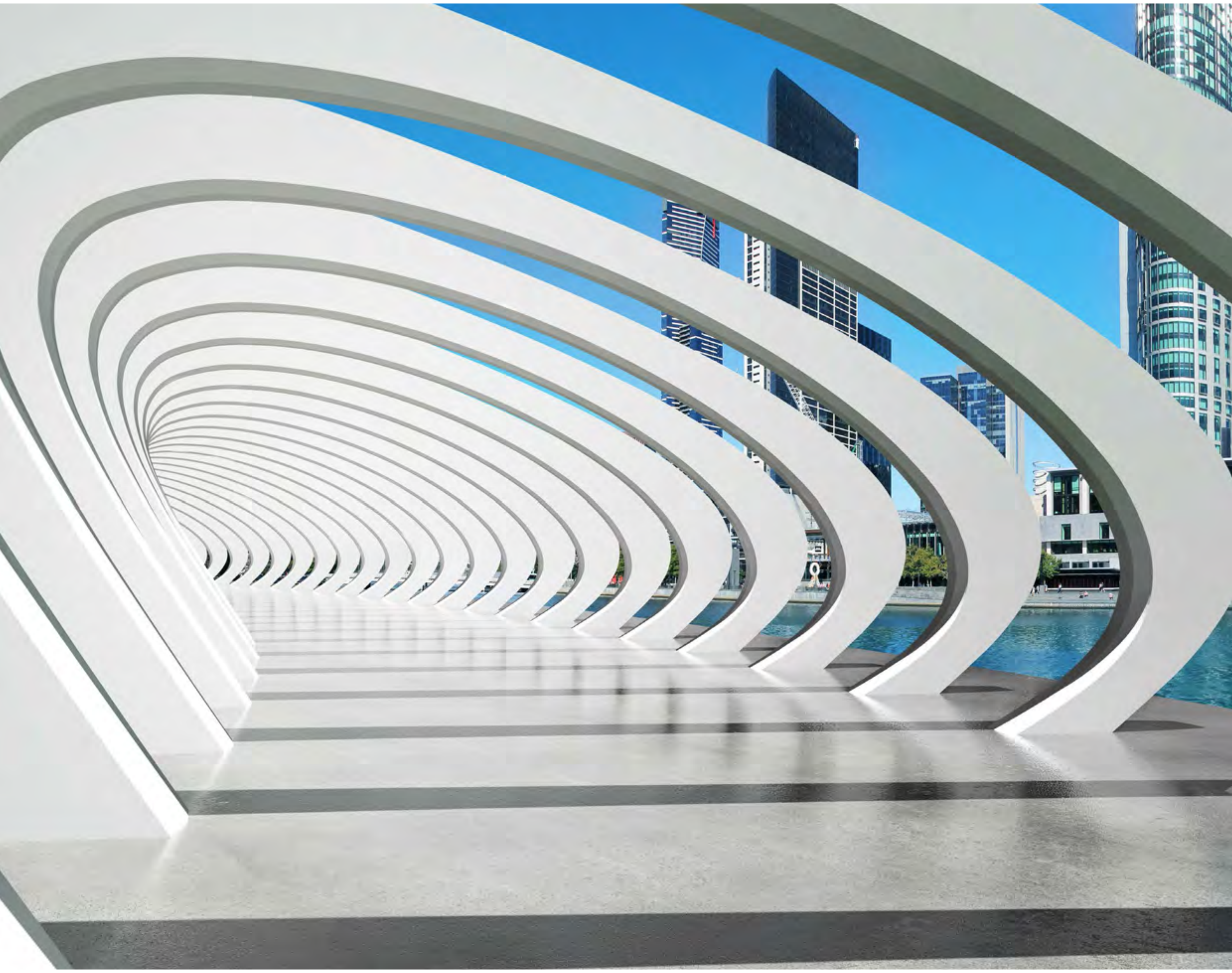

Collateral Solutions for a Changing Market:

Collateral Management and Collateral Segregation

July 2016

BNY MELLON

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SECTION 1 Introduction

JAMES MALGIERI

Executive Vice President
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"Collateral Solutions for a Changing Market: Collateral Management and Collateral Segregation" is the third in our series of papers on collateral management. In the first paper, "Collateral Management: A Review of Market Issues" BNY Mellon and The Field Effect examine the development of collateral management and identify key issues in the current collateral landscape including the anticipated difficulties in accessing supply. The second BNY Mellon/Field Effect paper "Collateral Management: Navigating the Regulatory Maze," shines the spotlight on specific industry regulations and directives by distilling their aims and objectives and considers the current and future collateral impacts and consequences. In this third paper, we explore a range of innovative solutions available from BNY Mellon that can help financial institutions and institutional investors meet today's collateral challenges.

Collateral plays a central role in today's financial marketplace. Regulation and changing market dynamics have moved collateral into the spotlight, creating new challenges for market participants as they pursue their trading and investment strategies. Indeed for collateral management, the move continues from a classic back office processing function to more of an all-encompassing back-middle-front office set of services, aims and objectives. Financial institutions and broker-dealers face increasing capital costs which have affected their trading activities and made them more selective in how they use their capital as collateral. This behaviour change is having a ripple effect throughout the market and is transforming how institutional investors (e.g., pensions, insurance companies, asset managers and corporate treasurers) view and generate value and apply collateral. Today's market provides opportunities for institutional investors to become more active in collateral transformation and market supply, a role traditionally seen as a function of the banks. In addition, there is a growing list of transactions requiring collateralisation which is transforming the institutional investor business model. With these trends, institutional investors will need to spend more time, energy and talent on managing collateral and understanding how to use it efficiently and effectively.

Many financial institutions and institutional investors are also facing complex operational and regulatory requirements across multiple jurisdictions, and the cost and speed of regulatory change is proving a challenge to all market players. Many are discussing the feasibility of reusing or leveraging existing business and operational flows rather than trying to design, build or buy new infrastructure and processes for new regulatory requirements. We believe that many of these firms are looking for internal synergies and not, perhaps, something new and or complex, with a preference in some cases for standardisation when possible. We are finding that the larger financial institutions, broker-dealers and asset managers are looking to leverage the existing set-up of their repo and securities finance businesses to cover exposure generated elsewhere, such as with OTC derivatives, as they already have a robust technology and operational infrastructure in place to support large transaction volumes. The majority of other institutional investors, however, require more support to manage collateral financing, valuations, monitoring and reporting. These post-trade activities are more efficiently met by partnering with service providers who have effective solutions, established track records and a global reach to support asset owners where they do business.

I think it is fair to say that we are at somewhat of a tipping point for the collateral management business and those firms that operate in this market. The raft of regulatory driven changes of recent and coming years has forced many to rethink what they have to do to succeed and perhaps create opportunities from what initially appear as challenges. The reality is that no one firm can 'do it all alone,' and in many cases it is acceptable to partner with others or outsource functions for the best results. I believe that the rise of market infrastructure and emergence of new technology and solution providers reflect this neatly, and while we are going through a transition period, the future is positive and will certainly be different from today.

