losses, and limits the need for market participants to monitor one another (Yellen, 2013). With regard to operational efficiency and liquidity partitioning, CCPs expedite payments to a subset of a failed clearing member's creditors without slowing payments to others (Squire, 2014). This is done by reserving a portion of the member's liquid assets and a matching amount of its short-term debts, and using the first towards immediate repayment of the second. The clearinghouse's surviving members then receive prompt cash payouts instead of delayed bankruptcy payouts.

From a regulatory perspective, central clearing enhances transparency in several ways. Clearinghouses increase regulators' ability to understand position concentrations (while introducing a new quality of concentration in the market) and counterparty credit risk exposures, so that they are more easily able to quantify the positions taken and carry out stress tests. CCPs increase the transparency of position valuations and related margin requirements, thus limiting potential disputes on collateral valuation (Culp, 2014). A CCP's ability to monitor participants' positions is a potentially large benefit to financial stability. In some cases, a CCP may be in a better position than supervisory authorities (Davison, 1988). Moreover, if clearing members bear a clear and unambiguous shared liability for any losses incurred in the market, their incentive to ensure that each member's positions are effectively monitored is correspondingly strong.

Another important advantage of clearing and CCPs is that they reduce the chance that any unsubstantiated rumours will lead to the default of a dealer. When a dealer is thought to be experiencing difficulties, other dealers may stop posting collateral or refuse to trade with that dealer or enter into trades that are designed to reduce their exposure to the dealer. This may cause cash flow problems for the dealer and accelerate its potential default. However, such an event is less likely to occur when trades are cleared through a CCP. This is due to the risk management tools and transparency rules that require CCPs to closely monitor the performance of a member and the positions they hold. Initial margin (IM) plays a key role in this.

Related to this is the fact that a CCP provides protection against indirect forms of market contagion during a crisis or when a major clearing member defaults (Hills *et al.*, 1999). A CCP is in a good position to monitor counterparty risk effectively and thus reduce the level of asymmetric information in the market (Carapella and Mills, 2014).<sup>26</sup> CCP clearing makes securities information insensitive and, as a consequence, prevents markets drying up, as observed in OTC markets during the GFC. As a consequence, a liquidity crisis is less likely to occur.<sup>27</sup> With a well-managed and well-regulated CCP, market participants know that losses may be mutualised, and thus it is less likely that another participant is exposed disproportionately.<sup>28</sup> In this way, a CCP may contribute to much needed market liquidity in a crisis situation.

<sup>&</sup>lt;sup>26</sup> However, this also depends on how the IM has been calculated. If, for example, the IM calculation for the portfolio that is being cleared is done conservatively, then the probability that the CCP will lose money if a member defaults can be reduced to zero. In other words, if the IM is the right one and the VM is exchanged in a timely way then the probability of any losses due to a member's default (or the default of several members) can be close to zero.

<sup>&</sup>lt;sup>27</sup> Although asymmetric information has certainly been a key source of the financial disruptions seen, it is not a necessary condition for a market breakdown.

<sup>&</sup>lt;sup>28</sup> This is only valid, however, if the CCP does not allow outsized concentrated positions. See for example what happened in September 2018, when a Norwegian trader failed to pay a margin call to the commodities arm of Nasdaq Clearing AB in Sweden. The CCP sold the trader's portfolio and generated a loss that exceeded both his posted margin and his default fund contribution. The balance of remaining loss was absorbed by the mutualised

## 2.3 Concerns about central clearing

Regulatory reforms and the introduction of CCPs for certain OTC derivatives contracts have greatly lowered counterparty risk through compression of trades, better collateralisation and more efficient risk-sharing. However, given the centralisation of risk in CCPs following the GFC, the impact of a CCP failure would now be more significant. Thus, and apart from the several advantages of central clearing, CCPs have also brought concerns stemming from the concentration of credit risk, the impact of a member's default, cross-border clearing activities, netting efficiency losses, high costs, and interoperability arrangements (Glasserman *et al.*, 2016; Ghamami and Glasserman, 2017).

A CCP depends on the performance of each clearinghouse member to assist in the completion of its own obligations. The default of a significantly large clearinghouse member, or the default of multiple clearing members, could result in the CCP failing to perform its obligations and experiencing liquidity or solvency issues. However, the risks on these issues are significantly reduced if the variation margin (VM) is posted in a timely manner, or if the IM is enough to cover any potential losses.

Other sources of CCP stress could include the default of an investment counterparty, the default of a payment bank, the risk of an extended operational disruption, or simply business risk. The European sovereign crisis, for example, highlighted and heightened many CCPs' exposures to several of these risks (BoE, 2011). In addition, many CCP members are too-big-to-fail financial institutions and banks, whose distress would be transmitted and cause systemic shocks in the banking system (Bernanke, 2011). A recovery and resolution regulation for CCPs now exists, which should allow for organised resolution or liquidation of a CCP, and to address financial stability problems that will occur.<sup>29</sup>

Nevertheless, CCPs' structure embeds multi-tiered layers of risk management that mutualise default risk among clearing members. This risk-sharing feature means that clearing members are mutually responsible for their own risk-taking activities for those of their clients, as well as of other clearing members. Such shared financial responsibility creates important incentives for robust mutual monitoring, which also makes a clearing member default less likely.

Cross-border clearing activities of CCPs have been a concern in terms of regulation and oversight (BCBS-CPMI-FSB-IOSCO, 2018a). As derivatives markets are global and have become more concentrated, especially since the GFC, the vast majority of derivatives products are now cleared through a few large CCPs. These CCPs have become systemically important for multiple jurisdictions besides the one in which they are headquartered. Global CCPs also mean that a large part of the transactions they clear are submitted by financial institutions incorporated outside the CCP's country/territory. Thus, risks and losses can be channeled through CCPs, and in extreme cases spread across borders, with potentially destabilising effects for financial markets and financial stability across the globe.<sup>30</sup>

In order to address such risks, regimes for registering or recognising third-country CCPs – as well as enhanced regulatory and supervisory cooperation and coordination between EU and third-country regulatory authorities, supervisors and central banks – have been established. The Principles for

default fund contributions of the non-defaulting members and the 'skin-in-the-game' contribution of capital from the CCP (FIA, 2018; Bell and Holden, 2018).

<sup>&</sup>lt;sup>29</sup> See <u>Regulation (EU) 2021/23</u> on a framework for the recovery and resolution of CCPs.

<sup>&</sup>lt;sup>30</sup> Because central clearing promotes the creation of new systemically important institutions and eliminates some opportunities for cross-product bilateral netting while only partially reducing the interconnectedness of the market, systemic risk may actually increase rather than decrease under mandatory central clearing (McBride, 2010; Henkel, 2020).

Financial Market Infrastructures (PFMI), a set of international standards, were vital in ensuring harmonised risk management requirements across the globe. To this end, on 2 January 2020, EMIR 2.2 entered into force, revisiting supervisory arrangements for EU and third-country CCPs in light of the growing size and cross-border dimension of clearing in the EU. EMIR 2.2 allocates the supervisory responsibilities and enhances ESMA's role for both authorised EU CCPs and recognised third-country CCPs.<sup>31</sup> For the former, although the home-country supervisor is the responsible competent authority of the CCP, ESMA's role has been reinforced in order to promote a convergent approach towards European CCPs, and to homogenise the application of EMIR across the EU. For the latter, ESMA (through the CCP SC) is responsible for classifying third-country CCPs depending on the level of systemic risk they pose for the Union, and supervising recognised CCPs that are determined to be SI Tier 2 CCPs.<sup>32</sup>

With regard to losses in netting efficiency, it has been shown that clearing heterogeneous asset classes in separate CCPs removes the benefits of netting, thereby increasing counterparty exposures (and the probability of counterparty default), as well as collateral demands (Duffie and Zhu, 2011).<sup>33</sup> However, the loss of netting efficiency due to multiple CCPs can be offset when a single CCP clears multiple classes of derivatives, or when portfolio compression takes place across CCPs (D'Errico and Roukny, 2020). Enabling netting among multiple CCPs might help to reduce the impact of large exposures and the sudden surge in liquidity needs (Hayakawa, 2018). Based on these papers, two important factors impact the efficiency of central clearing: i) the number of CCPs; and ii) the proportion of OTC derivatives that are cleared.

While offsetting could be possible in a single CCP clearing multiple asset classes, netting efficiency disruptions could also occur due to the global fragmentation in the clearinghouse landscape. In a world of fragmented netting, the only trades available to a clearinghouse to offset losses from a dealer's default are positions cleared by that particular clearinghouse, a subset of all open positions with the defaulting dealer (Griffith, 2013).<sup>34</sup> Fewer open positions mean greater residual loss for the clearinghouse to absorb. This is a problem that will be arise in each clearinghouse in which the defaulting member participates.

Although the post-GFC regulatory requirements have increased transparency and reduced risk, they have also raised the costs associated with derivatives clearing. Margin requirements and capital charges

<sup>&</sup>lt;sup>31</sup> Through the creation of the CCP Supervisory Committee (CCP SC), an internal ESMA committee composed of a Chair, two independent members and the competent authorities of Member States with an authorised CCP.

<sup>&</sup>lt;sup>32</sup> In addition, ESMA's powers include the ability to conduct investigations and on-site inspections, and to impose fines. See speech by Klaus Löber, Chair of the CCP SC at ESMA, on '<u>CCPs: evolving risks and supervisory responses</u>', at the Derivatives Forum Frankfurt, 23 March 2021.

<sup>&</sup>lt;sup>33</sup> The authors find that clearing a moderately large fraction of all classes of derivatives in the same CCP reduces average estimated exposures by 37%, though this might depend on the correlation between the different asset classes. If, for example, the same asset class is cleared in two different CCPs, then this will require the posting of more (or at best the same) IM and VM than required if clearing was taking place in only one CCP. However, if two CCPs clear different assets and are not correlated, then the IM will be the same as if clearing was taking place in one CCP. While the VM might have some netting effects, it is unlikely that the risk of default will increase.

<sup>&</sup>lt;sup>34</sup> When a clearing members defaults, the CCP typically liquidates or auctions the defaulting member's positions to the remaining clearing members. Since the clearing member has paid VM up to the time of default, the only exposure of the CCP is to the portfolio loss between the default time and the liquidation, i.e. the liquidation cost (Cont, 2017).

for exposures, as well as compliance and reporting costs, all have implications for market participants.<sup>35</sup> According to Deloitte (2014), the estimated annual added cost is approximately  $\leq$ 15.5 billion, with margin requirements – including clearing fees, capital charges for trade exposures and contributions to the CCP default fund – being the main driver. Furthermore, costly collateral requirements may reduce potential investment, with a corresponding loss of return for clearing members (Monnet and Nellen, 2021), and lead to cross-jurisdictional regulatory arbitrage (Gandré *et al.*, 2020).<sup>36</sup>

Another concern arises from interoperability arrangements – the links between two or more CCPs involving a cross-system execution of transactions.<sup>37</sup> Such arrangements increase opportunities for netting, lower outstanding gross exposures in the system<sup>38</sup> and reduce complexity for clearing members.<sup>39</sup> However, at the same time, interconnection (links) between CCPs introduces a channel for shocks and risks to be transmitted (either directly or indirectly) from one CCP to another. This is because interconnection introduces credit exposure between linked CCPs.<sup>40</sup> Although the probability of a CCP default is relatively small, such an event could threaten the solvency of any surviving linked CCPs if the number of trades cleared across the link and the potential adverse movement of prices are significant enough (Cox *et al.*, 2013). For this reason, academics suggest that CCPs have combined stress tests that take into account the actions of other CCPs, as compared to current stress tests that treat CCPs in isolation (Glasserman *et al.* 2016).<sup>41</sup>

<sup>&</sup>lt;sup>35</sup> Participating in a CCP imposes direct costs on both clearing members and clients. Clearing members incur membership fees and operational costs including significant investments in infrastructure, as well as costs associated with requirements to post highly liquid assets at short notice including intraday (pursuant to CCP rules), which can create collateral funding and liquidity risks. Clients also face clearing fees, operational and collateral costs. These costs may be so high that they do not compensate for the private benefits of central clearing. Finally, in addition to counterparty risks, CCPs face business, operational and liquidity risks, and managing these can involve placing additional requirements on their clearing members (BCBS-CPMI-FSB-IOSCO, 2018b).

<sup>&</sup>lt;sup>36</sup> The authors find that following the early implementation of the G20's global OTC derivatives market reform in the US, the five largest derivatives traders in the US (Bank of America, Citigroup, Goldman Sachs, JP Morgan and Morgan Stanley) shifted up to 70% of their OTC derivatives activity abroad towards less regulated jurisdictions. The main driver of this shift was the promotion of central clearing, and the fact that US banks did not want to become swap dealers and not primarily related to clearing.

<sup>&</sup>lt;sup>37</sup> Interoperability allows clearing members of one CCP to centrally clear trades carried out with members of another CCP, without needing to be a member of the second CCP (EPTF, 2017). In doing so, clearing members can hold their positions with one CCP instead of dividing them across different CCPs (ESRB, 2016), thus reducing the costs of maintaining multiple CCP memberships. Having a single CCP with an adequate multicurrency central bank liquidity backstop, which is regulated and supervised and spans the broadest range of derivatives, is the ideal solution (IMF, 2010; Singh, 2011). Moreover, from a regulatory point of view, it might be easier to oversee one or a few large CCPs rather than many small ones.

<sup>&</sup>lt;sup>38</sup> As the collateral in the system declines with the level of exposure, the size of intraday margin calls also decreases, and therefore the liquidity risk (Mägerle and Nellen, 2011; Cox *et al.*, 2013).

<sup>&</sup>lt;sup>39</sup> Under interoperability, clearing members would not have to manage collateral calls from additional CCPs and transfers of collateral across CCPs (McPartland and Lewis, 2016).

<sup>&</sup>lt;sup>40</sup> All linked positions in a defaulting CCP are taken on by linked CCPs, potentially leading to very large losses.

<sup>&</sup>lt;sup>41</sup> To date, calls for interoperability of derivatives CCPs have not extensively materialised, in part because of the thorny risk management issues such linkages produce. The European regulatory framework covers interoperability arrangements related to transferable securities and money market instruments. ESMA has recommended extending the scope to include ETDs, but not OTC derivatives (ESMA, 2015). This is due to the additional complexities involved in interoperability arrangements between CCPs clearing OTC derivatives contracts (EMIR, Recital 73). Potential credit exposures are greater for OTC derivatives, while the cost of assessing

# 3. CCP risk management

#### **KEY FINDINGS**

- Risk management is a crucial part of the clearing value chain. Positions managed and processed by a CCP are associated with specific risks, which should be effectively evaluated and addressed.
- In order to control the risks they face, CCPs employ several financial safeguards: financial and capital requirements, initial and variation margins, and default/guarantee funds. The Initial margin (IM) posted by all market participants to major CCPs increased from in €119 billion in 2015 to €269 billion in 2020, with 65% posted through UK-based CCPs.
- History indicates that the failure of a CCP can be considered a rare event. Regulation, as well as recovery and resolution regimes, provide all the necessary tools and powers to avoid a CCP's default. With regard to clearing member defaults over the last 35 years, in most cases IM and guarantee fund contributions were sufficient to absorb the losses in most of the cases.

Clearinghouses are risk managers that centralise and concentrate risk from the market (Tucker, 2011). Thus, the effective management of that risk is of great importance. A key design attribute and vital component of risk management is the CCP's balanced book (ISDA, 2017). The contract a CCP enters into with the original seller is offset exactly by the contract it enters into with the original buyer. This balance generally means that the CCP is protected from market risk, provided neither counterparty defaults on its obligations to the CCP. However, and because very occasionally members may not meet their obligations, CCPs rely on multiple layers of risk management measures and employ mechanisms to manage risks deriving from the members and the products they clear.

## 3.1 Financial and capital requirements

To start with, only members of the clearinghouse (i.e. clearing members) can clear a transaction directly with the CCP (by being a counterparty to the transaction). Clearing members of CCPs are usually large and well-capitalised financial institutions that have to fulfil significant minimum capital requirements.<sup>42</sup> These clearing members can clear trades for themselves (i.e. principal model), and also on behalf of a client by acting as an agent (i.e. agent clearing model). Clearing members' clients are indirectly linked to and exposed to the credit risk of the clearinghouse. Clearing members are required to meet specific CCP threshold requirements related to financial strength, operational capabilities and effective risk

risk and making risk management models compatible are much higher. Currently, there are five interoperability arrangements in Europe: three authorised CCPs located in the EU (EuroCCP in the Netherlands, CC&G in Italy and LCH SA in France) and two recognised third-country CCPs (LCH Ltd in the UK and Swiss SIX x-clear in Switzerland, including its Norwegian branch SIX x-clear NO). The links, which have been approved since the implementation of EMIR, mostly cover the clearing of cash equities and government bonds, with one link covering the clearing of ETD (ESRB, 2019).

<sup>&</sup>lt;sup>42</sup> Minimum capitalisation requirements for CCP membership have changed dramatically over the years, from \$2 trillion to \$100 million to \$50 million (CFTC-SEC, 2010; Turing, 2012; ICE, 2021). On the one hand, restricting CCP membership to such institutions help CCPs reduce counterparty credit risks (by keeping out smaller and riskier traders). On the other hand, systemic risk may be exacerbated by keeping CCP membership closed and the dealer oligopoly impermeable (Chang, 2016).

management, agree to the CCP's rules and submit to the clearinghouse's monitoring of their creditworthiness and portfolios.  $^{\rm 43}$ 

Furthermore, CCPs may also impose risk-specific restrictions on their members (e.g. position limits, concentration margin or stress loss margin) in order to prevent overexposure to any particular firm.<sup>44</sup> In addition, and upon joining a CCP, each member contributes to a guarantee (or default) fund, which will be drawn on if one or more members default and the defaulters' collateral proves inadequate (Gregory, 2014).<sup>45</sup>

#### 3.2 Margining

Margining requirements and the collection of margin on derivatives contracts are a critical safeguard, not only for CCPs themselves, but more importantly for the stability of the entire financial system. A lesson learned from the 2007-2008 GFC was the need to properly ensure that derivatives exposures are adequately collateralised as market prices change and volatility rises. This is what margin does, it reduces the risk that a CCP's failure causes solvency concerns for other CCPs. Greater use of central clearing and stricter margining requirements have made the financial system safer since the GFC. More recently, the March/April 2020 volatility at the beginning of the Covid-19 crisis illustrated that derivatives markets and the CCPs themselves were able to cope and overcome the challenges of distressed market conditions (Maijoor, 2021).

