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Collateral Annual 2024

As the financial industry battles against rising operational and regulatory costs, a robust collateral operational framework has emerged as a frontline necessity to enhance returns and mitigate liquidity risk.

Targeted collateral resilience is key to mitigate future stress events, according to Tonic's Philip Forkan, including market stress scenarios such as Covid-19, the collapse of Archegos Capital, the Ukraine war and the liability-driven investment (LDI) crisis.

Rising interest rates have emerged as a dominant force for the market, pinpoints State Street's Sam Edwards, with this economic shift necessitating a comprehensive reassessment of collateral management strategies as asset managers strive to optimise collateral usage and mitigate the impact of increased borrowing costs.

Technology advancements have revolutionised the way financial institutions operate, transforming collateral management from a paper-heavy resource-intensive process into an efficient, technology-driven endeavour.

In this annual, Acadia's Scott Sobolewski discusses the evolution of open source technology within the derivatives and collateral markets, and how it has become a key contributor in the future of pricing and risk analysis.

In addition, the International Swaps and Derivatives Association's (ISDA's) Amy Caruso evaluates how data standardisation and automation of key processes offer a way forward for the market. She highlights the fragilities in collateral management and underscores the urgent need for greater efficiency and automation.

As the structured finance market continues to evolve, the adoption of triparty collateral management systems is likely to grow, notes J.P. Morgan's Graham Gooden and Julie-Anne Atkins. Both remind market participants that triparty collateral management is an invaluable tool for structured finance trades.

We thank our publishing partners for their perceptive observations of the collateral landscape and for the sponsorship and support that makes this 2024 Collateral Annual possible.

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Poised for transformation

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Maybank IB partners with Broadridge to expand SBL business in Malaysia

Maybank Investment Bank Berhad (Maybank IB) partners with Broadridge Financial Solutions to grow its securities borrowing and lending business by creating a front-to-back platform that is fast, transparent and Shariah-compliant.

The newly launched SBL platform for institutional investors uses Broadridge's Securities Finance and Collateral Management (SFCM) solution.

Maybank IB says the SBL platform has the ability to interface with downstream systems, enabling automation and straight-through processing, resulting in enhanced client experience and improved cost management. Its scalability aims to offer flexibility to expand into other regions.

Tengku Ariff Azhar, chief operating officer at Maybank Investment Bank, comments: "This partnership enabled us to bring this product to market while adhering to the regulatory framework provided by Bursa Malaysia. We target to be the first in Malaysia to offer Shariah-compliant SBL for retail investors in 2024."

MEAG establishes triparty links with BNY Mellon and Euroclear

MEAG MUNICH ERGO Kapitalanlagegesellschaft, the asset management arm of Munich Re Group, has established triparty links with BNY Mellon and Euroclear to support its securities lending activities.

As a lender, MEAG indicates that transitioning to use of triparty collateral management to support its securities lending desk allows the buy-side firm to unlock significant efficiency gains through improved automation, while enabling it to develop additional revenue streams, to expand its business volumes and to reduce operational risk.

The project was led within MEAG by head of trading Elke Wenzler and senior fixed income trader Benjamin Flierl.

Flierl confirmed to SFT that this project will offer improved flexibility and optimisation to MEAG's in-house securities lending activities, which are managed as part of its multi-asset trading desk.

Financial services and technology consultants BearingPoint advised MEAG during this move to triparty adoption for its securities lending business.

SFTs are risky, complex and difficult to understand for some retail clients, says ESMA

The European Securities and Markets Authority (ESMA) has

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released a public statement highlighting the risks of securities lending in regards to retail client financial instruments, and how MiFID II rules apply in this area to protect investors.

While securities finance transactions (SFTs) may bring extra returns on financial instruments, ESMA says, SFTs are also a “risky and complex practice” that can present counterparty and collateral shortfall risk.

SFTs can also be difficult to understand for the average retail client, the Authority claims.

MiFID II imposes strict requirements regulating the use of client financial instruments. The regulation imposes rules on securities lending in the area of client consent, provision of collateral and information disclosure.

ESMA indicates that the investor lending out financial instruments will incur a loss if the external borrower is not able to return the borrowed financial instrument, the value of the collateral is insufficient to cover the loss of the financial instrument lent out, or if the investment firm is unable to compensate for the loss.

While securities lending is possible for retail clients, it notes that the bar for investor protection is higher when a firm uses retail client financial instruments.

Article 5 of the MiFID II Delegated Directive specifies that firms entering into SFTs which involve use of client financial instruments, should obtain written consent from clients regarding how these client assets will be used.

Further, ESMA clarifies that the firms involved should adopt specific arrangements to ensure that the borrower of client

ActiveViam partners with Tonic for transformation and implementation

ActiveViam partners with Tonic for transformation and implementation.

The company says the partnership will address growing demand for decision-making solutions in the financial services sector.

ActiveViam will add Tonic’s transformation and data practitioners to its team in an effort to improve solution delivery.

Additionally, the firm seeks to combine its analytics knowledge with Tonic’s experience in collateral management, post-trade, inventory management, market risk and x-value adjustment.

Capital markets consultancy Tonic was founded in 2018. It specialises in transformation and front-to-back trade.

Kathy Perrotte, CEO and founder at ActiveViam, says: “ActiveViam’s robust and flexible risk analytics platform and Tonic’s focus on transformation programmes and systems implementation provide the right combination of proven technology and outstanding support to any financial institutions wishing to implement best practices in areas such as collateral management, inventory analytics, credit and market risk.”

financial instruments provides appropriate collateral.

The firm must monitor the "continued appropriateness" of such collateral and take steps to maintain the balance with the value of the client financial instruments.

For written agreements and provision of information, firms are required to provide adequate information to the client on an ex-ante and ex-post basis, also providing transparency in terms of obligations and responsibilities held by the firm with respect to the use of those financial instruments.

In its public statement, ESMA highlights the practical application of MiFID II requirements to securities lending in relation to retail clients.

The Authority states that revenues from securities lending should directly accrue to the retail client, net of a normal compensation for the firm's services.

More broadly, it indicates that firms should always act honestly, fairly and professionally in accordance with their clients' best interests, as pinpointed by Article 24 (1) of MiFID II.

LCH SA merges RepoClear and €GCPlus services

LCH RepoClear SA has merged its RepoClear euro debt service, which includes specials and general collateral, with its €GCPlus service.

The Paris-based clearing house will combine its €GCPlus liquidity with the €3.3 trillion RepoClear liquidity pool to unlock additional netting opportunities for members.

€GCPlus is a general collateral

Murex introduces MX.3 for Collateral Management at DZ Bank

Murex, a trading, risk management and processing solutions firm for capital markets, has incorporated its MX.3 for Collateral Management extension at DZ Bank.

DZ Bank's operations, treasury and risk business units will be able to access a number of enhancements and process automations with the MX.3 extension, says Murex. This will include connectivity to platforms such as MarginSphere and TriResolve, as well as an automated allocation process and an improved trade import process.

According to the firm, DZ Bank processes 1400 collateral calls per day across more than 5400 collateral agreements.

Rüdiger Welsch, head of operations IT at DZ BANK, says: "The use of the integrated MX.3 platform generates considerable cost synergies in operations and further development compared to a standalone solution.

"For the participating units from operations, treasury and risk control, several business improvements were achieved compared to the legacy application. For example, an increased level of automation in collateral operations was achieved for cash and security allocation and electronic margining."

triparty basket repo clearing service that was launched in collaboration with Euroclear and Banque de France in 2014.

The clearing house says the transition will enable "quick and easy access" to secured liquidity and enhanced collateral management capabilities. It also aims to create alternative routes to access liquidity in the general collateral segment through the euro cleared liquidity pool.

According to LCH RepoClear SA, members of the clearing house will benefit from cost reductions through payment into a single default fund, as well as further operational efficiencies including the introduction of one set of margin calls and reports across combined services.

Clearing members can now lend specific securities and recycle the cash proceeds into €GCPlus, therefore reclaiming their asset inventory in one single ecosystem, the firm adds.

RepoClear SA anticipates that a number of financial institutions will benefit from access to a single liquidity pool.

The firm explains that it can ease resource management pressures that derive from balance sheet constraints through its Sponsored Clearing model, allowing buy-side access to cleared liquidity and releasing resource capacity for banks.

Commenting on the news, Emmanuel Rolland, chief operating officer of RepoClear, collateral and liquidity management, says: "We are delighted to build on our collaboration with Euroclear and Banque de France to offer the sell side and buy side alternative access to general collateral liquidity and the euro cleared pool with enhanced collateral management capabilities.

"The merger of our two services means that financial institutions will benefit from even greater netting opportunities, reduced margin requirements, harmonised reporting and operational processes."

TMX collaborates with Clearstream to release new Canadian collateral management service

TMX Group has announced that it will launch a new collateral management service for the Canadian market that is scheduled for Q3 2023.

The collateral solution, named the Canadian Collateral Management Service (CCMS), has been built through collaboration with Clearstream Banking SA, Clearstream's ICSD and licensed banking arm based in Luxembourg.

TMX Group, which operates the Toronto Stock Exchange and key Canadian post-trade infrastructure including the Canadian Depository for Securities (CDS), has worked with Clearstream to bring together their collateral management and post-trade expertise, delivering improved optimisation and collateral mobilisation to the Canadian market and offering domestic triparty repo in this location for the first time.

The first phase of CCMS will offer collateral management benefits to participants in Canada's secured funding market, delivering greater automation and processing efficiency across the SFT lifecycle.

TMX indicates that this will also set the Canadian market in a better position to move to T+1 settlement in May 2024, supporting greater collateral mobility at lower operational risk.

Commenting on the forthcoming CCMS release, TMX Group CEO John McKenzie says: "The new CCMS will enable our clients to better meet the continuously evolving collateral requirements of today's markets, while supporting the growth of repos as an investment product for Canadian buy and sell side clients."

Sam Riley, CEO of Clearstream Securities Services, comments: "It is at the heart of Clearstream's collateral management strategy to provide our clients with reliable and scalable state-of-the-art solutions that reduce the frictional costs of trading through transparency and automation."

SmartStream and Acadia collaborate on collateral management solution

Financial transaction management solutions provider SmartStream Technologies has extended its partnership with margin automation services firm Acadia.

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SmartStream's Transaction Lifecycle Management (TLM) collateral management solution will be available through Acadia's Margin Manager, alongside the latter's substitutions workflow product.

Together, the companies will offer automated two-way communication and substitution coordination between counterparties, with substitution details managed in a standardised format through the workflow lifecycle.

The partnership will improve processing and calculation efficiency of substitutions movements for TLM collateral management clients and their counterparties, the companies say, providing exceptions-based processing and promoting straight-through processing for collateral substitutions.

Jason Ang, programme manager at SmartStream's TLM Collateral Management, says: "Given the current emphasis for optimisation in the market, we see that there will be an increase in substitutions requests. These requests traditionally have been a time-consuming process, but we have worked to provide an automated solution to help our clients save time, reduce manual work, and automate the process.

"TLM Collateral Management, coupled with Acadia's Margin Manager, provides integration with a powerful collateral management solution, and a user-friendly dashboard allowing for quick exception management, with a complete audit trail with final statements."

BNY Mellon expands collateral platform to Malaysia

Malaysia has become a new market for BNY Mellon's International Collateral platform.

The expansion aims to unlock Malaysian equities and fixed income instruments for use as eligible collateral under the firm's standard pledge arrangements for English and Belgian law, with the first trade executed in Q1 2023.

By expanding into Malaysia, BNY Mellon says it will broaden the firm's capacity and builds on recent successes including triparty platform Stock Connect and Bond Connect.

The firm says it is working to enhance its platform and enable clients to use assets across locations and venues, with a key focus on resiliency, digital enablement and market connectivity.

In terms of market connectivity, BNY Mellon plans to assess how it can connect clients to new venues and markets.

In challenging market conditions, clients look to maximise the use of assets on their balance sheet, the firm says.

With growing balances in markets such as Malaysia, there was increased demand for efficient secured financing solutions, according to BNY Mellon.

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- / ***Optimize collateral pledges*** to reduce related costs, automate deliveries to meet margin calls, manage liquidity and optimize the inventory utilization, "What if" scenarios complement such optimization.
- / ***Streamline connectivity*** to utilities and agents through the onboarding of new standards such as the Common Domain Model in credit support annex (CSAs) and complex eligible collateral schedule representation.
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Seizing the moment to automate collateral management

Following a series of market stress events, reducing manual intervention and creating greater efficiencies in collateral management has become increasingly necessary. Data standardisation and automation of key processes offer a way forward, says Amy Caruso, head of collateral initiatives at ISDA

In financial markets, meaningful change is usually achieved in incremental steps. It might start with a new regulatory requirement or a switch in market convention, but further work is often needed, sometimes over a period of several years, to fully realise certain efficiencies, cost savings and reductions in risk.

Collateral management is a case in point. Following the global financial crisis in 2008, market participants were required to exchange collateral on their cleared and non-cleared over-the-counter (OTC) derivatives trades, which contributed to an overall reduction in systemic risk. But as firms focused on meeting the regulatory requirements, they often lacked the bandwidth to pursue standardisation and automation of collateral management processes, continuing to rely heavily on manual intervention.