In the following pages, we explore the range of solutions that BNY Mellon has created working side by side with our broker-dealer, financial institution and institutional investor clients. We continue to innovate as these market participants seek solutions to help them operate effectively in today's changing market.

Sources and Uses of Collateral

SECTION 2 Challenges and Solutions

STAFFAN AHLNER
Head of Collateral Management Product
BNY Mellon Markets

DOMINICK FALCO
Head of Collateral Segregation Product
BNY Mellon Markets

As new regulations come into force, the impact on the demand for and supply of collateral is causing the value of collateral to increase, resulting in a significant shift in the structure of the funding market. In this section we list for you a range of ideas and options that may help you to manage your collateral process with heightened efficiency.

The Challenge:
Finding the Right Collateral for You

HELPING TRANSFORM ASSETS INTO THE RIGHT COLLATERAL

Collateral demand is on the rise due to regulatory requirements, including liquidity ratio calculations and the upcoming margin rules for over-the-counter (OTC) derivatives trades. In particular, high quality liquid assets (HQLA) (e.g., cash and US Treasuries) are in shorter supply as regulations require that banks and broker-dealers keep HQLA on their balance sheets rather than using them as collateral thereby suppressing HQLA availability and velocity. European and US quantitative easing (QE) programmes have further affected HQLA availability by converting HQLA in the market to excess balance sheet deposit liabilities with the banks.

Furthermore, re-use constraints on posted margin “lock up” the collateral with third-party custodians which can also restrict collateral mobility.

With the growing demand for quality collateral and the increasing pace of regulatory change, market participants are seeking new collateral sources and ways to help them manage the transformation process. BNY Mellon helps clients manage regulatory requirements and capital needs and optimise their portfolio assets by continually expanding the supply of assets accepted in its collateral management programme. Please see the following table for examples of how BNY Mellon expands the supply of collateral.

BNY Mellon Solution:
Expanding the Supply of Collateral

Money Market Funds[1]	Collateral providers on BNY Mellon's tri-party platform can invest cash into a broad array of money market mutual funds accessed via BNY Mellon's LiquidityDIRECT℠ investment portal with units from these funds then posted as collateral. BNY Mellon provides the operational efficiency that can help with the: – initial investment into the money market mutual fund; – movement of fund units into collateral accounts; and – posting of fund units as collateral. The process takes place in a straight-through processing environment via an integrated technology platform.
Exchange Traded Funds (ETFs)	When ETFs are used as collateral in tri-party, we simplify the process by offering Markit ETF collateral lists. With these lists, clients can quickly add groups of ETFs to their collateral schedules versus having to choose each ETF individually. For more flexibility, collateral receivers can also exclude specific ETFs from each of the Markit lists. Markit publishes its ETF collateral lists daily and makes additions to the lists monthly according to their criteria.
Chinese Renminbi Assets	Offshore Chinese Renminbi cash[2] can be used in repo transactions and offshore Chinese Renminbi assets[3] can also be used as collateral in BNY Mellon's collateral management programme. The collateral assets in scope include offshore Chinese Renminbi denominated bonds (Dim Sum Bonds) issued, listed and settled in Hong Kong and offshore Chinese Renminbi denominated certificates of deposit settled in Hong Kong. All offshore Chinese Renminbi securities accepted by BNY Mellon settle at custody accounts held with the Central Moneymarkets Unit (CMU) of the Hong Kong Monetary Authority.
Covered Bonds	Another collateral option is covered bonds, specifically Danish mortgage bonds. A limitation in using Danish mortgage bonds as collateral has been the quarterly drawing procedures whereby a percentage of a bond's issue would be called weeks prior to record date before being redeemed early. The new partial redemption model was introduced in 2015 to streamline the process, and we refined our collateral management procedures to allow for only the redeemed portion of a bond to be excluded from the allocation process on record date. The unredeemed portion of a bond issue can be allocated over record date. Thus the use of Danish mortgage bonds can be maximised for the entire year.

"We see great potential in ETFs as new collateral; they are liquid, fungible and easy to trade. By offering Markit ETF lists as part of our overall collateral management solution, clients can seamlessly add these assets to their eligibility schedules." — Joe Keenan

"Our clients need to view their collateral holistically across their organisations, but there are costs associated with this holistic view – for example the costs associated with buying new technology and then deploying and maintaining it. To help manage these costs, clients can consolidate assets on BNY Mellon's collateral management platform." — John Templeton

The Challenge:
Optimising Collateral and Finding Efficiencies

With regulation and market changes placing a premium on collateral, market participants need to be more efficient when financing transactions. Allocating the least expensive collateral to each trade, having a full view of which collateral is being used and which is available and applying efficient collateral management techniques to a variety of transactions all help market participants use their eligible assets efficiently and manage financing costs.

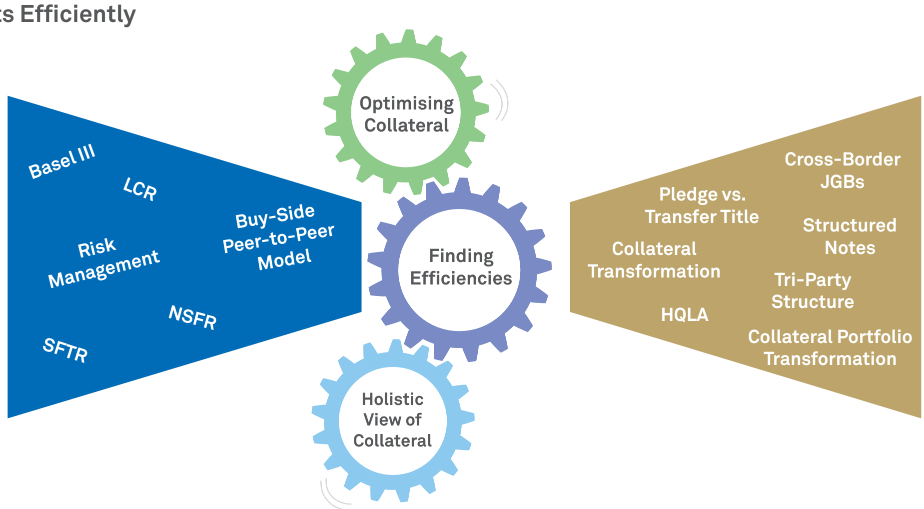
Due to regulation, broker-dealers and financial institutions continue to deleverage and use longer-term financing structures rather than short-term wholesale funding. Heightened balance sheet controls make it ever more important for them to deploy collateral efficiently across their global asset pools. In response, broker-dealers and financial institutions are finding new trading techniques which are more balance sheet friendly and more efficient in terms of collateral usage. Swaps, secured notes and alternative collateral forms (such as money market funds described above) may help with balance sheet management and are rising in popularity. In addition, some clients are exploring the use of collateral pledge structures as opposed to transfer of title in order to achieve better capital treatment for transactions.

