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# OTC Derivatives Processing

## Special Report

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# This Challenge Is Not Trivial

The rise in popularity of exchange-traded and over-the-counter (OTC) derivatives from a buy-side perspective is not a new phenomenon, but it is a growing one. Asset managers are yielding in ever greater numbers to the market's push and pull factors—the push away from traditional asset classes such as equities due to ever-shrinking margins, and the pull from the derivatives market, offering participants greater potential for alpha, although this market is not without its risks—making this one of the fastest-growing business segments in the financial services industry.

But the derivatives market, especially when it comes to OTC instruments, does present its fair share of challenges, chief among which are the dual-pronged issues of technology and operations that need to be satisfactorily addressed before firms can claim to have the wherewithal to systematically and efficiently manage such variables as counterparty credit risk, margin calls, collateral, the affirmation and confirmation processes, and clearing and settlement.

But let's be clear here: Developing an internal and external infrastructure connecting all the necessary links in the front-to-back-office chain is anything but a trivial exercise.

In this special report, covering just about every aspect of exchange-traded and OTC derivatives trading and processing—from haircuts to holistic risk views and SEFs to straight-through processing—our six sources discuss the crucial role that technology plays in supporting this complex industry, the need for market participants to finally get moving in terms of adopting standards to help the automation of such business processes, and the fact that much of this back-office game is in its infancy, and is therefore yet to be played out. ■

**Victor Anderson**
Editor-in-Chief

# State Street Set to Launch Swap Execution Facility

State Street has announced the expansion of its end-to-end derivatives solution to include an execution platform for the trading of derivatives products. The launch of this swap execution facility (SEF), SwapEx, coincides with the 2012 implementation of significant regulatory changes in the US and Europe. State Street's derivatives solution already includes clearing, servicing, custody and accounting, collateral management, valuation, and risk and analytics.

State Street plans to file its SwapEx registration with the Commodity Futures Trading Commission (CFTC) when the application window opens later this year. In preparation for the launch, State Street has entered into an agreement with the National Futures Association (NFA) to perform regulatory services for State Street's SEF.

"The derivatives market is in the midst of significant change as it moves away from a bilateral trading model to a centrally traded and cleared environment that offers greater price transparency, liquidity and enhanced risk management," says Clifford Lewis, executive vice president and head of the eExchange business at State Street. "State Street's core competencies as a custodian combined with the advanced technology of our eExchange platforms, including SwapEx, make the expansion of our derivatives solution to include a swap execution facility a natural extension of our business."

Adds Jeff Conway, executive vice president and head of investment manager services at State Street: "Through State Street's comprehensive derivatives solution, buy-side clients will have a centralized means for trading, clearing and processing their swap positions, managing the related collateral demands, allocating, reconciling and accounting for their positions, automating manual processes, and helping to reduce operational risk."

Key functionality of the SwapEx platform will include automated post-trade capabilities, portfolio compression available through request-for-quote, and indication-of-interest execution styles that allow for the "tear-up" of positions, and multiple execution styles.

# EOX, Updata Form Alliance for OTC Energy Analytics

Clients of over-the-counter (OTC) commodities interdealer broker OTC Global Holdings' EOX data division can now access and analyze the broker's end-of-day natural gas and power forward curve data in technical analysis software vendor Updata's Professional analytics workstation, under an agreement between the two.

"Clients will want to take OTC data and compare it to exchange curves or internal forward curves and look for trading opportunities, and can run historical analysis and strategy testing, and all sorts of technical analysis—such as creating moving averages or oscillators—just as you would for exchange data," says Rob Garfield, senior vice president of business development at Updata.

EOX officials say Updata will enable clients to get more benefit from EOX's data. "From an analytical perspective, traders often forget the relationship between technical analysis and forward curves. Technical analysis is the process of analyzing historical price movements to determine market sentiment. The structure of the forward curve—its level of contango, or backwardation—changes on a daily basis and is a powerful method of determining market sentiment. In addition, forward curves—especially in power and gas—highlight the often-referred-to 'widow maker' spreads that traders love to ride," says Jeff Shipp, director of sales and marketing at EOX. "Analyzing the shape of the overall curve, historical price movements and spread relationships of a given market creates a well-rounded trading viewpoint—and Updata's platform, in combination with our forward curves, facilitates that analysis."


Jeff Shipp

London-based Updata carries data from multiple brokers in Europe, but OTCGH is the first broker to provide US data to its platform, though the vendor is talking to other brokers and exchanges with OTC markets to expand its content, Garfield says. "Some of that OTC data is very specific to Europe, so as we seek to expand in the US, we are trying to replicate our success in Europe by sourcing OTC data, which is typically harder to obtain than exchange data," he says. "For us, it's about getting exposure to participants in the OTC energy markets. And for EOX, it's a chance to offer access to added-value analytics to encourage more trading."

For mutual clients, Updata will enable the data from OTCGH in their terminals for no additional charge, though firms must be an existing client of EOX—or must become one—to access the data in Updata. EOX provides the vendor with a file of end-of-day curve data, which Updata loads into its database and distributes via its proprietary feed to those clients permissioned to view the data in their workstation.

Lisa Causarano, director of electronic and market data sales at EOX, says the initial agreement covers natural gas and power data—which the broker made available late last year—but that it will expand to cover datasets on other asset classes brokered by OTCGH as EOX makes them available. "Our data can be used in a number of ways—for risk and in the back office, but more recently, we've tried to focus more on the front office and on price discovery for traders," Causarano says.

Garfield adds that Updata's desktop presence among commodities traders will help expand EOX's front-office base. "We both saw an opportunity to take interesting forward curve data that EOX is providing from its brokerage business, and to visualize it—not just for use in risk systems, but for traders to use it to perform more analytical work," Garfield says.

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## ING Expands Relationship with Quartet Financial Systems

Analytics provider Quartet Financial Systems has announced that Dutch banking group ING will roll out ActivePivot analytics to its credit department.

ING previously used the software for profit-and-loss (P&L) validation, and monitoring market risk. The extension will now see it deployed to monitor credit value adjustment and collateral management.

"We implemented ActivePivot in order to manage our market risk in a proactive, actionable and analytical way" says Marnix van Stiphout, managing director at ING. "However, we have recognized the solution's powerful potential in helping us solve a number of other operational issues across the business at a much lower cost than the industry's traditional approach. As a result, we have set up a center of excellence that is responsible for implementing ActivePivot in other parts of the bank."