In recent years, a series of market shocks has shone a light on the implications of a lack of end-to-end

automation, generating momentum to digitise documentation, automate workflows and standardise data across the different phases of collateral management. With more collateral being posted and collected each year, it is critical these processes are as efficient as possible to avoid collateral management becoming a source of risk in itself during periods of market stress.

Risk mitigant

During the 15 years that have passed since the financial crisis, increased clearing of over-the-counter (OTC) derivatives and margin requirements for non-cleared derivatives have led to a huge increase in the volume of collateral in the system. Central counterparties require margin to be posted against cleared trades and the amount required may increase during periods of volatility, while the number of firms required to post margin on non-cleared trades has grown with successive phases of implementation of initial margin (IM) regulations since 2016.

IM and variation margin (VM) collected by leading derivatives market participants subject to the margin rules for non-cleared derivatives totalled US$1.4 trillion at year-end 2022, compared to US$1.3 trillion at the end of 2021, according to an International Swaps and Derivatives Association (ISDA) survey. Based on responses from 32 firms, which comprise most of the entities included in the first three phases of implementation, US$325.7 billion of IM was collected by year-end 2022. This represents a 7 per cent increase on the US$304.1 billion of IM collected by the same group of firms at the end of 2021.

In September 2022, the sixth implementation phase of IM requirements brought hundreds of smaller banks and buy-side entities into the scope of the rules. Going forward, any legal entity with an aggregate average notional amount of non-cleared derivatives of more than €8 billion must now comply with the IM requirements. As more entities cross that threshold in the future, this will lead to the exchange of ever larger amounts of collateral.

The rising volume of collateral in the system certainly helps to insulate market participants during periods of market stress, but it has become clear that the end-to-end framework for delivering collateral is in desperate need of improvement. Key processes such as margin calls, settlement, substitutions and recalls are not currently automated, while a lack of interoperability and real-time data transfer between OTC and exchange-traded derivatives, repo and securities lending activities has become a source of operational risk.

ISDA has been working to promote automation, reduce risk and bring greater efficiencies to collateral management. In 2017, we published a blueprint for the optimal future state of collateral processing and we followed up with four collateral management transformation toolkits in 2020. These kits provide resources to help firms identify opportunities to improve collateral management, including digitising ISDA documentation, automating margin calls and collateral settlement, and streamlining portfolio reconciliation and dispute management.

Addressing fragilities

A series of unconnected market shocks during the past three years has highlighted the fragilities in collateral management and underscored the urgent need for greater efficiency and automation.

In March 2020, the onset of the Covid pandemic triggered the ‘dash for cash’ in financial markets, with widespread selling of assets and heightened volatility. In early 2022, Russia’s invasion of Ukraine led to volatility in energy markets, while a UK government fiscal announcement in September 2022 prompted a sudden spike in gilt yields. In each of these cases, the external shock was unique, but it led to a drain on liquidity as assets were sold off, with central banks intervening on several occasions to stem the disruption in key markets.

A common thread running through each episode was a huge increase in margin calls driven by a spike in volatility, leading firms to sell assets or tap repo markets to generate cash to post as collateral, putting extra strain on liquidity. In the UK, some liability-driven investment (LDI) funds had specified in their trade documentation that only cash could be posted as collateral. During the gilt crisis, this meant they had

to sell long-dated gilts to meet their obligations, contributing to further margin calls and forced gilt sales, which ultimately required the BoE to step in with a large round of gilt purchases.

For many market participants, these unconnected shocks have shown that inefficiencies in the management of collateral are not just an operational strain during normal market conditions, but can become a major source of risk when volatility strikes. With mounting margin calls and settlement volumes, as well as operational and data challenges, the continuing reliance on manual processing meant firms were unable to meet their obligations in a timely manner, or had to find additional resources to alleviate the strain.

Even before the gilt market crisis, international policymakers had been exploring areas where margining practices could be improved. In September 2022, the Basel Committee on Banking Supervision, the Committee on Payments and Market Infrastructures and the International Organization of Securities Commissions published a review that identified six areas for further work. These include enhancing the liquidity readiness of market participants, increasing transparency and streamlining VM processes in cleared and non-cleared markets.

As policymakers continue to work on those six key fields, ISDA is moving at pace to build on our efforts to transform collateral management. In addition to the toolkits that have proved to be a valuable resource for our members, we have worked with the industry to publish suggested operational practices that cover a range of processes, including onboarding custodians and counterparties, margin call affirmations and confirmations, settlement and substitutions, reporting, and portfolio reconciliation and dispute resolutions.

As we seek to consign manual processing and operational inefficiency to the past, we want to work with all market participants, including buy- and sell-side firms, technology vendors, infrastructure providers and custodians to promote greater standardisation and automation.

For that, we are leveraging the Common Domain Model (CDM), a free-to-use data standard for financial products, trades and lifecycle events that is available as code in multiple languages. The CDM has already been used to develop standard digital representations of collateral specifications and to support operational provisions of ISDA's most widely used credit support documentation. ISDA is now working on other use cases with the aim of improving interoperability and streamlining the processing of collateral.

An efficient collateral management process starts with document negotiation and execution. Firms can use the ISDA Create online documentation negotiation platform, which brings efficiency and transparency to the process of developing and executing key documents. Crucially, the CDM allows legal data captured during the negotiation process to be made available as a standardised digital output. This can reduce manual onboarding to collateral management systems, thereby addressing some of the root causes of disputes and post-trade operational discrepancies.

As collateral management spans multiple markets, including exchange-traded derivatives, OTC derivatives, repo and securities lending, it is critical that efforts to bring greater efficiency extend to the full ecosystem.

To that end, ISDA has worked with the International Capital Market Association (ICMA) and the International Securities Lending Association (ISLA) to identify common challenges and leverage the CDM to promote data standardisation and automation. Together with ICMA and ISLA, we have developed collateral representations across products, which will reduce onboarding time and improve interoperability and collateral optimisation processes.

Following the experience of recent market stress events, which highlighted the need for collateral management transformation, we are now on the cusp of a new era. Building on the successful implementation of regulatory IM requirements, the constructive and collaborative work that is now being undertaken across the industry will lead to a disciplined framework for collateral management that is more efficient and resilient than ever.

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Enhancing efficiency through triparty collateral management

As the structured finance market continues to evolve, the adoption of triparty collateral management systems is likely to grow, according to J.P. Morgan's Graham Gooden, EMEA head of collateral services product management, and Julie-Anne Atkins, sell side trading services sales

Structured financing solutions have long been constituent elements of the financing ecosystem, as both a source of collateral to be financed and as a vehicle to facilitate broader capital markets activity.

In recent times, there has been a renewed interest in established structures as well as new applications driven by the imperative to finance trapped assets, improve liquidity and optimise binding constraints.

Structured financing as a source of collateral

Asset-backed and mortgage-backed securities, covered bonds and esoteric assets have long been eligible as collateral in triparty. The transferability of the asset to the triparty agent — to be able to enforce security over the asset, through a custody network or transfer agent — and the availability of pricing for the triparty agent are key considerations. By their nature, many secured financing assets have limited liquidity and price transparency. However, that does not mean that the security has zero value. Evaluated prices can be made available through data service providers.

Consideration should be given to understanding the methodology used to calculate the evaluated price, as well as the appropriate haircut to be applied, given the type of price used. In triparty, the collateral receiver can accept or decline the use of evaluated prices, and eligibility tests or haircuts can be configured down to individual CUSIPs or ISINs to reflect risk appetite.

Specific accounts or ring-fenced collateral pools can be established between collateral providers and receivers to facilitate term financing for specific hard-to-finance, less liquid or lower credit inventory.

Collateralisation of structured trades

Structured financing activity often includes collateral as the source of credit enhancement — triparty can work in consort with corporate trustees and special purpose vehicle (SPV) administrators to collateralise structured finance transactions. Asset-backed commercial paper programmes have long participated as collateral receivers in triparty, accepting collateral in return for cash proceeds from multiple repo sellers. The collateral received is therefore owned by the SPV, providing security to the buyers of the commercial paper issued by the SPV.

Structured financing solutions have long been constituent elements of the financing ecosystem, as a source of collateral to be financed and as a vehicle to facilitate broader capital markets activity.

A collateralised commercial paper is an augmented version of this structure, where the banks or broker-dealer sponsor the SPV, and are a single seller for term repos to help diversify their funding sources away from traditional repo counterparties and to institutional investors that are more used to buying commercial paper.

Other examples include the use of structured notes to be financed in triparty, with illiquid securities not readily accepted by the usual collateral receivers, but instead combined as a diversified pool with appropriate haircuts and credit ratings. Repacks are another variation, where collateral is held in custody by the collateral manager on behalf of SPVs in partnership with corporate trustees for the note holder.

Structured trades within triparty

Structured trades in triparty can be more targeted with specific objectives. Contingent funding trades are one example — a dealer can borrow high-quality liquid assets (HQLA) and immediately post the collateral back to the originating counterparty through triparty, drawing down on the HQLA in times of necessity, substituting for lower-quality collateral and paying a utilisation fee.

Triparty collateral management is an invaluable tool for structured finance trades. Its ability to enhance operational efficiency, mitigate risks and provide greater transparency benefits both counterparties involved.

Margin loans are collateralised via control accounts to collateralise equity derivatives or equity market acquisitions. The merging of the recent demand-for-pledge transactions with financing activity for either repo or securities lending is another structured or augmented trade type from traditional triparty. Collateral is transferred to the receiver under transfer of title arrangements, the receiver in turn pledges back the principal or the haircut received to the original collateral provider, with the benefit of potentially helping to reduce the capital costs.

Looking ahead

Triparty collateral management is an invaluable tool for structured finance trades. Its ability to enhance operational efficiency, mitigate risks and provide greater transparency and regulatory compliance benefits both counterparties involved. As the structured finance market continues to evolve, the adoption of triparty collateral management systems is likely to grow, leading to improved efficiency.

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Sell side trading services sales
J.P. Morgan

Graham Gooden
EMEA head of collateral services product management
J.P. Morgan

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- Improve Collateral Resilience to Market Events
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    - | VM Forecasting - Reduce Cash Buffers
    - | SIMM Threshold Monitoring to ensure no posting requirement

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        - Margin Attribution | Understand Drivers | Day on Day Moves

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The exponential growth of collateral optimisation

Building a high-quality, real-time data layer is considered one of the 'heavy lifts' of any collateral optimisation programme, says Victor O'Laughlen, digital business leader for Clearance and Collateral Management at BNY Mellon, who explores data as a key driver of optimisation

BNY Mellon has a long history of developing, onboarding and expanding optimisation solutions that efficiently allocate collateral across secured funding portfolios. Client demand for our collateral optimisation solutions is high and growing — this owes mainly to the rising interest-rate environment and the material impact it has had on the cost of capital and financing.

In addition, increased market volatility has spurred a desire to automate processes to improve profitability, competitiveness and risk management. Given our

unique position in the market, we are often asked whether collateral optimisation solutions should be built in house or licensed from third parties. We preface our answer by addressing two related matters.

First, consider the evolution and support required of market infrastructure providers. After all, clients can only move as fast as market infrastructure will allow. Service providers have been challenged to invest and support clients' collateral efficiency programmes because of the material impact on profit margins. In fact, not all service providers have invested in the capabilities to allow clients to interact with their platforms in a targeted way — for example, real-time portfolio data and real-time eligibility via APIs — to efficiently automate collateral allocations while minimising intraday liquidity usage.

BNY Mellon addressed these challenges early on and will continue to invest to further streamline collateral allocation movements across legal entities and jurisdictions. This will enable further efficiency gains. Mobilising the right collateral inventory prior to allocation is critical, which is why we integrated Euroclear's Collateral Allocation Interface to support clients' efficient movement of assets to our platform to generate additional liquidity.

The second consideration is the Liquidity Coverage Ratio (LCR), an essential element from the Basel III reforms, which are global regulatory standards on banks' capital adequacy and liquidity. It is typically a core requirement of our clients' optimisation objectives, and it remains in focus despite the existence of basic solutions. However, these solutions can miss the enterprise view on 'sources and uses' that are required to optimise effectively.

We demonstrate this regularly in our ECPOConnect proof-of-value analyses with clients. Done well, an enhanced LCR optimisation capability can materially reduce a client's cost of liquidity and free up capital. An enriched 'sources and uses' data layer can also be applied to optimise additional and more complex objectives, such as the Net Stable Funding Ratio (NSFR), as well as be extended to optimise further across various settlement locations. We collaborate with clients to perform these proof-of-value analyses to build their business case to secure the funding and resources to start the project.

Build or buy the solution?

Important elements in the build-versus-buy decision include time to market, properly calculating continued investment and maintenance, a provider that delivers on time and can prove value upfront, and fully accounting for the opportunity cost of not completing other technology projects.

Time to market and technology opportunity costs can run into tens of millions of dollars per annum. Building one's own solution comes down to securing in-house quant expertise, hiring sophisticated developers, sourcing historical, high-quality collateral portfolio data, and building the service for optimised performance. A real tradeoff between accuracy and speed is a key area to consider. Even small underperformance in accuracy can have an outsized effect on cost of funding, and delays in completing the process can miss market cutoffs and important portfolio changes.

