

# OTC Derivatives

The new cost of trading



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# Executive summary

Over-the-counter (OTC) derivative markets are subject to significant change as global regulatory commitments originating in 2009 take effect. In Europe, the European Market Infrastructure Regulation (EMIR) requires standardised OTC derivatives to be cleared through central counterparties (CCPs); derivatives which cannot be cleared to be subject to bilateral margining arrangements and a strengthened operational risk framework; and OTC and exchange-traded derivatives (ETDs) to be reported to a trade repository (TR). In addition, the Capital Requirements Directive (CRD IV) and the Capital Requirements Regulation (CRR) increase capital requirements for both cleared and non-cleared OTC derivatives.

The scope of the reform is far reaching and covers the five main asset classes: interest rate, credit, foreign exchange (FX), commodity and equity.<sup>1</sup> It is clear that costs will increase as a result of these reforms, but the question is by how much and where the burden will fall. This paper addresses the question of how much more expensive OTC derivative transactions will become as a result of the reforms, and estimates the cost impact of the reform package on transactions in the EU.

The case for these changes is based on the argument that the reforms will increase transparency to the regulator and the market, and reduce risk for market participants. We expect the price for this to be an additional total annual cost of €15.5bn for the OTC derivatives market in the EU. We estimate that the incremental costs for transactions that are subject to the clearing obligation will be around €2.5bn per annum. The estimate for transactions that will not need to be centrally cleared is much higher – totalling €13bn annually.

There are three main elements to the costs that will be incurred by OTC derivatives in future: new margin requirements; new capital charges for exposures; and other compliance costs, mainly resulting from additional reporting requirements. This paper provides estimates for the incremental cost for both cleared and uncleared OTC derivatives for the three cost categories and explores some of the reasons for the differences in costs between cleared and uncleared OTC derivatives. In addition to these increases in costs, the market-making dealers<sup>2</sup> may also see revenue fall, e.g. if greater transparency leads to a narrowing of margins.

There are cost implications for all market participants transacting in OTC derivatives: financial counterparties including the market-making dealers; large buy-side customers such as mutual funds, pension funds, hedge funds and insurance companies; and also non-financial counterparties such as industrial companies using OTC derivatives for hedging purposes.

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**We expect an additional total annual cost of 15.5bn for the derivatives market in the EU.**

**Table 1 – Overview of incremental costs for centrally cleared and non-centrally cleared OTC derivatives transactions**

	Estimated additional cost (per € 1 million notional amount traded, basis points)
<b>Additional costs for centrally cleared OTC derivative transactions</b>	
Initial margin + contribution to the CCP default fund + additional costs arising from requirements for CCPs + clearing fees	€10 (0.10 bps)
Capital charges for centrally cleared OTC derivatives transactions	€3 (0.03 bps)
Trade, valuation and collateral reporting + compliance costs for trade repositories + compliance costs for CCPs	€0.60 (0.006 bps)
<b>Total additional cost</b>	<b>€13.60 (0.136 bps)</b>
<b>Additional costs for OTC derivative transactions that will not need to be centrally cleared</b>	
Initial margin for non-centrally cleared OTC derivative transactions	€50 (0.50 bps)
Capital charges for non-centrally cleared OTC derivatives	€120 (1.20 bps)
Trade, valuation and collateral reporting + other compliance costs + compliance costs for trade repositories	€0.50 (0.005 bps)
<b>Total additional costs</b>	<b>€170.50 (1.705 bps)</b>

Source: Deloitte calculation based on MAGD (2013), BCBS-IOSCO (2013a), ESMA (2012) and BIS statistics.

The structure of OTC derivative markets is set to change as a result of the reforms. Cost increases will lead dealer banks to review the products they offer and possibly withdraw from certain asset classes which are deemed to be too costly, or look to increase offerings for asset classes where client demand is expected to be greater. This will lead to a shift in the product mix offered by dealer banks and as a result, usage across the market. The increased costs for non-cleared products could move some end-users towards less precise hedges by using cleared/standardised OTC derivatives in place of a more bespoke (and more expensive) derivative, leaving them with more risk on their own balance sheet.

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**Cost increases will lead dealer banks to review the products they offer and possibly withdraw from certain asset classes.**

# Data sources and methodology

A number of studies have attempted to quantify various aspects of the OTC derivative reforms. This paper aims at combining all available quantifications and providing estimates for the average additional costs of the OTC derivatives reform package. The analysis and estimates provided in this paper particularly draw on the following impact assessments, studies and statistics:

- **The Macroeconomic Impact Assessment of OTC derivatives regulatory reforms carried out by the Macroeconomic Assessment Group on Derivatives (MAGD)** provides detailed estimates for costs arising from margin requirements, capital requirements and other costs such as clearing fees. For this paper, we have used the MAGD estimates to inform the calculations of the additional costs arising from capital requirements, the additional collateral required for centrally cleared transactions and the total amount of clearing fees.
- **The Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) quantitative impact study (QIS)**.<sup>3</sup> provided detailed estimates for the amounts of initial margin required under the new standards for non-centrally cleared OTC derivatives. We have used these estimates as basis for the calculations of additional costs arising from margin requirements for non-centrally cleared transactions provided in this paper.
- **The European Securities and Markets Authority (ESMA) Impact Assessment of EMIR implementing measures**,<sup>4</sup> includes detailed quantifications of costs arising from the EMIR Regulatory and Implementing Technical Standards. These cost estimates are the basis for our calculations of compliance costs for financial institutions, CCPs and trade repositories provided in this paper.
- **Information on key market characteristics such as size (notional amount outstanding, number of transactions) and segmentation** (proportion of transactions that are already subject to margin agreements, share of centrally cleared transactions, notional amount outstanding by asset classes) is taken from the ISDA Operations Benchmarking Survey 2010 and the ISDA Margin Surveys 2012 and 2013, and the OTC derivatives statistics of the BIS.
- **Results from a survey by Deloitte and Solum Financial Partners** asking 21 banks about their approach to managing counterparty credit risk provided the basis for the estimation of additional costs arising from CVA charges by product.

