

Financial Stability Paper No. 14 – March 2012

# Thoughts on determining central clearing eligibility of OTC derivatives

Che Sidanius and Anne Wetherilt



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# Thoughts on determining central clearing eligibility of OTC derivatives

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In response to the events of 2007–09, the G20 has mandated a comprehensive reform of the structure and transparency of over-the-counter (OTC) derivatives markets, which will result in significant changes in the trading, clearing and reporting of transactions. This article explains which criteria are important when determining the eligibility for central clearing of OTC derivatives products. Suitability for mandatory central clearing is likely to depend on product and process standardisation, but also on market liquidity. Liquidity is an important constraint and may require central counterparties (CCPs) to modify risk management models. Further, systemic risk reduction benefits associated with central clearing can only be achieved when CCPs have robust risk management processes. Novation to CCPs is unlikely to be practical where operational processes are not automated, while risk modelling and default management become particularly challenging when products are illiquid. Therefore, there may be a natural boundary for the central clearing obligation, with less liquid products, or products for which operational process remain bespoke and less-automated, unlikely to be suitable for a central clearing obligation.

## Introduction

Derivative instruments, such as interest rate and credit default swaps, play a key role in the financial system. They allow both financial and non-financial firms to hedge unwanted risks, in turn reducing the cost of doing business. Derivatives also support liquidity provision by financial intermediaries who can use derivatives to hedge the inventory risks that they incur in doing so. This paper aims to contribute to the policy debate on reducing systemic risk in over-the-counter (OTC) derivatives markets by considering some of the key factors that are likely to determine whether a contract should be subject to a central clearing obligation, or not.

By and large, derivatives are traded in OTC markets, where dealers trade bilaterally with each other and with clients.<sup>(1)</sup> If those market participants do not use a central counterparty (CCP), this exposes both parties to bilateral counterparty credit risk, in particular when derivatives positions are held over long maturities. These exposures are significant: the aggregate credit exposure related to derivative holdings for the top five US banks has been estimated to be over US\$1 trillion.<sup>(2)</sup> Transparency in these markets is generally low, so it is difficult to know the exact nature of counterparty credit exposures at both the individual and the global level. During the 2007–09 financial crisis, lack of transparency, combined with increased concerns about counterparty credit risk led to a significant reduction in liquidity.<sup>(3)</sup>

Furthermore, risk management practices tend to vary, with some, but not all transactions subject to collateral agreements (ISDA (2011a)). In 2007–09, concerns about large bilateral exposures with insufficient collateralisation may have further exacerbated the crisis. When Lehman Brothers collapsed it was a major dealer in the OTC derivatives market, including credit default swaps (CDS), and was counterparty to over 900,000 derivative contracts.<sup>(4)</sup> These contracts did not always provide contractual rights of netting, resulting in many firms reverting to the rights and remedies under different legal jurisdictions in order to understand and reduce their Lehman Brothers exposures.

In response to the events of 2007–09, the G20 has mandated a comprehensive reform of the structure and transparency of OTC derivatives markets, which will result in significant changes in the trading, clearing and reporting of transactions. Specifically, in September 2009, the G20 leaders agreed in Pittsburgh that, by end-2012, *all standardised OTC derivative contracts be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties.*

In the United States, the central clearing reforms are being implemented as part of the Dodd-Frank Act, with the Commodities Futures Trading Commission (CFTC) and

Securities and Exchange Commission (SEC) in charge of rule making. In Europe this is part of the European Market Infrastructure Regulation (EMIR) process led by the European Commission.

In its latest progress report, the Financial Stability Board (FSB) notes delays in both rule making and implementation across G20 jurisdictions.<sup>(5)</sup> Although the G20 deadline is approaching, many jurisdictions have not yet fully defined the nature of either the central clearing or the trading obligation — which products are in scope; which factors will be used to determine the scope etc. This article focuses on the central clearing commitment. The main aim of the paper is to offer some thoughts on how suitability for a central clearing obligation might be determined.

Work done by the FSB and by IOSCO sets out the general framework for determining the clearing obligation (see Box 1). Specifically, the FSB (2010) identifies the following broad factors that should inform the process of establishing a clearing obligation:

- the degree of standardisation of a product's contractual terms and operational processes;
- the nature, depth and liquidity of the market for the product in question; and
- the availability of fair, reliable and generally accepted pricing sources.

These same factors are included in EMIR. EMIR also specifies that in its technical standards, the European Securities and Markets Authority (ESMA) takes into account additional factors related to the CCP's ability to clear new contracts. A recent consultation paper published by ESMA (2012) proposes the following additional considerations:

- contractual standardisation terms need to refer to common legal documentation, including master netting agreements;
- margins need to be proportionate to the historical stability of liquidity, and liquidity needs to be sufficient in case of a default of a clearing member; and
- pricing information needs to be readily available to participants.

The present paper makes three contributions to the debate. First, it explains which aspects of standardisation critically underpin central clearing. Second, it clarifies why liquidity is a key determinant in a central counterparty's decision to clear a product, both in terms of day-to-day risk management and in

(1) See Smyth and Wetherilt (2011).

(2) Office of the Comptroller of the Currency (2011), *Report on bank trading and derivatives activities.*

(3) European Central Bank (2009), *OTC derivatives and post-trading infrastructures and Financial Stability Report*, October 2008, pages 19–23.