# Financial Stability Board Announces Legal Entity Identifier Implementation Group

The Financial Stability Board (FSB) has established an expert group to deliver global legal entity identifier (LEI) system implementation proposals by April, according to a statement from the board.

Following submission of these proposals, the FSB plans to review them and send them on to the Group of Twenty (G20) nations ahead of the planned June summit. The FSB's action took place in its meeting Jan. 10 in Basel.

The international regulatory coordination organization also set up an OTC Derivatives Coordination Group to work on achieving G20 over-the-counter (OTC) derivatives market reforms by the end of the year, starting with safeguards for a central counterparty (CCP) framework, according to the FSB.

The organization also has expanded its steering committee to represent more countries and institutions, and is creating a high-level group on governance and resources, which will look at ways to improve the FSB's standing as an authority for the industry.

## BNP Paribas Extends Hedge Fund, Fund-of-Funds Administration Services

BNP Paribas has announced the launch of a new program for its hedge fund and fund-of-hedge-funds administration services.

The program will introduce added reporting functionality in line with regulatory reform, and is targeted at both Ucits and offshore funds. Along with more powerful reporting tools, the platform also includes counterparty and asset exposure risk management, and automatic processing of over-the-counter (OTC) instruments, with collateral management, valuation and asset-protection structures. The new functionality is built on top of existing risk management, performance measurement and fund accounting capabilities.

"As the hedge fund industry becomes more institutional-investor-focused, hedge fund managers' administration requirements will continue to evolve," says Chris Adams, head of hedge fund solutions at BNP Paribas. "This investment program, now live, was conceived specifically to meet these requirements by taking a more menu-driven approach—helping managers launch funds quickly, measure counterparty exposure and exert greater control."

## Traiana Enhances Harmony CreditLink with FX Derivatives

Traiana has announced the re-launch of Harmony CreditLink, which now incorporates functionality for foreign exchange (FX) options trading.

Digital Vega will be the first firm to integrate the new software into its multi-dealer FX options platform, Medusa. Citigroup and Morgan Stanley will also use the service for client and counterparty credit management.

"Integrating the Medusa trading platform to Traiana's CreditLink solution brings advantages to our clients and partners in terms of managing counterparty risk and exposure," says Mark Suter, CEO at Digital Vega. "The provision of real-time, pre-trade limit checking allows us to deliver an integrated, industry-standard solution covering spot, forward and FX option trading. Additionally, this partnership provides us with an ideal solution with which to address the significant pending changes to the FX regulatory environment."

# The Law of Increasing Margin Costs Diminishes Returns

As derivatives and cash activities increasingly migrate to central clearing parties, the economics of trading will fundamentally change—costs that were previously implicit and hidden at execution become up-front, visible and potentially larger in magnitude.

By Mark Abrams


Mark Abrams

The new market structure means that front-, back- and middle-office staff will need to work more closely together to address changes associated with the new regulatory mandates. Change will impact data requirements, workflows, reporting and collateral costs, depending on the trade.

For illustration purposes, let's look at margin. In the US, for example, regulators estimate that compliance with the Dodd–Frank Act could necessitate up to $2 trillion of "new" initial margin, according to an article published last year by *Waters*' sibling publication *Risk*. This means that if not addressed, inefficiencies around collateral management that currently cost the industry billions of dollars each year will represent even greater financial and opportunity challenges to profitability in the future.

This is just one of the expected changes in the near term that will challenge firms to address the way they currently operate. Non-cleared activity, capital requirements, and measurement of counterparty risk will also have a profound effect on a trade's pricing and its economics. Overall, the viability of hedging strategies that historically may have been considered no-brainers will now need to be reassessed.

## Integrated Approach

A large number of consultants believe that it is critical to take an integrated approach to risk management that is reflected in everything—from trade and margin analytics, data and business process management, to real-time dashboard reporting of firm-wide net counterparty risk exposures and collateral balances in order to rein in these escalating costs. Using our previous illustration, the dimensioning of net counterparty exposures and margin requirements can play an important role in helping drive improved profitability. Margining-related considerations will have a major impact on the true value of a trade. They will, therefore, become a key determinant of where, and through which intermediary, a particular trade should be executed.

For those more complex derivatives that continue to be traded bilaterally, measurement and management of counterparty risk will also have a profound effect on pricing and the economics of the trade. Bilateral margin requirements have grown more onerous and complex, as well. Collateral optimization continues to increase in importance due to the drivers cited above. Central counterparty (CCP) margining-related considerations will have a major impact on the economic merits of a trade and where it should be executed.

Pro-forma margin calculation is becoming crucial for any firm that is serious about effective capital management. This is further compounded in a market climate of low interest rates, modest investment return opportunities and greater funding challenges. Before executing a trade, you need to be able to evaluate which combination of futures commission merchant (FCM) or derivatives commission merchant (DCM) and clearinghouse makes the most sense based on your trading activity, the fees charged and the initial, maintenance and variation margin requirements. After all, it's not inconceivable to have exposure to a particular firm by virtue of it being an underlying in a derivative trade, a clearing merchant and a member of a CCP, at the same time. Without knowing what your net exposure is, how can you make the most informed trading and risk management decisions?

## Vital Roles

Failures among individual firms over recent years have painfully demonstrated how vital a role margin analysis and collateral management play into a broader framework of integrated risk management. So, for example, pro-forma margin calculations should take account of your overall trading book and factor in consideration for potential cross–margin netting where possible. The interdependencies of financial markets and the multi-faceted nature of some firms' businesses make a compelling case for an enterprise-wide picture of all of your counterparty exposures.

A truly integrated, cross-asset management environment empowers everyone in your firm with a coherent picture of positions, exposures, collateral and risk so they can meet these new demands head on. Adopting an holistic approach to transaction lifecycle management has always had the potential to lessen the need for manual processes and reconciliation, reduce operational risk and improve efficiency. Now, amid changing regulations, the addition of consistent, automated data and information flow can enrich your pre-trade analytics, reporting, counterparty risk, and collateral management to play a vital role in helping you prevent increasing margin costs from diminishing your returns.

Mark Abrams is sales director, North America at OpenLink, a New York-based provider of financial technology including its flagship fully integrated financial market solution (Findur), a front-to-back office platform, which creates a straight-through-exception-processing (STeP) environment, supporting the entire transaction lifecycle for derivatives and cash instruments.

