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EXECUTIVE SUMMARY

Every business day in the United States, investors execute many millions of securities transactions—exchanging money for shares of stock, bonds, mutual funds, and other financial instruments. These transactions generate pools of capital that fund many kinds of business and government activities, including expansion of existing companies and creation of new ones. Until The Depository Trust & Clearing Corporation’s (“DTCC”) family of companies was established about 40 years ago, market participants were greatly exposed to operational risk because of the highly manual nature of clearance and settlement as well as to counterparty risk.

By providing its custody, clearing and settlement, as well as netting services, DTCC has effectively addressed these legacy issues. It has helped automate, centralize, standardize and streamline processes that are critical to the safety and soundness of the capital markets. In 2010, DTCC processed in excess of $1.66 quadrillion in securities transactions across multiple asset classes.1 As a result, DTCC has helped its customers reduce risk, increase their operational efficiency and lower costs.

This is the result of a deliberate evolution of DTCC over the last four decades. Originally, DTCC developed its business to provide for the safe and efficient transfer of securities ownership and settlement. At the same time, DTCC’s primary aim was to protect its participants by mitigating risk. To accomplish this, DTCC used the traditional tools of credit, liquidity, market and operational risk management.

Throughout the years, DTCC steadily built the capabilities of its own infrastructure and, jointly with the industry, enhanced market structures. This prepared the company to successfully fulfill its critical responsibility during the financial crisis of 2008. Following the Lehman bankruptcy, DTCC worked with market participants and regulators to successfully close out over $500 billion in open trading positions from trades in equities, mortgage-backed and U.S. government securities, without any loss to the industry. It was in no small part due to the solid infrastructure of DTCC that the company was able to provide much needed stability to the financial services industry during a period of nearly unprecedented financial turmoil. DTCC’s sound risk regime most likely helped to avoid a catastrophic outcome of the events of 2008.

And yet, the crisis was a call-to-arms to DTCC, the financial services industry and regulators to focus more aggressively on systemic risk and the need to identify and mitigate it to the extent possible. In the context of this document, systemic risk is defined as the risk that the effects of an adverse event or series of adverse events within the broadly defined financial services industry (including the industry’s critical infrastructures), caused by members of the industry or inflicted through external channels, are effectively transmitted across the industry, markets, products and/or structures. This transmission, in turn, leads to a severe impediment, disruption or degradation of the effectiveness and/or efficiency of the financial intermediation function of the sector, which may also impair the unencumbered functioning of critical financial infrastructures such as DTCC and its subsidiaries.

In meeting the challenge to maintain its commitment as a reliable and stable infrastructure in times of stress, the DTCC Board approved a Policy Statement on Systemic Risk in December 2009. This policy requires DTCC to understand the impact on – and threats to – systemic stability that may arise as a result of internal processes, procedures and systems in its day-to-day operations, or be related to DTCC’s ability to respond to extraordinary market events, as well as those that may arise from interconnections with other entities. The policy also provides that DTCC consider the potential beneficial or adverse effects of new products, services, or business initiatives. Finally, it tasked DTCC with providing educational resources to its participants to increase their understanding of DTCC’s risk management and mitigation activities.

In keeping with the systemic risk policy, DTCC is implementing a focused engagement strategy for

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1 This paper primarily focuses on The Depository Trust Company (“DTC”), National Securities Clearing Corporation (“NSCC”), the two divisions of the Fixed Income Clearing Corporation (“FICC”) – the Mortgage-Backed Securities Division (“MBSD”) and the Government Securities Division (“GSD”) – as well as the European Central Counterparty Limited (“EuroCCP”), all of which are subsidiaries of DTCC.
communicating systemic issues. Additionally, DTCC has begun an educational initiative by distributing handbooks to its participants focused especially on the risk management regimes of FICC, DTC and NSCC. This is to help participants understand how these subsidiaries manage risk and to make sure that these participants understand the residual risks that remain after DTCC’s risk mitigation.

With regard to DTCC's engagement strategy, the distribution of this white paper to DTCC’s participants is a cornerstone. As a starting point and in composing an initial list of potential systemic risks, the white paper is organized by first considering how such risks may be triggered along broad categories, such as liquidity, connectedness, concentration and legal or regulatory risk. Within each category, there is a review of how these risks may manifest themselves within the financial services industry and how they could affect DTCC's product offerings, its services and processes, as well as the way in which DTCC may pursue the development of new initiatives.

While DTCC is central to mitigating key risks that the industry faces, it is important to assess any residual issues. In identifying these specific issues, evolving action plans are described that may, at least in part, mitigate the risks described. DTCC’s interlinkages, whether in terms of its own connectedness to market participants or systems interdependencies, were also taken as important factors.

The white paper constructively addresses areas that could increase the resilience of the securities industry to future systemic shocks. As such, it considers shortening of the settlement cycle, because the shorter the settlement cycle, the more the industry’s risk profile may be reduced. The white paper raises particular challenges in reforming the commercial paper market, as the settlement of money market instruments presents some very specific opportunities for greater stability and better liquidity and credit risk management. The white paper also makes note of different market practices around the globe that have led to different risk management regimes for central counterparties (“CCPs”), especially in Europe vis-à-vis the United States. It focuses on how one may draw positive lessons from the experiences on both sides of the Atlantic to strengthen either model. Finally, the white paper highlights how DTCC’s proactive management of the possible implications from a then-potential downgrade of the U.S. debt rating could be applied to other financial events with major systemic risks.

The white paper raises these and many other issues and considers possible solutions to them, but DTCC is cognizant of the fact that only a portion of them are within DTCC’s control. Many considered solutions will require industry-wide coordination and/or regulatory approval. At the same time, risks are not static and their nature and the range of feasible solutions are dynamically changing.

Therefore, DTCC’s engagement strategy reaches beyond sharing the white paper with its participants and it is aimed to benefit from the insights of all stakeholders in identifying and mitigating current and emerging systemic threats. In that context, DTCC is seeking feedback from its participants as to their reflections on what is perceived as truly systemic, which solutions considered in the white paper may work and, in looking forward, where the industry sees new risks emerging. As such, DTCC has asked for comments from its participants in the Member Feedback section at the end of this white paper.

DTCC considers such active, multilateral and continuous engagement with its stakeholders as the most effective way to further strengthen the resilience of the current infrastructure in order to contain existing systemic threats as well as to prepare for shocks that may not have been previously contemplated.
INTRODUCTION

Systemic shocks to the financial sector occur with an uncanny frequency, and yet each time market participants seem surprised by events “far outside the norm.” Much of this apparent disconnect has to do with the conventional models that have been used over time to measure and explain risk, including systemic risk, in the world of finance by relying in particular on probabilistic assumptions such as normal or Gaussian distribution functions.

The late French-American mathematician Benoît Mandelbrot put it this way in 2004: “In fact, the bell curve fits reality very poorly. Theory suggests that over time, there should be 58 days when the Dow moved more than 3.4%; in fact, there were 1,001. Theory predicts six days of index swings beyond 4.5%; in fact, there were 366. And index swings of 7% should come about once every 300,000 years; in fact, the twentieth century saw 48 such days. Truly a calamitous era that insists on flaunting all predictions. Or perhaps our assumptions are wrong.” Since 2004, one could have added a number of such “outlandish” stock market movements that should happen only once every Ice Age, including the almost 10% drop of the Dow Jones during the so-called “flash crash” of May 6, 2010, as well as high volatility during the weeks following the downgrade of the U.S. sovereign debt rating by Standard & Poor’s (“S&P”) on August 5, 2011.

In other words, large dislocations in financial markets have occurred with far greater regularity than theory would suggest, and over the last two decades the severity of these shocks and their systemic implications have grown. The dramatic gains in efficiency and effectiveness in capital markets derived from exponentially growing interconnectedness between and among financial institutions and their supporting infrastructures have been accompanied by the magnified impact of random jumps caused by such interconnectedness which, in turn, is sometimes translated into systemic risk.

Industry, academia and financial regulators have over time identified certain triggers that may cause a systemic risk to materialize, such as lack of liquidity, connectedness, scale, concentration, correlation, excessive leverage, complexity of structures, lack of model resiliency, homogeneity of risk management, group think, automaticity as well as the “perfect storm” scenario. This paper discusses systemic risk considerations from DTCC’s perspective.

Of course, the definition of “systemic risk” itself is elusive as many will concede, including the International Monetary Fund (“IMF”). In the context of this document, systemic risk in the financial market environment relevant to DTCC is defined as the risk that the effect of an adverse event or series of adverse events within the broadly defined financial services industry (including the industry’s critical infrastructure), caused by members of the industry or inflicted through external channels, are effectively transmitted across the industry, markets, products and/or structures. This transmission, in turn, leads to a severe impediment, disruption or degradation of the effectiveness and/or efficiency of the financial intermediation function of the sector, which may also impair the unencumbered functioning of critical financial infrastructures such as DTCC and its subsidiaries. Negative feedback loops may turn a discrete risk event into a vicious cycle of events that eventually threaten the stability of the financial system.

DTCC recognizes its responsibility as a key provider to organize its delivery of clearance, settlement, and related services for transactions in securities and other financial assets in a way that contributes to the overall management and mitigation of potential systemic risk. DTCC, through its services, provides additional benefits to its participants, such as netting benefits.

It should be noted that the nature or composition of identified systemic risks dynamically changes as market conditions, regulatory requirements or other relevant factors evolve further. Over a longer time

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horizon, technology developments will also influence these issues, as improvements make it possible to remediate risks that might previously have had to be accepted due to technological limitations.

This structured focus on systemic risk is intended to set the approach for identification of potential sources of systemic risk, with the ultimate goal of developing enhanced capabilities to anticipate the rise of new forms or types of risks, as well as to provide increasing resilience of DTCC and the industry to systemic shocks. If a specific systemic risk materializes which has not been previously identified, this approach should guide DTCC, and its shareholders and participants (“stakeholders”) as well as regulators, in their responses. This is largely because DTCC will have engaged with its participants in pre-crisis planning and reviewed responses to various hypotheticals available, including the effectiveness of or potential downside to such responses. It is through this process that proactive systemic risk management evolves into effective preparation for crisis management.