We are beginning to see institutional investors exploring how to use the tri-party model in addition to the long established bilateral processing model, providing them with a chance to leverage proven tools and technology that broker-dealers have been using over the past two decades.

With broker-dealers being more selective in terms of financing, institutional investors may also find further opportunities in a peer-to-peer relationship, in which these buy-side firms are both the collateral provider and receiver. Institutional investors are also emphasising risk management, asset optimisation and viewing collateral management holistically across the enterprise, making sure that the right assets are in the right place at the right time.

The move to the tri-party model continues as a means to aggregate suitable collateral, optimise its selection and ultimate allocation. While the use of a tri-party collateral management model was established in support of repo and securities lending, we see a future where collateral in a tri-party model is used to cover a range of exposures (cross-product tri-party). BNY Mellon is working alongside its clients to help adopt new optimisation techniques into day-to-day operations. Please see the following table for examples of BNY Mellon's strategies for optimising collateral and finding efficiencies.

Using Assets Efficiently



BNY Mellon Solution:
Strategies for Optimising Collateral and Finding Efficiencies

Korean Securities	BNY Mellon is invested in offering collateral pledge structures in multiple jurisdictions. Japan and Korea are the latest markets to be added under this structure. In Korea, our solution is built upon our collateral management programme's efficiencies. The collateral provider holds a pool of available collateral that can be used in a variety of pledge secured transactions, and this collateral pool is held in a custody account by BNY Mellon. Throughout the term of the trade, BNY Mellon performs standard tri-party servicing which includes marking collateral to market daily, applying concentration limits, margins and other eligibility criteria, effecting substitutions as necessary and providing collateral projections. **Focus on the Balance Sheet:** Pledge agreements obtain better capital treatment, so our pledge transaction processing solution helps with balance sheet management.
Structured Notes	Market participants can also look to BNY Mellon for alternative financing solutions such as structured notes. With structured notes, a bank/broker-dealer works with us to issue the bonds/notes. The collateral that is being used to secure the notes is then maintained on our collateral management platform. Banks/broker-dealers can use structured notes to diversify their funding options and potentially access a broader pool of cash providers who may not participate in the repo market today but still require investment solutions when they are long cash. **Focus on the Balance Sheet:** Structured notes are off-balance sheet funding options which appeal to broker-dealers who are managing Basel III requirements.

"Regulation and its effects on the balance sheet are causing banks and broker-dealers to review their short-term liquidity options. BNY Mellon helps them to issue structured note programmes as a funding alternative." — Gesa Benda

"Our Korean pledge solution and our ability to allocate Japanese equities over record date are two solutions developed in Asia that can help our clients to efficiently mobilise and then best optimise their collateral pool." — Natalie Wallder

BNY Mellon Solution:
Strategies for Optimising Collateral and Finding Efficiencies cont'd

Cross-Border Use of Japanese Government	BNY Mellon supports cross-border allocation of JGBs and the reuse of Japanese Government Securities collateral for collateral receivers. These capabilities give clients more financing opportunities using Japanese Government Securities. Adapting our collateral management programme to accommodate JGBs helps both buy-side participants and broker-dealers address market challenges. For broker-dealers, JGBs are a liquid and inexpensive option to use as collateral. For asset owners long in JGBs, the cross-border solution helps these securities generate yield.
Collateral Optimisation Technology	BNY Mellon's collateral optimisation technology has redefined collateral optimisation for our collateral management clients by incorporating regulatory requirements and bringing balance sheet relief. Our collateral optimisation technology can help clients: – increase the amount of unallocated collateral in a client's account; and – maximise the potential for successful collateral substitution. The calculations within our optimisation engine aim to reduce overcollateralisation and/or undercollateralisation. Clients also have access to detailed reporting for a real-time view of positions and collateralisation throughout the business day. **Focus on the Balance Sheet:** BNY Mellon's optimisation technology helps clients manage Liquidity Coverage Ratio (LCR) balance sheet requirements. During the collateral allocation process, the engine takes into account trade duration, preserving HQLA for short-dated trades and, if possible, leaving HQLA unallocated.

"The need for Japanese Government Bonds (JGBs) as collateral is increasing. BNY Mellon has been accepting JGBs as collateral for more than a decade, and our JGB solutions are helping our clients with this recent trend." — Toru Hanakawa

"Our clients seek to reduce balance sheet cost and maximise collateral value. To accomplish this they must source, aggregate and optimise collateral efficiently. BNY Mellon provides the tools and infrastructure globally to move collateral assets where they need to be, when they need to be there."— Drew Demko

The Challenge:
Managing Initial Margin/Variation Margin Requirements

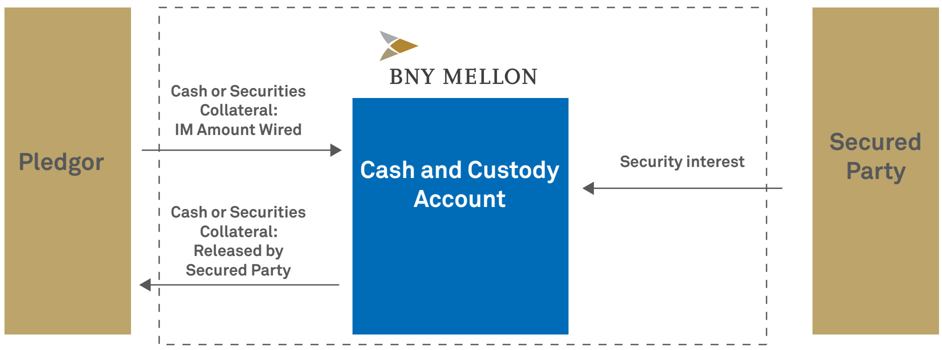
Global regulatory reform is reshaping and redefining the way institutions are required to post initial and variation margin, manage collateral and segregate assets. While the implementation dates for the changes and new requirements vary, there will be a significant impact on market participants' business models. As the new initial margin requirements are implemented beginning September 2016, we are shaping solutions that maintain a high degree of automation while focusing on controls, risk mitigation, efficiency and transparency.

BNY Mellon Solution:
Tools for Addressing New Margin Requirements

Bilateral Margin Segregation – Managing Your Margin Positions While Reducing the Extent of Your Counterparty Exposure
The posting and receiving of collateral is new to many institutional investor firms. Issues with data management (security ISINs reconciliations), cash management and inventory management make "cash collateral" easier to use in current markets. These issues need to be addressed before posting non-cash collateral can be done efficiently.

We offer a margin segregation platform that delivers custodial services in support of initial margin segregation for both cash and non-cash collateral. Using this platform helps clients with collateral segregation by providing:

- transparency and automation through portal access;
- electronic default notification functionality;
- flexible reporting and formats;
- integration with BNY Mellon cash investment technology; and
- electronic instruction capability including SWIFT.