#### 3.2.1 Initial margin

CCPs limit excessive exposure by requiring clearing participants to post appropriate initial and variation margins. Collecting initial margin (IM) is a key risk management component for CCPs to protect market participants and themselves. When a contract is first cleared, the CCP collects IM from the clearing member typically in the form of high quality liquid assets (HQLA) such as cash, Treasury securities or gold (Duffie *et al.*, 2010).<sup>46</sup> The IM is designed to protect the CCP from potential future losses should a member default, leaving the CCP to wind down the defaulter's portfolio (Bliss and Steigerwald, 2006).<sup>47</sup> It should also be sufficient to allow the CCP the time it needs to terminate or rebalance its positions by auctioning the defaulter's portfolio or entering into hedge trades (Singh, 2014). However, finding the right balance between providing protection against all but the most extreme price moves, and not damaging market liquidity or discouraging the use of the CCP, is crucial (Knott and Mills, 2002).

<sup>&</sup>lt;sup>43</sup> Most CCPs have internal credit scoring frameworks that allow them to monitor members' creditworthiness and adjust margin and credit allowances accordingly, if needed. In fact, the first line of defence for a CCP are the membership requirements that the potential members have to meet for admission to the CCP, as well as the ongoing financial and operational surveillance engaged in by the CCP in collaboration with self-regulatory and regulatory organisations (Davidson, 2021).

<sup>&</sup>lt;sup>44</sup> See for example the <u>CME Rulebook, Chapter 8F010</u>.

<sup>&</sup>lt;sup>45</sup> Another requirement that CCPs have of their clearing members is that they open an account with at least one of the CCP's settlement banks. Through that bank a clearing member satisfies its financial obligations (e.g. paying VM) to the CCP (McPartland, 2009).

<sup>&</sup>lt;sup>46</sup> The IM is adjusted periodically over the term of the contract by the CCP.

<sup>&</sup>lt;sup>47</sup> The CCP sets the IM using models, assumptions and historical data. Thus, it reflects (among other things) the historical price volatility of the product, and is in proportion to the clearing member's net or gross position in that product (McPartland, 2009; Turbeville, 2010).

IM requirements are usually expected to rise in response to market stress, reflecting increases in the risk of losses to the CCP, which would then have to be met by all members. This ensures that counterparty risk is properly mitigated at all times and that CCPs retain very high standards of resilience. However, this may also create a procyclical effect by requiring counterparties who post margin to find additional liquid assets at a time when it is most difficult for them to do so. For this reason, CCPs are subject to regulatory requirements that oblige them to use anti-procyclicality tools in their IM models (and thus avoid large unexpected jumps in IM).

Over the last years, IM posted by all market participants to major CCPs for their cleared IRD and credit default swap (CDS) transactions increased significantly and stood at  $\leq$ 269 billion at the end of 2020 – up by about 12% compared to 2019 (Figure 4). The vast majority of that amount (65%) was posted through UK-based CCPs, followed by their US (25%) and European (7%) counterparts, which indicates the global role of London.



Figure 4. Initial margin for cleared IRD and CDS by location (€ billion)

*Notes*: The figures refer to publicly available margin data (at the last quarter of each year) from two US CCPs (CME and ICE Clear Credit), two European CCPs (Eurex Clearing and LCH SA), two UK CCPs (ICE Clear Europe and LCH Ltd), and two Asian CCPs (JSCC and OTC Clearing Hong Kong Limited). The collected data only reflect IM for IRD and CDS. Data are published by CCPs under public quantitative disclosure standards set out by the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO). For the conversion into euros, the bilateral exchange rate EUR/USD at the end of the fourth quarter of each year has been used. *Sources*: ISDA Margin Survey Year-End 2020 and Eurostat.

IRD are responsible for 82% ( $\leq$ 220 billion) of the posted IM, while CDS are responsible for the remaining 18% ( $\leq$ 49 billion). In particular, LCH Ltd accounts for approximately 76% of the posted IM, followed by CME (14%) and Eurex (7%) (Figure 5).



Figure 5. Initial margin for cleared IRD by CCP (% of posted margin)

*Notes*: The figures refer to publicly available margin data (at the last quarter of each year) from CME, Eurex Clearing, LCH Ltd and JSCC. The collected data only reflect IM for IRD. Data are published by CCPs under public quantitative disclosure standards set out by the CPMI and the IOSCO. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of the fourth quarter of each year has been used.

Sources: ISDA Margin Survey Year-End 2020 and Eurostat.

The data, which comes directly from CCPs, offer a good measure of how much risk market participants are taking at each CCP. However, an important caveat is that they are not specific to EUR IRD. This is because none of the considered CCPs report IM for euro swaps separately from all others (e.g. USD, GBP and JPY). Although the data can give us the relative size of the CCPs in the IRD market as a whole, they do not offer any insight into euro clearing in particular.

#### 3.2.2 Variation margin

Another way in which CCPs protect themselves is by collecting (daily or more frequently) cash variation margin (VM) – also known as mark-to-market margin – from clearing members. Changes in asset prices result in price moves in underlying markets, which consequently lead to changes in CCPs' VM requirements. Given that VM reflects the new market price of a product, gains by market participants on one side of the trade are equal to losses incurred by other market participants.<sup>48</sup>

Whereas the IM is collateral for the purpose of protecting a CCP against potential future exposures, the VM is a payment that transfers actual market gains and losses between the CCP and its counterparties typically within a day of their occurrence.<sup>49</sup> In other words, VM does not remove liquidity from the system, but rather redistributes it (BoE, 2020).<sup>50</sup> The total collateral requirement on any given day is

<sup>&</sup>lt;sup>48</sup> The VM reflects daily changes in the market value of clearing members' portfolios (BIS, 2012).

<sup>&</sup>lt;sup>49</sup> Higher levels of IM and frequent VM calls minimise clearing member credit risk from the clearinghouse's perspective. At the same time, increased margin calls create greater liquidity needs and market stress for clearing members, potentially leading to their default. This tension arises because clearinghouses were initially created to serve their members' interests (i.e. micro-prudential function) and not to improve the safety and soundness of the financial system (i.e. macro-prudential function), which can be too costly (Bernanke, 1990). Risk-management measures that are helpful on a micro level – such as intraday margin calls – are not necessarily equally helpful at the macro level (Pirrong, 2011).

<sup>&</sup>lt;sup>50</sup> Having said that, market participants might face large VM calls if they have large directional positions. Thus, it is critically important that they manage their liquidity in anticipation of potentially large margin calls in a turmoil.

the sum of the VM and the IM requirements for each of the transactions. The monitoring of both, and its communication to clearing members, is a key part of the day-to-day management of a CCP.

#### 3.3 Default fund and waterfall

On top of the IM and VM, CCPs also require their members to contribute to a common default/guarantee fund.<sup>51</sup> If a member fails to post margin when required, the member is in default and its positions are closed out, leading to losses. A default waterfall defines how to sequence the CCP's financial resources against any losses. An illustrative order in which funds are accessed is presented in Figure 6. In the case of a clearing member defaulting, the CCP will use the defaulter's IM and default fund contribution to cover the incurred losses, followed by a designated tranche of CCP capital, referred to as the 'skin-in-the-game' amount.<sup>52</sup> Following the CCP's skin-in-the-game, the CCP uses the default fund. If the default fund is depleted, most CCPs have the right to assess clearing members for a multiple of the default fund (also called unfunded default fund contributions). Should these funds not be sufficient, losses will be reallocated across non-defaulting members via risk-sharing mechanisms embedded in the default waterfall structure (as part of the recovery or resolution regime).<sup>53</sup>

In extreme scenarios, and when a clearinghouse uses its default waterfall, the CCP might still require additional liquidity in order to meet its payment obligations. A CCP manages its liquidity profile by having liquidity providers (e.g. banks), accessing a central bank, or effectively storing cash margins in the repo markets. The liquidity profile is constructed so that enough cash is available each day to meet normal operational liquidity needs, with a buffer should a default event occur. In the days following such an event, the CCP needs to liquidate collateral and use it to meet members' VM calls. This creates the need for the CCP to store cash during this short period, since it cannot be tied up in investment activity. In that respect, access to a central bank and its liquidity against collateral, and not a bail-out. However, there is a thin line between liquidity and solvency in a financial crisis, as well as the timing of such intervention (as the CCP proceeds through its default waterfall towards recovery and/or

<sup>&</sup>lt;sup>51</sup> In order to minimise the risk of contagion between different asset classes, clearinghouses often have default funds that are asset class specific.

<sup>&</sup>lt;sup>52</sup> In fact, IM is the main protection against member default. An example of the effectiveness of IM is the Lehman Brothers' default in 2008 at LCH.Clearnet Ltd. To close out the Lehman portfolio with a total notional value of \$9 trillion (encompassing a total of 66,390 trades), LCH.Clearnet Ltd used only 35% of the defaulter's IM (LCH.Clearnet, 2008; Cusenza and Abernethy, 2010).

<sup>&</sup>lt;sup>53</sup> Such loss allocation mechanisms are a possible source of risk for clearing members. In particular, they face exposure via their pre-funded resources, via possible contingent liabilities (if the CCP calls for further liquidity) and via unquantifiable exposures caused by recovery or resolution regimes (Arnsdorf, 2012; EACH, 2012; BIS, 2014a).

<sup>&</sup>lt;sup>54</sup> There are several reasons why the relationship between CCPs and central banks is important. First, a CCP that fails to fulfil its obligations towards its members transmits a liquidity risk to them. This risk could potentially spill over and affect its obligations towards third parties (e.g. banks) and even transmit to jurisdictions with no oversight or supervisory powers on the CCP (Rosati and Rouveyrol, 2021). Second, CCPs' margin and collateral requirements could directly impact the liquidity management and funding needs of clearing members and their clients. Particularly for clearing member banks, this could in turn affect funding liquidity and collateral markets, for example those of high-quality and liquid assets such as sovereign bonds (which are typically accepted as collateral by CCPs and central banks (ESRB, 2020). Third, for solvent but illiquid CCPs, a central bank can act as a lender of last resort or as an emergency liquidity provider – to the extent that this falls under the scope of the related central bank provisions. To do so, the central bank should have a good knowledge of the CCP's risk profile, and be able to assess the systemic relevance of the crisis faced by the CCP and the broader implications of a potential default.

resolution) (Singh, 2014). Moreover, some CCPs have the statute of a bank and preferred access to liquidity, whereas others do not.

It is argued that when creating recovery plans, CCPs should not count on central banks' liquidity assistance (BIS, 2014b). However, efforts are made to ensure the timely provision (i.e. 'no technical obstacles') of emergency liquidity by central banks to solvent and viable CCPs (FSB, 2012). In the US, for example, the Dodd-Frank Act (Title VIII) enables the Federal Reserve (Fed) to provide liquidity to systemically significant CCPs.<sup>55</sup> This is the case for the Chicago Fed, which has granted access to liquidity to three CCPs (CME Clearing, ICE Clear Credit and the Options Clearing Corporation), the Bank of England (BoE) which has widened access to its sterling facilities to include CCPs and thus provide liquidity backstop,<sup>56</sup> and the Deutsche Bundesbank, which has provided a liquidity facility to Eurex Clearing (which has the statute of a bank).<sup>57</sup>





*Notes*: <sup>1</sup> Netting here refers to (multilateral) legally binding netting or obligation netting, and not to position netting. The latter is not a risk control measure and on the contrary can be a source of risk by creating moral hazard. <sup>2</sup> Includes delivery margin, contingent variation margin, and additional margins. <sup>3</sup> Taking into account the allocation of resources in relation to the size of the fund. <sup>4</sup> The size of these assessments varies from one CCP to another. It is usually a multiplier of the default fund contribution. <sup>5</sup> In the EU this is 10% to 25% of the minimum capital requirement of the CCP. <sup>6</sup> VMGH allows the CCP to distribute remaining losses by recourse to *pro rata* unpaid gains at the beneficial owner level.

*Sources*: Authors' compilation based on ISDA (2013), Carter and Garner (2015), Huertas (2016), McPartland and Lewis (2017), Paddrik and Zhang (2020), and websites of BME, CCP12, Eurex, LCH and KDPW\_CCP.

<sup>&</sup>lt;sup>55</sup> The Dodd-Frank Act also provides that the Fed System can permit CCPs that have been designated as systemically important by the Financial Stability Oversight Council (FSOC) to deposit money directly with a Fed Bank and to receive interest on the account balances. See the list of designated financial market utilities <u>here</u>.

<sup>&</sup>lt;sup>56</sup> See <u>press release</u> of 5 November 2014 by the BoE.

<sup>&</sup>lt;sup>57</sup> See <u>here</u>.

From a supervisory standpoint, a close relationship between central banks and CCPs not only contributes to the smooth conduct of monetary policy and the stability of the currency, but also gives central banks a powerful monitoring tool. In particular, it offers full visibility of all flows in the respective currency and over the collateral deposited on central bank accounts. This is very important in case of a crisis, and especially for OTC derivatives where collateral is more relevant than notional. Furthermore, it provides the central bank with direct oversight power with regard to payment and settlement systems, while it ensures additional guarantees for the central bank's involvement in any decision related to collateral (of domestic and foreign firms). Given that derivatives transactions (especially in EUR-denominated IRD) represent an important flow of value through payments systems in Europe such as the ECB's TARGET2 system, several CCPs – including two UK based – now hold TARGET2 accounts.<sup>58</sup> This gives the ECB visibility over euro and the collateral flowing through these CCPs.

Although having access to central bank liquidity assistance may be helpful for several reasons, moral hazard concerns are also present. A CCP might (theoretically) engage in additional risk taking if a third-party insurer, such as a central bank, could potentially provide a last-resort backstop in a financial emergency (Baker, 2012; Tucker, 2014a). This could consequently contribute to the mispricing of financial risk, as risk-taking activities become cheaper when part of the downside cost (of such activities) can be 'shared' with a central bank or a government. For example, banks considered by financial markets as 'too-big-to-fail' can borrow money more cheaply than banks thar are not viewed similarly (Mehrling, 2011; Baker, 2012; Baker, 2013b; BCBS, 2013).<sup>59</sup> In addition, access to central bank liquidity might encourage the CCP to offer lower margin requirements for its clearing members, which can be amplified in cases of too-big or too-important-to-fail CCPs (Nabilou and Asimakopoulos, 2020). Another concern may be the use of taxpayer money in bailing out CCPs, either domestic or foreign.<sup>60</sup> However, the combination of rigorous prudential requirements and oversight, as well as the implementation of appropriate recovery and resolution tools, could possibly help mitigate such moral hazard concerns (EC, 2016).

<sup>&</sup>lt;sup>58</sup> Currently, 10 EU CCPs have accounts in TARGET2 as ancillary systems: CCP.A (AT), Eurex Clearing and ECC (DE), BME Clearing (ES), LCH.SA (FR), AthexClear (EL), CC&G (IT), Ice Clear Nederland (NL), OMIClear (PT) and Nasdaq Clearing (SE). And two UK CCPs: ICE Clear Europe and LCH Ltd. TARGET2, which has been available since 2007, is the first truly pan-European integrated market infrastructure for secure and efficient settlement of payments. Its main aim is to harmonise, consolidate, and provide robust and cost-efficient cross-border transactions in Europe.

<sup>&</sup>lt;sup>59</sup> The American International Group (AIG), for instance, significantly underpriced the credit protection sold through its CDS.

<sup>&</sup>lt;sup>60</sup> This was one of the points of the ECB's 'location policy'. As reaffirmed by the Governing Council of the ECB, the infrastructure for clearing euro-denominated securities and derivatives should be located in the euro area (ECB, 2001). This is in order to ensure the effective exercise of the Eurosystem's core responsibilities with regard to monetary policy and financial stability (Russo, 2010), and to strengthen the role of the euro as a major currency of denomination of OTC derivatives contracts (ECB, 2009b).

## 3.4 History of CCPs' defaults and their clearing members

Looking back, history shows that the failure of a CCP can be considered a rare event. In fact, there have been just four CCP defaults in recent decades: the *Caisse de Liquidation des Affaires en Marchandises* (CLAM) in Paris in 1974,<sup>61</sup> the Kuala Lumpur Commodities Clearing House in 1983,<sup>62</sup> the Hong Kong Futures Exchange (HKFE) in 1987<sup>63</sup> and the National Spot Exchange and its clearinghouse in India in 2013.<sup>64</sup> However, all of them occurred for reasons that have now been addressed by regulation and CCPs. The majority of CCPs nowadays have drawn up and maintain recovery plans in case a loss exceeds its default waterfall, while authorities have put in place CCP recovery and resolution regimes that provide the relevant authorities with broad tools and powers, including the ability to intervene when a CCP is in financial difficulty and to restructure a failing CCP.

Table 2 lists a representative sample of clearing member defaults over the last 35 years. In about half of the defaults, the loss was entirely covered by the defaulter's IM and contribution to the guarantee fund. Interestingly, comparing clearing member defaults across CCPs, it appears that LCH's risk management framework was capable enough to overcome these defaults. In fact, the IM was sufficient to cover potential losses and there was no need to draw funds from the default fund (Table 3). Even when Lehman Brothers collapsed in 2008, LCH.Clearnet had enough IM on deposit from its member brokers to cover the situation, and thus the default fund of LCH.Clearnet was not impacted by Lehman's default.

Year of	Clearinghouse	Clearing member	Default loss	CCP	Sufficient resources
default				loss	
1985	COMEX Clearing	Volume Investors	\$14.9 million	Yes	No
	Association	Corp.			
1987	Options Clearing	H.B. Shaine & Co.	\$8.6 million	Yes	No (CCP requested an
	Corporation (OCC)				emergency loan from Fed)
1987	Chicago Mercantile	Multiple firms	NA	Yes	No (CCP requested an
	Exchange (CME)				emergency loan from Fed)
1989	New Zealand Futures	Jordan Sandman	NZ\$7.8 million	Yes	No
	and Options Exchange	Futures			
	(NZFOE)				
1990	LCH.Clearnet and CME	Drexel Burnham	NA <sup>1</sup>	No	Yes
		Lambert Ltd.			
1991	LCH.Clearnet	Woodhouse, Drake	£900,000 (before	No	Yes
		and Carey Ltd.	taking into account		
			defaulter's resources)		

Table 2. Clearing members' default history in CCPs

<sup>61</sup> With regard to CLAM's default, two reasons were identified for the closure: i) the composition of the pool of investors, which comprised unsophisticated and non-diversified retail investors; and ii) the misuse of instruments to manage risks – the CCP failed to protect itself against the growing position of a member (Hills *et al.*, 1999; Bignon and Vuillemey, 2020).