There are a number of cost factors that we have not considered in the calculation of cost estimates. The reasons for the omission of these factors include the practical challenges of estimating these costs, and uncertainties about the drivers of costs.

Specifically, costs not considered in the estimates provided in this paper are:

- **Variation margin**: the need to be prepared to post variation margin at short notice will require market participants to hold precautionary collateral available for posting. Additional collateral costs arising from new variation margin requirements are likely to be substantial.
- **Costs of model development and approval**: the costs of developing and securing regulatory approval for the required models to calculate initial margin as well as the usually very complex models to calculate capital charges. While these costs are likely to be material, they are likely to be only a fraction of the additional costs for non-cleared transactions estimated to be 1.705 bps.
- **Costs in terms of liquidity management and collateral optimisation**: the restrictions on the rehypothecation of collateral in particular will make it necessary to review and adjust liquidity and collateral management processes. The magnitude of costs arising from reviewing and adjusting liquidity and collateral policies will depend on the individual circumstances of each affected firm.

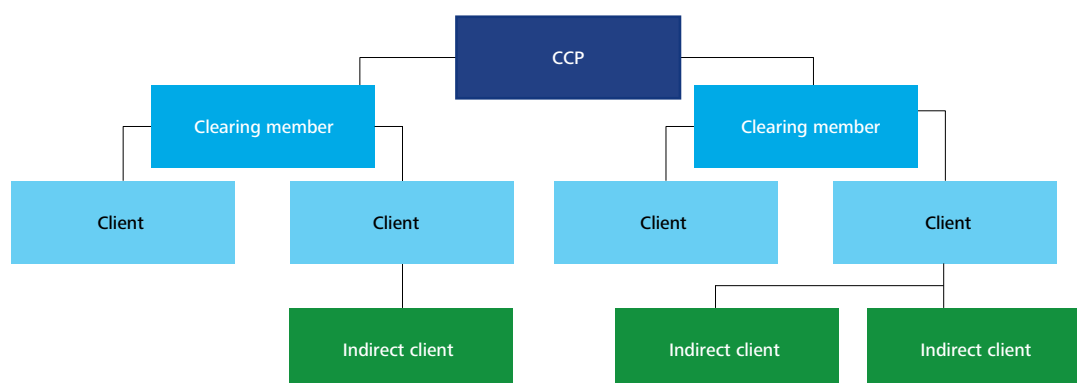
Table 2 – Assumptions and data sources

	Assumptions	Data sources
<b>General</b>	<ul style="list-style-type: none"> <li>• Notional amount of OTC derivatives, globally in US-\$</li> <li>• Euro/Dollar exchange rate</li> <li>• EU market share</li> <li>• 71% of transactions already subject to collateral agreements</li> <li>• About 40% of the notional amount of outstanding OTC derivatives centrally cleared pre-reform and 70% post-reform</li> </ul>	<ul style="list-style-type: none"> <li>• BIS statistics, end 2012</li> <li>• Yearly Average Exchange Rates for Converting Foreign Currencies into U.S. Dollars, Inland Revenue Service</li> <li>• BIS statistics</li> <li>• ISDA Margin Survey 2012</li> <li>• Broadly in line with the scenarios in MAGD (2013) and BCBS-IOSCO QIS (2013)</li> </ul>
<b>Costs for OTC derivative transactions that will need to be centrally cleared</b>		
<b>Margin requirements</b>	<p>Costs of additional collateral calculated using:</p> <ul style="list-style-type: none"> <li>• Initial margin requirements</li> <li>• CCP default fund contributions</li> <li>• Assumed costs of collateral: 0.5%</li> <li>• Clearing fees</li> </ul>	<ul style="list-style-type: none"> <li>• MAGD (2013) scenarios</li> <li>• Assumption broadly in line with the MAGD estimate for costs of collateral</li> <li>• Information provided by clearing companies</li> </ul>
<b>Capital requirements</b>	<ul style="list-style-type: none"> <li>• Capital shortfall estimation</li> <li>• Cost of capital</li> </ul>	<ul style="list-style-type: none"> <li>• MAGD – central scenario</li> <li>• Assumption is in line with cost of equity estimates available in previous studies, e.g. in MAGD</li> </ul>
<b>Reporting and other compliance costs</b>	<ul style="list-style-type: none"> <li>• Compliance cost estimates</li> <li>• One-off costs assumed to be depreciated over 10 years</li> </ul>	<ul style="list-style-type: none"> <li>• ESMA Impact Assessment of EMIR implementing measures</li> </ul>
<b>Costs for OTC derivative transactions that will not need to be centrally cleared</b>		
<b>Margin requirements</b>	<p>Costs of additional collateral calculated using:</p> <ul style="list-style-type: none"> <li>• Initial margin requirements under standardised approach</li> <li>• Initial margin requirement under model-based approach</li> <li>• Assumed costs of collateral: 0.5%</li> </ul>	<ul style="list-style-type: none"> <li>• BCBS-IOSCO QIS (2013) figures adjusted for market coverage</li> <li>• Assumption broadly in line with the MAGD estimate</li> </ul>
<b>Capital requirements</b>	<ul style="list-style-type: none"> <li>• Capital shortfall estimation</li> <li>• Cost of capital</li> <li>• Distribution of CVA charges by instrument</li> </ul>	<ul style="list-style-type: none"> <li>• MAGD – central scenario</li> <li>• Assumption is in line with cost of equity estimates available in previous studies, e.g. in MAGD</li> <li>• Deloitte-Solum estimates for the distribution of CVA charges is applied to the MAGD capital shortfall estimations</li> </ul>
<b>Reporting and other compliance costs</b>	<ul style="list-style-type: none"> <li>• Compliance cost estimates</li> <li>• One-off costs assumed to be depreciated over 10 years</li> </ul>	<ul style="list-style-type: none"> <li>• ESMA Impact Assessment of EMIR implementing measures</li> </ul>

