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Over-the-counter interest rate derivatives: The clock is ticking for the UK and the EU

by Apostolos Thomadakis

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Place du Congrès 1, 1000 Brussels, Belgium
www.eurocapitalmarkets.org
ecmi@ceps.eu
Phone + 32 2 229 39 11

Editorial Board Cosmina Amariei, Karel Lannoo, Apostolos Thomadakis

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Abstract

Over-the-counter (OTC) derivatives markets, in particular interest rate derivatives (IRD), have grown significantly in recent decades and now constitute a systemically important component of financial services activity. The UK plays a central role in clearing derivatives, both at a global and EU level. It is the single biggest venue for OTC derivatives activity and is even larger in terms to euro-denominated IRD contracts clearing. Yet, the fact that a large share of euros is traded, and will be traded after Brexit, in a non-euro area country raises questions about the regulation and supervision of such markets and the sustainability of liquidity provision, particularly during a time of financial turmoil. The burning question is thus whether the clearing of euro-denominated derivatives can remain in London or should be moved to the eurozone.

With the aim of shedding light on this issue, this report explores the OTC IRD market and the UK's role in it, and examines the potential costs of a relocation policy of CCPs after Brexit. It argues that there are aspects of the Commission's proposal that require further attention and clarification; the easiest approach might be to establish a location policy to require systemically important CCPs to be located within the eurozone, but this would be an error of judgement. The report highlights the urgent need for an impact assessment of the fragmentation, risks and costs of such a move. The report concludes that the best hope of addressing the risks of clearing post-Brexit is for heightened supervision, deep cooperation and clear coordination between the EU and the UK, rather than a potentially forced relocation of services currently provided by UK firms to the EU.

Keywords: interest rate derivatives, over-the-counter, euro-denominated, central clearing, Brexit, relocation policy, fragmentation, initial margin

Contents

1. Introduction.....	1
2. Setting the scene	2
3. Role of the UK in derivatives markets.....	4
3.1 Where is the UK placed?	4
3.2 Euro-denominated derivatives.....	6
3.3 Central clearing	9
4. Is relocation the right solution?.....	11
4.1 Fragmentation cost	13
4.2 Initial margin cost.....	15
5. Conclusion	17
References	19

List of Figures and Table

Figure 1. Notional value outstanding of OTC derivatives (\$ trillion).....	3
Figure 2. Turnover of OTC interest rate derivatives, by country (\$ trillion).....	5
Figure 3. Turnover of OTC interest rate derivatives in UK and US, by instrument (\$ trillion)	6
Figure 4. Turnover of OTC interest rate derivatives, by currency (\$ trillion)	7
Figure 5. Share of euro-denominated OTC interest rate derivatives turnover, by country (%)	8
Figure 6. Share of OTC interest rate derivatives turnover in the UK, by currency (%)	8
Figure 7. Turnover of OTC interest rate derivatives, by counterparty (trillion).....	10
Figure 8. Turnover of OTC interest rate derivatives by country of counterparty (\$ trillion)	11
Figure 9. Size of SwapClear's portfolio, by firm and currency (%)	14
Table 1. Global notional amount outstanding of OTC interest rate derivatives, by currency (\$ billion) 2	
Table 2. Share of UK turnover of OTC interest rate derivatives.....	5

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Apostolos Thomadakis*

1. Introduction

Over-the-counter (OTC) derivatives markets have grown significantly in recent decades, 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. Furthermore, the use of central counterparties (CCPs) in OTC derivatives markets has also increased over this period; they have become systemically important infrastructures and now play a key role in managing post-trade risk in financial markets.

Brexit poses many questions for the future of OTC derivatives markets. This is because more derivatives (both EU and global) are cleared in London than in any other financial centre globally. Legislative changes that will further strengthen the supervision of clearing in Europe are afoot. Both the European Commission (EC) and the European Central Bank (ECB) have expressed concerns about euro-clearing, and consequently the volume of euro-denominated derivatives that are currently cleared by CCPs which, after Brexit, will be regulated domestically in a UK that is no longer in the EU.

The important question is whether or not the clearing of euro-denominated derivatives that now largely takes place in London can remain there or should be moved to the eurozone (Table 1). Before attempting to answer this question, the facts, details and consequences of such action should be carefully assessed and analysed. It is certain that these derivatives contracts are of great importance to the stability of the Europe's financial system, but where these contracts are cleared is a challenging question, to which the answer is not clear-cut. The easiest approach might be to establish a location policy to require systemically important CCPs to be located within the eurozone, but this would be an error of judgement. Instead, an impact assessment of the fragmentation, risks and costs of such a move – as well as whether continental European clearing houses have the ability, knowledge and facilities to clear the volumes cleared by London – should be conducted urgently.

* Apostolos Thomadakis, PhD, is Researcher at the European Capital Markets Institute (ECMI).

Comments by Quentin Archer, Jean-Philippe Collin, Willem Pieter De Groen, Godfried De Vidts, Mariya Dinkova, Julien Jardelot, Ulrich Karl, Lucie Langer, Karel Lannoo, Coarentine Poilvet-Clediere, Olga Roman and Geert Vanderbeke are gratefully acknowledged. Their comments were expressed in a personal capacity and do not necessarily reflect the views or positions of their respective companies/organisations.

Table 1. Global notional amount outstanding of OTC interest rate derivatives, by currency (\$ billion)

	Total	USD	EUR	GBP	JPY	CHF
LCH Ltd	310,847	113,568	95,566	36,195	12,783	3,480
CME Group	14,717	8,655	1,357	852	416	17
Eurex Clearing	1,870	21	1,637	10	0	204
BME Clearing	1,861	-	1,861	-	-	-

Notes: For LCH Ltd and BME Clearing figures as of COB November 30, 2017. For CME Group and Eurex Clearing figures as of COB 7 December 2017.

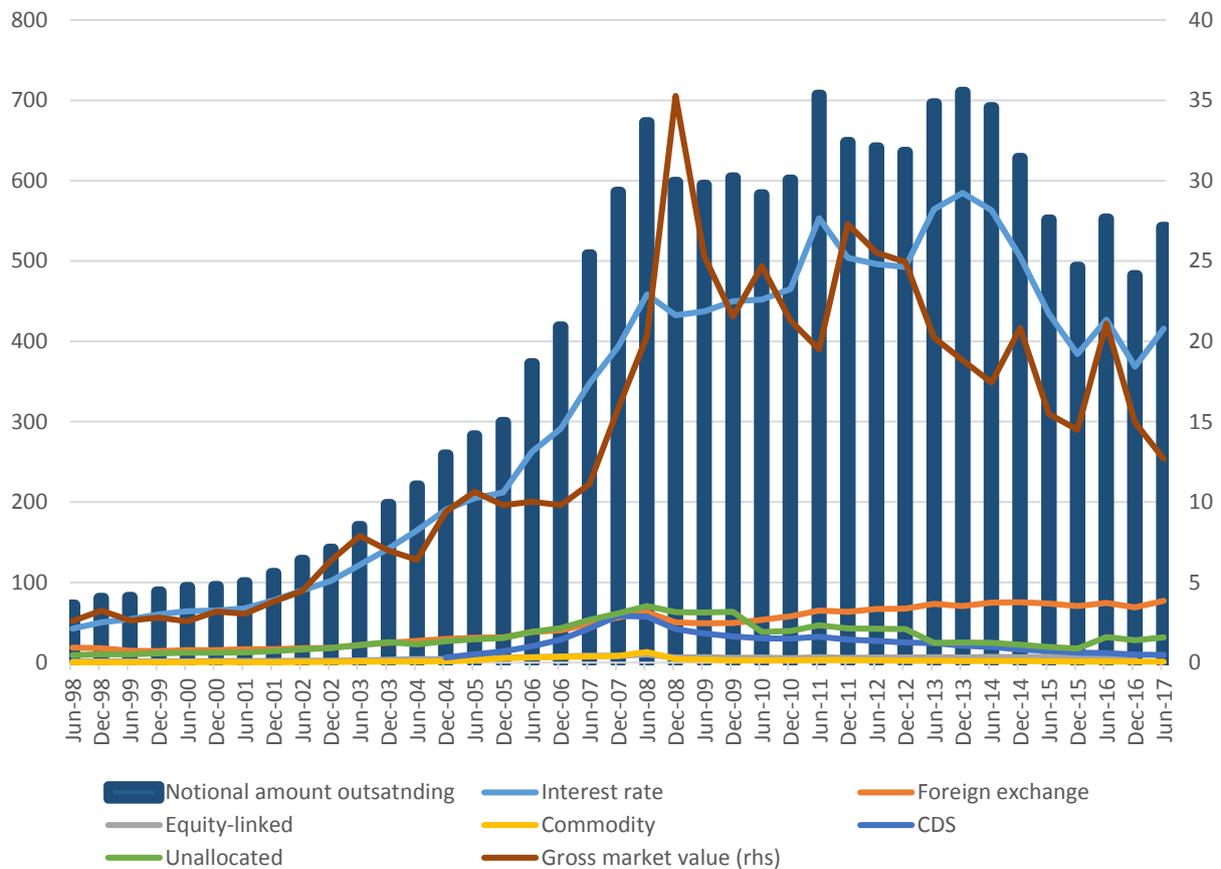
Sources: LCH.Clearnet, CME Group, Eurex Clearing and BME Clearing Newsletter IRS.