Such systemic risk perspective will, therefore, become an even more integral part of DTCC’s relationship with its stakeholders. For example, DTCC is implementing an educational strategy during 2011 to enhance participants’ understanding of DTCC’s operations and processes as they relate to DTCC’s risk management and mitigation activities, the effect of these operations and processes on participants’ risks in interacting with DTCC, and the effect of these operations and interactions on potential systemic risk more broadly.
Prudent management of a financial services firm’s liquidity critically influences the overall creditworthiness of a financial institution. Idiosyncratic mismatches of short-term liabilities against long-term assets at a given firm in and by themselves are not systemic risks. However, during the financial crisis of 2008, such mismatches were not limited to a particular firm, but were prevalent in the market. As an example, the short-term asset-backed commercial paper market was in large part backing long-term assets. These assets, in turn, were highly illiquid or, in other words, could not be sold in stressed times in order to repay short-term liabilities. This caused the systemic inability to access liquidity.

As part of its role in supporting predominantly U.S. clearance and settlement activities, DTCC too must manage liquidity risk. The liquidity resources of DTCC’s clearing and settlement subsidiaries (central counterparties and central securities depositories) are currently designed to withstand, at a minimum, the default of the participant-family (i.e., a participant and participant affiliates) with the largest settlement obligations in extreme but plausible market conditions. These resources are designed to achieve settlement despite the failure of such a participant-family with the largest net obligations. As a result of its resilient risk management controls, DTCC contributed to the successful management of the liquidity impacts of the financial crisis of 2008. At the same time, DTCC must remain confident that its liquidity resources are sufficient during normal times and during conceivable extreme, but plausible events, while carefully balancing these needs against actions which might increase liquidity constraints for its participants.

A. LIQUIDITY AND NSCC

Member Default(s) at NSCC

NSCC’s trade guarantee obligates NSCC to perform on transactions for a defaulted member – that is, accept and pay for deliveries against the defaulted member. A liquidity need could arise whereby NSCC’s resulting liquidity obligations exceed the amount of its liquidity resources to effect settlement on the day of default and the subsequent days. NSCC is addressing these considerations in several ways:

a. Minimizing NSCC Liquidity Demands:

- **Netting Long Allocations and Short Covers:** In light of the goal to minimize liquidity demands, an effort was undertaken during 2010 to research prior NSCC member-firm close-outs to determine the steps taken to resolve these incidents. As a result of this effort, DTCC Risk Management has adopted a process that provides for, in the event of a member default, using relevant long allocations paid for by NSCC to satisfy deliveries of the defaulting member in the same securities due to be delivered to its Continuous Net Settlement System (“CNS”) on days following the insolvency of a member.

  When an NSCC member becomes insolvent, NSCC will utilize settlement securities paid for by NSCC upon the member’s default to offset future settling NSCC short positions and to sell them in the open market in order to replenish the clearing fund cash used to satisfy the insolvent member’s settlement obligation. In using these options, NSCC determined that it would reduce liquidity needs by 30%.
• **ETF Close-out Enhancements:** Through daily monitoring of liquidity demands, NSCC observed quarterly liquidity spikes on the settlement day of trades placed on triple witching day,4 and significant activity in Exchange Traded Funds (“ETF”) indexes.

An ETF is a security portfolio that trades on an exchange as an equity. NSCC’s ETF process automates the creation and redemption of ETF securities. NSCC reports, clears and settles ETFs and their underlying securities through its creation/redemption process.

The observed significant activity in ETFs may have the potential to cause a material liquidity demand because NSCC’s trade guarantee puts it between the delivering member and the receiving member. As a result, NSCC has an obligation to receive and pay for securities delivered by the delivering member and to deliver securities to the receiving member. This typically includes transactions due to settle on the date of insolvency (if settlement is not yet concluded for that day) and the next three trading days. Upon declaration of a “cease-to-act,” NSCC potentially faces short-term liquidity exposure as demonstrated by the following example:

Prior to insolvency, a member creates an ETF. The ETF’s Index Receipt Agent delivers 50,000 ETF shares to NSCC to satisfy its delivery obligation through the CNS System. However, NSCC does not have the in-kind portfolio securities (since the insolvent member failed to deliver out), so it must pay the value of the creation unit, thus creating a liquidity risk. Further, depending on the makeup of the insolvent member’s open positions, there may be a situation where NSCC has an obligation to receive and pay for ETF units on the date of insolvency and the next three settlement days.

To mitigate this concern, NSCC plans to propose amendments to its rules to enter into offsetting ETFs. Under the rule change, NSCC would be able to enter into offsetting ETF redemption or creation transactions with the ETF’s Distributor and Index Receipt Agent to reduce its liquidity obligations imposed by the insolvent member. While the circumstances of each insolvency vary, NSCC recognizes that the time at which the offsetting transaction is placed is critical, as an offset placed post-processing hours may not affect settlement on the next business day. NSCC may be required to finance ETF long allocations that are due to be delivered into the insolvent member on the day of insolvency plus one. NSCC may specify that offsetting transactions will settle on a T+1 or T+2 basis (subject to the settlement capabilities of the respective Index Receipt Agent) in order to coincide with the settlement date of the original ETF. Such amendments to NSCC rules will be subject to approval by the U.S. Securities and Exchange Commission (“SEC”).

• **NSCC Access to Defaulting Member’s Inventory at DTC:** In the event of a default by a member of NSCC, which is also a DTC participant, access by NSCC to such participant’s inventory held by DTC to satisfy obligations of the defaulting member to NSCC could ease liquidity demands at NSCC in CNS by generating cash credits. Using DTC inventory to cover such short obligations would allow NSCC to complete deliveries (of trades NSCC has guaranteed) on behalf of the defaulting firm without having to take market action and would allow the same-day generation of cash rather than having to wait out the three-day settlement cycle.

However, neither DTC nor NSCC may have any claim to such inventory. Often, in the case of an insolvency, the trustee or receiver of the insolvent participant has permitted NSCC such access in the past. To anticipate the need, however, and assure that it will not be discretionary on the part of the trustee in bankruptcy, NSCC considers that it might access certain securities held at DTC by an insolvent member, if, for example, members would pledge certain securities through a DTC pledge to NSCC, prior to the settlement date in respect of their corresponding obligation in the ordinary course of business.5

NSCC will analyze the potential benefits to NSCC liquidity from the use of some type of pledging

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4 Triple witching day refers to the third Friday of every March, June, September, and December. On those days three kinds of securities expire: (1) Stock market index futures; (2) Stock market index options; and (3) Stock options. The simultaneous expirations generally increase the trading volume of options, futures and the underlying stocks, and occasionally increase volatility of prices of related securities.

5 Such pledge arrangement, if considered, would be discussed with the Securities Investor Protection Corporation (“SIPC”) as well as the Federal Deposit Insurance Corporation (“FDIC”).
procedures by modeling members’ obligations to CNS versus the availability of securities on deposit in the members’ DTC account and DTC will evaluate the offsetting risks to DTC.

b. Considering Additional Liquidity Sources:

NSCC is exploring the applicability of a structure similar to one FICC/MBSD is currently proposing (see Section C) referred to as a Capped Contingency Liquidity Facility (“CCLF”). In that regard, NSCC is considering a stock borrow/loan structure to complete delivery instead of the offsetting repo transactions as is proposed for FICC/MBSD. The NSCC CCLF initiative, if found practicable and subject to all required regulatory approvals, would be considered another tool NSCC could employ to gain access to liquidity. Considering that NSCC has never had to use its line of credit, it is expected that its usage of the CCLF would occur only in the most extreme events.

B. LIQUIDITY AND DTC

1. Liquidity Efficiency for DTC Participants in Using the DTC Settlement System

a. CNS for Value to Provide Intraday Cross-Endorsement for DTC and NSCC Settlement Balances

Currently, NSCC and DTC each produce an aggregate net debit or credit settlement balance for each participant at the end of the processing day and then proceed to consolidate these net balances per participant into a single net-net settlement obligation for each dual participant (a process known as “cross-endorsement”). Since this only happens at the end of the day, common NSCC and DTC participants do not have the ability to use NSCC credits to offset DTC debits.

DTC and NSCC are currently seeking feedback from their participants on the joint “CNS for Value” initiative. Today, CNS obligations are processed through DTC’s settlement system as free deliveries, and the related money settlements occur in NSCC’s settlement system. The proposed initiative would process CNS transactions as deliveries versus payment at DTC subject to DTC’s risk management controls with one consolidated settlement process for all these transactions. As such, CNS for Value would continuously net members’ CNS credits with DTC debits (real-time, intraday cross-endorsement rather than the current end-of-day cross-endorsement), which may reduce members’ intraday funding requirements. The implementation of CNS for Value would be subject to regulatory approval and should be considered a longer-term initiative.

b. Settlement Progress Payments (“SPPs”) and Withdrawals Prior to End-of-Day Settlement

Currently, DTC participants routinely inject liquidity into DTC’s settlement system in the form of SPPs throughout the processing day, principally to permit the processing of pending transactions that had been blocked because they would cause the participant’s net debit to exceed its net debit cap. Although SPPs can subsequently be withdrawn if the participant has a net credit balance (subject to risk management controls), historically participants generally chose not to, leaving the liquidity in the DTC system until the end-of-day settlement process. On a daily basis, DTC also allocates to participants various types of entitlement payments (dividends, interest, redemptions or corporate action proceeds, generally referred to as “P&I”), which may also result in a build-up of liquidity in participants’ accounts (particularly on heavy P&I payable dates).

In response to concerns about large end-of-day settlement balances, DTC implemented changes to permit participants to withdraw SPP monies more freely during the processing day in order to alleviate potential liquidity constraints in other systems. DTC conducted participant discussions and held education meetings with regard to several enhancements to simplify the process by which participants withdraw settlement payments and principal and income allocations. DTC focused in its dialogue on the enhance-

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ments to the Risk Management Control Inquiry screen, which displays SPP/P&I funds available for immediate withdrawal, as well as an optional “Push” profile that allows participants to establish a standing withdrawal request.

2. DTC’s Management of Liquidity Risk for the System

DTC’s settlement system supports the notion of allowing participant accounts to go into a collateralized debit balance prior to end-of-day settlement to facilitate the orderly movement of valued transactions with minimal amounts of blockage and to reduce funding costs to participants. DTC currently manages its liquidity risk through use of net debit caps to essentially limit the debit amount that any participant may incur. DTC assigns debit caps based on a participant’s activity and limits the maximum size of a debit cap for a legal entity to $1.8 billion, or $3 billion for a family of related accounts.