<sup>62</sup> The failure of the Malaysian CCP was caused when half a dozen large brokers defaulted as a result of the losses generated by the collapse in palm-oil features. In addition, and similar to CLAM, the CCP did not increase margin requirements in response to greater market volatility.

<sup>63</sup> Following the stock market crash of October 1987, the HKFE had to close for four days and be bailed out by the government, as a result of fears of unmet margin calls on purchased equity futures positions (Davison, 1988; Cox, 2015).

<sup>64</sup> Operations were suspended as a result of widespread fraud, corruption and incompetent management. The board of directors of the exchange and the CCP ignored the default of numerous of its clearing members and did not implement any efficient risk management system. On top of that, high-risk derivative positions were traded without the posting of any collateral and without any regulatory approval (Nayak, 2013).

1992	Chicago Board of Trade (CBOT) Clearing	Lee B. Stern & Co.	\$8.5 million	Yes	No
1995	Singapore International Monetary Exchange (SIMEX)	Barings Futures (Singapore) Ltd. (BFS)	\$259 million	No	Yes (but exceeded by \$86 million)
1995	Osaka Securities Exchange (OSE)	Barings Securities (Japan) Ltd. (BSJ)	\$145 million	NA	NA
2000	New York Clearing Corporation (NYCC)	Klein & Co. Futures, Inc	\$10 million	Yes	No (NYCC paid \$4 million to protect customers from loss)
2008	LCH.Clearnet	Lehman Brothers <sup>2</sup>	\$9 trillion	No	Yes (positions were auctioned successfully)
2011	LCH.Clearnet	MF Global UK Limited <sup>3</sup>	\$500 million	No	Yes
2013	LCH.Clearnet	Cyprus Popular Bank Co. Ltd.	NA	No	Yes
2013	Korea Exchange (KRX) CCP	HanMag Securities	KRW 46 billion	Yes	No
2016	LCH.Clearnet/Eurex	Maple Bank GmbH	NA	No	Yes
2018	Nasdaq Clearing	Einar Aas	€167 million	Yes	No

*Notes*: Default loss refers to the amount of losses caused by defaults. Sufficient resources refers to whether financial resources contributed by clearing members were enough to cover the CCP's loss. <sup>1</sup> When Drexel Burnham Lambert failed it had \$30 billion notional in derivatives contracts outstanding with roughly 200 counterparties. Under bankruptcy, the contracts were terminated early without any apparent credit losses to counterparties. <sup>2</sup> Although Lehman was a clearing member of several CCPs (including CME), positions were closed without loss for the CCPs. <sup>3</sup> MF Global was also a clearing member of CME. CME Clearing stated on 1 November 2011 that it '... is holding substantial excess margin collateral from MF Global and therefore continues to be in a strong financial position', and that '... the proprietary positions of MF Global have been liquidated with no adverse market impact, leaving a substantial part of that collateral to be applied to MF Global's obligations at CME'. *Sources*: Feder (1992), Samuelson (1996), Remolana *et al.* (1996), CFTC (2001), Norman (2011), Rehlon and Nixon (2013), Fleming and Sarkar (2014), McPartland and Lewis (2017), Cunliffe (2018), FIA (2018), Núñez and Valdeolivas (2019) and King

et al. (2020).

Table 3. Default history of LCH.Clearnet's clearing members

Year of default	Clearing member	Losses
1990	Drexel Burnham Lambert	within the IM held
1991	Woodhouse, Drake and Carey (Commodities) Ltd	within the IM held
1995	Baring Brothers & Co Ltd	within the IM held
1998	Griffin Trading Company	within the IM held
2008	Lehman Brothers	within the IM held
2011	MF Global UK Ltd	within the IM held
2013	Cyprus Popular Bank Co Ltd	within the IM held
2016	Maple Bank GMBH	within the IM held

Source: LCH Risk Management.

# 4. Regulatory issues surrounding derivatives clearing

#### **KEY FINDINGS**

- EMIR, which was adopted in 2012 in EU law as the first piece of EU legislation covering the post-trade financial market infrastructure, have worked well. The new regulatory framework was welcomed and supported by central banks and supervisors, as well as market participants.
- The latest update of EMIR has provided for an appropriate regulatory and supervisory framework for CCPs in Europe. Allows ESMA to directly supervise third-country CCPs and to decide on a series of prudential measures for such CCPs. It also gives extensive powers for the central bank of issue.
- The EU-UK cooperation agreement on trade in financial services allows for a new structure to emerge, but will take time to come to full operation, politics allowing.

The policy issues raised by central counterparty clearing and financial market infrastructures are a longstanding debate, in particular at European level, and have been the subject of controversy related to the nature and scope of the rules and governance of the entities involved. The key piece of regulation is EMIR and its recent amendments, which are analysed below. Given the importance of the UK in CCP clearing, we further detail the scope for financial services in the EU-UK Trade and Cooperation Agreement (TCA). This section starts with a brief review of the different policy actions in this domain over the last two decades.

## 4.1 EU CCP regulation: a brief review in time

At international level, the debate was kicked off in 2000 with the standards for financial market infrastructures, leading to the recommendations for CCPs put forward by the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of IOSCO (CPSS-IOSCO, 2004), later renamed the Committee for Payments and Market Infrastructures (CPMI). At EU level, it started in 2001 with the standards for central securities depositories (CSDs) as follow-up to the Giovannini Group (GG, 2001). But more binding rules only emerged in Europe after the GFC – and the collapse of the American International Group (AIG) and Lehman Brothers – when the ECB began to take a more active supervisory stance over CCPs, while other jurisdictions had already acted earlier.

The protagonists in the EU were the EC, the ECB and the Committee of European Securities Regulators (CESR – the precursor of ESMA), with each of them having different concerns and orientations. As member states were initially reluctant to adopt binding rules, the ECB, with the help of CESR, took the lead in adopting standards for clearing and settlement in 2004 (CESR-ECB, 2004) and for CCPs in 2009 (CESR-ECB, 2009). In 2007, the ECB decided to create a centralised securities settlement system (SSS) with TARGET2-Securities (T2S) (ECB, 2007a).

In the wake of the GFC, the initiatives taken by the Financial Stability Board (FSB) and the actions of CPMI and IOSCO were crucial to the development of global standards for the resilience of financial market infrastructures (i.e. PFMI), including key standards specifically dealing with CCPs. This work was also crucial in setting guidelines for the recovery and resilience of CCPs.

The ECB's concerns over exposures in CCPs have been highlighted by its actions over the last decade. It first tried to mandate CCP facilities clearing in euro to be based in the eurozone, which was challenged

by the UK. The EU Court decided that the ECB lacked the necessary competence to regulate the activity of securities clearing systems, as its competence was limited to payment systems.<sup>65</sup> The ECB later proposed a change to its statute (on 23 June 2017) to be able to exercise legal competence in the domain of CCP clearing supervision.<sup>66</sup> However, this required a change to the EU Treaty, and was retracted after criticism by the European Parliament in the context of the EMIR 2.2 discussions.

## 4.2 EMIR and EMIR 2.2

Further to the Pittsburgh 2009 G20 summit, EMIR was adopted in 2012 in EU law as the first piece of EU legislation covering the post-trade financial market infrastructure, following the proposals of the CPMI in the context of the post-crisis regulatory framework. In particular, EMIR includes prudential and risk management requirements for CCPs, as well as the obligation to centrally clear certain classes of OTC derivatives via authorised CCPs.<sup>67</sup> The implementation of EMIR went smoothly: it applied directly to trade repositories and to the 'single licence' for CCPs, but was phased in gradually for products that had to be cleared centrally. This compared to 2013 in the US under the Dodd-Frank Bill, which explains the difference between the EU and the US in the proportions of centrally cleared derivatives. Seen in hindsight, this entirely new regulatory framework was put in place rapidly, although some questions remain outstanding, such as the statute of CCPs, to ensure orderly resolvability and establish the no-creditor-worse-off (NCWO) principle, was adopted in December 2020.

Overall, the EMIR's essential prudential and conduct of business rules have worked well. The new regulatory framework was welcomed and supported by central banks and supervisors, as well as by market participants. As the European Systemic Risk Board (ESRB) commented, 'the derivatives market – once one of the most opaque financial markets in the world – is in the process of becoming one of the most transparent to regulators' (ESRB, 2016). The 2018 EMIR Refit made a set of targeted amendments in an effort to simplify and increase the proportionality of rules.<sup>68</sup>

The high volatility at the start of the Covid crisis demonstrated the stability of the clearing and financial system and is testament to the effectiveness of the G20 reforms. An FSB report noted that the market stress at the outbreak of the COVID-19 pandemic was the first major test of the global financial system since the G20 reforms were put in place (FSB, 2021). It acknowledged that large banks, financial market infrastructures, CCPs and insurance sectors demonstrated resilience thanks to past reforms and flexibility provided by monetary, fiscal, regulatory and supervisory authorities.

EMIR allows CCPs to enter into interoperability arrangements, subject to approval of the competent authorities. Such arrangements should increase netting possibilities and enhance the use of collateral (in cross-margining of positions). But they can also amplify risks by increasing contagion among CCPs. This requires advanced coordination among supervisors, proper monitoring of inter-CCP risks and

<sup>&</sup>lt;sup>65</sup> The General Court of the European Union annulled the ECB's European Oversight Policy Framework on 4 March 2015 (GCEU, 2015) <u>Action brought on 15 September 2011 – United Kingdom v ECB, Case T-496/11</u>.

<sup>&</sup>lt;sup>66</sup> See <u>ECB recommends amending Article 22 of its Statute</u> in 2017. Moreover, early drafts of the EMIR proposal suggest that clearing of euro-denominated derivatives should be in the eurozone. Similarly, in 2009 <u>Internal Market</u> and <u>Services Commissioner Charlie McCreevy</u> called for a 'European solution' for clearing 'European CDS'.

<sup>&</sup>lt;sup>67</sup> The list of CCPs authorised by ESMA in the EU can be found <u>here</u>.

<sup>&</sup>lt;sup>68</sup> See EMIR Refit <u>Regulation (EU) 2019/834</u>.

integrated stress tests, as well as sound procedures for recovery and resolution in case of an interoperable CCP defaulting (ESRB, 2016; ESRB, 2019).

Interoperability arrangements are also important from a competition perspective to limit monopolistic outcomes. Authorities should act as a catalyst for cooperation arrangements among CCPs by being an enabler, or implement cooperation through regulation. In the prescient words of the first chair of CESR and an ECB board member, Tommaso Padoa-Schioppa, 'a persistent lack of cooperation can rightly be interpreted as a lack of government'. He adds that '... a [government] can provide integrated facilities when the elements of natural monopoly and the financial stability concerns are particularly strong' (Padoa-Schioppa, 2006).

#### 4.3 EMIR 2.2 and the EU supervisory structure of CCPs

EMIR 2.2 establishes a dedicated CCP Supervisory Committee (CCP SC) as a permanent internal Committee of ESMA, reporting to the Board of Supervisors. It allows ESMA to directly supervise third-country CCPs and to decide on a series of prudential measures for such CCPs. It mandates the use of supervisory colleges and empowers ESMA to withdraw the recognition of a third-country CCP in cases of serious infringements.

The CCP SC is composed of three independent members, the relevant national authorities and the national central banks of issue. The main purpose of the committee is to supervise SI third-country or Tier 2 CCPs and to enhance supervisory convergence of EU-based CCPs. Under the initial EMIR rules, CCPs are supervised by the home country authorities, with supervisory colleges to facilitate the task EU wide or globally. ESMA is responsible for recognising third-country CCPs to provide clearing services in the EU, subject to the existence of an equivalence agreement by the EC. Under EMIR 2.2, ESMA's Board of Supervisors determines which are the Tier 2 CCPs it supervises directly with an additional toolkit, and where it chairs the supervisory college. Following assessment, after consulting with the ESRB and in agreement with relevant Central Bank of Issue (CBI), ESMA can propose to the EC that a CCP is 'of such substantial systemic importance that it should not be recognised to provide certain clearing services or activities' (EMIR 2 Article 25.2c). EMIR 2.2 makes robust arrangements for the exchange of information on the risks and activities a CCP is involved in.

To date, ESMA has recognised 38 third-country CCPs, the majority of which are based in Asia, but with the most important ones based in the UK and the US. It has determined that, so far, two of these third-country CCPs are 'systemically important or likely to become systematically important' (Article 25.2a of EMIR). The CCPs that are determined not to be SI (Tier 1 CCPs) will continue to be subject to a very similar regime to the one for the recognition of third-country CCPs under EMIR 1. However, systemically important third-country CCPs (Tier 2 CCPs) are subject to extensive additional requirements: 1) compliance with the relevant prudential requirements for EU CCPs; 2) compliance with EU central banks' requirements on liquidity, payment or settlement arrangements, also in exceptional circumstances; and 3) written consent for ESMA visits of its premises. Tier 2 CCPs have to contribute a supervisory fee to ESMA, which can also impose fines or penalty payments (Annex III to EMIR 2.2 contains a long and extensive list of possible infringements). The third-country CCP can ask ESMA to assess whether it is meeting comparable requirements in place in its home country (Article 25.2b(a)).

EMIR 2.2 gives extensive powers to the CBI, which is the central bank of the currencies in which the CCP clears. It can request a Tier-2 CCP to open an overnight deposit account with the CBI and ask it to comply with all of its requirements in exceptional situations.

EMIR 2.2 also states that ESMA needs to carry out a cost-benefit analysis of the non-recognition of a CCP, in the context of assessing the risks for and readiness of the EU market. If after assessment ESMA (following consultations with the ESRB and relevant CBI) concludes that a CCP or some of its services are of such systemic importance that it cannot be recognised, it will recommend that the EC adopts an implementing act not to recognise the CCP, or for it to provide certain clearing services or activities. For a third-country CCP that is not recognised by ESMA, the EC can, 'as a measure of last resort', decide which services can still be offered by that CCP and allow for an adaptation period for the CCP's clearing members and clients of a maximum of two years, extendable once by an additional period of six months (Article 25.2c). The EC shall also consider the cost implications of such a decision, especially for those established in the EU.

EMIR is complemented by a regulation on the recovery and resolution of CCPs, which was adopted at the end of 2020. Regulation (EU) 2021/23 establishes an ESMA Resolution Committee and creates resolution colleges, managed by the home country authority, but it does not refer or give a role to the CCP SC, apart from the technical advice.

## 4.4 Financial services and the EU-UK TCA

The outcome of the TCA between the EU and UK did not include significant provisions for financial services (TCA, 2020). The TCA does not institute a dedicated financial services committee, but rather a general one for services.<sup>69</sup> But the agreement provides for an umbrella, a governance structure, a mechanism for orderly competition between the EU and the UK with rebalancing and safeguard measures, and for dispute settlement and cooperation in a variety of fields. Joint actions are also foreseen on money laundering and cybersecurity, and in financial programmes of the European Investment Bank (EIB). The agreement contains a long list of member states' specific market access reservations, notably on financial data processing services.

The TCA has a dedicated chapter on cross-border financial services and investment, following the (most favoured) national treatment and anti-discrimination rules (Section 5.37 of the TCA). But it provides for a prudential carve-out, as in other international trade agreements, which allows each party to adopt or maintain measures deemed necessary for consumer and investor protection or the stability of its financial system. This clause can easily be invoked in the financial services domain, and for CCPs in particular, and has never been challenged before international courts. Hence the TCA is of little support to large cross-border businesses such as CCPs.

Equivalence assessments of each other's supervisory systems are not referred to in the Free Trade Agreement (FTA), but in a Joint Declaration stating that 'the EU and the UK agree to establish structured regulatory cooperation on financial services, with the aim of establishing a durable and stable relationship between autonomous jurisdictions'.<sup>70</sup> This includes: bilateral exchanges of views relating to regulatory initiatives; transparency and appropriate dialogue in the adoption, suspension and withdrawal of equivalence decisions; and enhanced cooperation and coordination, including in international bodies as appropriate.

<sup>&</sup>lt;sup>69</sup> Although this did not come as a surprise looking at the EU's TCAs with other third countries.

<sup>&</sup>lt;sup>70</sup> See the <u>Joint Declaration on Financial Services Regulatory Cooperation between the European Union and the</u> <u>United Kingdom</u>.

So far, the EU has concluded one equivalence agreement of importance with the UK, the (temporary) equivalence of supervision of UK clearing facilities, as contained in EMIR, whereas the one under the Central Securities Depositories Regulation (CSDR) has expired. This is far less than the number of equivalence agreements the EU has concluded with other third countries so far, but also less than the temporary relief that the UK has granted to EU service providers.<sup>71</sup> Although the EC has received the UK's replies to its questionnaires covering 28 equivalence areas, further clarifications are needed.<sup>72</sup> Decisions will be assessed only 'when they are in the EU's interest'. The UK from its side, in line with comments made by Chancellor Sunak, has announced that it intends to further strengthen the resolution regime of CCPs (Sunak, 2021).

In the meantime, the EU and the UK, represented by the EC's DG FISMA and HM Treasury respectively, have finalised a memorandum of understanding establishing the EU-UK Financial Regulatory Forum to improve transparency, reduce uncertainty and tackle regulatory arbitrage. This agreement still has to be agreed by the EU Council and the EC College of Commissioners.

<sup>&</sup>lt;sup>71</sup> See <u>here</u>.

<sup>&</sup>lt;sup>72</sup> In particular regarding how the UK will diverge from EU frameworks, how it will use its supervisory discretion regarding EU firms, and how its temporary regimes will affect EU firms. See <u>Questions & Answers: EU-UK Trade</u> and Cooperation Agreement.
# 5. Current landscape and evolution of the market

#### **KEY FINDINGS**

- Derivatives markets have grown significantly over the years. OTC products cover almost the totality of the market (90%). Interest rate derivative (IRD) contracts account for the great majority of OTC derivatives (80%). From 2008 to 2020, the share of derivatives contracts that were centrally cleared rose from 50% to 83%, while for certain asset classes like IRD it reached 91%.
- Euro-denominated IRD accounted for approximately 24% of the global daily average turnover in 2019 (down from 49% in 2013). UK sales desks were responsible for 86% of that turnover, with continental Europe accounting for 10%.
- Focusing on the most active IRD product, IRS, UK-based CCPs clear approximately 93% of eurodenominated IRS traded notional globally. Of the 20% of euro-denominated IRS executed on European trading venues, 17% is cleared by CCPs located in the UK.
- CCPs are highly interconnected with international financial institutions and global banks. Economies of scale and network effects result in a natural tendency towards large-scale concentration. However, the growing interconnection between CCP and clearing members raises concerns with regard to financial stability and systemic risks.