(4) PricewaterhouseCoopers (2009), *Lehman Brothers' bankruptcy.*

(5) Financial Stability Board (2011), *OTC derivatives market reforms: progress report on implementation.*

## Box 1

### The central clearing obligation

In September 2009, G20 leaders agreed that all standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest, and that all OTC derivative contracts should be reported to trade repositories. Actual implementation of these commitments is being monitored by the Financial Stability Board.<sup>(1)</sup>

In principle, the clearing obligation can be determined using a bottom-up and/or a top-down approach.<sup>(2)</sup> IOSCO (2012) recommends that authorities implementing a central clearing obligation consider using these bottom-up and top-down approaches in their decision-making processes. In Europe, ESMA will be the responsible authority. In the United States, this role falls to the CFTC and the SEC.

In the top-down approach, the responsible authority identifies the classes of OTC derivatives contracts to be cleared. IOSCO (2012) recommends that this process includes

consultation with all relevant stakeholders. For example, the authority will need to establish why there may not yet be a CCP for a particular product category, whether the product is suitable for central clearing and whether any CCPs would be able to do so in the short to medium term.

In the bottom-up approach, a CCP submits products it already clears or proposes new products that it could clear. These proposals are then considered by the responsible authority, which decides whether the products in question should be subject to mandatory clearing. IOSCO (2012) recommends that authorities using this approach clearly set out the criteria against which the clearing obligation will be assessed.

Both approaches should be mutually reinforcing and ensure that CCPs are not forced to clear a product where they or their participants cannot manage the risks, including a default process. Together, they should also ensure that CCPs do not consider clearing products purely on commercial considerations, but for the purposes of systemic risk reduction.

(1) See FSB (2010, 2011).

(2) For more detail on the main characteristics of the two approaches, see IOSCO (2012).

default risk management, and how in turn this is related to standardisation. Finally, it explains why the systemic risk reduction benefits of central clearing can be achieved only when contracts meet these eligibility criteria.

Section 1 of the paper provides an overview of OTC derivatives markets. Section 2 describes the post-trade processes supporting OTC derivatives trading. Section 3 offers definitions for the terms *standardisation* and *liquidity*, and uses these concepts to suggest a definition for *central clearing eligibility*. Building on this analysis, Section 4 describes progress towards central clearing. Section 5 concludes.

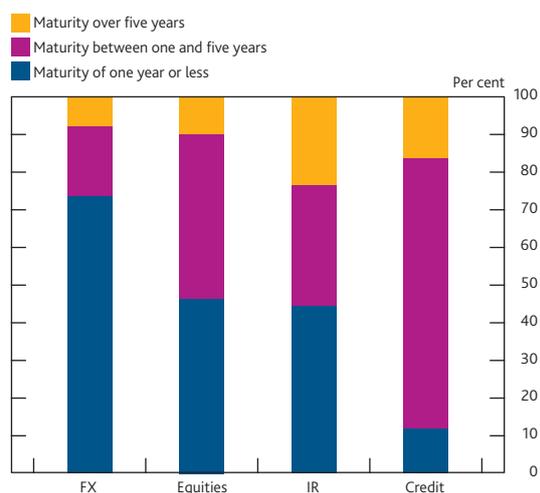
## 1 OTC derivatives markets: some general characteristics

There are a number of general features of the OTC derivatives market that are worth setting out, as they affect both standardisation and liquidity. First, aggregate trading volumes are high, especially in the interest rate segment of the market. Average daily turnover in OTC interest rate derivatives was US\$2.1 trillion in April 2010, with so-called plain-vanilla interest rate swaps accounting for US\$1.3 trillion, and forward rate agreements (FRAs) for US\$601 billion.<sup>(1)</sup>

Second, while maturities vary across asset classes, exposures can be very long-lived. FX derivatives, FRAs, overnight index swaps (OIS) and basis swaps tend to have shorter maturities (0–2 years), while swaptions and more exotic swaps have

longer maturities. The majority of credit swaps fall within the 1–5 year category. This is illustrated in **Charts 1** and **2** which show the average maturities of outstanding exposures.

**Chart 1** Maturity of outstanding OTC derivatives positions<sup>(a)(b)</sup>



Source: BIS.

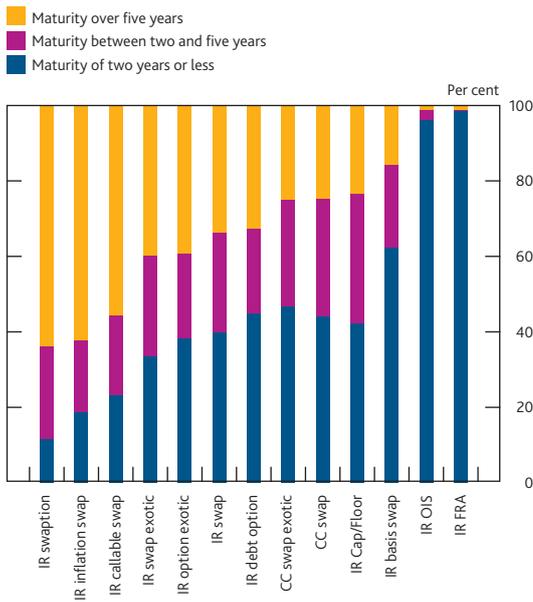
(a) As percentage of notional amounts outstanding.

(b) As at June 2011.

Third, trading of interest rate swaps is concentrated in a handful of currencies. This is illustrated in **Chart 3**, with interest rate swaps in US dollars comprising around 32% of all transactions, followed by euro (26%), yen (12%) and sterling (9%).

(1) BIS triennial survey, April 2010, Table 6.

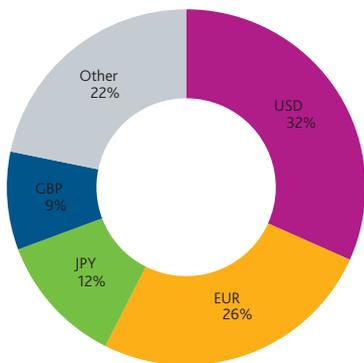
**Chart 2 Interest rate swap maturities<sup>(a)(b)</sup>**



Source: TriOptima.