# Costs for OTC derivative transactions that will need to be centrally cleared

All 'standardised and liquid' OTC derivatives transactions entered into by financial counterparties and by some non-financial counterparties<sup>5</sup> will need to be centrally cleared through a CCP. All OTC derivatives within the scope of clearing, regardless of whether an exemption to clear applies, must be reported to a trade repository.

**Figure 1 – Structure of clearing**



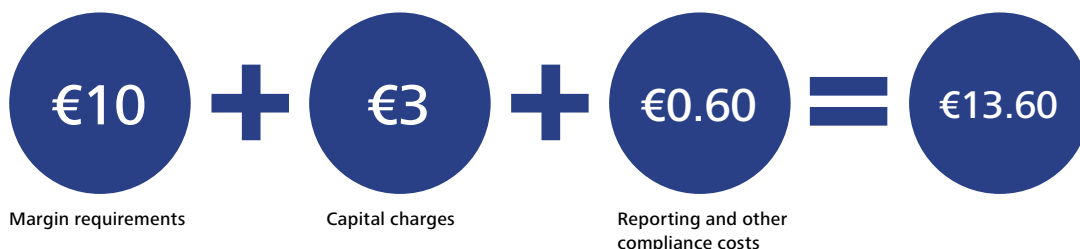
In the context of the clearing obligation, all market participants must have access to CCPs. In many cases, especially for some smaller firms, indirect clearing arrangement may be the only way to access central clearing.

For the purpose of this analysis, we assume that the total notional amount outstanding of OTC derivatives will remain constant, which was, according to the Bank for International Settlements (BIS) statistics, €512bn at its end-2012 level.<sup>6</sup> At that time, about 40% of the notional amount of outstanding OTC derivatives were centrally cleared. Over time we expect this proportion to increase significantly and will ultimately capture 70% of the market.<sup>7</sup> For some highly standardised asset classes, e.g. interest rate derivatives, this percentage is likely to be higher and for asset classes such as equity and commodity derivatives this will be lower.

We estimate that the proposed reforms for centrally cleared OTC derivatives will lead to incremental transaction costs of €13.60 per €1m notional (the equivalent of 0.136 basis points). This includes margin requirements, capital requirements including capital charges for trade exposures and exposures to the CCP default fund and other compliance costs such as reporting. Multiplying the additional transaction costs of €13.60 with the notional amount outstanding of OTC derivatives in Europe in the centrally cleared segment leads to an estimated additional total annual cost of €2.5bn.

Margin requirements are the main driver of the additional costs. We estimate that costs will increase by €10 per €1m notional. This estimate also includes additionally incurred clearing fees and contributions to the CCP default fund. Costs arising from new capital charges for trade exposures and exposures to the CCP default fund are estimated to amount to €3 per €1m notional. The third block of costs – incremental costs arising from new reporting requirements and other compliance costs such as account separation and record keeping – is fairly small; we expect them to be approximately €0.60 per €1 m notional.

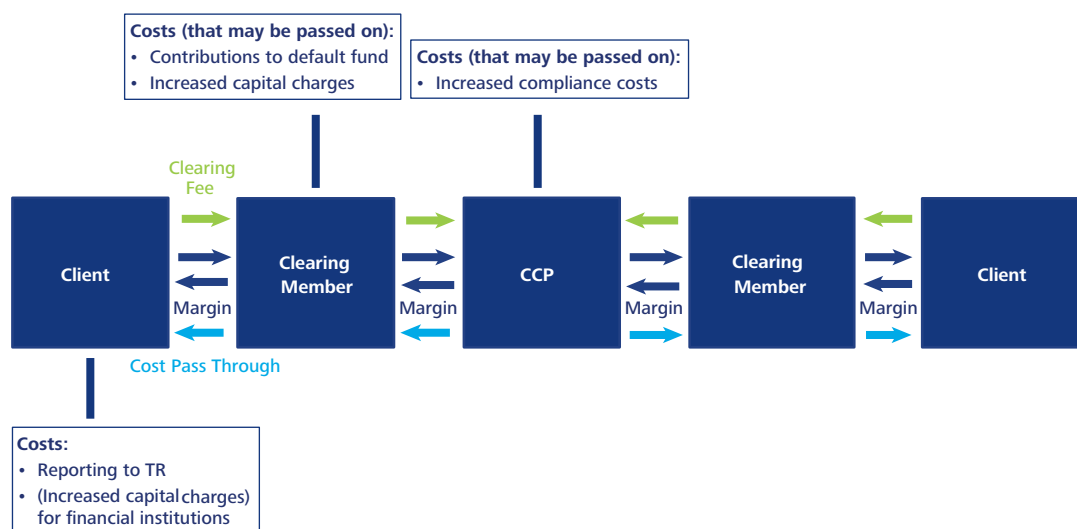
**Figure 2. Additional cost per €1 million notional for centrally cleared transactions**



We have calculated the impact of these estimated costs on a typical transaction. Average additional costs per transaction for interest rate and credit derivatives can be calculated using recent ISDA data.<sup>8</sup> According to this, the average notional for a cleared Euro-denominated interest rate derivatives is €105m which would translate into an average additional cost of €1,428 (i.e. 13.6 x 105) per transaction.

