Racing ahead

SLT's panel of experts look under the hood of collateral management to find out what is making it tick and how it is being finely tuned to go the distance

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In what ways has collateral management changed in the last few years?

Ted Leveroni: Following the financial turmoil of 2007 and 2008, collateral management underwent some significant practical changes. Prior to that time, the way that collateral was managed, particularly on the buy side, was non-standard to say the least. While some investment managers had balanced and detailed International Swaps and Derivatives Association CSAs (ISDA credit support annex) in place that allowed for daily bilateral collateral management, along with an automated process to support it, many others were subject to one sided CSAs that were in favour of the brokers and had small or non-existent collateral management operational teams.

This has changed. Today, we are seeing the buy side revisit their CSAs to ensure that collateral flows both ways—to and from their brokers. We are also seeing these investment managers implement dedicated, automated collateral management operations to support daily processing. While many buy-side firms still have a ways to go, many investment managers have implemented significant advancements.

Saheed Awan: Collateral management is undergoing a transformation in nearly all financial institutions, if only because prior to the crisis—indeed a few years ago—a large portion of the business was still conducted on an unsecured basis and this, across market segments. Collateral management is no longer viewed as an isolated and reactive back-office function, but as a key enabler for firms to mitigate their counterparty risks. Even more importantly, collateral is increasingly needed to meet their daily liquidity and financing needs.

Since the crisis began, a raft of new regulations has propelled collateral management to the fore. The forecasts of new and additional collateral requirements due to regulatory impetus are going to be substantial. This in itself is forcing almost all financial institutions—both the

buy- and sell-sides—to redefine their operating models for collateral and margin management. The key focus is on optimisation, transformation and global or enterprise-wide inventory management. Firms are realising that managing collateral, and thereby counterparty exposures, within business silos is no longer an option.

Institutions are looking to have a global view of their available positions across asset classes and locations. And on top of viewing all their positions, the need is then to mobilise securities as collateral optimally, with the objective of minimising the overall cost of funding.

At the same time, investors are continuously looking at ways in which they can improve their risk controls. The latter has put collateral management firmly in the spotlight as an integral part of risk mitigation. Collateral must be marked-to-market, adequately margined and diversified.

Collateral is ultimately about managing the worst-case scenario, namely a counterparty default. At that point, collateral must be accessible without any impediment to facilitate a timely realisation of value.

Paul Harland: BNY Mellon has been in the collateral management space as long as anyone, since the early 1980s. With balances exceeding $1.8 trillion across our programmes, we manage substantially more than any other collateral manager. Our size and depth of experience has given us exposure to every market change over the last few years and we have responded to meet such challenges with innovative product development.

Collateral has always been used as a means to mitigate risk; triparty collateral management was originally developed as a means to mitigate financing risk. However, in recent years, it would seem as though collateral has become more broadly accepted and is now required by institutions across all sectors, including those outside of the traditional triparty world.

Market expectations around collateral have also changed. As a result of the market dislocation of 2008, today there is a greater focus on transparency, optimisation and customer control. The industry is also grappling with heightened risk sensitivities and the requirements of an ever-changing regulatory paradigm—in particular, the collateral requirements embedded within centrally clearing business that was previously settled bilaterally. Institutions ranging from the traditional sell-side firms through to the buy side (in all its various guises) now partner with BNY Mellon and the central counterparties (CCPs) in an effort to understand and respond to the new requirements.

For us at BNY Mellon, industry changes led to the formation of a new business unit, Global Collateral Services (GCS). GCS builds on BNY Mellon's extensive collateral management capabilities to offer one of the most comprehensive set of collateral services in the industry, including collateral finance, securities lending, liquidity management, and derivatives services.

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Sander Baauw: In my previous role, I have seen it changing from a daily exposure management job at the middle/back office to a sophisticated front office trading activity, which optimises your entire trading book and mitigates your risk. Due to the volatile market circumstances and changing regulatory environment, it is now required to have a dynamic and fully fledged, focused collateral management team, which is not only in very close contact with the traders but sometimes even more with the risk managers. One of the results is that it is now almost the standard to handle your collateral via multiple routes. In the old days, some parties could handle it with only one asset class (cash for example) and only dealing bilaterally, but nowadays a lot is done via different triparty agents and with a variety of asset classes. Every asset class nowadays has its own price, and even within the asset class, there is a wide range of price differentiation, which affects the collateral costs. As you can see, it is all much more detailed these days and everybody takes into consideration multiple criteria such as credit ratings, country of issue, average daily volume, maturity, and so on. However the most important aspect is all these factors in combination with the risk on your trading counterparty. Taking all these factors in consideration, it is not possible to do this in a spreadsheet with a price feed, but you need reliable systems that can handle multiple locations and have the ability of interfacing with all possible systems.

John Rivett: For many firms, effective collateral management processes have increased in importance, given the capital and cost pressures driven by the regulatory reform agenda. Central clearing is likely to change the composition of margins posted to CCPs, increasingly favouring non-cash collateral. This is driven by several factors. Buy-side participants wishing to avoid holding large un-invested cash pools will represent higher drivers of flow. Improved service models reducing historic cost and operational complexity to manage non-cash collateral can be overcome by adopting triparty solutions.