BNY Mellon processes over 10,000 complex optimisations a day and must deliver on accuracy, speed and resiliency all at once, given our role in the market and the size of the optimisation problems we have to solve. To efficiently support the market, BNY Mellon operates on a tight timeline of five minutes or less to produce a result — including our largest and most complex dealers. Therefore, continual investment in performance is table stakes, which is why we recently re-architected our post-trade collateral optimisation service (ECPO) to reduce run times by 75 per cent without sacrificing accuracy. Performance is especially critical because increasingly sophisticated objectives, growing portfolio sizes, de-siloed business units, widening collateral locations and compressing timeframes mean increased complexity in execution.

Resiliency is essential and multi-faceted for collateral optimisers. The solution must always provide an optimal result in a short amount of time. And given a forced time-boxed result, it must also have a fallback option. Moreover, the application requires constant uptime – any failure during critical processing times can

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Victor O'Laughlen
Digital business leader for Clearance and Collateral Management
BNY Mellon

put a firm at undue risk. BNY Mellon has solved this via our active-active-active infrastructure where allocations are accurately processed 99.99 per cent of the time. Without this, a firm might need to reserve capital for adverse, 'stress' scenarios.

Data as a key driver of optimisation

Building a high-quality, real-time data layer is considered one of the 'heavy lifts' of any collateral optimisation programme. Investment is required to connect and consolidate data from various internal books-and-records systems as well as external venues like exchanges, and to normalise data with various settlement venues to effectively optimise intraday collateral deliveries, allocations and substitutions. A sophisticated solution should provide an API, and allow pulling input data and processing whole portfolio collateral allocations via a 'target state' directed allocation service, as well as support automated substitutions and allocations across the entire portfolio.

Most settlement venues do not provide this level of service, so connectivity is required in bespoke ways that are costly to establish and maintain. Many fintechs are also providing collateral mobility services, though some require clients to leverage their own infrastructure to execute the actual movements. For this reason, we felt collaborating with Pirum and Baton Systems made sense, given their connectivity with clients and their networked solutions connecting firms to the wider ecosystem.

Once market participants have created that foundational base for data, the challenge then becomes how to source, normalise and continue to maintain real-time data to minimise incorrect data that create 'breaks' in the end-to-end process. Portfolio data will be required across products, desks, legal entities and external service providers. Bringing all this together in a frequency and format that is useful to optimise and mobilise collateral is paramount. This is especially true for executing collateral allocations where settlement fails can occur if data is not properly mapped and so causes incorrect collateral eligibility and concentration limit calculations.

For this reason, BNY Mellon provides a collateral eligibility API, so it is unnecessary for clients and fintechs to consistently map data as it regularly changes due to data vendor changes, harmonising jurisdictional differences and adding new markets. Non-provision of this service gives rise to the challenge of producing quality collateral eligibility output that is consistent despite the various data changes that occur at each settlement location.

Quality data is key in achieving 'last mile' optimisation outcomes that typical settlement venues cannot provide. One example is disaggregating exposures of different trade tenors (and transaction types) from one required collateral value to provide refined eligibility data to fully optimise a portfolio. BNY Mellon charges a fee for our APIs because of the complexity and investment, which is included as part of the base offering for ECPOConnect. Clients should consider these additional data and service fees from service providers in their upfront cost analysis.

The importance of collaboration

First-movers invested significant resources in their collateral optimisation platforms 10 years ago in response to Basel III regulations. We consider them great partners — they supported the development of our ECPO service. Through its interfaces (APIs), clients gain greater control over their optimisation function and collateral allocation process, accelerate implementation, reduce process latency, enable straight-through processing, and extend their capabilities as portfolios and settlement locations they aim to optimise grow.

To provide our clients a comprehensive, managed service option, BNY Mellon formed a strategic collaboration with Pirum Systems to market and sell ECPOConnect. The offering integrates two production services that complement each other, while enabling each company to more capably solve a key client task: deliver a turnkey, end-to-end portfolio optimisation solution for their enterprise.

To be sure, much work needs to be done across the evolving collateral ecosystem. Sophisticated first movers are investing materially in their technology platforms many years later to address the complexity and breadth of capability that is required to centralise and automate across the scope of their enterprise and global activity.

We think the industry has yet to fully solve the multi-product, cross-venue collateral mobility challenge, but progress is being made. For example, we see material progress in digitising collateral eligibility data, though not all collateral venues are providing support for this capability in a sophisticated manner — leaving the heavy lifting to clients and fintechs to piece it together, where possible. Furthermore, optimising and mobilising bilateral activity, such as CCP margin, has required participants to develop bespoke technology solutions for each CCP.

In response, we are enhancing our ECPO solution with the help of Baton Systems to deliver this capability via the integration of their Core-Collateral service into our ECPO collateral optimisation platform. Our solution enables clients to access real-time CCP data, automate and post bilateral margin in a more optimal way via our ECPO APIs and our recently reengineered, flagship collateral management platform, AccessEdge.

In conclusion, we suggest comparing providers who will perform a proof-of-value exercise very early in the process to de-risk your investment decision while building your internal business case. Clients generally aim to optimise triparty funding, uncleared margin and bilateral cleared margin in priority. Additionally, a provider that is willing to accept data in any format will limit the upfront cost of standardising your data sets.

Finally, it is advisable to sequence settlement venues where optimisation outcomes can be realised quickly. Clients who choose the BNY Mellon platform often cite its advantages of size, the sophistication of the services supporting their programmes, proven resiliency, and the connectivity we have with various market vendors. There is material value to be had, so getting started is important and the first step is generally the most challenging. ■

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Creating community-driven collateral infrastructure through open source technology

Scott Sobolewski, co-head of quantitative services at Acadia, discusses the evolution of open source technology within the derivatives and collateral markets, and how it has become a key contributor in the future of pricing and risk analysis

In recent years, there has been a distinct shift in the derivatives industry towards greater acceptance of standardised collateral infrastructure utilising open source technology, as the technology has become more widespread and the cost-saving benefits more transparent.

Put simply, open source refers to technology that is readily accessible and freely available, that can be modified or enhanced by others using the same software codebase. The financial industry has come a long way since the early 2000s, when there was greater aversion towards open source software, driven by the misconception that it must be poorer quality or less secure if people were willing to give it away for free.

In recent years, large companies have recognised and rewarded open source-focused business models via

acquisitions that have attempted to further propagate open source adoption: from IBM's acquisition of Red Hat in 2019 for US$34 billion, to Microsoft's acquisition of GitHub in 2018 for US$7.5 billion, and London Stock Exchange Group's (LSEG's) recent acquisition of Acadia in March 2023.

The majority of the world's largest technology businesses now position open source software on their critical path, including Amazon (PostgreSQL, EKS), Meta (React, PyTorch, Llama) and Google (TensorFlow, Kubernetes, Flutter). Senior managers and quantitative finance developers have followed suit, gradually shifting their opinions on open source technology more positively by accepting the greater transparency and community-driven benefits that open source affords.

Ultimately, there has been a realisation that open source now provides equivalent functionality — if not greater — to more expensive "black box" alternatives; and crucially, it is free.

We will now further explore the specific use cases for open source technology in the collateral and derivatives markets, and outline why global financial institutions should look more actively to open source technology when it comes to the critical business of pricing, risk and collateral management of derivatives and traded products.

What can open source do for collateral?

Transparency

Open source technology provides multiple benefits to collateral management and efficiency in financial markets. Beyond the primary advantage of affording significant cost takeout — for example, legacy collateral vendor systems can cost several hundred thousand dollars up to seven figures — it is entirely transparent down to the code-level.

This is hugely valuable in terms of the high-scrutiny regulatory environment that most financial services firms currently operate within. Since the 2008-09 financial crisis, most firms must seek regulatory approval for nearly every model which calculates capital, collateral and risk analytics. Ensuring these firms have a clear understanding of what is happening "under the hood" of their software, and affording the ability to demonstrate clear ownership and understanding of their collateral systems to regulators and internal stakeholders, becomes absolutely critical for firms in this context.

Within the collateral world, the transparency and standardisation afforded by open source also leads to fewer disputes and a significant reduction in settlement delays. Within the Acadia user community, users of our open source risk engine experience a more than 50 per cent reduction in the calculated differences between their view of the bilateral collateral requirement against their counterparty's, compared to other "black-box" vendor systems. If our clients and their counterparties are able to better align and agree collateral requirements based on calculations made from open source software, disputes are reduced and collateral movement is made exponentially more efficient.

Greater access

Open source technology also plays a key role in levelling the playing field and democratising risk and collateral models for derivatives and other traded products. Over the last two decades, heightened regulatory capital requirements have turned leading-edge risk and collateral models into a proprietary advantage reserved only for the biggest firms with armies of "quants", leaving smaller firms at a disadvantage or priced out of certain markets.

However, it has always been our strong opinion that prudent and accurate risk management solutions should not be reserved only for the largest and richest firms — all market participants should have equal access to models that allow them to safely risk-manage their portfolios. Ultimately, reducing systemic risk globally, and avoiding the next financial crisis, should be in everyone's best interests.

Bespoke and community-driven

Another advantage of open source is how flexible and customisable the technology is. Clients own the

source code and, if they recognise a way to improve it that best meets their unique requirements, they can modify it locally on their own rather than waiting for vendor software to release updates. The open source software, by its very nature, equips users with the necessary framework while providing them with the creative space to customise, innovate and make their own contributions.

Fundamentally, it is a community-driven initiative — we actively encourage individuals to contribute their updates publicly, so that industry-leading best practices can be standardised and eventually benefit the entire community.

Open source in action

An example of open source collateral technology in action is Acadia's Open Source Risk Engine (ORE), a peer-reviewed, free-to-access framework for pricing and risk analysis of traded financial products.

We recognised early on that by being open and collaborative with innovation, data and even IP, we would have a better chance at making a significant positive impact on the derivatives industry, rather than charging licence fees as a traditional software vendor. ORE has been an active open source project since 2016, but Acadia decided in 2022 to release the vast majority of its expanded commercial functionality and product coverage out into the open source domain.

Paired with a commitment to future quarterly releases that maintain ORE's cutting-edge nature, Acadia has given clients equivalent functionality to what is available on its hosted commercial services across the 3,000 plus clients that Acadia currently supports.

ORE is being used most widely by clients navigating challenging regulatory environments. Historically, this has been larger banks in G10 regulatory jurisdictions that are replacing their "black-box" collateral and risk systems with ORE, enabling them to demonstrate greater control and ownership to regulators. Similarly, many firms are deploying ORE to meet their needs for calculating value adjustments (xVAs), collateral and margin, and regulatory capital requirements.

ORE also enables firms to streamline processes of internal model validation groups. These groups are responsible for putting the final stamp of approval on models that get developed and deployed across the firm. They often must develop parallel implementations of the same — or similar — methodologies that they are validating and have found real value in using ORE as a starting point. ORE gives them out-of-the-box model coverage for their benchmarking requirements — or at the least it gets them 90 to 95 per cent of the way there without having to reinvent the wheel each time they want to develop a new benchmark model. This saves enormous time, energy, resources and costs.

There is no denying that open source technology will expand across all industries, and will continue to be a key contributor in the future of pricing, risk analysis and collateral management within the financial services space. The historical misconceptions and misunderstandings of open source technology have been quickly changing.

At Acadia, we remain focused on continuing to drive adoption of industry best-practices and community-led standardisation of risk analytics and efficient collateral management.

Scott Sobolewski
Co-head of quantitative services
Acadia

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Building resilience in an uncertain climate

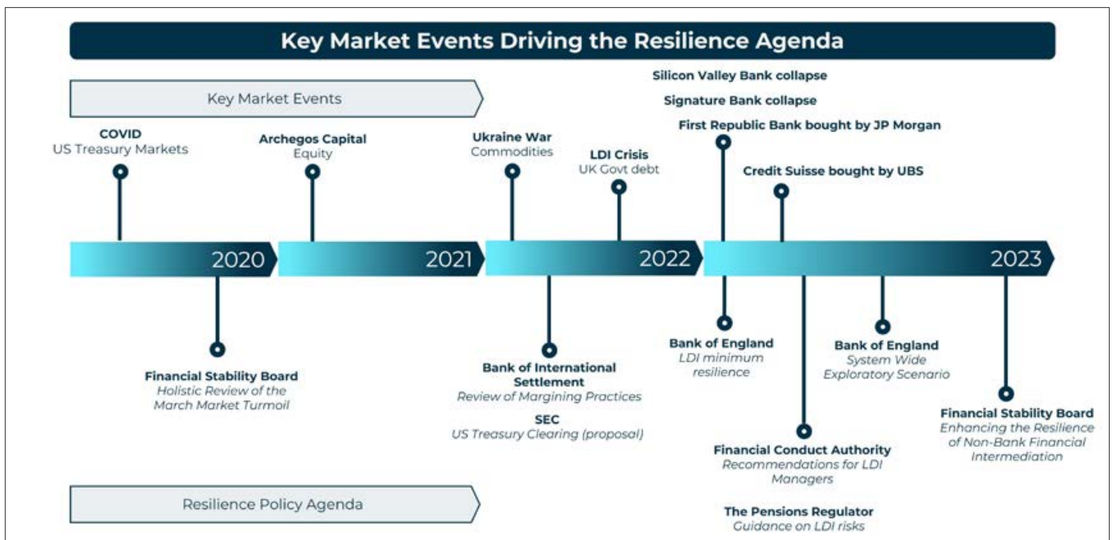
Tonic's head of collateral Philip Forkan discusses the significance of strengthening resilience in preparation for future crises and long-term market volatility

Enhancing resilience is now a critical, board-level agenda item across the financial markets. Recent geopolitical and economic events have proven that several firms need to strengthen their resilience and crisis management frameworks.