These net debit caps are supported by $3.2 billion of liquidity resources at DTC in the form of a $1.3 billion all-cash Participants Fund and $1.9 billion in a committed secured line of credit. DTC has the ability to reduce a participant’s debit cap at any time during the processing day if it believes that the participant is at risk of default. Reducing the debit cap allows DTC to mitigate the risk that a participant failure will absorb DTC’s liquidity resources on the day of the failure, putting the system at risk of not having enough liquidity to allow participants to incur settlement debits on the next day.

a. Net Credit Reductions

DTC may also borrow from some or all of its participants an amount up to the entire amount of the end-of-day credit balance due to participants on the business day on which a settlement failure occurs. Any such borrowing from the lending participants would be secured by the defaulting participant’s collateral. While this is designed to keep the system operational, this could cause secondary stresses for participants to the extent they were depending on such payments for further obligations outside of DTC. In addition, DTC and NSCC might have to unwind cross-endorsements before DTC may apply net credit reductions, which could potentially spread the problem to NSCC. This should be viewed as a measure to which DTC is most likely to resort only in extreme circumstances; however, it remains an option to DTC in its discretion.

In 2011, DTC performed a study simulating two scenarios: the failure of the participant family with the largest net obligations and the failure of two participant families with the largest net obligations. It was determined that in all single family failures, DTC would not need to implement net credit reductions. In the dual participant family failure, DTC noted one instance where if two families simultaneously failed to settle, DTC would have to implement net credit reductions.

Over the longer term, DTC will undertake simulated impact analyses of net credit reductions on the unwinding of cross-endorsements with NSCC in order to assess the interaction of these two tools to optimize protections for both DTC and NSCC settlements.

b. Operating on Day-2 After a Participant Failure

If a major participant family with an aggregated large net debit failed to settle, it would significantly reduce DTC’s liquidity resources that could be used to operate on the next business day (“Day-2”). If in such circumstance, DTC’s liquidity resources were diminished, such reduction would have to be offset by a reduction in net debit in order to assure the availability of adequate liquidity at DTC on Day-2.

In a worst-case scenario, whereby a family of participants were all at their net debit caps and their total net debit that failed to settle was $3.0 billion, participants with end-of-day net debits would have to operate under essentially cash-and-carry conditions, relying on SPPs to fund their net debit as they would be able to take delivery only against a sufficient credit balance in their accounts. This could impose a strain both on individual participants’ liquidity resources and throughout the DTC settlement system.

DTC may, in its discretion, proactively reduce the net debit cap of a participant about which it has credit
concerns, in order to limit the impact of the participant’s failure on DTC’s liquidity resources. In addition, DTC is exploring two additional enhancements to further contain the systemic impact of a Day-2 issue as follows:

- **Transaction Processing**: At DTC, transactions are processed through a “night cycle” (before the actual settlement day starts) and a “day cycle” (on settlement day). In most instances, DTC is able to reduce a troubled participant’s net debit cap immediately prior to the night cycle. Since the night cycle for a Monday settlement date is processed on Friday night, it is possible that DTC may not have sufficient warning of a participant’s financial problems to act preemptively, meaning that significant liquidity resources could be absorbed by a member’s failure over the weekend.

In order to shorten the time period during which this could occur, DTC first considered moving the night cycle for a Monday settlement day to Sunday night. However, to move such processing from Friday night to Sunday night would have required an industry-wide adjustment with the related costs. Therefore, this solution was not pursued.

Instead, DTCC is considering lowering all net debit caps above a certain cut-off level on Friday nights. Initial reviews suggest, for example, that lowering the net debit caps of participants/participant families with a net debit cap above $1.5 billion to $1.5 billion on Friday nights or over a holiday before raising such caps to their previous levels on the morning of the next business day would not materially affect settlement processing. To the extent that DTC becomes aware of a participant/participant family in difficulties over the weekend, DTC would not expect to restore the higher net debit cap for that participant/participant family. This solution would have the additional systemic benefit that DTC could potentially sustain the failure of more than one participant/participant family with the largest net obligation during that time period.

- **Additional Access to Liquidity**: In its considerations to additionally reduce the likelihood for needing net credit reductions on Day-1 or net debit cap reductions on Day-2, DTC will study, in cooperation with the industry and its supervisors, adding other sources of liquidity to its existing resources, including but not limited to the requirements for the Participants Fund. Also, if DTC were designated as a systemically important financial market utility (“FMU”) by the Financial Stability Oversight Council, it might be able to access emergency liquidity from the Federal Reserve in unusual and exigent circumstances if it met the conditions set forth in Title VIII of the Dodd-Frank Act, as well as any other terms or conditions set by the Federal Reserve Board.

C. LIQUIDITY AND FICC

**Capped Contingency Liquidity Facility**

FICC/MBSD intends, subject to regulatory approval, to become a CCP. As such, it must meet the applicable international standards for CCPs, developed by Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions (“CPSS-IOSCO”) including Recommendation 6, Default Procedures, and requirements for adequate liquidity resources.

In creating a sustainable liquidity framework so that FICC/MBSD has sufficient resources to fulfill its obligations to meet the CPSS-IOSCO standards for CCPs, FICC/MBSD has proposed a solution called CCLF as referenced under Section A above. CCLF is designed as a fall-back option for the extreme event of the failure of a large FICC/MBSD member if other liquidity tools are not available (e.g., because the repo market had ceased to operate). It could be considered a tool with systemic risk-reducing properties. Members would, however, have to make sure to assess and accept the accounting implications, if any, of such facility.

If the CCLF structure were to be utilized, FICC/MBSD would ask solvent firms that were due to deliver mortgage-backed securities to FICC/MBSD for delivery by FICC/MBSD to the insolvent member to hold those deliveries for a number of days until FICC/MBSD had liquidated the positions of the defaulting member. FICC/MBSD and the firms involved would reflect the delivery as having been completed, but would book an offsetting repo transaction for the same quantity of securities and same value in order to establish the basis on which the
firms would finance the position. (Financing cost would be covered by FICC/MBSD as part of the insolvent firm’s liquidation.)

Each solvent selling firm’s liquidity commitment with FICC/MBSD would be capped based on periodic liquidity analyses, allowing these firms to put in place adequate liquidity planning. Subject to approval by the SEC, FICC will implement conversion of FICC/MBSD to a CCP that includes CCLF provisions. Moreover, subject to regulatory approval of the CCLF for FICC/MBSD, FICC will consider whether or not an analogous liquidity structure could be applied to FICC/GSD, since the U.S. government bond market is very liquid and might lend itself to such a liquidity facility.

As noted in Section A, NSCC is also exploring this concept. In considering the extension of the CCLF across DTCC’s central counterparty clearing corporations, the aggregate impact on common members and their commitments under such facilities would be analyzed to gain a better understanding of the possible liquidity implications for such members if these facilities were drawn upon concurrently by those DTCC central counterparty clearing corporations for which they are being considered.

D. LIQUIDITY CONSIDERATIONS COMMON TO FICC, NSCC OR DTC

1. Draw-Down of Clearing Funds at NSCC and FICC and of Participants Fund at DTC

In their rules, NSCC, FICC, and DTC provide for the event in which they may resort to mutualizing separately the losses upon liquidation of the portfolio of a defaulting participant through usage of the respective Clearing/Participants Fund in accordance with the rules applicable to each clearing agency. This could add to liquidity strains experienced at such time by participants.

Subsequent calls on a participant’s fund deposits are limited by the right of such participant to resign from the clearing agency under its applicable rules. As a practical matter, the registered clearing agencies are central to the processing of securities transactions in the U.S. and DTCC understands that participants rely on the service.

Additional margin requirements might be considered to further reduce the likelihood of loss mutualization. However, such gain in resiliency in stressed times must be weighed against the more permanent cost of lesser market liquidity in normal times as a result of higher margins.

2. Intraday Risk Margining

FICC/MBSD currently does not monitor or collect Clearing Fund collateral on an intraday basis. The current daily margin calls are calculated based on prior day’s end-of-day positions and pricing. Since it is not currently a CCP, FICC/MBSD does not include an intraday risk-mitigating Margin Requirement Differential (“MRD”)\(^7\) component in its daily margin requirement calculation. MRD will be added to the margin methodology upon launch of CCP services (subject to SEC approval).

To address the issue of intraday exposure, FICC/MBSD will launch an intraday monitoring system post FICC/MBSD CCP approval, which will provide suggested clearing fund charges and exception reporting versus defined surveillance thresholds.\(^8\) Details on intraday positions will be provided to DTCC Risk Management and to members.

With the launch of New York Portfolio Clearing (“NYPC”), FICC/GSD has implemented an additional margin call to be satisfied by 2:45 PM ET based on unsettled position snapshots at 12:00 PM ET. FICC/GSD generates hourly reports based on position snapshots from 11:00 AM ET to 5:00 PM ET to assist members in monitoring their activity as well as for hourly surveillance conducted by FICC/GSD.

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\(^7\) MRD is a Clearing Fund component designed to cover a member’s predicted intraday risk on \(T+1\), which is based on statistical data from 100 days of the member’s historical intraday positions.

\(^8\) FICC/MBSD’s plans to launch an intraday monitoring system that will incorporate hourly monitoring of mark-to-market calculation changes and hourly monitoring of Value at Risk calculation changes. Post FICC/MBSD CCP approval and upon integration into the “single pot” portfolio margining scheme with FICC/GSD and New York Portfolio Clearing (both initiatives are subject to SEC approval), FICC/MBSD will incorporate a formal intraday margin cycle.
FICC/GSD also monitors Value at Risk ("VaR") and mark-to-market ("MTM") fluctuations based on hourly intraday pricing and position feeds. At this time, DTCC Risk Management is studying and calibrating appropriate thresholds that, when breached, may result in the collection of additional clearing fund deposits.

By comparison, NSCC currently monitors member CUSIP level positions for intraday price moves. The review occurs hourly from 10:00 AM ET to 4:00 PM ET. Margin calls are based on individual position level MTM changes versus a threshold and risk staff review. In conjunction with the Accelerated Trade Guarantee ("ATG"), NSCC will hourly monitor intraday portfolio MTM and intraday portfolio VaR and may make margin calls if established thresholds are exceeded.