Furthermore, collateral preference changes have occurred due to an increase in risk sensitivity. In securities lending, for example, the majority of the European market already operates on a non-cash basis, and post-crisis, a larger proportion of the US market is also moving that way. Collateral terms are being renegotiated to be more risk averse and to remove or reduce what used to be normal practices, such as high thresholds or margin call frequencies set as 'monthly' or 'quarterly'.

Mat Newman: There has been a big shift in emphasis over the past couple of years from the operational management of the collateral process to the optimisation of asset allocations to reduce costs and enhance yields. Whilst operational efficiency and cost containment are still important factors in the back-office functions that are related to collateral, we have seen much more interest coming from the front office in terms of collateral availability and collateral upgrades. This is partly driven by regulatory changes, which have put enormous pressure on banks in terms of both capital usage within the trading businesses and the amount and quality of liquid assets that they need to use. This compression of profitability and additional demands for assets mean that any edge a trader can gain in terms of cost of funding and cost of collateral is a significant factor in whether his business can remain viable.

Elaine MacAllan: Traditionally, collateral management has been managed in product silos, so a collateral technology was implemented to take data from a siloed upstream (front office) system, and manage the margin calculation and workflow to the point of settlement and reporting. As the cross-product markets have evolved, precedence, technical capacity, and varying legal agreement definitions at product level have created a wide variety of global collateral management practices.

Historically, collateral has been fairly cheap and widely available, with collateral teams readily accessing long positions of trading or treasury desks, and there was less focus on the cost of collateral—it was an accepted and acceptable cost of risk mitigation. Furthermore, collateral operations tended to be viewed as a standard oper-

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ational function, with the front office, treasury and credit risk departments establishing the guidelines and then generally leaving the back office to manage the process, positions and costs.

Since the banking crisis, there has been an intense focus both by firms and the regulators on collateral operations, as one of the key tools available to manage and increase control over credit and market risk.

Appetite for risk has been drastically reduced—bilateral thresholds and credit limits are being reduced and therefore increased levels of collateral are being demanded. Furthermore with the advent of mandated clearing, and the regulatory imposition of minimum margin levels—these collateral requirements are only set to increase.

> Neri: Collateral management has effectively moved from a way of mitigating risk to a business opportunity

As a result, collateral is more expensive and less readily available. There is an increasing pressure to make the best use of available collateral, calculate the cost and maximise the cost savings, within the collateral programme. Credit risk teams are clearly operating at heightened levels of awareness, and treasury and front-office functions are becoming increasingly involved or responsible for collateral inventory management and cost attribution.

Collateral operations are no longer seen as just another operational function and cost. Firms are looking at collateral strategy as a top priority in a time of unprecedented market change and upheaval.

Antonio Neri: Collateral management has effectively moved from a way of mitigating risk to a business opportunity. Sound collateral management is still a powerful way of moderating counterparty credit risk. However, it has also evolved into a way to boost revenues and reduce costs as pricing of collateral and credit risk becomes more sophisticated. As time goes on it will increasingly become a way for firms to differentiate their offerings in a highly competitive market and is rapidly gaining more and more attention among both buy side and sell side firms as regulatory deadlines move closer.

From a buy-side point of view, there is also attention on greater segregation of pledged assets as end users seek to ring fence collateral in the event of a broker default (as in the recent case of MF Global, for example). Bankruptcy remote collateral will also have a lower risk weighting under Basel III.

Likewise, restrictions around re-hypothecation of collateral are also becoming more prevalent following the demise of Lehman Brothers. This should have the effect of reducing the velocity of collateral and further increasing its cost.

From a technology perspective, collateral optimisation is currently the hot topic, and we have seen huge interest in our collateral optimisation solution. Driving this are regulatory demands for banks to hold more capital, coupled with a need to post margin with CCPs as derivatives trading moves to a centrally cleared model. This is increasing demand for high quality collateral and firms are therefore seeking to use their collateral pools more efficiently. It is also prompting a move to centralise the collateral function across all business lines a firm is involved in, which facilitates a more holistic view of assets and more effective allocation.

James Tomkinson: The changes in collateral management have been tremendous over the last few years, with indications that the rate of change will continue to accelerate in future. There are a number of key drivers causing this change, but because of market interconnectivity and interdependence, no single event occurs in total isolation of any other. Three key factors that most would identify as dominant drivers of the changes are:

- Reduction in the availability of uncollateralised credit in the market
- Regulatory changes
- Increased usage of CCPs.

The reduction of available uncollateralised credit lines has been driving the increased activity of collateralised trading for some while, but it is predicted that the effects of new regulation will increase the value of collateral being held in 2013 and beyond, as more players implement their margining solutions in order to become regulatory compliant. This will be accompanied by an increase in the number of CCPs and the inevitable further increase in margin activity.