It is now deemed non-negotiable for firms to enhance their preparedness and response capabilities to the inevitable future crises, and long-term market volatility that we now have become accustomed to.

Previous market shocks include the extended Covid impact, energy market volatility following Russia's invasion of Ukraine, the UK gilt market crisis in September 2022, major crypto market disruption in Q3-4 2022, and the spate of defaults and near-defaults in H1 2023, culminating in Credit Suisse's merger with UBS.

Market stress events driving the resilience agenda



Although all of the events have been driven by different circumstances, the end result has been consistent — all of the events have resulted in severe operational and liquidity stresses across the industry. Specifically, there has been a major, well-known impact on the collateral domain. Improved resilience, such as targeted collateral resilience, has since been identified as the cornerstone of the UK financial services sector strategy, to mitigate against such future events.

In a recent speech on "The Building Blocks of Resilience", Sarah Breedan, deputy governor of the Bank of England (BoE), outlined the importance of the resilience framework being applied to non-bank financial institutions (NBFIs).

Here we explore the impact of the recent recommendations provided by the UK authorities to improve resilience of the liability-driven investment (LDI) sector — driven by events in September 2022 — and, where appropriate, the wider NBFIs sector.

Notable key focus areas within the UK's market recommendations have included:

- **collateral resilience —** ensuring that firms have sufficient collateral liquidity in the form of readily-available, eligible assets to withstand margin call demands in times of stress.
- **operational resilience —** ensuring that organisations continue to successfully manage their operational processes throughout periods of stress activity, to support extreme volumes and to minimise

any service disruption.

- **stress testing** — establishing minimum levels of collateral and operational resilience that firms should plan and test for, via suitable test frameworks, tools and outputs.

Collateral resilience

A key consequence of the 2008 global financial crisis was the widespread collateralisation of derivative trades, an essential part of the package of reforms to address crisis fault lines that had been exposed. In turn, market-wide collateralisation has naturally increased the volume and size of margin calls, especially in times of heightened market volatility.

If market participants are not prepared for such margin call increases, their actions to raise additional collateral can squeeze liquidity in already-stressed markets, further amplifying market shocks, rather than absorbing them.

While collateralisation has greatly reduced counterparty credit risk at a relationship level, an unintended consequence may have resulted in increased systemic liquidity risks. This has occurred simultaneously with a relative shift in derivative activity towards the non-bank finance sector, including investment managers, hedge funds and corporations.

This was especially evident in late 2022, where rapid and large moves in the interest rates on UK government debt exposed weaknesses in LDI funds. The sharp transition to significantly higher interest rates on long-dated UK gilts led to greater market volatility and resulted in a spiral of collateral calls, until the UK government intervened through its temporary repo facility. Importantly, a number of funds had to fund the increased collateral demands via the sale of their UK gilts into an already falling market, further magnifying margin demands.

A coordinated regulatory response

In response, UK regulators — including the BoE, Financial Conduct Authority (FCA) and The Pensions Regulator — published a series of recommendations and guidelines aimed at improving the resilience of LDI funds to future interest rate shocks. The recommendations outline minimum levels of resilience, with key focus areas on collateral resilience and operational resilience.

A prerequisite to establish these minimum levels of

Building Blocks to Enhanced Resilience

Resilience

Collateral | Operational

Stress Testing

Collateral Resilience – sufficient collateral liquidity to withstand margin call demands in times of stress
Operational Resilience – ability to ensure continuity of operational processes in periods of stress
Stress Testing – ensure firms are prepared for 'severe but plausible market events'

resilience is for firms to own a comprehensive stress framework. At the centre of any firm's stress framework is stress testing, which should be performed to ensure that firms prepare for 'severe but plausible market events', including the elevated collateral requirements and operational capacity that they bring.

Collateral resilience guidelines

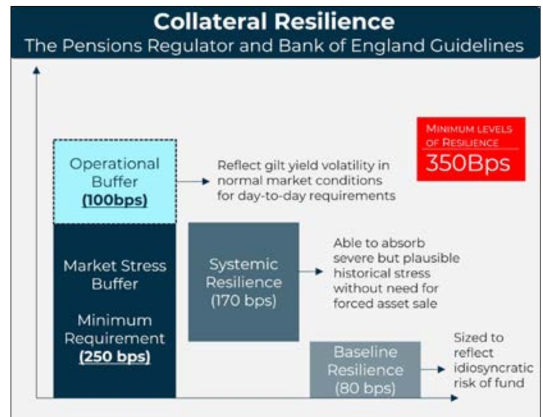
Collateral resilience aims to ensure that sufficient, eligible collateral is always available to cover trade exposure, including when there are larger margin calls driven by volatile markets.

Most LDI funds already held collateral buffers at the time of the crisis in 2022. The spike experienced in gilt yields was beyond any previous worse case expectations and these buffers proved insufficient to meet the increased volume and size of margin calls produced. Importantly, the UK regulators now recommend for each LDI fund to have sufficient collateral buffers to manage both the day-to-day collateral demands and any additional liquidity required, due to market stress.

Building effective resilience should be placed in a different pile to the other regulatory items. Instead, it should be viewed as priority no.1 across the market.

As such, collateral buffers have been broken down into two components, with minimum numeric guidelines applied to each. The first being the operational buffer, which provides sufficient liquidity to manage day-to-day volatility in the market. This is expected to be in the region of 100 bps. The second is the market stress buffer, which supplies additional liquidity to provide resilience during severe market stress. This means that funds should be resilient to a gilt yield shock of around 250 bps. Therefore, funds must withstand yield changes via total collateral buffers in the region of 350 bps.

These levels should be sufficient to ensure that funds can withstand "severe but plausible" market stresses to meet margin calls without engaging in asset sales. The theory is that this will protect the markets from magnified volatility and disruption. The graph below provides an illustration of the minimum levels of collateral resilience proposed by the UK Pensions Regulator and BoE.



Being collateral-resilient will require many firms to significantly strengthen their internal risk and liquidity management capabilities.

A number of key challenges should be considered when calculating collateral buffers, including:

- **calculating optimal size of operational buffer.** Funds must ensure an important balance between too much buffer (high cost impact), or too little (frequent top-ups).
- **quantifying the timing impact of sourcing assets.** Calculating the market stress buffer needs to take into consideration the speed of collateral sourcing for each firm — for example, how quickly additional collateral can be sourced. If there are any delays to mobilising assets, then the collateral buffer should be increased in line.
- **balancing collateral buffer assets with fund profitability.** Funds may wish to hold the collateral buffer in non-eligible instruments

to improve both yield and fund performance. Ensuring that these assets can be rapidly converted into eligible collateral to satisfy margin calls will require additional monitoring and more sophisticated solutions.

Firms should also consider employing early warning triggers that could indicate the occurrence of a stressed market event. By forecasting margin demands the day before or even same day, it will help predict any potential collateral squeeze and provide a window to manage collateral inventory more appropriately.

In summary, although liquidity management measures such as collateral buffers are critical, they are only part of the solution to ensuring sufficient resilience within firms. There will always be events or conditions that exceed these liquidity provisions.

Maximising resilience therefore requires a far more holistic and strategic approach, which must include enhancements to operational resilience — including technology, data, process and people — contingency planning and the application of appropriately-designed stress tests.

Operational Resilience

Being operationally resilient means having the appropriate people and processes in place to ensure that key business services are delivered throughout a period of stressed market activity. Any operational friction or delays in the processing of margin calls and meeting timely collateral obligations can manifest in liquidity stresses. These liquidity stresses further amplify, rather than absorb, market shocks.

This was observed by UK regulators during the recent LDI crisis, where inadequacies in technology and data did not allow them to react with speed. Therefore, a number of recommendations were published to address such operational vulnerabilities in the system.

Key focus areas

Given the tendency to squeeze on resources in stressed market conditions, firms must build capacity into their operating models to withstand any additional operational activity demands under these conditions. Regulators are keen to ensure that firms have robust and effective operational processes in place to ensure resilience to market shocks.

This will require firms to understand how market stress translates into operational demands — for instance, what is the impact on margin call and settlement volumes in times of stress? Further, it will require firms to assess operational capacity, including that of third party service providers. Firms must also build sufficient operational capacity to ensure bandwidth in prolonged periods of stress, paying particular attention to scalability via the use of technology automation.

Building resilient operating models

Consequently, firms should establish operational capacity that enables them to support high levels of margin call demand in periods of market stress, under a theme of increased scalability.

To achieve this, firms should:

- build highly-automated straight-through processing environments, which remove any manual processes that are vulnerable in times of market stress.
- simplify and standardise workflows and operating models, that allow firms to scale more effectively.
- ensure a strong supply of sufficient, suitably-skilled resources, that are available and can be redeployed to deal with crisis situations.
- have robust crisis-response capabilities for the various stress scenarios that may arise.

Stress Testing

Across the sector, UK regulators noted significant deficiencies in the management of risk within stress testing and scenario planning. Stress testing allows organisations to better prevent and manage the risk of adverse outcomes arising from a range of ‘what-if’ forecast scenarios.

Firms are therefore recommended to regularly review stress testing capabilities, including developing their

own tailored scenarios to accurately test resilience for their business model and their specific sources of risk. Firms must also consider dynamic stress testing that is based on multiple and simultaneous scenarios. This could include both operational (system failure) and external events (changes in liquidity).

In addition, companies should perform stress tests that will forecast the impact to volume and size of collateral demands, and subsequently impact collateral buffers, based on changes in spreads and volatility of underlying assets. Lastly, firms should regularly review the stress tests and contingency plans for dealing with such scenarios.

Outputs of stress testing should be used as the critical input to establish the minimum levels of resilience, be it financial or operational, that firms can support during prolonged periods of stress, to ensure ongoing provision of collateral liquidity, operations and services.

What's next for resilience?

In June 2023, the BoE launched a System-Wide Exploratory Scenario (SWES) exercise, with the aim to improve the understanding of organisations' behaviours in stressed financial market conditions. The Bank anticipates publishing a report to conclude the SWES exercise in 2024 to document key findings and implications of financial institutions in stressed financial market conditions.

