



# **Swaps Regulation Version 2.0**

## ***An Assessment of the Current Implementation of Reform and Proposals for Next Steps***

### **White Paper**

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## **EXECUTIVE SUMMARY**

This White Paper analyzes the range of academic research, market activity and regulatory experience with the CFTC's current implementation of swaps reform. It explores and considers a range of improvements to the current reform implementation that is pro-reform, aligned to Congressional intent and better balances systemic risk mitigation with healthy swaps market activity in support of broad-based economic growth.

The CFTC has been a consistent leader among regulators of the world's major swaps and derivatives markets in enacting effective regulation and oversight. By 2014, it was the first regulatory agency to implement most of the internationally agreed swaps reforms. As result, we now have more than four years of U.S. experience with the current CFTC regulatory framework with its varied strengths and deficiencies. Four years provides a significant sample size, if not a long period of history, to evaluate the effects of these reforms and their implementation. Based on a careful analysis of that data and experience, we are in position to recognize success, address flaws, recalibrate imprecision and optimize measures in the CFTC's initial implementation of swaps market reform.

Chairman Giancarlo has long been a public supporter of the swaps market reforms passed by the U.S. Congress in Title VII of the Dodd-Frank Act of 2010 (Dodd-Frank).<sup>1</sup> The authors believe that market regulators have a duty to apply legislative policy in ways that enhance trading markets and their underlying vibrancy, diversity and resilience. That duty includes continuously reviewing past policy applications to confirm that they remain optimized for the purposes intended. It means adopting a forward-looking approach that considers the impact of technological innovation and anticipates changing market dynamics.

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<sup>1</sup> Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, §§ 721-774, 124 Stat. 1641, 1641-1807.

Accordingly, this White Paper assesses the CFTC’s implementation of Dodd-Frank swaps reforms in the areas of central counterparty clearing, trade reporting, trade execution, swap dealer capital, and the end user exception. It looks both at areas of success and recognized shortcomings. In numerous areas, it makes considered recommendations for improvement.

## **1. Swaps Central Counterparties**

Swaps clearing is probably the most far-reaching and consequential of the swaps reforms adopted under Title VII of Dodd-Frank. Precise data as far back as 2010 are not available, but the Bank for International Settlements (BIS) estimated minimum global clearing rates at that time of about 40% for interest rate swaps and 8% for credit default swaps.<sup>2</sup> By 2017, according to data collected by the CFTC on U.S. reporting entities, about 85% both of new interest rate swaps and new credit default swaps were being cleared. The default risk of swaps counterparties that was once spread across Wall Street is now pooled and managed within regulated central counterparties (CCPs).

Unquestionably, the CFTC’s swaps clearing mandate was highly successful. Its success, however, has significantly increased the volume of swap transactions cleared through CCPs and has led to a number of challenges for further consideration.

The first challenge is to ensure that newly enlarged CCPs are safe and sound under extreme but plausible conditions. Each CCP runs a perfectly “matched book,” meaning that they take zero market risk. They do face the risk, however, that clearing members default at the same time they lose value in their cleared positions. Against this risk, CCPs operate under CFTC supervision to carefully scrutinize member creditworthiness, collect calibrated resources against potential losses, and undergo rigorous regulatory examinations.

There is room for further analysis, however, along several dimensions: ensuring the liquidity of funded resources, understanding correlated defaults and

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<sup>2</sup> See Wooldridge (2016).

network effects, and properly accounting for liquidation costs (particularly for new products).

The second challenge is with respect to recovery plans, which describe how a CCP, in extreme adverse scenarios, would comprehensively allocate losses, restore its matched book and replenish its financial resources. A great deal of progress has been made here as well, but some issues remain: the transparency and predictability of recovery plans and the role of unfunded resources, namely, assessments.

Third, there are challenges related to resolution by government authorities, in the event that recovery plans prove inadequate. This would be a very extreme scenario, in which the financial system would almost certainly have greater and more pressing problems than derivatives clearing, but prudence dictates that such plans be ready and as transparent as possible. Undoubtedly, there is still much to be done collaboratively by the Federal Deposit Insurance Corporation (FDIC) and CFTC along these lines.

