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Clearing of euro OTC derivatives post Brexit: An analysis of the present cost estimates

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No. 588

Volker Brühl

Clearing of euro OTC derivatives post Brexit - an analysis of the present cost estimates

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Clearing of euro OTC derivatives post Brexit - an analysis of the present cost estimates

Abstract:

In the context of the upcoming Brexit, a relocation of the clearing of euro-OTC derivatives for EU-based firms is the subject of controversial discussion. The opponents of a relocation argue that a relocation would cause additional costs for market participants of up to USD 100 bn over a period of 5 years. This paper shows that this cost estimate is fairly unrealistic and that relocation costs would amount to approximately USD 0.6 bn p.a., which translates to cumulative costs of around USD 3.2 bn for a transition period of 5 years. In light of the strategic importance of systemically relevant CCPs for the financial stability of the eurozone, the potential relocation costs should not be a decision criterion.

Volker Brühl¹

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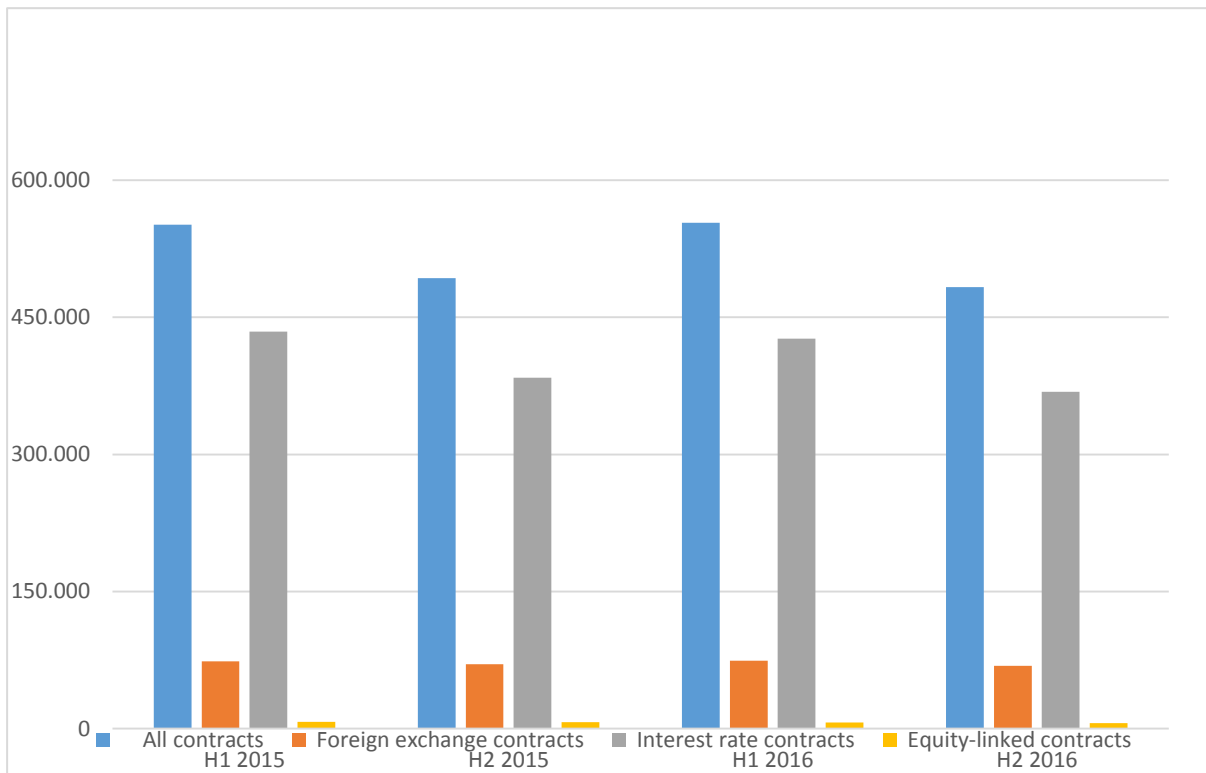
JEL Classification: G20, G21