Additional compliance and operational costs are likely to be incurred by all market participants, financial and non-financial counterparties, as well as market infrastructure such as CCPs and trade repositories. Precisely how and to which parties these additional costs will be allocated is less clear. For example, how much of the increased capital requirements (which are incurred by firms within the scope of CRDIV/CRR) are likely to filter through to clients in the form of higher fees and lending rates. The extent to which costs can be passed on to clients and ultimately to end users depends on, among other things, how likely sellers are to reduce or withdraw a certain product line and how easily buyers can shift to other products or activities.

**Figure 3. – Cost incidence in a cleared transaction**



### Margin requirements for centrally cleared transactions

Centrally cleared trades will be subject to initial margin and variation margin on a daily and even intra-day basis. The methodology for determining initial and variation margin requirements is set out in EMIR.

Multilateral netting and more efficient clearing reduce margin requirements in CCPs and associated costs significantly compared to a bilateral exchange of margins. Central clearing allows for multilateral netting with exposures being offset against the CCP. The magnitude of the multilateral netting advantage depends on the number of CCPs in a market segment, the interoperability of CCPs<sup>9</sup> and the portfolios of market participants.



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Margin requirements are likely to increase further as a result of EMIR requirements for CCPs.

If only a fraction of transactions in a portfolio moved to central clearing, the portfolio may become increasingly fragmented, diminishing the advantages of central clearing. BCBS-IOSCO and MAGD have taken into account benefits from multilateral netting for their calculations of increases in margin requirements. Estimates provided in this paper are based on these calculations and therefore already incorporate multilateral netting advantages.

Clearing using CCPs is generally more efficient than bilateral transactions as CCPs are able to more effectively replace defaulted portfolios and therefore calculate margins using a shorter close out period compared to transactions with bilateral exchange of margins.<sup>10</sup> CCPs generally use a close out period of 5 days compared to 10 days for bilateral transactions subject to BCBS-IOSCO rules.

Firms that are clearing members<sup>11</sup> of CCPs are required to contribute to the CCP default fund. A default fund is designed to add another layer of defence to a CCP and is called upon when a defaulting clearing member's margin payments have been exhausted. Our calculation factors in these default fund contributions as well as their capital risk-weights (see next section).

Margin requirements are likely to increase further as a result of EMIR requirements for CCPs, such as rules regarding look-back period, confidence interval, and liquidation period. The clearing fee itself will be added to the costs for those transactions that will move to central clearing after reform, driving up average transaction costs. For the estimate of total incremental cost arising from margin requirements for centrally cleared transactions, we have taken into account the additional costs arising from these EMIR requirements for CCPs.

Adding up the different cost components, we estimate that the additional costs arising from margin requirements for OTC derivatives transactions that will be centrally cleared amount to €10 per €1 m notional.

### Capital requirements

The CRD IV/CRR increases capital requirements for OTC derivatives transactions that are centrally cleared. Specifically, capital charges will increase for trade exposures, and exposures to the CCP default fund. These increases will directly affect any firm in scope of CRD IV/CRR and will be even more pronounced for any firm that is a clearing member.

While in the past, trade exposures to CCPs received a 0% risk-weight, mark-to-market and collateral exposures to a CCP will, under the new rules, be subject to 2% or 4% risk weights.<sup>12</sup> These new and higher risk weights will apply to clearing members but may also apply to other financial institutions under certain conditions, e.g. if they enter into a transaction with a clearing member and the clearing member completes an offsetting transaction with the CCP.

Capital charges for exposures to the CCP default fund will add to the increased cost of capital requirements. Capital charges for default fund contributions will need to be calculated either using the risk-sensitive 'hypothetical capital requirement' approach or alternatively applying a flat risk-weight of 1250% to exposures to CCP default funds.

Financial institutions will need to finance more of their assets through equity in order to meet higher regulatory capital requirements. The MAGD report has estimated the additional capital required globally across the market for centrally cleared OTC derivatives (compared to the pre-reform period) in their central post-reform scenario to be €11bn.<sup>13</sup> Taking this estimate as a basis and assuming the costs of raising additional capital to be around 10%,<sup>14</sup> we estimate the additional transaction costs arising from additional capital charges for centrally cleared OTC derivatives transactions to be €3 per €1 million notional.

As a supplementary measure to capital requirements, Basel III has introduced the leverage ratio which is – at its most basic level – defined as tier 1 capital over total exposures. There has been some concern about the leverage ratio. The leverage ratio is designed as a backstop and does not take into account the risk of exposures. This may be particularly problematic with respect to clearing. If the calculation of total exposures simply added up exposures without allowing for netting out exposures that offset each other, as had been initially proposed, this would have double-counted exposures and required banks to hold more capital for centrally cleared transactions than for non-centrally cleared.<sup>15</sup> The standard as proposed by the BCBS in January 2014, however, recognises this issue and includes a provision for central clearing. According to the proposed standard, a clearing member's trade exposures to qualifying central counterparties (QCCPs) associated with client-cleared derivatives transactions may be excluded from the leverage ratio exposure measure when the clearing member does not guarantee the performance of a QCCP to its clients.<sup>16</sup>

#### **Reporting requirements and other compliance costs**

EMIR imposes wide-ranging reporting requirements and other compliance obligations on market participants. All OTC and exchange-traded derivative transactions must be reported to a trade repository no later than T+1 and information on some historical trades must also be reported. The information to be reported is extensive and both parties to the transaction need to report.