## **2. Swaps Reporting Rules**

An important feature of the 2008 financial crisis was the inability of regulators to assess and quantify the counterparty credit risk of large banks and swap dealers. Of all the swaps reforms to emerge from the financial crisis, visibility into counterparty credit risk of major financial institutions was perhaps the most pressing. The regulatory failure to complete it is certainly the most disappointing.

As with swaps trade execution, Dodd-Frank got much right in requiring that swaps trades be reported to swap data repositories (SDRs). Yet, despite the hard work and effort that has gone into establishing SDRs and supplying them with swaps data, a decade after the financial crisis, SDRs still cannot provide regulators with a complete and accurate picture of counterparty credit risk in global swaps markets.

In part, the problem has been faulty implementation and ineffective project management by regulators, including the CFTC. Unlike its overly prescriptive approach to swaps execution, the CFTC's initial approach to swaps reporting provided insufficient technological detail and specification. Instead, it relied on industry participants to utilize standardized nomenclature and data protocols, assuming the existence of a similar degree of standardization of swaps market data that exists in futures markets.

Since then, substantial progress has been made here and abroad by both regulators and market participants in standardizing data nomenclature, reporting elements and reporting protocols.

The CFTC is committed to success in the global reform efforts towards swaps data reporting. That means devoting high-level resources and effective project management to complete the process of data standardization and cross-border harmonization. It means extensive dialogue with industry participants as was initiated through the CFTC's July 2017 "Roadmap to Achieve High Quality Swaps Data (Roadmap)." It also means examining opportunities to utilize emerging digital technologies, such as cloud computing, automated "big data" analysis and, ultimately, distributed ledger technology, to make trade data reporting more accurate, reliable and automated.

### **3. Swaps Execution Rules**

Congress enacted the G-20 swaps execution reforms by requiring that swaps transactions be traded on regulated platforms called swap execution facilities (SEFs) and executed by "any means of interstate commerce." As described in a previous White Paper,<sup>3</sup> the CFTC incorrectly implemented some of this reform. It attempted to re-engineer much of the market structure of swaps execution by limiting methods of swaps execution in contravention of express Congressional intent. The CFTC grafted into its SEF rules a number of market practices from highly liquid futures markets that are antithetical to episodically liquid swaps trading. It interpreted core principles in ways that are not conducive

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<sup>3</sup> See Giancarlo (2015).

to environments in which swaps liquidity is formed and price discovery is conducted. The impact of this flawed implementation has been to fragment swaps trading into numerous artificial market segments, increase market liquidity risk, hinder swaps market technological innovation, and incentivize a significant amount of price discovery and liquidity formation to take place off-SEF rather than on-SEF, contrary to Congressional intent.

This paper proposes making SEFs more conducive to the full sweep of liquidity formation, price discovery and trade execution by removing the ad hoc constraints on methods of execution and other inapposite forms taken from futures markets, while raising the standards of conduct of the professionals serving on those platforms. This paper also proposes expanding the category of swaps subject to the trade execution requirement to include all swaps that are subject to the Commission's clearing mandate. Such expansion would better promote the full range of price discovery, liquidity formation and trading of swaps taking place on SEFs and would better facilitate market transparency.

#### **4. Swap Dealer Capital**

While the debate has not been conclusively settled, the emerging consensus seems to have endorsed the principle of risk-based capital requirements. However, in part because regulators have not allowed regulator-approved internal models in all cases, many parts of the current regime are biased against swaps.

The particular problems of standardized, regulatory capital models arise from inappropriately relying on swap notional amount to measure risk; from not sufficiently recognizing offsetting swap positions between pairs of counterparties; and from not sufficiently acknowledging the risk-mitigation of posted margin. These appear to be unintended consequences of swaps market reform, and should be corrected.