# Titan Adds Insider, Predictive Data to Signals


John Coulter

Titan Trading Analytics, an Atlanta, Ga.-based provider of trading strategy signals based on behavioral research, has added two new sources of sentiment analytics—Insider Insights and Recorded Future—to the behavioral information it makes available to clients.

CEO John Coulter says Titan receives updates from Insider Insights on a weekly basis and Recorded Future as events occur, and incorporates these as additional values on its feed of signals. "We have our models based on price, volatility and our suite of algorithms, then we take the unstructured data and use it as an overlay, by adding an alerting column so we can serve up sentiment changes and upcoming actions within our signal stream," he says. "We provide these as separate information that is not readily available, intended to round out a trader's decision-making process."

Jonathan Moreland, director of research at Insider Insights, who started collecting insider deal data to support his own fundamental research and trading activities, and then began selling the results to offset his research costs, says insider deals provide an indicator of a company's—and its executives'—confidence in its own stock, which, in conjunction with other research, could be factored into investors' decisions.

"Especially in this uncertain market, if you are willing to increase your position in your company, that's saying something," he says. "I've always thought the behavioral science of insider data was under-rated, so combining Titan's behavioral signals with ours made perfect sense."

Insider Insights also specifies whether deals were traded on the open market, and even whether a sale indicates lower confidence or is to cover the capital gains tax on any increase in the value of their holdings, Moreland says, adding that the vendor is considering moving to daily data delivery by automating some of its processes.

Recorded Future creates so-called "temporal analytics" by scanning public sources of news and information to generate timelines for individual companies and capturing any mentions of future events, then predicting the impact of that event on securities prices based on historic performance around similar events in the past.

# Kempen Selects Omgeo for Collateral Management

Kempen Investment Management has chosen Omgeo's ProtoColl software for the automation of its collateral management processes.

ProtoColl will replace Kempen's legacy system of spreadsheet management for its counterparty risk, as well as collateral management. The automated solution allows for Kempen to make its own collateral calls, validate received calls and monitor movement in its over-the-counter (OTC) derivatives business.

"The collateral needed to cover OTC derivatives trades will become an increasingly important operational function," says Martin Loxley, director of collateral management at Omgeo. "Firms who are thinking pragmatically are already looking to enhance their control over the process. By automating collateral management processing for OTC derivatives trades, users take advantage of a more scalable operation that is capable of future growth and expansion to additional asset classes."

# AcadiaSoft Signs Bluebay, Cheyne, Goldman Sachs AM

Financial software vendor AcadiaSoft says Bluebay Asset Management, Cheyne Capital Management and Goldman Sachs Asset Management will be live on its over-the-counter (OTC) derivativjes community, MarginSphere, in the first or second quarter of 2012.

MarginSphere is an online margin confirmation community designed to bring some automation to the OTC derivatives market. Users can use the solution's web-based distribution channel to electronically confirm, manage and track margin calls. It also provides a full audit trail of collateral management activities, according to the vendor.

"AcadiaSoft allows us to view and respond to our margin calls from one online location, benefiting the efficiency and transparency of our daily operations," says James Dawson of Cheyne Capital Management.

# Paladyne Unveils Version 8.0 of Portfolio Management Solution

Investment management systems provider Paladyne Systems announced the launch of version 8.0 of Paladyne Portfolio Master, its order and portfolio management solution. Paladyne president Sameer Shalaby says this latest offering is geared toward the changing regulatory environment and fee structures.

Version 8.0 includes enhancements to tools for modeling and over-the-counter (OTC) valuation. There are more model libraries, enhanced sensitivity analysis, and real-time access to market data for things like curves, volatilities and spreads. The vendor has also expanded its integration with investment bank-offered algorithms and added more than 200 global brokers to its FIX broker network.

Paladyne has also added tools for profit-and-loss (P&L) and Ucits reporting. The Borrow Fee Manager will help firms to manage P&L reporting by automating the calculation and tracking of post-trade borrow costs. It will then allocate those costs directly to the short positions and related strategies.

# The Credit-Checking Challenge

Jay Spencer

As change comes to the derivatives market, Tradeweb Markets CTO Jay Spencer discusses the need for pre-trade credit checking.

Certainty of execution and clearing has intensified as a global issue for the industry as it prepares for the implementation of derivatives reform. No widely adopted technology solution currently exists for the pre-trade credit checking process, which is at the heart of the issue. Several approaches to resolving this challenge are under consideration, but the most compelling method relies on the use of pre-trade credit checking algorithms by trading venues.

Derivatives trades between liquidity providers and institutional investors are generally not cleared in today's world. This will change under the Dodd–Frank Act in the US, which is expected to be enacted in phases later in 2012. Similar rules are expected to be subsequently implemented in Europe and other global jurisdictions.

**Q. Why does the industry need a pre-trade credit checking methodology?**

Clearing mandates have prompted a change in workflow as parties to a trade now want assurance that positions they are entering into will clear and will not result in broken trades. In the absence of clearing certainty, traders who go on to hedge these positions may take on additional risk if the original trade does not successfully clear. A pre-trade credit checking mechanism is a compelling method to minimize this risk. Central to this credit checking process are institutional investors' relationships with clearing members, as clearing members will need to extend credit to buy-side institutions in order to ensure clearing certainty.

**Q. What technology solutions could respond to this challenge?**

Pre-trade credit checking tools may be built by three distinct categories of industry participant: clearinghouses, technology vendors, and trading venues. They all have their challenges. From a technology perspective, clearinghouses may be hesitant to build credit checking tools if they are unable to devote the technology resources to build the solution on a timely basis, or don't see an adequate return on investment. Many large financial institutions have expressed concern that a technology vendor might not be in a position to deliver a timely, reliable third-party "hub" solution in the timeframe required under regulatory reform.

However, trading venues with a technology heritage are very well positioned to respond to the challenge. With robust development operations and years of experience in building market infrastructure, these established platforms have the potential to deliver an intelligent, targeted and integrated workflow that addresses pre-trade clearing certainty.

**Q. What are the different approaches the industry is considering to achieve certainty of clearing?**

Industry participants seem to agree that there are three potential ways for a trading venue to build a credit checking tool:

**'Pinging'**—This approach provides a drop-down menu on a trading ticket, allowing investors to dynamically select a clearing member. When the ticket is sent, the clearing member is notified and returns a message to the dealer to confirm that the client has enough credit available to clear the transaction.

**Daily Uploads**—Clearing members upload credit limits to the platform at the beginning of the trading day, using this method, where information on clients' available credit is stored and monitored locally.