Simon Lillystone: The demand for advanced, robust, enterprise-wide collateral and margin management systems has never been greater. This could be seen as a natural outcome from the seemingly cyclical, often systemic market failures, whether driven by regulators or more stringent internal risk management policies, but there are many other reasons. The key ones are:

- The diversity of participants has never been broader, and the communication/messaging web that needs to lie between them never more complex
- A growing number of third-parties, such as brokers, clearers, custodians, fund administrators, and other intermediaries are keen to offer collateral management as a service to others (often alongside their proprietary business)
- There has been a steady, relentless move from unsecured to secured, collateralised trading across just about all asset classes
- Numbers of collateralised relationships has risen dramatically, largely due to the increasing presence of derivatives in fund portfolios, and the growing preference for risk diversification through the use of multiple, rather than sole prime-brokers
- There has also been a transformation from reactive to active portfolio reconciliation, which can be overwhelmingly challenging without the support of advanced technological solutions
- More recently, with the increasing use of initial margin, and the flight to quality in terms of collateral and its allocation to margin obligations, collateral management is finally having to do what it says on the tin.
- There is a greater emphasis on best practice in risk management in general, and collateral management in particular. Fewer and fewer firms are relying on regular office tools, such as spreadsheets, to manage their risks.

These and other aspects have not only pushed risk, collateral and margin management ever further into the limelight, and demonstrated its pivotal nature at macro and micro levels, but have also highlighted the critical need for advanced, enterprise-wide collateral management solutions.

Is collateral management a profitable business, a risk mitigation strategy, or both?

Baauw: This is dependent on your business model in combination with your risk appetite and the position you have in the securities financing value chain. I think that it is all about finding the balance between these items. If you are a pension fund and only want to lend government bonds versus German government bonds as collateral, you will see it as a risk mitigation strategy. If you are a bank with a collateral management trading team that is able to trade all kinds of asset classes versus other asset classes, you will see it as profitable trading business. For most parties, the balance will be somewhere in the middle.

Harland: It depends on your perspective. From a front office, repo or stock borrow loan perspec-

tive, the core function is embedded in income and profit. However, if you consider collateral as an operational or middle-office function, then it may be seen as more of a risk mitigation strategy.

Collateral management can be both income and cost driven, but it is not unreasonable to suggest that using collateral management as more of a risk mitigation strategy may dominate thinking going forward.

Awan: Collateral allows clients to extend their trading limits against their counterparties and trade more often

Rivett: Collateral management has been a core business activity for J.P. Morgan for more than 20 years. It is a risk mitigation tool providing controls and automated solutions to manage concentration limits, asset allocation orders and haircuts. Collateral management also ensures that positions are not unnecessarily over-collateralised, allowing clients to use assets for alternative activities. The ability to offer a holistic approach to collateral management, whether clients are active in swaps, futures or securities, is a key business enabler that helps clients to meet regulatory pressures in the most cost-effective and secure manner. An important driver, especially for sell-side participants, is to reduce their operational burden through improved optimisation, quick substitution and automated allocation of their collateral process.

Awan: Collateral allows clients to extend their trading limits against their counterparties and trade more often. Sound and efficient collateral management will enable banks to reduce their risk-weighted assets and expand their funding capacity. Lowering the cost of accessing liquidity and reducing the amount of risk capital required for trading definitely adds to their bottom line.

However, as a result of the financial crisis, managing collateral is increasingly about managing risks. Effective collateral management has become a key component of any investor's risk mitigation strategy. In addition to having comprehensive portfolios of accessible collateral and fully automated processing, transparency is an important element. Investors need granular views on the type of collateral they are holding so that they can assess whether their exposure is sufficiently covered. And, of course, in the event of a counterparty default, collateral needs to be liquidated. Therefore, easy access to collateral and liquidity, in its broad sense, then becomes vital.

Newman: Collateral managed used to be thought of purely as a risk mitigation strategy, much in the same way people viewed netting agreements and credit limits. Now, there are opportunities to optimise collateral usage across multiple silos and to actively pursue substitution strategies to increase overall returns, so the collateral management area is becoming a profit centre.

MacAllan: Fundamentally, collateral is an essential risk mitigation function, and always will be. It represents a cost to the firm, but ultimately regulatory reform will ensure that a poorly managed collateral programme will become even more costly from a capital, liquidity and availability perspective. Therefore, a strategic focus on the cost of collateral, and the attribution of those costs, is engaging the front office. They are looking for ways to both reduce exposures to bring down collateral requirements, and also to limit the cost of collateral through an effective optimisation process.

Traditionally, collateral was only a revenue-generating business for those involved in directly selling collateral functions—for example, triparty service providers. This is changing: firms are identifying how collateral optimisation can become a value-added, chargeable service for their clients, and starting to develop technology solutions and product offerings within this space. Collateral transformation services in the clearing space are a good example of how broker-dealers are transforming a potential increasing cost to the firm's collateral programme, into a revenue opportunity.

Neri: We should never detract from the fact that collateral management is primarily a risk mitigation tool and as it evolves, it will continue to use ever-more sophisticated methods of assessing counterparty credit risk and managing exposures.

However, due to shortages of high-grade collateral it is also becoming both a cost reduction and a profit generation tool. Successful firms are now pricing and deploying collateral more effectively while also expanding trading opportunities through efficient collateral use and more informed decision-making. In this sense, collateral management is moving towards becoming a front-office trading discipline as well as an operational process. The point should also be made that firms with superior operational capabilities in collateral management can win market share through better client service and more competitive pricing.