- (a) As at 17 February 2012.
- (b) IR stands for interest rate, CC stands for cross-currency.

**Chart 3 Interest rate swap transactions by currency<sup>(a)</sup>**



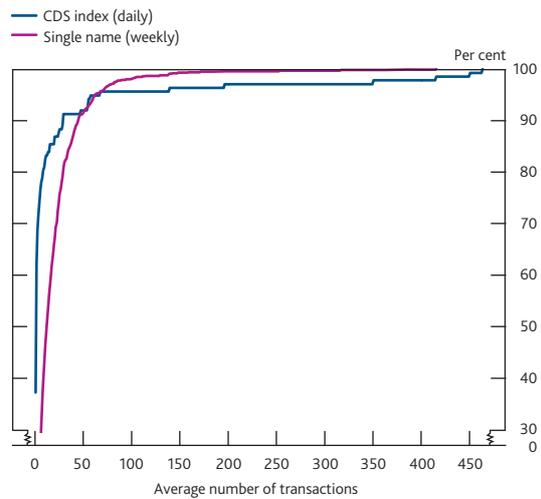
Source: Fleming *et al.* (2012).

- (a) Based on 167,000 transactions between 1 June 2010 and 31 August 2010.

Fourth, many contracts are traded infrequently. As an example, **Chart 4** shows that around 90% of all credit default index transactions trade less than 50 times a day, and around 90% of all single-name credit default swaps trade less than 50 times a week.

Finally, transactions are concentrated among the main dealers, though more so in some segments than others. In aggregate, G14 dealers<sup>(1)</sup> hold above 70% of plain-vanilla swaps and OIS, and over 50% of single-currency basis swaps. In the CDS market, dealers hold over 40% of index contracts and over 60% of single-name CDS contracts (**Charts 5 and 6**).

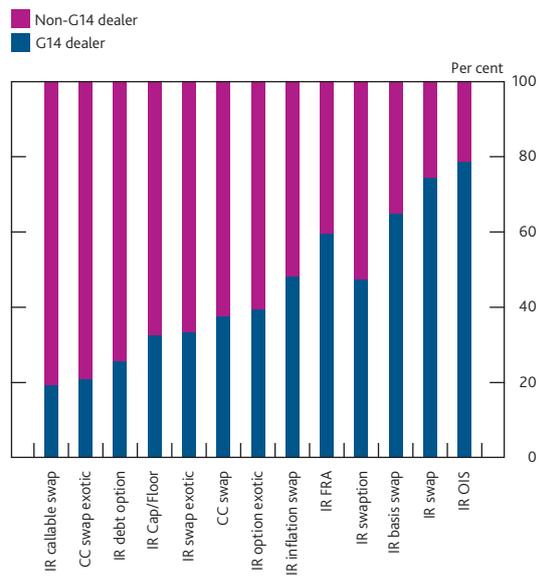
**Chart 4 Credit default swaps: average number of trades<sup>(a)(b)</sup>**



Source: DTCC Trade Information Warehouse.

- (a) Average daily transactions for 137 CDS index contracts from 20 June 2011 to 19 September 2011.
- (b) Average weekly transactions for 1,000 single-name CDS contracts from 29 August 2011 to 24 February 2012.

**Chart 5 Counterparties to OTC interest rate swap transactions<sup>(a)(b)(c)</sup>**



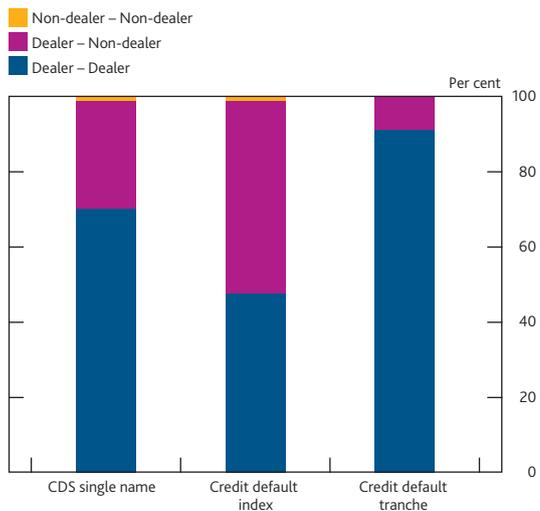
Source: TriOptima.

- (a) Percentage of gross notional amounts outstanding. G14 data include CCP-cleared transactions (OIS, IRS, basis swaps).
- (b) IR stands for interest rate, CC for cross-currency.
- (c) As at 17 February 2012.

Having described the main characteristics of OTC derivatives markets, the next section explains how post-trade processes are organised, both for contracts that are centrally cleared and for those that are cleared in a bilateral manner.

(1) The G14 dealers are the fourteen largest global OTC derivatives dealers.

**Chart 6** Counterparties to OTC credit derivatives transactions<sup>(a)(b)(c)</sup>



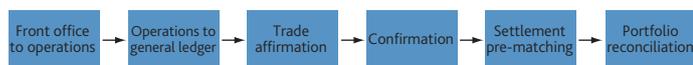
Source: DTCC Trade Information Warehouse.

- (a) Percentage of gross notional amount outstanding.  
 (b) As at 2 March 2012.  
 (c) Non-dealer to non-dealer transactions account for 0.15% of CDS single-name transactions, 0.05% of credit default index transactions and 0% of credit default tranche transactions.