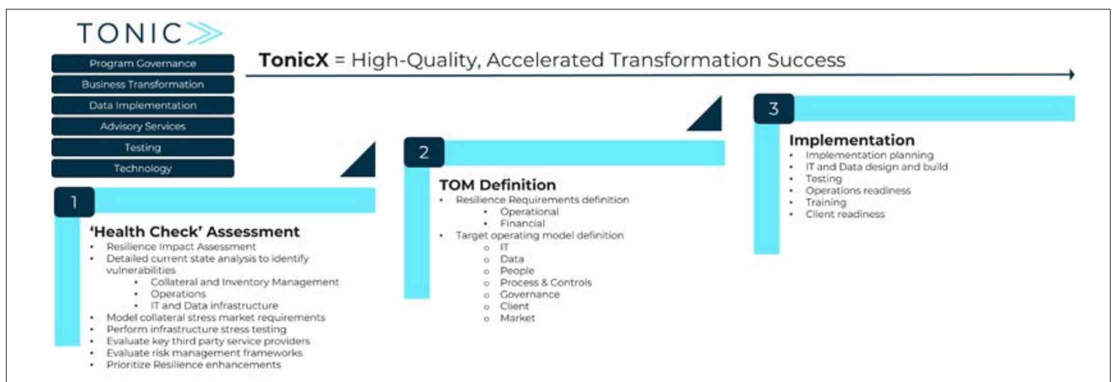
How Tonic can help

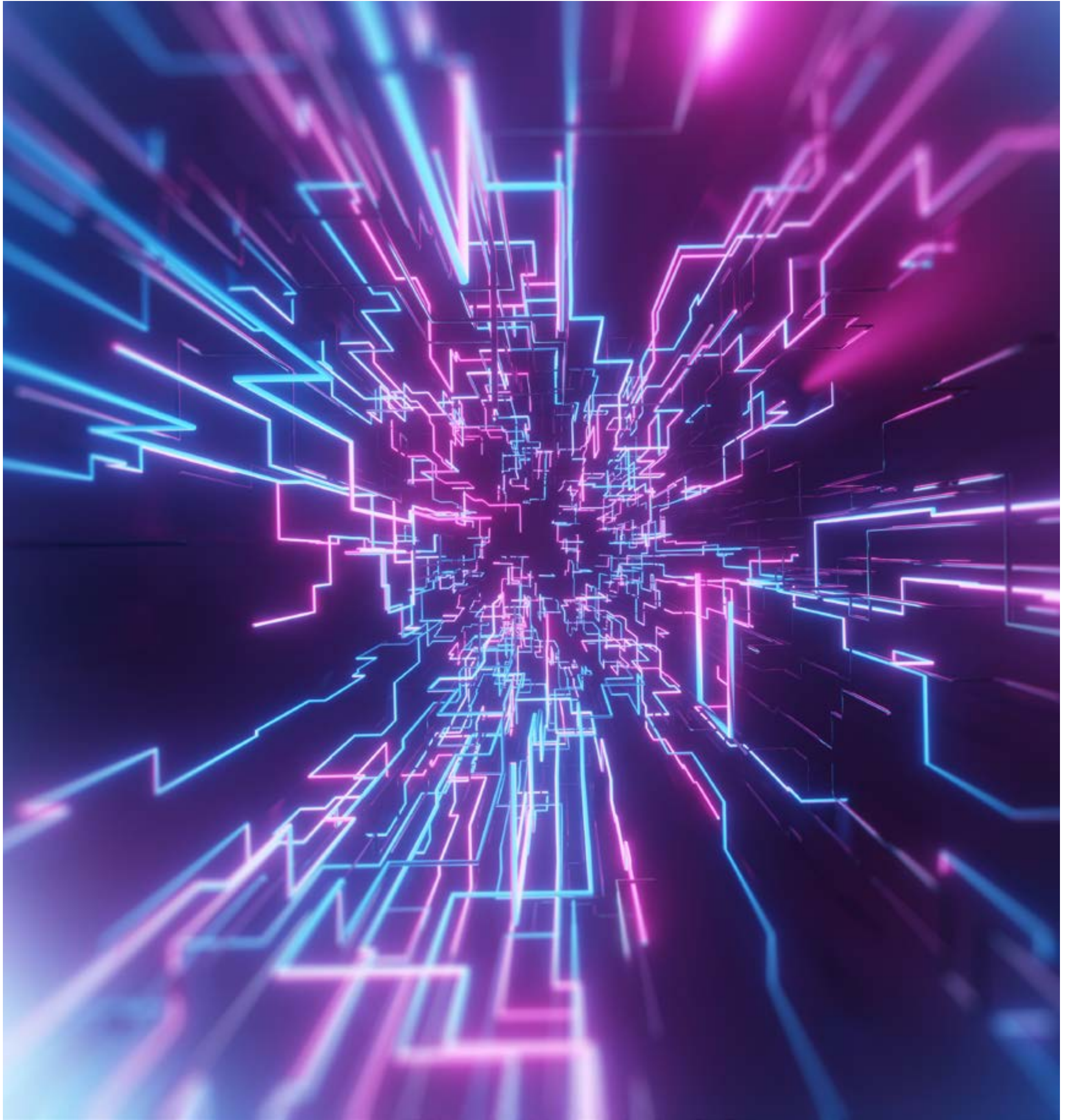
At Tonic, we believe that building effective resilience should be placed in a different pile to the other regulatory items. Instead, it should be viewed as priority no.1 across the market. Bearing in mind the long-term climate of volatility that we find ourselves in, resilience is something that must be acted upon now, or face the consequences once the next crisis hits. After all, there are only so many times market participants can use a 'black swan event' excuse, when 'grey swans' are occurring with increased regularity.

In turn, resilience — and especially collateral resilience — should increasingly be viewed as a business differentiator that drives profits. Those firms that invest in their resilience will prevent, adapt, respond to and quickly recover from operational and liquidity disruptions. As such, they will directly benefit from increased trust, trading and financial growth.

Tonic's Resilience Solutions is a family of services that leverage our transformation and domain expertise, including high-focus domains such as collateral, post-trade, treasury, risk and more. Across our modular resilience services — including vision and strategy, target operating models and vendor assessments — we help our clients accelerate the definition of high-quality, tailored solutions to meet their business objectives.

Tonic's approach to enhancing resilience





The evolution and modernisation of collateral management

CloudMargin product manager Farhan Waheed examines the milestones that have shaped the collateral management space from the financial crisis to present day, particularly highlighting the advent of cloud technology and SaaS

The financial industry has seen its fair share of challenges and innovations over the past decade and a half, with each milestone significantly impacting collateral management practices. From the global financial crisis of 2008 to the unprecedented Covid-19 pandemic and the introduction of stringent regulations, the collateral management space has had to constantly adapt.

At the same time, technological advancements have revolutionised the way financial institutions operate, transforming collateral management from a paper-heavy, resource-intensive process into an efficient, tech-driven endeavour. This article will delve into the milestones that have shaped the collateral management space from the financial crisis to present day, highlighting the role of technology, particularly the advent of cloud technology and Software as a Service (SaaS), in addressing the challenges and ushering in a new era of efficiency.

A wake-up call for collateral management

The global financial crisis of 2008 was a seismic event that sent shockwaves through the financial industry. As financial institutions faced massive losses and a crisis of confidence, the importance of effective risk management, including collateral management, became glaringly evident. Collateral management, traditionally viewed as a back-office function, suddenly took centre stage as institutions realised the crucial role it played in mitigating risk.

As firms started to scramble to establish better risk management practices, they realised that legacy on-premise technology, which was prevalent at the time, presented significant challenges. Outdated systems often lacked the flexibility needed to adapt to rapidly changing collateral requirements. Manual processes and siloed data made it difficult to gain a comprehensive view of collateral positions and counterparty exposures. To add to that, all of the volatility and increased margin calls raised cost immensely.

Slow to change

Even as firms were realising the limitations of legacy technology, many stayed the course with their current tech stacks due to a combination of a low-interest rate environment and substantial regulatory changes. Low rates discouraged large-scale investments in technology upgrades due to minimal return on investment at the time, and the continuous rollout of new regulations diverted resources toward compliance efforts.

That’s all changed in recent years.

Financial crisis revealed massive inefficiencies in tech stacks and operations

Global instability added to existing challenges

Market turmoil caused by the unprecedented Covid-19 pandemic and challenging macroeconomic conditions have shifted the appetite for change dramatically. The current landscape demands a rethink of operations and technology. The drastic rise in interest rates mean that firms are spending more to fund and manage trades, eating into their bottom line more than ever.

Collateral management at a crossroads

Given the scene-setting above, it is clear that the financial industry — and collateral operations in particular is at a crossroads.

While the world around us has rapidly evolved with technological innovations, a significant portion of the industry continues to rely on legacy technology stacks, posing substantial credit and operational risks and inflating operational costs.

However, the dominance of these legacy systems poses immense risk to firms and the industry as a whole. Legacy systems used in the collateral and margin management space are often inflexible, lack interoperability, and struggle to adapt to changing market conditions and regulatory requirements. This perpetuates the problem of siloed data and manual processes, making it difficult to gain comprehensive insights and manage risk effectively. In essence, these archaic systems serve as ticking time bombs, threatening both financial stability and competitiveness.

The good news is that the industry now has more time than it did before. The Phase 6 deadline of the Uncleared Margin Rules (UMR) has come and gone, and compliance efforts have tapered, allowing focus elsewhere. Now firms have the space to strategise and approach operational change with a more holistic view.

SaaS and its impact on collateral management

As one of several innovations that have disrupted the financial industry over the past decade and half, the adoption of the cloud — and, arguably more important, SaaS — has become central to digital transformation.

SaaS's impact on collateral management is significant since it has allowed more institutions to have access to low cost, robust workflow and analytics tools to mitigate risk firm-wide and ultimately, industry-wide.

SaaS solutions offer several advantages over legacy technology, including:

- cost-efficiency: financial institutions have access to cutting-edge collateral management tools without the upfront costs associated with purchasing and maintaining on-premises software.
- scalability: SaaS platforms allow institutions to scale their collateral management capabilities quickly, accommodating changes in trading volumes and regulatory requirements.
- shared platform: with SaaS, multiple users from different institutions share the same platform, fostering collaboration and standardisation across the industry.
- automatic updates: SaaS platforms provide automatic updates and maintenance, ensuring that institutions always have access to the latest features and regulatory compliance.
- flexibility: cloud-based solutions provide flexibility in accessing collateral management tools from anywhere, supporting remote work and business continuity.
- transparency and interoperability: SaaS technology easily connects to other platforms via APIs, embedded integrations with best-in-breed technology and data sources and market infrastructure. By bringing all data and process in one place whether internal or via these integrations (or both), SaaS enables users to have one, real-time view of their data to act quickly.

The shared nature of SaaS platforms facilitate collaboration among financial institutions, encouraging the development of industry-wide best practices and standards. This collaborative approach reduces operational risk and promotes greater efficiency in collateral management.

The urgency of embracing modern technology

Decision-makers in the collateral management

industry must shed outdated views and embrace technology without delay. Firms that continue to rely on legacy systems risk falling behind, not only in terms of efficiency but also in their ability to manage risk effectively. Outdated technology introduces unnecessary complexity, limiting adaptability and increasing operational costs.

At this point, embracing modern technology is not just about staying relevant; it is about survival. As we have seen recently, firms that fail to adapt will find themselves increasingly vulnerable to market shocks, regulatory scrutiny and operational inefficiencies. The choice is clear: evolve or risk obsolescence.

Attracting talent and fostering a culture of innovation

Beyond mitigating risk and reducing costs, the adoption of modern technology — like SaaS, AI and other new tools — offers another compelling advantage: it makes the industry more attractive to the next generation of talent. Young, tech-savvy professionals are drawn to organisations that leverage cutting-edge technology to drive innovation and positively impact employee experience and productivity.

A technologically-advanced industry not only attracts fresh talent, but also fosters an environment where new ideas and solutions can thrive. As collateral leaders at leading asset managers, pension funds, insurers, hedge funds and banks modernise their operations, they create an ecosystem that encourages collaboration, knowledge sharing, and the continuous pursuit of excellence. In doing so, they not only secure their future but also set the stage for further innovation and growth.

The future of collateral management technology

One significant difference with the past is that operations and tech teams now have the luxury of "compliance reprieve" — and therefore they have the time to take a more holistic and strategic approach to their investment operations process and tech stack.

Flexibility, interoperability, centralisation of data and robust analysis tools give firms the ability to act quickly and will be key as we look ahead.

At this point, embracing modern technology is not just about staying relevant; it is about survival. As we have seen recently, firms that fail to adapt will find themselves increasingly vulnerable to market shocks, regulatory scrutiny and operational inefficiencies.

As we move forward, the collaborative and flexible nature of SaaS platforms will continue to play a central role in the evolution of collateral management. CloudMargin, the first SaaS collateral and margin management platform on the market, has spent the past nine years pioneering this space, steadily seeing year-over-year growth, now with more than 190 client groups on the platform. Forward-thinking financial institutions will increasingly leverage shared platforms, like CloudMargin, to exchange knowledge, adopt best practices, and harness the power of data analytics and automation to optimise collateral allocation and utilisation.

The SaaS delivery model, with its ability to facilitate rapid adoption of new technologies, will remain a key driver of efficiency in collateral and operations teams, ultimately reducing costs, mitigating risks and ensuring the stability of the financial industry as a whole.

Is it time for you to ask what's holding your firm back?

Poised for transformation

The over-the-counter collateral management industry plays a pivotal role in ensuring the smooth functioning of global markets, says State Street's Sam Edwards, global head of triparty, European and APAC head of relationship management for collateral services, who suggests that this sector is at a crossroads and ripe for transformation

The macro environment

In the global financial landscape, rising interest rates have emerged as a dominant force. This economic shift necessitates a comprehensive reassessment of collateral management strategies as asset managers strive to optimise collateral usage and mitigate the impact of increased borrowing costs.

Further, the Central Securities Depository Regulation (CSDR) has introduced stringent penalties for settlement failures. As a result, efficient collateral management has become not just a competitive advantage, but a vital defence against potentially crippling penalties.

While the industry's swift transition towards a T+1 settlement cycle has disrupted existing collateral management processes, it is imperative to adapt to the demand for agility and real-time settlement capabilities to remain both competitive and compliant.

A persuasive case for…

Inventory optimisation for multi-fund managers. Managing collateral across multiple funds and entities can be a complex task. Effective inventory optimisation solutions are essential to ensure that assets are utilised optimally, resulting in cost reduction and enhanced returns.

Peer-to-peer repo for the asset management industry. In a rapidly evolving financial landscape, peer-to-peer repo arrangements have emerged as a promising source of liquidity. These arrangements empower asset managers to access short-term liquidity efficiently and cost-effectively, bypassing traditional intermediaries.

Triparty collateral management. Triparty collateral management offers multiple benefits for buy-side institutions, including:

- **Risk mitigation:** triparty collateral management introduces an additional layer of security through an independent third party overseeing collateral movements, reducing counterparty risk significantly.
- **Efficiency and cost reduction:** streamlining collateral management processes under a triparty framework optimises asset utilisation, leading to substantial operational cost reductions. In today's fiercely competitive environment, cost savings can be the difference between success and stagnation.
- **Regulatory compliance:** the complexity of regulatory compliance can be daunting. However, triparty solutions often come equipped with built-in compliance features. This ensures that buy-side institutions remain ahead of ever-evolving regulatory requirements, mitigating compliance-related risks.

Operational challenges and swift solutions

The demand for accelerated collateral velocity is irrefutable in today's financial landscape. Automation and efficient data management are the cornerstones of meeting the requirements and enabling real-time collateral utilisation.

The adoption of advanced technology solutions is not merely an option but a necessity. Cloud-based platforms, blockchain and distributed ledger technology (DLT) are indispensable for enhancing transparency, reducing operational risks and ensuring scalability.

Drawing lessons from the LDI crisis

The liability-driven investment (LDI) crisis in the United Kingdom serves as a poignant reminder of the significance of robust risk management and collateral optimisation. The lessons learned from this crisis underscore the need for a proactive approach to identify and mitigate risks, ultimately safeguarding the financial stability of institutions.

The over-the-counter collateral management services industry stands at a crossroad, poised for transformation. Rising interest rates, CSDR penalties and the move to T+1 settlement demand innovative solutions.