Costs arising from requirements such as reporting daily valuations to trade repositories, collateral reporting, account segregation and record keeping are incurred directly at the level of the transacting firm. In addition, EMIR imposes detailed requirements on the CCPs themselves regarding governance, risk management, account segregation, reporting, record keeping and other compliance obligations.

In total, we estimate additional costs arising from these compliance requirements to be fairly small – about €0.60 per €1 million notional. That said, costs of reporting and other compliance obligations may increase if the market for cleared OTC derivatives – as a result of the reform – becomes increasingly standardised. More standardised transactions could bring about increasing trading volumes and decreasing notional sizes. Higher trade volumes would drive up the reporting and compliance cost element unless dealers have scalable infrastructures in place to mitigate such increases.

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**Costs arising from requirements such as reporting daily valuations to trade repositories, collateral reporting, account segregation and record keeping are incurred directly at the level of the transacting firm.**

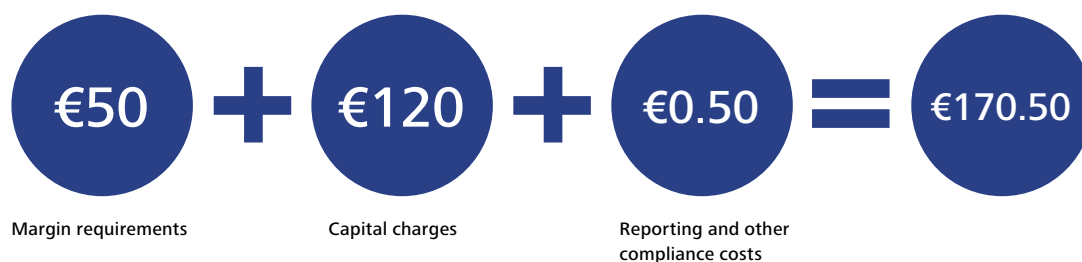
# Costs for OTC derivative transactions that will not need to be centrally cleared

OTC derivatives that will not need to be centrally cleared will be subject to strengthened risk management requirements, including the need to collateralise positions, increased capital charges and additional reporting.

We estimate that the incremental costs arising from the reforms for non-cleared OTC derivatives are more than ten times as much as the estimate for cleared transactions. Margin requirements, additional capital charges, as well as reporting and other compliance costs amount to €170.50 per €1 million notional amount. By multiplying the additional transaction costs of €170.50 with the notional amount outstanding in Europe for OTC derivatives that will not need to be centrally cleared post-reform, leads to an estimated additional total cost of €13bn per annum.

Additional costs in terms of margin requirements are five times those for centrally cleared derivatives. This can be explained by the loss of advantage derived from multilateral netting and the greater clearing efficiency of using CCPs. Additional capital charges for non-centrally cleared OTC derivatives transactions are estimated at €120 per €1 million notional. This is significantly more costly than the charges for centrally cleared transactions and in line with a deliberate move by global regulators to incentivise the use of clearing. Additional costs arising from reporting requirements and other compliance costs are €0.50 per €1 million notional, slightly lower than for centrally cleared transactions.

Figure 4. Additional cost per €1 million notional for centrally non-cleared transactions

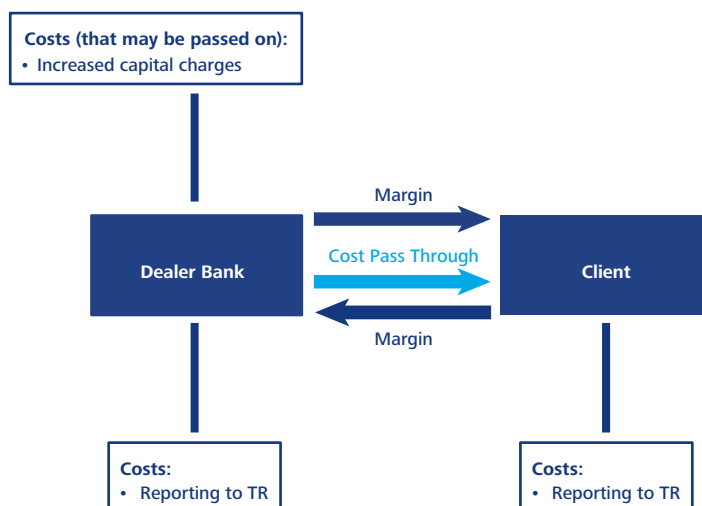


The additional costs can be applied to the average trade size to produce an estimate of the additional cost per transaction. For non-cleared Euro interest rate derivatives, the average notional is €85m which implies additional costs of €14,492.50 per transaction. For credit products, the average notional amount is around €40m for cleared as well as non-cleared credit OTC derivatives which suggests average additional costs of €544 for cleared and €6,820 for non-cleared trades. Based on these calculations, additional costs for non-cleared derivatives are at least ten times the additional costs for cleared transactions.

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**We estimate that the incremental costs arising from the reforms for non-cleared OTC derivatives are more than ten times as much as the estimate for cleared transactions.**

**Figure 5. Cost incidence in a bilateral transaction**



### Margin requirements for non-centrally cleared transactions

To date, in the absence of regulation, initial margin requirements on bilateral transactions have been negotiated on a case-by-case basis and market practice has varied across different counterparties, asset classes and jurisdictions. Around 74% of OTC derivatives transactions are already subject to collateral agreements, with the percentages varying from 83% for credit derivatives to 48.3% for commodities transactions. Of those contracts already collateralised, 88% were subject to bilateral exchange of collateral and 12% unilaterally collateralised.<sup>17</sup>

In September 2013, the BCBS and IOSCO published a joint paper outlining the final policy framework that establishes minimum standards for margin requirements for non-centrally cleared derivatives. Except for physically settled FX forwards and swaps, it is proposed that non-centrally cleared OTC derivative transactions between financial institutions will be subject to a two-way initial margin requirement as well as mandatory variation margin requirements. In the EU, a consultation paper on the detailed rules for bilateral margining is due shortly. Overall this is expected to follow the framework proposed by the BCBS and IOSCO but there could be some differences.