One approach to correcting the problem is to continue to refine, and by necessity complicate, the standardized models imposed on market participants. A better approach may be to ascertain how regulators might rely more heavily,

but confidentially, on the internal risk models used by banks and their swap dealer affiliates.

## **5. End User Exception**

The Dodd-Frank Act required various market participants to clear standardized swaps and required swap dealers to collect margin on uncleared swaps. The benefits of these requirements, with respect to reducing systemic risk, were judged to be worth the concomitant costs.

At the same time, Dodd-Frank exempted commercial end users from these requirements through a legislative arrangement known as the “end user exception.” These market participants are not sources of systemic risk and would find the requirements particularly costly.

The fate of many financial end users, by contrast, was not as definitive, particularly with respect to uncleared margin requirements. This paper asserts that smaller financial end users should be exempt from clearing and margin requirements through a material swaps exposure threshold, for the same reasons that commercial end users are exempt. Larger financial end users, on the other hand, that can very well be sources of systemic risk, should remain subject to the clearing and uncleared margin requirements.

This White Paper also asserts that uncleared margin rules can and should achieve their objectives without being as prescriptive as currently constructed. A less prescriptive approach would both encourage sound and innovative risk management and be less likely to encourage model herding, itself a source of systemic risk.

## **Conclusion**

The essential role of global derivatives markets are to help mitigate price, supply and other commercial risks – shifting risk to those who can best bear it from those who cannot. Thus, well-functioning global derivatives markets free up capital for business lending and investment necessary for economic growth. Flourishing capital markets underpin global economic growth. We must foster



safe, sound and vibrant global markets for investment and risk management to stimulate greater job creation and broad-based prosperity.

Financial regulators have a duty to apply the policy prescriptions of their legislators in ways that enhance markets and their underlying vibrancy, diversity and resiliency. That duty also includes the responsibility to review past policy applications continuously to confirm they remain optimized for the purposes intended. It further includes anticipating changing market dynamics and the impact of technological innovation.

This White Paper analyzes and considers the CFTC's particular implementation of swaps reform from a perspective that is pro-reform and aligned to Congressional intent. It seeks to better balance market durability and systemic risk mitigation with healthy trading liquidity necessary for broad-based economic growth and revival. Its purpose is to establish a vision for a continuous process of improvement to swaps market reform.

**Authors' Note:** This work represents the considered views of the authors drawn from extensive discussions with – and the work of – many experienced CFTC staff and senior policy advisors, as well as the writings and observations of knowledgeable market professionals and esteemed economists, to whom the authors are most grateful.

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## **INTRODUCTION: DERIVATIVES PROVIDE ESSENTIAL RISK MITIGATION**

For more than a century, Americans have relied on U.S. derivatives markets to stabilize the cost of living. These markets allow farmers and ranchers to hedge production costs and delivery prices so that consumers can always find plenty of food on grocery store shelves. They are the reason why American consumers enjoy stable prices, not only in the supermarket, but in all manner of consumer finance from auto loans to household purchases. Derivatives markets influence the price and availability of heating in American homes, the energy used in factories, the interest rates borrowers pay on home mortgages, and the returns workers earn on their retirement savings.

And not just consumers. More than 90% of *Fortune* 500 companies use derivatives to manage commercial or market risk in their worldwide business operations.<sup>4</sup> These markets allow the risks of variable production costs, such as the price of raw materials, energy, foreign currency, and interest rates, to be transferred from those who cannot afford them to those who can.

Even Americans not actively participating in commodity futures markets are affected by the prices generated by them. Commodity futures markets provide a critical source of information about future harvest prices. For example, a grain elevator uses the futures market as the basis for the price it offers local farmers at harvest. In return, farmers look to exchange prices to determine for themselves whether they are getting fair value for their crop. The U.S. Department of Agriculture (USDA) uses that same information to make price projections, determine volatility measures, and make payouts on crop insurance.<sup>5</sup>

In short, derivatives serve the needs of society to help moderate price, supply and other commercial risks to free up capital for economic growth, job creation and prosperity. While often derided in the tabloid press as “risky,” derivatives – when used properly – are tools for efficient risk transfer and

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<sup>4</sup> See Kuprianov (2009)

<sup>5</sup> E.g., USDA (2017).

mitigation. It has been estimated that the use of commercial derivatives added 1.1% to the size of the U.S. economy between 2003 and 2012.<sup>6</sup>

And yet, global derivatives markets have not always performed as well as they should.