2. Setting the scene

Since 1998 the OTC derivatives market evolved into the biggest global market, in terms of size (Figure 1). The market showed an impressive growth rate until the first half of 2008, when it reached its first peak with more than \$672 trillion worth of notional amounts for outstanding contracts.¹ The market grew between June 1998 and June 2008 by 832%, at an average annual rate of 12%. However, due to the financial crisis and the consequently reduced activity of financial institutions, the market dropped to \$598 trillion in the second half of 2008. For the next three years the market fluctuated at around that value (i.e. \$596 trillion) before reaching its second peak of \$707 trillion (June 2011) and further expanded to reach an all-time high of \$710 trillion at end-2013. Since then, and until December 2015, the market plunged by 31% – largely due to exchange rate movements – before bouncing back temporarily (\$553 trillion at mid-2016). The latest figures report the notional amount at \$542 trillion.

¹ The notional amount of outstanding OTC derivatives contracts determines contractual payments and is an indicator of activity in OTC derivatives markets.

Figure 1. Notional value outstanding of OTC derivatives (\$ trillion)



Notes: Amounts outstanding are reported in gross notional terms. The notional amount outstanding, as well as all products (i.e. interest rate, foreign exchange, equity-linked, commodity, CDS, unallocated) is displayed on the left-hand axis. Only the gross market value is displayed on the right-hand axis.

Source: Author’s calculation based on data from BIS and the 2017 ECMI Statistical Package.

Importantly, a major factor of the observed decline in recent years has been trade compression and the elimination of redundant contracts. In particular, a number of jurisdictions have taken steps to encourage a more widespread use of other risk-mitigation measures for non-centrally cleared derivatives (NCCDs), such as trade compression and portfolio reconciliation. 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, while maintaining the same risk profile. (BIS, 2017; FSB, 2017).²

On the other hand, the gross market value³ soared by 73% to \$35 trillion from June to December 2008. The increased risk as a result of the global financial crisis and the consequent impact on liquidity and market value contributed to this increase (Valiante, 2010). In the first half of 2009, however, the gross market value declined dramatically by 28% and fluctuated downwards for the next two years before increasing to \$27.3 trillion in December 2011. This was the largest rise since the second half of 2008

² Such compression reduces capital charges and trading costs by shrinking notional amounts outstanding, while leaving net exposures unchanged (BIS, 2015).

³ 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.

and driven mainly by an increase in the market value of interest rate contracts. Since then, the gross market value fluctuated downwards before reaching a ten-year low of \$12.7 trillion at mid-2017.

IRD are, by far, the OTC derivatives market's largest product, and have become an integral part of the derivatives market.⁴ These derivatives contracts, which typically exchange – or swap – fixed-rate interest payments for floating-rate interest payments, are an essential tool for investors who use them to hedge, speculate, and manage risk. Numerous varieties of OTC IRD have been developed to meet specific needs in terms of variations in the types of rates, maturities and currencies exchanged or the presence of contingent agreements (options). Some of the most common types are: basis swap, caps/floors, cross-currency swap, forward rate agreements (FRAs), inflation swap, overnight indexed swap (OIS), single-currency interest rate swap (IRS) and swaption.⁵

3. Role of the UK in derivatives markets

After the financial crisis, global regulators required a large share of the over-the-counter derivatives markets to be cleared centrally. London has been a beneficiary because most OTC business is traded by banks based in London and underpinned by English commercial law, which is generally preferred to standards on the continent.⁶ The dominant position of London in clearing is due to the local ecosystem of infrastructures and actors. In particular, it is because trade execution, trade capture, trade enrichment and validation, trade confirmation, settlement, collateral management IT companies and infrastructures in the very basic sense (fibre optic cables) that the UK has built an advantage in clearing.⁷

3.1 Where is the UK placed?

London is home to three clearinghouses (CCPs) – the London Clearing House (LCH Ltd), the Intercontinental Exchange (ICE Futures Europe)⁸ and the London Metal Exchange (LMEclear).⁹ Using

⁴ An interest rate swap is an agreement (contract) between two parties to exchange one stream of interest payments for another over a set period of time. Derivatives can either be traded on organised exchanges (exchange-traded derivatives) or negotiated privately between two parties (OTC). Privately negotiated trades (OTC) allow parties to customise features of the derivative to serve the specific needs of the users. OTC trading can be conducted through voice execution or an electronic trading platform, with dealers typically making the market for customers. The most commonly traded and most liquid interest rate swaps are known as 'vanilla' swaps, which exchange fixed-rate payments for floating-rate payments based on LIBOR. Although there are other types of interest rate swaps, plain vanilla swaps comprise the vast majority of the market.

⁵ Within product types, OTC IRD can be customised to suit the needs of customers. Among common contract features that can be customised are: tenor forward start, floating rate reset dates, payment frequency, break dates, etc.

⁶ OTC IRD was cleared in London long before the financial crisis.

⁷ More generally, London has developed over the last quarter century as the wholesale financial centre for the EU, in the same way that Wall Street functions for the US, or Hong Kong for China (Lannoo, 2017). Thus, a quick move of services (i.e. clearing) from the UK to Europe would be costly and require infrastructure spending.

⁸ However, ICE Futures Europe is not authorised by ESMA to clear OTC IRD, but only those IRD taking place on a regulated market.

⁹ The fourth CCP, up until recently, was the CME Clearing Europe Limited (CMECE). However, CME Group has decided to close down – as of 12 October 2017 – its London-based derivatives clearing house, as customers prefer direct access to the bigger pool of CME liquidity that is in the US (Chicago). See <http://www.cmegroup.com/company/closing-cme-europe-and-cme-clearing-europe.html>.

London as the epicentre of European trading in OTC IRD, the UK accounted for 82% of the EU28 market in 2016 in terms of daily average turnover. This is confirmed by the steady increase in the share of the UK market since 2001, when the UK represented less than half (47%) of the European market (Table 2 and Figure 2).

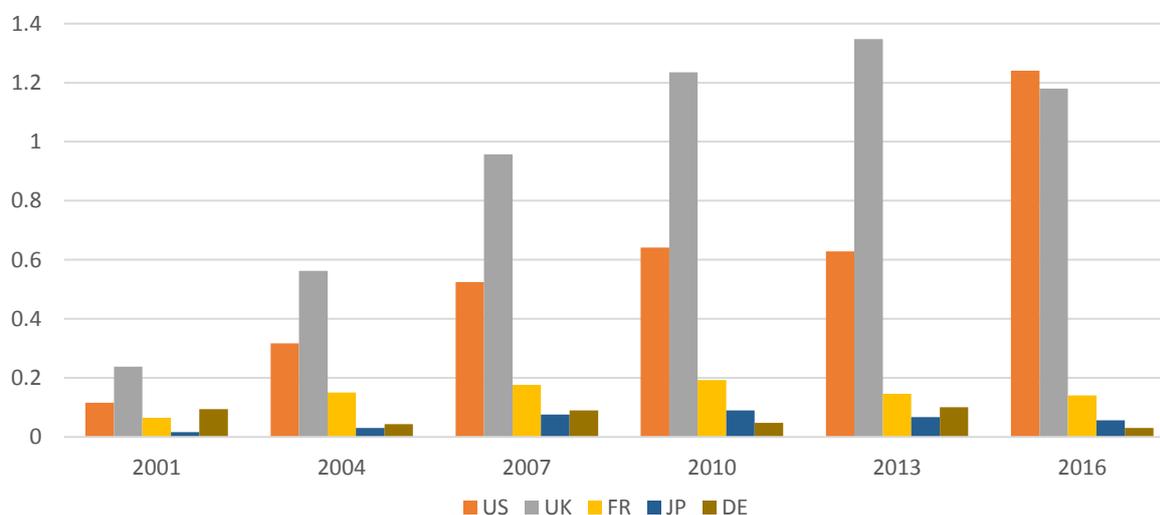
Table 2. Share of UK turnover of OTC interest rate derivatives

Year	% of UK on EU28 market	% of UK on global market	% of US on global market
2001	47.3	35.2	17.2
2004	61.8	42.3	23.8
2007	70.1	44.0	24.2
2010	74.5	46.6	24.2
2013	76.5	49.9	23.2
2016	81.7	38.8	40.8

Source: Author's calculations based on BIS Triennial OTC derivatives statistics.