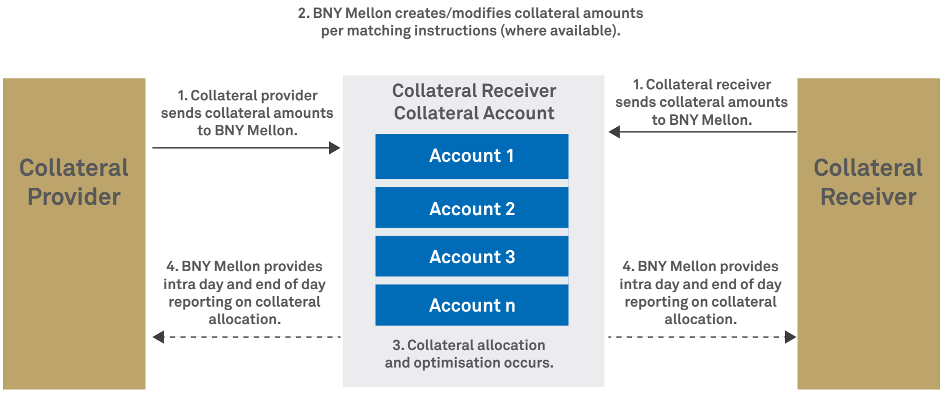


Tri-Party Collateral Segregation – Segregating Pledged Collateral Across Multiple Counterparties Efficiently

For more than 30 years, investment banks and broker-dealers have been using tri-party collateral management for repo, securities lending and other collateral management obligations. The tri-party structure now also allows them to post and receive margin on derivatives and structured trades and integrate operational processes to increase the speed and automation of moving collateral. With the growing volume of collateral calls and collateral eligibility schedules that need to be managed, auto allocation and asset optimisation are preferred with the eligibility checking and optimal asset allocation handled within a tri-party model.

Using the tri-party model, we can help with posting initial margin/independent amounts to swap counterparties. We can consolidate the securities collateral allocation process across repos, OTC derivatives, TBAs or any other instrument requiring collateralisation. The initial margin/independent amount, in the form of securities, is held in a collateral account at BNY Mellon while allocation is efficiently managed through optimisation, eligibility and sufficiency screening criteria. Using this platform offers many benefits including:

- transparency and automation through portal access;
- flexible reporting and formats;
- streamlined collateral allocation process;
- optimisation capability through customisable rule set(s); and
- collateral valuation.



"As initial margin/variation margin requirements come into play, financial institutions and institutional investors need to decide where they are going to set up their operational capabilities around margin processing. BNY Mellon can help with sourcing, optimisation, financing, segregation and administration enabling clients to focus on their core portfolio needs." — Sam Jacob

"Foreign exchange transactions are going to be subject to more margining and collateral movement. BNY Mellon can help clients navigate this new landscape and find foreign exchange and collateral solutions to meet their needs." — Melanie Wong

HOW TO BUILD A COLLATERAL SEGREGATION SOLUTION

Margin segregation rules require solutions that maintain a high degree of automation while focusing on controls, risk mitigation, efficiency and transparency. As market participants reevaluate their margin and collateral management practices, they need to focus on solutions that can help provide automation, security and clarity.

A Collateral Segregation Solution – What Should It Include?

The right segregation solution will not come in one size fits all. Key considerations for an effective segregation solution include the following:

1. Ensuring the chosen and eligible asset choices are posted to each counterparty
2. The level of assurance for the safe return of assets in a timely and efficient manner in the event of a counterparty default
3. The ability to move assets quickly/effectively and, in certain cases, outside of market hours
4. The tools and channels to allow the proactive management of the assets held within a "Segregation Network" – the different segregated custody accounts required versus each counterparty
5. Impact of scale of solution on operations, infrastructure and reporting and data management
6. Cost of solution

Choosing A Service Model – Full Or Modular Approach?

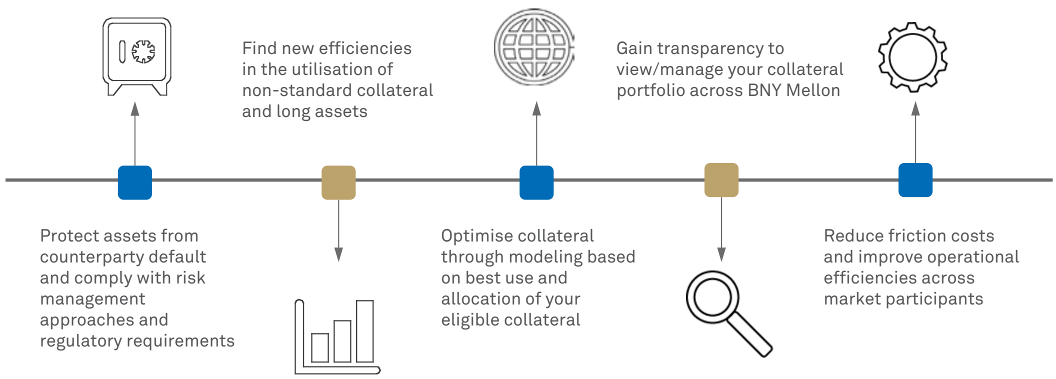
BNY Mellon can offer a simple user interface to move collateral into a segregated account. This segregated account will hold the amount of collateral due to each counterparty as well as the acceptable collateral types. We also provide each counterparty with a process to facilitate the return of unneeded or excess collateral back to the collateral provider.

For clients looking to use a service provider for more elements of the collateral process, we can also help:

- maintain information on which types of collateral are eligible to each of the counterparties;
- provide data to help you determine if there is sufficient eligible collateral;
- maintain automated parameters as to which eligible collateral is most efficient to use to meet obligations; and
- systemically move the identified pieces of eligible collateral to segregated accounts opened at BNY Mellon.

Powering Each Business Model

BNY Mellon's suite of collateral segregation tools, technology and solutions are designed to help market participants to:



BNY Mellon's collateral segregation services combine the safety of segregated accounts with dynamic system capabilities that help optimise collateral use while also facilitating the mitigation of counterparty, market and operational risk.

COLLATERAL ADMINISTRATION

It is important that collateral is efficiently posted to cover exposures associated with derivatives, repo, securities lending, forward-settling mortgage-backed securities transactions, and any other type of bilateral exposure. BNY Mellon's collateral administration solution can help clients manage the collateral for these bilaterally traded transactions. We offer a range of margin management tools to help monitor margin parameters, calculate margin status and segregate margin. This solution helps clients maximise margin calls and minimise margin movements. A third-party electronic messaging service, embedded into our system, facilitates the issuance and response to calls allowing straight-through processing (STP). This functionality supports the exchange of critical information on exposures and commitments in a real-time and secure manner. Our capabilities help support efficient margin mobilisation and risk mitigation through a hierarchy of activities covering:

- data capture, including agreements and positions;
- daily mark-to-market of collateral;
- margin call processing;
- application of security and cross-currency haircuts;
- substitution of eligible collateral;
- assess eligibility of proposed collateral;
- settlement;
- transaction and exposure reporting; and
- collateral safekeeping (where requested).

