FINANCONCEPTS

Trade Transparency in OTC Equity Derivatives Markets

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Abstract

This paper describes the over-the-counter derivatives markets from the point of view of its structure, participants and products. We highlight the current trading venues for OTC equity derivatives, which include the inter-dealer market as well as electronic trading networks. The paper shows that the link between listed stock exchanges, options exchanges and the OTC market provides significant pre-trade transparency and price-discovery mechanisms. In terms of post-trade transparency, the issues of trade reporting, trade processing, documentation and clearing are addressed. The overall picture is that the industry is evolving toward better post-trade regulatory transparency, via electronic reporting, trade repositories and centralized clearing.

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1 Executive Summary

1. Finance Concepts conducted a survey of trading venues, products and transaction processing for over-the-counter equity derivatives. This study follows another one covering credit derivatives, in which a cost-benefit analysis of trade transparency was made. For general considerations on pre- and post- trade transparency and academic viewpoints, we refer the reader to that companion study [1].

2. The analysis used documents and statistics from DTCC/AITE [2], the Bank of International Settlements [3] and ISDA [4]. We also conducted interviews with some of the major market participants, including the sell-side, buy-side, and major electronic data vendors.

3. The majority of OTC equity derivatives consists of equity options, equity swaps, portfolio swaps, contracts for difference, variance swaps, dividend swaps, and exotics. Considerable price-discovery is available in underlyings and options on listed markets. Pre-trade transparency and price-discovery are further increased through the development of multi-dealer electronic platforms.

4. While transparency is desirable in general, the nature of the OTC equity derivatives markets warrants making a strong distinction between informational transparency, which is well-suited for exchanges, and *regulatory transparency*. Retail derivatives exchanges typically have real-time quotes and centralized clearing. In this case, pre- and post-trade transparency are important to create a level playing field for all participants. On the other hand, due to the structure of the OTC market, in which dealers and clients negotiate large, often customized, transactions, the wide dissemination of pre- and post-trade information would not serve the market well and would be difficult to implement. For example, it would become more difficult and costly for dealers to hedge client-originated trades, resulting in a potential reduction of the offerings in customized OTC products and large transactions. As a consequence, the corporate and institutional investor will not be served well.[1]

5. In August 2010, DTCC launched an OTC equity derivatives global trade repository. The streamlining of trade documentation and electronic processing via Master Agreements is another major advance. DTCC's trade repository will provide regulators with position-related information on a monthly basis. Significant efforts for improving documentation and processing have been adopted by the industry as well, as exemplified with Markitserv's processing of ISDA Master Confirmation Agreements.

6. The European market has attempted to build clearing for OTC derivatives with the BClear product. In the US the OCC (Option Clearing

[1] This argument was elaborated in a companion report [1] and is supported by this survey of the OTC equity derivatives market.

Corporation) is preparing to offer clearing on OTC index options in Q2 2011. We note that, in both the US and Europe, OTC equity derivatives clearing remains voluntary.

7. Given the great variety of products, some of which are highly customized, standardization and central clearing may not be appropriate or feasible uniformly across all OTC equity derivatives. The most likely candidates for central clearing are look-alike share options, index options and index variance swaps.

8. We find that, in the wake of the financial events of 2008, the measures adopted by the industry will increase post-trade transparency for regulators, while preserving at the same time the flexibility and privacy that makes these markets attractive to its participants.

2 OTC Equity Derivatives Markets

2.1 A Global Marketplace

Over-the-counter equity derivatives (OTCEDs) service a wide variety of investors – corporations, banks, insurance companies, asset-managers and hedge funds. Other occasional participants are sovereign wealth funds, and public-sector and pension funds. The OTCED market has experienced phenomenal growth over the last decade, as wholesale derivatives are used increasingly as risk-management tools, to diversify portfolios, to hedge the issuance of equity-linked financial products and to try outperform benchmark indices[2].