**Hybrid**—In this scenario, credit limits are uploaded from clearing members to the trading venue at the beginning of each trading day, and a tolerance limit is set for each client—for example, at 75 percent of available credit. If the client reaches the tolerance level—which is monitored by the trading venue—the platform pings the clearing member to request a credit increase. The limit stored within the trading venue is then adjusted and monitored accordingly.

**Q. What preferred solution is Tradeweb planning to roll out?**

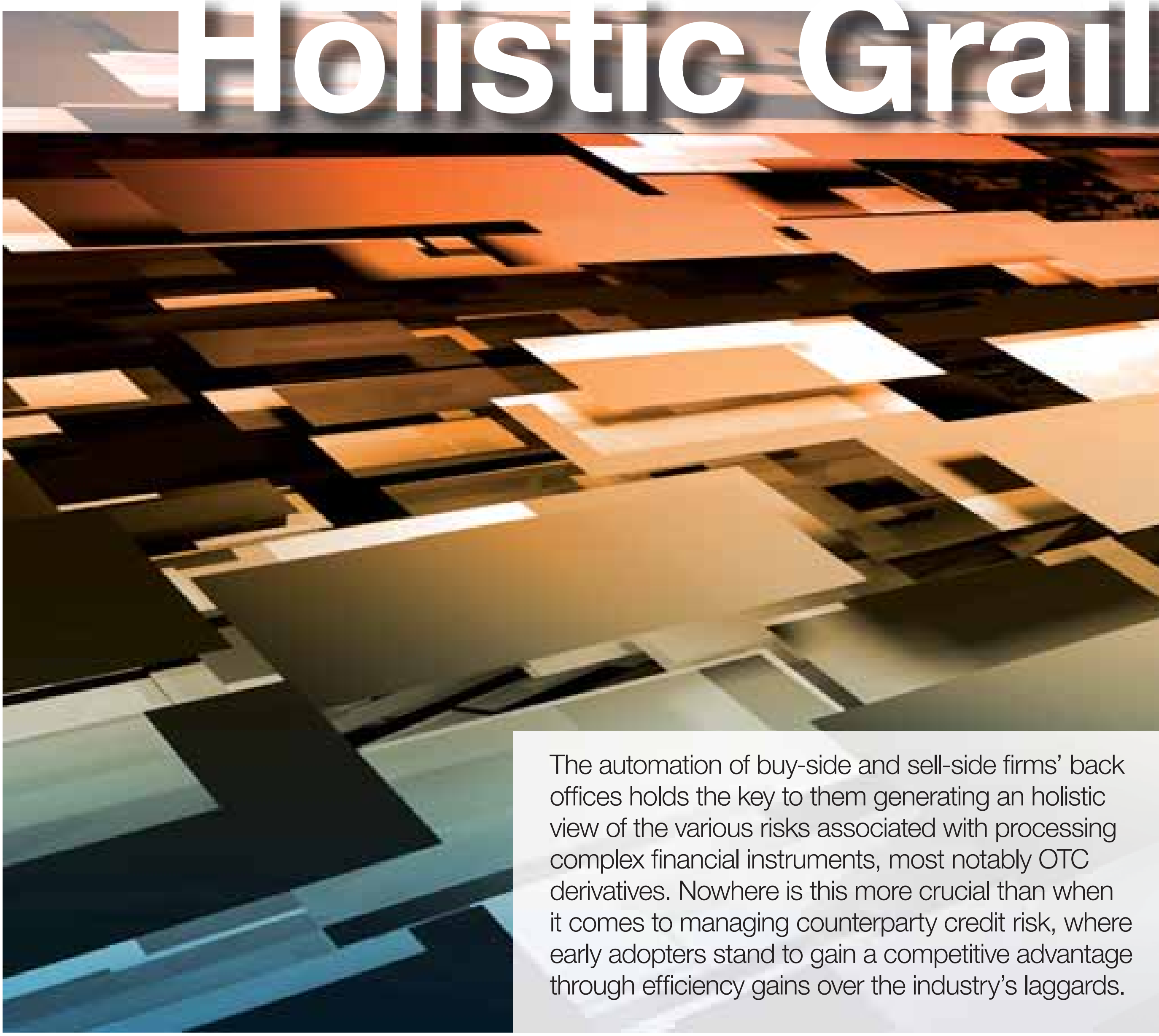
Tradeweb has developed a hybrid solution for the institutional client-to-dealer marketplace that successfully addresses the needs of the industry. At the beginning of the trading day, the Tradeweb Viewer (trading screen) is populated with a credit limit delivered daily from the clearing member for each account. This may be at the sub-account level or the firm level, and would not necessarily represent the total amount of credit.

At the time of trade, the customer selects the clearing service and the clearing member on the trade ticket. Some customers may be required to pre-allocate at this point. Tradeweb then checks against the credit held within our system.

If credit is sufficient, certainty of clearing exists and the request-for-quote (RFQ) would be sent to the executing dealer with a message indicating clearing has been approved. If credit is insufficient, a message would be sent to the clearing member requesting transmission of appropriate credit. While additional credit is being requested, the customer would receive a "pending" status notification. At this stage, the customer may elect to override the credit-check process and send the trade to the dealer with a message indicating that clearing certainty has not been achieved. If the clearing member increases credit, however, the RFQ is sent with certainty of clearing status notification.

Tolerance levels would be in place to allow clearing members to be notified when a certain percentage—for example, 75 percent—of credit monitored by Tradeweb for a specific account has been depleted. The clearing member could then elect to increase the credit line, keep the limit firm and disallow trading above that credit limit, or even rescind credit completely. ■

# In Search of the Holistic Grail



The automation of buy-side and sell-side firms' back offices holds the key to them generating an holistic view of the various risks associated with processing complex financial instruments, most notably OTC derivatives. Nowhere is this more crucial than when it comes to managing counterparty credit risk, where early adopters stand to gain a competitive advantage through efficiency gains over the industry's laggards.

**Q Do you expect to see more challenges in the front office, or middle and back office, when preparing for the new trading environment? What are those challenges?**

**Mark Abrams, sales director, North America, OpenLink:** There are critical trading challenges for the front office in the new market structure. Even though the credit markets are more advanced than rates as a trading environment, finding pools of liquidity can be difficult. This is especially true for the more thinly traded names. The challenge then grows with the introduction of multiple swap execution facilities (SEFs) and greater fragmentation.