E. PROCYCLICALITY OF DTCC LIQUIDITY DEMANDS

Market Effects of DTCC’s Steps to Manage its Liquidity in Times of Stress

In times of stress, DTCC could potentially add to a liquidity crisis due to procyclical demands on liquidity. By calling for additional margin, DTCC and other financial market infrastructures might further reduce liquidity in a stressed market magnifying the market-driven pressure on available liquidity in any one of the scenarios described above. This could take the form of intraday adjustments in Clearing Fund/Participants Fund requirements (as market volatility drives these up), the use of net credit reductions in the case of DTC’s not having sufficient liquidity to fund multiple, simultaneous failures, or its reduction of net debit caps on Day-2, for example.

In a market-wide liquidity squeeze, such constraints could be intensified if NSCC or FICC were to make intraday mark-to-market calls or if FICC were to increase intraday margining requirements. It needs to be emphasized in this context that any subsidiary of DTCC would undertake such actions in the interest of protecting the integrity of the infrastructure and its members. In fact, following the U.S. downgrade by S&P in August 2011, DTCC Risk Management made a number of intraday margin calls in NSCC due to high volatility in the market for exactly those reasons.

DTCC’s subsidiaries recognize the importance of reviewing with participants the implications of margin calls and other intraday measures and the impact that such measures might have on the liquidity position of the participants in times of stress. This includes considering, among other things, whether participants should provide excess liquidity during normal times that could serve as a buffer during times of stress, allowing for a normalization of market conditions.

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9 This will be subject to regulatory approval.
10 As noted above, FICC/GSD has a standard intraday margin call that is based on unsettled position snapshots at 12:00 PM ET.
**MARKET STRUCTURE**

Certain systemic risks may derive from or could be mitigated by the particular structure of a given market. Generally, addressing such issues takes the concerted effort of market infrastructures, the industry and industry associations as well as regulators to create a consensus for restructuring the existing regime in an effort to reduce or avoid systemic risk and reap other benefits.

**F. RISKS ASSOCIATED WITH SETTLEMENT OF MONEY MARKET INSTRUMENTS (“MMIs”)**

1. Issuing and Paying Agents (“IPAs”) and Credit Risk

MMIs are generally short-term securities used by corporations and other entities for various funding needs. MMIs constitute a significant portion of DTC’s settlement value (i.e. roughly half of DTC’s total settlement value) and are settled in DTC’s settlement system, where risk management controls and other procedures are used to mitigate credit, liquidity and operational risk. To facilitate the processing of MMIs in DTC, MMI issuers employ the services of an IPA. The IPA acts as an agent for the issuer and must be a participant of DTC. As new MMI securities are issued, the IPA’s account is credited on behalf of the issuer and as MMI mature, the IPA’s account is debited on behalf of the issuer.

Unlike other debt instruments eligible in DTC, where maturity proceeds are wired to DTC on payment date in immediately available funds, then credited to the holder’s account in DTC’s settlement system, MMI maturity proceeds are debited from the IPA’s DTC settlement account and then provisionally credited to the DTC account of the investor’s custodian. Although proceeds from MMI issuances are often used to fund MMI maturities, DTC processes maturities and offsetting issuances as separate transactions. Where possible, DTC aligns maturities and issuances of the same issuer program (the system will try first to apply proceeds from the issuer’s issuance to any unprocessed maturities remaining open for that issuer). The process is not a full matching system and, therefore, can result in an issuer’s credits being used to complete another issuer’s maturities.

DTC also offers IPAs some control over how a subset of maturities can be processed. These optional tools are designed for managing risk of a limited number of issuers to ensure the processing efficiency of the system is maintained. The money wired to DTC by the IPA may (unless specifically directed) be used to fund maturities at random, and the IPA’s net debit cap at the beginning of the day is used randomly to permit maturities to update. To give the IPAs some control over this process, they have the ability to target settlement credits from an SPP to a specific issuer’s maturity presentment, and they can manage the queue of maturities to be presented to sequence better-credit issuers earlier in the process (and to earmark issuers about which they have credit concerns to “pend” awaiting approval for presentation).

The debits and credits related to MMI issuance and maturity activity are conditional until 3:00 PM ET, at which time IPAs must decide if they wish to exercise the “Refusal to Pay” function at DTC, if they have not received sufficient funding. This IPA refusal results in a reversal of both the issuer’s maturities and issuance transactions processed at DTC for that day. This unique processing, while efficient, does cause credit and liquidity risks associated with the lack of intraday settlement finality and has been the subject of a recent Securities Industry and Financial Markets Association (“SIFMA”) MMI Blue-Sky Task Force. The Task Force published a progress report in March 2011 that outlined a number of short-term and long-term enhancements to DTC’s MMI process:

- The short-term proposals recommended by the Task Force include modifications to the deadlines for valued new issuance and changes to require that receiving participants approve issuance transactions prior to processing. These modifications will serve to enforce consistent market

11 This is a functionality available to IPAs by which they may target their SPPs for certain maturity presentments; they will make use of such functionality in order to manage their credit risk, especially to issuers with large maturity presentments but no new issuances on a given day.
practices and will offer relief to IPAs’ credit risk concerns through increased clarity related to issuer funding gaps. These changes are subject to SEC approval.

- Longer-term proposals identified by the Task Force offer a broad range of potential changes that could further reduce risk and contribute to earlier settlement finality. Going forward, and in respect to the intraday credit exposure incurred by the IPAs, efforts are required to engage the appropriate industry participation to prioritize the longer-term recommendations to identify the optimal approaches for risk mitigation and advancement of MMI settlement finality. These changes may require structural changes and technology investments.

2. Risks Associated with Issuer Failure

As mentioned earlier, DTC’s MMI system does not generally link the maturity of a money market instrument with the issuance of a new instrument intended to fund the maturity (e.g., rollover of commercial paper). As a consequence, if an issuer default occurs, DTC must unwind both matured paper and new issuances, which may significantly change participants’ net debit balances intraday.

Unwinding of MMI maturities and issuances as a result of an issuer default poses potential for systemic risk because issuance and maturity presentments are provisionally credited to participants in some instances prior to the IPA being funded by the issuers. As such, the associated credits are subject to reversal until 3:00 PM ET. The impact of such reversals could then strain the system from a liquidity and credit perspective.

DTC mitigates this risk by employing the Largest Provisional Net Credit (“LPNC”) risk management control. On each processing day, DTC provisionally withholds intraday from each participant the largest net settlement credit of an issuer for purposes of calculating the participant’s position in relation to system controls. As such, this largest net settlement credit is not included in the calculation of the participant’s collateral or in the settlement balance measured against its net debit position. Therefore, in the event of the default of any issuer, the participant will not be under-collateralized nor will the potential issuer failure reversals permit the participant’s collateral group net debit to exceed its net debit cap. If there are multiple issuer failures, however, resulting in several reversals, the amounts might exceed the LPNC, creating exposure for DTC participants.

DTC will perform an analysis to determine the impact of two or more issuer failures on participants’ balances to determine the potential liquidity and credit impacts to DTC and its participants. The results of this analysis will be the basis for considering any changes to DTC’s LPNC risk management tool.

G. OVERRIDES OF RISK MANAGEMENT CONTROLS

Reclamation of Transactions and Other Overrides

There are various transactions that for limited purposes are permitted to be processed, in order to support adjustments, penalties, and fees. In the case of adjustments, these include facilitating the return of securities received in error.

Under DTC’s Rules, securities transfers are final from the standpoint of the delivering participant once the securities have been debited from its securities account. Because there is not a formal “matching” at DTC, the receiving participant that does not recognize the delivery has the right to “reclaim” it by redelivering the same securities back to the original delivering participant, in a separate transaction known as “reclamation.” Return deliveries may be processed without the application of risk management controls only as long as the settlement value of the transaction is less than $15 million for deliver order transactions or $1 million for payment order transactions and the reclaim transaction is processed by 3:30 PM ET on the original day of delivery. On any subsequent day, the delivery of returned securities will be subject to risk management controls as for any deliver order.
Total reclaims represent less than 2% of the aggregate dollar amount of delivery orders and payment orders processed on an average day or the equivalent of approximately $3 billion; same-day reclaims not subject to risk management controls amount to only $9 million on an average day (the equivalent of 0.3% of total average reclaims).

Still, this reclamation procedure may impact DTC or its participants. Such matched reclaims potentially result in additional liquidity and/or market exposure to DTC if the original delivering participant to which the securities were reclaimed became insolvent prior to settlement. While this may not be a major concern for one individual reclaim, an aggregation of such reclamations could cause exposure to DTC or its participants.

As a mitigant to the risks related to reclaims, DTC is considering a pre-settlement matching requirement for deliver order and payment order transactions. Pre-matching transactions prior to settlement would eliminate reclaims since both parties agree they know the transaction prior to settlement. DTC’s matching proposal is currently being vetted with various participants and industry groups.

To manage the risks related to transactions permitted to override DTC’s risk controls more generally, DTC Settlement Operations and DTCC Risk Management monitor situations where participants exceed their net debit cap or have a negative collateral monitor. Studies on exposures to DTC from these transactions are currently reviewed on a quarterly basis by DTCC Risk Management.

H. CYCLE TIMES

T+3 Settlement of Equities

Equity transactions executed on U.S. domestic markets settle three days after the trade and DTC and NSCC are currently structured to provide settlement on this schedule. This time lag creates exposure and settlement risk for the parties to the trade as unforeseen intervening occurrences could cause transaction failure, independent of DTC and NSCC processing. Much of this exposure is mitigated by central counterparty guarantees that are covered by collateral requirements posted by each member. Reducing this three-day “cycle time” would curtail outstanding exposure between the parties to a trade, trading parties to the clearinghouse and for the clearinghouse itself, hence lessening systemic risk.

It is appropriate, therefore, for the industry and DTCC to perform a cost/benefit analysis to assess the impact of shortening the cycle. Certain benefits of shortening the cycle are documented and known. For example, a shortening of the settlement cycle for equities from T+3 to T+2 would:

- decrease credit exposure by approximately 25% (three days of open trading exposure rather than four);
- reduce members’ exposure to NSCC;
- reduce the number of open settlements and/or positions, which may reduce NSCC’s collateral requirements and liquidity needs in the event of a default; and
- synchronize the equity settlement cycle with global counterparties enabling more fungible and flexible trading.