For those transactions that have so far not been subject to collateral agreements, the move to exchange margin is likely to lead to a significant step change in the costs of trading. Based on the results of the BCBS-IOSCO QIS, we have calculated the incremental costs of collateral arising from the margin requirements. The estimates provided are minimum estimates as they only consider initial margin. Costs arising from variation margin would be in addition to the cost estimates provided here. Variation margin will lead to incremental costs as firms will hold precautionary collateral available for posting in case of margin calls. MAGD has estimated the additional global pre-funding requirement to be €104bn.

Besides the costs arising from the requirement for additional collateral, the new bilateral margin standard may lead to costs in terms of liquidity management and collateral optimisation due to restrictions on the rehypothecation of collateral. These costs are not considered in the estimates provided in this paper.

The additional collateral costs arising from two-way initial margin requirements will depend on how many firms in the market will use a model-based approach and what proportion of the market will apply the more costly standardised approach.<sup>18</sup> Under the proposals, models may only be used with approval from the relevant regulator. It is likely that some firms either do not apply for model approval, or fail to meet the standards required by the regulator. We note that the cost estimates provided in this paper do not consider possible costs of model development and approval.

Given that the market is dominated by G-15 firms, we expect margin requirements for 90% of the market volume (total notional outstanding) to be determined using model-based approaches. These firms will be driven to using model-based approaches (subject to regulatory approval) as these are more capital efficient and ultimately will lead to lower margin costs for their clients.

The cost of collateral is the difference between the funding cost for collateral and the return earned on posted collateral. According to the ISDA Margin Survey (2013), 79.5% of collateral received and 78.7% of collateral delivered was cash. Government securities constitute 11.6% of collateral received and 18.4% of collateral delivered. We assume the costs of collateral to be 0.5%.<sup>19</sup> This would translate into additional costs arising from the new initial margin requirements of €50 per €1 million notional.

The standardised approach prescribes standardised schedules for initial margin and haircuts and does not account for risk on a portfolio basis in the way model-based approaches usually do. In the unlikely event that the whole market was to use the standardised approach, the initial margin required would be considerably higher with incremental costs totalling €270 per €1 million notional.

**Table 3 - Additional collateral costs**

	Estimated additional cost (per € 1 million notional amount traded, basis points)
Maximum cost scenario: Whole market using standardised approach	€270 (2.7 bps)
75% of the market using model-based approach	€85 (0.85 bps)
80% of the market using model-based approach	€75 (0.75 bps)
90% of the market using model-based approach	€50 (0.5 bps)
95% of the market using model-based approach	€35 (0.35 bps)

Source: Deloitte calculations based on BCBS-IOSCO QIS (2013) and BIS statistics.

### Capital requirements for non-centrally cleared transactions

CRD IV/CRR introduces new capital requirements increasing the regulatory capital for counterparty risk in OTC derivatives. Non-cleared OTC derivatives will be subject to a capital charge to protect against variations in the credit valuation adjustment (CVA). CVA measures asset valuation changes related to counterparty credit risk. Under the new requirements, financial institutions in scope of CRD IV/CRR are required to hold capital against potential falls in the market value of counterparty exposures due to increases in counterparty credit risk.<sup>20</sup> In effect, financial institutions will need to finance more of their assets through equity in order to meet higher regulatory capital requirements.

The CVA charge is based on current and potential future exposures from OTC derivatives. The BCBS-MAGD has estimated CVA capital charges based on the current exposure method (CEM) and has estimated that – in their central scenario – the additional capital required globally will be around €185bn. On the basis of this estimate and assuming the cost of raising additional equity to be around 10%, the capital shortfall as calculated by MAGD would translate into additional costs arising from CVA charges of €120 per €1 million notional.

Using data from a survey by Deloitte in cooperation with Solum Financial Partners, additional costs arising from CVA charges can be split by instrument. The additional costs arising from CVA charges as calculated above are highest for equity derivatives and lowest for interest rate products. The Deloitte-Solum report has identified that the contribution of each product type to CVA is driven by factors such as high notional amounts, long-dated transactions, and overall complexity.

**Table 4. Additional costs from CVA charges by instrument**

	Share of the market (% of total notional)	Estimated additional cost (per € 1 million notional amount traded, basis points)
Interest-rate	77%	€100 (1 bp)
Foreign-exchange	11%	€215 (2.15 bps)
Credit derivatives	4%	€180 (1.8 bps)
Equity	1%	€240 (2.4 bp)
Other	7%	€150 (1.5 bps)

Source: Deloitte Calculations based on MAGD (2013), BIS statistics, Deloitte and Solum Financial Partners (2013).

#### Reporting requirements and other compliance costs

EMIR imposes extensive reporting requirements and other compliance obligations on market participants. These apply regardless of whether a transaction is centrally cleared or not. While requirements such as reporting valuation (daily mark-to-market) and collateral (trade by trade, portfolio basis) are incurred directly at the level of the transacting firm, other compliance obligations affect trade repositories.

In total, we estimate additional costs arising from reporting and other compliance requirements to be fairly small, about €0.50 per €1 million notional.

# What do firms need to be doing now?

There is now sufficient clarity for firms to undertake a strategic review of their current OTC derivative portfolio to better understand the impact of these reforms. As a result of this, banks may decide to restructure their product offerings and pull back from certain asset classes which are deemed to be too costly or look to increase offerings for asset classes where client demand is expected to be greater.