From a global perspective, the share of OTC IRD traded in the UK went down from 50% to 39% between 2013 and 2016. At the same time, while the US accounted for 22% on average of the global market from 2001 to 2013, it has doubled in recent years, reaching 41% in 2016. Many factors can explain these opposing trends, such as the decision of some jurisdictions to force local counterparties to keep trades domestic (e.g. Japan), the negative interest rates in Europe as a result of the ECB's monetary policy, and the market infrastructure in the US, which is much more beneficial to IRD growth.

Figure 2. Turnover of OTC interest rate derivatives, by country (\$ trillion)



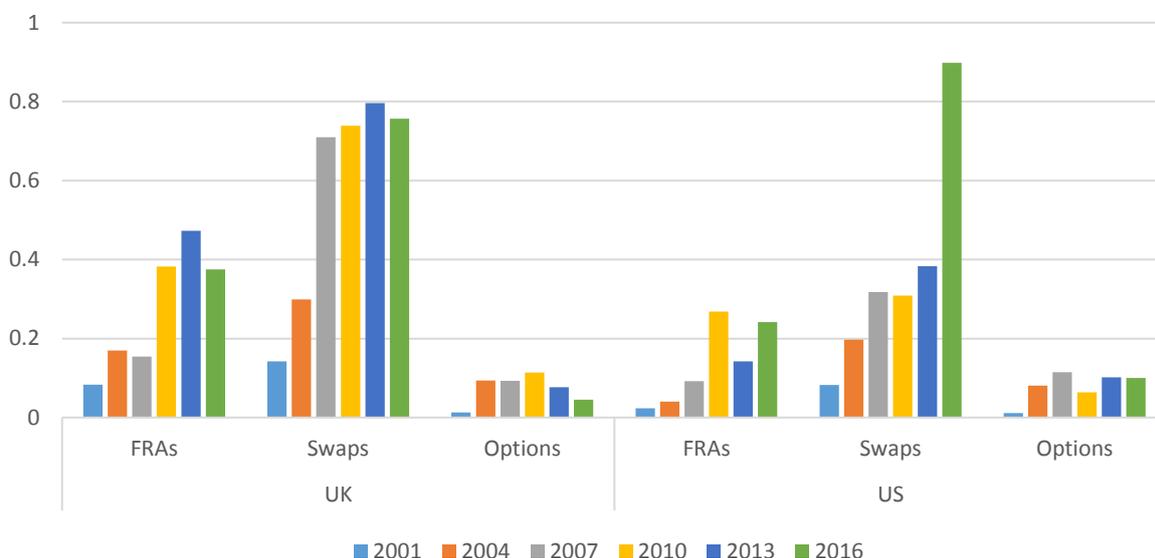
Notes: Net turnover (net-gross basis), April 2001-2016 daily averages. Adjusted for local inter-dealer double-counting.

Source: Author's compilation based on data from BIS and the 2017 ECMI Statistical Package.

Average daily turnover in forward rate agreements (FRAs) in the UK decreased by 21% to \$375 billion from 2013 to 2016, while over the same period US average daily turnover rose by 70%, from \$142 billion to \$242 billion (Figure 3). Regarding interest rate swaps, the daily turnover in the UK decreased by 5% to \$757 billion per day and comprised 36% of the global swaps market in April 2016 compared to 50% in April 2013. Meanwhile, the turnover from swaps in the US more than doubled (134%) over the last three years, reaching a record high of \$898 billion per day in 2016 and covering 42% of the

global swaps market. Turnover in interest rate options also declined for the UK by 41% to \$45 billion, while for the US it remained stable at \$100 billion.

Figure 3. Turnover of OTC interest rate derivatives in UK and US, by instrument (\$ trillion)



Notes: Net turnover (net-gross basis), April 2001-2016 daily averages. Adjusted for local inter-dealer double-counting.

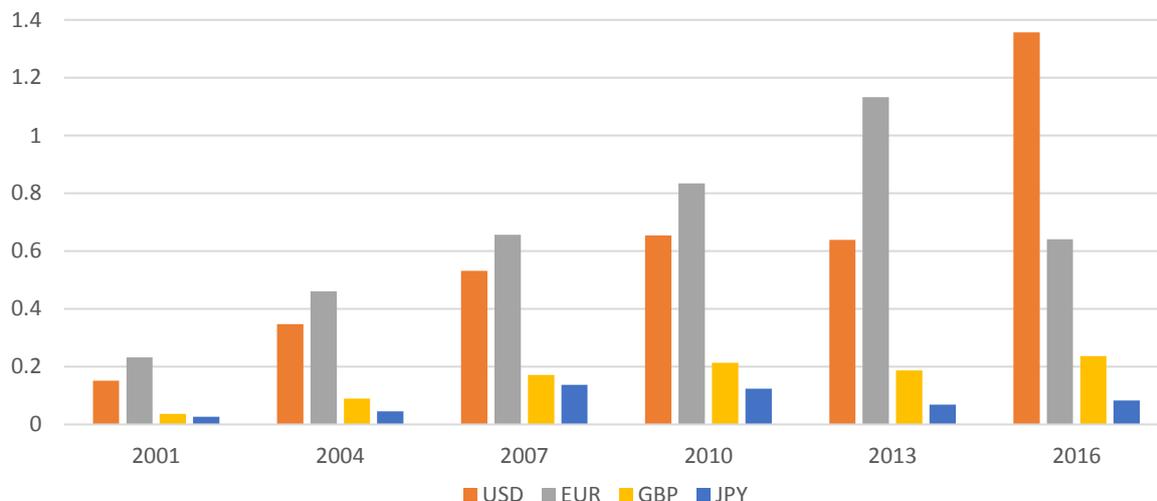
Source: Author's compilation based on data from BIS and the 2017 ECMI Statistical Package.

3.2 Euro-denominated derivatives

Euro-denominated contracts have historically been the most actively traded segment of global turnover. However, in 2016 US dollar-denominated contracts overtook euro instruments to become the most actively traded OTC IRD. In particular, turnover from OTC derivatives denominated in euro fell in 2016 by 43%, down from \$1.1 trillion in 2013 to \$641 billion in 2016 (Figure 4). While euro-denominated trading represented 49% of the global market in 2013, it represented only 24% in 2016. By contrast, turnover attributable to the US dollar doubled from \$639 billion to \$1.3 trillion, between 2013 and 2016. Thus, the share of US dollar-denominated trading on the global market grew from 28% to 51%.¹⁰

¹⁰ These movements are largely driven by the clearing of swaps. Euro-denominated swaps trading represented 16.6% of the global OTC IRD market in 2016, while US dollar-denominated swaps trading represented 33.6% of the global OTC IRD market.

Figure 4. Turnover of OTC interest rate derivatives, by currency (\$ trillion)



Notes: Net turnover (net-net basis), April 2001-2016 daily averages. Adjusted for local and cross-border inter-dealer double-counting.

Source: Author's compilation based on data from BIS and the 2017 ECMI Statistical Package.

The fall observed in euro-denominated OTC activity countered the sharp rise in US dollar-denominated OTC derivatives. Regulatory changes, as part of the broader financial reform agenda adopted by the G20 countries, are the main drivers behind these movements. The G20 reforms aim to increase transparency and limit financial stability risks in OTC derivatives markets. Thus, several elements of this agenda have been put into practice in recent years, such as the move to central clearing, and to exchange-based or electronic trading of standardised OTC derivatives.