### **The 2008 Financial Crisis and Derivatives Reform**

Ten years have passed since the start of the 2008 financial crisis. In September 2008, Lehman Brothers filed for Chapter 11 bankruptcy protection. Its failure was a consequence of the bursting of a double bubble of housing prices and consumer credit, as lenders became concerned about a fall in property values and repayment of mortgages. An extraordinary “run-on-the-bank” ensued with rapidly falling asset values preventing U.S. and foreign lenders from meeting their cash obligations. This marked the beginning of a financial crisis that was devastating for far too many businesses and families.

Over-the-counter (OTC) derivatives contributed to the financial crisis<sup>7</sup> through American International Group’s (AIG) writing of credit default swaps (CDS) protection on mortgage products – a substantial part of AIG’s failure – and through synthetic mortgage collateralized debt obligations (CDOs), which had made their way onto bank balance sheets. Perhaps most important, however, was the lack of reliable information about OTC derivatives positions contributing to the “fog of war.” Very simply, government authorities did not have the data to accurately assess the implication of the failures of Bear Stearns, Lehman Brothers and AIG on derivatives counterparties throughout the financial system.

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<sup>6</sup> The Milken Institute found the following economic benefits to the U.S. economy from derivatives: “[b]anks’ use of derivatives, by permitting greater extension of credit to the private sector, increased U.S. quarterly real GDP by about \$2.7 billion each quarter from Q1 2003 to Q3 2012; [d]erivatives use by non-financial firms increased U.S. quarterly real GDP by about \$1 billion during the same period by improving the firms’ ability to undertake capital investments; [c]ombined, derivatives expanded U.S. real GDP by about \$3.7 billion each quarter; the total increase in U.S. economic activity was 1.1% (\$149.5 billion) between 2003 and 2012; [b]y the end of 2012, use of derivatives boosted U.S. employment by 530,400 (0.6%) and industrial production 2.1%.” See Prabha et al. (2014).

<sup>7</sup> In contrast to exchange-traded derivatives such as listed futures and options, which performed reliably and well throughout the 2008 financial crisis.

It became clear that financial market regulatory reform was needed. It was time for swaps intermediation to be a regulated activity, just as it is in markets for other major financial products. It was time for greater transparency in swaps risk exposure and market pricing. It was time for central counterparty clearing to replace bilateral arrangements whenever possible to better allocate risk. And, it was time for swaps dealer firms to hold appropriate levels of capital against their swaps exposures.

At the 2009 Pittsburgh G-20 Summit, global leaders agreed to work together to support economic recovery through a “Framework for Strong, Sustainable and Balanced Growth.” They pledged to work together to “implement global standards” in financial markets, while rejecting “protectionism.”<sup>8</sup>

The G-20 leaders agreed upon several fundamental principles to reform over-the-counter derivatives markets, namely: regulation of swaps trading and execution, reporting of swaps transactions, increased central counterparty clearing of swaps transactions, and swap dealer capital requirements.

The United States moved first, with Congress enacting many of the Pittsburgh reforms into law under Dodd-Frank. Among U.S. regulators, the Commodity Futures Trading Commission (CFTC) has been the most active, implementing most of the swaps reforms under Title VII of Dodd-Frank by 2014.<sup>9</sup> In Europe, swaps market reform was first implemented in the form of EMIR in

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<sup>8</sup> See G-20 Leaders' Statement, The Pittsburgh Summit, Sept. 24-25, 2009 at p. 2, available at [http://www.treasury.gov/resource-center/international/g7-g20/Documents/pittsburgh\\_summit\\_leaders\\_statement\\_250909.pdf](http://www.treasury.gov/resource-center/international/g7-g20/Documents/pittsburgh_summit_leaders_statement_250909.pdf) (G-20 Statement).