Over the past 20 years, global derivatives markets have grown dramatically. Most of this growth has been in the OTC segment of the market, which has caught up with and surpassed (by many measures, including gross notional volume) the exchange-traded derivatives (ETD) market. OTC derivatives are privately negotiated contracts, which may be easily customised (although they range from highly bespoke to relatively standardised contracts) and are traded either on trading platforms or bilaterally. ETDs are standardised contracts that are traded on organised exchanges.

## 5.1 Development of the market

The aggregate size of the OTC and ETD markets combined, in terms of notional amounts outstanding, grew from  $\in$ 78 trillion to  $\in$ 528 trillion between 1998 and 2020 (Figure 7). However, the predominance of the OTC segment of the market over ETD – measured in gross notional volume – is evident. OTC derivatives activity constitutes approximately 90% of total derivatives activity (as measured by gross notional volume), with the remaining 10% made up of ETDs. At the end of 2020, the size of ETD markets was  $\in$ 54 trillion compared to  $\notin$ 474 trillion for OTC markets.





*Notes*: The difference between ETD and OTC should be interpreted cautiously, as it depends on compression efficiency. The notional amount of outstanding OTC derivatives contracts determines contractual payments and is an indicator of activity in OTC derivatives markets. BIS reports data in US dollars at end-June and end-December of each year. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of each quarter has been used. *Sources*: Bank for International Settlements (BIS) and Eurostat.

OTC derivatives represent a sizable fraction of financial transactions worldwide, encompassing a wide variety of contracts and asset classes. The total nominal amounts outstanding of OTC derivatives contracts, which determine contractual payments and are an indicator of activity (not risk), increased significantly from  $\notin$ 66 trillion in June 1998 to a peak of  $\notin$ 562 trillion in June 2019, before reaching  $\notin$ 474 trillion at the end of 2020 (Figure 8).

While notional amounts provide a measure of the size of the market, they do not provide a measure of risk. For this reason, the gross market value, which calculates the cost of replacing all outstanding contracts at market prices, offers a better indication of the market and counterparty risk in derivatives markets.<sup>73</sup> Gross market value reached its all-time-high of  $\leq 25$  trillion at the peak of the GFC at the end of 2008. Since then, and largely because of the implementation of the G20 commitments, the gross market value of outstanding contracts declined to  $\leq 13$  trillion in December 2020. The gross market value of 2020, compared to its lowest level of 2% at the end of 2018.

<sup>&</sup>lt;sup>73</sup> Although the gross market value does not take into account the effect of netting for each pair of counterparties.



Figure 8. Notional amounts outstanding of global OTC derivatives market (€ trillion, 1998 H1-2020 H2)

*Notes*: The notional amount of outstanding OTC derivatives contracts determines contractual payments and is an indicator of activity in OTC derivatives markets. The gross market value represents the maximum loss that market participants would incur if all counterparties failed to meet their contractual payments and the contracts could be replaced at current market prices. BIS reports data in US dollars at end-June and end-December of each year. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of each quarter has been used. *Sources*: BIS and Eurostat.

The great majority of OTC derivatives contracts are IRD. This exchange of payment, which allows one party to sell off the risk of increasing variable interest rates to a willing counterparty, stood at €380 trillion, or 80% of the entire OTC derivative market, in December 2020. Moreover, there has been a shift in the interest rate market away from bilateral settlement towards clearinghouses (Figure 9). The notional amount of interest rate contracts between derivatives dealers has been falling steadily since 2008.<sup>74</sup> From December 2008 to December 2020, the notional amount of contracts bilaterally cleared between derivatives dealers dropped from €131 trillion (39%) to €31 trillion (7%). At the same time, all contracts handled by other financial institutions – mostly clearinghouses – rose from €176 trillion (52%) to €422 trillion (91%). Hence the central role of clearinghouses.

An important factor that has contributed to and enhanced the role of CCPs in OTC derivatives markets since the GFC is trade compression. This is the practice of eliminating or reducing the size of OTC derivative positions by terminating offsetting trades or replacing them with a smaller set of netted trades. Trade compression, which can be applied to both bilateral and centrally cleared trades, leaves each counterparty's market risk exposure unchanged (or within a pre-defined range). In particular for IRD contracts, compression has increased rapidly over the last years. Market participants have a direct

<sup>&</sup>lt;sup>74</sup> A major factor fuelling this trend has been trade compression and the elimination of redundant contracts.

incentive to engage in trade compression as it reduces the number of individual trades to be managed, and consequently it lowers both costs and operational risk.<sup>75</sup>



Figure 9. Share of notional amounts outstanding of IRD by counterparty (%, 1998 H1-2020 H2)

*Notes*: 'Reporting dealers' mainly include commercial and investment banks, and securities houses. 'Other financial institutions' include financial institutions not classified as 'reporting dealers'. For example, banks, CCPs, funds and non-bank financial institutions which may be considered as financial end users (e.g. mutual funds, pension funds, hedge funds, currency funds, money market funds, building societies, leasing companies, insurance companies, central banks). 'Non-financial customers' include any counterparty other than those described above (i.e. mainly non-financial end users, such as corporations, high net worth individuals and non-financial government entities). BIS reports data in US dollars at end-June and end-December of each year. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of each quarter has been used.

Sources: BIS and Eurostat.

Zooming into the category 'other financial institutions', which includes central counterparties, the share of notional amount of IRD contracts cleared by CCPs was at 78% in December 2020 (Figure 10). Although CCP clearing rates seem to have plateaued over the last years, they rose rapidly from 2008 (from about 40%) following the G20 mandate for greater clearing of standardised products (BIS, 2021).<sup>76</sup> Similar is the trend for CDS, for which the share of contracts cleared by CCPs rose from about 10% to 63% between 2008 and 2020. However, and given the fact that clearing obligations apply to specific classes of interest rate and credit OTC derivatives,<sup>77</sup> clearing rates could further increase if more

<sup>&</sup>lt;sup>75</sup> Other factors have also contributed to the increase in compression activity. In 2015, for example, IOSCO released risk mitigation standards for non-centrally cleared OTC derivatives that encouraged trade compression. These standards required entities to implement policies and procedures to engage in portfolio compression when appropriate. Furthermore, reforms to counterparty credit risk capital requirements provide an incentive for banks to compress non-centrally cleared trades, by introducing higher capital requirements for such contracts.

<sup>&</sup>lt;sup>76</sup> However, there is a difference between the EU and the US. In 2019, the clearing rate for new IRS was 69% in the EU (62% in 2017), compared to 93% in the US (87% in 2017) (FSB, 2017b; ESMA, 2020; CFTC 2020). Having said that, the clearing rates in the EU and US may not be entirely comparable, since the clearing obligation in the US came into effect before it did in the EU and does not cover the same entity base.

<sup>&</sup>lt;sup>77</sup> For example, under the EMIR clearing obligation, in 2019 the IRD classes subject to the obligation were basis swaps, fixed-to-float IRS, FRAs and overnight index swaps. For credit derivatives, certain European untranched index CDS classes were subject to the obligation (ESMA, 2021).

products become subject to the clearing obligation<sup>78</sup> (e.g. cross-currency swaps, and transactions denominated in non-clearable currencies).<sup>79</sup>



Figure 10. Notional amounts outstanding of IRD by counterparty (€ trillion, 2016 H1-2020 H2)

*Notes*: 'Reporting dealers' mainly include commercial and investment banks, and securities houses. 'Other financial institutions' include financial institutions not classified as 'reporting dealers'. For example, banks, CCPs, funds and non-bank financial institutions which may be considered as financial end users (e.g. mutual funds, pension funds, hedge funds, currency funds, money market funds, building societies, leasing companies, insurance companies, central banks). 'Non-financial customers' include any counterparty other than those described above (i.e. mainly non-financial end users, such as corporations, high net worth individuals and non-financial government entities). BIS reports data in US dollars at end-June and end-December of each year. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of each quarter has been used.

Sources: BIS and Eurostat.

#### 5.2 Derivatives trading activity

Trading of OTC IRD has grown rapidly over the last 20 years. From €762 billion in 2001 trading surged to €6.5 trillion in 2019 (Figure 11). In the last three years between 2016 and 2019, average daily OTC turnover increased by 143%. Structural and regulatory changes that took place in OTC markets, the expansion in terms of the amount of non-price-forming trades (i.e. back-to-back and compression

<sup>&</sup>lt;sup>78</sup> However, not all products that can be cleared should be subject to mandatory clearing, in principle. Furthermore, some products are cleared on a voluntary basis. Dealers have largely embraced central clearing on a voluntary basis, in particular in the IRD and credit derivatives asset classes, where they see clear capital and risk management benefits (BCBS-CPMI-FSB-IOSCO, 2018b).

<sup>&</sup>lt;sup>79</sup> It is estimated that around a quarter of IRD are not currently clearable (Toledo, 2015). To achieve this, two developments are necessary: i) the expansion of product coverage from global clearing organisations; and ii) increased recognition by local clearinghouses of other currencies. Nevertheless, given the need for historical comparison in order to establish margins, it is hard to envision exotic, illiquid, or highly structured OTC derivatives being centrally cleared in the near future, or even ever.

trades), the proliferation of electronic trading platforms and the global uncertainty around policy rates were among the main drivers of this development.



Figure 11. Daily average turnover of OTC IRD by country (€ billion, 2001-2019)

*Notes*: Figures refer to 'net-gross' basis, April 2001-2019. Adjusted for local inter-dealer counting. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of April of each year has been used. *Sources*: BIS Triennial Central Bank Survey and Eurostat.

London is historically the prevailing dominant location for OTC IRD trading. In 2019, the global share of OTC IRD traded in the UK was 50%, compared to 39% in 2016. The UK is followed by the US, which accounted for 32% in 2019. As for the EU-27, although in absolute terms the daily average turnover increased to €250 billion in 2019 (from €229 billion in 2016), its share in the global market declined to 4%. French and German sales desks recorded around 43% and 20% of that turnover respectively.

With regard to the currency composition of the globally traded OTC IRD, euro-denominated contracts have historically been the most actively traded segment, representing on average 44% of global turnover up until 2013 (Figure 12). However, since then, and despite the significant increase in turnover of euro-denominated contracts (from  $\in$ 562 billion in 2013 to  $\in$ 1.4 trillion in 2019), their share in the global market dropped to 24%. Over the same period, US dollar-denominated contracts became the most actively traded OTC IRD, representing around 50% of the global market with a daily average turnover of  $\in$ 3 trillion.

This relative increase in US dollar-denominated contracts was due to increased activity in short-term maturity instruments (e.g. overnight index swaps (OIS)), while the turnover of euro-denominated contracts declined for all maturities. This contrasting development can largely be explained by the two continents' different stances on monetary policy. In anticipation of policy rate rises in the US, activity in the OIS market (which is linked to policy rates) increased (Ehlers and Eren, 2016). In contrast, euro area market participants' expectations for unchanged rates resulted in declined trading for both short-and long-maturity euro-denominated contracts.



Figure 12. Daily average turnover of OTC IRD by currency (€ billion, 2001-2019)

*Notes:* Figures refer to 'net-gross' basis, April 2001-2019. Adjusted for local inter-dealer counting. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of April of each year has been used. *Sources:* BIS Triennial Central Bank Survey and Eurostat.

Focusing on EUR IRD, 86% of global turnover in 2019 was via UK sales desks, up from 75% in 2016 (Figure 13). On the other hand, the share of euro-denominated contracts traded through sales desks in continental Europe dropped from 23% in 2016 to just 10% in 2019. France, which is the largest EU trading centre, saw its share in global EUR IRD turnover decrease from 13% to 5% over the same period.



Figure 13. Share of euro-denominated OTC IRD by country (% of global euro turnover, 2001-2019)

*Notes:* Figures refer to 'net-gross' basis, April 2001-2019. Adjusted for local inter-dealer counting. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of April of each year has been used. *Sources:* BIS Triennial Central Bank Survey and Eurostat.

Looking at more granular data, this shows not only the important role of UK CCPs in euro-denominated derivatives, but also the very small fraction of EUR IRS that are executed on an EU trading venue and cleared within the EU by an EU CCP (Figure 14). To start with, Euro IRS traded notional executed on venue – such as swap execution facilities (SEFs), multilateral trading facilities (MTFs), organised trading

facilities (OTFs) – represented 49% of total EUR IRS traded notional globally at Q2 2021, while the remaining 51% was executed off venue. Of the 49% executed on venue, 45% is cleared in UK CCPs. More interestingly, 17% of the EUR IRS executed through an EU trading venue is cleared in the UK and only 3% in the EU. This implies that an EU-location clearing mandate (i.e. location policy) will affect a rather small share of the EUR IRS market, namely, the counterparties domiciled in the EU.

Figure 14. Execution and clearing of EUR-denominated OTC IRS (% of globally cleared IRD measured in terms of notional traded, Q2 2021)
Clearing



*Notes:* The figure refers to new transactions aggregate notional traded. The products considered are all new cleared single currency swaps, meaning fixed-for-fixed, fixed-for-floating and floating-for-floating (i.e. basis), but no cross currency, options (i.e. swaptions) or FRAs. Data include all new cleared IRS trades executed globally in a given month, including on venue (e.g. SEF, MTF and OTF) and those executed off venue (i.e. off facility) that are cleared via MarkitSERV's CCP connectivity service, or where MarkitSERV receives a copy of the trade. *Source:* OSTTRA.

## 5.3 Authorised and recognised CCPs in the EU

Due to market and regulatory fragmentation, CCPs have historically been organised in terms of national or regional borders, allowing them to adapt to the needs of local markets. However, given their clearing members and the trading venues for which they provide clearing services, CCPs are highly interconnected with international financial institutions and global markets.<sup>80</sup> Because CCPs are so large, interconnected and integral to the operation of the financial markets, academics have identified them

<sup>&</sup>lt;sup>80</sup> CCPs are deeply interconnected, as they have direct relationships with clearing members and settlement banks, and indirect relationships with clearing members' customers, but also with other CCPs. Almost every big financial institution is connected to all big CCPs, and the vast majority of their derivatives trades go through clearinghouses (Baker, 2013a).

as too-big-to-fail entities (Allen, 2012), or even as very systemically important financial institutions (V-SIFIs) (Singh, 2011).

In the EU-27, there are currently 13 CCPs authorised by ESMA – headquartered in 11 EU member states – to offer clearing services and activities in the EU (Table 4). There are nine EU countries with a single CCP, while Germany and the Netherlands each have two CCPs. In terms of products that CCPs are authorised to clear, there is significant variation. Although the majority of them may clear derivative transactions, differences exist in terms of the asset classes they are authorised for.<sup>81</sup>

With regard to IRD, out of the 13 European CCPS, only five are authorised to clear this asset class, one of which only offers execution on a regulated market (the Hungarian Keler CCP). The remaining four – Nasdaq OMX Clearing, KDPW\_CCP, Eurex Clearing and BME Clearing – clear almost all OTC IRD classes, such as basis swap, fixed-to-float, forward rate agreement (FRA) and OIS. However, the clearing volumes at Eurex Clearing are significantly higher than those at the other three CCPs. With regard to IRD products, although all four CCPs clear derivatives denominated in euros, only Eurex Clearing clears IRD in international currencies such as GBP, USD and JPY (albeit with low volumes, as shown in Table 1).

Name of CCP	Country of	Clearing	Place of	IRD class	Settlement		
	establishment	ofIRD	execution		currency		
Nasdaq OMX Clearing AB	Sweden	Yes	OTC and	Fixed-to-Float, FRA, OIS	EUR, DKK,		
			ETD		NOK, SEK		
European Central Counterparty	Netherlands						
N.V.							
KDPW_CCP	Poland	Yes	OTC and	Basis Swap, Fixed-to-	EUR, PLN		
			ETD	Float, FRA, OIS			
Eurex Clearing AG	Germany	Yes	OTC and	Basis Swap, Fixed-to-	EUR, GBP,		
			ETD	Float, FRA, OIS	JPY, USD		
Cassa di Compensazione e	Italy						
Garanzia S.p.A (CCG)							
LCH SA	France						
European Commodity Clearing	Germany						
Keler CCP	Hungary	Yes	ETD				
CCP Austria Abwicklungsstelle	Austria						
für Börsengeschäfte GmbH							
(CCP.A)							
BME Clearing	Spain	Yes	OTC	Basis Swap, Fixed-to-	EUR		
				Float, FRA, OIS			
OMIClear – C.C., S.A.	Portugal						
ICE Clear Netherlands B.V.	Netherlands						
Athens Exchange Clearing	Greece						
House (Athex Clear)							

Table 4. Lis	t of Furopea	n CCPs autho	orised to of	fer services	and activitie	s in the FU
TUDIC 4. LIS	сој сагорса	i cci s uutite	niscu to oj		und activitie	

*Notes:* The CCPs listed here have been authorised to offer services and activities in the EU in accordance with Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories (EMIR). FRA refers to a forward rate agreement, OIS refers to overnight index swap. *Source:* ESMA.

With regard to third-country CCPs, ESMA has recognised 38 international CCPs as providers of clearing services and activities in the EU, subject to the existence of an equivalence agreement between the EU

<sup>&</sup>lt;sup>81</sup> For the list of classes of financial instruments covered by the CCP's authorisation, see <u>here</u>.

and the respective country.<sup>82</sup> Over the years, the number of recognised third-country CCPs has increased significantly, from 11 in 2015 to 32 in 2017 and 38 since the beginning of 2021. As for geographical coverage, most of these CCPs are located in Asia and Northern America. However, only four of them are recognised and active in the European OTC derivatives market covered by a clearing obligation (Table 5).

Name of CCP	Country of	Clearing	Place of	IRD class	Settlement
	establishment	of IRD	execution		currency
Chicago Mercantile	US	Yes	OTC and	Basis Swap, Fixed-to-	EUR, GBP, JPY,
Exchange (CME)			ETD	Float IRS, FRA, OIS	USD, NOK, PLN, SEK
Japan Securities Clearing	Japan	Yes	OTC	Basis Swap, Fixed-to-	EUR, JPY, USD
Corporation (JSCC)				Float IRS	
OTC Clearing HK	Hong Kong	Yes	OTC	Basis Swap, Fixed-to-	EUR, USD
				Float IRS	
LCH Ltd	UK	Yes	OTC and	Basis Swap, Fixed-to-	EUR, GBP, JPY,
			ETD	Float, FRA, OIS	USD, NOK, PLN, SEK

Table 5. List of third-country CCPs recognised to clear IRD in the EU

*Notes:* The CCPs listed here have been recognised to offer services and activities in the EU in accordance with Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories (EMIR). FRA refers to a forward rate agreement, OIS refers to overnight index swap.