"Clients need to make sure that they are adequately collateralised at any point in the day, and they are seeing a higher level of engagement from their credit and risk departments. BNY Mellon can help through our collateral valuation and reporting capabilities." — Brian Leddy

"In Asia-Pacific, there's the added complexity of clients having different entities across various jurisdictions. We work with clients to set up each entity on our collateral management platform so that it can take advantage of our collateral eligibility, auto allocation and asset optimisation capabilities." — Filippo Santilli

The Future of Wholesale Funding Markets

A US Perspective

BRIAN RUANE

CEO of Broker-Dealer Services

“Collateral is the new cash – the ongoing shift away from the traditional uncollateralized world, particularly in the derivatives space, means that the demand for collateral and high quality liquid assets, and its mobility, is outpacing the demand for all other asset types.

The creation, adoption, and operationalization of regulations have dominated financial literature since the Financial Crisis. The narrative around wholesale funding, repo and collateral management may move away from the pure macro effects of regulatory reform to include firm specific strategies for implementation and the re-emergence of market driven change. We believe that future changes in collateral management are more likely to be driven by internal strategy and capital allocations than by overt regulatory pressure.

The complex array of market priorities highlights the importance of having a comprehensive roadmap to help guide a firm s collateral strategy. An increased focus on an enterprise-wide view of collateral management and the introduction of cleared repo products are expected to be at the forefront of change, helping markets and clients alleviate pressures from risk, regulation, and operational burdens. The ability to mobilize collateral across legal entities and countries is becoming as important today as payment systems have been in the past.

We believe that our position as both the US s largest tri-party agent and holder of collateral[4] gives us the unique perspective to understand the evolving market and to provide global collateral management solutions. To highlight this, we published a Thought Leadership paper titled “The Future of Wholesale Funding” in which we concluded that:

- US Tri-Party Reform materially improved the safety and soundness of the financial system.
- The Federal Reserve Reverse Repo programs are important to the market and their material involvement is expected to remain a near certainty for the foreseeable future.
- Expanding the availability of cleared repo or unique central counterparty clearing house (CCP) structure is desired by market participants and is the clearest path to giving global systemically important banks (G-SIBs) balance sheet relief.

Given the critical importance of wholesale funding in Europe and Asia-Pacific, the impact of US reforms will inevitably ripple across other financial markets.

Download the full paper at www.bnymellon.com/wholesalefundingmarkets.

“Our collateral management solution for segregation is a great example of where we can add value. Our broker-dealer clients are already set up in our collateral management programme and have the infrastructure in place.” — Jeannine Lehman

“Broker-dealers are interested in diversifying their cash provider base and adding tenor to their funding portfolios. They can leverage our global market presence to find a more diverse base of cash providers.” — Ken McDonnell

SECTION 3 Case Studies

BNY Mellon is a pioneer in providing collateral solutions around the globe. Please read the following case studies and discover how our collateral ideas, insight and vision can help you keep moving forward with the markets, and along the way, help to improve the efficiency of your collateral management activities.

Case Study: Managing Balance Sheet Requirements by using Money Market Funds as Collateral

The Challenge: Regulatory change made hedge fund client cash too expensive for broker-dealers to hold. The dealers still want access to hedge fund assets to help them finance transactions, but they want to move the cash off balance sheet.

The Solution: BNY Mellon's LiquidityDIRECT cash investment portal allows hedge funds to invest their cash in money market funds, and these fund shares could then be used by broker-dealers to collateralise transactions on BNY Mellon's collateral management platform. LiquidityDIRECT provides access to a broad array of funds with multi-currency options and robust reporting. Onboarding is a straightforward process with streamlined documentation requirements, minimal operational set-up and no new technology to install.

Benefit – The Bottom Line: BNY Mellon's capabilities around money market funds and collateral facilitate balance sheet optimisation.

Case Study: Consolidating and Automating Collateral Management for OTC Derivatives

The Challenge: A fund, which was an active user of OTC derivatives, had three asset managers. Collateralisation for the derivatives trades was handled separately by each manager which resulted in the fund having three sets of margin calls to reconcile, reduced cross-netting opportunities and increased cross-settlement risks.

The Solution: Collateral administration for the fund's OTC derivatives activity was consolidated at BNY Mellon. We provided ISDA/CSA support, dispute management, collateral valuation, reporting and the ability to customise the margin and collateral process via a web-based interactive workflow.

Benefit – The Bottom Line: The fund gained greater transparency and operational control as well as simplified margin call reconciliation. In addition, the fund could better manage netting allowances which helped reduce transaction charges and cross-settlement risks.

Case Study: Helping Hedge Funds Mitigate Counterparty Exposure

The Challenge: Prior to 2008, hedge funds posted collateral directly with their prime brokers, thus concentrating a significant amount of cash and securities among a small group of counterparties. After the market crash, counterparty exposure came under intense scrutiny by both the funds and their underlying investors, and hedge funds needed to find a new collateral model that would help diversify their counterparty profile and mitigate risk.

The Solution: BNY Mellon's bilateral margin segregation model was the solution. Placing collateral with BNY Mellon helped the hedge fund diversify risk away from their prime brokers, gave them transparency into their collateral assets and provided flexible options for investing cash collateral. This model was easily replicated across each fund/dealer relationship and helped to satisfy underlying investors' concerns about counterparty risk.

Benefit – The Bottom Line: BNY Mellon's bilateral margin segregation product helped hedge fund managers mitigate counterparty risk.

Case Study: Helping Clients Source HQLA

The Challenge: With LCR requirements and the expanding role of central clearing for transactions, HQLA are in high demand. In addition, broker-dealers are increasingly interested in term financing to aquire HQLA.

The Solution: Through BNY Mellon's agency securities lending programme, we facilitate asset owners lending HQLA (e.g., US Treasuries) against equity collateral provided by the borrower. Increasingly, these are structured as evergreen transactions which help with the broker-dealers' need for term financing. These trades can also leverage BNY Mellon's global presence and give borrowers and lenders flexibility outside of the markets in which they principally trade. We work closely with clients and risk/credit personnel so that these transactions fall within the participants' securities lending programme parameters.

Benefit – The Bottom Line: Broker-dealers have the potential to optimise their collateral assets globally to help source the HQLA they need. Asset owners have the opportunity to generate incremental revenue from lending HQLA.