## 2 Post-trade processes: definitions

Figure 1 shows what needs to happen between two parties agreeing on a trade (trade execution) and the settlement of contracts. These processes are often referred to as post-trade processes. Central clearing is an important part of this process, but it is not the only one, and it is preceded by a number of other operations. These are captured in Figure 1 which provides a stylised timeline. Table A summarises the key technical terms.

**Figure 1** Timeline of post-trade processes



*Front office* initiates the trade and passes it to *operations* for processing. The *general ledger* is the main accounting record used to track the financial transactions the firm makes. *Trade matching* and *affirmation* involve pairing the two legs of a trade and verifying that all trade details (eg price, size, counterparty) are accurate. *Trade confirmation* is about creating a final record of the trade that is agreed upon by both parties. *Portfolio reconciliation* processes allow counterparties to settle any outstanding discrepancies in valuation and avoid future collateralisation disputes.

Many, but not all of these processes have been automated in recent years. For example electronic trade affirmation and confirmation rates have increased significantly, and progress is tracked by the International Swaps and Derivatives Association (ISDA) in an annual benchmarking survey (see Section 4).

**Table A** Straight-through processing: key terms

<b>Front office to operations</b>	Trade data transferred from sales/trading to operations for processing.
<b>Operations to general ledger</b>	Trade data transferred from the operations systems to the general ledger.
<b>Trade affirmation</b>	Counterparties verify that they agree on the economics of the trade.
<b>Settlement pre-matching</b>	Counterparties match payments in advance of settlement date.
<b>Nostro reconciliation</b>	Reconcile expected cash movements of a transaction with actual cash movements.

ISDA also monitors progress in *straight-through processing* — defined as the automation of the entire process from trade initiation to settlement (and often referred to as STP). Note that trade affirmation and confirmations are often captured as part of straight-through processing, even though they each constitute a process in their own right.

Having completed these post-trade processes, trades can then be cleared bilaterally or cleared centrally through a CCP. In the former case, the two counterparties have already agreed bilaterally on the amount of collateral required. In the latter case, *novation* replaces the original transaction with the two transactions with the CCP, which as principal will manage its counterparty credit risk over the lifetime of the contracts.

Finally, *settlement* refers to the exchange of contracts and monies, thus completing a transaction between two counterparties. While this means the termination of pre-settlement risk, counterparty risk remains an issue until a contract's expiry — hence the need for collateralisation and other risk management processes.<sup>(1)</sup>

The next section explains which post-trade processes are essential when moving from bilateral to central clearing, and why they need to be standardised. This in turn allows us to define suitability of a product for central clearing, or 'clearing eligibility' more precisely.

## 3 Defining clearing eligibility

Table B summarises the processes required for central clearing. We also assess the degree of standardisation for five broad asset classes. In doing so, we distinguish between product standardisation (steps 1 and 2 in the table) and process standardisation (steps 3 and 4). We then suggest a definition for *clearing eligibility*. The remainder of the section defines the clearing eligibility factors in more detail. Section 4 will provide a more detailed assessment of industry progress for each of these factors, based on available data, and will highlight data gaps.

(1) CPSS (2007), 'New developments in clearing and settlement arrangements for OTC derivatives'.

**Table B** Current status of clearing eligibility factors

	Standardised legal terms (product)	Trade economics (product)	Confirmation (process)	Straight-through processing (process)	Central clearing risk management
Interest rates	✓	✓	✓	✓	Ongoing
Credit	✓	✓	✓	✓	Ongoing
Equity	✓	✓	✓	Ongoing	Ongoing
Currency options	✓	✓	✓	✓	Ongoing
Commodity	✓	Ongoing	Ongoing	Ongoing	Ongoing

✓ = Significant progress achieved.

Source: Bank of England.

**Standardising legal terms** is the first condition for central clearing. It provides the basis for establishing trading relationships between counterparties and sets forth the contract specifications through common legal documentation including master agreements, definitions and confirmations. The ISDA Master Agreement and related asset-specific documentation has become industry standard, facilitating automated processing, and allows parties to quickly negotiate new transactions without having to necessarily recreate the contract terms (**Table C**).

**Table C** Legal standardisation: key terms

<b>Master Agreement</b>	Document agreed between two parties that sets out standard terms that apply to all the transactions entered into between those parties.
<b>Schedule to the Master Agreement</b>	Used to make amendments to and customisations of the Master Agreement including thresholds relating to certain events of default and the offices through which parties can act.

Market participants use the pre-printed master agreement, insert the names of counterparties, and further customise their transaction through use of the *schedule* to the master agreement. The latter contains elections, additions and amendments to the master agreement. Together with the schedule, the master agreement sets forth all of the general terms and conditions necessary to properly allocate the risks of the transactions between the parties, but does not contain any commercial terms specific to a particular transaction.

Standardisation of legal terms is a required step towards central clearing. Novation by the CCP cannot take place in its absence. The CCP has to be certain that trades are conducted on the same terms to facilitate netting and risk management. Ongoing efforts by the industry to standardise legal terms has enabled more products to be centrally cleared. An assessment of ISDA initiatives to standardise product documentation suggests that this has been achieved in all five derivatives classes summarised in **Table B**.<sup>(1)</sup>

A well-understood process to capture the **trade economics** is the next step. For instance, interest rate transactions are effectively standardised through product templates and market practice for the majority of fields including start dates, end dates, periodicity of interim payments, coupon levels, etc. **Table B** shows that this second aspect of product standardisation has been achieved in four out of five asset classes.

Capturing the economic terms of the trade is necessary to **confirm** transaction details between counterparties (the third step in **Table B**). It also facilitates electronic trade processing (STP). Again, novation cannot take place without well defined and confirmed trade terms in place. **Table B** shows that these aspects of process standardisation have been achieved in four asset classes. More detail will be given in Section 4.