**Chris Coleman, managing director, Derivatives360 business manager, Americas, BNY Mellon:** The derivative landscape has been undergoing significant changes during the past several years. Amidst all of these changes remains a level of uncertainty for clients regarding the end state requirements and process workflow. One certainty many in the industry can agree upon is that derivative processing will be more challenging and cumbersome in the short-term before things get easier in the long run. Global regulatory reform will ultimately impact the entire life of the trade—from execution to middle- and back-office processing. SEFs and organized trading facilities (OTFs) will change the overall process, from both a technology and operational process flow perspective, for those institutions executing derivatives with their counterparty. Depending on how you define middle and back office, key areas that will be transformed include: collateral management, accounting, valuation, and reconciliation. The move from an uncleared bilateral market to a central clearing counterparty environment will call for an exchange-traded-futures–like process, with a number of anomalies that are likely to test the industry for some time to come.

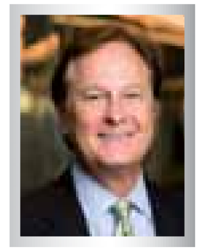
**Ted Leveroni, executive director, strategy, Omgeo:** While the front office will face a number of challenges, I believe the middle and back office will be impacted the greatest. One of the most significant challenges for participants is managing counterparty risk holistically across cleared and non-cleared OTC derivatives transactions. Creating automation across these differing workflows on a single system to allow for holistic control of bilateral collateral and cleared margin will be essential to effectively manage counterparty credit risk.

**Darren Thomas, global head of clearing services operations, Barclays Capital:** The big challenges we're seeing are largely in the back office. The back-end infrastructure for margin processing, for settlements and general books and records for clearing has been relatively monolithic in the futures world and what we've had in the OTC world is more of a componentized-type infrastructure that has dealt with the flexibility of the OTC market and the different bits of connectivity we've had for the market infrastructure.

As a result, the back office had to really invest. If you look at our top 30 infrastructure programs in the bank, the majority of those are all focused on back-end, non-client-facing activities to facilitate these clearing activities, and settlement infrastructure for securities clearing, as well as massive investment in our margin processing. That all has to do with changes in the regulatory environment with Dodd–Frank, as well as the Basel III implementation that is changing our view of regulatory capital and how we manage this.

On the front-office side, there's no shortage of work being done to connect to the SEFs and to understand the trading implications of what's going to happen—I just think it's a little less developed than clearing, which is going to go live well in advance of SEFs. So the majority of our investment has been focused on automating the back-end infrastructure and making it a lot more flexible to support clearing.

> "The two key areas that businesses need to focus on are creating flexible trading protocols and high-performance infrastructures. There are still a number of options as to how swaps may be traded on regulated, electronic markets, such as order book work-up, top-of-book, block trades, high-speed and request-based markets. Firms have varying degrees of experience in these areas, which can be leveraged accordingly."
> **Jay Spencer, Tradeweb Markets**



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**Jay Spencer, CTO, Tradeweb Markets:** It will be a race against the clock for some firms to develop trading protocols that meet the new rules of derivatives reform and there are a number of challenges. At Tradeweb, we have the advantages of deep experience in developing more than 30 fixed-income electronic trading platforms, as well as a wealth of industry technology expertise to fall back on. With a foot in both the dealer-to-client and inter-dealer markets, we have built an array of trading technologies that will position us well for the next year and beyond.

In the middle and back office, the challenges may be even greater than for the front office. Certainty of clearing, for example, has become a pressing issue. We are road-testing a credit-checking solution in the marketplace for this, which we think will help liquidity providers manage their business with more confidence and reduce overall counterparty risk.

As the electronic markets develop and volumes pick up, we see speed becoming an increasingly important differentiator, especially given that the risk profile of swap trades extends beyond that of a cash trade. Some of the other issues that need to be addressed include unwinding swaps, and more generally managing the clearing process across multiple trading venues, clearinghouses, swap data repositories and other service providers.

**Q Which part of the OTC trade lifecycle will be the easiest, and which will be the hardest, to automate? What can firms do to address this?**

**Neil Monaghan, global head of OTC clearing and client service, Citi:** The hardest part is going to be any type of high-frequency execution because there are a lot of different pieces involved in the execution process—from when you get the quote, to making sure that your futures commission merchant (FCM) has limits, to making sure that it gets cleared. On the front-end it's the high-frequency execution. The SEF stuff is going to be very complicated. Once you get past that point and then you start going back in, I think the netting of trades becomes very complicated, especially in the rates space. Currently, all OTC systems are not position-based systems; they're line-item-based systems.

**Thomas:** I would say the easiest part is the normal confirmation and execution in clearing process. We've been doing that for a few years in terms of dealer-to-dealer clearing, so a lot of the trade date clearing isn't actually as difficult as we once thought it was. There are a lot of legal issues with it that drive our workflow, but the actual technology component of it is kind of common to interfaces that we use now.

The hardest to automate is a lot of the back-end processing around the maximum amount of collateral moves that we're doing—the high number of cash settlements that are moving back and forth. Clients and dealers are looking to optimize their margins on a day-to-day basis, and even a real-time basis, and a lot of strain is being put on the infrastructure—which is not very automated throughtout the industry—to do all these security moves, cash moves, and optimize margin at each CCP.

It's definitely become very challenging and we're looking for market utilities like the Depository Trust & Clearing Corp. (DTCC) and some of our custodians to help us reduce the transaction costs and make sure all of that automation is coming to us so that we don't have a product that can't support the volumes.

**Leveroni:** One of the most difficult and important areas of automation in the trade lifecycle is the creation of electronic links between the collateral management systems of the buy side and their clearing brokers. Ultimately, firms want to be able to manage counterparty credit risk on a single platform, and it is essential that they have connectivity with their counterparts to become truly automated.

With daily margining, limited to nonexistent thresholds, and portfolios split across brokers, CCPs, and bilateral counterparties, participants will receive significantly more calls in the future. Because the calls on a firm's cleared trades will generally be satisfied by the same pool of collateral as those calls on non-cleared trades, aggregation and automation of the call processing and collateral movement across both models is imperative, yet not traditionally supported by a single system.

**Spencer:** For the market as a whole, allocations will be a challenge. Creating a methodology for allocating trades to sub-accounts, building the technology and creating a robust standard settlements instructions database all take a lot of time. Fortunately, Tradeweb management—before I arrived, I should add—had the foresight to build out a full straight-through processing toolkit for clients, so this is much less of an issue for us. While nothing is easy to automate, the experience of Tradeweb and some competitors makes it possibly less time-consuming for them to adapt existing trading protocols to meet the new rules.