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1. Introduction

One of the questions arising from the upcoming Brexit is what impacts it will have on the clearing of euro-denominated over-the-counter (OTC) derivatives. Figure (1) shows the size of the global OTC derivatives markets. The notional amount of interest rate, foreign exchange and equity-linked derivatives trades cleared worldwide each year comes to over USD 400 trillion. Interest rate derivatives account for the greatest proportion, at around 75%. Around 30% of the interest rate derivatives are euro-denominated, and around 97% of these are cleared via LCH Clearnet (LCH), the clearing subsidiary of the London Stock Exchange (LSE). Eurex currently has a market share of around 1% for the clearing of euro-denominated OTC interest rate derivatives; CME Group controls around 2% of the market. The importance of other clearing houses is negligible.

Figure 1: OTC derivatives - Notional amounts outstanding (billions of USD)



Source: BIS

Back in 2011 the question was already raised over whether and under what conditions euro OTC derivatives could be cleared in the UK and thus outside the eurozone. The position of the ECB at the time was that this business would have to be located within the eurozone due to supervision considerations (ECB 2011). However, this stance was rejected by the European Court of Justice in 2015 due to a lack of jurisdiction on the part of the ECB (General Court 2015). Since then, an

agreement has been in place between the Bank of England and the ECB on an enhanced exchange of information and closely coordinated supervision (BoE & ECB, 2015).

Now, in view of the upcoming Brexit, the question arises again as to whether and under what conditions the clearing of euro OTC derivatives may be located in the UK and thus not only outside the eurozone, but also outside the EU. The clearing business as a whole is one of the most profitable business segments of the LSE Group and is therefore of considerable strategic importance to London as a financial centre. It is estimated that the entire post-trading business affects some 10,000 jobs, and a considerable portion of these could be lost if the euro OTC derivatives business is relocated to the EU (Djankov 2017). The CEO of the London Stock Exchange puts the number of affected jobs as high as 100,000 (Bloomberg 2016). Yet the assumptions that underlie such figures are not disclosed. They do appear to be very high estimates, bearing in mind LCH Clearnet has around 700 employees and the LCH Group has around 950 (LCH annual reports 2016).

It is no surprise that lobbyists, individual market participants and political actors in the financial centre of London are vehemently committed to maintaining the status quo in the clearing business. They cite the cost benefits for market participants associated with an integrated, multi-currency liquidity pool (Rolet 2017, ClarusFT 2017, AFME 2017). They argue that an appropriate regulation and supervision of the relevant Central Counterparties (CCPs) in the UK, which will become third-country CCPs from an EU perspective, will be guaranteed due to the equivalency of the relevant provisions.

Whether the regulation and supervision of the LCH is considered equivalent to the relevant European legislation (in particular MiFID2/MiFIR and EMIR) in the context of third-country regulations remains subject to an examination by the European Commission and the European Securities and Markets Authority (ESMA). What "equivalence" precisely means with regard to financial market regulation and supervision in the respective third country depends very much on the product, service and market segments in question (European Commission 2017a). The European Commission must confirm equivalence in each case and the CCPs must register with ESMA.

Those who advocate relocating the euro-denominated clearing of OTC derivatives to the EU emphasise that, due to their growing importance for financial stability, systemically relevant CCPs should be subject to direct supervision by European supervisory authorities. After all, if a systemically relevant CCP were to run into financial distress, this would be likely to influence, directly or indirectly, the monetary policy of the responsible central banks. In light of this, on 13 June 2017 the European Commission presented a draft for an amendment of the regulations in question (European Commission 2017b).

In accordance with the EMIR regulation, EU CCPs are currently supervised by colleges, which may include national supervisory authorities, ESMA and other authorities. The colleges are coordinated by the authority of the home Member State. This means there may be divergent supervisory practices for CCPs in the EU, for instance in the approval process or the methods of model validation. In order to avoid regulatory arbitrage, the European Commission has pointed out these emerging risks and the need for greater supervisory convergence.