"In Europe we are seeing more buy-side clients coming to the table as investors just at the time when the sell side is reviewing their business model due to regulatory pressure. Other clients, driven by yield, are looking to manage their collateral more efficiently. As these trends develop, we're offering solutions such as money market funds as collateral." — Ingrid Garin

"Asset managers look to us to provide expertise on managing their daily margin needs. BNY Mellon's solutions allow our clients to devote more resources toward driving performance, new product development and distribution."
— Matthew Joyce

SECTION 4 Consultant's Corner – APAC, EMEA and US

Consultants are also speaking to their clients about collateral. Thomas Ciulla (TC), PricewaterhouseCoopers, New York, Nick Nicholls (NN), Business Consulting Lead, GFT, UK, and Kishore Ramakrishnan (KR), PricewaterhouseCoopers, Hong Kong, describe the trends they are seeing around collateral management and collateral segregation.

Q. What kind of engagements are you usually called in for related to collateral management and segregation?

NN – Our clients are predominantly broker-dealers and European investment banks. With the larger broker-dealers, the focus is optimisation and meeting regulatory compliance while some of our tier 1 bank clients are looking to move to an enterprise-wide collateral strategy to manage both counterparty credit and funding. We also work with clients as they review their current collateral management process. These clients may have governance issues or process gaps and are often looking to develop a best practise within their organisation.

Clearly, buy-side institutions are impacted by whatever constraints the banks have to endure. Our focus with those clients at the moment is explaining or reinforcing the potential impact of regulatory reform on their business

TC – PwC has had a dedicated collateral management and liquidity practice for over a decade and in short, we do everything but security perfection. Across the sell side, buy side, and custody banks, we are helping clients in a variety of areas. For some, we are developing strategies to meet the impending bilateral margining rules, but we are also breaking down cross-product silos (OTC derivatives, repo, SBL) to achieve liquidity and operational efficiency. Improving efficiency, while meeting regulatory mandates, is particularly important with sell-side clients who are invariably under pressure to reduce costs (often through shared services and utilisation).

We also work closely with buy-side clients. For many of these clients, “repapering” ISDA CSAs is a priority. For others, who have not exchanged margin through automation as mandated by regulators, we are helping them move from spread sheets to either vendor packages or outsourced solutions (very often from service providers such as BNY Mellon).

KR – Additionally in Asia, each of the market participants have a different set of challenges and priorities as they look through the lens of “asset protection/asset safety” and “operational efficiency” when addressing “segregation” mandates. PwC assists these firms in implementing the segregation rules that involve establishing custodian accounts by connecting to custodians alongside negotiating tri-party control agreements and account control agreements.

Q. In your conversations with the street, what are the top concerns regarding collateral management and how do you see firms dealing with it?

KR – When I speak to clients in Asia-Pacific, they are concerned with assessing the impact of collateral/margin requirements from a capital/balance sheet standpoint. Firms are working towards identifying the least common denominator in the intersection of Basel capital rules, leverage rules, funding rules and their bearing on the firm's collateral/margin imperatives. Firms are also equally concerned about dealing with operational challenges as they pertain to cross-border transactions due to divergent approaches to collateral regulations in each region.

TC – Adding to Kishore's points, clients in the US are gathering momentum for the September 1 deadline while others are preparing for the March 2017 mandatory variation margin (VM) requirements. Many participants exchange VM regularly, so preparing for the regulations entails developing an approach to handle increased margin call volumes. Correspondingly, many participants are developing regulatory compliant documentation that is driving the increase in margin calls. This is a significant issue as organisations can have as many as four CSAs active for any given portfolio (legacy VM, regulatory VM, legacy IM, regulatory IM). However, organisations must first understand the P/L impact of migrating legacy agreements to regulatory compliant ones against the operational burden of managing multiple CSAs per margin event.

Q. We often hear the term "sources and uses" of collateral. What are these in reality and what collateral do you see as most in demand?

NN – In effect, sources and uses of collateral are sources and uses of funding, and there should be funds transfer pricing – or equitable distribution of benefit or cost - back to the trading books for that use of liquidity. Utilising firm inventory effectively and sourcing cheaper forms of eligible collateral from the market are part of an effective collateral management process. In terms of demand, cash and high quality government debt will always be popular forms of collateral. Regulators have allowed some leniency in the definition of HQLA under LCR, but then that defeats the object of what quality collateral should be, and assets such as equity or RMBS remain quite restricted.

TC – HQLA is certainly in demand. Not only is it the collateral of choice to meet regulatory coverage ratios, but it is also a critical component of the repo market. But this question really points to collateral optimisation. This is only one form of optimisation that needs to be considered along with many others that include pre-trade and funds/collateral transfer optimisation. It is critical to understand how to best source and use collateral across the organisation – being able to view the entire collateral inventory, understanding what is encumbered, understanding each function's need (lending, margin calls, treasury, regulatory) and developing the operating model and funding transfer mechanisms to share and use collateral most efficiency.

Q. Where do you see collateral demand/supply going? Is a collateral squeeze expected?

TC – This has been discussed for years and has not seemed to materialise yet. Still, more collateral will be needed to cover an increased volume of bi-lateral margin calls, combined with what is needed for clearing, as well as what is needed to satisfy capital requirements. At the same time, there are participants who do have cash and other eligible collateral. They can become more active securities financing transactions (SFT) participants if the incentive is right. So, if beneficial owners can be convinced to participate more in securities lending markets, while at the same time new repo solutions, such as direct participant clearing solutions for the buy-side, come to fruition, collateral shortages might be mitigated.

NN – There is a potential for a shortage of eligible HQLA as demand rises and supply shrinks. QE has been ongoing in major economies since 2009. With the exception of the US this continues. Government debt crises of 2011 saw these asset types downgraded, meaning in some cases, those assets were no longer eligible for collateral. Other governments have reduced or withdrawn from debt markets altogether, and while the supply is compromised, demand continues to increase. Banks are required to hold reserves of HQLA to support their liquidity ratios, and ensure that they can settle cash and securities in a crisis. Gross margining for IM will see even more of these eligible assets "locked away" and unavailable to the market.

KR – I actually do not subscribe to the view of perceived collateral squeeze or cliff. The challenge at the moment particularly within Asia is to be able to find an asset that meets the criteria of both "high quality" and "high liquid". I expect to see an expansion in the universe of assets that can fit the definition of “eligible collateral” in the months and years to come within APAC.

Q. Based on your experience, do you see business moving towards enterprise-wide collateral management or is it still a divided approach with silos?

NN – I think it varies by client type. The larger and more adept hedge funds will look for effective and efficient management of assets and collateral and will optimise their positions. I see pension funds begrudgingly being pulled in to mandatory clearing. One would hope that our pension funds are extremely conservative in the way they operate, but they and other funds may be sitting on assets which, if unlocked into the market, could solve some of their funding issues and help (in the UK at least) to reduce some of the defined benefit shortfalls they’re now incurring on suppressed markets and low yielding assets.