> "Collateral can be managed across desks and portfolios so systems need to be nimble enough to dig down and report on the granularity needed to reconcile these figures, attribute them to the right parties and identify the economic benefits of various activities." **Mark Abrams, OpenLink**

**Coleman:** BNY Mellon's expertise and core competencies enable us to offer clients a complete set of services throughout the OTC trade lifecycle beyond execution.

Generally speaking, however, each organization executing derivatives today will experience challenges throughout the life of an OTC trade, with some organizations better positioned to support specific functions. Many in the industry are still challenged with the complexity of a bilaterally traded, uncleared derivative portfolio such that the injection of centrally cleared trades will prove overwhelming. For some firms, connectivity into industry utilities, CCPs, and FCMs will be taxing, while others will be faced with the realization that their internal processing platforms are too limited to support a hybrid portfolio of cleared and uncleared items.

Regulatory reform—Dodd–Frank and the European Market Infrastructure Regulation (EMIR)—will stress even some of the best technologies and processes in the industry. However, certain functions within the lifecycle should be less difficult to automate when based on existing industry best practices for other similar product types. Two examples of this are inter-connectivity with industry pricing vendors and CCPs, as well as reconciliation of derivatives portfolios with the FCMs and, going forward, with the swap data repositorys (SDRs). Although these examples have their own challenges, they should prove easier to automate than, for example, the independent calculation of initial margin, and price alignment interest.

The new regulations also impose collateral requirements and real-time reporting requirements designed to reduce counterparty credit risk and bolster market transparency.

**Abrams:** If we assume that the OTC trade lifecycle includes electronic trading, then the time delay between perceived execution events and clearing confirmation will lead to greater uncertainty from a straight-through processing (STP) perspective. It's hard to automate activities when you are not sure if the event even happened.

### Q How will risk management and collateral management systems need to change to handle the new automated environment?

**Thomas:** Collateral management was kind of a back-office function that was used mainly to mitigate counterparty risk. Nowadays, data for collateral needs to be at the trader's systems that are going to be able to price trades. They need to be right there when they are executing so we can properly route trades to the right clearinghouse and know what trades we're getting into, and what the charges are going to be from a capital perspective and a margin perspective, and what the potential impact of the guarantee fund might be.

This all also has to do with risk. From a risk perspective, our risk has typically been intra-day for traders and end-of-day for

everyone else to consume and understand the portfolio. We're now moving much closer to understanding our risk on a real-time basis, looking at a client's portfolio and being able to make decisions at the transaction level and determine whether or not we're comfortable with the risk that we're taking on.

We're changing the collateral system to be real-time and changing our risk management system to consume that data in real-time with all the different factors coming from the regulators included. So that's been our big challenge: Changing the systems to be able to handle all of that.

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**Leveroni:** To properly support counterparty credit risk management, collateral systems will need to become holistic platforms able to automate collateral inventory and deliver effective risk management across the largest spectrum of collateralized instruments possible, including cleared OTC derivatives as well as various bilateral products. To achieve this, a firm's collateral management offering must address two main areas: links to clearing brokers to automate the margin-call process, which I described earlier; and enhancements to support the new emphasis on independent amount/initial margin, now required for all transactions.

**Monaghan:** They need to be much more real-time. Right now the risks that you're taking on are very different. In a bilateral world, you know your client, you know your haircut, your initial margin is fixed, and at the end of the day you mark your positions and you have your ISDA [agreement] in place to protect you.

When you go to clearing, the exposures are different. All the risk managers in the firm need to deal with the risk at the CCP, they need to be able to know on a real-time basis what they're taking and have some comfort with what's going on with the rest of the system. On my side as the FCM, I have to be very comfortable and very real-time in all the risks I'm taking for my client and be sure that I'm not entertaining any poor risk judgment.

**Coleman:** A significant aspect of regulatory reform is focused on minimizing the amount of risk in the market. The general thought is that counterparty, operation, and general systemic risk will be minimized as the industry moves to standardized products and a central clearing counterparty model. Derivative users will continue to review their risks associated with executing these trades. Collateral management operations and technology will be required to be more efficient and effective by ensuring proper collateralization and optimization as this process moves closer to a front-office function

Both the buy side and the sell side will be more conscious of the manner in which they manage their collateral, moving away from silo pools of collateral, segregated by desk or third-party investment managers. Efficient collateral management systems and processes will require a holistic view of all products that can be collateralized—such as exchange-traded derivatives (ETDs), cleared and uncleared OTC derivatives and repos—in an effort to meet collateral requirements with the appropriate eligible collateral by utilizing optimization techniques and asset transformation.

**Abrams:** Collateral management disputes and reconciliation will be more challenging. Portfolio margining includes components such as initial and variation margin as well as price-aligned interest. Each figure is calculated, adjusted for market conditions and then netted, where possible. Collateral can be managed across desks and portfolios so systems need to be nimble enough to dig down and report on the granularity needed to reconcile these figures, attribute them to the right parties and identify the economic benefits of various activities.

**Spencer:** Tradeweb provides connectivity to risk systems as part of an integrated electronic workflow. A more efficient approach provides many benefits, including the reduction of systemic risk.

### Q Are firms reinventing the wheel in preparing the trading infrastructure for this market? Where can they leverage existing best practices?

**Coleman:** I do not believe this is the case for the industry as a whole, necessarily, as much as certain participants may be reinventing the process and technology currently in place. With the creation of swap execution facilities, for example, tier-two banks will be more competitive with the larger swap dealers in the industry. The price for competing will come in the form of deep expertise and technology interfaces with SEFs or the employment of middleware, which will allow connectivity with multiple SEFs through one port of call.

Some institutions—Tradeweb and Bloomberg for example—resemble the undefined view of a SEF and are seemingly acting in a like capacity in many respects. Therefore, some of the best practices associated with these well-established venues can be leveraged as rules and definitions begin to crystallize.

**Spencer:** The two key areas that businesses need to focus on are creating flexible trading protocols and high-performance infrastructures. There are still a number of options as to how swaps may be traded on regulated, electronic markets, such as order book work-up, top-of-book, block trades, high-speed and request-based markets. Firms have varying degrees of experience in these areas, which can be leveraged accordingly. It's worth noting that Tradeweb takes an evolutionary approach to developing markets and will extend existing protocols in order to leverage existing technologies and reduce disruption to the user experience during the implementation phase of Dodd–Frank.