In addition, the draft presented on 13 June 2017 includes a provision to ensure that the future role of central banks in the CCP colleges is strengthened in areas where the mandates of central banks and supervisory authorities overlap (in particular, interoperability and control of liquidity risks). To account for the growing importance of CCPs in general and third-country CCPs in

particular for global and European financial stability, the draft envisages clearly strengthening the supervisory powers of the European authorities over third-country CCPs and differentiating the future authorisation requirements for third-country CCPs according to their systemic relevance. Specifically, the European Commission's proposal would enable ESMA, in agreement with the affected EU central banks, to determine that - for reasons of size, complexity and systemic relevance - even a full application of EMIR by these third-country CCPs would not sufficiently reduce the risks to European financial stability. In this case, ESMA, in consultation with the relevant EU central banks, can advise the Commission to only recognise the CCP in question if it is authorised and established in a Member State (European Commission 2017a). The wide range of legal issues related to this question shall not be addressed here.

From an economic perspective, there is a discussion over whether and to what extent a relocation of euro-denominated OTC derivatives clearing would lead to additional costs for the market participants. This is because the relocation would fragment what is currently a single market, thus reducing market liquidity by creating two liquidity pools. Such costs would arise if, as a result of relocating to an EU CCP, the collateral requirements (in particular the initial margin, IM) and capital requirements for clearing members increased. Ultimately these cost increases would manifest as a larger bid-offer spread.

It should be noted that, from the market participants' perspective, the efficiency of CCPs rises as the IM demanded by the CCPs falls and as the capital requirements for clearing members fall. The benefits arise because it is possible to offset matched trades (netting), to combine trades with an identical or comparable risk profile into a single position (compression), or to offset matched trades in different currencies and between exchange-traded and OTC derivatives at the portfolio level (cross-margining).

These benefits tend to become more pronounced, the larger the customer base and the broader the product portfolio. The exact calculation of the IM by the CCPs is only disclosed conceptually, which means it is not verifiable from an outside perspective. It is therefore not possible to trace the reasons for IM changes in detail without having access to the model algorithms. This applies to LCH and Eurex as well as other CCPs.

2. Potential costs of a relocation of euro OTC derivatives clearing

From an overall perspective, the question arises as to what additional costs could potentially result from relocating the clearing of euro OTC derivatives from the UK to the eurozone.

2.1 Increase in initial margin requirements

The initial margin volume, which clearing members must deposit with the CCPs as collateral, tends to fall when there are better risk netting and cross-margining effects at the portfolio level of the respective CCPs. These benefits are particularly dependent on the diversity of the customer structure and tend to increase with the number of clearing members and the number of contracts cleared.

Hence a relocation of the LCH Clearnet euro OTC derivatives portfolio to a newly created or existing CCP in the EU (hereafter "EU CCP") could lead to lower risk-based netting effects, if the receiving CCP offers a less diversified clearing portfolio. A relocation of the euro OTC portfolio would therefore probably entail an increase in IM requirements, at least initially.

Whether and for how long after the relocation this increase in IM requirements would persist, however, depends on the existing netting opportunities and the future development of the receiving EU CCP's portfolio. It should be noted that other netting effects may arise, depending on the business model of the receiving EU CCP, for instance between OTC products and exchange-traded derivatives (ETDs), which may partly or fully compensate for the potential rise in IM requirements described above. In addition, the opportunities for cross-currency portfolio margining with the EU CCP can be expected to grow over time as it acquires business in foreign currencies.

In this context, it should be noted that ESMA's peer review has revealed substantial differences in the methods applied by the CCPs to determine the IM and the default fund contributions. In particular, it cannot be ruled out that certain CCPs are more generous than others when it comes to assessing portfolio margining effects. This aspect cannot be taken into account within the scope of this study.

2.2 Additional equity requirements for clearing members

A relocation of the euro OTC clearing business may have another impact at the level of the clearing members, as the increased IM requirements and the associated contributions to the CCP default fund trigger additional equity capital requirements. Whether and to what extent the clearing members have to hold additional equity capital will depend on various factors including the risk assessment of the respective CCP. Calculations of the additional equity capital requirements of the clearing members are usually made on the assumption of a 2% risk weight.