The private nature and the flexibility in terms of product design have helped the OTC market to thrive. OTC derivatives exist because there are a significant number of products that are not offered by exchanges: in the latter, products are limited in tenor, size and strike ranges. There is significant appetite beyond exchange-traded derivatives for several reasons. OTC derivatives facilitate tailoring of transactions to meet specific end-users' needs. Equity swaps are intrinsically simple derivatives featuring certain common terms, but they also include counterparty-specific provisions, including nuanced financing levels and term financing, choices regarding unique life-cycle events and long-term dividend forecasts which are differentiated by the dealers in the offerings to clients. There is also a large volume of OTC derivatives involved in hedging the issuance of structured notes, warrants, structured funds and ETFs. These hedges are typically cheaper to execute in the OTC markets than in exchanges. The customization of OTCEDs makes them often difficult to standardize, and hence to be eligible for central clearing (see Section 2.2 for a product-by-product discussion).

[2]See Tables 1 and 2 for the evolution of the market. The highest outstanding notional amounts were observed in mid-2008. Since then we have seen a pull-back of approximately 35% from that high.

The market in OTCEDs is truly global, with products actively trading in Europe, the Americas and Asia-Pacific. According to the Bank for International Settlements (BIS), Europe leads the trading in OTC equity derivatives with 55% of the global market. The United States represents 27%, Japan follows with 7%. [2]. Other parts of the Americas have approximately 5% and Asia ex-Japan about 3%. According to data supplied by ISDA, BIS and others, this market is growing steadily on a year-on-year basis, as indicated in Tables 1 and 2, although a pull-back in notionals outstanding happened since the 2008 crisis.[3]

Retail structured products is a much bigger business in Europe than America. Due to the fragmentation of listed markets in Europe, it is generally easier for traders and issuers of structured products to hedge their risk and large trade size in the OTC market. Asia and Australia are structurally similar to the European model and are big users of structured products. Japan resembles more closely the US market, with less issuance of retail structured products.

Most of the operational and regulatory issues that arise with OTCEDs stem from the global nature of the business, the very wide-ranging nature of participants, and the myriad of products. In particular, the existence of proper documentation and reporting of trades has been an issue of concern as the market developed over the last two decades.

Notional exposures for OTC Equity Derivatives

Date	Outstanding Notional (USD trillion)
Dec 2002	2.3
Dec 2006	6.3
Dec 2007	8.5
Jun 2008	10.2
Dec 2008	6.15
Jun 2009	6.61
Dec 2009	6.59

Table 1: Evolution of outstanding notional amounts in OTCED. Source: ISDA & BIS

2.2 Description of the major products

1. **Equity Share Options**. An option is a financial instrument that gives its owner the right, but not the obligation, to buy or sell shares of stock at a pre-specified price. An option to buy is called a call; an option to sell is called a put. The price specified at which the underlying may be traded is called the strike price. The process of activating an option and thereby trading the underlying at the agreed-upon price is referred to as exercise. Most options have an expiration date. If the option is not exercised by the

[3]This reduction is also due to a notional-value effect: we see lower volumes as well as lower prices in the underlying equities.

expiration date, it becomes void and worthless. Many options are created in standardized form and traded on anonymous options exchanges, while other over-the-counter options are customized to the needs of the buyer, usually by an investment bank or OTC dealer. Due to the differences that may arise in the treatment of corporate actions, OTC share options may not be easily standardized in some cases.

2. **Equity Index Options**. An equity index option is an option whose underlying instrument is an equity index (*e.g.* Eurostoxx 50 or S&P 500). Index options are usually cash-settled. Index options are the easiest to standardize and could be eligible for centralized clearing.