Additionally, the monetary policies of the ECB and the Federal Reserve Bank (FED) have also played an important role, particularly with respect to differences in market trends across currency segments. Low interest rates within the euro market have been a factor in dampening the demand for euro-denominated swaps, while the rise in turnover in short-term swaps in the US is consistent with expectations of increasing short-term rates (Ehlers and Eren, 2016).¹¹

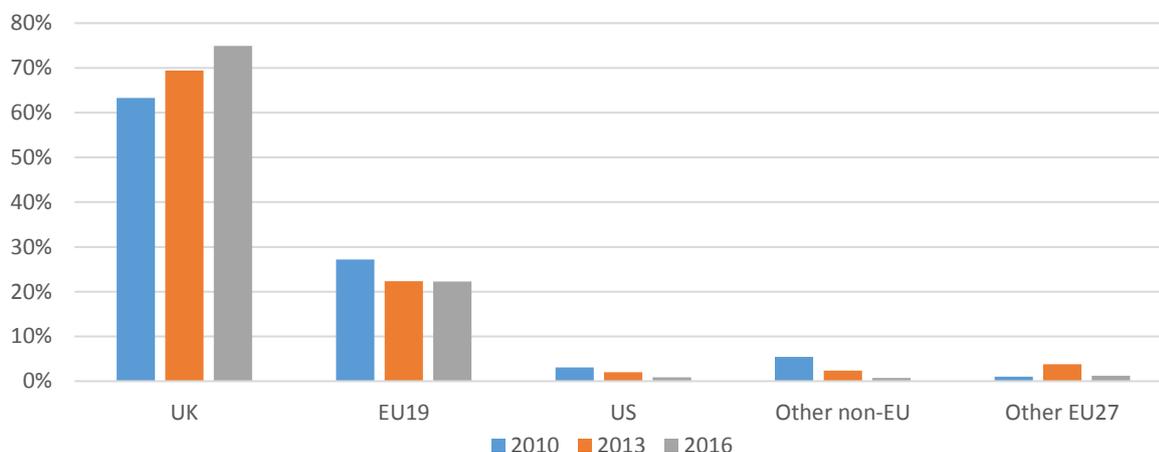
Another reason for this shift is the market infrastructure in the US, which is much more beneficial to IRD growth. For example, the clearing mandate for all market participants under Dodd-Frank was introduced by the Commodity Futures Trading Commission (CFTC) in March 2013, while by the EC in August 2015.¹² Moreover, the trading obligation on swap execution facilities (SEF) – the first SEF launched in October 2013 – promotes more liquidity and transparency in the market, made the market more interesting for other non-typical users of IRD (i.e. Citadel became the first non-bank direct

¹¹ Using granular data from the Depository Trust & Clearing Corporation (DTCC), the authors show that most of the increase in the outstanding amount of US dollar-denominated contracts was due to trading activity in short-term instruments, while the outstanding amount of euro-denominated contracts declined for all maturities. This was due to the divergent stance on monetary policies between the FED and the ECB: a heightened probability of policy rate increases in the US and no anticipated change in the euro area. The reduced hedging activity by government-sponsored enterprises (GSEs) was a key factor, according to the authors, as the FED took over a large part of their mortgage portfolios.

¹² See <http://www.cftc.gov/PressRoom/PressReleases/pr6529-13>, and http://europa.eu/rapid/press-release_IP-15-5459_en.htm.

member for IRD of LCH in US).¹³ This, in combination with the overall infrastructure of the rates market – free access to the bond and repo markets for non-bank participants – made the total rates market much more interesting for new parties to enter. Thus, the trading activity grew.

Figure 5. Share of euro-denominated OTC interest rate derivatives turnover, by country (%)

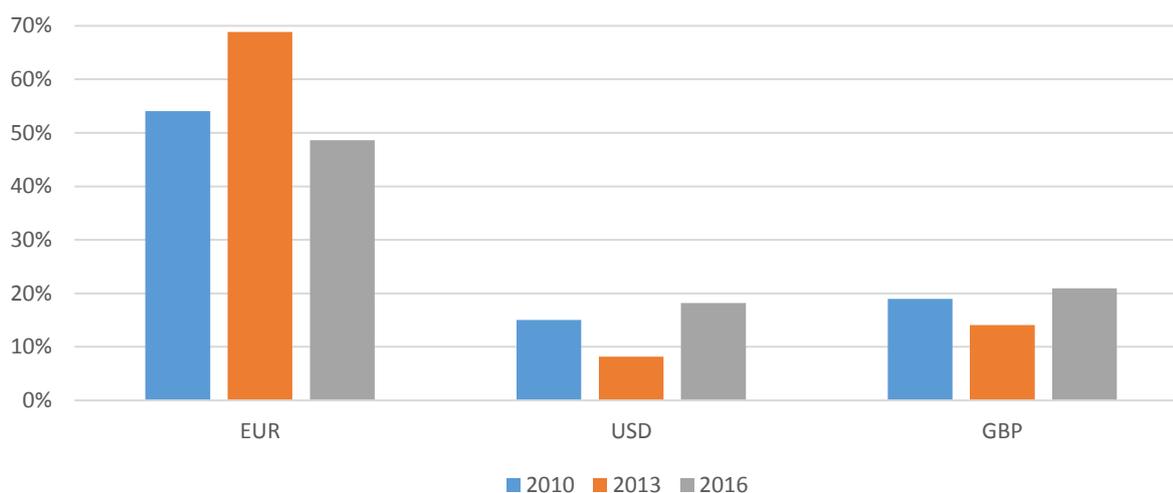


Notes: Net turnover (net-gross basis), April 2010-2016 daily averages. Adjusted for local inter-dealer double-counting.

Source: Author's elaboration based on data from BIS and 2017 ECMI Statistical Package.

Despite the global drop in the average daily turnover of euro-denominated OTC IRD between 2013 and 2016, the UK increased its share in the market from 69% to 75% over that period, while the share of turnover from sales desks located in EU19 remained stable (Figure 5). However, a more careful examination of the UK market shows that the proportion of euro contracts decreased from 69% to 49% (Figure 6). On the other hand, from 2013 to 2016 the share of turnover attributable to sterling increased from 14% to 21%, and that to the US dollar from 8% to 18%.

Figure 6. Share of OTC interest rate derivatives turnover in the UK, by currency (%)



Notes: Net-gross basis, April 2010-2016 daily averages. Adjusted for local inter-dealer double-counting.

Source: Author's compilation based on data from BIS and the 2017 ECMI Statistical Package.

¹³ Since the mandatory execution requirements for swap trades, SEFs have served to move a large share of OTC swap trading to electronic platforms (Ehlers and Eren, 2016).

3.3 Central clearing

The role of central counterparties or central clearinghouses on the OTC derivatives market is very important.¹⁴ Trading participants whose transactions are cleared by a CCP are essentially exchanging the credit risk of their original counterparties for the credit risk of the CCP.¹⁵ This implies that the CCP must maintain financial resources and risk management policies and procedures sufficient to preserve the confidence of trading counterparties in the CCP (Culp, 2010). Moreover, as most CCPs are shareholder-owned entities whose equity investors also seek to avoid losses, they have some of the most conservative risk management practices of any participants in the market.¹⁶

While the Bank for International Settlements (BIS) does not report data on central clearing before June 2016, the share of trades that are cleared with other financial institutions – this includes CCPs among other financial institutions – can be used to approximate the pace of the shift in activity towards CCPs.¹⁷ The figures for counterparties are based on the location of the primary intermediaries that have registered the derivatives contracts with their counterparties and do not necessarily coincide with the clearing location.

¹⁴ Derivatives participants have historically managed their credit exposure through the use of master netting agreements, collateral requirements, periodic cash resettlement, and other forms of bilateral credit enhancements. Beginning in the late 1990s, several major derivatives clearinghouse organisations began to provide clearing and settlement services for OTC derivatives to help market participants manage their credit exposures and protect them from both settlement risk and replacement cost losses arising from a counterparty default. The OTC-cleared derivatives are negotiated privately and off-exchange and rebooked into a clearinghouse on a post-trade basis. The clearinghouse then acts as a central counterparty (CCP) to the transactions (Valiante, 2010). However, it is important to clarify that clearing and settlement are two different things. Clearing is the process by which payment obligations between two or more firms are computed (and often netted), and settlement (which takes place outside the CCP) is the process by which those obligations are discharged. The means by which payments on OTC derivatives are cleared and settled affect how the credit risk borne by counterparties in the transaction is managed. While OTC derivatives are not traded on a traditional exchange, the majority is nowadays traded electronically through platforms directly connected to the CCP. Hence, they do not really need to be rebooked.