Tomkinson: In the first instance, collateral management is a process that is designed to mitigate risk for all firms, principally by converting counterparty risk into operational risk. However, as the rules and regulatory requirements of collateral are applied, there are inevitably different ways to build a collateral management capability. Firms that are particularly 'balance sheet hungry' have every incentive to build a collateral capability that minimises the trading effect on the balance sheet. With the super-large volumes involved, a small improvement in the collateral management capability can have a multiplier effect, thereby having a significant impact on the balance sheet utilisation. Hence, those firms that are highly balance sheet sensitive are highly incentivised to optimise their collateral management capability in order to deliver increased profitability.

Lillystone: Collateral management should be measured as a service and servant to risk management, and firms should be primarily concerned with the effectiveness of their risk mitigation strategies, of which the cost (or profit) is just one part. Enterprise-wide technology solutions have been developed to focus on features that enhance effectiveness, and reduce resource requirements, such as offering STP, event-driven and exceptions-based workflow, collateral optimisation and analytical techniques, electronic messaging. Naturally, there are ways that firms can either recoup costs or even generate profits, such as through the reuse of collateral, if that is permitted, through paying attention to liquidity, and enabling collateral managers and repo traders to share their inventories, or by ensuring that collateral is optimally allocated.

Leveroni: Today, collateral management is primarily still a risk mitigating strategy, and I do believe that it will always be

Leveroni: Today, collateral management is primarily still a risk mitigating strategy, and I do believe that it will always be its most fundamental purpose. That said, there are real opportunities for some firms to create a profit through re-hypothication, collateral transformation, and implementing automated collateral solutions. The key to devising a business plan around a 'for profit' collateral business is that you cannot lose sight of the primary purpose of the process,

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which is to reduce risk. Fortunately, the two goals—risk reduction and profit in the collateral space—are not mutually exclusive. There are some smart safe moves that firms can take to realise both goals at the same time.

What can be said is that comprehensive, best-practice collateral management is a core risk management process, and managed well it can not only mitigate losses, but can create opportunity for profit, through collateral trading, optimisation, and so on.

How are firms that act across multiple product lines integrating collateral management into their operations?

Harland: The concept of enterprise-wide collateral management has been around for some time, but has not been widely put in to practice. However, with the latest market pressures it seems that the concept is really coming to life; though it is certainly not without meaningful challenges around data, technology and business structure.

Effectively collaborating across internal business lines may not be easy. Firms will need the buy-in of all the people who are involved, investment in technology and strong working relationships. The benefits, however, could be significant. Breaking down silos allows for greater transparency, aggregation and control of data, which will lead to optimisation of collateral. Arguably, it is collateral optimisation along with liquidity risk management that are going to be central to an enterprise-wide collateral management solution.

MacAllan: Most firms will already have integrated collateral management functions, though generally in product silos, meaning that they are supporting operations and technology in product streamser—generally when this is the case it is an enormous challenge to consolidate information across products and gain a truly cross-product view.

But it is becoming clear that being able to view firm-wide exposures across product lines, and ideally, operate within an entirely cross-product collateral technology environment, is a priority for firms. At a recent Lombard Risk webinar event, 90 percent of attendees confirmed that 'cross-product' was a key strategic aim for their firm.

Firms are responding to challenges of the current environment in different ways. Whether the aim is just to provide reporting at a firm-wide level, or to be able to truly consolidate all margin functions into a cross-product environment, firms are focusing on:

- Establishing stakeholder(s) to address global, firm-wide collateral management strategy, breaking down product-silos and providing a cross-product view for both bilateral and clearing markets
- Creating a collateral change programme, engaging front office, treasury and risk and legal departments
- Understanding their technology infrastructure across all product lines
- Understanding the synergies and differences between product lines and technologies
- Identifying best of breed from a process perspective
- Engaging external vendors and internal technology leads to review and establish the best fit for their defined needs.

Awan: Collateral management operations are historically organised in silos with separate pools of collateral being managed independently, per business line (repo, securities lending, treasury and derivatives) and most often by geographical location. On top of regulatory incentives, the relative scarcity of collateral and the fundamental transformation that is taking place in some market segments, such as OTC derivatives, will force firms to better integrate their collateral management functions.

Such integration first requires a deep dive analysis of their current operating models for the management of the firm's collateral assets across business silos, and who owns or runs them. Often, the treasury function is the biggest single user of collateral for funding purposes. However, they are often separated from another key part of the firm's trading activities—the OTC derivatives or rates business. This part of the firm may be giving away the firm's liquidity to meet CCP margin calls while the treasury is borrowing cash, sometimes from the same counterparty with which the OTC derivatives people are trading.

> MacAllan: Firms are responding to challenges of the current environment in different ways

Therefore, the first key decision in redefining a new operating model for collateral management and optimisation is to appoint a collateral tsar—the owner of all the firm's collateral assets. From there, a new operating model that crosses business silos and trading desks can be defined to serve the collateral and funding needs for all of the firm's business lines. The key point to appreciate is that collateral needs to be managed from a single, global pool with a comprehensive view of the entire collateral inventory.

From an operational perspective, switching to an integrated collateral management model is a major challenge for the industry. Collateral management is ultimately about anticipating the worst-case scenarios. Given the scale of the current and future needs for collateral, the question of 'do-it-yourself' versus outsourcing to a specialised service provider will quickly come on the table.