3. **Equity Swaps**. An equity swap is a financial derivative where two counterparties agree to exchange a set of future cash flows at set dates in the future. The two sets of cash flows are usually referred to as "legs" of the swap; one of these "legs" is usually pegged to a floating rate such as LIBOR. This leg is also commonly referred to as the "floating leg". The other leg of the swap is based on the performance of either a share of stock or a stock market index. This leg is commonly referred to as the "equity leg". An equity swap involves a notional principal, a specified tenor and predetermined payment intervals. *Dividend swaps* are also a form of Equity Swaps. In this case, the floating leg consists of the dividend stream of the shares of a company or a group of companies and the fixed leg is a constant payment. Equity swaps are generally customized to end-users' needs and often contain risk-reduction provisions, such as barriers and optionality, which allow for large-size bilateral transactions between end-users and dealers. Additionally, a customized basket swap can be tailored to provide unique exposures to certain segments of the equity markets not available through standard index products, ETFs or other such products. The treatment of corporate actions, special dividends, spinoffs and rights issues is also customized. Due to these features, standardization of equity swaps is not straightforward.

4. **Equity Volatility/Variance Swaps**. A variance swap is an over-the-counter derivative that gives exposure to the realized volatility of an equity index or a stock. One leg of the swap will pay an amount based upon the realized variance of the price changes of the underlying product. The other leg of the swap will pay a fixed amount, or strike, quoted at the deal's inception. Variance swaps are in principle standardizable, although there is a certain degree of customization in start dates, end dates and other risk-reducing provisions (see above).

5. **Contracts for Difference (CFDs)**. A CFD is a contract between two parties, typically described as "buyer" and "seller", stipulating that the seller will pay to the buyer the difference between the current value of an asset and its value at contract time. If the difference is negative, then the buyer pays instead to the seller. When applied to equities, such a contract is an equity derivative that gives exposure to share price movements

without the need for ownership of the underlying shares. CFDs are currently available in Europe, Singapore, South Africa, Australia, Canada, New Zealand, Sweden and Japan.

CFDs are analogous to equity swaps referred to above in subparagraph 3 to the extent that they both feature delta-one exposure to an underlying security. CFDs, however, do not provide for customization around financing, life-cycle events, exposures, and corporate actions. CFDs are more akin to the standardized single-stock futures product in the U.S.[4]

6. **Structured and Exotic OTC Derivatives**. A structured/Exotic OTC is a derivative that has non-vanilla features, such as barrier options, accumulators, and "cliquets". Essentially, structured and exotics are customized contracts, the terms of which cannot be met from the standardized financial instruments available in the markets. Structured products are generally traded by institutions and dealers as part of the asset allocation process, to reduce risk exposure of a portfolio, or to hedge the cash-flows of a corporate treasury[5] or the issuance of a structured note. Exotics are, by their nature, difficult to standardize and centrally clear, although some efforts have been made in this regard (see section 6 below).

The Bank of International Settlements (BIS) divides the universe of OTCED products into two broad classes for reporting purposes: *options*, representing 78% of the market, and *forwards and swaps*, with 22% (see Table 2 and [2], [3]). Greater granularity is provided when the universe is divided broadly into the following four areas (in descending volume order):

- options
- equity swaps
- volatility/variance swaps
- structured OTC derivatives

3 OTC Equity Derivatives in different continents

As shown in Table 2, the greatest volumes of OTCEDs are, in decreasing order, Europe, US, Asia and Latin America. Each of these markets operates in different ways, for historical and regulatory reasons.

[4] There is an emerging exchange in equity futures in America, *OneChicago*, but its volumes are minuscule by any measure.

[5] In this regard, we note that some customized deals will be eligible for hedge accounting, whereas more standardized derivatives may not qualify under FASB rules.