In early 2015 we expect the first mandatory clearing obligations to start in the EU and around the same time, we expect final rules on the treatment of non-cleared derivatives (following a consultation paper due to be released shortly). From a practical perspective both of these elements will necessitate significant client outreach actions as well as the need to revisit and potentially amend existing legal documentation such as ISDA agreements. As we have seen from other elements of EMIR these can be lengthy and time consuming programmes. There will also be significant operational considerations, particularly in relation to the segregation of client assets and establishing processes to deal with the expected increase in disputes.<sup>21</sup> Firms need to make sure that they have robust operational infrastructure in place including efficient post-trade processing.

To the extent to which this has not already happened, dealer banks and their clients may want to reduce costs of clearing by centralising clearing with one or two CCPs in order to maximise netting benefits. Similarly, CCPs may offer services such as portfolio value-at-risk (VaR) based margining that help minimise clearing costs. Not all products are suitable for portfolio margining and the default management challenges are considerable.

Greater use of internal models for bilateral transactions could help mitigate costs from margin requirements. However, this comes with the biggest challenge that banks will face for non-cleared derivatives: the development of the required models to calculate initial margin. In reality, we expect this to be a two-pronged approach. Firstly, banks will look to develop their own internal models for some product sets and submit them for the required regulatory approval. Secondly we expect the emergence of market-based solutions offering a standardised model approach for some product sets. Common models have also some operational benefits such as fewer collateral disputes.

EMIR is only one of various regulatory initiatives that have reinforced collateral use in financial markets. Although recent studies<sup>22</sup> do not expect a shortage of collateral, firms should ensure effective collateral management and consider developing an explicit collateral optimisation strategy.

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**Firms need to make sure that they have robust operational infrastructure in place including efficient post-trade processing.**

# What will the market look like post-reform?

The structure of OTC derivative markets is set to change as a result of the reforms. Not only will there be greater use of market infrastructure such as CCPs and trade repositories and ultimately the use of trading venues as envisaged under the revisions to the Markets in Financial Instruments Directive and new Regulation (MiFID II / MiFIR), but the new cost of trading in these markets will lead to a shift in the product mix offered by dealer banks and as a result, usage across the market.

As discussed in this paper, new capital charges are likely to drive costs higher for all OTC derivatives but particularly so for non-cleared derivatives. Currently, dealer to dealer business dominates in the more standardised products i.e. those which are likely to be subject to mandatory clearing going forward, whereas buy-side firms, such as asset managers and corporate end-users, are more active in bespoke business as they seek derivative contracts which ultimately match their hedging needs. The impact of the increased costs for non-cleared products is expected to manifest itself in a number of ways.

First, some banks may decide that these markets are too capital intensive and look to focus offerings in standardised products. Second, as a result of the new increased costs we could see end-users looking to buy less perfect hedges by using cleared/standardised OTC derivatives in place of more bespoke and more expensive non-cleared derivatives, ultimately leaving more risk on their own balance sheets. Third, we may see financial and non-financial counterparties look for alternative products, for example in the futures market where margin requirements are lower.

Overall, the costs of doing business in OTC derivatives markets looks set to increase – substantially so for products which are not cleared. As a result, firms active in the market will review margining practices and, if applicable, capital efficiency of products. We expect banks to respond to the challenges in an innovative and competitive way. Firms will review product lines and restructure their offerings as appropriate, possibly adding new, more capital efficient products. The large dealer banks may opt for more defensive strategies in order to prevent general erosion of client base and protect higher-margin product lines. Smaller firms on the buy side may be the ones that find OTC derivatives in the new environment too expensive and will move to cheaper, more standardised, cleared products to a larger extent. But it is clear that OTC derivatives markets will undergo significant change for some time to come.

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**We expect banks to respond to the challenges in an innovative and competitive way. Firms will review product lines and restructure their offerings as appropriate, possibly adding new, more capital efficient products.**