As for the additional contributions to the CCP default fund, which also need to be considered, the risk weights may be significantly higher. The currently applied methodology (BIS 2014) can indeed result in equity capital requirements of 20-25% of the additional contributions to the default fund. The ratio between the default fund contributions and the corresponding IM is another element that cannot be determined without having a detailed insight into the IM models and the respective portfolios. However, a rough indication can be obtained by looking at the ratio between the IM and the default fund contributions at the major clearing houses on the reporting dates.

The increased equity requirements resulting from these two effects need to be assessed to determine whether they would also be sufficient to meet the equity requirements of the banks in terms of the leverage ratio (currently 3% of the non-risk-weighted exposure).

2.3 Increase in execution costs due to reduced market liquidity

The London Stock Exchange (LSE) argues that a forced relocation of euro OTC derivatives clearing could lead to reduced liquidity and therefore rising costs due to the fragmentation into a smaller "on-shore market" in the EU and a considerably larger "off-shore market" outside the EU in London. It also contends that a 1bp deterioration of market prices for OTC interest rate derivatives compared to current levels would leave EU-based SwapClear customers facing annual recurring costs of up to USD 20bn (LSE 2017). Over a period of five years, this would represent a cumulative cost increase of USD 100bn.

This statement rests on the assumption of rising trading costs for the clearing members due to higher equity requirements, particularly through the leverage ratio being applied to the trading activities. All other things remaining equal, the more the net exposure of the respective clearing

member can be reduced through netting and compression effects, the lower the trading costs will be. However, LSE does not plausibly explain why such additional costs would occur, not just temporarily but permanently, nor does it substantiate its projected figure of a 2bp wider spread.

Even if the relocation does trigger a fragmentation of the liquidity pool of euro OTC derivatives, the bid-offer spreads of the traders would only widen if the fragmentation considerably diminished their opportunities to utilise netting and compression effects. The LSE's main reasoning on this point is that only a small proportion (approximately 14%) of the liquidity pool stems from EU market participants, so the traders would have far inferior netting opportunities on a smaller "on-shore market".

However, this is not self-evident. The LSE's argument overlooks the fact that high netting efficiencies can still be attained with relatively low clearing volumes if the EU CCP has a balanced end customer structure that allows traders to keep their portfolio as risk neutral, and therefore as cost efficient, as possible. Secondly, a relocation can be expected to bring rapid change to the market structures, making any initial disadvantages in terms of market liquidity merely temporary. This is because traders will manage their portfolios so as to attain similar netting and compression effects by allocating new deals to the EU CCPs. One factor that underpins this argument is the enormous real economic importance of the EU in comparison with the UK.

In light of this, within a foreseeable period, a notable business volume can be expected to migrate from companies based outside the EU to an EU CCP, particularly in the euro interest rate swaps segment, allowing these CCPs to attract greater liquidity to the EU by broadening and deepening their customer and product portfolios. Therefore, even in case of an initial widening of the spread, the effect should not be permanent.

Furthermore, LSE's projected figure of a 2bp wider spread is not verifiable. It would represent a five-fold increase in the currently prevailing spread of approximately 0.5bp to 2.5bp. In such a highly competitive market, this does not appear realistic.

LSE even confirms this in a position paper, stating:

"Note that we do not expect that the price of every Euro swap done by every EU firm in the future would move by a basis point against them. Rather, we offer the aggregate PV01 figures to promote a sense of the scale of the wealth transfers / revenues / costs at stake. Furthermore, the effect could be as small as tenths of a basis point, or could be whole numbers of basis points. We offer the basis point sensitivities as an enabler of the discussion" (LSE, 2017).

Currently no one can say how strongly the fragmentation of the OTC clearing market will impact the size of the spreads. However, the OTC derivatives markets do exhibit highly transparent conditions and intense competition. This applies at the level of the dealers as well as the CCPs themselves. The cost estimate presented in this paper takes into account the increased trading costs that could add up to 0.15bp of the notional volume relocated (see Section 4). However, this effect should be temporary and will most likely level out within 5 years.