¹⁵ The counterparty becomes the CCP, but a) there is multilateral netting, and b) the member pays for its risk (margins).

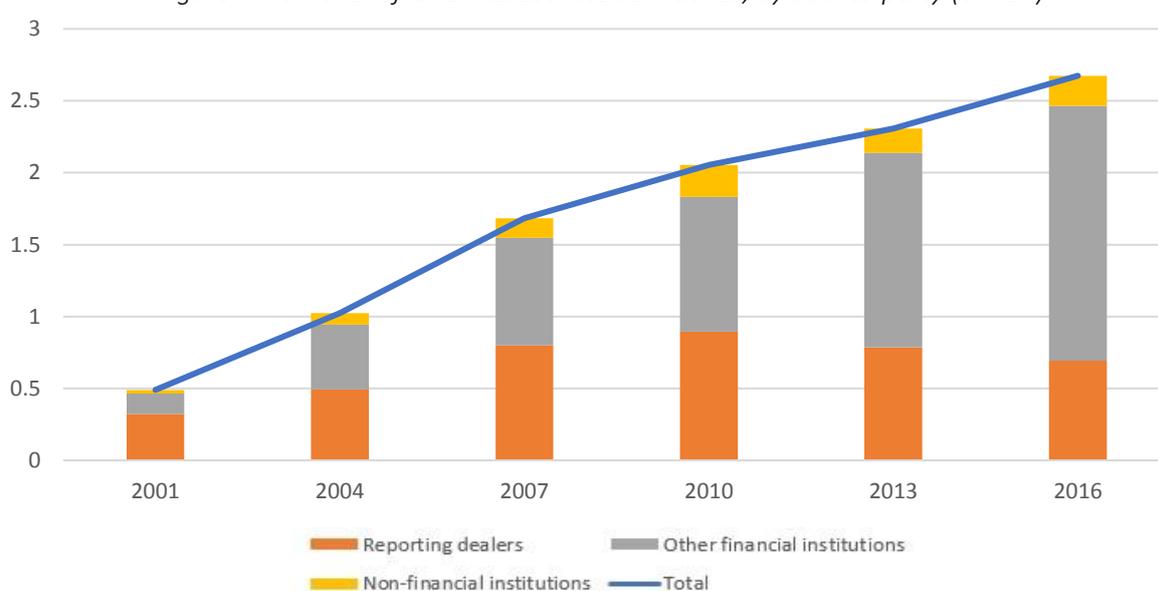
¹⁶ But this should not be interpreted to mean that clearing is a shareholder-driven service and that CCPs are under-collateralised. EMIR includes mechanisms to appropriately incentivise CCP operators to perform prudent and efficient risk management and resource calibration. Derivatives CCPs typically rely on a multi-tiered system of risk controls, policies, and procedures designed to manage the credit exposure of the CCP (and its participating members) at a reasonable cost.

However, questions can be raised about how conservative the risk management policy of a CCP is, given the fact that CCPs are owned by their members whose optimal goal is to generate revenues. For example, a CCP could invest its excess cash overnight bilaterally in repos or deposits at a commercial bank, which may be a shareholder of that CCP. If so, how it can be ensured that excess cash is safely invested overnight? One solution is to require the CCP to post that cash only to the relevant central bank (e.g. for euros to ECB), which implies that the CCP will have a bank status and fall under the supervision of the ECB. This is an argument in favour of moving euro clearing activity to continental Europe. Alternatively, CCPs could be granted access to Central Bank accounts (ECB, 2011; Eurex, 2017).

¹⁷ For the first time, in 2016 BIS captures comprehensive data on positions with CCPs. Whereas in previous years details about financial counterparties were collected only for CDS, at end-June 2016 CCPs were separately identified for all types of OTC derivatives. Previously, CCPs were grouped indistinguishably with all financial institutions other than dealers.

For OTC IRD, the share of trades that are cleared with other financial institutions has been climbing steadily since 2001, from 29% of daily average turnover to 66% in 2016 (Figure 7). On the other hand, the inter-dealer segment declined in importance since its peak in 2010, from 44% to 26% in 2016. The picture is similar when looking at notional amounts, which provide a measure of the aggregate amount of risk that dealers transfer from other counterparties to CCPs.¹⁸

Figure 7. Turnover of OTC interest rate derivatives, by counterparty (trillion)



Notes: Net-net basis, April 2001-2016 daily averages. Adjusted for local and cross-border inter-dealer double-counting. The category “Other financial institutions” includes financial institutions that are not reporting dealers, such as central clearing counterparties and swap execution facilities (electronic trading platforms) as well as smaller commercial banks, securities houses, mutual funds, pension funds, hedge funds, money market funds, building societies, central banks and residual differences.

Source: Author’s compilation based on data from BIS and the 2017 ECMI Statistical Package.

By looking at the location of the counterparty and the share of trades cleared through CCPs, it is evident that over the years the US has overtaken the UK to become the largest centre (Figure 8). In particular, the share of daily average trading activity booked against a US-based CCP rose from 10% to 27% between 2010 and 2016, driven mainly by the increased trading of US dollar instruments (as explained earlier). On the other hand, the share of OTC interest rate trades cleared through a UK-based CCP increased from 17% to 26% between 2010 and 2013, but fell thereafter to 21% in 2016 – owing in part to the weakness of euro activity, for which the UK is the largest trading centre.

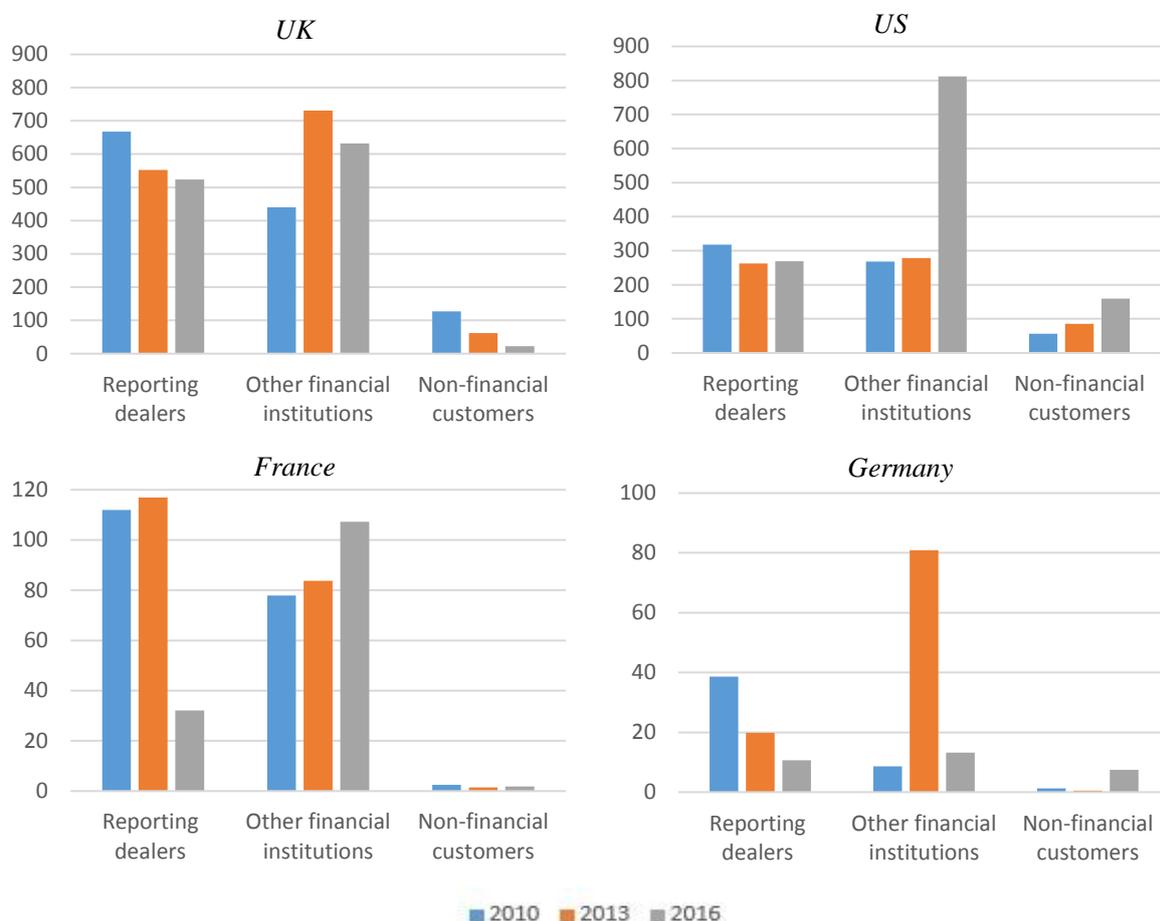
Within the euro area, three locations emerge as the most active, but their volumes pale in comparison to the US and the UK. Among them, only in France did the turnover of cleared derivatives through “other financial institutions” grow from €77 trillion in 2010 to €107 trillion in 2016.¹⁹ This represented

¹⁸ The share of outstanding positions with other financial institutions has increased at a steady pace since 2007, from 49% of notional principal in 2007 to 86% in 2016, while the inter-dealer segment declined markedly in importance over this period, from 40% to 11%.