Total Notional Amounts Outstanding by Contract Type

Instrument /market	**Dec-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Dec-09**
Total contracts	**8,469**	**10,177**	**6,155**	**6,615**	**6,591**
US Equities	1,766	2,064	1,403	1,519	1,773
European Equities	5,003	6,134	3,862	3,906	3,237
Japanese Equities	543	628	364	628	959
Other Asian	553	514	165	173	274
Latin American Equities	212	282	99	125	38
Other Equities	391	556	261	264	309
Forwards and swaps	**2,233**	**2,657**	**1,553**	**1,709**	**1,830**
US Equities	719	764	474	527	551
European Equities	1,104	1,384	850	937	947
Japanese Equities	43	70	44	70	114
Other Asian	74	62	35	34	63
Latin American Equities	126	135	40	34	20
Other Equities	166	242	110	107	136
Options	**6,236**	**7,521**	**4,602**	**4,906**	**4,762**
US Equities	1,047	1,300	929	992	1,222
European Equities	3,899	4,750	3,012	2,968	2,291
Japanese Equities	501	558	320	559	845
Other Asian	479	452	130	139	211
Latin American Equities	86	146	60	90	19
Other Equities	225	314	151	158	173

Table 2: Notional amounts outstanding in OTC Equity Derivatives. Source: BIS, June 2010

3.1 Europe

The most developed market for OTCEDs is in Europe. More than 75% of all single-name equity options trade over-the-counter [2]. The reason for this is historical, in our view: equity markets were naturally fragmented before the European Monetary Union (EMU) (see [5]). Large pan-European banks have therefore played a role as liquidity-providers for corporates and institutional investors that wish to trade in large sizes not generally available in regional derivatives markets or even in the largest derivatives exchanges, such as Eurex or Liffe-Euronext. Volumes on listed derivatives exchanges have been increasing and substituting some OTC derivatives trading as the pan-European markets become more mature.

Share options trading over-the-counter are sometimes structured as *look-alikes*. They mimic exchange-traded options but are booked as bilateral transactions between client and dealers. Look-alikes can be used for trading large sizes, preserve anonymity, as well as to reduce basis and operational risks. As listed options markets such as Eurex evolve and attract larger trading volumes, a greater number of equity options are expected to trade and clear in exchanges. One of the advantages of exchange-trading is centralized clearing. At the present time, only a small fraction of OTC equity derivatives are centrally cleared, despite the existence of Bclear and Eurex clearing facilities for off-exchange "flex" trades.[6]

The NYSE-Euronex-Liffe Bclear service, which was launched in September 2005, has gained considerable traction in the European OTC options business. It offers a clearing service in flexible exchange-like derivatives. The model of a quasi-OTC-exchange hybrid seems to be working for this sector of the market. We cover BClear in a separate section below.

The dual role of pan-European banks as capital market participants and retailers led to the popularity of structured products (such as principal-guaranteed equity-linked notes), which are commonly marketed to individuals. Retail structured products in Europe, Middle East and Africa (EMEA) grew as a result of retail investors looking for access to equity markets while determining the level of risk they wish to take as an alternative to directly investing in cash equities. [7]

3.2 U.S./North America

OTCEDs traded in the United States consists primarily of equity and index options and equity swaps. The existence of 8 different exchanges for trading options gives market participants an excellent pre-trade price discovery environment, which is unique in the world. Most share options are *cross-listed* in

[6] Blcear only offers an OTC clearing capability;it does not offer an exchange-traded capability. Eurex offer clearing facilities only for Eurex products: it clears only off-order book ("upstairs") transactions in listed options, and this is extensively used as a substitute for OTC.

[7] The treatment of corporate actions in EMEA can result in a different treatment in the listed market vs. the OTC markets, one area of concern being rights issues.

different electronic and regional exchanges and also centrally cleared by the Options Clearing Corporation. This means that there is little or no chance of price manipulation by market-makers or other participants in the national listed market.

The complete transparency of the listed market translates into a transparent price-discovery pre-trade environment for most OTC equity derivatives, since implied volatilities and equity forwards are observable for maturities of up to 3 years.