Operational costs

These may be understood as the process costs that could arise due to legal and technical execution activities if portfolios are actually relocated. These operational costs shall not be

considered further here, as they are non-recurrent in nature and only arise if a relocation applies not only to new business, but also to existing portfolios.

3. Overview of the existing cost estimates of a relocation of euro OTC derivatives

Currently there are widely varying figures in circulation regarding the expected costs of a relocation for the market participants. Table 1 below gives an overview of the figures currently in circulation.

Table 1: Costs and liquidity effects of a potential relocation of euro-denominated OTC derivatives to the eurozone

Author	Estimated cost and liquidity effects	Method	Critical aspects
ClarusFT (2016)	IM increase of USD 77bn	<ul style="list-style-type: none"> Greatly simplified estimation of IM effects, based on proprietary models of ClarusFT 	<ul style="list-style-type: none"> IMs are implicitly classified as costs Major simplification of model assumptions; approximation of portfolio through 12y swaps Method of calculating cross-margining effects undisclosed Arbitrary assumption of matched positions, particularly between EUR/USD No accounting for concentrations of risk with CM No detailed accounting for position data
European Commission (2017)	IM increase of EUR 6.8–10bn	<ul style="list-style-type: none"> Confidential data; model calculations undisclosed 	<ul style="list-style-type: none"> No transparency regarding model and data base
LSE (2017)	Increased trading costs: USD 125bn over 5 years if swaps in all currencies are relocated; approx. USD 100bn if only euro swaps are relocated	<ul style="list-style-type: none"> Assumption that execution prices for IRS will deteriorate by 1bp (which implies a 2bp wider spread) 	<ul style="list-style-type: none"> No transparency regarding model and data base A 2bp wider spread would equate to a five-fold increase in the current spread. Sensitivity calculation is no cost estimate
AFME/BCG (2017)	IM increase: EUR 30-40bn (40-50%) plus extra default fund contributions of EUR 3-4bn (20-30%)	<ul style="list-style-type: none"> Use of a re-weighting approach based on maturities and volatilities Impact assessment of a relocation is not verifiable 	<ul style="list-style-type: none"> Assumptions only described in vague terms; IM impact in particular is not transparent; additional capital requirements for clearing banks based on numerous assumptions

The currently circulating figures regarding the size and temporal distribution of costs resulting from a relocation of euro-denominated OTC derivatives clearing are based on numerous assumptions that are not made (fully) transparent by the respective authors.

Evaluation of the existing studies:

- The existing calculations are often based on a static analysis, which means that changing market structures and any resulting portfolio compositions post Brexit are not taken into account.
 - There is no accounting for the fact that the relocation will enable clearing members to achieve additional netting effects, for example between OTC products and exchange-traded derivatives (ETDs), which are unavailable at the UK-CCP.
 - It cannot be ruled out that a considerable portion of the USD derivatives business will shift from the UK to the EU27 in the period following Brexit, since the trading activities of many customers of the UK CCPs could be relocated to the EU27. The cross-margining benefits currently offered by certain UK CCPs may therefore disappear over time.
- Rising IM requirements are implicitly classified as costs. However, only the funding costs and the additional equity capital should be taken into account.
 - IM itself does not represent costs in an economic sense, but collateral that needs to be funded. Therefore, only the clearing member's additional funding costs should be considered.
 - The additional costs of equity capital need to be added due to increased IM and default fund contributions.
- The additional liquidity requirements due to potentially higher collaterals should be assessed separately. According to LSE estimates (LSE 2017), they amount to approximately USD 11bn, which is a manageable figure in relation to the banks' available liquidity reserves.
- Limited data base
 - The data base that underlies the respective estimates is a crucial factor when it comes to the meaningfulness of any conclusions drawn. However, the underlying data base is not sufficiently disclosed. A meaningful estimate of one-off and ongoing costs of a relocation requires access to detailed position data of the relevant clearing houses in the UK and the clearing houses in the EU potentially eligible as receiving CCPs. Therefore, the cost estimate presented by the author of this paper is also preliminary and subject to further analysis.