¹⁹ The French CCP (i.e. LCH SA) acts as the clearing house for regulated markets (RM) in France, the Netherlands, Belgium and Portugal and for listed derivatives markets, repos traded on trading platforms located in France, the UK and Italy, and credit default swaps (CDS).¹⁹ In other words, LCH SA does not clear OTC IRD.

only 3.5% of global turnover. The proportion of positions cleared by a CCP located in either Germany or the Netherlands represented around 0.5% of the market.

Figure 8. Turnover of OTC interest rate derivatives by country of counterparty (\$ trillion)



Notes: Net-gross basis, April 2010-2016 daily averages. Adjusted for local inter-dealer double-counting. This corresponds to the total on a 'net-net' basis plus local reporting dealers. April 2010-16 daily averages. The category "Other financial institutions" includes financial institutions that are not reporting dealers, such as central clearing counterparties and swap execution facilities (electronic trading platforms) as well as smaller commercial banks, securities houses, mutual funds, pension funds, hedge funds, money market funds, building societies, central banks and residual differences.

Source: Author's elaboration based on data from BIS and the 2017 ECMI Statistical Package.

4. Is relocation the right solution?

The financial crisis highlighted two deficiencies within the OTC derivatives market, with major implications for financial stability. The first deficiency was counterparty credit risk, while the second was transparency. To address these issues, in 2009 G20 leaders agreed the Pittsburgh Declaration²⁰, which stipulates that all standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms and cleared through central counterparties, by the end of 2012 at the latest. They also called for the use of non-centrally cleared contracts to be discouraged by making them

²⁰ See <http://www.g20.utoronto.ca/2009/2009communique0925.html>.

subject to higher capital requirements. Leaders also agreed that all OTC derivative contracts should be reported to trade repositories.

In response to the G20 agreement, the EU adopted the European Market Infrastructure Regulation (EMIR) in 2012.²¹ EMIR ensures that information on all EU derivative transactions is reported to a recognised trade repository (i.e. reporting obligation). This data is made accessible to supervisory authorities, including the European Securities and Markets Authority (ESMA) and the National Competent Authorities (NCAs), to give policymakers and supervisors a clear overview of activity in financial markets. The second central requirement is for standard derivative contracts to be cleared through CCPs (i.e. clearing obligation) and establishes stringent organisational, business conduct and prudential requirements for CCPs. EMIR ensures that counterparties to an OTC derivatives contract exchange margins (i.e. collateral) for trades that are not cleared through CCPs, making it more expensive.

The analysis of this report highlighted the importance of the UK as a financial centre for OTC IRD contracts denominated in euro. More than a year and a half since the Brexit referendum of 23 June 2016, the future of the UK's dominance as a trading hub in the eurozone and worldwide is uncertain. The decision to leave the EU prompted a renewed political tussle over London's status as a clearing hub and is expected to change the EU's financial landscape in terms of central clearing.²² The large share of euros being traded in a non-euro area country raises questions about the supervision and sustainability of liquidity provision, particularly if there is financial turmoil.

Based on these developments, in June 2017 the Commission adopted a package of proposals for a pan-European approach to the supervision of EU CCPs, as well as for closer cooperation between supervisory authorities and central banks.²³ To support that, a newly created supervisory mechanism called 'CCP Executive Session' will be established within ESMA. This Session will be responsible for ensuring a more coherent and consistent supervision of EU CCPs and a more robust supervision of CCPs in third countries.

To achieve that, the proposal introduces a new 'two tier' system for classifying third-country CCPs. In particular, it is proposed that ESMA has the power to distinguish between CCPs that are, or are likely to become, systemically important and those that are not. Third-country CCPs of the latter category are referred to as 'tier 1' and will continue to be subject to the current arrangements and conditions for third-country equivalence. On the other hand, third-country CCPs that are deemed to be or are likely to become systemically important are called 'tier 2', and the decision on whether a CCP is tier 2 or not will be based on four objective criteria.²⁴

²¹ [Regulation \(EU\) No 648/2012](#).

²² Some openly expressed the view that London should be stripped of its role in clearing euro-denominated derivative trades in the wake of Brexit, while others took a more diplomatic line describing as a "challenge" the continuation of clearing and settlement of euro-denominated transactions outside the single currency area.

See <https://www.ft.com/content/e8e0c44a-3d89-11e6-9f2c-36b487ebd80a> & <https://www.ft.com/content/51a68c6e-e094-11e6-9645-c9357a75844a>.

²³ Proposal for amending Regulation (EU) No 1095/2010: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017PC0331>

²⁴ These criteria are: 1) the nature, size and complexity of the CCP's business, including the value in aggregate terms and in each Union currency of transactions cleared by the CCP, or the aggregate exposure of the CCP engaged in clearing activities to its counterparties; 2) the effect that the failure of or a disruption to the CCP would

Those tier 2 CCPs will be subject to strict requirements, such as: i) compliance with the necessary prudential requirements for EU-CCPs while taking into account third-country rules; ii) confirmation from the relevant EU central banks that the CCP complies with any additional requirements set by those central banks (e.g. the availability or type of collateral held in a CCP, segregation requirements, liquidity arrangements, etc.); iii) the agreement of a CCP to provide ESMA with all relevant information and to enable on-site inspections, as well as the necessary safeguards confirming that such arrangements are valid in the third country.

Moreover, depending on the significance of the third-country CCP's activities for the EU and member states' financial stability, a limited number of CCPs may be of such systemic importance that the requirements are deemed insufficient to mitigate the potential risks. Thus, in such instances, the Commission, upon request by ESMA and in agreement with the relevant central bank can decide that a CCP will only be able to provide services in the Union if it establishes itself in the EU. In other words, the Commission, as a last resort, may require systemically important CCPs to be located inside the bloc.

The natural question, therefore, is what will happen to the UK-based CCPs? On the one hand, a relocation policy will allow for full supervision of third-country CCPs and adequately mitigate any associated systemic risk. However, there are significant costs and downsides to such an action, as unintended consequences for financial stability and adverse effects on operations and systemic risk in the EU may arise.

4.1 Fragmentation cost

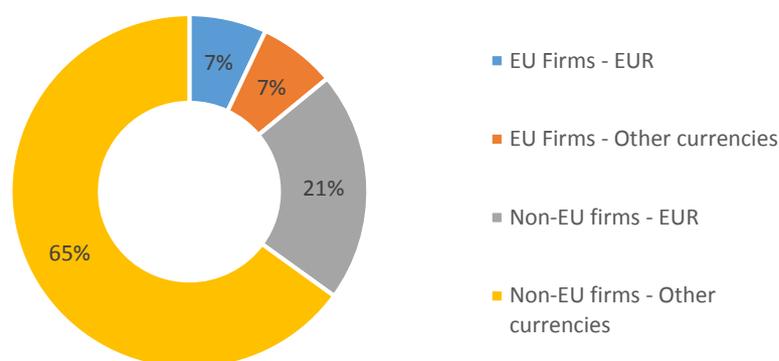
Forced relocation of euro-denominated cleared derivatives would be a disruptive and expensive approach to overseeing third-country CCPs. It would also give rise to the fragmentation of market liquidity and increase costs for end users.²⁵ An impact analysis by SwapClear (a service of LCH.Clearnet), which clears the vast majority of the centrally cleared euro-denominated IRD,²⁶ shows that a denial of recognition/location policy covering the full portfolio cleared by EU institutions would create a restricted captive EU-based liquidity pool representing 14% of SwapClear activities (Figure 9). This would create an offshore (third country) market (86%) that would be more liquid and efficient than the nascent and fragmented onshore EU market. Having two markets for the same asset (i.e. one for EU participants and another for non-EU participants) would distort competition and increase systemic risk both in the EU and across the global markets (AFME, 2017).

have on financial markets, financial institutions, or the broader financial system, or on the financial stability of the Union or for one or more of its member states; 3) the CCP's clearing membership structure; and 4) the CCP's relationship, interdependencies, or other interactions with other financial market infrastructures, other financial institutions and the broader financial system. See amendments of Article 25(2a) of EMIR (No 648/2012) at Commission's Proposal of 13 June (EC, 2017).