On the other hand, moving to a shortened settlement cycle could lead to some incremental operational risk, as there is less time to fix operational errors, which could result in increased fails. Discussions in the U.S. to reduce the settlement cycle to T+1 that occurred some 10 years ago may have led some institutions to prepare their systems to handle a shorter settlement cycle so that minimal incremental investments may be required. Given the potentially systemic risk-reducing aspects of a shorter settlement cycle, NSCC will explore the implications at NSCC of such a shorter cycle.

Finally, mandating same-day trade affirmations might be considered a single-standing initiative to reduce systemic risk or a pre-condition for containing operational risk during a shortened settlement cycle. There appears to be some industry interest in this, while there are also challenges to same-day trade affirmation.
I. COUNTERPARTY RISK IN MORTGAGE-BACKED SECURITIES (“MBS”)

The Mortgage-Backed Securities Division of FICC as a CCP

During the financial crisis of 2008, the need for a central counterparty in the mortgage-backed securities market became apparent. After the Lehman bankruptcy, FICC/MBSD initiated its liquidation process of advising members to undertake the liquidation of pending “to be announced” (“TBA”) mortgage-backed securities obligations. However, the amount of gross obligations under this process would have placed an undue burden on members already suffering from severe shortages of liquidity. On an exception basis, FICC/MBSD for the first time used a centralized netting process which led to a reduction of obligations for its members from the gross amount of $329 billion to approximately $30 billion.

Subject to regulatory approval, FICC/MBSD as a CCP would replace the bilateral settlement of MBS pools among FICC members. FICC/MBSD has been working towards this goal in an incremental fashion. The last two steps are pool netting, which will have FICC/MBSD function as a CCP for netted pool obligations, and full TBA Netting and Novation, where FICC/MBSD will become a CCP at the TBA level when trades are compared and matched. In addition to the issue of counterparty credit risk that would be addressed by converting FICC/MBSD into a CCP and applying a guarantee at the point of match, this model will further mitigate operational and fail risk due to the reduced number of settlements.

In September 2009, FICC/MBSD launched a pilot program for pool netting. Subject to regulatory approval, FICC/MBSD will move the pilot program of Pool Netting into production in phases until all FICC/MBSD-supported products are part of the Pool Netting Service.

In the long term, FICC/MBSD will consider replacing the current settlement balance order model, in which members net out to multiple counterparties, with a model in which members would net out to one receive/deliver obligation (per CUSIP) with FICC/MBSD as counterparty. Under the longer-term CCP plan, FICC/MBSD would also replace the current netting model, which is effected 72 hours prior to settlement, with a daily netting process that continues until settlement date minus one. This will expand the time frame in which eligible trades can be submitted for netting, thereby reducing settlement obligations and mitigating the existing operational risk that arises from netting one to three months’ worth of trades in a single process. It would also eliminate the current Notification of Settlement process, because FICC/MBSD will be party to all settlement activity and thus be able to update its books and records in real time. Finally, this approach will improve the predictability of liquidity management by giving firms a more accurate calculation of their daily margin requirements.

J. PROVIDING TRANSPARENCY IN THE FIXED INCOME MARKET

Segregation of Cash and Derivatives Portfolios

Margin requirements within FICC/GSD were historically calculated based on the member’s portfolio of cash market positions, while a member’s exposure in derivatives positions was essentially not taken into account. Firms had to keep the portfolios for their cash trades separate from their portfolios for fixed income futures trades, since they were done on separate trading platforms and cleared through and risk-managed by separate clearinghouses. This impaired market transparency, because market regulators and clearinghouses lacked a centralized view of member portfolios. For example, FICC/GSD would not receive important indications of a worsening financial situation of a member as it was experiencing extreme negative results in its derivatives book.

In the event of the default of a firm that participated in both the cash and derivatives markets, liquidation results could have been impaired because of discrepancies in timing, information-sharing, etc., among the clearinghouses. In addition, FICC/GSD could not reduce clearing fund requirements for derivatives positions that were offsetting cash positions. In this case, FICC/GSD members were required to post more collateral than they would have been required to if derivatives positions were incorporated in the positions that were
margined, acting as a drain on liquidity. Both the lack of transparency as well as liquidity constraints could have posed systemic risks.

The cross-margining arrangement between FICC/GSD and NYPC addresses these risks by aggregating information about an individual member’s total risk in cash markets and applicable derivatives. By margining cash and derivatives in a “single pot,” FICC/GSD and NYPC bring together cash positions and their derivatives hedge in a manner designed to substantially improve operational and capital efficiency, while providing market supervisors a single view of a firm’s market risk. Following the required regulatory approvals, NYPC launched in March 2011 and FICC/GSD implemented its cross-margining program with NYPC at that time.

K. ENTITLEMENT PROCESSING

Handling of Entitlement Payments and Paying Agents

The process of handling entitlement payments (dividends, principal and interest payments, and redemptions) depends on a widespread network of paying agents external to DTC that are responsible for making these payments to DTC; this potentially creates operational risk to DTC. DTC deals with some 2,000 agents on an average high-volume payment date and 7,000 different entities over the course of a year. The paying agents, from which DTC receives payment, range from large bank paying agents, local banks and trust companies to small municipal issuers paying on their own behalf with correspondingly different abilities and automation. DTC has developed extensive automated capabilities to streamline the processing of these payments.

Although DTC still deals with a sizeable number of agents in handling entitlements, the activity has become significantly concentrated over the past decade. Currently, for example, the top five agents are responsible for on average 60% of the scheduled entitlement payments (dividends, interest and redemptions) that DTC processes.

In 2010, DTCC expanded its entitlement processing public metrics to include 16 paying agents responsible for 85% of the value of all payments made. The performance of these 16 agents is compared against all other agents (in aggregate). Results are monitored to identify performance gaps between the two groups and trends that may indicate an operational disruption.

Where issuers themselves perform the function of agents (typically some small municipalities), DTC uses the Automated Clearing House (“ACH”) processing for the handling of the necessary payments. ACH rescission rules may create risks. For example, an ACH may reverse an entitlement payment made within 5 days and at least 24 hours after an error has been detected. DTC will have to honor such rescission. DTC, in turn, would debit the amount from its participants to which the payments were made. If any such participant became insolvent in the meantime, DTC would be a secured creditor to such insolvent participant. It should be noted that ACH payments amounted to just 1% of total P&I payments in both 2009 and 2010.

However, DTC has identified the top agents that account for over 90% of all ACH payments, more than half of which have agreed to use wire payments instead of ACH processing. DTC is still in discussions with the remaining agents.

L. HIGH-FREQUENCY TRADING AND THE IMPACT ON DTCC

Algorithmic Trading, Volatility and the Impact on Margining and Market Liquidity

On September 30, 2010, the staffs of the U.S. Commodity Futures Trading Commission (“CFTC”) and the SEC issued a joint report on the events of May 6, 2010, also referred to as “the flash crash.” The key results of the analysis were that May 6th started with significantly volatile trading and thinning liquidity because of negative macro fundamentals released that day. At 2:30 PM ET, the Dow Jones was down by 2.5% when
compared to the close on the previous day.

At 2:32 PM ET, a large trader initiated a sell order valued at $4.1 billion. This sell order was based on an automated sell execution algorithm and completed within 20 minutes. High-frequency traders (“HFTs”) initially absorbed this order accumulating large net long positions for these trades. Recognizing that they held such net long positions, HFTs aggressively sold out of these long positions between 2:41 PM ET and 2:44 PM ET, further deepening the fall in equity prices. In addition, several HFTs observing these drops in prices simply halted all trading after exiting their positions and hence withdrew liquidity from the market, which led to an even greater mismatch between sell orders and buy offers, magnifying the market crash. As a result, the Dow Jones declined by nearly 10%. Moreover, individual stocks had in some cases declined to penny values.

After reviewing the causes for the decline and verifying the integrity of their data systems, buy-side and sell-side participants returned to the market and normal price discovery began to take place. As a result, most stocks had returned to trading prices reflecting such price discovery. However, as the above-mentioned report pointed out, at 3:00 PM ET over 20,000 trades in more than 300 separate securities representing 5.5 million shares had traded at 60% away from their 2:40 PM ET values. After the market close, the Financial Industry Regulatory Authority (“FINRA”) and the exchanges decided to break all such trades as they were considered “erroneous.” Yet, there was large uncertainty during the day about which trades would eventually be broken, as there are no precise rules.

In their report, the CFTC and the SEC also noted that 17 HFTs accounted for 43.8% of dollar volume on the public quoting markets between May 3 and May 10, 2010. As HFTs use quantitative and algorithmic methodologies, the May 6th example shows how one algorithmic trade ultimately triggered HFTs’ models to also sell out of existing positions. The results of this CFTC/SEC analysis are not undisputed, however.

High-frequency trading is common practice, especially in the U.S. equities market. Therefore, if it were established that HFT activity translates into a material rise in market volatility, this could impair effective margining for all participants, including in such infrastructures as NSCC. The impact of such increasing volatility could be heightened as NSCC moves to intraday mark-to-market calls and to an Accelerated Trade Guarantee. The concurrence of excessive volatility and the failure of a large member could stress the current risk design.

Apart from a modeled trigger that leads to a sudden drop (or rise) in stock prices, there could also be a fatal flaw in the models (algorithms). HFT has expanded to the currency, bond and commodities markets, and traders are not only trading within these markets but also across them following certain algorithms. A flaw in the algorithmic model of high-frequency traders and the related sudden drop in one market could, therefore, be transmitted to other markets and hence affect other subsidiaries of the DTCC infrastructure.

As the aforementioned CFTC/SEC report pointed out, market participants have different parameters that trigger them to enter into a trading pause. While market withdrawal by one participant will not affect the orderly functioning of the market, the withdrawal of many participants, including HFTs, could lead to a liquidity crisis, undermining price discovery, which ultimately leads to a market crash.

NSCC is considering the deployment of a post-trade risk management tool that will allow clearing members to pre-set thresholds for their customers. This will act as an additional risk management process for clearing members as they would be alerted when these pre-set thresholds are being approached or are breached. However, it would be up to such clearing members to consider corrective action.