- Lack of transparency in the methodology used to calculate the initial margin and default fund contributions
 - CCPs use very different models to ascertain the IM and default fund contributions. Since the CCPs are not currently subject to uniform regulation and supervision, it cannot be ruled out that for a given exposure IM requirements differ from one CCP to the next due to different model designs. Although ESMA has conducted peer reviews that point out this fact (ESMA 2016), the current supervisory structure of colleges under the auspices of the national competent authorities (NCAs) is not suitable to produce the necessary supervisory convergence. This effect should be taken into account when making comparative calculations. Similar observations have been made in the area of banking regulation, where banks' internal rating approaches may lead to significantly different evaluations of the same credit risk and corresponding equity capital requirements.
 - The methodologies used to calculate the predicted changes of the initial margin and default fund contributions are not disclosed in detail. One of the portfolio models applied by LCH, known as PAIRS (Portfolio Approach to Interest Rate Scenarios), is officially described as an “expected shortfall model”, which is basically a “contingent value-at-risk (VaR) model” based on historical data. The model is intended to enable clearing members and their customers to reach the maximum possible capital and margin efficiency (LCH 2017).
 - Eurex Clearing pursues a slightly different approach. Its PRISMA model combines a backward-looking mark-to-market component with a forward-looking VaR component into a portfolio approach where contract risks are diversified across different products, maturities and currencies (Eurex 2017).
 - In both cases, only the competent supervisory authorities have access to the details of how the respective models are designed and calibrated.

4. Own estimate of the costs of a relocation

The widely cited study of ClarusFT (ClarusFT 2016) assumes that the initial margin would double if the euro-denominated OTC derivatives were relocated from LCH Clearnet, while a study by Afme (Afme/BCG/Clifford 2017) predicts an increase of around 40-50%. The following estimate is based on the data published by LSE itself, which suggests an expected IM increase for EU-based companies of around 29%. Since the estimates from ClarusFT also relate to LSE's SwapClear portfolio, a further examination of the ClarusFT calculations is not necessary, as these constitute an evidently inaccurate approximation of the impacts of a relocation of the euro OTC portfolio.

In any case, estimates for these relocation costs currently in circulation are far too high since, with regards to the IM for example, only the funding costs and the cost of additional equity capital have to be taken into account. Average funding costs of 50bp for increased collateral obligations are a reasonable assumption (Deloitte 2014, BIS 2013).



Given the expansive monetary policy of the ECB, the banking sector in the eurozone has a significant liquidity buffer that is not being used for lending, at least for the time being, so the opportunity costs for binding the additional collateral should be manageable. As of 31 December 2016, the liquidity reserves held by the banks in the Eurosystem alone amounted to around EUR 1,300bn, despite negative deposit rates. In addition, there are other liquid assets in the banking sector that further multiply this figure.

The following estimate of relocation costs is based upon the figures used by LSE itself (LSE 2017) on the reporting date of 28 April 2017. The direct CCP costs (booking fee, collateral fee, maintenance fee) are not taken into account, since any differences in these cost items between a UK CCP and an EU CCP are negligible.

Assumptions:

- SwapClear notional amount (total): USD 299,000bn
- EU-based companies notional volume: USD 41,000bn
- Initial margin (IM) of the OTC clearing portfolio in the UK affected by the relocation: approx. USD 111bn
- Amount of this IM that applies to EU-based companies: approx. USD 35bn
- Increase in IM requirements for clearing members if euro OTC derivatives are segregated: approx. USD 11bn, of which approx. USD 5bn applies to EU-based companies
- Funding costs for additional collateral: 50bp
- Additional contribution to the default fund: 15% of the additional IM (conservative approach)
- Average cost of equity capital of the clearing members: 8% p.a.
- Risk weight of IM: 2%
- Capital requirement of an additional default fund contribution: 25% of the face value
- Transitional period for alignment of netting efficiency: 5 years

Indicative estimate of an increase in trading costs:

- Higher trading costs, if capital requirements (Leverage Ratio, LR) increase due to lower netting efficiency at the receiving CCP
- Calculation of the LR-relevant trade exposure (TEX):
Assumed replacement costs of the relocation portfolio: 0
- Netting ratio: 0% (worst case for a newly founded EU CCP)
- $TEX \sim \text{notional} \cdot 1.5\% \cdot 0.4 = \text{USD } 246\text{bn}$
- Equity capital requirements (LR = 3%) USD 7.4bn:
- Cost of equity capital (8% p.a.) ~ USD 590m p.a.
- Extrapolated on a linear basis over 5 years: ~ USD 3bn

Indicative estimate of increased funding and capital costs due to higher initial margin and default fund contributions

- Additional funding costs for cash collateral (USD 5bn):
approx. USD 25m p.a.
- Additional equity capital requirements (IM and default fund) for EU companies: approx. USD 200m
- Additional equity capital costs (@ 8% p.a.): approx. USD 16m p.a.
- Sum of additional funding costs and equity capital costs:
approx. USD 41m p.a.
- Extrapolated on a linear basis over 5 years: approx. USD 200m

Total costs p.a.: approx. USD 631m

**Total accumulated costs over 5 years: approx. USD 3.2bn
(equivalent to ~ 0,15bp of the notional amount relocated)**

However, this would only be a temporary effect.

- The relocation may result in a temporary increase in the equity requirements for the trading business (leverage ratio). This could amount to up to USD 7.4bn if the netting efficiency at the receiving EU CCP is weaker than at the UK- CCP. From a cost perspective only the related equity capital costs of approx. USD 590m p.a. are relevant.
- In addition, the funding costs for the higher IM requirements need to be taken into account, along with the rising equity capital costs that result from the additional equity capital requirements for the IM (risk weight of 2%) and for the default fund contributions (up to 25% of the contributions). All in all, the resulting additional equity capital requirements amount to approx. USD 200m with corresponding cost of equity at around 8% p.a. (e.g. Bain 2015) that translate to USD 16m p.a.. Therefore the additional annual cost of funding and related cost of equity add up to USD 41m.
- Consequently, the total costs of a relocation may amount to up to USD 631m p.a. Assuming a transitional period of 5 years, during which the netting efficiency of UK- and

EU-based CCPs are likely to become aligned, the expected cumulative funding and equity capital costs would amount to around USD 3.2bn.

Indeed, the cost estimate presented here may be regarded as an upper limit, since the cross-margining effects between ETD and OTC derivatives at the receiving EU CCP should significantly mitigate such effects.

5. Conclusions

- The existing estimates of the potential costs associated with relocating euro-denominated OTC derivatives clearing to the EU are conceptually questionable and generally lacking in transparency with regard to their methodology, underlying assumptions and data base. The author of this paper has also performed a preliminary calculation of the relocation costs. This separates cost and liquidity effects and is based on publicly available data from LSE. In addition, this estimate bases the expected increase in IM and default fund contribution requirements for a transitional period upon cautious assumptions. The greatest uncertainty lies in the expected (temporary) widening of the bid-offer spread. The extent and temporal distribution of such effects largely depend on how the market participants adapt their strategies as a consequence of the relocation. In light of the high transparency and fierce competition on these markets, the scenario calculation by LSE, which anticipates additional execution costs of up to USD 100bn, appears unrealistic. A plausible alternative scenario proposed in this paper posits a temporary cost increase of around 0.15bp resulting from wider bid-offer spreads, which will disappear within 5 years due to a gradual alignment of netting efficiencies.
- In light of the dynamic changes on the relevant securities markets, the already very fierce competition among the market participants, and the commodity character of the clearing services being offered, the estimate presented here of cumulative relocation-related costs of **approx. EUR 3.2bn** over a five-year period may be regarded as an upper limit of the expected costs.
- In light of the high level of liquidity in the financial sector, the additional liquidity requirements should not be a criterion for the relocation decision.
- Due to the strategic importance of OTC derivatives clearing in terms of avoiding systemic risks, the costs associated with a relocation appear negligible, especially since they are likely to be temporary.
- In this context, it should be noted that ESMA's existing findings reveal substantial differences in the methods applied by the CCPs to determine the IM and the default fund contributions. In particular, it cannot be ruled out that certain CCPs are more generous than others when it comes to assessing portfolio-margining effects.