<sup>9</sup> See <https://www.cftc.gov/LawRegulation/DoddFrankAct/Rulemakings/ClearingRequirement/index.htm> (clearing), [https://www.cftc.gov/LawRegulation/DoddFrankAct/Rulemakings/DF\\_18\\_RealTimeReporting/index.htm](https://www.cftc.gov/LawRegulation/DoddFrankAct/Rulemakings/DF_18_RealTimeReporting/index.htm) (reporting), and <https://www.cftc.gov/PressRoom/PressReleases/pr6853-14> (trade execution).

2012<sup>10</sup>, to be followed by MIFID II, much of which first came on line at the start of 2018.<sup>11</sup>

We now have more than four years of U.S. experience with the current CFTC regulatory framework with its varied strengths and shortcomings. Four years provides a significant sample size, if not a long period of history, to evaluate the effects of these reforms and their implementation. Based on a careful analysis of that data and experience, we are in position to address flaws, recalibrate imprecision and optimize measures in the CFTC's initial implementation of swaps market reform.

### **Swaps Reform Implementation Version 2.0**

In many ways, regulatory frameworks are like software applications. The modern software industry is built upon a range of common methodologies and developmental frameworks, such as the software development life cycle designed to preserve the value of software over the time. That value can be enhanced by addressing flaws, improving functions, meeting additional requirements, becoming easier to use, more efficient, accommodating newer technology, and expanding the user base.

Regulatory frameworks also have a development cycle. In the United States context, the cycle begins with Congressional passage of an authorizing statute. Then, it advances through regulatory agency action subject to relevant administrative procedural requirements, including public input and comment.

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<sup>10</sup> See EMIR: Official Journal of the European Union. "Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories." See <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32012R0648>.

<sup>11</sup> See MiFID II: Official Journal of the European Union. "Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU. See <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0065>.

The maintenance stage is primarily in the hands of regulatory agencies, which gather data and empirical information and can propose rule changes or provide rule relief as appropriate. Their task is also to preserve the value of the core regulatory framework over time. The value can be enhanced by expanding the user base, meeting additional requirements, improving features, clarifying terms of use, and increasing efficiency.

Like software users, market participants will always look to participate in well-designed, regulatory frameworks. Trading counterparties seek neither the least nor the most regulated marketplaces, but marketplaces that have the right balance of sensible, objective and well-maintained regulation – in other words: good software. It is in the interest of the United States to achieve such balance in swaps market regulation.

Financial regulators have a duty to apply the policy prescriptions of their legislators in ways that enhance markets and their underlying vibrancy, diversity and resiliency. That duty also includes the responsibility to review past policy applications continuously to confirm they remain optimized for the purposes intended. It further includes anticipating changing market dynamics and the impact of technological innovation.

The authors believe that commitment should include a responsibility to pursue improvements to the CFTC Version 1.0 implementation of swaps reform that enhances market health and safety, while respecting the spirit of global swaps reform and the law embodied in the Dodd-Frank Act.

The purpose of this White Paper is to assess the CFTC's current implementation of swaps market reform in the areas of swaps central counterparties, swaps reporting, swaps execution, dealer capital and the end user exception. It looks at both areas of recognized success and deficiency. In numerous areas, it makes considered recommendations for improvement.

This White Paper considers the CFTC's particular implementation of swaps reform from a perspective that is pro-reform, aligned to Congressional



intent and that better balances market durability and systemic risk mitigation with healthy trading liquidity. Its purpose is to establish a vision for the future. The day-to-day work of the CFTC demands diligence and concentration. Yet, it must be undertaken with awareness of complex issues yet to be resolved and an overall sense of forward direction. This White Paper is intended to identify those issues and chart that direction.

The time has come to take stock of global swaps market reforms to balance better systemic risk resiliency with vibrant and durable financial markets essential for sustainable economic growth and broad-based prosperity. The time has come for Swaps Regulatory Reform Version 2.0.