Baauw: Global centralising across multiple product lines is the optimal situation, although I know that this is very hard to achieve for most banks. The problem lies most of the time in the fragmentation of the organisational set up and/or the system infrastructure. I have seen, for example, some banks using different systems for repo and securities lending, with the result sometimes being that they cannot see the long position in the system and cover their shorts externally. This is a small example, but when you are looking at the bigger picture at a global bank with multiple trading disciplines, it is extremely important to have an up-to-date overview of all your assets across the firm, so that you can run your collateral management efficiently across multiple product lines. Besides the almost inevitable challenge to overcome the internal politics, you can do this by interfacing a lot of systems and decommissioning a lot of systems to arrive at one over all multiple product system or put one consolidated multiple asset trading system on top of the existing systems.

Newman: The first step is to get a single inventory of all collateral assets. This gives consumers of collateral the full picture of what is available to pledge and how that inventory is going to evolve over time as assets are returned and used. Next you need to understand all the competing claims on that collateral pool, be they from the OTC derivatives business, exchange traded instruments, CCPs or the funding and stock lending desks. You also have to satisfy central bank requirements. The final piece in the jigsaw is an automated optimisation process that can take all this information into account, along with the differing haircuts and costs that are associated with different collateral movements, and produce the optimal assignment of available collateral to outstanding claims so that the overall cost of collateral posted is minimised. This needs to be a dynamic process because your portfolio will change over time.

So the question should not be, 'What collateral should I use to meet this new margin call?' There should be a regular review of collateral allocations across the board to understand what combination of collateral allocations to collateral requirements will give the optimal result.

Neri: We have helped a number of clients with this process and there are three elements to successful centralisation of collateral management:

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technology, operations and culture. This equates to changes in systems, processes, and importantly, the mind set of people previously used to working in separate business silos. Firms planning to integrate their collateral management across securities lending, repo and OTC/exchange traded derivatives need to address each of these factors and this can be a complex process.

However, there are significant benefits to centralisation. Firstly, because technology systems can now consolidate views of collateral across product lines, users can gain a clearer snapshot of risk across the entire organisation or determine net exposures with specific counterparties. This will help firms adapt to regulatory change and reporting more smoothly, for example, around the US Dodd Frank Act rules on credit exposure limits.

> Tomkinson: The essential issue is that although collateral represents the crossroads for an increasing number of business lines, the various businesses have different priorities

Secondly, this centralised view of collateral can help drive decisions on the best way to deploy assets based on their opportunity cost and the return on economic capital a given trade can generate. Finally, cross product netting could materialise at some point in the future should agreements for full netting of securities lending, repo and derivatives trades become common.

Tomkinson: Generating an integrated collateral management operating model across multiple product lines is a complex process that most firms find particularly challenging. Often, the different businesses have developed along independent lines, with their own technology, operations and control systems. Historically, although there have always been advantages in developing a single centralised collateral pool, the political complexities and financial costs have proved too great for most firms to realise these benefits. The essential issue is that although collateral represents the crossroads for an increasing number of business lines, the various businesses have different priorities, and essentially compete with each other for the control and use of available collateral. Although the firm as a whole may be incentivised to manage a single collateral pool in order to optimise collateral utilisation and therefore balance sheet usage, resolving the conflicts and aligning the different businesses continues to challenge most banks. However, the prize for being successful in this endeavour has never been greater, particularly for institutions that are balance sheet hungry.

Observations of firms that have been successful in making progress in this area indicate a priority to first implement organisational change and to establish a single business head across all of the business areas. Having a single business head with authority to manage across the different business areas appears to remove the log-jam of political conflicts. This enables an effective allocation of resources to the key technical and operational areas responsible for achieving a truly integrated collateral solution, providing the necessary controls to achieve true collateral optimisation and the required balance sheet management benefits.

Lillystone: There has always been a desire, especially on the sell side, to coalesce the collateral management of OTC derivatives, repo and securities lending. This is quite natural, given that repo and securities lending desks will often be the primary funders of collateral for the OTC business, and can also benefit from long positions taken by collateral management. It seems more important than ever that the inventories of each need to be known by the others. However, divisions of responsibility between desks for the subsequent servicing of transactions post-deal, such as re-pricing repos and rebooking amended transactions, can impede developing a cross-product approach.

Many firms are adopting a pragmatic approach beyond this, realising that we are essentially talking about two activities—margin management, and collateral management. One feeds the other—a successfully negotiated margin call needs to be converted into an equivalent, securable amount of collateral—to enable external systems to deliver margin calls to a central collateral management system that offers not only views on the global inventory, but also advanced techniques for optimisation and allocation, as well as handling incidental cash-flows and corporate actions.

While historically exchange-traded and triparty business might have lain outside of the scope of the enterprise-wide collateral management approach, the move towards centrally-cleared OTC derivatives is leading to renewed efforts to draw more business lines onto the same collateral management platform. Ultimately, the development of flexible systems that can enable disparate parties, both inside and outside of the organisation, to contribute appropriately to collateral management processes, is essential.

Leveroni: In the past, collateral management was typically managed in silos, attached to each business line. We are seeing this change with a number of major players on the buy and sell side reviewing and managing at their collateral holistically, but there still is a long way to go. I believe that holistic collateral management will eventually become an industry standard because it makes sense from both a collateral and operational efficiency perspective. To get there, firms must implement flexible robust collateral management technology that can support OTC collateral management, repos, security finance and other collateralised instruments.