**Straight-through processing** is the fourth stage in **Table B**. It reduces risk from the otherwise manually intensive nature of post-trade processing and the potential for significant market disruptions in closing out positions following a member default. STP therefore facilitates novation and ensures that trades can be processed safely. For instance, in September 2005, a backlog of unconfirmed trades had accumulated in the credit derivatives market, as a result of inefficient manual confirmation processes. Totalling 150,000 trades, nearly two thirds of these remained unconfirmed for more than 30 days. In addition, there was a significant degree of unilateral position transferring from end-users to other counterparties, even though the trade agreements did not permit assignments without the dealer's prior consent.<sup>(2)</sup>

Lack of automation is not only a source of operational risk, but also creates credit risk as counterparties may not have a full

(1) [www2.isda.org/asset-classes/](http://www2.isda.org/asset-classes/).

(2) GAO (2007), 'Credit derivatives: confirmation backlogs increased dealers' operational risks'.

**Table D** OTC derivatives straight-through processing, G14 dealers

Per cent	Front office to operations	Operations to general ledger	Affirmation	Electronic confirmation	Nostro reconciliation	Settlement pre-matching	Average for product
IRS	93	93	56	85	75	30	72
CDS	94	95	24	94	89	86	80
Equity	84	90	45	52	67	20	60
Currency options	90	94	22	75	89	45	69
Commodity	79	87	30	65	80	18	60

Sources: ISDA (2011a) and Bank calculations.

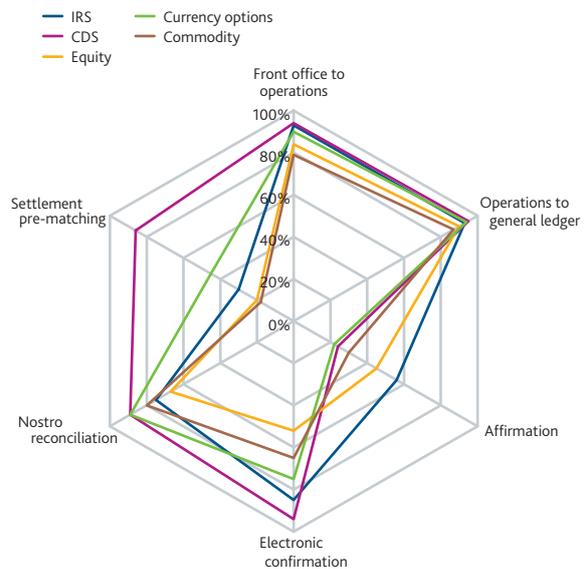
picture of their exposures. Unilateral transfers meant that dealers did not always know the exact counterparty to which they were exposed, thus limiting their ability to monitor and manage pre-established limits.

Front office trade data transfers, trade confirmation and nostro reconciliations all should be automated so the CCP does not incur the above risks. In principle, trade affirmations may be done either via voice or electronically, though the former may be less suitable when trading volumes are high.

As **Table D** and **Chart 7** illustrate, significant progress has been achieved by the industry in automating trade processing. The chart shows that on average, just over 70% of interest rate derivative volume and 80% of credit derivative volume have been automated by the G14 dealers.<sup>(1)</sup> **Chart 7** shows, however, that processing equity and commodity derivatives is more manual, with average product automation rate of 60% each. More detail is given in **Table D**, which will be discussed in the next section.

The CCP's ability to manage the credit and liquidity risk exposures that arise from novation constitutes the fifth clearing eligibility factor in **Table B**. A CCP needs to manage its own risk profile in order to mitigate the systemic risk which arises from its role as central counterparty.<sup>(2)</sup> To do so, the CCP needs not only to have a sound methodology to measure risk on a continuous basis, but also needs to assess whether there is sufficient **liquidity** and **price transparency** in all the markets it plans to clear. This is to ensure mark-to-market prices are sufficiently reliable to enable the CCP to value its positions and to ensure that a member's position could be absorbed by the market in the event of a default scenario.

It is at the point of a member failure that product standardisation (underlying asset, maturity etc) matters most — the more standardised product is likely to attract greater trading interest and will consequently be more liquid. This has the following implications for CCP risk management: first, the more liquid a product, the easier it is to achieve an accurate valuation of positions, which in turn reduces the risks that positions will be undercollateralised or overcollateralised.

**Chart 7** OTC derivatives straight-through processing

Source: International Swaps and Derivatives Association, Inc., *Operations Benchmarking Survey*.

Undercollateralised trades impose more risks on the CCP in the event of default. Overcollateralised trades raise the costs of trading derivatives because collateral is costly.<sup>(3)</sup> Second, more liquid products typically have more accurate time-series price data. This facilitates the development, testing, and calibration of risk models, permitting CCPs to choose initial margin levels that more precisely reflect the true risks posed by these products. Third, a liquid market is needed so the CCP can hedge the risk on a defaulter's portfolio by entering into an equal and opposite position in those contracts.

CCPs can mitigate credit and liquidity risk by adjusting their margin models (eg by extending assumptions regarding the close-out period). In addition, some CCPs conduct a daily auction-style price discovery process, where clearing-house members provide end-of-day quotes for instruments in which they have an open interest. From these quotes, the CCP establishes final end-of-day prices for mark-to-market. These

(1) ISDA (2011a), *Operations Benchmarking Survey*.

(2) See, for example, *Financial Stability Report*, June 2010, Box 9.