NSCC is participating in industry groups to understand the additional opportunities for mitigating this risk and related issues. In that context, it might be contemplated, among other things, whether same-day trade affirmation may normalize trading volume.
DTCC STRUCTURAL CONSIDERATIONS

Some of DTCC’s subsidiaries were individual companies for a number of decades before they were integrated under the DTCC umbrella, while remaining as separate legal entities and maintaining large parts of their former identities. Considering their strong record of risk mitigation for the industry based on their original foundations, DTCC’s subsidiaries are actively reviewing whether there are opportunities for improvement of structural legacy processes.

M. ENTITLEMENT PROCESSING

1. Advance of Entitlement Payments

One legacy process that DTC has addressed concerns entitlement payments. At one time, DTC employed an approach that allocated virtually all cash entitlements (>99.9%) to participants on the payable date, generally withholding only those allocations where information had been received that payment from the agent or issuer would not be received on the payable date. To support a timely combined DTC/NSCC settlement, DTC employed a stated cut-off of 3:00 PM ET for receipt of entitlement payments. As payments continue to be received until Fedwire closes at 6:00 PM ET, a portion of each day’s payments was allocated to DTC participants before funding was received from the paying agent, creating intraday liquidity/credit risk on these payments.

The sheer volume of payments (more than 200,000 on high volume days) as well as the number and ability of agents making payments also complicated the process of identifying particular payments to the securities for which payment was intended. Due to untimely funding and an inability to reconcile all payments before completing the processing day, on average 2% of each day’s payments were allocated to participants before they were received or reconciled. These payments represented $3 billion – $6 billion per month in 2010. If, in this process, payments were incorrectly identified, they could have been subsequently reversed. As a result of this practice, DTC was exposed to the credit risk of the receiving participant if any payments had to be reversed.

Over time, DTC expended considerable effort to achieve improved performance by agents remitting funds and identifying detail to DTC in sufficient time to permit allocation of the payment to the participants to whom it is due on the payment date. As a result, the vast majority of funds were received in a form permitting same-day allocation. Given this improvement, DTC determined not to advance funds any longer, effective February 7, 2011, and now only allocates funds that are received by the cut-off time in identified form. This change in practice by DTC was preceded by working with various groups of members and agents to prepare for the implementation of this change as well as the necessary rule filing approval by the SEC.

DTC also evaluated the unintended consequences of such risk-mitigating change; in this case the likely increase in overnight balances in the concentration account with one of DTC’s participants. An analysis over 89 days (July 1, 2010 through November 5, 2010) showed that on one peak day such overnight deposit, assuming the P&I allocation had been implemented at the time, would have been 18 times greater than the actual deposit that night, although far below concentration limits set for such deposits.

DTCC’s Treasury Department monitors and reports daily on these limits. Still, in view of greater exposure to such credit and operational risk with one entity for its overnight balances, DTCC’s Treasury Department is evaluating the cost/benefits of further diversifying these overnight deposits in order to mitigate the concentration risk.

Entitlement processing was previously addressed under Market Structure, K. above. However, the issue addressed in that section was more related to market structure constraints while the aspects of entitlement processing covered under this section are more related to DTCC structural considerations.
2. Entitlement Processing, Payment Timing and Identification and “Clawback”

Entitlement processing frequently involves fund flows from multiple accounts to the paying agent, meaning that agents have the same issues as DTC, of confirming and identifying receipts. The complexity in the entitlement process is also present at the paying agent level, since paying agents are being funded by issuers that frequently are moving funds from other concentration accounts to the agent. As a consequence, agents have the same problems of payment timing and identification.

In DTC’s efforts to improve this process over the past decade and to simplify the process for agents that may themselves advance funds in anticipation of issuer funding, DTC implemented a “clawback” process, permitting an agent to demand the return of a particular payment if it subsequently discovers (within the permitted time frame of 24 hours) that the offsetting funds from the issuer had not been received. Still, since the beginning of 2009 and through 2010 there were only 17 such clawbacks out of a total of some 9.5 million entitlements processed since then, totaling $36.8 million compared to the aggregate amount of $4.5 trillion in entitlement processing during that time period. In light of changes in its own allocation methodology which were implemented in February 2011 (see above), DTC will assess the appropriateness of continuing this relief for agents which may advance funds in anticipation of issuer funding.

N. TIMING OF SETTLEMENT

End-of-Day Settlement Process

DTC’s settlement system in the U.S. has a single net “end-of-day” settlement process. This end-of-day process at DTC and NSCC consolidates settlement credits and debits resulting from activities into a net-net settlement balance that is ultimately settled through an exchange of payments via the Federal Reserve National Settlement Service (“NSS”) funds transfer system at the end of the settlement day (at about 4:30 PM ET). In practical terms, DTC/NSCC settlement nets down the number of funds transfers necessary to effect settlement for DTC and NSCC through NSS to less than 100 for over 300 participants and for hundreds of thousands of transactions across several asset classes, including MMIs processed by the participants’ settling banks.

Despite the ability to use intraday credits to offset intraday debits that is provided by an end-of-day settlement process, having an end-of-day money settlement may extend the credit risk participants are taking and the inability to use freed up funds from transactions that could be settled intraday may constrain their liquidity. The 2008 global financial crisis has shown that this risk may have systemic implications.

With the CNS for Value model, a provision for multiple settlement cycles intraday would be incorporated into the system redesign plan. The costs/benefits of multiple or separate asset class settlement cycles will be analyzed, including the effects that either potential option might have on netting efficiency. In addition, morning settlement needs would have to be evaluated from a margining perspective to understand their potential impact, because multiple settlement cycles would be cross-endorsed and netted with NSCC.

O. TRADING ACTIVITY OF UNREGULATED MARKET PARTICIPANTS

FICC/GSD Members’ Risk Profile

A number of FICC/GSD members engage in daily trading with unregulated investment pools ("UIPs") more commonly referred to as "hedge funds." The unregulated nature of this market segment contributes to a lack of transparency for FICC/GSD with regard to the exposure of its members to such UIPs.

There is the risk that positions that are maintained by a member at FICC/GSD may be offset by its positions with these unregulated entities. The lack of information regarding these positions does not give FICC/GSD a clear overall picture of a current member’s risk profile. For example, an FICC/GSD member could have an undue concentration of trades with an unregulated firm that might have serious financial difficulties.
FICC is working to make membership in GSD for certain services available to UIPs that meet enhanced financial criteria to address their unregulated status. If regulatory approval can be obtained, FICC/GSD would start processing applications for membership to FICC/GSD with these firms with the noted benefit of increasing transparency and improving FICC/GSD's ability to more effectively monitor the positions of current members.

**CONCENTRATION RISK**

DTCC is confronted with two aspects of concentration risk. First, the success of DTCC’s business model and risk design has led to a development whereby a growing percentage of trades in the securities business is now cleared through and settled by DTCC. On the one hand, this has led to consistent margining practices across the industry, greater transparency and orderly managed liquidation. And yet, this heightened concentration of clearing and settlement through DTCC could present systemic risk if the company’s risk design or parts thereof were to fail, or even if the market were to lose confidence in that design.

The second aspect of concentration risk is that the U.S. financial industry itself is highly concentrated, which has been considered by some as one of the contributing factors to the severity of the financial crisis in 2008. For example, the five largest U.S. financial institutions hold more than 70% of total U.S. banking assets. Some analysts argue that concentration is at the core of systemic risk. If a financial system is dominated by a small number of large banks, the failure of any one of those institutions carries the systemic risk that the others will fail as a consequence, in some sense making each of those institutions too big to fail. For FICC/GSD, this aspect of concentration risk is reflected in the fact that there are only two clearing banks, which are critically important to FICC for General Collateral Finance Repo (“GCF Repo®”) and security settlement processing. Also, four IPAs account for the vast majority of MMIs by volume and value settled within DTC. All of the above are liquidity providers with committed lines of credit to DTC and NSCC.

**P. DTCC AND CONCENTRATION RISK**

1. **DTCC and Single-Point-of-Failure**

   DTCC’s services cover a very large portion of securities activities in the United States. Proposed changes in the securities industry suggest that DTCC should make its services available to an even broader set of customers, including market segments DTCC has not traditionally served.

   It is the imperative of DTCC’s services to bring processing efficiencies and reduce risk in the industry. As such, DTCC identifies standard processes the industry engages in that could leverage DTCC’s common platform and be added to its suite of services. This leverages the industry’s investment in building the platform’s capabilities and lowers the cost of those capabilities allocated to particular business functions, thereby helping to reduce DTCC’s fees. As this business model is pursued, however, it may raise concerns about the possibility of “single-point-of-failure” risk for the industry.

   Similarly, the introduction of new membership types could alter DTCC’s exposure to risk. Therefore, when considering the appropriateness of admitting new types of participants, DTCC sets membership standards designed to address such risks. Ultimately, the adequacy of DTCC’s risk design should reflect systemic benefits to the industry that more than offset any systemic risk implications from such an expansion.

   It is important in that context that DTCC continues to maintain a robust risk design, follow a stringent assessment of new initiatives and carefully review resilience of this risk design against such new initiatives and, where necessary, make adjustments to mitigate additional risks. More specifically, DTCC applies a comprehensive risk assessment process that assists the evaluation of new initiatives by reviewing these initiatives against CPSS-IOSCO standards or other regulatory provisions to assure safety and soundness of such new initiatives.
This issue will be periodically reassessed as DTCC adds new asset classes, new products, new services or new classes of participants that may materially affect the concentration risk at DTCC.

2. DTCC and Tri-Party Repo Transactions

The tri-party repo market is of considerable scale, peaking at $2.8 trillion on one day during 2008, and still averaging $1.7 trillion/day in 2010. There is also considerable concentration risk currently in this market because the top 10 dealers account for approximately 85% of cash borrowed and the top 10 investors account for approximately 65% of cash lent against collateral.

In its white paper of May 17, 2010, the Federal Reserve Bank of New York (“FRBNY”) invited comments on the Report by the Task Force on the Tri-Party Repo (“TPR”) Infrastructure published on the same day. The key focus of the recommendations was to reduce the reliance by market participants on intraday credit provided by the tri-party repo agents. The ultimate goal was to reduce such intraday credit by 90%. DTCC is an active member of the Task Force.

One of the key recommendations of the Task Force was to streamline the current settlement process sufficiently to position all cash and collateral to execute a simultaneous “unwind and rewind” of maturing and new trades early enough in the afternoon. However, in a Progress Report by the Task Force published in July 2011, it was concluded that such “unwind and rewind” was not achievable in the short term, but the Task Force remained committed to the objective of eliminating intraday credit by exploring approaches that “entail a more substantial re-engineering of tri-party repo settlement mechanisms, including the potential adoption of multiple batch or real-time settlement approaches.”