Rivett: Many firms traditionally operate a number of collateral management silos that cover specific transactions, like bilateral and triparty repo, securities lending, OTC derivatives (bilateral or cleared), exchange-traded derivatives and client clearing. However, many firms are looking to centralise their collateral functions to increase synergies and maximise liquidity and funding opportunities including new collateral trading functions. But achieving this objective is not just an operational issue. It requires consideration of how collateral management processes tie into treasury functions, and how these activities are reflected in the legal documentation across these trades. This is an on-going evolutionary process, but the involvement of an external provider can help to facilitate this quicker.

Should the need for high quality collateral in large quantities be balanced?

MacAllan: Due to regulatory reform (including mandated margin levels and increasing capital requirements), there is an increasing focus on exposure management, and a reduction in risk appetite. There is a global increase in collateral requirements (quantity) and collateral requirements (quality), and a reduction in collateral availability.

Rivett: There is a concern that a shrinking supply of safe assets combined with ever increasing demand driven by regulatory requirements could negatively affect the overall functioning of financial markets. There are on-going discussions to address this issue. Market concerns centre around the level of consistency of collateral eligibility between CCPs, Basel III and central bank funding, and if so, should the eligibility criteria allow for broad or a narrow set of assets? Additionally, if the cost of collateral rises, how will that

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affect the economics of certain transactions? At present, regulators have commissioned further impact studies on some of these issues. But we believe that the answer is clear: the market will need some flexibility in terms of collateral eligibility, combined with strong risk controls, to avoid a potential liquidity squeeze.

Awan: The need for collateral—or more precisely, the need for high-quality collateral—as a result of new regulatory requirements and multiple major downgrades will become a very strong driver for collateral optimisation. Collateral is not a 'virtual' resource. The best way to ensure collateral optimisation, while keeping safe the variety of assets that are involved, is to pool such assets in a few safe locations. It is important to have easy access to these assets and to your counterparties via the same providers in order to ensure low-cost and efficient use of collateral.

Newman: There are competing demands for high quality collateral across a bank from the liquidity coverage ratio, the funding desks and the collateral management department. Again, getting the complete inventory view is essential if you are going to make rational decisions across the organisation, as opposed to working in silos.

Harland: It is difficult to talk about 'balance' because CCPs are going to be prescriptive about what collateral they accept. When it comes to variation margin posted to CCPs, it has to be cash; there is no balance or flexibility. There is an option for cash or securities as an initial margin, though at present securities will need to be high quality G7 government bonds.

When considering OTC swaps, either cleared or non-cleared, cash remains king, with government bonds second. Other assets, such as corporate bonds and equity, are important in repo and securities borrowing and lending, and will be central to collateral transformation.

The question then becomes 'what can I give as initial margin?' This opens the door to the question of transformation and optimisation and the question of 'how much is it going to cost me?'

Firms are addressing these issues by focusing on identifying and achieving the optimal (most effective) use of available collateral.

Optimisation is becoming a 'catch-all' term, which actually, when you drill down into it, means many different things to many different people. Depending on who you talk to, the goals of optimisation can be very different, and the scale of what different firms expect to achieve through collateral optimisation is extremely varied.

There is a danger here, because we hear the term 'optimisation' being widely used in the market, and the context is usually one where it is being proposed as the answer to some very real contemporary business issues. However, unless you can clarify exactly what you mean by 'optimisation', you cannot begin to understand how you can achieve it. What is your definition of 'most effective use' of collateral?

Some hope to be able to simply make sure that they are posting the lowest available quality collateral that they can, within single margin call events, and accessing only a proportion of available inventory. Some want to be able to optimise collateral across all their firm-wide collateral obligations, utilising the entire firm-wide inventory. Some want to be able to calculate the cost savings that can be realised through the process of collateral optimisation, and others want to be able to attribute and allocate the cost of collateral back to the trading desks as the source of exposure. At the other extreme, others are looking to establish a triparty optimisation model within their bilateral margin collateral relationships, ie, the full regular and recurring hypothetical sweeps of all pledged assets back to zero, and a full optimised reallocation, which is supported by an automated substitution process to achieve optimal allocation.

Newman: Getting the complete inventory view is essential if you are going to make rational decisions

Neri: While high-grade collateral will most certainly become scarcer, the pain could be eased somewhat by CCPs accepting lower grade assets as collateral and through the use of collateral transformation techniques. There is some debate over whether collateral transformation will be viable for everyone, due to the economics of collateral upgrade trades and associated costs. The regulatory standpoint on collateral transformation may also influence the shape of the market.

Some firms may also simply stop carrying out certain derivatives transactions due to onerous collateral requirements and instead look for alternative methods of trading and hedging risk. Furthermore, collateral optimisation, interoperability between CCPs and more efficient netting and offsetting processes, particularly across product types, could also reduce the need for large amounts of collateral.

Tomkinson: As institutions focus on the changing regulatory requirements and solutions are being implemented, a number of scenarios are being identified that raise questions around the ability of individual firms (mostly buy-side players) to maintain collateral margin payments during more extreme market circumstances, such as the events of 15 September 2008. These events are best described as low probability, high impact events—for example, a fully invested fund manager that is required to deliver large swap trade-related cash margin payments on an intraday basis as a result of being in extreme market circumstances. A variety of these market scenarios are generating the need for institutions to consider the alternative approaches, to identify preferred responses and to plan and implement agreed solutions.