Silos also exist within banks and need to be broken down. If that doesn’t happen, then banks will never efficiently manage their inventory or their collateral. I’m being very direct here but with reason. If we don’t work within organisations and across the industry to manage our pools of assets more effectively, there may well be a time when collateral costs make derivative hedges unviable.

TC – There are certainly common issues and approaches to solve those issues among the buy and sell side. This includes calculating IM, resolving disputes, and mobilising and settling collateral. At the same time, there are many differences, in part because the buy side is so diversified. As such, a large asset manager might very much look like a sell-side organisation in terms of operations, technology, and cross-enterprise collateral management solutions (i.e., breaking down the silos). Smaller organisations might be less concerned about silos and links to other internal functions such as treasury because they are smaller and flatter and have a correspondingly smaller need for cross-product solutions, often times relying on their outsource partner to handle the bulk of their collateral management needs.

KR – Traditionally within banks, asset managers or insurers, each desk was the master of its own asset inventory, causing “trapped asset inventory / liquidity pools.” This model is no longer sustainable, and I believe that the industry is moving towards a centralised collateral management architecture. In doing so, the treasury functions have taken center stage in partnership with their markets business and collateral functions in developing a for-profit centralised collateral utility to achieve capital and operational efficiency. Treasury is more involved because they act as the gatekeepers of capital and are primarily responsible for the optimising the assets on the balance sheet.

Q. Would you estimate more collateral baskets being traded in the future, given how CCPs and other regulated forms prescribe the range and balance of collateral required?

KR – With increased restrictions on re-use of collateral assets and lack of HQLA within Asia including in both cleared and un-cleared world, I certainly foresee the rise of collateral baskets and collateral swap type products in the near future. Additionally, I am noticing CCPs offering cross product margining to the clearing members and passing on the capital savings to their clients. This is a particularly important offering given the lack of netting enforceability in many markets across APAC.

NN – I think this has some merit. ETFs could be an answer in terms of providing a meaningful and (relatively) similar level of security as HQLA. Working them into an eligibility schedule would also reduce some of the collateral cliff issues we mentioned earlier. Some may disagree with this but, if we gave the accountant the ability to “look through” to the underlying fund components, there should be no reason why these couldn’t be an eligible instrument.

Q. And what about cash, is that still king?

TC - Cash is still king for OTC derivatives margining. However, that will likely change. Cash has segregation issues, is operationally more complex (e.g., interest processing), and is also not usually optimal for initial margin. When there is a change in the negative/low interest rate environment, cash might also be in less demand to meet collateral calls. As collateral is managed more centrally, firms will seek to unlock latent liquidity through greater access to non-cash assets. Finally, those who are not natural holders of cash (e.g., insurance companies in liability driven investing (LDI) strategies) will look to post non-cash collateral instead of transforming those into assets into cash (or holding cash).

NN – There may be distinct on-balance sheet netting advantages for using cash collateral, and 80% of the market uses cash to cover variation margin. So, yes, it probably will continue to be king. But with cash not really suitable for initial margin, and given that the return on cash at CCPs and CSs isn't floored at 0%, it's far from optimal. It is all but impossible to segregate cash safely. For initial margin and pledge agreement variation margin, securities are the best option.

KR – Building on Tom's points regarding transition from cash to non-cash, cash on the balance sheet drives a higher leverage ratio. A number of financial institutions have tried to move assets off their balance sheet using different accounting treatments in an attempt to reduce their leverage ratio and subsequently the amount of capital they are required to hold. Financial institutions are working with the regulators to put forth an argument that some of the assets on their balance sheets were held on clients' behalf and so should not be treated as a liability and that those assets should go into a separate, segregated account.

Q. In what ways do you think clients could help themselves when it comes to managing collateral across the market?

KR – Clients can certainly help themselves by embracing the industry's tri-party solution offerings.

NN – I also see tri-party as an effective way of meeting the demands for increased capacity invoked by regulation. Effective outsourcing of collateral settlement and substitution process to the tri-party provider reduces risks, creates capacity, and should reduce RWA against counterparty credit.

TC – I agree. Both sides of the street will look to tri-party collateral segregation solutions driven by regulation, safety, and efficiency. The largest sell-side/buy-side participants aside, most participants either need to find a collateral management vendor package that is compliant with the new margining rules or upgrade to newer, compliant application versions

Q. If you had to come up with the top three collateral management and segregation initiatives for clients for 2016-17, what would they be?

TC – I'll focus on collateral segregation, and I would ask clients to consider the following.

- their plans and workflow for using a tri-party model for collateral segregation
- their plans and workflow for using a third party model and developing the necessary collateral optimisation strategy for this model
- the funding of these new requirements given that assets are rendered effectively immobile due to segregation

NN – I would ask clients to work on the following three key areas:

- creating capacity and inventory availability
- improving reporting on all potential risks
- reducing exposure and fails risk

KR – Like Tom, collateral segregation would be the topic of conversation.

- Is there full clarity around collateral segregation requirements given that some regulators have not published explicit guidance, particularly in the Asia Pacific region?
- Clients should focus on achieving capital and operational efficiency in adopting or providing segregation solutions for asset protection and asset safety.
- I would also ask clients about the tri-party model for collateral segregation. I expect to see a rise in the adoption of tri-party offerings across APAC as it is a time-tested solution.

SECTION 5 Conclusion

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We believe the collateral management industry is at the cusp of change that will have a significant impact across market participants i.e., sell side, buy side, custodians and clearing members. The complexity continues to grow with multiple regulatory changes and the varying approaches to meet the demands of local regulatory bodies. Consequently, market participants will need to evolve and create exposures to asset classes through new structures and broaden access to collateral asset types. A key theme thus far addressed in this document has been risk mitigation through collateral segregation as required by initial and variation margin requirements. We recognise the ability to strategically apply the appropriate technology solution coupled with the right operational set up to meet collateral demands and margining requirements will be critical in this new landscape.

ARE YOU READY?

1. Are you able to identify when/where your collateral is held and if it is held in segregated accounts?
2. Are you ready for the operational challenges of managing more collateral that will be allocated across more transaction types?
3. Can you unlock collateral mobility with a consolidated view of your collateral assets across your business and procedures for prioritising the use of idle assets?
4. Do you have adequate tools and channels to proactively manage the assets held within your segregation network i.e., the different segregated accounts required for each of your legal counterparties?

BNY Mellon is well positioned to play a leading role in assisting clients to mobilise and optimise collateral and help to mitigate collateral silos whilst they seek to maintain and grow their business.

We hope that you have enjoyed reading this paper, recognising some of the challenges faced with collateral management post regulatory reform. We have a broad range of people, business experience and technical capability at BNY Mellon, all ready to help you develop your business and work with you to deliver the very best in collateral management. You have met some of our team through reading this paper, and now we welcome you to meet us in person. To help with that, please refer to our details at the end of Section 6, and feel free to give us a call or drop a line.