The primary motivation for engaging in OTC equity option transactions, therefore, as opposed to trading them in exchanges, is that large options trades may still have considerable market impact. In fact, most market-makers' quotes are good for a limited size that can be as little as 20 contracts in some cases. Block trades in listed options cannot be "crossed" off-exchange and instead have to be exposed to the floor of the exchanges. Thus, a 10,000-contract order in a single-name product would be difficult to execute in the exchange without moving the market. This is where the OTC market facilitates trading.[8]

The contribution of the OTC market is to allow for corporate and institutional trading and to support trading in the largest sizes. Typically dealers will hedge their risk either in the inter-dealer market or by *internalizing* the trade, i.e. using its inventory to take the other side the OTC trade. Finally, dealers can also hedge OTC trades by taking opposing positions in listed option markets in a delayed fashion. Thus, there is also a price feedback on the listed markets from OTC trading.

The next step for improving further the current system would be to introduce centralized clearing for OTC equity options, which seems like a reachable goal in the near future.

The market in equity swaps (ES) in the US is divided into (1) total-return and price-return swaps (2) synthetic equity (3) dividend swaps. By far, the major component of the business is in total-return and price return swaps. These products are referenced to single-stocks, equity baskets and indices. The main characteristic of ES is that they usually are structured flexibly in terms of tenor (maturity), as well as the reference rate, which could be LIBOR, Fed Funds or even a foreign currency interest rate. Furthermore, most ES are designed with risk-reduction features, such as embedded options which limit exposures for extreme price moves, as well as cancelation features, in which swap counterparties can terminate the agreements on short notice. The customized nature of ES makes it possible to trade in large size.

Synthetic equity (also known as Contracts for Difference) represent a small portion of the market (<10%). Finally, an even smaller fraction corresponds to dividend swaps, in which the "floating leg" is associated with a dividend stream on a reference stock or indices. The majority of the trades are in the S&P500 Index dividends and are typically used by market participants to hedge dividend risk in long-term index options.

[8]These considerations apply to all OTC derivatives, of course, not just those trading in the US.

4 The structure of OTC derivatives markets

Generally speaking, OTC derivatives are not traded like listed options, in which traders are pro-actively "taking" or "adding" liquidity in the market. OTC trades usually have a purpose, such as call overwriting or gaining exposure to volatility via variance or volatility swaps. In some cases, the final product that is traded might be different from what the client may have conceived as the original trade idea. In this process, clients may put dealers in competition and have time for price-discovery. The time-scale for the trade, as well as the size of the trade are therefore different from those of exchange-traded equity derivatives.

4.1 The dealer market

The OTC markets have traditionally been organized around one or more dealers who make a market by providing bid and offer quotes to market participants. The quotes and the negotiation of execution prices are generally conducted over the telephone, although the process may be enhanced through the use of electronic bulletin boards by the dealers for posting their quotes. The process of negotiating by phone, whether end-user-to-dealer or dealer-to-dealer, is known as bilateral trading because only the two market participants directly observe the quotes or execution. While voice brokerage does not provide the same price transparency as that of electronic exchanges/ platforms, pure voice brokerage does provide multiple market participants with the ability to obtain, evaluate and execute against multiple bids or offers on the other side of the market. It should be pointed out that the bilateral negotiation process arrangement is relatively simple. Dealers have direct phone lines between themselves and the Inter-Dealer Brokers (IDBs). The major players are ICAP, Tradition Financial Services, GFI, Celent, LinkBrokers, Cantor Fitzgerald, NewEdge and Tullet Prebon.

Yet another type of trading arrangement found in OTC derivatives markets is a composite of the traditional dealer and the electronic brokering platform in which an OTC derivatives dealer sets up their own proprietary electronic trading platform. In this arrangement, the bids and offers are posted exclusively by the dealer; other market participants observe these quotes, in what is best described as a one-way multilateral environment. The dissemination of quotes to clients by brokers through electronic methods is achieved, for instance, via "broker pages" posted in Bloomberg terminals.