Sam Edwards
Global head of triparty
State Street

Similarities to the Lehman Brothers collapse

The Lehman Brothers collapse during the global financial crisis emphasised the fragility of the financial system and the pivotal role of collateral management in preserving stability. It serves as a stark reminder of the urgency of maintaining resilient and well-regulated collateral management practices. The consequences of complacency in risk management are far-reaching and devastating.

The benefits of holistic end-to-end service provision

The over-the-counter (OTC) collateral management services industry stands at a crossroad, poised for transformation. Rising interest rates, CSDR penalties and the move to T+1 settlement demand innovative solutions. Multi-fund managers must optimise inventory for better efficiency, while leveraging the flexibility that liquidity solutions like peer-to-peer repo offer.

Triparty collateral management shines as a beacon of security, efficiency and compliance. Operational challenges are surmountable with increased collateral velocity, driven by technology solutions such as the cloud and blockchain.

Why State Street?

As a distinguished leader in the financial industry, we offer a unique perspective and benefits to the OTC collateral management services sector.

With decades of experience in collateral management, State Street helps to enable asset managers in navigating the intricate terrain of collateral optimisation.

State Street's global presence allows asset managers to access collateral solutions across diverse jurisdictions. This ensures compliance with local regulations and facilitates seamless cross-border operations.

With the ever increasing complexity and associated risk that financial market participation brings, State Street is committed to continuing to strengthen our services to better position our clients to thrive in this dynamic landscape. ■

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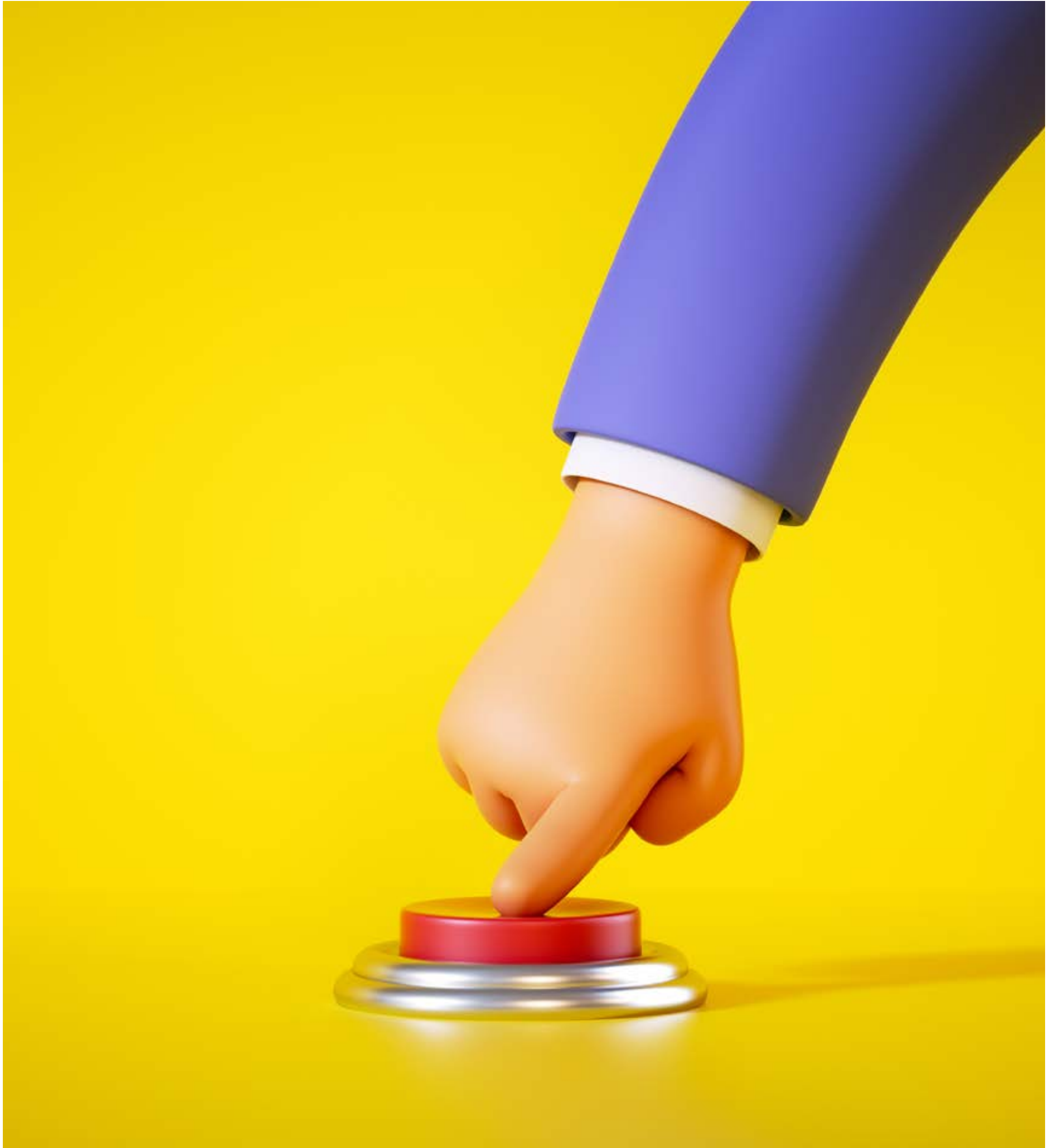
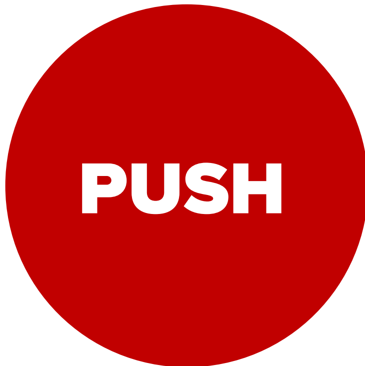


Beyond the big red button: the reality of collateral optimisation

Broadridge's Martin Walker, head of product management, and Dan Griffiths, head of collateral management, explore the necessity of collateral optimisation and the significance of high-quality data

Press the big red optimisation button and it will optimise your firm's whole balance sheet and generate huge amounts of P&L — as the theory goes. Conversations on the necessity of collateral optimisation have been in play for the past two decades, but what does collateral optimisation mean in the real world and how did the need for it become part of the accepted wisdom?



Optimiser

Market participants that worked through the great financial crisis experienced years of chaos, dealt with one crisis after another, and were under the threat that the entire world financial system would collapse. A whole generation has grown up in the markets since then that had no direct experience of those times. Experience provides context — particularly the context that made market participants realise the critical importance of collateral management and gave birth to visions of better ways of working.

Prior to 2007, a number of firms had been working towards centralising their collateral management functions across different business lines. For some, this was based on a desire for greater efficiency and consistency. For others, it was based on the realisation that effective collateral management needed to be done for all trading activity that was carried out with each counterparty.

The great financial crisis demonstrated the problems that arose from disjointed collateral processes, low quality data and poor quality collateral. These factors exposed a number of firms to unnecessary risks and often huge losses. It further demonstrated the significance of correctly managing good quality collateral — particularly cash; something that could rapidly fall into short supply in a crisis.

An ideal collateral management team would have the tools to view all of the exposures and inventory available for all asset classes and clients — with the collateral team delivering the most optimal collateral to counterparties, as well as substituting the most valuable collateral with cheaper alternatives. The ultimate tool would use an optimisation algorithm, such as the Simplex method, to make all of the complex decisions — i.e. "the big red button".

With the Basel agreements creating regulatory changes relating to capital, liquidity and leverage, market participants came to believe that the big red button should further optimise firms' overall balance sheet. A number of firms also started to consider the cost of collateral in trading decisions. Collateral optimisation was clearly defined in a 2017 academic paper as "... all actions done by a financial institution to make a more effective use of its existing portfolio of collateral assets"— but what does collateral management mean to practitioners today?

In August, specialist collateral management consultants Margin Reform published the results of a survey that discussed what collateral optimisation really meant to market practitioners. In response to the question "What does optimisation mean to you?", 82 per cent of respondents responded "end-to-end", 4 per cent said "pre-trade" and 14 per cent suggested "post-trade".

The idea of end-to-end optimisation is not about implementing a Simplex algorithm to pick the optimal collateral delivery, it references creating the most efficient end-to-end process. This covers everything from digitalising collateral eligibility

schedules, to creating a consolidated view of collateral, to aggregating exposures across business lines and using market utilities for connectivity to counterparties.

“Pre-trade” is about helping guide decisions such as cleared versus non-cleared and who to trade with — based on the likely collateral costs.

This survey result is unsurprising when considering what is required for the big red button to work. It is only possible to optimise the selection of collateral if there is excellent quality data on inventory, trades and master agreements. If data is incomplete, incorrect or inconsistent it does not matter which optimisation algorithm is used or how skillfully it is turned into computer code; the results of optimisation will be far from optimal.

Getting the data basics right can have a far larger return on investment than an optimisation engine per se. Poor quality data and poor integration of systems does not just hold back internal efforts at collateral optimisation, it can also hold back offering optimisation as a service. Using data from clients to optimise their collateral can be even more challenging than using internal data, unless the provider of optimisation services is also the primary source of the required data.

Additional findings from the survey related to where organisations were carrying out collateral optimisation. 81 per cent of respondents stated it was done in the front office, though often on an ad hoc basis rather than by a dedicated team. There are two likely reasons for the concentration of collateral optimisation activities in the front office.

The first applies when the optimisation process attempts to optimise beyond finding the “cheapest to deliver” collateral — considering the constraints of capital, leverage and liquidity. This type of data is generally more easily available to — and understood by — front office than operations.

The second reason indicates that firms viewing collateral optimisation as a P&L generating activity, rather than just an operational cost centre, are more likely to place the activity on the trading floor with other P&L generating functions.

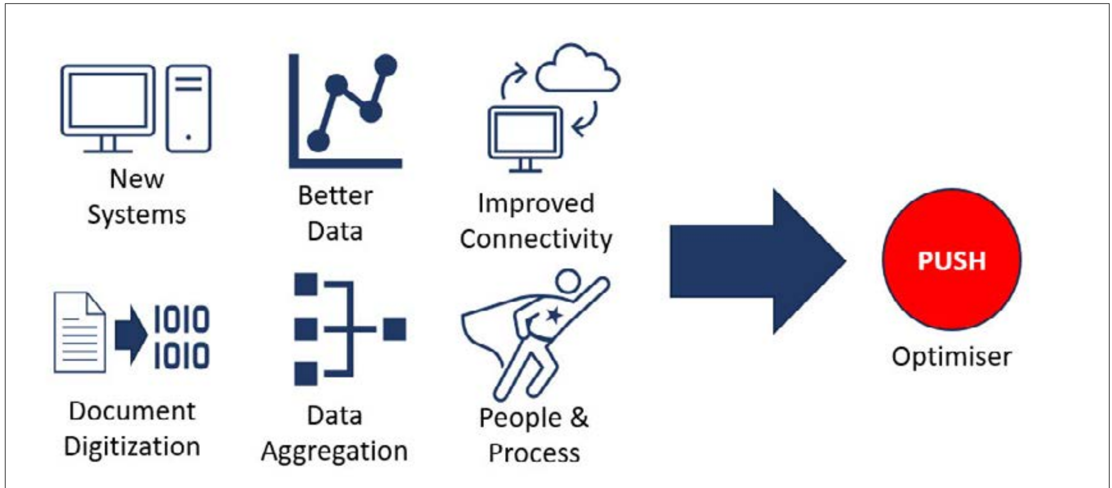
For a firm to make the optimal use of collateral, the process needs to be integrated across business lines. Only 16 per cent of respondents had succeeded in doing so. This is likely to reflect the decades-long struggle to genuinely integrate collateral management as a whole across business lines.

The management of collateral related to derivatives, repo and securities lending is frequently done in different systems and often by different teams. The creation of legal frameworks that allow the netting of exposures between activity executed under different master agreements — such as the International Swaps and Derivatives Association (ISDA), the Global Master Securities Lending Agreement (GMSLA) and the Global Master Repurchase Agreement (GMRA) — has made slow progress.

Cross netting — as commonly seen in the prime brokerage model — allows far more efficient use of collateral. However, the absence of cross-netting agreements does not stop a firm from using optimisation techniques to select the most cost-effective collateral for use under each individual agreement.

While the general picture of collateral optimisation is one of a series of small front red buttons, practical optimisation processes do require consideration of post-trade factors from a cost and client relations perspective. A mathematically brilliant optimisation will not appear well if it generates huge numbers of recalls and substitutions — something that can increase costs, operational risk and annoy counterparties. Therefore, it is important to add post-trade considerations as constraints on any optimisation.

The varied and often fragmented picture of collateral optimisation is most likely a reflection of the value firms achieve, or expect to achieve, from their investment. Implementing an optimisation module is only a small part of the overall cost of



creating a "big red button". A number of foundations can have significant costs, for example:

- changing organisational structure, incentives and processes
- improving the quality of connectivity between systems
- improving the general quality of data and making it available to the right people
- converting documents such as eligibility schedules into data
- aggregating data such as exposures and inventory
- introducing genuine cross product systems

These costs mean that for some firms the "big red button" is not justified by the P&L benefits, but there is every reason for firms to build out the foundations, each of which in themselves can add major value.