Market Leading Solutions...A Unique Provider... BNY Mellon

What are the driving forces behind these collateral management and segregation solutions?

COMMITMENT
Collateral management and segregation are core services for BNY Mellon, and we continually invest in the people, processes and technology that support our solutions.

BREADTH OF SERVICES
The size and scope of BNY Mellon's offering provides clients with the infrastructure and expertise they need to address regulation requirements and changing market dynamics. Our suite of services helps clients focus on their competencies and sustain, and further expand, their trading and investment strategies.

FINANCIAL STRENGTH
Supporting all that we do are credit ratings that are among the highest in the financial services industry. BNY Mellon has consistently received high ratings from all four major credit rating agencies and for key credit categories.[5]

GLOBAL REACH
We help clients successfully manage and mobilise their assets into eligible collateral. Our teams located in APAC, EMEA and the US work with you to deliver integrated solutions across geographies.

INNOVATION
For over two centuries, BNY Mellon has introduced new products and services that have helped our clients succeed and transform the financial services industry worldwide. Our global Innovation Centers develop breakthrough financial services technologies and encourage the collaboration that results in cutting-edge solutions.

These driving forces support our efforts to build collateral management and segregation solutions that can help drive your success in markets around the world.

"Clients need service providers that can adapt in a rapidly changing environment. Due to BNY Mellon's scale and deep liquidity, we have been able to develop products and services to help our clients." — Rebecca Lentchner

"Collateral receivers are looking for standby liquidity agents, and BNY Mellon is uniquely positioned to fill this role through our collateral pricing expertise combined with our capital markets execution capabilities.[6] When looking for a liquidity agent, collateral receivers need to consider which providers are better placed to weather a market downturn, and BNY Mellon's strong capital and liquidity positions make us a leading choice." — Jeremy Colvin

SECTION 6 Contributors

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Staffan is responsible for the strategic direction and product development for BNY Mellon's collateral management services.

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Thank you to the following individuals for contributing to this paper.

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Nick brings over thirty years of experience in investment banking and capital markets, working in prominent roles across front, middle and back office functions. Prior to joining GFT, Nick was with Credit Suisse where he worked in liquidity management, collateral optimisation and business reengineering roles. Nick has also been instrumental in creating Target Operating Models for Tier 1 banks and consulting banks with their migration and entity rationalisation programmes. Specialising in business architecture and process reengineering, he has extensive experience of creating processes that incorporate efficiencies within workflows that enhance profitability, whilst also assisting clients with their regulatory obligations. Nick is a chartered member of CISI.

GFT is a listed business advisory, technology consulting and implementation provider with over 4,000 staff in 13 countries, across Europe and the Americas region. GFT's specialist focus in capital markets was reinforced by the acquisition of Rule Financial in 2014. Its client base ranges from the largest internationally active banks and asset managers to smaller domestic financial services providers. GFT differentiates by working alongside clients to implement change.

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Thomas Ciulla
Advisory Principal PwC US

Thomas is a principal in Banking and Capital Markets focusing on derivatives, collateral management and trade clearing. He assists both buy and sell-side capital markets participants realise their collateral management and clearing strategies across products that include derivatives, swaps, repurchase agreements, and securities lending / finance.

Thomas has over 20 years' experience in developing strategy, business, technology, and architectural solutions for buy-side, sell-side, custody bank and utility market participants. He has deep experience in evaluating, selecting and implementing many of the leading collateral management solutions to support leading practice operating models.

He has led many large business/IT transformation projects for global financial services participants, including working with consortiums to develop common industry utility solutions, industry participants who have formed joint ventures, mortgage lenders under regulatory scrutiny, as well as several multi-year anti-money laundering efforts that addressed data, systems, and policy issues.

In addition to leading capital markets and anti-money laundering efforts, Thomas has provided other financial services in domains as diverse as trade surveillance and best-execution initiatives.

Thomas attended Columbia University and John Jay College in New York. He is also a certified Project Management Professional (PMP), Certified Fraud Examiner (ACFE Certified Fraud Examiner) and a Certified ACAMS Anti-Money Laundering Specialist.

Kishore Ramakrishnan
Director PwC Hong Kong

Kishore is a Director in the Financial Services Risk & Regulatory Consulting practice of PwC Hong Kong, and he brings over 15 years of industry and consulting experience in joining PwC. Prior to joining PwC, he has lived and worked in the US, UK, Europe, Hong Kong, Singapore, Japan and India. In his most recent role prior to joining PwC, Kishore built and developed the capital markets consulting business at EY focusing on global and regional financial regulations including derivative reforms, bi-lateral margin reforms, Volcker regulations, capital reforms among other things. He has advised several top-tier sell-side and buy-side institutions on the "structural" and "operational" implications of financial regulations. Kishore is quite active with various industry working groups such as ISDA and ASIFMA. He also regularly interacts with various regional and global regulators including IOSCO, IMF and ADB.

PwC is a network of firms in 157 countries with more than 208,000 people who are committed to delivering quality in assurance, advisory and tax services. In relation to collateral management, PwC provides a range of services to its clients covering sell-side, buy-side, custody banks, industry utilities, trade associations, regulators around collateral and margin imperatives including but not limited to helping clients to: target operating model design & implementation; collateral segregation implementation; technology selection implementation; vendor and service provider tracking; agreement / documentation management solution; margin model validation & approval services; margin reforms execution roadmap; industry benchmarking of operating model; industry utility integration and testing services; F2B collateral process controls gap assessment & remediation. The content PwC disclosed in the interview process is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.

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ABOUT BNY MELLON

BNY Mellon is invested in collateral management and collateral segregation solutions. We add value for collateral providers and collateral receivers by providing connectivity, asset pools and effective models to support our clients' business needs. We offer services tailored to the underlying business requirements of broker-dealers, financial institutions and institutional investors.

BNY Mellon is a global investments company dedicated to helping its clients manage and service their financial assets throughout the investment lifecycle. Whether providing financial services for institutions, corporations or individual investors, BNY Mellon delivers informed investment management and investment services in 35 countries and more than 100 markets. As of March 31, 2016, BNY Mellon had $29.1 trillion in assets under custody and/or administration, and $1.6 trillion in assets under management. BNY Mellon is the corporate brand of The Bank of New York Mellon Corporation (NYSE: BK). Additional information is available on www.bnymellon.com.

1. The services described in the “Money Market Funds” section are not being offered and not available in Japan currently.

2. Offshore Renminbi cash for the purposes of repo transactions can only be settled through cash accounts held in Hong Kong.

3. Registration of the Security Agreement in Hong Kong and other jurisdictions may be required. Your Relationship Manager will advise whether this is necessary.

4. Source: The Bank of New York Mellon Corporation, Form 10-Q, for the quarterly period ended March 31, 2016.

5. Current ratings for The Bank of New York Mellon Corporation and its principal subsidiaries are posted at www.bnymellon.com/investorrelations/creditratings.html.

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