The ability to access high quality collateral in large quantities in the event of severe market volatility is one such scenario. Responding to the need for such contingency arrangements is forcing a number of difficult conversations—for example, for buy side institutions that are employing an outsourced collateral management solution using a third-party service provider such as a global custodian. In such an event, there are expectations that a collateral transformation solution should be included as part of the overall outsourced solution provided by the global custodian.

Practically, this would require the global custodian to pre-agree a series of conditions under which it would guarantee to accept lower grade (non-eligible) margin collateral provided by the customer in order to make available high quality (eligible) margin collateral in return. It is becoming evident that as much as this may represent a solution for the customer, the balance sheet ramifications and costs mean that the global custodian is not in a position to offer this type of service on an on-going basis.

In reality, each institution has a requirement to ensure that it is able to meet its own margin requirements and it is not practical to rely on a single service provider to guarantee a solution (who can be sure of their situation in the event of the need to activate under high stress market conditions?). Hence, there are no prescriptive solutions to these collateral scenarios, and it is anticipated that a hierarchy of responses will need to be identified that will ultimately require the transacting counterparty to model their potential requirements against the available solutions as part of their risk and control functions.

Lillystone: Consolidating margin calls across business areas and creating a single view of collateral requirements is the first step towards

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optimisation. With this combined picture, firms will be better able to determine the 'best' way to meet collateral demands. Collateral optimisation is not necessarily only about finding and selecting collateral at the lowest cost. It can also include many other criteria when selecting the assets to use. With the right optimisation engine in place, firms should be better placed for selecting the optimal collateral to use, regardless of the amounts involved.

Baauw: We see a lot of demand for tools on top of all of the triparty agents and their existing trading systems

Leveroni: Collateral inventory will become one of the major challenges in the post Dodd-Frank and the European Market Infrastructure Regulation (EMIR) world. High quality collateral will be available, but it will come at a price. The ability to optimise a manager's existing collateral pool will become a must. But, that only goes so far. Many firms that face a shortage of high quality collateral will need to evaluate the collateral needs of the transactions before the trade is executed, as well as conduct a cost benefit analysis to determine those transactions that are worth the cost of collateral and those that are not. The vast majority of market participants are not doing this today, but will need to in the future.

How is technological innovation shaping collateral management?

Rivett: Traditionally, the industry found itself challenged to replace legacy systems, given the complexity involved. However, increasing client demand is forcing a need for change, as clients need to support their businesses with more sophisticated tools such as eligibility testing, multi-layer concentration limits and substitutions, as well as global availability and 24-hour access to systems. Technological innovation has helped. IT systems are increasingly component-built, allowing functionality to be leveraged—once developed—across different business lines. This offers clear cost advantages.

Equally important are the changes in the consumer industry, which have led to increasing demand for better user experience. Clients are looking for more personalised reporting, or even the ability to have mobile access to data. Collateral management services are not isolated from such trends in technological innovation.

Baauw: I think that this is topic number one for all of the system vendors and consultants based on the requirements their clients have these days. They have been working on system configurations since the day people began realising the cost variation of different kinds of collateral asset classes is not something temporary and the business has been changed forever. At Synechron, we see a lot of demand for tools on top of all of the triparty agents and their existing trading systems, for optimising the collateral flows via algorithms. You can only achieve this by having detailed static data with a dynamic collateral cost price attached for every asset class. The result is that your entire trading book could be optimised thanks to collateral cost transparency. Besides this, your profit and loss reporting will be more detailed and transparent as well, and you will be able to run scenario simulations on your portfolio.

Harland: Technological innovation has always shaped collateral management. As we all begin to seek greater efficiencies and risk mitigation, continued advances will be necessary in order to meet the latest market requirements.

A technology driven firm, BNY Mellon continuously develops its collateral engine around rule-set implementation, market pricing data feeds, and haircut computation. We also modify our proprietary technology for triparty and apply these changes to connect clearing brokers and CCPs for the allocation and reporting of non-cash collateral. In the future, technological innovation for both new and established vendor systems on the market will be of critical importance. We use a vendor solution as part of our Derivatives360 outsourcing service, and the vendor's regular updates allow us to be ready to service our clients post-Dodd-Frank/EMIR.

In summary, technology plays a pivotal role when processing and optimising collateral, especially when meeting the vast number of collateral obligations that are required by central clearing.

Awan: Efficient collateral management solutions are essential to enable market participants to tackle the many operational complexities they face when managing collateral for multiple purposes in different locations. The ability to value and deliver multiple asset types as collateral while taking into consideration the different operational practices across various market segments and counterparties requires technological innovation.

The growing need for high-quality collateral inherent to new regulatory regimes will force collateral resource accessibility on a much broader scale than today. Technology will need to be adapted to meet such huge scale and speed requirements. Technology will also need to support greater interoperability between market infrastructures at all levels of the post-trade processing chain.