## **1. SWAPS CENTRAL COUNTERPARTIES**

Swaps clearing is probably the most far-reaching and consequential of the swaps reforms under Dodd-Frank. Its implementation by the CFTC has succeeded in significantly increasing the volume of swaps transactions cleared by central counterparties (CCPs). According to data collected by the CFTC on U.S. reporting entities, about 85% of both new interest rate swaps and new credit default swaps were cleared in 2017. Precise data as far back as 2010 are not available, but the Bank for International Settlements (BIS) estimated minimum global clearing rates at that time of about 40% for interest rate swaps and 8% for credit default swaps.<sup>12</sup>

The challenges of swaps regulatory reform, therefore, have been to ensure the following: (1) that CCPs hold resources that are sufficient to render them safe and sound under extreme but plausible conditions; (2) that, should these resources ever prove insufficient, CCPs have transparent and credible recovery plans to maintain their viability without government assistance; and (3) that government resolution plans are in place should these recovery processes fail or seem likely to fail, and should authorities deem it necessary to intervene.

Over the past several years, there has been substantial progress in ensuring the safety and soundness of swap CCPs and in their development of recovery plans. Nevertheless, government resolution plans remain very much work in progress. The purpose of this section, therefore, is not to suggest changes in the direction of policy with respect to CCPs, but rather to encourage continued progress and to point out current and future challenges. While some of the exposition here may be relevant for CCPs to other types of transactions, the focus of this discussion is very much on CCPs that clear swaps.

### **A. CCP Risk and Risk Mitigants**

A prerequisite to understanding the challenges of regulating CCPs is an understanding of the nature of the risks of clearing.

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<sup>12</sup> Wooldridge (2016).

Consider the case of an interest rate swap (IRS). A bank agrees to receive a fixed rate of interest from – and pay a floating rate of interest to – a swaps dealer. When that swap is cleared, the swaps contract changes in several ways.

First, the CCP interposes itself between the bank and the dealer. The bank makes all of its contractual payments to the CCP, which passes them to the dealer. The dealer makes all of its payments to the CCP, which passes them to the bank. It is in this sense that CCPs run a perfect “matched book.” Every payable is matched, in timing and amount, by a perfectly offsetting receivable.

Second, as the swap changes in value, the party that loses value agrees to pay variation margin to the CCP, to be passed on to the party that gains value.<sup>13</sup> Continuing with the IRS example, say that interest rates increased over the day. Then the bank loses money on the swap: It had agreed to receive a fixed rate, which, now that rates have increased, is relatively low. It had also agreed to pay a floating rate, which is now relatively high.

The exact amount of money that the bank loses depends on the maturity and size of the swap. If it happens that the bank loses \$1 million in value on the swap over the day, then the bank would have to pay the CCP \$1 million in variation margin, which would, in turn, be paid to the dealer.

The third change to a swap contract when it is cleared is that the CCP assumes the legal obligation to make all payments. If the bank were to default, so that it no longer made payments to the CCP, the CCP would nevertheless be obliged to make payments to the dealer. Conversely, if the dealer were to default, the CCP would continue to pay the bank. In other words, after a default, the CCP no longer has a perfectly matched book.

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<sup>13</sup> This discussion reflects the relatively recent treatment of variation margin as settlement, which means that variation margin payments are, in fact, payments from one party to another, like daily settlement payments in futures markets. Previously, variation margin payments in swap markets were transfers of collateral from one party to the other.

The risk to the CCP, therefore, is that one of the counterparties loses value on its position and defaults—before having made its variation margin payment for the day. In that situation, the CCP does not receive variation margin from one side of a trade but is nevertheless obligated to pay variation margin to the other side. Furthermore, since the CCP's book is no longer matched, the CCP runs the risk of incurring future variation margin payables with no offsetting receivables.