(3) Pirrong (2011), 'The economics of central clearing: theory and practice'.

are also used to compute margin and default fund contributions.<sup>(1)</sup>

For highly illiquid contracts these processes may not suffice. In the event of a default there needs to be a sufficient number of participants with open positions to support the CCP with regards to hedging, portfolio auction, and allocation. There also needs to be adequate depth to ensure that any executed trade does not affect the market price unfavourably. Hence, the CCP may conclude that its risk management models are not suited for the most illiquid products.

Liquidity can be measured in a number of ways. *Bid-ask spreads* give an indication of the cost of transacting — the less liquid the market, the wider the spread. As an illustration, recent research published by ISDA (2011b) reports quoted spreads for dollar interest rate swaps on three dealer platforms in a range of maturities, from two to 30 years. The data (collected over a four-week period) reveal that over 90% of all quoted spreads were 0.5 basis points or less. There is some variation though, with the percentage of quotes greater than 0.80 basis points ranging from 2.10% (two-year swaps) to 4.40% (five-year swaps). The reported variation in spreads shows that liquidity and standardisation are not synonymous: all contracts in the ISDA sample are single-currency interest rate swaps traded on single-dealer electronic trading platforms and can be considered towards the more standardised end of the spectrum, yet some appear more liquid than others.

The ISDA data also show that quoted spreads widen as contract maturity increases, although the relationship is not linear (eg wider spreads are observed for the five-year contract, than for the seven-year one). Hence, if larger spreads imply less liquid markets at longer maturities, a CCP may find it relatively more difficult to manage the risks associated with longer-maturity contracts, although as noted above, the greater liquidity risk can be mitigated through the CCP's margin methodology.

Liquidity measures based on trading activity provide an alternative way of assessing liquidity. *Trading frequency* may give an indication of the time it takes to find a counterparty to a trade. For example, Chen *et al* (2011) report that trading in credit default swaps is highly skewed. While the top reference entities trade several times a day, a large number of both single-name and index contracts are found to trade very infrequently. More detail is given in Section 4.

*Total trading volume* and *average trade size* may give an indication of market depth — whether it is possible to bring a large trade to the market without creating sharp price movements. This is particularly important in a default situation where the CCP may have to sell large parts of the defaulting member's derivatives holdings in a relatively short time span.

*Dealer concentration* may provide further information. Pricing may be more competitive in a market with a higher number of dealers acting as liquidity providers. Chen *et al* (2011) characterise the CDS market as one with 'low to moderate' dealer concentration. In their data set, the four most active dealers account for half of all trades. They do not, however, have data on dealer quotes.

To conclude, the suitability of a product for central clearing can be defined quite precisely in terms of product and process standardisation first, and market liquidity second. Hence, to determine whether a clearing obligation is appropriate, the key indicators are usage of standard legal terms, use of straight-through processing with an emphasis on electronic confirmation, and standard measures of liquidity. These are summarised in Table E.

**Table E** Clearing eligibility: a checklist

Clearing eligibility factor	
Product standardisation	<ul style="list-style-type: none"> <li>• Does the product have a standard master agreement?</li> <li>• Are trade economics sufficiently standardised (eg start dates, end dates, frequency of interim payments, coupon levels)?</li> </ul>
Process standardisation	<ul style="list-style-type: none"> <li>• Is trade confirmation automated?</li> <li>• Are the other aspects of post-trade processing automated?</li> </ul>
Liquidity	<ul style="list-style-type: none"> <li>• Are reliable bid and ask quotes available?</li> <li>• How frequently are contracts traded?</li> <li>• What is the total trading volume?</li> <li>• What is the average trade size?</li> <li>• How many dealers support the product?</li> <li>• Can the CCP risk manage its exposure, even if liquidity changes over time?</li> </ul>

The next section examines these factors for the major derivatives classes and highlights data gaps. It also considers the role of the major dealers in setting existing clearing eligibility targets.

## 4 Monitoring progress towards central clearing

Since 2005, the OTC Derivatives Supervisors Group (ODSG) has monitored and encouraged improvements in post-trade processes. The ODSG is chaired by the Federal Reserve Bank of New York (FRBNY) and meets annually with other supervisors and signatories (G14 dealers and buy-side institutions) to produce a series of 'commitment letters'. Commitments made by signatories signify their collective agreement to work with other signatories and their counterparties, whether signatories or not, to deliver structural improvements to the OTC derivatives market in the interest of financial stability.

(1) Futures Industry (2011), 'CDS clearing at ICE: a unique methodology'.

The initial mandate of the ODSG was to address the emerging risk of a growing confirmation backlog in the credit derivatives market. As a result of a meeting hosted by the FRBNY, representatives of major OTC market participants committed to reduce the backlogs, improve CDS settlement, and develop metrics to measure industry progress.<sup>(1)</sup> The ODSG mandate subsequently expanded to include structural improvements across all asset classes in the OTC derivatives market.

The G14 dealers continue to affirm their commitment to increasing product and processing standardisation in each of the asset classes.<sup>(2)</sup> Central clearing targets were made public for interest rate derivatives and credit default swaps in a letter to the FRBNY issued on 31 March 2011. For interest rate derivatives, the dealers planned to achieve a submission rate of 95% of new 'eligible' trades. Clearing targets for other asset classes continue to be reviewed by the industry. But clearing 'eligibility' in this context is defined by the dealers and it is unclear how the dealer targets compare with the G20 commitment. Furthermore, it is difficult to judge whether either dealers or CCPs will have sufficient incentives to significantly raise their clearing targets in the absence of additional regulatory action. The remainder of this section examines available evidence for progress towards central clearing in different OTC derivatives asset classes, using the factors developed in Section 3.