4.2 Electronically brokered markets

OTC derivatives markets also make use of electronic brokering platforms (sometimes referred to as an electronic brokering systems). These electronic brokering platforms are analogous to the electronic trading platforms used by exchanges, where bid and offer quotes are displayed. The ultimate goal is to create a multilateral trading environment. However, at this time, electronic platforms are

primarily used by IDBs and dealers and much less by end-users.

Two examples of multi-broker systems or "aggregators" are BrokerHub and Cscreen. These systems allow dealers to post brokered interests, facilitating pre-trade price discovery. Furthermore, these systems are not "click-and-trade": traders still need to telephone to generate a trade. At the time of this writing, the market is evolving toward multi-broker electronic platforms, the most prominent being Tradeweb.[9] Participants can send RFQs to multiple dealers. However, not all RFQs are seen by all participants. The RFQ is the basis for generating interest, and responding dealers will send a price taking into account the size of the trade, the counterparty's creditworthiness and the borrow rate on stock loan. The client initiating the RFQ can then click and trade within a set time with any responding dealer. Electronic trading platforms are, in principle, the venues which offer the most pre-trade transparency, since participants can send RFQs to multiple dealers. The natural limitations in OTC electronic trading (due to size and the limited range of products traded) suggest that the IDB system will continue to be the major trading venue.

5 Transparency in OTC Equity Derivatives Markets

By definition, a transparent market is one in which current trade and quote information is readily available to users. A common (explicit or implicit) argument is that transparency is necessary for proper functioning and stability of markets, and more transparency leads to more liquidity. An example is provided by the following excerpt from the Council of Securities Regulators of Americas's *Principles of Market Transparency*:

> Transparency is increasingly important for today's securities markets. The fairness and efficiency of securities markets are directly related to their transparency. By providing protections for investors, transparency encourages greater participation in the securities markets, and thereby enhances the liquidity of those markets. This increase in liquidity, in turn, increases market efficiency. Conversely, by reducing the effects of market fragmentation and increasing the pricing efficiency of securities markets, transparency also promotes fairness of the markets. For these reasons, regulators have a responsibility to assess the adequacy of the transparency of the markets operating within their respective jurisdictions.

While transparency is desirable in general, the nature of the OTC equity derivatives markets warrants making a strong distinction between *informational transparency*, which is suited for exchanges, and *regulatory transparency*, which is desirable to manage systemic risk in a broader sense.

[9] Tradeweb is expected to go live in EMEA for index and single-stock options at the end of August 2010.

Retail derivatives exchanges typically have real-time quotes and central clearing. Positions and statistics are available to regulators and monthly statistics and position-related information is disseminated. In this case, informational transparency is important to create a level playing field for all participants.

On the other hand, due to the structure of the OTC market, in which dealers and clients arrange for large, often customized, transactions, the dissemination of pre- and post-trade information to the public would not serve the OTC market well and would be difficult, if not impossible to implement realistically. For example, it would become more difficult and costly for dealers to hedge client-originated trades, resulting in a potential reduction of the offerings in customized OTC products and large transactions. As a consequence, the corporate and institutional investor will not be served well. This argument was elaborated in a companion report [1].

We believe that improving *regulatory transparency* – post-trade reporting for regulators – is the direction in which the OTC derivatives markets can improve from its current state, by allowing for better control of systemic risk. Proper reporting to regulators on derivatives transactions is also important to avoid fraud.

5.1 Pre-trade transparency and price-discovery

The existence of listed markets in options and of multi-dealer trading platforms facilitates considerably price-discovery, since options and equity swaps form the bulk of the OTC equity derivatives. Electronic trading platforms allow the end-user to put dealers in competition and to compare their quotes to the implied volatilities quoted on exchanges. Thus, pre-trade transparency is high for non-exotic OTC equity derivatives.