²⁵ Additionally, there would also be fragmentation between euro-denominated derivatives cleared in the EU, and non-euro denominated derivatives (which are likely to continue being cleared outside the EU, as they currently are). This is expected to have an adverse effect on systemic risk, for example by negatively impacting a CCP's ability to successfully port or auction client positions of a defaulting clearing member or by reducing access to alternative locations for clearing (FIA, 2017).

²⁶ On a daily basis SwapClear clears about \$3.7 trillion in interest-rate derivatives, with \$2 trillion in US dollar-denominated contracts, and €648 billion in euro-denominated contracts as the second largest component (figures are of cob 13 December 2017).

Figure 9. Size of SwapClear's portfolio, by firm and currency (%)



Notes: Figures relating to the EU should be interpreted as EU27 (i.e. excluding the UK).

Source: LCH.Clearnet.

The spiral effect of the resulting captive market would be an increase in the underlying costs of clearing for EU firms (subject to EMIR), as they would be required to clear OTC derivatives contracts – subject to EMIR clearing obligations – via a less liquid, and consequently with fewer netting opportunities, EU CCP. However, non-EU firms not mandated to clear under EMIR would have access to a more liquid market. But the possibility that, due to operational and margin efficiencies, non-EU firms may decide to move their portfolios to the EU cannot be discounted. In other words, if EU firms are obliged to clear euro-denominated derivatives in the EU, it does not automatically follow that non-EU firms will keep their portfolios in the UK.

Furthermore, the cost differential between such onshore and offshore markets would incentivise EU27 banks (servicing EU and non-EU firms) that are subject to EMIR and that clear on EU CCPs to pass on additional charges to their clients.²⁷ LSEG estimated that forcing EU firms to use EU CCPs for all interest rates derivatives would create an additional cost of approximately \$25 billion per annum for CCPs EU members and clients (LSEG, 2017). Over a period of five years, this would represent a cumulative cost increase of \$125 billion.²⁸

²⁷ Whilst clearing on more liquid third country CCPs, non-EU banks servicing non-EU clients could face lower underlying costs to perform similar clearing activities.

²⁸ It is very important to mention here the exemption that pension funds have to comply with requirements to trade derivatives through CCPs until 2020. In continental Europe the major pension funds (e.g. PGGM, APG, PKA, ATP, MN, etc.) hold large IRD portfolios with long durations, which are currently not cleared or barely cleared (e.g. in cases where the pricing differential is substantial). It has been estimated that "...the total cash collateral needed by the counterparts of European pension funds to support a 100bp (1%) move in interest rates would amount to €205 billion to €255 billion, increasing to €420 billion in more stressed scenarios" (EC, 2014). This is why EU policymakers agreed that European pension funds should not be required to post cash variation margins (VM) given the negative impact on their beneficiaries. Instead, it would be the counterparties of the pension funds that need to pay the VM call. But this, in combination with other payment failures could trigger the default of clearing members, resulting in the CCP having to pay (all or part of) these cash amounts and activate the waterfall procedure.

Once the margin of the defaulted members is exhausted, the default fund (DF) contribution of the CCP will be activated. If the DF contribution of the CCP is in a given currency, contributions have to be received in that currency. For example, if the DF contribution is in GBP, even members who clear only EUR instruments, have to pay DF contributions in GBP. This can be a real challenge when having to pay out EUR amounts.

While a relocation policy is expected to fragment the market and increase costs for EU firms, the magnitude of such costs and the duration of their persistence is difficult to estimate. As long as the underlying assumptions are questionable and ambiguous, the figures should be treated and interpreted cautiously. For example, the additional cost of \$25 billion is based on the assumption of a 1 basis point increase of the bid-ask spread for EU firms (as measured by PV01) or that all counterparties are affected by the basis between Eurex and SwapClear (EUR LCH/EUX Basis Swap) the same way. This represents a rather considerable increase and does not appear to be realistic given that the five-year spread in 31 January 2018 was 0.55 bps (down from 1 bps in 28 April 2017).²⁹

In addition, the LCH study explains that the main reason for this additional cost is the fragmented on-shore (EU) liquidity pool of 14%, which will create reduced netting and compression opportunities for EU firms. However, even in such a small and polarised EU-based liquidity pool, high netting efficiencies can arise as long as EU CCPs have a balanced end-customer structure that allows traders to keep their portfolio as risk neutral and cost efficient as possible. It is also expected that in coming years a considerable portion of business volume will migrate from non-EU firms to an EU CCP, thus resulting in greater liquidity. This implies that fragmentation costs will be temporary, not permanent.

4.2 Initial margin cost

Another important effect of the relocation policy would be on margins requirements of both EU and non-EU firms.³⁰ Portfolio margining today applies to EU and non-EU clearing members' portfolios containing euro and non-euro denominated transactions.³¹ A forced relocation would impose splitting: i) the portfolio of EU CCPs into euro and a non-euro set of transactions, and ii) the portfolio of non-EU firms for their trades in euro with EU CCPs. This would increase the risk across euro and non-euro contracts and would also increase the financial requirements for clearing members (i.e. margin requirements, default fund contributions and capital requirements). At the same time, it would hamper the benefits of clearing services such as capital and margins efficiencies.

From the market participants' perspective, the efficiency of CCPs increases as the initial margin demanded by the CCPs falls, and as the capital requirements for clearing members fall. Benefits arise because it is possible to offset matched trades (i.e. netting), to combine trades with an identical or comparable risk profile into a single position (compression), or to offset matched trades in different

As a systemically important market participant, the CCP can potentially count on intervention from the relevant central bank. However, it is not clear whether the ECB will be willing to lend EUR such CCP in a stress scenario post-Brexit if the CCP does not fall directly under the supervision of the ECB. In such a case, existing swap agreements between central banks can be activated, meaning for example that the Bank of England (BoE) obtains sufficient EUR or USD deposits to accurately intervene where required.

²⁹ The study itself notes that: "... it is not expected that the price of every euro swap done by every EU firm in the future would move by a basis point against them." The estimate offers: "... a sense of the scale of the wealth transfers/revenues/costs at stake". (LSEG, 2017)

³⁰ Margin is defined as the funds or securities that must be deposited by clearing members as collateral for a given position. Margining encompasses the entire process of measuring, calculating and administering the collateral that must be put up for coverage of open positions. The provision of collateral is intended to ensure that all financial commitments related to the open positions of a clearing member can be offset within a very short period. Members can satisfy margin requirements by depositing securities or cash. Variation margin (i.e. daily settlement of profits and losses) as well as premiums on traditional options and futures on options must be paid in cash.

³¹ When calculating margin, CCPs consider the joint risk of all the positions within a member's single portfolio containing both euro and non-euro transactions.

currencies and between exchange-traded and OTC derivatives at the portfolio level (cross-margining).³² Having said that, the benefits tend to become more pronounced the larger the customer base and the broader the product portfolio (Brühl, 2017).

In general, the initial margin tends to fall when there are better risk-netting and cross-margining effects at the portfolio level of the respective CCP. But a relocation policy can lead to lower risk-based netting effects if the receiving CCP offers a less diversified clearing portfolio. There will therefore be an increase in initial margin requirements, at least initially. The level of this increase can vary between €5 billion to \$77 billion depending on the data, estimation method or algorithmic model, and assumptions used.

A survey analysis of 12 banks, conducted by ISDA, reveals that a requirement for euro-denominated IRD to be cleared post-Brexit at an EU-based CCP would result in an overall initial margin increase of between 16% and 24% (ISDA, 2017a and 2017b). While a study by ClarusFT (2016) estimates that bifurcation of LCH portfolio into euro risk and non-euro risk would lead to an increase in initial margin requirements of \$77 billion, the Commission (EC, 2017b) – based on confidential and proprietary data – assesses the additional initial margin to be in the range of 8% to 12% (i.e. between €6.8 and €10 billion). Another study puts the initial margin need to be posted by banks at €30-40 billion (AFME, 2017).