- To avoid any regulatory arbitrage that might result from this, a considerably greater convergence of supervisory procedures is recommended. Because currently the ongoing monitoring of CCPs is performed by supervisory colleges under the auspices of the NCAs.
- A further consideration would be whether to have (some of) the existing contracts remain in the UK, so the obligation to clear euro OTC derivatives through an EU CCP would only apply to new contracts. This would entail a transition period of several years for interest rate derivatives, which can only be provisionally estimated at this point. According to data from SwapClear, over 50% of the outstanding volume will reach maturity within two years; a further 20% will reach maturity in 2 to 5 years. Less than 10% of the volume has a maturity date of over 10 years. Consequently, a large proportion of the existing contracts will mature within a transitional period of 5 years or less.

Frankfurt am Main, 29 November 2017



Sources:

AFME, BCG, Clifford (2017), Bridging to Brexit: Insights from European SMEs, Corporates and Investors, London

Bain (2015), Deutschlands Banken 2015, München 2015

BIS (2014), Capital requirements for bank exposures to central counterparties, <http://www.bis.org/publ/bcbs282.pdf>

BIS (2013), Macroeconomic impact assessment of OTC derivatives regulatory reforms - A report prepared by the Macroeconomic Assessment Group on Derivatives, Basel 2013

Bloomberg; LSE's Rolet Says 100,000 Jobs at Risk If Clearing Leaves
London, 23. September 2016, 10:45

ClarusFT (2016), Moving Euro Clearing out of the UK: the \$77bn problem?
<https://www.clarusft.com/moving-euro-clearing-out-of-the-uk-the-77bn-problem/>

Deloitte, OTC Derivatives – the new cost of trading, London 2014

Djankov, S. (2017), The City of London after Brexit, LSE DISCUSSION PAPER NO 762, Feb 2017

ECB (2016), Looking back at OTC derivatives reform – objectives, progress and gaps, August 2016 https://www.ecb.europa.eu/pub/pdf/other/eb201608_article02.en.pdf

ECB and BoE (2015), European Central Bank and Bank of England announce measures to enhance financial stability in relation to centrally cleared markets in the EU, Press Release 29 March 2015
<https://www.ecb.europa.eu/press/pr/date/2015/html/pr150329.en.html>

ECB (2011), Eurosystem Oversight Policy Framework, 5 July 2011
<https://www.ecb.europa.eu/pub/pdf/other/eurosystemoversightpolicyframework2011en.pdf>

ESMA (2016) Peer Review under EMIR Art. 21, Supervisory activities on CCPs' Margin and Collateral requirements
https://www.esma.europa.eu/sites/default/files/library/2016-1683_ccp_peer_review_report.pdf

Eurex (2017), EurexClearing OTC IRS, Eschborn 2017

European Commission (2017a), EU equivalence decisions in financial services policy: an assessment, Staff Working Document, Brussels 27 February 2017

European Parliament (2017b), Directorate General for Internal Policies, Policy Department A: Economic and Scientific Policy, Implications of Brexit on EU Financial Services, Brussels 2017

European Commission (2017a), Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EU) No 1095/2010 establishing a European Supervisory Authority (European Securities and Markets Authority) and amending Regulation (EU) No 648/2012 as regards the procedures and authorities involved for the authorisation of CCPs and requirements for the recognition of third-country CCPs, Strasbourg, 13 June 2017



General Court, Judgement of 4 March 2015, Case T-496/11, United Kingdom of Great Britain and Northern Island v European Central Bank (ECB)

LCH (2017), Margin Methodology

<http://www.lch.com/risk-collateral-management/margin-methodology>

LSE (2017), European Commission's 13 June 2017 proposal regarding third-country CCPs, 20 July 2017

Rolet, X., EU should not meddle with a safe, transparent system, Times, 22 May 2017

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