To restore its matched book, the CCP needs to replace the swaps of the defaulting counterparty. In the context of the example, if the bank defaults on its swap to receive fixed and pay floating, the CCP has to find another counterparty to receive fixed and pay floating.<sup>14</sup>

Under perfect conditions, finding another counterparty to step in to the bank's position would cost very little. Once the CCP has paid the outstanding variation margin obligations of the defaulting bank, the value of the bank's swap position is zero. Therefore, any market participant that wants to receive fixed would be willing to take over the bank's position at little cost.

In practice, however, the CCP might have to pay someone a nontrivial amount to take over the bank's position, particularly if the defaulting bank's position is large, and if markets are under stress. The costs of replacing defaulted positions are known as "liquidation" costs, because the defaulted positions have to be extinguished, or liquidated, and then taken over by another counterparty.<sup>15</sup>

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<sup>14</sup> A matched book is typically restored by auctioning the defaulted positions to surviving clearing members. See CPMI-IOSCO (2017), paragraph 4.5.3. Members are incentivized to participate in such auctions both through opportunities to profit from such participation and through potential juniorization of their guaranty funds, in which some portion of guaranty fund losses are first allocated to members making poor bids.

<sup>15</sup> More precisely, as soon as possible after a default, a CCP hedges the market risk of no longer having a matched book. Then, through an auction, the CCP transfers the defaulted positions and the hedges to one or more clearing members. In practice, most of the liquidation costs are incurred in the hedging rather than the auction phase of replacing defaulted positions.

In summary, then, the risk of clearing to a CCP is that, should a clearing member default, the CCP must make any outstanding variation margin payment and must bear the costs of restoring its matched book.

This section now describes exactly how risk is mitigated at swap CCPs. The CFTC is very involved in the process, through oversight of risk management practices, requiring and scrutinizing daily risk reports, and thorough, periodic examinations. The section concludes with challenges to improving CCP risk mitigation even further.

### Clearing Members

Settlement accounts at CCPs are limited to clearing members, which are subject by CCPs and by regulation to rigorous, ongoing requirements with respect to financial resources, risk management and operational capabilities.<sup>16</sup>

In the example presented, the bank and the dealer are both clearing members that deal directly with the CCP. A particular bank might not be a member, however, in which case it would deal with the CCP through the intermediation of a clearing member. In that case, the bank's ultimate performance to the CCP would be safeguarded by a guarantee from the clearing member.

### Initial Margin

CCPs collect initial margin, or a "performance bond," to ensure that they can meet their obligations in the event of a member default, as described above.

Returning to the example, the bank might have posted \$3 million of initial margin against its swap position. Should it default, with an unpaid variation margin obligation of \$1 million, the CCP would use \$1 million of the initial margin to make that variation margin payment. Subsequently, should it cost \$500,000 to

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<sup>16</sup> See Reg. §39.12(a), 17 CFR 39.12(a). Risk management requirements include the incorporation of daily stress tests, which estimate potential losses under extreme but plausible market events.

replace the bank's position and restore the matched book, the CCP would recover that sum from the bank's initial margin as well.

In this more detailed example, as long as the variation margin obligation and the replacement cost sum to less than the \$3 million of available, initial margin, the CCP bears no loss as a result of the member's default.

By regulation, the CCP must set the initial margin of each position at an amount commensurate with its risk. At a minimum, this includes enough initial margin to cover a 99% tail event over a "margin period of risk," which, for swaps, is typically five days.<sup>17</sup> In other words, in the event of a member default, a CCP will have enough initial margin on hand to cover five days of variation margin obligations in an adverse 1-in-100 five-day market move.

To cover the potential costs of replacing defaulted swaps, CCPs typically increase initial margin requirements above the market risk charges just described. Larger and less liquid positions are typically charged the most, commensurate with the greater risks inherent in their potential liquidations.

#### *Additional Prefunded Resources: Guaranty Fund and Skin-in-the-Game*

Despite best efforts to ensure that clearing members are creditworthy and that initial margin is adequate, there is always the possibility that combinations of clearing member failures and adverse market moves in excess of margin would leave a CCP with losses. To protect itself from these rare events, a CCP is required to have additional prefunded default resources.