Moreover, the movement of euro swaps to an EU27 CCP would also necessitate additional default fund contributions from clearing members. The EC (2017b) estimates this contribution to be in the range of €478 million to €705 million. By contrast, the AFME (2017) calculates the contribution to be €3-4 billion, and further highlights that this could also require banks to hold an additional €1 billion of equity capital, although the figure could be much higher if there are material losses in compression benefits.

Somewhere in the middle of these figures stands LCH's impact analysis. Under the relocation scenario, which will result in slipping the euro-denominated transactions away from the current integrated transactions, the initial margin would increase by around 29% (\$5 billion) for EU clearing members, and by 17% (\$6 billion) for non-EU members. Relocation would also impact clients, albeit in a less pronounced way, as EU clients' initial margins would increase by 9%.

Despite the large discrepancies between the studies presented in this section, all of them estimate an increase of the initial margin cost. How big the increase will be and for how long it will last is not clear, however. One thing that these studies fail to mention is the fact that margin efficiencies can generate positive effects in the form of initial margin and financing savings. These can be achieved by cross-product margining of euro-denominated exchange traded derivatives (ETDs) and OTC derivatives at an EU27 CCP, as well as by efficient collateral management. The margin and collateral efficiencies should exceed potential marginal, temporary cost increases caused by a wider bid-ask spread, and thus partly or fully compensate for the potential rise in initial margin requirements.

An important issue that needs clarification in these studies is that rising initial margin requirements should not be classified as costs. Initial margin represents a deposited collateral (that needs to be funded) more than an expense for market participants. Therefore, only the clearing member's funding costs and the additional equity capital (due to increased initial margin and default fund contributions)

³² For example, CCPs that clear IRD can gain efficiencies in margin requirements by offsetting risks arising from transactions in a given currency (e.g. euro) with risks arising from transactions in other currencies (e.g. US dollar or Japanese yen).

should be taken into account. For example, assuming an initial margin increase of about €6.8-€10 billion (as estimated by the Commission) at 50 basis points represents a real financing cost for the entire industry – in the range of €34 to €50 million per annum.

5. Conclusion

As the single biggest venue for OTC derivatives activity, the UK plays a central role in clearing, at both European and global level. Globally, UK-based CCPs account for almost half of all clearing of IRD (which account for 80% of all OTC transactions). For euro-denominated IRD the UK is an even larger centre, clearing 75% of all such transactions. However, in the event of Brexit, these CCPs will become third-country CCPs.

Exposure to third-country CCPs raises issues regarding the mandate of external supervision and the management of risks to the financial stability of the EU. This is particularly relevant in the context of the UK's decision to leave the EU, and the consequent removal of UK CCPs from the EU legal framework governing those CCPs. When the UK exits the EU, there will be a shift in the proportion of OTC derivatives transactions being cleared by third-country CCPs outside the EU's jurisdiction – exacerbating the concerns described in this report. The concentration of risk within third-country CCPs and with their members is a possible source of systemic risk that could challenge the EU authorities in safeguarding the financial stability of the EU (Lannoo, 2017).

The European Commission's concerns in relation to the regulation of tier 2 CCPs – and the possible risk that may represent to the financial stability of the Union – are very reasonable, as is the effort to ensure that third-country CCPs accessed by EU market participants are appropriately and proportionately supervised. Stronger and more effective cooperation between supervisors is of great importance, but there are aspects of the proposal that require further attention and consideration.

For example, there is a lack of clarity about how and when CCPs would be classified as systemically important, or of substantial systemic importance, and could be required to relocate to the EU in order to serve EU counterparties. This could create unnecessary uncertainty for the market and market participants. In addition, while the EC's proposal talks about a location policy at CCP level, would it not be less problematic to implement it at product/currency level? As this report has highlighted, the risk and cost of a relocation policy for euro-denominated IRD is a concern. However, if such a policy affected other currencies and products cleared by a non-EU CCP (systemically important or not), the risk and cost would be much higher, with multiple effects for EU27 clearing members and their clients.³³

Regarding the risk of too much concentration in one CCP (LCH Ltd), it should be noted that denying recognition to a non-EU CCP would render that CCP inaccessible to EU27 counterparties. Thus, it would restrict these counterparties to what is likely to be a smaller liquidity pool. Moreover, there would only be one CCP accessible to EU27 counterparties for certain products (i.e. Eurex for IRD) subject to the clearing mandate, meaning there would be no back-up CCP available. Therefore, by deconcentrating the risk from a non-EU CCP, there is the danger of concentrating risk to an EU-CCP. This splitting of liquidity pools could also lead to lower market liquidity in stressed periods.

³³ Location policies have been considered in jurisdictions other than the EU and have either been abandoned as a policy option (in Canada and Australia) or drastically scaled down (Japan) (ISDA, 2017b).

From a more global perspective, the EC's proposal and the envisaged 'last resort' forced relocation of systemically important CCPs leaves wide open the risk of reciprocal action by non-EU jurisdictions. Furthermore, the proposed two-year review process of equivalence decisions could potentially give the time to other jurisdictions to rethink their relationship with the EU.

The euro, the world's second most important reserve currency, should preserve its status. This means that euro-denominated derivatives should remain capable of being traded and cleared freely and openly, under rules that support a global level playing field and avoid geographical distortions to competition.

From an economic perspective, the question is about whether and to what extent a relocation of euro-denominated OTC derivatives clearing would lead to additional costs for market participants. While different views have been expressed on the actual cost of forced relocation, all estimates point to an increase in costs for users of derivatives markets (especially EU end users). What is needed is a proper impact assessment of the fragmentation, the risks and the costs of such a move, as well as whether continental European clearing houses have the ability, knowledge and facilities to clear the volumes now cleared by London.

Having said that, the transitional arrangement to be agreed between UK and any new joint UK-EU supervisory system, is very important.³⁴ The consequences of becoming a third country for OTC derivatives (for both the UK and the EU) should be further clarified and explained through impact assessment.³⁵ The severe disruption of trading in derivatives both between the UK and the EU should be avoided. What the status of uncleared contracts between the UK and EU 27 counterparties would be when the CCP is based in the UK is uncertain.³⁶ It is in both sides' economic interest to avoid a cliff edge, as it is unlikely that all EU-based counterparties would be able to switch to using clearinghouses based in the EU-27, given their more limited capacity and product offering compared to London.

It is clear that the use of a transitional mechanism alone does not solve the issues created by the UK leaving the single market. Once the UK becomes a third country (whether in March 2019 or at the end of a subsequent transitional period), the EMIR's provisions on restricting British CCPs from performing a clearing function in the EU will automatically apply.³⁷ For the moment, the best hope to address the risks of clearing post-Brexit is for heightened supervision, deep cooperation and clear coordination between the EU and the UK, rather than a potentially forced relocation of services currently provided by UK firms to the EU.

³⁴ This is in effect an acknowledgement that, when the UK ceases to be an EU member state, its CCPs will become third-country operators vis-à-vis the single market, as of March 2019.

³⁵ For example, UK CCPs will automatically lose their ability to perform a clearing role under EMIR. Instead, they will have to seek individual recognition from ESMA, provided the EU agrees that the UK's post-Brexit regulatory regime for OTC derivatives is equivalent to EMIR. The duration of this process is very uncertain, it normally takes years and involves a detailed legal assessment by the Commission of the UK's future domestic version of EMIR as amended under the provisions of the Repeal Bill. It is not clear that this regime could be put in place by Brexit day in March 2019.

³⁶ The failure to reach an agreement with the EU on derivatives clearing would mean that "... after Brexit, firms may lose the permissions required to perform regular "life cycle" events in these contracts, such as trade compression or exercising options. Tens of thousands of counterparties could be affected, representing around a quarter of both UK and EU client uncleared derivative contracts.", BoE (2017).

³⁷ Only if there aren't been any terms in the withdrawal agreement as to cross-recognise CCPs.

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www.eurocapitalmarkets.org | info@eurocapitalmarkets.org

Place du Congrès 1 | 1000 Brussels | Tel: + 32 2 229 39 11 | Fax: + 32 2 219 41 51

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