# Endnotes

- 1 Spot FX transactions and certain types of physically settled commodity transactions are excluded from EMIR. In this context, the European Securities and Markets Authority (ESMA) published a letter to the Commission on 14 February 2014, in which ESMA asked the European Commission to clarify 1) the definition of currency derivatives in relation to the frontier between spot and forward and their conclusion for commercial purposes, and 2) the definition of commodity forwards that can be physically settled.
- 2 The largest derivatives dealers are organised in an industry group referred to as the G15 (G14 until Q3 2011) and account for around five-sixths of the market.
- 3 Published in the Annex of the Second Consultation Document for Margin requirements for non-centrally cleared derivatives.
- 4 Contained in Annex VIII of the Final report on draft Regulatory and Implementing Technical Standards on Regulation (EU) 648/2012 on OTC derivatives, central counterparties and trade repositories.
- 5 Non-financial counterparties will need to clear their non-hedging derivative contracts, if the firm exceeds one of the clearing thresholds: gross notional values above €1bn for credit and equity derivatives, €3bn for interest rate, foreign exchange, commodity and other contracts.
- 6 We use end-2012 data for the analysis in this paper rather than more up-to-date statistics as the studies which inform our analysis are based on end-2012 data.
- 7 This assumption of an increase of volume to be cleared is in line with the scenarios of the Quantitative Impact Study of the Basel Committee on Banking Supervision and the International Organization of Securities Commissions (BCBS-IOSCO QIS) as well as the analysis carried out by Macroeconomic Assessment Group on Derivatives (MAGD).
- 8 Retrieved from the platform <http://www.swapsinfo.org/> which is run by ISDA.
- 9 Interoperability between CCPs clearing OTC derivatives is not permitted by EMIR. More generally, establishing interoperability would be particularly hard to implement across jurisdictions, and even in one jurisdiction would present formidable risk, legal and operational difficulties. In conclusion, in the absence of interoperability, maximising margin efficiency in clearing requires limiting the number of CCPs used in a market segment, ideally to one.
- 10 The close out period is the time it takes to close out and re-hedge an OTC position following the default of a counterparty.
- 11 A clearing member is a member of, or a direct participant in, a CCP that is entitled to enter into transactions with the CCP, regardless of whether it enters into such trades for its own hedges, investment or speculative purposes or whether it also enters into trades as a financial intermediary between the CCP and other market participants.
- 12 The 2% risk weight essentially applies if the CCP holds assets or collateral in a bankruptcy-remote manner, otherwise the risk weight is 4%. For exposures to "non-qualifying" CCPs, the risk weight is as high as 50%.
- 13 The estimates provided in the MAGD study may overstate the additional capital required as MAGD has used a flat risk weight ('Method' 2 of the interim BCBS rules) in order to estimate capital charges related to exposures to the default fund of CCPs. The flat risk weight of 1250% can be considered to be more penal than the capital charge derived from the hypothetical capital requirement.
- 14 The 10% assumption is in line with cost of equity estimates available in previous studies, e.g. MAGD has carried out historical estimations and arrived at estimated cost of equity (long-run mean) of 10.3% for the Eurozone and 11.3% for the UK. For the pre-crisis period the respective estimates were 9.5% for the Eurozone and 10.4% for the UK. Using the cost of equity for the estimation of capital cost may overstate the true cost of additional capital to the extent that banks cover some of it with Alternative Tier 1 and Tier 2 capital instruments.
- 15 Acworth (2014) provides a good summary of the concerns raised.
- 16 See BCBS (2014), paras 27 and 28 for details.
- 17 According to the ISDA Margin Survey 2013. In transactions with unilateral collateralisation (also referred to as one-way transactions), only one counterparty to the transaction is obliged to post collateral. In transactions with bilateral exchange of collateral, both counterparties to a transaction may post (and receive) collateral. Bilateral exchange is typically on a net basis rather than on a two-way basis. The decision of which type of collateral agreement is chosen usually depends on factors such as product type and creditworthiness of counterparties.
- 18 The standard initial margin schedule as provided by BCBS-IOSCO is less risk-sensitive and deliberately conservative. Also, while the model-based initial margin calculations account for portfolio effects such as diversification within asset classes, hedging and risk offsetting by legally enforceable netting agreements, the standardised schedule does not take any of these into account.
- 19 This assumption is in line with estimates available in previous studies, e.g. MAGD has carried out historical estimations of long-term average collateral costs and arrived at 38 bps for the Eurozone and 59 bps for the UK in non-crisis periods. Many buy-side derivatives users may have excess high quality assets that they could use as collateral at little or no cost, while other buy-side derivatives users may face higher funding costs, either due to poor access to funding and/or because they hold one-directional positions.
- 20 Article 382 CRR exempts transactions with non-financial counterparties below the EMIR clearing threshold (see footnote 6) and most intra-group transactions from CVA charges.
- 21 Disputes between counterparties to an OTC derivatives transaction may arise over issues such as the valuation of the underlying positions and collateral that result from diverse risk management systems and valuation models. See e.g. IMF (2010), p. 6.
- 22 See e.g. Committee on the Global Financial System (2013).

# Glossary of acronyms

**BCBS:** Basel Committee on Banking Supervision

**BIS:** Bank for International Settlements

**BPs:** Basis points

**CCP:** Central Counterparty

**CEM:** Current Exposure Method

**CRD IV:** Capital Requirements Directive IV

**CRR:** Capital Requirements Regulation

**CVA:** Credit Valuation Adjustment

**EMIR:** European Market Infrastructure Regulation

**ESMA:** European Securities and Markets Authority

**ETD:** Exchange-Traded Derivative

**FX:** Foreign Exchange

**ISDA:** International Swaps and Derivatives Association

**IOSCO:** International Organization of Securities Commissions

**MAGD:** Macroeconomic Assessment Group on Derivatives

**MiFID:** Markets in Financial Instruments Directive

**MiFIR:** Markets in Financial Instruments Regulation

**OTC:** Over-the-counter

**QIS:** Quantitative Impact Study

**QCCP:** Qualiifying Central Counterparty

**TR:** Trade Repository

**VAR:** Value-at-Risk

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# Contacts

**David Strachan**

Partner - EMEA Centre for Regulatory Strategy  
dastrachan@deloitte.co.uk

**Hubert Justal**

Director - Audit  
hubjustal@deloitte.co.uk

**Kai Kohlberger**

Senior Manager - EMEA Centre for Regulatory Strategy  
kohlberger@deloitte.co.uk

**Gordon Mackenzie**

Director - Consulting  
gmackenzie@deloitte.co.uk

**Luxembourg contacts:****Benjamin Collette**

Partner - Financial Services Consulting Leader  
+352 451 452 809  
bcollette@deloitte.lu

**Xavier Zaegel**

Partner - Capital Markets & Financial Risks  
+352 451 452 748  
xzaegel@deloitte.lu

**Vincent Gouverneur**

Partner - EMEA Investment Management Leader  
+352 451 452 451  
vgouverneur@deloitte.lu

**Jean-Philippe Peters**

Partner - Business Risk  
+352 451 452 276  
jppeters@deloitte.lu

**Johnny Yip**

Partner - Investment Management Leader  
+352 451 452 489  
jyiplanyan@deloitte.lu

**Laurent Collet**

Director - Corporate & Business Strategy  
+352 451 452 112  
lacollet@deloitte.lu

# Notes

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