One important example of pre-trade transparency is in the area of variance/volatility swaps. Whereas equity and volatility swaps trade vigorously over-the-counter for large sizes, the VIX, VSTOXX and VDAX indices and volatility futures provide real-time information about volatility markets which is available to OTC market participants.

Pricing software from third-party vendors is readily available to facilitate price-discovery in exotic products[10], for example in Bloomberg Valuation Services. This allows users to price exotics and structured products with embedded optionality, facilitating price discovery in this area as well. It is our impression that pre-trade transparency is therefore not an issue of major concern.

6 Post-trade Transparency, Reporting and Clearing

Post-trade transparency in OTCEDs is important for several reasons, the most important one being regulatory. The ability of regulators to access post-trading

[10] *E.g.* barrier options, options on bespoke baskets and structured notes.

information, in the form of exposures and concentrations of positions, and to have central clearing of the more standardized OTCEDs, is very important to avoid market concentrations which may give rise to systemic risk.

Post-trade transparency in OTCEDs is also important to avoid fraud. The recent Bernard Madoff case show how reporting and central clearing of OTC derivatives might have helped avoid losses to retail investors that were lured to his fund. In fact, Madoff Investments Securities claimed that the fund was conducting very large OTC trades in look-alike index options (OEX options). These trades were fictitious and, since they were not reported to regulators or cleared, this allowed Madoff to claim that they actually took place. Regulators would not have been able to verify the trades by consulting a repository. For more information on OTC options trading and Madoff, see [6].

Since the original initiatives by Congress and regulators in May/June 2009, the industry has worked to create and put in place mechanisms that increase post-trade transparency in general, and reporting and clearing of derivatives transactions in particular. The main goals is to create unified sources of information about trades for regulatory purposes and to move to central clearing and centralized reporting whenever this is feasible. We think the development of the trade repository is a key step forward in giving regulators access to exposures in OTC derivatives.

We report on important new developments: the DTCC trade repository, Markitserv and Bclear, which represent significant progress towards post-trade transparency.

6.1 DTCC Trade repository

The DTCC has recently announced the launch of its Equity Derivatives Reporting Repository (EDRR) and FSA's approval of a European DTCC Derivatives Repository Ltd. All of the 14 global market dealers are now present on EDRR.

EDRR's central registry will hold key position data, including product types, notional value, open trade positions, maturity and currency denomination for participants transactions, as well as counterparty type. The service will initially support options; equity, dividend, variance and portfolio swaps; CFD (contracts for difference), accumulators and a final category covering other structured products.

Participating firms are responsible for loading all their open third-party positions in the repository. DTCC is responsible for managing the data, and providing reports to regulators and participants. On a monthly basis, DTCC will provide the designated regulators and participating firms with a series of summary reports on the position data. DTCC will create and make available three different reports:

- a Participant Report showing a summary of the open positions for each individual organization;
- an Aggregate Report showing a summary of the aggregate positions for

the firms that have the same designated regulatory authority (Regulators Only); and

- an Industry Report showing a summary of the aggregate positions for all trading parties.

The reports will contain repository data which includes gross notional and positions by product, counterparty type, local currency and maturity profile.

6.2 Markitserv: streamlining transactions and documentation

Markitserv is an electronic network to exchange trade data, confirm transactions and achieve straight-through processing (STP) in equity derivatives.

Markitserv handles a broad spectrum of products. Single-name index and share transactions in each of the major regions (Americas, Europe, Asia-Pacific) for the following products are available for the following derivatives: options, total return swaps, variance swaps, dividend swaps, and corresponding sub-products including variance, barrier, spread, butterfly, straddle, strangle and cliquet options, and dispersion variance swaps.

6.2.1 Master Confirmation Agreements (MCAs) and Markitserv MCA-Xpress

According to DTCC and Markit press-releases, industry participants are committed to adopting streamlined documentation using Master Confirmation Agreements (MCAs). Markitserv offers MCA-Xpress, a Web-based application that streamlines the negotiation and execution process, fostering market participants ability to process automatically OTC equity derivative MCAs. Parties may upload and reference MCAs executed outside MCA-Xpress, thereby providing a single global location to view all MCAs.