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**Abrams:** No. There is a temptation to do that but most firms are taking a measured approach. For instance, best practices can be improved by employing better workflow tools, adding transparency and minimizing disparate systems. These are steps that help mitigate operational risk under a variety of scenarios. There is a high level of doubt that we can force the OTC market into a futures and equities paradigm. In some ways it just doesn't fit.

**Monaghan:** I don't think that they're reinventing the wheel; they're expanding the wheel. Additionally we're starting with an RFQ-type system. As for best practices, I think they are looking at how futures handle it. What we're going to see is a logical maturity of the order process.

**Leveroni:** The new cleared OTC derivative environment shares a number of characteristics with both the established OTC and futures models. As a result, there is an opportunity to significantly leverage existing technology and best practices. However, there are some conflicting practices that need to be reconciled. The creation of this new model actually gives the industry an opportunity to re-visit established practices and determine what works well and what could be changed.

An obvious example of leveraging what does work is the adoption of the mandatory daily margin call. This practice is standard in the futures model, but optional, albeit common, in the OTC world. Conversely, the decision by the regulators to dictate adoption of the legally segregated, operationally commingled (LSOC) collateral model is a great example of revisiting and then adjusting existing practices and applying them to the new cleared OTC space.

> "To properly support counterparty credit risk management, collateral systems will need to become holistic platforms able to automate collateral inventory and deliver effective risk management across the largest spectrum of collateralized instruments possible including cleared OTC derivatives as well as various bilateral products." **Ted Leveroni, Omgeo**

### Q What new technologies and services should the industry see from the SEFs and clearinghouses to distinguish themselves from the competition?

**Abrams:** There is a tremendous interest in liquidity aggregation tools that size up the OTC book across platforms. Services like these can provide insight into the depth of the market. Players that offer rich technology solutions that address shared pain points will benefit accordingly.

**Spencer:** Clearly there will be services that are formed—for example, swap data repositories and swap execution facilities. These will need to be integrated with, or accessible to, regulators and service providers, so there is much work ahead. Among the projects is certainty of clearing and execution, for which Tradeweb is actively developing a pre-trade credit-checking solution.

In addition to new types of entities, there is a likely increasing need for scalable high-speed matching. We expect this to spur technology advances in the industry as participants converge on lower-latency solutions. We also see network and information security as areas where new technological products and services will have an impact.

**Monaghan:** A lot of it is going to come down to latency. You're going to have to have the right kind of trade pricing information flowing through. You are going to need to see the right kind of intra-day, real-time risk information coming back from the CCPs. The better you are at telling us where our risk is—either as an FCM or as an executing broker (EB)—the more comfortable you are knowing what your requirements are. Therefore, you can put a better bid on the screen, because at the end of the day, that's the cost of the trade.

**Thomas:** The challenges, less so with SEFs but more so with clearinghouses, is the lack of standardization. They've built unique clearinghouses for every product, and all the clearinghouses have a certain amount of operational uniqueness to them as well. They don't treat cash flows all the same; they don't settle margin in the same way; and they don't calculate intra-day margin in a similar way, which makes this product incredibly difficult to build to, support, and create scale.

We have to create a very flexible infrastructure to support all these nuances of all the CCPs and it's very costly to do. What we really need to be building for is very large scale because clearing is being mandated.

The challenge here is that to differentiate themselves, clearinghouses have to actually undifferentiate themselves by being more standard, and provide the appropriate client segregation. They need to do all the things legally required of them, but operationally simplify the product so that it's cheaper to provide a service that has a low transaction cost and is highly scalable.

**Leveroni:** While I will leave SEF commentary to those focused on the front office, I believe clearinghouses have the opportunity to distinguish themselves in two areas: transparency and collateral efficiency. Initial margin (IM) will play a much larger role in the new environment. Many buy-side participants would find visibility into the CCPs' IM calculations helpful in their collateral management process. As for collateral efficiency, offering portfolio margining across futures and OTC derivatives and/or across various CCPs would greatly reduce the cost of collateral to the buy side. This is of increasing importance due to the strains on collateral inventories that will result from new regulations. Obviously, there are hurdles to be cleared in order to offer these capabilities, but I believe that these advancements would be welcomed by the industry.

**Chris Coleman**
**BNY Mellon**

**Coleman:** Clearinghouses will openly compete for market share in a couple of ways: one, by addressing their collateral eligibility criteria, we have recently seen a move from the CME to accept some corporate bonds as eligible collateral where treasuries and cash had been required; two, by clearing more products and currencies, allowing for cross-margining of exposure and netting benefits; and three, competitive membership criteria allowing for more clearing members.

Swap execution facilities will distinguish themselves from their competition by providing a technology solution with state-of-the-art workflow integrated with market utilities coupled with premier trade processing functionality. Products executed through a SEF, as well as the number of trades executed on the SEF, will be limited in the early stages of evolution. Effectively, SEFs will compete for liquidity providers by offering broad clearinghouse/member connectivity, broad product coverage and functionality.

## Q Are the current industry standards up to meeting this new environment? Where do they need to be improved?

**Abrams:** The short answer is not yet. The standards are obviously not up to the task. Naturally, the regulators really need to finish their work so that the market can confidently address the new requirements. Firms haven't fully committed to their IT spend because they don't fully know what they need to buy.

There is clearly room for improvement. First off, there are too many user-defined applications—Microsoft Excel, for example—being used in daily activities. There is still a great reliance on low-end technology. This is on the decline, but the pace could be better.

**Leveroni:** While many market practices and standards will need to change, there are solutions in the marketplace that introduce better processes and standardization. The key is to know where to look. Market participants should actively engage their service providers to leverage their expertise to identify solutions across the derivatives lifecycle.

Standardization of the post-trade confirmation process for exchange-traded derivatives between the buy side and brokers is a good example. Today, these communications are typically performed via individual broker portals, often in a manual fashion. However, we will likely see a significant increase in exchange-traded derivatives volumes as participants look to avail themselves of lower futures margin costs by mimicking the hedging effect of an OTC transaction through a mix of ETDs. These larger volumes can only be supported by the adoption of technology that standardizes and automates the post-trade confirmation process.

**Thomas:** The standards around processing have really yet to be defined. In the bilateral space, it took us many years to get to a level of standardization where we were able to efficiently create market infrastructure and processes that were easy to execute on.