### Interest rate derivatives

Central clearing of OTC interest rate swaps between major dealers has been in place for over a decade with more than 50% of the total market currently cleared.<sup>(3)</sup> G14 members currently clear new eligible trades at a rate of 92%.<sup>(4)</sup> OTC interest rate derivatives exhibit many of the attributes required for central clearing. Almost all trades are executed under standard legal terms and most documentation and operational processes are standardised. **Table D** above showed that electronic confirmation was at 85% according to a survey released by ISDA in May 2011. Automation of the other STP processes ranged from 93% (data transfers) to 75% (nostro reconciliations).

Liquidity measures are very difficult to obtain. **Table F** shows the trade count, as submitted to the ODSG in 2010.<sup>(5)</sup> As an example, out of a total of 3 million trades, 1.7 million are in G4 (USD, euro, yen, GBP) single-currency swaps, 35,000 in G4 OIS, and less than 1,000 for some of the more exotic interest rate products such as debt options.

More recently, transaction-level data analysed by Fleming *et al* ((2012), covering 1 May to 31 July 2010) reveal that trade frequency of interest rate swaps is on average 2,500 a day with single-currency interest rate swaps representing roughly three quarters of all transactions.

Fleming *et al* (2012) further report that trading is concentrated in the most standardised contracts. For example, in their

**Table F** Interest rate derivatives standardisation matrix (ISDA)<sup>(a)</sup>

Interest rate derivatives	Sub-product	Region	Trade count (stock)	Per cent of total trade count	Per cent of clearing eligible
Single-currency swap	Fixed vs Float	G4 CCY	1,735,319	57.3	70–80
		Non-G4 CCY	468,981	15.5	30–40
	Float vs Float	G4 CCY	98,619	3.3	20–30
		Non-G4 CCY	15,185	0.5	10–20
OIS	G4 CCY		34,624	1.1	50–60
	Non-G4 CCY		14,451	0.5	0–10
Cross-currency swap	Fixed vs Float		48,080	1.6	10–20
	Fixed vs Fixed		11,800	0.4	0–10
	Float vs Float		68,254	2.3	10–20
Debt option			393	0.0	0–10
Inflation swaps			36,013	1.2	0–10
FRA			168,479	5.6	10–20
Cap/Floor			81,163	2.7	10–20
Exotic	Single currency		71,984	2.4	0–10
	Cross currency		10,336	0.3	0–10
Swaption			164,151	5.4	10–20

Sources: ODSG data submission 2010, published October 2011, and Bank calculations. Sample period not available.

(a) G4 currencies include US dollar, euro, Japanese yen and Pound sterling.

sample of single-currency interest rate swaps, OIS and FRAs, almost 60% of the activity in the top currencies is concentrated in a few maturities. In contrast, outside these standard maturities, trading is less frequent and a wider variety of maturities is observed. Likewise, most trading is concentrated in benchmark reference entities, such as Libor or Euribor. Periodicity of payments appears the most variable of all contract terms.

In terms of dealer participation, Fleming *et al* (2012) find that around 45% of all trading occurs between two G14 dealers, with the remaining 55% between G14 dealers and non-G14 market participants. For single-currency interest rate swaps, the top four dealers account for 32% to 39% of transactions, depending on the currency.

Dealers aim to clear 95% of new eligible trades with 'eligibility' defined by the dealers themselves. More detailed data submitted to the ODSG show, however, that views of clearing eligibility vary significantly across sub-asset classes (**Table F**). These data, published by ISDA in October 2011, show that clearing eligibility is deemed highest for single-currency swaps. Specifically, 70%–80% of fixed-versus-floating single G4 currency swaps were deemed clearing eligible, followed by

(1) Statement from the G14 dealers to FRBNY (2005) regarding developments in the credit derivatives market.

(2) Strategic Roadmap to Support Global Efforts in OTC Derivatives Markets (2011).

(3) [www.lchclearnet.com/swaps/swapclear\\_for\\_clearing\\_members/](http://www.lchclearnet.com/swaps/swapclear_for_clearing_members/).

(4) Strategic Roadmap to Support Global Efforts in OTC Derivatives Markets (2011).

(5) [www2.isda.org/asset-classes/interest-rates-derivatives/](http://www2.isda.org/asset-classes/interest-rates-derivatives/).

50%–60% of OIS swaps for the four major currencies. Unfortunately, more recent data on clearing eligibility are not available in the public domain.

To conclude, available data show that legal standardisation, electronic confirmation and electronic processing (STP) rates are high for many interest rate swaps. Hence, if using indicators based on product and process standardisation data, a relatively large set of clearing-eligible contracts can be identified. This is also reflected in dealers' own clearing targets and the fact that a large proportion of contracts in this asset class is already cleared by CCPs. Liquidity measures, using average number of trades as a proxy, suggest that the set of contracts with good liquidity is smaller, especially when moving beyond single-currency contracts. However, the absence of publicly available data is a concern given that liquidity metrics are a critical component in determining clearing eligibility.

### Credit derivatives

Central clearing of credit default swaps is more recent (the first contracts were cleared in 2009) and the latest BIS statistics indicate that around 10% of all CDS contracts are centrally cleared.<sup>(1)</sup> G14 counterparties have not yet committed to a clearing target however.<sup>(2)</sup>

Considerable standardisation progress has been achieved and this is reflected in the reduced backlogs of unexecuted confirmations, the increased number of trades executed under standard legal terms and improvements in the calculation of trade economics.<sup>(3)</sup> For instance, a publicly available CDS calculator has been adopted to convert quoted spreads into a present value number using agreed standard input values (interest rate curve, assumed recovery rate, curve shape, etc).<sup>(4)</sup> In addition, a central party now calculates the cash flows required for the life of a contract which removes the risk of differences in calculation methodology by each market participant, and reduces valuation disputes.