Source: ESMA.

#### 5.4 CCPs' clearing members

The offsetting of matched positions that a CCP performs is characterised both by economies of scale (i.e. the marginal costs of clearing are close to zero) and by network effects (i.e. the greater the number of participants in a CCP, the more efficient it is). This network effect results in a natural tendency towards large-scale concentration (Hasenpusch, 2009; Lee, 2011; Turing, 2012; Chang, 2016). One of the main reasons is that marginal costs decrease when the CCP grows, due to its ability to perform two significant trading functions: netting and compression (Jackson and Manning, 2007).<sup>83</sup> For example, in terms of number of participants, at the end of 2020 the three UK CCPs had a total of 313 participants: LCH.Clearnet Ltd (180), ICE Clear Europe (87) and LME Clear Ltd (46). The German EUREX Clearing and the French LCH Clearnet SA had 222 and 130 participants respectively (Table 6).

	Name of CCP	2014	2015	2016	2017	2018	2019	2020
	EUREX Clearing	183	186	195	190	209	218	222
	Athens Exchange Clearing House (Athex Clear)	27	25	24	19	19	19	17
	BME Clearing	58	60	65	65	64	68	67
FΔ	LCH.Clearnet SA	110	110	100	99	125	119	130
LA	CC&G	81	82	87	86	84	91	93
	European Central Counterparty N.V.	48	45	43	44	42	44	45
	ICE Clear Netherlands	2	3	4	-	-	-	-

Table 6. Number of participants in CCPs

<sup>&</sup>lt;sup>82</sup> The list with all recognised third-country CCPs is available <u>here</u>.

<sup>&</sup>lt;sup>83</sup> Compression allows the combining and offsetting of trades with compatible economic characteristics, resulting in a reduction in notional outstanding amount. This technique results in the reduction of the number of individual positions in the portfolio (resulting in lower capital charges and trading costs), while maintaining the same risk profile.

	CCP Austria	57	53	50	49	51	51	48
	OMIClear – C.C., S.A.				14	14	11	9
	Total EA	566	564	568	566	605	621	631
	KDPW_CCP	38	39	38	37	35	33	32
Non-EA	KELER CCP	29	25	21	21	21	18	18
	Nasdaq OMX DM	97	92	92	88	88	97	87
	Total non-EA	164	156	151	146	144	149	137
	LCH.Clearnet Ltd	161	154	158	157	161	162	180
	ICE Clear Europe	80	73	78	80	81	88	87
UK	CME Clearing Europe Ltd		19	17	-	_	-	-
	LME Clear Ltd	42	42	44	46	46	45	46
	Total UK	283	288	297	283	288	295	313

*Notes:* The number of clearing members refers to the last day of the year. Since May 2017, ICE Clear Netherlands no longer provides clearing services for the Dutch market. CME Clearing Europe (CME CE) received authorisation as a CCP under the European Market Infrastructure Regulation (EMIR) on 4 August 2014 and was closed on 12 October 2017. *Sources:* ECB and individual CCPs.

CCPs are increasingly interconnected with one another either indirectly via their clearing members (Armakolla and Bianchi, 2017; Alfranseder *et al.*, 2018) and/or directly via interoperability arrangements (ESMA, 2016). Thus, in addition to the size of the member base, it is important to consider the identity of these clearing members, as well as the number of CCPs in which a single member participates. This will allow us to better understand the impact that the default of an interconnected member could have on multiple CCPs simultaneously.

The top part of Table 7 shows the list of the top 30 global systemically important banks (G-SIBs) that are clearing members of the four EU and four third-country CCPs authorised and recognised to clear IRD in the EU. LCH Ltd comes first with 24 G-SIB members, followed by CME with 19 and Eurex Clearing with 17.<sup>84</sup> Some institutions, like Bank of America, Barclays, Citigroup, Deutsche Bank, JP Morgan Chase and Société Générale are members of six of the CCPs considered, while BNP Paribas is a member of seven CCPs. Similar is the view when looking at the bottom part of Table 7, which shows the participation of European other systemically important banks (O-SIBs) at CCPs.

	SIBs	LCH Ltd	CME	Eurex Clearing	JSCC	OTC Clearing Hong Kong	BME Clearing	KDPW_CCP	Nasdaq Clearing
	Agricultural Bank of China					Х			
	Bank of America	Х	Х	Х	Х	Х	Х		
	Bank of China	Х				Х			
	Bank of New York Mellon	Х							
Bs	Barclays	Х	Х	Х	Х	Х	Х		
30 G-SI	BNP Paribas	Х	Х	Х	Х	Х	Х	Х	
	China Construction Bank					Х			
Тор	Citigroup	Х	Х	Х	Х	Х	Х		

Table 7. Membership/participation of SIBs in CCPs authorised/recognised to clear IRD in the EU

<sup>84</sup> In 2016, Eurex Clearing had 24 G-SIBs as clearing members (EC, 2017).

	Credit Suisse	Х	Х	Х	Х		Х		
	Deutsche Bank	Х	Х	Х	Х	Х	Х		
	Goldman Sachs	Х	Х	Х	Х		Х		
	Groupe BPCE								
	Groupe Crédit Agricole	Х	Х	Х	Х	Х			
	HSBC	Х	Х	Х	Х				
	Industrial & Commercial Bank of China					Х			
	ING Bank	Х						Х	
	JP Morgan Chase	Х	Х	Х	Х	Х	Х		
	Mitsubishi UFJ FG	Х			Х				
	Mizuho FG	Х	Х	Х	Х				
	Morgan Stanley	Х	Х	Х	Х		Х		
	Royal Bank of Canada	Х	Х	Х					
	Santander	Х	Х	Х			Х		
	Société Générale	Х	Х	Х	Х	Х	Х		
	Standard Chartered	Х	Х			Х			
	State Street								
	Sumitomo Mitsui FG				Х				
	Toronto Dominion	Х	Х						
	UBS	Х	Х	Х	Х		Х		
	UniCredit	Х		Х		Х			
	Wells Fargo	Х	Х						
	Total	24	19	17	16	14	12	2	0
	ABN Amro Clearing Bank	Х	Х	Х			Х	Х	
	Banco Bilbao Vizcaya	Х	Х	Х			Х		
	Banco Santander	Х		Х			Х	Х	
	CaixaBank	Х		Х			Х		
	Commerzbank	Х		Х					
	Crédit Agricole	Х	Х	Х		Х			
	Danske Bank	Х							Х
Bs	Deutsche Bank	Х		Х	Х	Х	Х		
0-S	DZ Bank	Х		Х					
	ING	Х		Х				Х	
	Intesa Sanpaolo	Х		Х					
	Landesbank Baden-Württemberg	Х		Х					
	Nordea	Х		Х					Х
	Skandinaviska Enskilda Banken	Х		Х					Х
	Swedbank	Х							Х
ĺ	Total	15	3	13	1	2	5	3	4

*Notes:* Consolidated at G-SIB and O-SIB group level, based on CCPs' public websites, June 2021. The list of 30 G-SIBs was obtained by FSB (2020a). The CCPs considered are the ones authorised/recognised by ESMA to offer clearing services and activities in OTC IRD. *Sources:* FSB (2020a), CCPs' public websites and ESMA.

G-SIBs, which are the principal clearing members in all major CCPs, are also the principal dealers in derivatives. The dealer market is characterised by a high degree of concentration among a handful of large banks. For example, according to latest data for the US, the four large US commercial banks held

88.7% of the €143.9 trillion total notional amount of IRD held in the first quarter of 2021 (Figure 15). This large stake confers to the top dealers a great share of the IRD derivatives trading revenues, which can reach €2.5-3.5 billion per quarter.<sup>85</sup> However, it is important to highlight that a major part of the gross notional volume traded between CCPs and their largest clearing members (in particular the top dealers) does not create significant net risk exposure (Fiedor *et al.*, 2017; D'Errico *et al.*, 2018; D'Errico and Roukny, 2020). This is because these large institutions (i.e. dealers) operate as intermediaries between end-customers (Allen and Santomero, 1997), generally seeking to take largely offsetting positions, despite maintaining large gross portfolios. Having said that, they do have large exposures to each other, accounting for about 70% of the total notional traded in the market (Benos *et al.*, 2013), and are therefore an important source of counterparty risk (ECB, 2009a).



#### Figure 15. Top four US dealers in OTC IRD (% of notional amount, Q1 2021)

*Notes:* These figures are based on bank derivatives activities provided by all insured US commercial banks and saving accounts associations. They refer to the global trading activity of US dealers, and thus do not account for the US trading activity of dealers domiciled outside the US.

Sources: Office of the Comptroller of the Currency (OCC, 2001) and Eurostat.

The growing interconnection between CCPs and clearing members raises concerns with regard to financial stability and systemic risk (Yellen, 2013; Wendt, 2015). A recent analysis found that at least 16 of the 26 CCPs considered could be impacted by the default of any of the 11 largest clearing members (BSBC-CPMI-FSB-IOSCO, 2018a). This suggests a high degree of interconnectedness and dependence among the central clearing system's largest and most significant clearing members. However, such a default might be unlikely (but not impossible) because a large clearing member would most probably be resolved following the rules on recovery and resolution (adopted after the Lehman collapse) and the CCP's own buffers (described above), before it defaults at an SI CCP.

<sup>&</sup>lt;sup>85</sup> Trading revenues have comprised, on average, 12-15% of the gross revenues of the top four banks. For JP Morgan, a bank with a long history of trading, revenues have reached as high as 31% of gross revenues (Q2 2020).

# 6. Competition between CCPs and the role of the City of London

#### **KEY FINDINGS**

- Greater competition between CCPs would promote market efficiency and transparency, and thus benefit market participants in terms of greater choice and lower prices, as well as stimulating innovations in markets.
- However, as it relates to central clearing, market fragmentation can actually create inefficiencies through fragmentation of market liquidity and loss of netting benefits and lead to a 'race to the bottom' as regards CCPs' risk management practices, thus compromising safety and the ability to control systemic risk.
- London's dominance as a global clearing hub for OTC derivatives has developed over a long period, and as part of the single market and the passporting regime. The concentration of other building blocks, such as financial infrastructures, intermediaries and end users, widespread subject matter expertise and a suitably adapted legal framework, as well as a number of other professions and services, have contributed towards its dominance.
- Splitting the activity of one CCP into two CCPs for a given market segment would not necessarily result in a reduction of risk; instead it may further exacerbate it. Initial and variation margins would have to be posted twice, collateral as well, while in the case of default, a defaulter would default at both CCPs.

In order to attract users, CCPs have an incentive to be large and to clear multiple product types. This has benefits for risk management in a default situation, in particular in times of market stress in smaller liquidity pools.<sup>86</sup> There are also cost incentives for a CCP to be large. With regard to users seeking to maximise their ability to net positions and economise on initial margin and guarantee fund contributions, they favour a CCP that enables them to net across many counterparties and multiple products. An important – or perhaps *the* most important – factor when a firm decides to clear in one CCP or another is market liquidity. Other factors include the quality of the service provided to the clearing members and their clients, product availability, operational efficiency, and a safe and sound risk management framework.

#### 6.1 Competition between CCPs

Economic theory suggests that competition promotes market efficiency and transparency, and thus benefits consumers in terms of greater choice, driving down prices and stimulating innovations in markets (Demsetz, 1973; Tirole, 1998; Muthoo and Mutuswami, 2011; Aghion *et al.*, 2018). However, the debate on competition for central clearing is rather inconclusive. Although EMIR mandates central clearing on a product only if at least two CCPs are authorised or recognised in the EU to clear that

<sup>&</sup>lt;sup>86</sup> Substantial counterparty risk reduction benefits can be obtained by the joint clearing of different asset classes of derivatives. Duffie and Zhu (2011), for example, call for the joint clearing of standard interest-rate swaps and credit default swaps in the same clearinghouse. In fact, central clearing does reduce interdealer exposures as the gain from multilateral netting in a CCP outweighs the loss of netting across asset classes in bilateral netting agreements. Thus, when a CCP exists for IRD, adding a CCP for credit derivatives is shown to decrease overall exposures (Cont and Kokholm, 2014), although these products have different default management and recovery tools.

particular product (ISDA-FIA, 2014), concerns have been voiced that competition between CCPs could lead to a race to the bottom with regard to their risk management practices (Cœuré, 2014).<sup>87</sup>

CCPs are privately owned entities, and as such their number (and location) is subject to market forces. Having said that, the number of CCPs necessary from an economic perspective is different to the number of CCPs necessary from a practical perspective. Theoretically speaking, a single global clearinghouse that clears all OTC derivative products and has access to central bank liquidity in all relevant currencies would be considered an ideal solution. Having a single CCP would offer the greatest netting benefits (by allowing the most efficient levels of IM possible to be achieved), eliminate fragmentation of cleared portfolios of participants (by allowing maximum multilateral netting and reducing liquidity requirements) and reduce clearing costs for both participants and the CCP (by distributing operational and risk management costs across many transactions).

On the other hand, a single global CCP would raise several challenges that would be difficult to overcome (ISDA, 2018). First, from a supervisory perspective and given that derivatives markets are regulated by national authorities with limited jurisdiction, having a single CCP would require maximum cooperation among supervisors internationally and consensus on risk management standards. Related is the financial stability angle, whereby competing CCPs may be preferred from a systemic perspective. The degree of risk concentration in a single CCP would be such that it is uncontrollable.

Second, the lack of competitive pressure on a single CCP might affect its operational efficiency, drive prices up, result in a suboptimal risk management framework, and disincentivise innovation. Only effective competition stimulates innovation and allows the true cost curve to be seen. This is also enshrined in the EU Treaty's Article 102, which prohibits any abuse of a dominant position, including unfair prices and unfair trading conditions. Moreover, there are political challenges to overcome, as some policymakers may want certain OTC derivatives – particularly those denominated in their home currency – and the local financial institutions to clear transactions within their jurisdiction, for legitimate reasons or not.<sup>88</sup>

While there are many CCPs around the world of different sizes and activities, the IRD segment of the market is cleared mainly in one or a very small number of CCPs. Factors driving market concentration include efficiencies gained through higher market liquidity and netting benefits, the existence of silos between trading venues and clearing houses, and the high cost of developing new clearing services. As a result, although small CCPs may have a local footprint, cleared markets are structured around global hubs with broad cross-border access.

However, the trade-off between competition and risk should not be ignored. More CCPs will mean greater competition, resulting in a potential decrease in prices, fees and costs incurred by members and dealers.<sup>89</sup> At the same time, more intense competition decreases the revenue of CCPs, leaving

<sup>&</sup>lt;sup>87</sup> Such concerns have not materialised, at least not in the EU. Instead, what has materialised is competition between CCPs on products, including those that should not be cleared.

<sup>&</sup>lt;sup>88</sup> Among these jurisdictions is the EU. Others, such as Canada and Australia, after initially considering requiring the clearing of local currency-denominated derivatives to take place locally, have decided to allow their financial institutions to use CCPs in other jurisdictions in order to fulfil the G20 mandate. In Japan, CCPs from other jurisdictions have not yet been permitted to clear local currency-denominated derivatives (this is discussed in more detail in section 7.3).

<sup>&</sup>lt;sup>89</sup> See Eurex Clearing's <u>statement</u> in June 2018 with regard to its Partnership Programme and the move of market participants from the US, UK, Asia and Continental Europe to Eurex in an effort to build a liquid alternative to clear

them with a smaller buffer to withstand financial shocks and raising the probability of their default, but more importantly possibly compromising the risk management. Together, these effects create a tradeoff between competition and risk. It is good to have a number of CCPs to encourage competition, but not too many that it can hamper market efficiency and effectiveness in controlling systemic risk. Thus, there is a need for appropriate regulation and supervision of risk management standards in order to ensure that CCPs compete on quality of service, rather than on revenues and size of margins.

### 6.2 London's dominance?

UK-based CCPs are leading global clearing hubs for OTC derivatives: LCH clears nearly 90% of all IRS cleared globally in 27 different currencies, and more than 91% (in terms of trade count) and 93% (in terms of notional traded) of EUR IRS (Figure 16). The dominance of London as a pre-eminent global centre for OTC IRS has sparked a great deal of scholarly work on what economic, political, legal and social forces contribute to the building of financial centres (Cassis, 2006; Atack and Neal, 2009; Carlos and Neal, 2011). Some invoke arguments about network externalities that, once created, can sustain a financial centre in the long term (Spufford, 2006). Others take the view that significant economies of scope and scale favour the creation of natural monopolies (Kindleberger, 1974; Pirrong, 2011). These monopolies usually result from the presence of market failures such as externalities, asymmetric information, increasing returns to scale or decreasing average costs (ECB, 2007b).



Figure 16. EU and UK CCPs' share of cleared EUR IRS by trade count (lhs) and notional traded (rhs) (% of globally cleared EUR IRD, Jul 2020-Jun 2021)

*Notes:* The figures on the left-hand side refer to new transactions trade count, while those on the right-hand side refer to new transactions aggregate notional traded. The products considered are all new cleared single currency swaps, meaning fixed-for-fixed, fixed-for-floating and floating-for-floating (i.e. basis), but no cross currency, options (i.e. swaptions) or FRAs. Data include all new cleared IRS trades executed globally in a given month, including on venue (e.g. SEF, MTF and OTF) and those executed off venue (i.e. off facility) that are cleared via MarkitSERV's CCP connectivity service or where MarkitSERV receives a copy of the trade.

Source: OSTTRA.

euro-denominated OTC IRD in the EU-27 post Brexit: 'There is no evidence for the concern that a fragmentation of the existing liquidity pool would lead to significant cost increases in particular for EU-27 buy-side firms.'

Firms participate in organised markets whose liquidity (i.e. rapid execution of large orders with the minimum possible disturbance to prices) and efficiency (i.e. prices that reflect all available information) increase with the number of participants. Such concentration supports the development and growth of groups of traders and professions such as lawyers, accountants, actuaries, technology providers and consultants. Customers also benefit from the cluster of firms, financial institutions and service providers in one location. As more and more firms are attracted to a financial centre and business becomes concentrated, competing centres may find it hard to challenge the incumbent.