DTCC is planning to change the time of daily unwind of collateral to 3:30 PM ET. This will impact the GCF Repo® service that FICC offers. FICC is working with the clearing banks to coordinate any changes to occur in the GCF Repo® service.

Q. RELIANCE ON CLEARING BANKS

Impact on FICC in Case of Default or Operational Failure of Clearing Bank(s)

FICC/GSD and FICC/MBSD depend exclusively on two members as clearing banks for FICC/GSD’s GCF Repo® service and the processing of all other settlement obligations between members and the clearing corporation. A default or operational failure by either of these two institutions could have large systemic implications for FICC’s members and ultimately for FICC. In addition, these two members are also among DTC’s major IPAs for MMIs. The combined impact of a clearing bank and/or IPA’s inability to operate within DTCC’s timelines could lead to a systemic risk event.

FICC has somewhat mitigated the risk of failure at one clearing bank by using the services of two clearing banks. Becoming a full clearing member of the Fed Book-Entry System would require that FICC be designated a systemically important FMU by the Financial Stability Oversight Council and authorized by the Board of Governors of the Federal Reserve Bank to access Federal Reserve accounts and services. In addition, FICC would need to analyze, at a minimum, legal constraints, technology concerns, capital requirements, and regulatory concerns.
**CONNECTEDNESS RISK**

A network with a great number of members which have few links and a small number of members that have many links is defined as scale-free. In other words, highly interconnected members are far outnumbered by members with few connections. In normal times, it is far more likely that a lesser-connected member of the network will fail, because the number of members in the network with few connections is greater than the number of highly connected members. Under such circumstances, the system would be very resilient to such failure. When operating in a stressed environment, however, and experiencing the failure of a member with a high number of connections, the impact of such failure would be systemic. This is why scale-free networks are classified as “robust, but fragile.”

The European Central Bank ("ECB") has identified payment systems as networks with such property. The Federal Reserve Bank of New York has come to similar conclusions and its research showed, for example, that in the case of Fedwire, the wire transfer system for high-value payments operated by the Federal Reserve System, the nodes with the greatest number of links accounted for some 75% of daily value transferred through Fedwire.

Of course, some of DTCC’s participants have many connections with other financial institutions, with payment systems and with DTCC. DTCC, in turn, is a hub for the vast majority of clearing and settlement of securities in the United States and hence critical to the network of financial institutions. DTCC also has additional connections with other clearinghouses. These interconnections between and among participants in the financial services industry are a source of stability, but can also be a source of systemic risk.

**R. LINKS WITH OTHER INFRASTRUCTURES**

1. **Interlinkages with Other CCPs**

   There are different models for the clearing and settlement in the cash and equities markets. While such clearance and settlement is more concentrated in the United States and primarily undertaken by industry utilities, Europe has adopted a more competitive model. There are advantages and disadvantages to either model.

   In the European model, many of the CCPs active in both the cash equities and derivatives markets are profit-based. This raises the risk that such CCPs might adjust margins to meet competitive challenges. In the derivatives market, there is the additional challenge that complex instruments might be difficult to margin against whether or not CCPs operate in a competitive space.

   In the trading of cash equities, the demand for CCP linkages is strongest in Europe, where the same stock can be traded on multiple national exchanges and multilateral trading facilities. A firm that trades the same stock on multiple venues wants its trades netted into one obligation at its CCP of choice for the purpose of settlement and margining. A venue which offers such choice will give its trade feed to multiple CCPs. When a trade is executed between two parties that use different CCPs, the CCPs manage their exposure to each other’s ability to fulfill the obligations under the trade via interoperability agreements with each other. Linked CCPs could be affected by the financial or operational failure of one CCP in the chain.

   Adequate measures must be in place, via regulation and governance, to ensure that the competition of linked CCPs does not compromise the safety of the markets. Common concerns regarding competition among CCPs include a “race to the bottom” where CCPs compromise their safety standards to win business, and inadequate disclosure of relevant information among linked CCPs to enable accurate assessment of the credit quality and competencies of a CCP, including its risk management regime.

   Therefore, it is a necessity to have interoperability agreements in place with robust, harmonized and

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scalable inter-CCP risk management arrangements to ensure legal certainty of CCPs’ ability to exercise their contractual rights against linked CCPs, to have complete transparency of all link agreements entered into by all CCPs, and to provide for business continuity arrangements among linked CCPs and the venues for which they clear.

EuroCCP, is fully interoperable with SIX’s x-clear for trades executed on the UBS MTF (Multilateral Trading Facility) platform as of July 29, 2011. Similarly, BATS Europe recently took a first step towards offering a fully interoperable clearing environment to its members by adding EuroCCP – along with LCH.Clearnet Ltd and SIX x-clear – as alternative choices to the European Multilateral Clearing Facility N.V.

EuroCCP also took leadership in making four specific recommendations in a white paper on interoperability issued in January 2010. These recommendations were:

- An Interoperability Convention, to provide transparency of arrangements between interoperating CCPs, should replace confidential bilateral agreements.
- CCPs should augment their existing default funds to cover potential close-out losses in the event of an interoperating CCP’s default.
- Commercial barriers to interoperability should be removed. Each market participant should be able to choose which CCP it uses.
- Longer term, further consideration should be given to inter-CCP netting, whereby a netting agent would be established to determine each CCP’s net securities and cash position against the other CCPs.

While the first recommendation, an Interoperability Convention, has not been agreed to by CCPs, the legal nature of interoperability agreements seems to have converged and there is greater transparency among CCPs with regard to sharing their content. Still, such increased transparency does not provide insight in all interoperability agreements entered into by all CCPs. The remaining three recommendations have not been adopted by the industry at this point. EuroCCP has maintained high visibility on these issues.

2. Consequences of Failure of non-DTCC CCP

As the number of CCPs (some functioning as utilities, some profit-driven) and the demands on CCPs grow, the probability that a CCP will eventually fail may also increase. If a CCP were to fail, this could affect market confidence in such infrastructure. The Brady Report on the 1987 stock market crash noted that rumors grew on the second day of the crash that a clearinghouse was about to fail, which further intensified market panic. Such effect might be enhanced if one of DTCC’s subsidiaries had interoperability, cross-margining or other link agreements with the failing entity. At this point, however, it would appear that the systemic risk would be limited to the important issue of market confidence in the concept of CCPs.

LEGAL AND REGULATORY RISK

Legal risk may occur in a variety of forms, and it is the remit of the legal departments of all participants in the financial services industry to control such risk. However, there are systemic risk issues that may have to be addressed in this context. For example, cross-border expansion raises such questions as compatible legal regimes.

Regulatory risk is also a multi-faceted issue. The recent financial crisis was partly caused by regulatory arbitrage, a conscious effort by certain industry participants to incorporate themselves within a jurisdiction or within a regulatory space that provided for the least regulatory control.

The effectiveness of the Dodd-Frank Wall Street Reform and Consumer Protection Act on the financial industry's and DTCC's ability to mitigate systemic risk will significantly depend on the regulatory implementation of Dodd-Frank. Also, in light of the agreement of global regulators to strengthen prudential standards commencing now with final implementation by 2019 (Basel III), detailed regulatory implementation by national overseers needs to be carefully reviewed with respect to new systemic risks as unintended consequences. Finally, international standards, such as the principles for financial market infrastructures promulgated by CPSS-IOSCO, also affect the way in which systemic risk may be addressed across infrastructures and jurisdictions.

S. INSOLVENCY OF DTCC’S SUBSIDIARIES

Insolvency of DTCC Subsidiary, Receivership and Resolution

There are extreme scenarios that might lead to multiple failures of DTCC participants, which if combined with a precipitous fall in collateral values, could lead to a situation in which one or all of DTCC’s clearing agency subsidiaries have exhausted their liquidity resources, accrued losses not reimbursed by the membership and, therefore, might become insolvent. Due to the systemic significance of DTC, NSCC and FICC, such insolvency would have systemic effects on the financial system.

It is a matter of best practice for DTCC to understand the implications of such an insolvency, even if the likelihood is remote. The assessment of this risk entails analyzing the types of potential insolvency proceedings that may be applicable to DTCC’s subsidiaries under pre-existing law and in light of the Dodd-Frank provisions. It also requires anticipating the types of transactions that would likely be outstanding at the time of insolvency and the treatment of such transactions under the applicable insolvency regime.

T. WITHDRAWAL OF GOVERNMENT GUARANTEES FOR FANNIE MAE AND FREDDIE MAC

FICC/MBSD and a Change in Business Model

Fannie Mae and Freddie Mac guarantee almost $11 trillion in U.S. mortgages, or more than 90% of all mortgages. While these government-sponsored enterprises (“GSEs”) only carried an implicit government guarantee, they eventually had to be put into conservatorship in September 2008 due to their exposure to the subprime and Alt-A mortgage market. The costs of this intervention, combined with ongoing evaluation of the role of these GSEs in the housing finance sector, could result in changes in the U.S. government’s support for these entities.

Any material changes to the government guarantees of Fannie Mae and Freddie Mac could siphon off liquidity from the housing market. Currently espoused models could become obsolete. Given the market dominance of the GSE model, mortgage lenders would be unlikely to securitize their books; FICC/MBSD’s model of fungibility of GSE-backed mortgage pools would no longer stand. Such change would have implications that would be far-reaching.
In February 2011 the Treasury Department released a report to Congress\textsuperscript{20}, which contemplates three basic options to the current regime of the federally guaranteed housing market:

**Option 1:** A privatized system of housing finance with the government insurance role limited to the Federal Housing Administration (“FHA”), the U.S. Department of Agriculture (“USDA”) and the Department of Veterans Affairs’ assistance for narrowly targeted groups of borrowers. This option would represent the most dramatic change to the current market, leaving the vast majority of mortgage finance to the private sector.

**Option 2:** A privatized system of housing finance with assistance from FHA, USDA and the Department of Veterans Affairs for narrowly targeted groups of borrowers and a guarantee mechanism to scale up during times of crisis. This option would also be a major departure from the current model, although it is unclear how the backstop of guaranteeing a larger share of mortgages during times of crisis would operate and how it would affect the underlying model.