Martin Walker
Head of product management
Securities Finance and Collateral Management
Broadridge

Dan Griffiths
Head of collateral management
Securities Finance and Collateral Management
Broadridge

Maximising returns while minimising risk: the buy side's path to collateral optimisation

The inclusion of collateral optimisation tools in the buy side's operational framework is no longer an option — it is a necessity, says Thomas Griffiths, head of product at Cassini Systems

In recent years, regulatory requirements, extreme market shocks and rate rises have created a perfect storm for funds, driving up margin calls and significantly affecting funds' liquidity and collateral positions. In the face of this, a robust liquidity and collateral operational framework has emerged as a frontline necessity to enhance returns and mitigate liquidity risk.

For buy-side players navigating this complex terrain, collateral optimisation tools have emerged as an indispensable part of this framework, providing a competitive edge and safeguarding against the challenges posed by market fluctuations and increasing funding costs.

Navigating regulatory complexity

The regulatory shifts reshaping the financial landscape — such as the Uncleared Margin Rules (UMR) and the European Market Infrastructure Regulation (EMIR) — have forced market participants to collateralise derivatives trades more rigorously. Consequently, the buy side is now required to not only make larger collateral pools available for meeting margin requirements, but also to consider more accurately the value of the assets in their funds for smarter allocation of collateral.

Stage one of navigating this regulatory change has been to ensure compliance — this is now largely in place across the buy side. The focus is shifting beyond calculating and analysing the margin and collateral requirements that these new regulations have imposed on firms, and onto how firms can reduce the impact of these regulations by operating more optimally across their collateral processes.

Market volatility demands preparedness

Market volatility is an ever-present reality, and times of stress have a direct impact on margining requirements. Sudden market fluctuations in asset values can trigger margin calls while simultaneously depreciating the assets that could have been used as collateral to meet these increased requirements. This impacts collateral buffers that are often held by buy-side firms against extreme market events and can require them to top up longbox allocations at triparty agents or to raise expensive liquidity in stressed markets to meet unexpected margin calls.

Sophisticated forecasting and stress testing analytics provide the buy side with the ability to simulate margin requirements and collateral values under different market scenarios.

Gaining the competitive edge

In an increasingly competitive market, buy-side firms are under pressure to enhance returns and operational efficiency simultaneously to increase alpha and reduce costs within individual funds and across their firm.

Automating collateral selection tools, rather than relying purely on an individual's expertise within collateral and treasury functions, provides an initial step to address these needs. Using more advanced optimisation algorithms enables firms to free up previously encumbered collateral assets for maximising investment opportunities, generating additional returns to fund performance. Providing these analytics as part of the daily collateral workflow further ensures that these optimal results are achievable, consistently and without specialist intervention.

Collateral optimisation: a strategic necessity

At its core, collateral optimisation is the art of deploying collateral resources efficiently. It has long been the belief that by defining a priority order of assets based on eligibility criteria in legal agreements, as well as haircut rules, a collateral manager is able to manage this complexity. These so-called "waterfall" models of managing collateral assets have been commonplace and were considered fit for purpose when funding costs were low, collateral was cheap and margin calls had a significantly lower impact on a fund's bottom line.

However, in an era where regulatory changes are redefining margin requirements and market stresses can trigger unexpected margin calls, the buy side faces a twofold challenge: meeting increased and often unexpected margin calls while minimising the impact of higher collateral costs on returns.

Collateral optimisation analytics designed for the buy side provide a lifeline in this intricate maze of margin and collateral complexity. By optimising collateral allocation across portfolios, these tools ensure that the optimal assets are allocated to each margin requirement, thereby minimising the overall cost of collateral, which otherwise may cause a drag on portfolio performance.

There are a number of factors that must be considered to optimise collateral allocation. The significance of these can vary from firm to firm, but will generally include:

- understanding opportunity cost of different assets
- modelling counterparty eligibility and haircut schedules
- restricting assets from collateral posting for dividends and corporate actions
- ensuring diversity of assets across counterparty (i.e. impose concentration limits)
- allowing for collateral buffers to reduce the number of movements
- optimising substitution to free up assets when they become non-GC for lending

The journey to embrace collateral optimisation tools and analytics can start as a simple replacement of existing waterfall methodologies, but to truly benefit from the efficiencies these tools provide, firms should evolve their processes into a full collateral optimisation suite.

Thomas Griffiths
Head of product
Cassini Systems

Buy-side firms beginning their journey to optimisation are realising that by having transparency into the above factors, and an automated way to apply them in the daily collateral process, can result in:

- a reduced drag on portfolio performance from collateral costs
- a robust collateral liquidity framework for both T+1 and future requirements
- avoidance of forced asset sales or emergency funding to meet short-term margin demands
- transparency and control of the assets available within their funds and direction on the best way to deploy them

The consequence of this realisation among buy-side firms is that collateral optimisation, once a peripheral concern, has surged to the forefront, transforming into a strategic necessity for their business.

Embracing collateral optimisation tools

The journey to embrace collateral optimisation tools and analytics can start as a simple replacement of existing waterfall methodologies, but to truly benefit from the efficiencies these tools provide, firms should evolve their processes into a full collateral optimisation suite.

An advanced collateral optimisation framework will evaluate market opportunities for each underlying asset and leverage intelligent optimisation algorithms to identify the cheapest assets to post either into a longbox, or against a margin requirement.

These analytics should be available at all stages of the workflow to help check for collateral sufficiency as part of a pre-trade process, process individual margin calls, or as part of a regular rebalancing and substitution of already pledged collateral.

While some buy-side firms are already well advanced in implementing this robust model, and are benefiting from the increased revenue and reduced costs that result, many others are just starting out. What is clear, however, is that as the derivatives margining ecosystem continues to evolve, buy-side players that embrace collateral optimisation tools position themselves to thrive while those that do not are likely to be left behind. ■

Many of the world's largest institutions know a thing or two about collateral.

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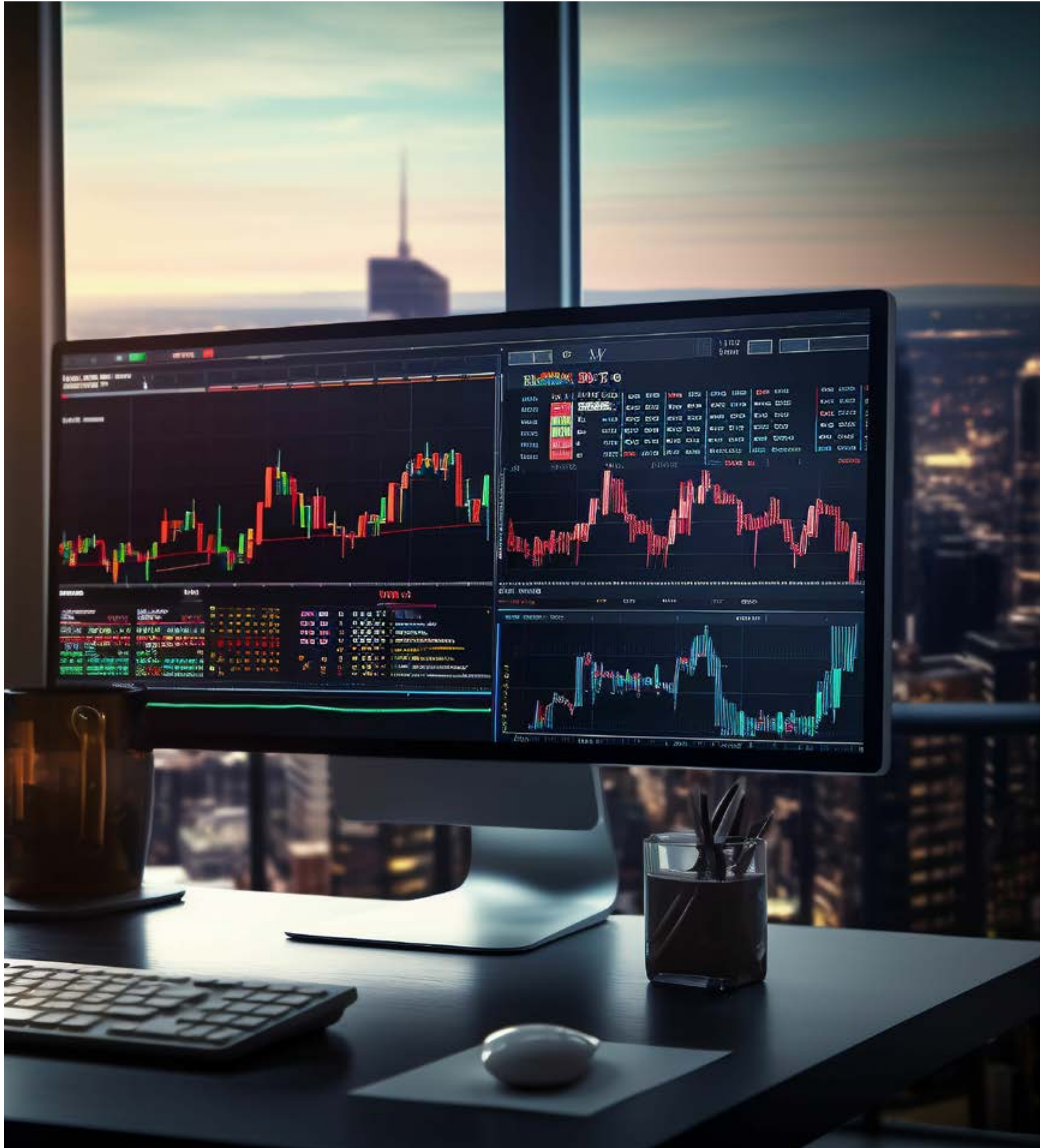

Making margin friction-free

One year on from the UK gilt crisis and the market is already reshaping itself, Martin O’Connell, solutions architect at HQLA^{X}, discusses the significance of a two-part strategy, involving extended collateral eligibility and streamlined operating models, in preparing firms for margin calls

Margin is the grease in the wheels of international capital markets, essential for the efficient functioning of the finance industry, yet it only grabs headlines when it creates knock-on effects elsewhere. A case in point was the experience of liability-driven investment (LDI) funds operating in the UK gilt markets in September 2022, when market events driven by the UK government's mini-budget triggered a sell-off in this historically stable asset class.

LDI funds found themselves suddenly needing to meet margin calls in cash which required them to sell their gilt positions into a falling market, creating a feedback loop which ultimately required central bank intervention to resolve. Processing backlogs, settlement cycles and staffing bottlenecks amplified the situation, disrupting multiple firms' day-to-day operations for multiple weeks.

One year on, we are seeing the market adapting as a result of the crisis. New solutions have been developed which allow firms to collateralise their margin calls more effectively in times of stress.

UK mini-budget and its impact on the gilts market

On September 23, 2022, the newly installed UK government announced a range of economic measures and tax changes in the 'mini-budget'. These measures surprised the capital markets and were interpreted as negative for the British economic outlook, especially for the public debt burden, which was projected to grow with no apparent or credible plan to fund the additional borrowing. Long-term UK borrowing costs rose by around 0.3 per cent in one day. The yield on the 30-year gilt rose by a further 1.2 per cent over the following three days.

The unprecedented volatility had wide-ranging impacts, including on the pound which quickly sunk to its lowest value in decades, and in retail mortgages where interest rates surged to levels not seen since before the 2008 financial crisis. The political cost was high, and over the next few weeks UK government ministers were forced from office as the policy changes were reversed one-by-one in a series of U-turns from the governing party.

Amid the initial volatility, LDI funds were subject to repeated margin calls on their derivative strategies as the market moves drove ongoing re-valuations in their interest rate swap portfolios. When gilt yields rise and their value falls, these funds must typically provide additional margin to their derivative counterparties to support both cleared and uncleared swap positions.

At the time of the crisis the majority of funds' collateral schedules required cash to be posted, with no option to use non-cash when fulfilling margin calls. The funds do not hold large cash reserves so are forced to sell holdings when the demand for collateral exceeds these reserves. The mismatch in collateral eligibility versus fund holdings triggered additional downward pressure on gilt prices as the LDI funds became one-way sellers in the market, a 'feedback loop' which — left unchecked — could have threatened the solvency of the entire LDI market segment.

LDI funds selling holdings depressed gilt prices, raising the prospect of higher margin calls, requiring further asset sales to generate the necessary cash. The UK's central bank stepped in five days after the mini-budget to backstop the market in long-dated gilts by buying assets to stabilise prices and end the cycle.

Sarah Breeden, Bank of England's executive director for financial stability strategy and risk, was quoted: "more widespread collateralisation has increased the sensitivity of liquid-asset demand to market volatility. And, if market participants are not prepared for such calls, their actions to raise cash can squeeze liquidity in already stressed markets, further amplifying shocks."

Preparatory actions on behalf of market participants can be addressed by using a two-part strategy applicable to firms on both the buy-side and the sell-side of derivatives markets: (1) extended collateral eligibility and (2) streamlined operating models.

The baseline capabilities offered by HQLA^X for Variation Margin enable clients to transfer the ownership of securities between each other at precise moments in time, 24 hours a day.

Martin O'Connell
Solutions architect
HQLA^X

Extended collateral eligibility in over-the-counter (OTC) markets can be achieved by extending the range of allowed securities in the Collateral Support Annex (CSA) of the International Swaps and Derivatives Association's (ISDA's) trading agreements. Where, historically, these had been limited to cash-only, a number of the LDI funds have undertaken the process of updating their agreements to ensure assets such as UK gilts, other highly-rated government bonds, or even corporate bonds are included in the eligibility schedules.