However, the benefits arising from the concentration of financial firms and services in one location cannot be achieved from one day to the next, but are accumulated over a long period. In the 17<sup>th</sup> century, Amsterdam was the world's commercial, trading and financial centre (Gelderblom and Jonker, 2004; Carlos and Neal, 2011). London borrowed and improved upon financial innovations from Amsterdam, and developed a market-based system, as opposed to the Dutch bank-based system (Van der Wee, 1963). During the 18<sup>th</sup> and 19<sup>th</sup> centuries London grew more dominant, as the Netherlands went through an economic and political decline (Wilson, 1939; Stapelbroek, 2010), while in France the Central Bank suspended specie payments after France lost a war with Prussia (Bagehot, 1873). The advent of the Joint Stock Companies Act in 1844, which allowed the formation of joint stock companies, <sup>90</sup> opened the door to organised stock trading (Hunt, 1935; Maltby, 1998) and coupled with the industrial revolution, spurred financial activities to grow in London (Allen, 2009).

London held a supreme position until the start of the First World War, when it started to have difficulties in maintaining its global role as the centre for foreign reserves and a source of short- and long-term credit. This period saw the US gain importance as a financier, and the New York Stock Exchange (NYSE) overtook the London Stock Exchange (LSE). New York was briefly the financial centre of the world after the Second World War and up until the 1950s, when the Eurodollar market developed in London (Johnston, 1983; Schenk, 1998).

Thatcher-time changes allowed for greater liberalisation through privatisation, deregulation and increased open competition policies in the UK, while the Financial Services Act of 1986 (i.e. Big Bang) made London a magnet for global financial activity. Several changes took place at that time, such as the elimination of fixed brokerage commissions, the move of securities trading off the floor of the exchange, changes in the structure and ownership of trading firms, the influx of foreign firms (particularly US investment banks) and the significant increase in the number of market participants (Clemons and Weber, 1990; Bellringer and Michie, 2014; James *et al.*, 2021). The success of London was based on the size of its financial sector and on a select group of highly specialised financial services, such as international bank lending and syndicated loans, FX market, cross-border securities trading, Eurobond and international bond placements, and global fund management (Rajan and Zingales, 2003; Mollan and Michie, 2012).

<sup>&</sup>lt;sup>90</sup> For the first time, the act made a legal distinction between private partnerships and joint stock companies, while it removed the costly and burdensome necessity of a special act or charter in order to gain corporate status, in favour of permitting incorporation by registration. Moreover, the prospectus provision contained in the act marked the beginning of modern securities legislation (Kilbride, 1963).

Importantly, much of London's dominance should also be attributed to its legal system, which is based on common law as opposed to the EU and its member states' system of civil law. This is a critical point in understanding London's emergence as a global financial centre. Under civil law, codes, regulations and laws are developed top-down, so that they can be applied to any conceivable circumstances. Contrarily, in a common law system the law develops and adapts as the market develops (Bryson, 2021). Thus, for example, civil law tends to regulate out innovation preventing it from occurring, while common law prioritises and encourages innovation and then regulates (Smith *et al.*, 2021). Major international financial centres – such as London, New York, Hong Kong and Singapore – operate on the common law model, which is based on legal precedent (Reynolds, 2021).

## 6.3 Splitting a CCP into two CCPs?

Some have argued that having more than one CCP in a given market segment could have riskdiversifying benefits (BIS, 2010; Fontaine *et al.*, 2012). Although such diversification sounds attractive, in practice it might prove difficult to achieve. Others, however, have expressed the view that splitting positions across CCPs can significantly reduce the efficiency of trade compression, and thus increase risks and costs (Duffie and Zhu, 2011; D'Errico and Roukny, 2020). Below we examine five reasons why it is not evident that splitting one large CCP into two would necessarily result in a reduction of risk.

First, dividing a market between two CCPs would require all major market participants, mainly G-SIBs, to become members of both CCPs. This would mean that in the event of a crisis, a defaulter would default at both CCPs. Moreover, taking into account the fact that it is likely that these firms would join the two CCPs using different legal entities (e.g. as happened in the past with the Lehman default), it would imply that these entities might enter default in an unsynchronised manner.<sup>91</sup>

Second, due to their natural franchises (and in some cases legislative exemptions to clearing obligations across the globe),<sup>92</sup> firms that are members of both CCPs are likely to end up with concentrated risk exposures that offset across the CCPs. This would also affect and give rise to both excess margins and a volatile price basis. A volatile CCP basis, which reflects the relative cost for dealers of clearing at two different CCPs, would most probably undermine confidence in the market. A forced relocation from one CCP to another could result in losses of millions of euros for firms if the basis moves against them. At the same time, the dealers facilitating such transfer could potentially gain or lose far bigger sums.<sup>93</sup>

Third, implications for cross-CCP default management should not be underestimated. Not only do firms have different appetites and capacities for risk at the different CCPs, but also in practice the offsetting positions do not offset exactly.<sup>94</sup> Even when considering the best case in which both subsidiaries of a defaulting G-SIB (that are CCP members) default at exactly the same time and have offsetting positions, today there is no such mechanism for the CCPs to hedge the risks with each other.

<sup>&</sup>lt;sup>91</sup> Indeed, the assumption of a synchronised default is not consistent with the way the resolution framework is designed, either in the UK or the EU.

 $<sup>^{92}</sup>$  See for example for <u>Europe</u> and the <u>US</u>.

<sup>&</sup>lt;sup>93</sup> If forcing trillions of notional through the market in a short period of time, then the basis could become extremely volatile with no upper limit (Clancy and Wood, 2017).

<sup>&</sup>lt;sup>94</sup> These positions might also be hedged at different maturities.

Fourth, if a G-SIB dealer defaults, it will not only default facing the two CCPs, but will also default facing all of its bilateral counterparts. Those counterparts will be seeking to re-establish hedges in the market at (approximately) the same time as the two CCPs. However, bilateral risk managers have considerably more discretion and flexibility in their actions than CCPs, which must act in a defined and predictable manner. As a result, a CCP would find itself competing for hedges against other, more flexible, market participants. Such default competition risk has been identified as part of the EMIR Post-Trade Risk Reduction (PTRR) services (e.g. portfolio compression and portfolio rebalancing). Splitting the market across CCPs would further exacerbate such risks.<sup>95</sup>

Fifth, crisis conditions can lead to onerous liquidity challenges measured in hundreds of billions of euros, as the Covid-19 pandemic illustrated. Splitting a portfolio across two CCPs would only tend to exacerbate such challenges given that: i) IM is posted on both long and short positions; and ii) offsetting positions across multiple CCPs requires additional liquidity. This is due to timing differences, as VM receipts from one CCP cannot generally be used to fund VM payments to another.

<sup>&</sup>lt;sup>95</sup> A further layer of complexity is added because a defaulting G-SIB not only clears on its own account, but also on behalf of its clients. If this is the case, there might be a range of time delays between the close out of the risk in the house account, and the close out of any client accounts that cannot be migrated to another provider. Such delays will differ both by client and by CCP, meaning that not only will the different G-SIB clearing subsidiaries default at different times, but there will also be varying delays in determining the full/total exposures the CCPs are required to manage.

# 7. Examples of location policies

#### **KEY FINDINGS**

- Location policies have been considered in the past in other jurisdictions than the EU, but they were either abandoned as a policy option or drastically scaled down.
- Australia and Canada both considered location policies, but decided against them due to the increased costs and potential market fragmentation that such policies would have caused for local banks and businesses raising funds and hedging risks in global financial markets. Regulators instead strengthened cross-border regulatory cooperation with third countries, given the liquidity and resilience benefits provided by global CCPs.
- Japan on the other hand, is the only jurisdiction that requires Japanese entities to clear their home currency-denominated IRD through a local CCP. While the majority of Japanese Yen (JPY) is cleared in Japan, it has effectively restricted Japanese entities to the local CCP liquidity pool and created fragmentation between the activities of Japanese banks which clear through the local CCP, and global banks which typically clear through a global CCP.

Location policies have been considered in the past in other jurisdictions than the EU, and for CCPs that are much smaller than London's LCH. However, they have either been abandoned as a policy option (in Australia and Canada, for example) or drastically scaled down (Japan). A critical issue is of course the share in the global IRD market of these currency-denominated products, as well as the size of the exposures across jurisdictions and the swap line arrangements between the respective central banks. Although AUD- and CAD-denominated IRD represent a very small fraction of the global notional outstanding, JPY IRD, which used to account for nearly 20% of the global turnover, now account for approximately 8% of the market (Figure 17).



Figure 17. Share of notional amounts outstanding of IRD by currency (%, 1999 H1-2020 H2)

*Notes:* The notional amount of outstanding OTC derivatives contracts determines contractual payments and is an indicator of activity in OTC derivatives markets. BIS reports data in US dollars at end-June and end-December of each year. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of June and December has been used. *Source:* BIS.

# 7.1 Australia

OTC derivatives notional outstanding in Australia totalled €31 trillion at June 2021, with IRD accounting for 82% (of which 90% are IRS) and equity derivatives 16%.<sup>96</sup> As for the currency composition of IRD contracts, more than half (55%) are denominated in AUD, 25% in NZD,<sup>97</sup> and 11% in USD (Figure 18, left-hand side). The share of AUD in global IRD trading has increased significantly over the last years, from about 1% in 2007 to almost 7% in 2019. However, although in the past the vast majority of activity in AUD-denominated IRD contracts took place in Australia, this has shifted towards other jurisdictions, particularly London and Hong Kong (Figure 18, right-hand side). But with regard to clearing, an estimated 85% of all globally centrally cleared AUD IRD is cleared via SwapClear, in terms of notional registered (RBA, 2020).



Figure 18. Share of notional amounts outstanding of OTC derivatives by currency (%, June 2021) (lhs) and share of daily average turnover of AUD IRD by location (%, 2007-2019) (rhs)

*Notes:* The left panel depicts the share of gross notional outstanding IRD by currency as at 28 June 2021. The right panel depicts the share of average daily transaction volume in AUD IRD by location. Figures on the right panel refer to 'net-gross' basis, April 2007-2019, adjusted for local inter-dealer counting. For the conversion into euros, the bilateral exchange rate EUR/AUD at the end of April of each year has been used. *Sources:* DTCC and BIS Triennial Central Bank Survey.

In July 2013, the Australian Securities and Investments Commission (ASIC), the Australian Prudential Regulation Authority (APRA) and the Reserve Bank of Australia (RBA) recommended (to the government) to mandate central clearing of OTC transactions in IRD denominated in EUR, GBP, JPY and USD (G4 IRD).<sup>98</sup> A year later, in April 2014, the recommendation was extended to include AUD-denominated IRD. In December 2015, ASIC adopted rules implementing Australia's mandatory central clearing, which came into force in April 2016.

<sup>&</sup>lt;sup>96</sup> Based on data from the <u>DTCC Data Repository</u>.

<sup>&</sup>lt;sup>97</sup> NZD IRD are very common because Australian banks are exposed to NZD interest rates through their New Zealand subsidiaries.

<sup>&</sup>lt;sup>98</sup> See "<u>Report on the Australian OTC Derivatives Market</u>".

These Derivative Transaction Rules<sup>99</sup> require the mandatory clearing of certain IRD denominated in AUD, USD, EUR, GBP and JPY.<sup>100</sup> However, they permit counterparties to these trades, to clear them either through local ('licensed') CCPs or in overseas ('prescribed') CCPs. In other words, the regime allows Australian market participants to decide for themselves where they will clear their AUD-denominated IRD. At that time, two CCPs were licensed in Australia to admit Australian-based institutions as direct participants to clear this type of product: one domestic CCP, ASX Clear (Futures), and one overseas CCP, LCH. Clearnet Ltd.<sup>101</sup>

By reaching this decision and not implementing a location policy, regulators wanted to minimise the disruption and regulatory impact on Australian participants in OTC derivatives markets (APRA-ASIC-RBA-Treasury, 2012). Failure to do so could have significantly increased costs for Australian banks and businesses raising funds and hedging risks in global financial markets. Although allowing the Australian market to be cleared by an overseas-based CCP might give rise to financial stability risk, authorities took the view that a domestic location requirement could risk market fragmentation and might not be sustainable in a rapidly changing global market.

Instead, authorities decided to strengthen the regulatory cooperation between the two jurisdictions (Australia and the UK) and impose additional regulatory requirements depending on the importance of the cross-border CCP for the domestic economy and financial system. In 2013, LCH.Clearnet Ltd became the first CCP to be granted an overseas licence and fall within the scope of this framework. In addition, and since then, this CCP has established operational and governance arrangements commensurate with the scale of its services to Australian participants. It has also established Australian dollar liquidity arrangements consistent with the requirements for an SI CCP, including opening an Exchange Settlement Account (ESA) with the RBA. As part of the arrangements, the RBA is also represented In the global supervisory college for LCH.Clearnet Ltd, led by the BoE.<sup>102</sup>

#### 7.2 Canada

The current size of the Canadian OTC market stands at about €40 trillion in terms of notional outstanding, and represents approximately 7% of the global market for OTC derivatives (Figure 19, left-hand side).<sup>103</sup> The largest asset class are interest rate contracts, which account for 84% of the market, followed by FX contracts (14%). With regard to the location in which trading in CAD IRD takes place, 67% of the daily average turnover was conducted in Canada in 2019, with approximately 20% in the US and around 10% in the UK (Figure 19, right-hand side).

<sup>103</sup> Based on data from the <u>DTCC Data Repository</u>.

<sup>&</sup>lt;sup>99</sup> See "ASIC Derivative Transaction Rules (Clearing)".

<sup>&</sup>lt;sup>100</sup> These include fixed-to-floating swaps, basis swaps, overnight index swaps and FRAs.

<sup>&</sup>lt;sup>101</sup> With regard to overseas clearing and settlement facilities (CSFs), ASIC and RBA are responsible for the supervision of CSF operators and their participants. In particular, ASIC can only advise the Minister to grant or refuse a CSF licence, or exempt an operator from the requirement to hold one. Moreover, ASIC may advise the Minister to impose conditions on a particular CSF, such as the requirement to: i) establish a domestic operational presence (either with respect to human resources or other aspects of their operations, for either all or part of their function); ii) have a 'domestic legal presence'; or iii) allow regulatory participation in risk management processes for systemically important CSFs. For detailed information, see <u>Clearing and Settlement Facilities:</u> <u>Australian and Overseas Operators</u>.

<sup>&</sup>lt;sup>102</sup> According to the RBA's latest annual assessment (RBA, 2020), LCH Ltd has '... either met or made progress towards meeting the regulatory priorities identified by the Bank' and has '... conducted its affairs in a manner that causes, or promotes, overall stability in the Australian financial system'.



Figure 19. Share of notional amounts outstanding of OTC derivatives by asset class (€ trillion, 2015 H2-2021 H1) (lhs) and share of daily average turnover of CAD IRD turnover by location (%, 2007-2019) (rhs)

*Notes:* The left panel depicts the notional amounts outstanding by asset class. The right panel depicts the share of average daily transaction volume in CAD IRD by location. Figures at the right panel refer to 'net-gross' basis, April 2007-2019, adjusted for local inter-dealer counting. For the conversion into euros, the bilateral exchange rate EUR/CAD at the end of April of each year has been used.

Sources: DTCC and BIS Triennial Central Bank Survey.

In December 2009, the Bank of Canada (BoC) chaired a working group composed of representatives of Canadian regulatory agencies in order to determine and coordinate efforts to meet the G20 commitments related to OTC derivatives. Among the issues considered was the introduction of an 'onshoring' clearing requirement for Canadian counterparties. Although small on a global scale, OTC derivatives play an important role in Canadian financial markets. The majority of OTC transactions are cross border, but there is small activity for certain products (e.g. Canadian equity-linked derivatives) that takes place locally.

The working group focused on OTC IRD denominated in Canadian dollars, which is considered a systemically important and largely clearable market. This market is served by LCH.Clearnet's SwapClear, given that there is no Canadian-based CCP that clears OTC IRD.<sup>104</sup> Four key points were considered by the group when deciding whether or not to relocate activity that takes place in a third-country.

First, to ensure that market participants have fair and open access to a third-country CCP. Access criteria to LCH.SwapClear are in line with the CPSS-IOSCO Principles, while all major Canadian banks have direct access to it. Currently, all six largest banks in Canada (Bank of Nova Scotia, Bank of Montreal, Canadian Imperial Bank of Commerce, National Bank of Canada, Royal Bank of Canada and Toronto-Dominion Bank) are clearing members of SwapClear.

Second, to fulfil Canadian regulators' oversight responsibilities. Canadian securities regulators had – and continue to have – a close regulatory and supervisory cooperation and information-sharing frameworks (bilaterally and multilaterally) with the Financial Conduct Authority (FCA). Furthermore,

<sup>&</sup>lt;sup>104</sup> Thus a location policy would have required a domestic clearing capability to be built.

the BoC participates in a multilateral arrangement for oversight cooperation led by LCH Ltd.'s lead regulator, the BoE.<sup>105</sup>

Third, to have access (if needed) to emergency liquidity. SwapClear – which has been deemed systemically important by the BoC – meets the minimum liquidity requirements of the CPSS-IOSCO Principles, while multicurrency emergency liquidity by the BoC is available to SwapClear.

Fourth, to have robust recovery and resolution plans in place. Jurisdictions around the world have committed to putting recovery and resolution regimes in place for SI CCPs. LCH Ltd, together with Eurex and 11 other CCPs, have been identified as SI in more than one jurisdiction (SI>1 CCPs), which means that the relevant regulatory and supervisory authorities are expected to: i) conduct resolution planning (consistent with FSB Guidance (FSB, 2017c); ii) establish a crisis management group (CMG); iii) adopt an institution-specific cooperation agreement (CoAg); and iv) launch a process of resolvability assessments and resolution planning (FSB, 2020b). Although LCH already has recovery and resolution (R&R) frameworks in place that can help withstand financial or operational disruptions and ensure continuity of clearing services, further improvements can still be made.<sup>106</sup>

In 2012, the working group's assessment concluded that Canadian market participants should be able to clear OTC derivatives using any CCP recognised by Canadian authorities, including global CCPs. The reason given by the Canadian regulators was that global CCPs support liquidity and efficiency in a global OTC derivatives market, thus making them more robust in their resistance to financial shocks.<sup>107</sup> At the same time it acknowledged and supported the work of international standard-setting bodies to establish safeguards for clearing OTC derivatives through a global framework of CCPs (FSB, 2012).