Where we do have good standards is in 100 percent electronic processing. Where we lack them is in the back-end processing—how you treat cash flows based on margin, how you settle these on a net basis, and the type of information provided to clients in the transfer of securities and the collateral back and forth. These are all kinds of standards that have not been well-defined, and every time we meet with a client they want something unique.

Additionally, the support of the market infrastructure in terms of how we are transferring collateral back and forth is where we need a large amount of standardization. A fair amount of work has been done by the International Swaps and Derivatives Association (ISDA) to standardize the protocol for transferring securities and collateral back and forth in a standardized way, and I think the decision to use AcadiaSoft to facilitate that transfer has gone a long way to getting us a little more automated. But clients need to adopt all of these standards so that we're not exchanging phones calls and pieces of paper to move billions of dollars in collateral every day. We need to be doing it through automated messaging.

"Regulatory reform will continue to pressure the industry to develop and implement best practices with the goal of stability and risk mitigation for all market participants without disruption or frozen liquidity. This is an extremely fluid environment; therefore, industry standards will be essential."
**Chris Coleman, BNY Mellon**

**Monaghan:** I can't really answer that one directly because in the US all the Dodd–Frank rules are still being written and industry standards aren't even set yet. Everyone will get there and they will be good. We have a good infrastructure in place and we will continue to work to improve it, but it's still early days. If you ask me this question in 36 months, I'll have a better answer.

**Coleman:** Regulatory reform will continue to pressure the industry to properly develop and implement best practices with the goal of stability and risk mitigation for all market participants without disruption or frozen liquidity. This is an extremely fluid environment; therefore, industry standards will be essential. Leveraging the knowledge and expertise provided by industry participants, such as BNY Mellon, and regulatory bodies will be key. Some aspects of regulatory reform remain less clear, so it would be short-sighted to think current industry standards are wholly inclusive of the considerations necessary in the Dodd–Frank and EMIR worlds.

> "Right now we're very much in an RFQ world and the SEF world is going to stay that way for a little bit of time until we can work out all the stuff that needs to get done, such as working out all the clearing pipes, and make sure we can get the trades in and done and managed appropriately."
> **Neil Monaghan, Citi**

**Q How should the industry address market fragmentation? Should we expect onward routing of orders from venue to venue?**

**Spencer:** It is not necessarily the case that the market will fragment—certainly in the larger asset classes, such as interest-rate swaps. We have seen over the past 15 years that there are usually only a handful of electronic platforms that compete effectively in any particular asset class. While there may be one or two new participants in some sectors, we don't see any strong reason why the swaps market should behave any differently.

Onward routing doesn't happen in today's markets and there are real difficulties in making this work in the fixed-income markets, unless all platforms were built around the same protocols. We don't see this as inevitable or even likely, as there are good reasons why end-users prefer different types of trading models and market structures to suit their businesses. For example, asset managers like to demonstrate best execution by approaching multiple liquidity providers using an auction or request-for-quote process.

**Coleman:** Fragmentation is a risk and the limitations associated with products eligible for central clearing quickly come to mind. The market will continue to pressure clearinghouses to expand the products and currencies they can clear. This will allow for a number of efficiencies, most notably allowing derivative participants to take advantage of cross-product netting benefits within a specific clearinghouse.

Fragmentation also extends to the trading venues on which swaps will be executed. The final criteria surrounding SEFs and the manner in which these platforms should operate is still open to some speculation. The possibility of venues specializing in only certain products with connectivity to only certain clearinghouse remains open as the market begins to embrace reform associated with execution. A SEF able to support the execution of all derivative products with connectivity to all clearinghouses would be ideal from the perspective of "one-stop shopping." Opportunities should quickly emerge for consolidators or aggregators of SEFs.

I believe it is premature to evaluate the feasibility of onward order routing from venue to venue. The expectations on this topic must be managed due to the uncertainty surrounding swap execution facilities.

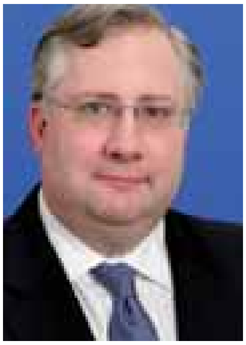
**Abrams:** Liquidity-aggregation tools are a natural response to fragmentation concerns. There are those who claim that major market players are economically driven to minimize changes in market behavior. If you believe this, then it is not entirely unreasonable to envision a mischievous effort to promote market fragmentation and other disruptions that maintain that status quo. Liquidity aggregators are the technology response to the major dealer stronghold on liquidity in its present form.

**Thomas:** Inherently, no one would have designed OTC clearing to have three or four CCPs and four or five SEFs trading the exact same product. That's not the most efficient model, but that's the model we've taken on based on the regulations that have been put forward in the open-market access that everyone has.

So from an operational standpoint, there's a large amount of inefficiency when supporting any product from an execution standpoint on SEFs and then for clearing it. But what is actually happening is margin optimization, and you need to understand the impact of your initial margin, as well as the impact of the guarantee fund, and the risk-weighted asset (RWA) charges, all at the time of execution, which is where the smart technology needs to be.

You need to be able to understand all of these complex factors when you're making a pricing decision and when you're onward to clearing that trade, and moving a trade or clearable item from venue to venue. If you don't understand those factors you're going to pay maybe more than what you made on that trade, or it will cost you more in the longer term because you cleared the trade in the wrong venue or you didn't take into account certain capital charges.

**Q How will dealers be able to address smart order-routing in this new market structure?**



**Neil Monaghan**
**Citi**

**Monaghan:** Very carefully. I don't know if we're at the volume where we're dealing with that yet. That's really, to me, more of a SEF thing and once SEFs get up and running we can see how the order routing is going to happen.

Right now we're very much in an RFQ world and the SEF world is going to stay that way for a little bit of time until we can work out all the stuff that needs to get done, such as the clearing pipes, and make sure we can get the trades in and done and managed appropriately. A lot of people like to run to that end-state, but it took a long time for this stuff to clear out before it could all become electronic, and I think we're kind of in that stage now where we're laying pipes and we'll get there when it's time. If we get there too fast then we're not going to have the right infrastructure for it.

**Abrams:** The vast majority of the OTC market has operated on a principal basis, but it is not unreasonable to think that more agency trading is on its way. There is already an ongoing push to bundle services where one-stop execution and clearing complement each other. As we move further down the supply chain, services still play a significant role in the designation of order activity. Agency-based trading captures that value while sidestepping some of the regulatory compliance required in principal trading. ■

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