This step will serve to make the market more resilient in the face of future volatility and provide firms with a larger collateral pool to source margin collateral from. However, it constitutes only a partial solution. To fully mitigate the risks, firms should also evaluate the sensitivity of their operating models to spikes in processing volumes.

Streamlined operating models around margin processing have progressed significantly since the advent of Uncleared Margin Rules (UMR) regulations pushed firms to consolidate and automate workflows in the derivatives markets beginning in 2016. Many more opportunities for automation remain, and this was highlighted during the gilts crisis when a variety of manual processes were quickly overwhelmed by the volume of activity. Firms seeking to manage these risks while simultaneously reducing their balance sheet costs through optimisation can benefit from using a platform such as HQLA^X.

The baseline capabilities offered by HQLA^X for Variation Margin enable clients to transfer the ownership of securities between each other at precise moments in time, 24 hours a day. Clients can choose to extend the automation around these flows by adding programmable behaviour in their own margin management systems or by working with HQLA^X partners. If an LDI fund and its derivative counterpart bank used the HQLA^X platform, the workflow could be automated.

1. Market moves generate a revaluation of interest rate swaps between the counterparties.
2. The resulting margin call is made from the bank to the fund (or vice-versa) through a shared margin automation service.

3. The margin service communicates the agreed call requirement to an optimisation service (multiple providers exist) which can select from the LDI's available non-cash assets based on pre-agreed eligibility in the CSA.
4. The optimisation service instructs HQLA^X to deliver the selected assets from the fund to the bank, completing the workflow.

This process can work in both directions and can be run as often as the counterparties require. It is feasible to complete the whole sequence in a matter of seconds, depending on the level of automation set in each system. The software and services necessary exist in production today, the legal models are proven, and integration can be accomplished using existing messaging networks to accelerate onboarding.

Significantly, the same models could be extended to support initial margin both in the uncleared and cleared space. The cornerstone of the technology deployed by HQLA^X is the ability to mobilise collateral at precise moments in time. In the cleared space, the latency of the margin call and collateralisation process is critical, with cash calls being triggered if securities are not delivered quickly.

Moreover, when a clearing house issues margin calls to its members who in turn may be required to issue margin calls to their end clients, the overall transaction chain may result in multiple movements of collateral and therefore trigger additional real-time reconciliation requirements. To mitigate the operational risks, many clearing members require clients to post a buffer of assets to them which, in turn, would be deposited with the clearing house to comply with asset protection rules under EMIR, for example. However, this is sub-optimal, particularly if the end client wishes to mobilise assets across different venues or jurisdictions or substitute positions frequently.

Aligned with the model that HQLA^X has already rolled out to support variation margin, HQLA^X is working with market participants and leading clearing houses and CSD's to extend this capability from OTC into cleared margin, enabling participants to move collateral quickly and seamlessly in and out of CCP accounts with minimal operational complexity. The result will lay the foundation for additional automation and optimisation opportunities, further reducing costs for clearing members and their clients in both the operational and balance sheet domains.

Margin Management

HQLA^X

WHAT?

We can leverage our platform for managing margin exposures, both for over-the counter (OTC) and central counterparty (CCP) derivative exposures.

KEY BENEFITS

- Make collateral settlement seamless. On-ledger Transfer accelerates collateral mobility.
- Enable DvD substitution, eliminating the need to over-collateralise when adjusting collateral.
- No market-level settlement so Participants minimise risk of fails.
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Acadia is a leading industry provider of integrated risk management services for the derivatives community. Our risk, margin and collateral tools enable a holistic risk management strategy on a real-time basis within a centralized industry standard platform.

Acadia's comprehensive suite of analytics solutions and services helps firms manage risk better, smarter, and faster, while optimizing resources across the entire trade life cycle. Through an open-access model, Acadia brings together a network of banks and other derivatives participants, along with several market infrastructures and innovative vendors.

Acadia is used by a community of over 3,000 firms exchanging more than $1 trillion of collateral on daily basis via its margin automation services. Acadia is headquartered in Norwell, MA and has offices in Boston, Dublin, Dusseldorf, London, New York, Manila, and Tokyo. Acadia® is a registered trademark of AcadiaSoft, Inc.

Acadia is an LSEG Business within the Post Trade division.

For more information, visit acadia.inc. Follow us on X and LinkedIn

BNP PARIBAS

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BNP Paribas's Securities Services business is a leading global custodian providing multi-asset post-trade and asset servicing solutions to buy-side and sell-side market participants, corporates and issuers. With a global reach covering 90+ markets, its custody network is one of the most extensive in the industry, enabling clients to maximise their investment opportunities worldwide.

As of 31 March 2023, Securities Services had USD 12.96 trillion in assets under custody, USD 2.74 trillion in assets under administration and 9,355 funds administered.

With an in-depth knowledge of global markets across multiple asset classes and currencies, BNP Paribas has supported securities lending and borrowing activities for many years. Our seven trading desks covering all established securities lending and borrowing markets allow us to provide in-depth knowledge of local market trends across multiple asset classes. BNP Paribas' proven track record in the securities lending and borrowing industry is the result of strong trading expertise, robust risk management policy and control, as well as the continuous development of operational efficiencies. We are able to provide both agency and principal lending services and our agency lending capabilities are also available in third-party.

Furthermore, BNP Paribas offers a full suite of repo services including traditional repos, committed repo facilities and sustainable repos. We can answer your liquidity needs through efficient and customised (e.g. tenor, size…) programmes.

Since 2017, we also support our clients with our triparty collateral management services, providing advanced technology and seamless user experience. With this solution, we enable you to connect with a large community of banks, asset owners, asset managers, hedge funds and corporates to manage your collateral for repo, securities lending, uncleared derivatives and other activity generating counterparty risk. Our solution is fully integrated with the rest of the BNP Paribas ecosystem to ease the connection between collateral takers and collateral givers.

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BNY Mellon’s Clearance and Collateral Management business provides global securities clearing and collateral management services in more than 35 countries.

Our collateral services include collateral management, administration and segregation worldwide across repo, securities finance and non-cleared derivatives.

In addition, we are the leading provider of U.S. government securities clearance and settlement services, supporting new Treasury issuance and secondary market activity.

In 2021, we processed approximately $10 trillion in securities transactions per day on behalf of our clients and ended the year with a record $5 trillion of collateral on our global platform.

We offer innovative solutions, expertise, operational excellence and a resilient infrastructure which help financial institutions and institutional investors with their financing, risk and balance sheet challenges.

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Broadridge Financial Solutions, a global Fintech leader with over $4.5 billion in revenues, provides the critical infrastructure that powers investing, corporate governance, and communications to enable better financial lives. We lead business transformation and deliver technology-driven solutions for enriching client engagement, navigating risk, optimising efficiency, and generating revenue growth, helping our clients get ahead of today's challenges with products that streamline and simplify the Securities Finance industry.

Broadridge Securities Finance and Collateral Management (SFCM) offers a suite of global, front to back office securities finance solutions for buy side and sell side. Both our full service integrated Mainline solution and new FastStart rapid spin up operating solution both support agency and principal trading of equities and fixed income securities across securities lending, repo, collateral management, collateral optimisation, and end to end transaction reporting solutions. Broadridge's solutions help customers comply with new regulations, increase efficiency, improve strategic decision making and make more intelligent use of capital, balance sheet and liquidity.

In addition, Broadridge provides project management, consultancy, business analysis and testing support to augment firms' internal regulatory project teams and help them comply with the rules in a timely manner. Broadridge's technology and operations platforms underpin the daily trading of on average more than US$10 trillion of equities, fixed income, and other securities globally.

For more information about Broadridge and our proven securities finance, collateral management, and transaction reporting solutions, please visit our website.

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Founded in 2014, Cassini Systems offers an award-winning derivatives margin analytical platform that provides the industry's only front-to-back margin and cost analysis across the entire lifecycle of a trade. Cassini users can calculate any margin on any cleared or uncleared derivatives asset; analyze drivers and movement in margin exposure; reduce Initial Margin levels; and maximize margin efficiency with the firms' industry-leading, advanced algorithms.

Cassini services have a proven track record of enhancing portfolio returns at every point in the daily business cycle, empowering traders and portfolio managers to analyze instantly in the pre-trade stage the all-in, lifetime cost of a transaction. Top-tier hedge funds, asset managers, and global banks rely on Cassini for powerful, flexible, automated tools to manage their portfolios of over-the-counter and exchange-traded derivatives products. Cassini was named Best UMR Service of the Year in the Risk Markets Technology Awards 2022 and the Derivatives Technology Provider of the Year by the 2022 GlobalCapital Derivatives Awards.

CLOUDMARGIN

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CloudMargin created the world's first cloud-based collateral and margin management workflow tool that centralises, connects, automates, and optimises collateral management from pre-trade analytics to settlement and reporting. The company's Software-as-a-Service (SaaS) model helps leading financial institutions globally, including banks, asset management firms, pension funds, hedge funds, insurance companies, and asset servicers, reduce costs, mitigate risks, and increase the efficiency and effectiveness of collateral usage across the firm. Since 2015, CloudMargin has earned more than 25 industry awards and honours for innovation and best-in-class technology. For further information, please visit www.cloudmargin.com

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HQLA^{X} is an innovative financial technology firm that leverages Distributed Ledger Technology (DLT) to bring game-changing efficiencies to the securities finance and repo industry. Our core clients are banks and asset managers active in the global securities finance and repo markets, and our unique platform enables market participants to execute frictionless, precise and real-time transfer of ownership of securities.

J.P.Morgan

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As one of the world's leading global custodians operating in over 100 markets, J.P. Morgan offers an industry leading and innovative suite of settlement, asset servicing, tax, FX, collateral management, agency securities finance, cash and liquidity products. J.P. Morgan understands the increased convergence between the securities finance and collateral ecosystem, and since 2016 have organised these two businesses together under the Trading Services umbrella.

Our Agency Securities Finance business enhances portfolio returns and provides customized solutions linked to award winning global equity and fixed income trading capabilities for securities held in custody at J.P. Morgan or on a non-custody/third-party basis. Individual program parameters are supported by expert service and technology that delivers holistic trading, risk, reporting, analytics and market intelligence from five trading desks across 38 lending markets.

A suite of Collateral Services products leverage a single global collateral platform, designed to meet local needs and efficiently manage collateral using innovative solutions for both collateral providers and receivers. Banks, broker-dealers, asset managers, insurers, central banks and pension funds can optimize their portfolios with sophisticated analytics and eligibility tools, bilaterally or via tri-party. Global capabilities, delivered locally to support institutions in managing collateral around the world or onshore to meet increasingly complex financing, liquidity and regulatory requirements.

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When it comes to collateral management, existing approaches and tools are often no longer fit for purpose. The Uncleared Margin Rules (UMR) are a pressing challenge. Systems are fragmented. Processes depend on inefficient and error-prone spreadsheets. As buy-side investors contend with the ebb and flow of the markets, the support of a trusted partner and access to advanced technology solutions have never been more important.

We know that you have specific financing needs that can change daily. Our team can help you capitalise on opportunities through our flexible and risk-based approach.

We understand your objectives and draw on our innovative product suite to provide the optimal solution to minimize costs and maximise returns. With more than 40 years of industry experience, we have extensive industry knowledge and a strong commitment to serving our clients.

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Tonic is an expertise-led Capital Markets consultancy, formed in 2018.

We provide a superior service model for our clients, by leveraging genuine expertise to accelerate business objectives and financial growth. As a result, we build long-term, trusted client partnerships.

At our core we are a team of transformation specialists, with deep expertise across domains, regulations and market vendors.

For that reason, we are a transformation partner to define and execute complex infrastructure transformation, customized to your firm's unique needs.

We accelerate high-quality, end-to-end solutions, reflecting our clients' bespoke set-up and the complexities of the financial markets.

We provide a family of Tonic services - Advise, Transform, Educate and Operate - across a growing set of high-focus domains, including Margin, Post-Trade, Treasury, Market Risk, Legal, Onboarding, Digital, Sustainability and More.

Our global client base includes dealer banks, major custodians, buy-side firms, digital firms (crypto, tokenization and DLT) and technology vendors.

Our Tonic principles - Client First, Expertise-Led, Integrity, and Continual Improvement - underpin our business model and ensure we always do business the right way.

VERMEG

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VERMEG is a specialized software house covering three main market segments in financial services: Collateral Management & Asset Servicing, Regulatory reporting and Digital transformation.

VERMEG is the global leading provider of Collateral Management solutions for Central Banks. Its business solutions have been designed to address Sell side, Buy side and major CSDs & CCPs' challenges linked to the transformation of the financial services industry, but also to support these financial institutions in the overhaul of their information system through cost reductions and time-to- market control.

In addition to offering standard software solutions that meet evolving digitized needs, VERMEG offers tailor-made solutions based on our own tools, project and business expertise.

VERMEG has over 1600 employees and supports more than 550 clients in 40 countries.

J.P.Morgan

Empowering your collateral

| Optimization | Mobilization | Integration

J.P. Morgan's global collateral platform is designed to meet your local needs and power your collateral universe. Our data-driven solutions efficiently manage regulatory and operational complexity. We maximize efficiency, minimize costs and mitigate risk, providing you with the platform to excel.

Contact your representative to learn how we can help or visit www.jpmorgan.com/securities-services

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HQLA^X

Redefining Collateral Mobility

Frictionless, precise and real-time transfer of ownership of securities

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