## 7.3 Japan

The OTC derivatives notional amounts outstanding of Japanese dealers stood at €53 trillion at June 2021, representing approximately 10% of the global OTC derivatives market. Looking at the composition of notional amounts in terms of risk factors, IRD make up approximately 85% of the total, with FX derivatives holding the second largest share with 14%, following by credit, equity, and commodity derivatives, with minute shares (Figure 20).

<sup>&</sup>lt;sup>105</sup> See the BoC's <u>Regulatory Oversight of Designated Clearing and Settlement Systems</u>. In 2013, the BoC designated SwapClear under the Payment Clearing and Settlement Act (PCSA), which brought the CCP under the formal oversight of the BoC.

<sup>&</sup>lt;sup>106</sup> Recently, HM Treasury issued a <u>consultation</u> setting out the UK Government's proposals to expand the resolution regime for CCPs to give the BoE additional powers to mitigate the risk and impact of a CCP failure and the subsequent risks to financial stability and public funds. More importantly, the NCWO safeguard proposed by the UK's enhanced resolution regime will ensure that clearing members of other jurisdictions cannot be disadvantaged compared to UK clearing members. This safeguard would replicate an existing safeguard in the bank resolution regime, and ensure that creditors of a CCP would have a right to compensation should they be left worse off in resolution than they would have been in the absence of resolution action.

<sup>&</sup>lt;sup>107</sup> On the one hand, a local CCP would provide the most straightforward oversight and the best capacity for local authorities to intervene and control risks. On the other hand, however, a global CCP has the potential to be more efficient and more robust to certain types of shocks.



Figure 20. Notional amounts outstanding of OTC derivatives in Japan (€ trillion, 1998 H1-2021 H1)

*Notes:* Consolidated data of reporting dealers. Data are not adjusted for inter-dealer double-counting. The double-counting will be eliminated in the global results released by the BIS. Data were reported in US dollars at end-June and end-December of each year. For the conversion into euros, the bilateral exchange rate EUR/USD at the end of June and December has been used.

*Sources:* BoJ and Eurostat.

Zooming into the IRD segment of the market, an interesting trend emerged over the last years in Japanese dealers' OTC derivatives contracts (Figure 21). Although the share of JPY as a domestic currency was at its highest point in 2010 (57%), since then it has gradually declined to 30% at end-June 2021. At the same time, there has been a significant increase in the USD-denominated IRD segment, which today accounts for 47% (up from 22% in 2010) of the outstanding amounts. This pattern reflects the fact that due to the decline in domestic interest rates, Japanese investors have increased their investments in USD interest rate assets. Thus, their need to hedge interest rate risks has boosted demand for USD IRD (Yoshizaki *et al.*, 2017).



Figure 21. Share of notional amounts outstanding of OTC derivatives by currency (%, 2010-2021)

*Notes:* The figure depicts the share of gross notional outstanding IRD by currency at end-June 2010, end-June 2016, and end-June 2021. *Source:* BoJ. Japan was the first, before the EU and the US, to implement the G20 requirement for central clearing.<sup>108</sup> The Financial Instruments and Exchange Act (FIEA) of 2006 was amended in 2010 to mandate Japanese entities to clear their OTC IRD.<sup>109</sup> The clearing mandate specifically covers large domestic financial institutions that are registered under FIEA as Financial Institution Business Operators (FIBOs) or Registered Financial Institutions (RFIs) and are members of licensed clearinghouses such as JSCC.<sup>110</sup> Importantly, the clearing mandate only applies to these entities when transacting in yen-denominated IRD (and CDS) with other registrants.<sup>111</sup>

Regarding the location of clearing, products subject to the Japanese clearing mandate must be cleared at a licensed CCP. This means: i) a licensed Japanese CCP; ii) a foreign CCP that is licensed by the Japanese Financial Services Agency (JFSA); or iii) a foreign CCP that is not licensed by the JFSA but has established a linkage with a licensed Japanese CCP with JFSA approval (which is considered 'equivalent'). Currently, there are four offshore licensed CCPs: Eurex Clearing, OTC Clearing Hong Kong, LCH.Clearnet Ltd and CME.<sup>112</sup> However, all four of them are only licensed by the JFSA to offer clearing services of non-JPY IRD to Japanese financial institutions.

Products that have been designated as clearing mandate products are only derivatives transactions clearable at JSCC. In particular, these products are either: i) CDS on the Markit iTraxx Japan index (clearable at JSCC); or ii) fixed-to-floating IRD contracts (clearable at JSCC). In other words, Japanese-regulated entities can only meet the mandatory clearing requirements by clearing their JPY-denominated IRD through JSCC.

This 'localisation' of clearing has resulted in the majority of JPY IRS (63%) being cleared by CCPs located in the Asia-Pacific region (mainly JSCC), with only 20% cleared in UK CCPs, particularly LCH's SwapClear (Figure 22).<sup>113</sup> Although it is not clear whether this development is due to internal policy or simply the fact that no foreign CCPs are applying to the JFSA for JPY IRS clearing, it shows that Japanese entities (mainly banks) are restricted to the JSCC liquidity pool.<sup>114</sup>

<sup>&</sup>lt;sup>108</sup> This is not surprising considering that Japan has a long history in market structure innovation, and was one of the first countries to start trading commodity futures with the establishment of the Dojima Rice Exchange (the world's first futures exchange) in 1697.

<sup>&</sup>lt;sup>109</sup> Find more information on FIEA <u>here</u>.

<sup>&</sup>lt;sup>110</sup> The clearing obligation does not apply to all FIBOs and RFIs, but only to those that meet certain criteria such as large volume of the relevant OTC derivative transactions.

<sup>&</sup>lt;sup>111</sup> This is subject to certain exemptions, for example intergroup transactions.

<sup>&</sup>lt;sup>112</sup> See the list of domestic authorised and foreign recognised FICOs by the JFSA <u>here</u>. All foreign recognised FICOs can only offer their services and activities for non-JPY derivative instruments.

<sup>&</sup>lt;sup>113</sup> However, there are differences between the two CCPs for different maturities in JPY IRS. While JSCC has a larger market share in 5Y, 10Y and 30Y tenors, LCH has higher market share for shorter tenors. See analysis carried out by <u>Clarus</u>.

<sup>&</sup>lt;sup>114</sup> There are currently only two Japanese banks (Mitsubishi UFJ Financial Group and Sumitomo Mitsui Financial Group) in the <u>Top 20 World Banks</u> list. The remainder are: nine Chinese, five US, two French, one Spanish and one UK bank. However, there is an important caveat to be made here. It is difficult to draw a clear and direct link between Japanese banks' global business presence and the current structure of JPY IRD clearing. Although a downward trend of Japanese banks could be observed, it could not be ascribed to the JFSA's current stance on JPY IRD clearing. Japan has experienced a period of stagnant economic growth, with a long history of negative interest rates and quantitative easing, which has had a significant impact on Japanese banks' business, with Japan's share of global GDP shrinking (EC, 2021).

Moreover, the observed widening of the LCH-JSCC basis<sup>115</sup> in JPY IRS over the past years (e.g. in April 2016 and January 2018)<sup>116</sup> has made it more difficult for Japanese banks to access preferential pricing offshore. It has thus created fragmentation between the activities of Japanese banks, which clear through the local CCP, and global banks, which typically clear through a global CCP (IOSCO, 2019).<sup>117</sup> However, since non-Japanese hedge funds started clearing JPY IRS in JSCC in 2018, absorbing the directional swap trading appetite of JSCC clearing members, the basis has tightened and dropped to close to zero (Giancarlo, 2018a; Giancarlo, 2018b).<sup>118</sup>

<sup>&</sup>lt;sup>115</sup> The CCP basis is the price difference for the same product cleared at different CCPs. In other words, it is the price differential that reflects the margin costs for dealers of clearing a derivative product at one CCP versus another CCP. Among the drivers of a CCP basis are: i) collateral costs; ii) dealers' credit risk; iii) structure of market participants/clients; and iv) expectations on monetary policy and interest rates (Benos *et al.*, 2021).

<sup>&</sup>lt;sup>116</sup> In April 2016, the LCH-JSCC basis jumped when JSCC updated the IM model to make it compatible with a negative rate environment. The IM increased in general, prompting traders to reassess its costs. Moreover, the approval from the Japanese regulator to allow LCH's SwapClear to clear non-JPY IRS on behalf of local banks, also had an impact. In January 2018, the LCH-JSCC basis reached its highest point as hedge funds accessing LCH speculated on the potential normalisation of Bank of Japan (BoJ) monetary policy (Itozaki, 2018). However, a few months later in September 2018, following the speech of Christopher Giancarlo, then Chair of the Commodity Futures Trading Commission (CFTC), in which he suggested that US clients would be able to clear swaps on non-US CCPs that are not fully registered but do not pose substantial risk to the US financial system, the basis declined significantly (Giancarlo, 2018a; Giancarlo, 2018b). Overall, and despite such temporary variations, in the long run the basis has tended towards parity.

<sup>&</sup>lt;sup>117</sup> The yen market has traditionally been dominated by Japanese banks looking to hedge their loan books with fixed receiver swaps, which previously gave JSCC a highly directional book. That meant dealers could often only find counterparties willing to pay fixed at a third-country CCP, particularly LCH, thereby duplicating their margin requirements, something that is reflected in swap prices at the two CCPs. See <u>Clearing House of the Year: JSCC</u>, 11 September 2019, Risk.net.

<sup>&</sup>lt;sup>118</sup> During his speech, Giancarlo suggested that US clients would be able to clear swaps on non-US CCPs that are not fully registered (but do not pose substantial risk to the US financial system).



Figure 22. Execution and clearing of JPY-denominated OTC IRS (% of globally cleared IRD measured in terms of notional traded, Q2 2021)

*Notes:* The figure refers to new transactions aggregate notional traded. The products considered are all new cleared single currency swaps, meaning fixed-for-fixed, fixed-for-floating and floating-for-floating (i.e. basis), but no cross currency, options (i.e. swaptions) or FRAs. Data include all new cleared IRS trades executed globally in a given month, including on venue (e.g. SEF, MTF and OTF) and those executed off venue (i.e. off facility) that are cleared via MarkitSERV's CCP connectivity service or where MarkitSERV receives a copy of the trade. *Source:* OSTTRA.

Despite temporary variations, JSCC's efforts to internationalise and attract foreign firms have resulted in the basis being close to its parity over the long run. Liquidity also plays a role in attracting activity, as most of the liquidity in the JPY market is at JSCC.<sup>119</sup> Not only has the average daily clearing volume in IRS increased over the last years (Figure 23, left-hand side), but also the number of offshore clients, albeit remaining much smaller than LCH – particularly non-Japanese buy-side investment firms (Figure 23, right-hand side).

<sup>&</sup>lt;sup>119</sup> See Japan's CCP Goes Global, 29 June 2021, Risk.net.





Sources: JSCC and Eurostat.

It is important to highlight some characteristics of the Japanese market that may explain the approach followed by the Japanese authorities, and help us draw some comparisons with EU markets and the impact that potential de-recognition might have. First, Japanese markets are generally more based in cash products (e.g. bonds and repos) than derivatives (Ono *et al.*, 2015). As a result, JPY-denominated derivatives products in Japan are, proportionately, less important than, for example, EUR-denominated derivatives in Europe. This reflects in the rankings of Japanese banks in Japanese government bond (JGB) markets versus IRS markets (Greenwich, 2016).<sup>120</sup> Second, Japanese clients have a much greater propensity to trade with Japanese banks than EU clients have with European banks.

Another interesting consideration is that the Japanese model does not impose severe capital surcharges on Japanese firms using overseas CCPs. The EU non-recognition model does impose this surcharge (by treating such CCPs as non-qualifying). As a result, Japanese banks have set up offshore trading subsidiaries through which they conduct their offshore business. This alternative would not be available to EU firms with regard to non-EU clients under a de-recognition model. Last but not least, Japan does not have ambitions for JPY to be a globally leading currency, whereas the EU is promoting the international role of the euro.

<sup>&</sup>lt;sup>120</sup> Japanese banks hold a significant market share in the JGB market, opposite to global banks which have traditionally dominated the Japanese IRS market.

# 8. European location policy

#### **KEY FINDINGS**

- A requirement from European authorities for EU-based firms to move out of UK CCPs, either through a clearing location policy or lack of equivalence/derecognition of UK-based CCPs, will restrict those firms' access to liquidity, increase clearing costs, reduce netting benefits, negatively affect the competitive position of EU companies internationally and go against the EU's policy of strengthening the international role of the euro.
- Instead, any EU policy to further develop central clearing in the EU should be part of a clear long-term strategy in the context of the Capital Markets Union (CMU). In fact, European regulators should consider the potential effects of the available options in terms of financial stability, efficiency and future development of European financial markets.
- EU market participants should be able to retain the flexibility to continue to clear their transactions through a CCP of their choice, or the choice of their clients and counterparties, and benefit from access to global pools of liquidity and product ranges that meet their needs. This is even more the case when their regulatory and supervisory regime is equivalent to the EU one.
- Allowing participants in the marketplace to determine the optimal market structure based on their trading needs and objectives will allow for a more organic, market-led and customerdriven development of EU derivatives market infrastructure. This will enable EU financial markets to remain open, global and attractive, while strengthening the international role of the euro.

In setting a CCP clearing policy for the EU, European policy makers need to strike a balance between financial stability and competitiveness considerations. Derivatives markets and the related institutions are global, and the markets have evolved considerably since the GFC. CCP clearing has become much more important, and so have the rules affecting clearing houses. Market transparency has increased and CCP prudential rules have been implemented and have already withstood their first tests.

Since the start of the single market and in the Financial Services Action Plan (FSAP), the EU's ambition has been to strengthen the competitiveness of its financial sector and to create global players. The UK, and the City of London in particular, has benefited largely from this objective by becoming the bridgehead of Europe's financial industry, in all its dimensions, but also by attracting ever more important activities of international banks. The EU has thereby managed to remain an open market, also for third-country operators.

With the departure of the UK form the EU, the EU and the UK concluded a Withdrawal Agreement (WA) and a new Trade and Cooperation Agreement (TCA) ensuring a framework for an orderly transition to – and management of – their new relationship. Appropriate safeguards are in place to ensure orderly competition on both sides, including a dispute settlement system. The frictions are so far most evident on the trade in goods side, but on the services side business has adapted rapidly. The scale, size and expertise that London has in financial services will continue to be important for the EU, and a new modus operandi will have to be found. On the EU side, the creation of a Banking Union (BU), and even more a Capital Markets Union (CMU), remains a work in progress. Europe's banks need to consolidate further, and capital markets need to become more integrated.

The EU has also recognised this need for openness with other third countries. It has concluded a large number of equivalence agreements with many jurisdictions around the world; agreements that are constantly monitored by the European Supervisory Authorities (ESAs). The highest number of agreements are in place for the closest trading partners like the US and Japan, but even with jurisdictions such as Brazil or China several agreements are in place. Specifically on the clearing side, an equivalence agreement for CCP supervision under EMIR is in place with 14 different jurisdictions.

Following the UK's departure from the EU, a clear EU policy is yet to emerge on the financial markets side. Some steps have been taken, but much more needs to be done. Some of the rhetoric used by the current UK government on elements of the WA is certainly of no help in developing a more balanced relationship. The EU on the other hand prefers to support the development of financial services in its single market. So how to find a new balance? A vision is needed for the long term, but in the short term continuity should be the hallmark.

European firms and market participants should not be restricted from participating in the OTC derivatives market. To start with, mandated relocation will be costly for European banks, which make up about a quarter of the global IRD market.<sup>121</sup> It will cause fragmentation of trading volume between different CCPs, a reduction of netting benefits and an increase in margin costs (Chande *et al.*, 2012; Benos *et al.*, 2021). Forcing relocation will result in investors having to bear higher costs and risks, and end users of derivatives having to pay more or forego hedging, while the pool of available counterparts to offset the contracts/trades that have been moved from one CCP to the other will be smaller.<sup>122</sup>

In addition, relocation will increase volatility, as differences in pricing basis will be exacerbated, and will also inflate prices and reduce their availability. Furthermore, the international footprint of EU banks will be reduced, as they will no longer be able to offer market-making and client-clearing activities to their non-EU clients and counterparties (which are not subject to relocation on UK CCPs).<sup>123</sup> Moreover, it will go against the EU's policy of strengthening the international role of the euro, as European regulators (e.g. ESMA and the ECB) will lose their supervisory powers with respect to the derecognised CCPs (which cover more than three quarters of the euro clearing market). In fact, any restrictions or forced measures will hinder progress towards the CMU.

European policy makers should avoid the unnecessary division of derivatives markets into separate EUfirm and non-EU firm marketplaces. Markets in jurisdictions that have adopted the G20 swaps reforms each function under one set of comparable clearing rules. The EMIR 2.2 rules have only just been implemented and the new supervisory structure that also allows the supervision of systemic thirdcountry CCPs is fully designed for this, and needs to be given time. The ECB is also fully involved in this structure and will have first-hand information to address any financial stability concerns.

<sup>&</sup>lt;sup>121</sup> It is important here to highlight the fact that such relocation can only be mandated for new transactions. This is because IRS legacy transactions can only be relocated if the opposite parties involved are ready to clear in EU CCPs (matched book). If the non-EU counterparties do not agree to change CCP, it is not possible to relocate legacy transactions. As a result, such operation might be too complex and very costly to perform, carrying high systemic risks.

<sup>&</sup>lt;sup>122</sup> This not only entails a counterparty with the receiving CCP but also with the departing CCP, in order to maintain the 'matched book'. Considering that most liquidity is with non-EU counterparties and that these would have no mandatory obligation to clear in the EU, they may be unwilling to split positions.

<sup>&</sup>lt;sup>123</sup> This will also have an impact on EU banks' relevance to EU clients with regard to derivatives markets. Losing non-EU clients will have follow-on effects on EU clients. This is because revenue loss will put EU banks' overall business at risks, given that market making operates on thin margins and requires scale to be competitive.

A regulatory driven reduction of exposures to UK CCPs – whether it is mandated or not – would introduce risks to financial stability and have additional systemic implications. Creating a smaller market for EU-firms clearing in euro only would result in less liquidity and fewer actors, not only to hedge risks with but also to rely on in times of crisis. It would result in fewer clearing members being available to take large positions, creating a market that would be riskier, particularly in the case of a clearing member defaulting. On the contrary, a globally diversified membership and extensive liquidity in globally traded correlated products brings strong benefits in terms of financial stability, diversification of risk and resilience.