Newman: Technology is essential when you are looking to optimise collateral usage—it is not something that you can do by hand for anything more than a few positions. This involves data capture, transformation and management as a starting point and then a sophisticated optimisation engine to sit on top. Collateral allocation problems tend to involve non-linear analysis, which can be fairly compute intensive, so a fast and scalable engine is key. Technology is also automating collateral optimisation, which can result in large numbers of collateral movements and substitutions. Finally, there is the distribution of management information. The collateral process can produce a lot of detailed information, and providing intelligent summary information that enables managers to take actions helps cut through the noise and lets people understand the key aspects of their operation: where is the concentration risk? Where does the process break down? How efficient is my allocation algorithm? This holistic view of enterprise collateral management is made possible by technology.

Tomkinson: The complexities of collateral management solutions are highly technical, so technical innovation is fundamental to shaping the changes underway in collateral management.

The need to work at an enterprise level with a single consolidated collateral pool across numerous product silos has challenged the markets for some time. Recent technological focus has generated solutions to realise this vision—albeit at different levels of sophistication, as individual firms identify and address their own specific business needs.

It is possible to identify three key stages in the collateral management evolutionary process of most firms. The first stage simply addresses data integrity and ensures that data is captured in an accurate, timely and usable form. Good examples are the codification of legal documents into operationally readable form and consolidating settlement data from different sources. The second stage involves maximising the data integration processes—improving operational efficiency and processes. The third stage, which is currently the focus of a number of the more sophisticated firms, provides the real value-add processing, often driven by the overriding need to minimise balance sheet utilisation that results from collateral optimisation algorithms and sophisticated operational practices such as monitoring the opportunity cost of collateral.

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Neri: Technology is helping collateral managers to automate manually intensive operational processes, and improving the flow of data on exposures and collateralisation throughout the organisation. This is allowing more time to focus on strategic decision making about asset allocation and liquidity.

Technology is also driving cutting-edge optimisation techniques that are rapidly becoming a necessity for balance sheet management in the new regulatory environment. Optimisation is helping firms make better use of valuable collateral and enabling a smoother transition to the regulatory capital requirements that are laid out in Basel III.

Once the migration of standardised bilateral derivatives contracts to CCPs is fully underway, technology will also help collateral managers to make best execution decisions based on each CCPs margining criteria and netting capabilities. Finally, collateral management systems will allow users to forecast exposure scenarios and resulting margin requirements through the lifecycle of a given trade more accurately. They can then price this into the cost of collateral calculation and predicted profit and loss at the start of the trade, and make more informed decisions on which trades will be most profitable.

Lillystone: Firms can now handle hundreds if not thousands of active agreements across multiple business lines at once, automatically generating and publishing margin call information, performing daily reconciliations of portfolios, accessing global inventories, which are often distributed disparately, and helping to negotiate and settle collateral within ever tighter deadlines. This would not have been possible without the application of technology and technological innovation.

In these times of heightened awareness of visible and hidden risks, collateral managers need to keep all their interested parties, both internal and external, integral to and informed of current and potential situations on an almost continuous basis.

It is in this area where collateral management is harnessing new technologies, such as through the use web-based tools, new data-mining techniques, and advanced data visualisation solutions. These extend the reach of collateral management within firms to offer counterparty-facing interfaces that draw the margining parties closer than ever, to deliver user-definable reporting, and also to offer self-service collateral management portals.

Self-service portals enable collateral managers, whether service-providers or not, to deliver fundamental as well as advanced features and functions to others, both inside and outside of the organisation. Collateral management now has practical tools and solutions that enable them to rely on portals to handle interactions with customers and custodians, such as enabling customers to choose eligible collateral from that available in the portfolio to satisfy a negotiated margin call, and for custodians to be made immediately aware of the agreement between the collateralising parties.

Communication between parties and custodians is now migrating from the flimsy, insecure telephone/email paradigm for negotiating margin calls, reconciliations and collateral transfers, to one founded on resilient, fault-tolerant, guaranteed-delivery electronic messaging. While this has long been discussed, it is finally but slowly coming to market.

Leveroni: Technology is the foundation for almost everything that we have discussed. Managing a daily collateral management process, thriving in a mixed cleared / non-cleared environment, and facilitating collateral optimisation all require an automated, efficient technical solution. If a firm wants to truly manage their counterparty risk, spreadsheets and manual processes are just not good enough anymore. The required collateral calls are too frequent, collateral eligibility has become too complex, and the overall collateral will be in short supply. Simply put, technology allows us to eliminate the potential for a repeat of past mistakes, while well preparing us to capitalise on future opportunities.

MacAllan: To an extent, technological capability has always shaped collateral management. Many of the standard practices that we see in the market today have been defined by early technology solutions and the extents or limits of their capacities.

More so than ever, firms are looking to technology to provide the tools with which to meet the current challenges of the collateral market, across products. Frequently, in all but the largest firms, internal change and technology teams do not have the capacity to support change at a sufficient rate to meet all emerging requirements in this space, and so are looking to third-party vendors to provide solutions.

Technology vendors see the current environment as a double-edged sword—it is a rapidly changing environment that presents a challenge, as today's solution may not be fit for purpose for tomorrow's as-yet-unknown requirements. However, it also presents a golden opportunity to innovate and design configurable and flexible tools that can be adapted to the shifting demands of the market.

At Lombard Risk, our COLLINE strategy is to provide a truly cross-product margin platform, with optional and configurable functionality to allow cross-product netting, for both bilateral and cleared markets, and collateral optimisation. **SLT**