**Option 3:** A privatized system of housing finance with FHA, USDA and the Department of Veterans Affairs’ assistance for low- and moderate-income borrowers and catastrophic reinsurance behind significant private capital. If this option were selected the impact of this change would materially depend upon the way in which it were implemented. It is unclear, in that context, how the contemplated government-supported reinsurance feature would affect the market as well as infrastructures such as FICC/MBSD that operate in this space.

Of course, the report of the Treasury Department and its considered reform options for the mortgage market are only proposals at this point and there are other potential changes, such as replacing the GSEs with a U.S. government-operated entity that would provide a guarantee on mortgage-backed securities. This concept could include placing this new entity under the U.S. Treasury or the Department of Housing and Urban Development, the latter of which oversees the FHA and Ginnie Mae.

While the latter may change little in the way in which the market and FICC/MBSD may operate, this is far less certain with regard to the three options above considered in the report of the Treasury Department. These options would likely change the U.S. government’s guarantee structure impacting FICC/MBSD’s business model. If mortgage-backed securities in their majority were to carry a private label, such non-GSE guaranteed securities would not be eligible at FICC/MBSD. This, in turn, could result in a material decline of business volume at FICC/MBSD, unless FICC/MBSD changed its business model to include non-GSE guaranteed mortgage-backed securities, which, in turn, would necessitate regulatory approval.

FICC/MBSD will monitor the relevant proposals as they evolve. Once such proposals have sufficient detail, FICC/MBSD will undertake analyses considering the various reform proposals with reasonable prospects of implementation. Such analyses will include the impact of each proposal on market efficiency, liquidity and the impact on the risk-reducing function of clearing mortgage-backed securities through FICC/MBSD, especially from a systemic risk perspective. Such impact analyses will facilitate informed discussions with policy-makers in the legislative branch as well as with regulators in order to guide them to a workable business model without undermining the risk-reducing function of the clearing corporation.

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**PERFECT STORM**

In a so-called perfect storm a series of independent, discrete events may trigger a systemic shock. Some might argue that accelerating deregulation of the financial services industry, the growth of a shadow banking sector, the development of increasingly complex financial instruments in an extended low interest rate environment all were factors that contributed to the build-up of the 2008 financial crisis. The fact that this crisis peaked in a U.S. presidential election year complicated the speed with which solutions could go through the Congressional approval processes. All in all, these factors (and others, not mentioned) made for a perfect storm scenario in which risks grew and came to the tipping point without preventative intervention.

The March 2011 earthquake in Japan is another perfect storm example. A random event, an earthquake of 9.0 on the Richter scale, caused a severe tsunami on Honshu Island with loss of life and property damage. As a result of the earthquake and tsunami, the Fukushima Daiichi nuclear plant was severely damaged with unpredictable environmental outcome and economic consequences. Later analysis revealed that regulators had failed to properly assess the resilience of the plant against tsunamis. All of this happened against the background of a chronically weak Japanese economy with permanently low interest rates and exponentially rising government debt partly due to a rapidly declining demographic trend.

In applying these lessons to DTCC, it is worthwhile reviewing discrete risks as well as the occurrence of combined risk events in order to understand possible cascading effects. For example, what would happen if there were a multiple failure of participants and if such event also coincided with the collapse of a systemically important CCP in Europe as well as with a flash crash two minutes before the closing bell?

**U. SOVEREIGN RISK**

**Effects on Market Stability**

In DTCC’s internal review of systemic risk endorsed by the Board of DTCC in December of 2010, the Systemic Risk Office of DTCC (“SRO”) identified a downgrade of the U.S. credit rating as a potential systemic risk. Subsequent events such as the debt ceiling dispute, a negative outlook attached to the U.S. rating by S&P on April 18, 2011, followed by S&P’s review for downgrade of the U.S. sovereign credit rating and the eventual downgrade of the U.S. debt rating by S&P to AA+ from AAA on August 5, 2011, confirmed the relevance of this concern.

In thinking through the potential systemic implications, DTCC considered the following: First, the sovereign downgrade could lead to a series of downgrades of AAA-rated U.S. corporates, including DTC, NSCC and FICC. Second, FICC relied heavily on U.S. Treasury and Agency debt as the principal securities collateral held in its clearing funds. The value of such collateral might be impaired following a downgrade. Third, as a consequence DTCC’s subsidiaries might be forced to increase their collateral requirements. Fourth, such additional collateral requirements might be accompanied by similar actions undertaken by participants in the financial sector for secured transactions outside of DTCC, potentially causing material liquidity problems. Fifth, a downgrade of the U.S. long-term rating could also impair the functioning of the commercial paper market and repo arrangements, also with widespread liquidity effects. Sixth, the resulting volatility could impair price discovery and the ability of valuing collateral even for vanilla instruments. Seventh, a U.S. downgrade might require downgrades of other rated entities along the entire rating scale in order to maintain the relative risk ranking of ratings. Such consequential downgrades might also include U.S. municipal bonds. Finally, there were a number of “unknowables” with regard to such an event, for example, the impact of a downgrade on structured instruments.

While some of these potential consequences deriving from a downgrade materialized in the days following August 5th, others have not. However, in order to best prepare for plausible eventualities in the event of a temporary U.S. default or a rating downgrade, DTCC formed a Senior Management Working
Group in April of 2011 with particular focus on the effects on collateral value, liquidity and cash management strategies employed by DTCC’s Treasury, the financial conditions of members and repo counterparties, as well as potential effects on capacity management and DTCC’s operations.

The Working Group evaluated the various scenarios, their potential consequences and DTCC’s options to mitigate risk under such circumstances as well as DTCC’s readiness to use the tools at its disposal. As a result, DTCC was well prepared at the time of a possible default by the U.S. government, which was assumed to occur on August 4th had the debt ceiling not been raised on August 2nd, as well as when S&P downgraded U.S. government debt on August 5th. DTCC also had an appropriate governance structure in place so that it would move effectively from proactive risk management to crisis management.

The longer-term effect of the S&P downgrade on the U.S. economy, the financial services industry and on DTCC is still unclear, but DTCC monitors the situation closely and will continue to evaluate the appropriateness of its risk management tools against any after-effects.

A sovereign default in the euro area, a series of such defaults or even a realignment of the euro area could have similar effects on the stability of the financial system. This is an extreme but not implausible scenario. There has been enormous stress on the euro area over the last two years as the financial crisis caused severe economic contraction in some of its member countries with large fiscal implications. Consequently, the European Union and the IMF have put in place financial support packages for those countries.

If a country belonging to the euro area were to default on its debt and subsequently re-introduced its own currency in order to regain competitiveness, such default and withdrawal from the euro area would reduce market confidence in the euro, impact the balance sheet of European banks and could be transmitted to the U.S. financial system. Such shock would also make other struggling countries within the euro area more vulnerable.

The fragmentation of the European Monetary Union would cast a shadow over all equities and bond markets and, in fact, other asset classes as well. Apart from credit risk, there would be market and liquidity risk that might be difficult to manage through concerted global action by central banks. This could put severe stress on the effectiveness of margining practices of CCPs in Europe and in the United States.

While it is possible that markets would readjust to these changed realities, there is little precedent and no certainty about the way in which this could unfold. Therefore, the approach used by DTCC in assessing the risk implications and DTCC’s mitigation tools with regard to a then-potential U.S. downgrade has been refined in order to mitigate the possible impact of this particular threat.
CONCLUSION

Systemic risk is not a new phenomenon. Over the last 30 years, there have been a number of serious shocks to the financial system, arguably because interconnections and leaps in technological progress have allowed for faster transmission speeds, spreading risks throughout the system. These systemic shocks include, but are not limited to, the Latin American debt crisis of the early 1980s, which posed a major threat to the viability of U.S. banks; the Savings & Loan crisis of the late 1980s, which at the time represented the greatest collapse of U.S. financial institutions since the Great Depression; the Asian financial crisis of 1996/97, which had global implications; the Russian default of 1998, which brought down Long-Term Capital Management (“LTCM”) in the United States and required a bail-in by the private financial sector; and finally, the financial crisis of 2008, which raised volatility, illiquidity and insolvencies to levels not seen since the 1930s.

The financial services industry and regulators are now focusing more aggressively on the centrality of systemic risk and the need to address it. DTCC is at the forefront of this effort by appointing a Chief Systemic Risk Officer in October 2009, by approving a Board Policy Statement on Systemic Risk in December 2009, by internally reviewing systemic risks during 2010 and by dedicating resources towards understanding and communicating risks that may emanate from DTCC’s processes and operations in normal times or from its reactions to external events under exigent circumstances.

DTCC will develop and implement a new risk discipline with the strategic objective to identify the rise of new forms or types of systemic risks as well as to ensure increasing resilience of DTCC and the industry to systemic shocks. In the development and implementation of this new structure, DTCC will also seek to exploit tactical solutions if processes fail, in order to contain their systemic impact. In following this vision DTCC will be cognizant of its interdependencies within the firm in order to contribute to the company-wide policy mandate to further enhance systemic stability.

Still, there is the risk that not all material issues might be identified in this process or that the impact of identified systemic risks might have been underestimated. However, this is inherent to this new discipline as systemic risks may be the result of an aggregation of related or unrelated events with innumerable permutations. The structured approach of systemic risk management applied by DTCC and the extensive and continuous vetting of this approach and its results with internal and external stakeholders is designed to minimize this risk as much as possible.

MEMBER FEEDBACK

The process of designing the systemic risk strategy and identifying/memorializing specific issues was thoughtful, deliberate and iterative among multiple parties within DTCC and with key industry participants. At the same time, the strategy, but in particular the identified issues, will dynamically change as the environment for the industry changes.

The approach and the list of issues have been extensively vetted within DTCC. Given the scope of the initiatives, their impact on the industry as a whole, as well as the central importance of systemic risk, DTCC is interested in receiving comments, questions and feedback on the white paper from its membership and other interested industry representatives. DTCC considers this a major step in its efforts to develop an active engagement strategy with the industry on systemic risk. For feedback please contact one of the following staff members of DTCC:

- Nan Noonan, Managing Director and Chief Systemic Risk Officer, by telephone at +1 (212) 855-3290 or via email to nnoonan@dtcc.com
- Uwe Bott, Managing Director, by telephone at +1 (212) 855-4719 or via email to ubott@dtcc.com