The EC and the ECB should further assess the trade-off between financial stability and cost considerations arising from a potential relocations and lack of equivalence extension. What is needed is a proper impact assessment of the fragmentation, risks and costs of such action, as well as an analysis of whether continental European CCPs currently have the ability, knowledge and facilities to accommodate the needs of European (and other) market participants (Thomadakis, 2018).

## 8.1 A global or a local approach?

When considering the best way forward, whether or not to relocate clearing of euro-denominated derivatives, the relevant question should be what is the best approach for the EU to follow? Does the EU want a local or global approach? The EU authorities should consider the potential effects of the available options in terms of financial stability, efficiency and future development of European financial/capital markets. These three factors are highly interrelated on many levels, and also requested as part of EMIR 2.2.

Efficient markets are important both for promoting a resilient and robust financial system and for developing European financial markets and infrastructures. The nature of OTC derivatives markets plays an important role in this framework. This is because transactions in OTC derivatives frequently involve counterparties in different jurisdictions, while market participants regularly trade in several currencies and across various types of OTC derivatives.

Latest data for LCH's SwapClear reveal that in 2020: i) the majority of trades in EUR IRD that took place in SwapClear did not involve an EU firm (73% of the EUR IRD notional registered); ii) the vast amount of daily cleared activity was in currency other than euro (76%); and iii) EU firms accounted for a limited part of SwapClear's daily activity (14%). An EU CCP would most likely capture a small share of the EUR IRD market, while much of that business would either remain in London or migrate to another CCP with a similar product offering to LCH (in terms of depth in currency coverage). On top of that, a local clearing requirement for euro trades would not be able to capture trades involving two foreign counterparties, and thus not be able to attract all market participants.

## 8.2 Financial stability

CCPs concentrate counterparty risk and are critical to the functioning of cleared markets. This risk concentration in CCPs is a deliberate and inherent outcome of the policy drive towards central clearing (Cruz Lopez and Manning, 2017). It is a feature of CCPs' function that should be tackled in the most appropriate way. Indeed, it is precisely in recognition of the associated systemic risk implications that the international regulatory bodies, CPMI and IOSCO, introduced the PFMI in 2012 (CPSS-IOSCO, 2012).

If CCPs incorporate appropriate risk controls, they can enhance financial stability; otherwise, they can be a source of financial stress. European regulators have considered the extent to which instability at a

third-country CCP (i.e. a UK CCP) could affect European markets and participants. Critical elements of this analysis are: (i) the capacity of European authorities to oversee the CCP's activities during the normal course of business and to intervene to mitigate shocks during a crisis, if necessary; and (ii) how the structure of both the CCP and the cleared market affects the CCP's ability to mitigate financial shocks.

# 8.2.1 Oversight of UK-based CCPs

European regulators (National Competent Authorities (NCAs), EC, ECB and ESMA) have co-ordination and oversight responsibilities for European and third-country CCPs, and are particularly interested in the euro activities of UK-based CCPs, as well as the risks to European participants through their use of a UK-based CCP. The main oversight objective is to ensure that risk is appropriately controlled. This means, among other things, that CCPs meet the applicable risk-management standards (i.e. PFMI) developed by the CPSS and the Technical Committee of the IOSCO.

Supervising a CCP located in the EU is more straightforward than overseeing a CCP located in London. European authorities have direct powers in regulating EU CCPs, and have a full set of legal mechanisms for enforcing their requirements. However, the oversight benefits would accrue only to the portion of the market being served by an EU CCP. It is more complicated for European authorities to oversee a third-country CCP, since they would not be the primary regulator and would generally have less direct influence. Currently, under EMIR 2.2, ESMA has direct powers over UK CCPs due to recognition and equivalence. In particular, for CCPs deemed more systemically important to the EU and designated as Tier 2, ESMA has extensive direct supervisory powers. ESMA has designated two UK CCPs (ICE Clear and LCH) as Tier 2, and through 2021 has started to apply its supervisory powers. After 30 June 2022, however, and the expiry of the temporary recognition, these direct powers will cease to apply.

A forum that can promote cross-border cooperation and coordination among authorities, as well as enhance preparedness for the failure of a CCP – and facilitate the resolution of the CCP in this event – is the CMG. CMGs have been established with the aim of enabling CCPs and regulatory and supervisory authorities to cooperate, share information and coordinate, both during business-as-usual periods and in times of crisis with a view to facilitating recovery or, as necessary, an orderly CCP resolution. The CMG focuses on the resolution planning and actions in relation to the CCP, opposite to those crisis management aspects relating to recovery or early intervention, which are dealt with by the EMIR College (Article 18 of EMIR) and by each authority. For example, in the UK, CMGs are organised and chaired by the BoE, with CMG members including all relevant EU supervisory/resolution authorities, the ECB and ESMA. Although CMGs play a vital role in having close and continuous cross-border regulatory cooperation and providing assurance in a crisis situation, it is important to highlight that the ultimate decision making should reside with the resolution authority of the jurisdiction in which the CCP is established.

It is worthwhile drawing a comparison here with the US, and the very large volume of dollardenominated clearing that takes place in London. In contrast to the EC, the CFTC has never insisted that dollar-denominated products should be cleared in the US (Macchiarelli, 2018). However, the US, unlike the EU, requires overseas clearinghouses that clear any OTC swap for US persons to register there and provide access just like any other US-based clearinghouse. This framework gives the US the ability to oversee what is going on at foreign clearinghouses, and thus provides oversight of major London CCPs.

# 8.2.2 Ability to mitigate financial shocks

Having clear and robust processes in place to manage member defaults in an orderly fashion, CCPs promote financial stability. In the event of a default, the CCP takes on the obligations of the defaulting member's portfolio and manages this risk with the help of other members. This means that effective management of a default requires a strong membership base and access to liquid and efficient markets. CCP participants play an important role in that respect. Although CCPs meet harmonised risk management standards (CPSS-IOSCO, 2012), differences in their ability to manage severe shocks may occur, such as the simultaneous default of multiple clearing members.

A large CCP may be better placed and have a greater capacity to manage member defaults than a smaller EU CCP. This has not only to do with the size of the CCP, but also the diversity of its market participants from many different jurisdictions, and the larger pool of surviving members to help hedge and replace the defaulted portfolio. In addition, such a CCP would also be able to have greater financial capacity to absorb losses in the event of a default.

Participating in a third-country CCP could expose EU firms to shocks arising from the default of participants based in other jurisdictions, since stress might be transmitted to markets in Europe through the default-management mechanism of that CCP. On the one hand, a localisation policy that restricts European participants to clear their euro derivatives at an EU CCP might protect European markets from shocks occurring in non-EU countries. However, this benefit will be limited since European dealers will still need to be members of UK CCPs to clear non-euro derivatives products (given that currently there is no EU equivalent of a large centralised clearing services provider). On top of that, some UK dealers would probably be members of CCPs located in Europe. One way or another, the interconnection and global nature of the derivatives market unavoidably exposes European participants to potential financial losses stemming from the default of CCP members based in other jurisdictions. Instead of localising clearing, enhancing supervisory and regulatory cooperation between the EU and the UK should be prioritised.

## 8.3 Efficiency

A requirement to clear euro-denominated derivatives in an EU-based CCP would induce higher costs for European market participants and would adversely affect market efficiency. This is because a location policy would force users of EU CCPs to split their cleared portfolios between EU and non-EU CCPs. As a result, costs and the need for collateral (due to lower netting opportunities) would increase.

#### 8.3.1 Higher costs

Costs would increase in six ways. First, users would need to pay membership and clearing fees to two CCPs. If they are already members of a UK-based CCP, they would have to become members of an EU CCP, thus paying additional fees. Second, users would be required to contribute to two default funds, one of the EU CCP and another of the UK CCP. Third, they would be required to increase collateral, as they would benefit from less cross-currency diversification and netting of risk exposures in their cleared portfolios.

Fourth, users would have to post margin at two different CCPs. This would further increase costs not only because margin needs to be funded by tapping capital markets, but also because of debt overhang (Andersen *et al.*, 2019). Fifth, regulatory capital costs would increase, given the reduced netting of risk exposures and the additional contributions to the default fund.<sup>124</sup> Sixth, dealers may recover the cost of not being able to net positions across CCPs by charging their clients. Although the price difference charged between net buyers and net sellers (known as 'CCP basis') may seem small, if multiplied by daily volume the cost may be significant (Benos *et al.*, 2021).

#### 8.3.2 Fragmentation and reduced liquidity

Fragmentation associated with using EU CCPs would likely lead to higher costs and decreased market liquidity in euro OTC derivatives. Market participants not obliged to clear in the EU would have an incentive to concentrate their clearing through UK CCPs. Since trading can occur only when both counterparties clear through the same CCP, European market participants would consequently have fewer trading opportunities and would face decreased market liquidity. This would consequently raise costs of clearing and trading for European market participants.

In a far-stretched scenario, increased costs associated with clearing locally could potentially result in reduced use of standardised and clearable derivatives products, and thus decelerate the adoption of central clearing. Furthermore, higher costs could discourage the use of derivatives as a risk management tool, and might put European market participants at a competitive disadvantage relative to their international counterparts. But more importantly, from a financial stability point of view, reduced liquidity in a fragmented market could reduce the ability of EU CCPs to effectively manage risk and handle clearing members' defaults. Opposite to that, a third-country CCP with access to a large pool of liquidity can quickly replace defaulted portfolios, thus minimising the impact on surviving members and protecting the stability of the financial system.

Interoperability arrangements – links between two or more CCPs which involve the cross-system execution of transactions – could reduce costs related to the fragmentation of clearing (ESMA, 2016; ESRB, 2019). Currently there are no such arrangements in place between CCPs for OTC derivatives, let alone between an EU CCP and a UK-based CCP.<sup>125</sup> The benefit of having links between CCPs is that it allows each counterparty to a trade to clear at a different CCP (with an inter-CCP contract arising to offset the exposures). It also allows clearing members to have access to more netting and diversification opportunities without seeking membership of multiple CCPs, as well as benefiting from having a portfolio cleared at a single CCP. While interoperability is an unlikely solution for OTC derivatives, it is a tried and tested model for equities, which would also stop if equivalence expires in June 2022.

<sup>&</sup>lt;sup>124</sup> Capital costs would also be increased if there was no extension of equivalence, which would imply that UK CCPS are non-qualifying CCPs (i.e. not recognised in accordance with EMIR).

<sup>&</sup>lt;sup>125</sup> Expanding interoperability arrangements for OTC derivatives would be challenging to configure, as CCPs, their members and supervisors would need to evaluate such arrangements carefully against the risk of contagion in times of market stress.

### 8.4 Development

The development of European capital markets might be affected – either positively or negatively – by the decision to relocate euro clearing. On the positive side, a location policy for euro-denominated derivatives could be beneficial for the development of market infrastructures in Europe. A requirement to use an EU CCP might facilitate cross-product netting with other financial instruments or listed derivatives – but only where this product offering is available in the EU.<sup>126</sup> This could promote local trading,<sup>127</sup> while also stimulating the creation of legal, economic and operational expertise, which might facilitate further the development of European financial centres.

Although such potential benefits are important, in absolute terms they might prove to be small or insignificant. There is a need to assess them carefully, and to measure and weigh them against the disadvantages of imposing a location policy. Some of these are: financial stability risks, higher costs, restricted liquidity and efficiency, greater vulnerability to financial shocks, implementation risks (associated with the development of EU CCPs to clear particular classes of trades in OTC derivatives), competitive disadvantage of European investors compared to international ones, (un)attractiveness of EU capital markets and the declining role of the euro as an international currency.

<sup>&</sup>lt;sup>126</sup> Such cross-product netting is used to reduce derivative exposure. It can take the form of either derivative to derivative, or financial instrument to derivative. For example, a common way to reduce derivative exposure is to have the cash equity or bond as part of a portfolio that combines cash instruments (already settled) with derivatives – with the condition that both cash instruments and derivatives are part of a portfolio within a CCP. <sup>127</sup> This may be the case for EUR instruments. However, for non-EUR instruments the non-EU counterparties would still be needed to assure deep liquidity and efficient price formation.
## 9. Conclusion

Derivatives markets allow local economic exposures to be shared globally, thus efficiently transferring risk. Since the GFC, central clearing has been at the forefront of the financial regulatory agenda. One of the G20 commitments was the introduction and use of mandatory clearing, which has been the catalyst for the trend observed over the last years where market participants clear financial trades through CCPs. Central clearing of OTC derivatives has increased transparency and reduced risks, while at the same time CCPs' risk management strategies have been strengthened with the introduction of the PFMI. Nevertheless, finding the right balance between the global nature of CCPs on the one hand, and financial stability within each individual jurisdiction on the other, is a significant challenge.

A few global financial centres have specialised, and these centres clear the lion's share of global trades. London in particular is a leading clearing hub for OTC derivatives. In interest rate swaps, UK CCPs have a central role and clear over 90% of the market in currencies such as euros and dollars. Concern about the risk in CCPs and foreign currency exposure has been an issue among EU policymakers and supervisors for the last two decades. Specifically in the EU, given its multijurisdictional nature, supervisors have progressed with greater European-wide supervision of CCPs, which has been sharpened with the UK's withdrawal from the EU.

In this context, ensuring that financial stability risks are adequately managed and that EU financial institutions that participate in UK CCPs are sufficiently protected is the EC's primary task. As such, EMIR 2.2 was introduced as a means to enhance the EU framework for the supervision of third-country CCPs. The direct application of EMIR standards to systemically important CCPs, and the direct involvement of ESMA (and EU central banks) in monitoring and supervising recognised third-country CCPs, resolves some of the policy issues raised by the heavy reliance of the EU financial system on services provided by UK-based CCPs.

The EC has granted temporary equivalence to the UK for CCP clearing services to allow for a transition from the previous EU CCP regime to the new third-country regime, but this expires at the end of June 2022.

In an effort to find ways to reduce what is deemed to be EU clearing members' and market participants' excessive exposures to systemically important UK CCPs (in particular their euro-denominated OTC derivatives exposures), one consideration is the introduction of a location policy. Such migration of EUR IRD clearing to the EU will reduce exposures in these products to third-country CCPs, and will also help to further develop the European infrastructure to clear OTC derivatives markets. In addition, the use of EU CCPs might facilitate cross-product netting with listed derivatives, which could promote trading within the EU. It will also stimulate the creation of legal, economic and operational expertise, which will spur the development of EU financial centres.

However, location policies might be counterproductive, and instead of mitigating financial stability risk within a jurisdiction, they can actually contribute to it. Not taking into account the global nature of derivatives markets, and restricting access to clearing and markets for which there is a clearing mandate, runs against the G20 commitments and their justification.

Such policies would harm liquidity, increase costs for market participants, create two distinct marketplaces for EU and non-EU firms, and reduce their efficiency to participate and compete in the global derivatives market. In addition, they would disadvantage EU banks compared to their non-EU

counterparts, as EU banks would no longer be allowed to be a direct clearing member of the relevant UK CCPs, thus impacting their client-clearing and market-making activities with non-EU clients and counterparties not subject to the location policies. Meanwhile, non-EU banks would preserve their ability to offer these services to non-EU clients and counterparties.

Furthermore, location policies have been considered in the past in other jurisdictions than the EU, but these were either abandoned as a policy option or drastically scaled down. In Australia and Canada, for example, regulators decided instead to strengthen cross-border regulatory cooperation with third countries, given the liquidity and resilience benefits provided by global CCPs. In Japan, on the other hand, the requirement for Japanese entities to clear their home currency-denominated IRD through a local CCP has effectively resulted in these entities being restricted to the local liquidity pool. It has thus created fragmentation between the activities of Japanese banks, which clear through the local CCP, and global banks, which typically clear through a global CCP.

Moving forward, and in order to avoid the risk of regulatory divergence and the loss of EU supervisory oversight, systemically important third-country CCPs are required by EMIR 2.2 to continue to comply with the European standards (i.e. prudential, governance and operational), while EU authorities continue to maintain the same degree of oversight of such CCPs. Importantly, the best way to manage any financial stability risk is to have appropriate supervisory and regulatory co-operation, working together, jointly supervising and making sure that regulators have access to the information they need to carry out their responsibilities. It appears that the current relationships – underpinned by the EMIR 2.2 regulatory framework in the EU, and as onshored in the UK – seem to be achieving the desired outcomes. The new supervisory structure should be given time to develop and evolve over the coming years, before introducing any radical or unnecessary changes with unintended consequences for EU firms.

Nevertheless, it is equally important for EU market participants to be able to retain the flexibility to continue to clear their transactions through the CCP of their choice, or the choice of their clients and counterparties. This allows them to continue their market-making and client-clearing activities and have access to global pools of liquidity, especially when the CCP has an equivalent regulatory and supervisory regime to the European one. Enabling market participants to determine the optimal market structure based on their trading needs and objectives will allow for a more organic and customer-driven development of the European derivatives market structure. Overall, any measures should aim to develop EU capital markets and infrastructures, apply on a voluntary basis, be market driven and given the appropriate time.

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More than EUR 3.2 trillion notional outstanding of interest rate swaps (IRS), the most active interest rate derivative (IRD) product, are cleared every day in the City of London, including around 94% of all euro-denominated IRS that are traded globally. Brexit has naturally raised questions around whether London's central role can continue.

A new study 'Setting EU CCP policy – much more than meets the eye', now calls for a long-term vision for the future of the European clearing market, by taking financial stability, efficiency, and market development objectives into account.

- In the short-term, the best way forward to address EU concerns about the exposure of EU firms to UK central counterparty clearing houses (CCPs) is to implement appropriate supervisory and regulatory co-operation. EMIR 2.2 foresees 'adequate' cooperation between the EU and the UK and allows for hands-on supervision of UK-based systemically important CCPs by European Securities and Markets Authority (ESMA).
- Any new supervisory structure needs to be given time to function properly before more radical changes are introduced, given the significant potential negative consequences for EU firms. A policy to further develop central clearing in the EU should be part of a clear long-term strategy in the context of the Capital Markets Union (CMU), be market-driven and, again, be given the appropriate time to mature.
- The alternative, to abruptly restrict EU firms' access to London, cannot be easily achieved and would result in clear collateral damage for EU banks and end users, put EU banks at a clear competitive disadvantage vis-à-vis it's international counterparts and unnecessarily harm the EU economy. To avoid such a situation, this report provides valuable analysis and insights to help EU policymakers make the right decisions to ensure that EU financial markets remain open, global and attractive, while strengthening the international role of the euro.