6.3 NYSE-LIFFE BClear

NYSE Liffe launched its Bclear service to process and clear OTC look-alike equity derivatives in 2005. Bclear now offers clearing in futures and/or options on over a thousand underlying companies from more than 20 countries, as well as a broad range of index derivatives. Since its inception, it has cleared over 500 million contracts, with a notional value in excess of USD 10 trillion.

Bclear has expanded clearing services from 300 European stock options since 2005 to more than 1,120 European, US and Asian single stocks and 13 European indexes. It has significant participation by the hedge funds, NYSE-Euronext members and traditional asset-managers.

With many contracts, participants can choose to publish or not to publish trades, thus preserving privacy while contributing to regulatory transparency.

Clients have the flexibility to specify contract maturity, exercise price and settlement methods as well, so Bclear is well-suited for clearing bespoke equity derivatives.

7 Conclusions

Over-the-counter equity derivatives constitute a broad spectrum of financial products, trading in the U.S., Europe and Asia. They are primarily used by financial institutions to hedge outright equity exposure, to hedge exposure to equity-linked products, and hedge against market volatility. According to the Bank of International Settlements, the outstanding notionals in OTC equity derivatives reached a record of approximately USD 10.2 trillion in 2008. Trading and price-discovery in OTCEDs is done via Inter-Dealer Brokers, broker-client proprietary systems and through multi-broker-to-client electronic trading systems.

Equity derivatives differ from Interest Rate and Credit derivatives in the sense that there is considerable transparency in pricing due to the existence of listed equities and equity derivatives exchanges. One important example of this transparency is in the emerging area of variance swaps. Volatility swaps trade over-the-counter for large sizes; at the same time the listed VIX, VSTOXX and VDAX indexes and index futures provide real-time information about the volatility market to participants. Listed options markets perform the same function for look-alikes and swaps, including also variance swaps. The conclusion is that pre-trade transparency is very high for non-exotic OTC equity derivatives, unlike interest-rate and credit products where price discovery is limited to dealer-client proprietary communications.

The situation for post-trade transparency is different, and varies across regional markets (Europe, Americas, Asia-Pacific). The complexity and multitude of products has raised the issue of proper documentation and trade reporting. Recent progress has been made since 2008, which the emergence of global trade repositories and centralized clearing in Europe and the US.

With regards to post-trade transparency, we note that OTC derivatives often consist in tailor-made financial products for corporate and institutional clients. Since trades are customized and large, the rapid dissemination of trade information may be detrimental to the market, making it more difficult for dealers to hedge customer business. In addition, customized transactions would require significant product description disclosure for the price information reported to be interpretable and, indeed, to avoid creating misleading price signals. As a result, significant costs would be borne by the reporting parties. Thus, in such cases, transparency in reporting would not have obvious beneficiaries as the product represents a one-off tailored transaction.

Thus, a distinction should be made between *full post-trade transparency*, which is necessary and appropriate for exchanges, and *regulatory transparency*, in which trades are reported to regulators but not necessarily disseminated immediately to all market participants.

In Europe, a substantial amount of look-alike derivatives are cleared through Bclear or through clearing facilities provided by Eurex and Liffe-Euronext. Progress is slower in the U.S., but the industry is steadily moving in the direction of streamlining transactions and reporting via Master Confirmation Agreements, which are processed electronically and disseminated to the centralized reporting facilities. Given the research that we have done, more work needs to be done in the direction of centralized clearing in the U.S., particularly for over-the-counter equity puts and calls, which form the bulk of the business.

The general picture which emerges in the post-2008 environment is that of a market which is evolving from bilateral to multi-lateral trading and reporting, while attempting to safeguard the main characteristics of OTCEDs: flexibility of product design and privacy.

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