The data on process standardisation in **Table D** above indicate that electronic trade confirmation rates are high (94%), while STP processes range from 95% (data transfers) to 89% (nostro reconciliation).

The degree of standardisation is reflected in the trading data. Chen *et al* (2011) find that most contracts in their data set (covering 1 May–31 July 2010) have standard contract terms. For example, 92% of all single-name contracts traded have standard coupon terms and 97% have standard payment dates. Contract maturities too are found to be highly standardised, with 84% of indices and 43% of single-name contracts concentrated at the five-year maturity. Likewise, trading is concentrated in standard notional sizes (eg 24% of all single-name contracts in the sample occur at US\$5 million).

Yet, in spite of this high degree of product standardisation, trading activity is found to be infrequent for all but the most active contracts in their data set. CDS indices are traded more frequently than single-name contracts. For example, the most active indices trade on average 120 times a day, and the most active single-name contracts trade on average 22 times a day. At the same time, the least actively traded contracts trade less than ten times a day for some CDS indices and less than once a day for some single-name contracts. Furthermore, those contracts in their sample which CCPs determine to be clearing eligible, trade more frequently: they trade several times a day and on more days in the sample.

To conclude, as in the case of interest rate swaps, indicators of operational standardisation suggest that the set of CDS products that is clearing eligible could be quite large, provided there is sufficient market liquidity. Again, using available data on trade frequency as a proxy for liquidity indicates that the latter may not be the case for a large number of contracts. Dealers have indicated that they will work with CCPs to prioritise the CDS products to be cleared but have not yet set specific clearing targets.<sup>(5)</sup>

### Equity derivatives

The gross notional of OTC equity derivatives is a smaller part of the total derivatives market. It is a highly standardised asset class with the majority of trades occurring on regulated exchanges. The 2010 Equity Standardisation Matrix indicates quarterly turnover of OTC equity derivatives stands at roughly US\$7 trillion by notional value. This is smaller compared to the quarterly notional turnover in equity exchange-traded derivatives of around US\$30 trillion as reported by the BIS.<sup>(6)</sup>

Work is ongoing to automate this product further: **Table D** shows that electronic trade confirmation is at 52%, well below the rates seen for interest rate and credit derivatives. Other indicators of operational standardisation vary, from 84%–90% for data transfers to 67% for nostro reconciliation. Dealers have not yet set any public clearing targets for equity derivatives.

### Other derivatives

For FX derivatives it is less clear what the clearing obligations will be as the US Government has argued for FX swaps and forwards to be exempt.<sup>(7)</sup> **Table D** shows that product standardisation is ongoing for commodity derivatives. Major dealers have partnered with ISDA to further standardise legal

(1) See also Heller and Vause (2011).

(2) Strategic Roadmap to Support Global Efforts in OTC Derivatives Markets (2011).

(3) [www.newyorkfed.org/markets/otc\\_derivatives\\_supervisors\\_group.html](http://www.newyorkfed.org/markets/otc_derivatives_supervisors_group.html).

(4) [www.theice.com/cds/Calculator.shtml](http://www.theice.com/cds/Calculator.shtml).

(5) Strategic Roadmap to Support Global Efforts in OTC Derivatives Markets (2011).

(6) Exchange Traded Derivatives Statistics, BIS (2011).

(7) See FSB (2011) for a more detailed discussion of exemptions to the clearing obligation.

terms and track documentation take-up rates. The post-trade processes for both asset classes are generally less automated compared with the interest rate swaps and CDS markets, but in line with equity derivatives. Electronic confirmation stands at 75% for FX and 65% for commodity derivatives. Dealers have not set any public central clearing targets for these asset classes.

## 5 Conclusions

This article has highlighted factors that are important when determining the eligibility of OTC derivatives products for central clearing. We have argued that clearing eligibility can be defined quite precisely in terms of product and process standardisation first, and market liquidity second. Hence, in determining the central clearing obligation, key considerations are likely to be usage of standard legal terms, use of straight-through processing with an emphasis on electronic confirmation, and accessible measures of liquidity.

The Financial Stability Board has outlined concerns that there has been a lack of sufficient progress in implementing the G20 central clearing obligation. The FSB has forewarned that the target of having all standardised OTC derivatives contracts centrally cleared will not be met by end-2012.<sup>(1)</sup>

While substantial progress has been made in achieving greater product and process standardisation, progress towards increased central clearing has been significantly slower. Liquidity — or the absence of it — is an important constraint,

as it may require CCPs to modify risk management models developed for more liquid products. More work is needed in this area, for example to improve price transparency, and make more data available on measures of liquidity.

The global derivatives dealers, in co-operation with the ODSG, have published targets for central clearing, while progress towards meeting these targets is being monitored by the ODSG. But the industry may need more specific guidance from the authorities as to which OTC derivatives should be centrally cleared. This is likely to need close and co-ordinated engagement with CCPs, as well as the main dealers. There is also an urgent need to develop precise and timely metrics to monitor central clearing progress, work which was highlighted as a priority in the October 2011 FSB progress report.

This article has highlighted that the systemic risk reduction benefits associated with central clearing can only be achieved when CCPs have robust risk management processes in place, including procedures to deal with a member default. Risk management becomes particularly challenging when products are illiquid, or when the underlying operational processes are insufficiently developed. This suggests a natural boundary for the central clearing obligation, with less liquid products, or products for which operational processes remain bespoke and less-automated, unlikely to be suitable for a central clearing requirement. When determining eligibility, the authorities' primary concern should be whether mandating a product to be cleared achieves a net reduction in systemic risk.

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(1) See FSB (2011).

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