Current CFTC regulations require a "cover-two" standard for large and complex CCPs.<sup>18</sup> This means that the total amount of prefunded default

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<sup>17</sup> Reg. §39.13(g)(2)(iii), 17 CFR 39.13(g)(2)(iii). Clearing members must collect margin from the customers they introduce to the CCP. See Reg. §39.13(g)(8)(i), 17 CFR 39.13(g)(8)(i) and Reg. §39.13(g)(8)(ii), 17 CFR 39.13(g)(8)(ii). Furthermore, customer margin is posted to the CCP on a "gross" rather than "net" basis; that is, margin must be calculated separately for each customer and then summed across customers. Reg. §39.13(g)(8)(i)(A), 17 CFR 39.13(g)(8)(i)(A).

<sup>18</sup> More specifically, the "cover-two" standard applies to CCPs that clear products with a more complex risk profile or that are systemically important in multiple jurisdictions. See Reg.

resources must be sufficient to cover losses from the failure of the two clearing members whose default – under extreme but plausible market stress – would cause the largest aggregate loss.

Almost all of the additional prefunded resources are collected from members as guarantee fund contributions. A very small portion is known as “skin-in-the game,” and is contributed by the owners of the CCP.

The owners of a CCP naturally have a strong incentive to keep a CCP viable and safeguard its reputation for strong risk management. Skin-in-the-game is intended to strengthen those incentives: CCP owners that have funds directly at risk in the event of a costly default have all the more reason to be vigilant risk managers.<sup>19</sup>

### Unfunded Resources

The final category of resources available to a CCP is “assessments” or “cash calls,” which clearing members have agreed to provide in case of need. The magnitudes of potential assessments vary by CCP, but are almost always capped by rule. In one case, for example, which provides for a relatively low level of total resources, prefunded default resources plus maximum assessments are set to a “cover-four” standard.

Some have questioned whether clearing members will honor assessments in the midst of a financial crisis, after the CCP has gone through all of its prefunded resources. This question will be discussed later in this section, but for now it will be noted that clearing members who have positions at the CCP are legally obliged to provide funds in accordance with CCP rules.

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§39.33(a)(1), 17 CFR 39.33(a)(1), and CPMI-IOSCO (2012), Principle 4, paragraph 3.4.19. Other CCPs are subject to a “cover-one” standard.

<sup>19</sup> CCPs are required to hold funds, separate from skin-in-the-game, to ensure that they can continue operations for some time after disruptions arising from non-default events. See Reg. §39.11 and 39.33.

## The Waterfall

CCP rules define a “waterfall” that allocates losses across resources. The typical order of a waterfall for a swaps CCP, from first to last allocations, is as follows:

- Margin of the defaulting customer or member;
- Guaranty funds of the defaulting member;
- Skin-in-the-game;
- Guaranty funds of non-defaulting members; and
- Assessments on non-defaulting members.

## Challenges

To summarize, should a member default, a CCP is exposed to any unpaid variation margin obligations and any costs of liquidating the swaps of the defaulting member. To mitigate these risks, beyond monitoring the creditworthiness of its members, a CCP collects initial margin, default fund contributions from its members and puts up some skin-in-the-game itself. The total of these prefunded resources are set so as to cover losses arising from the combination of extreme market events and the default of the two largest clearing members. Furthermore, a CCP also has the legal right to call for a predetermined amount of additional funds from its non-defaulting members.

So far, so good. But challenges do remain to ensure the safety and soundness of CCPs in extreme scenarios.

**Liquidity of Prefunded Resources.** CFTC regulations require that CCPs hold margin in safe and liquid assets. These requirements restrict both the securities that members post as margin and the CCPs’ investments of cash posted as margin. Nevertheless, since the default of one or more clearing members may very well be part of a larger financial crisis, a CCP with a sufficient amount of resources to meet its obligations might have difficulty converting those resources into cash as quickly as needed.



To the extent that prefunded resources are held as cash deposits in commercial banks, there is a risk that, in a crisis, funds cannot be drawn as contractually stipulated. A depository might fail, leaving the CCP, at least temporarily, without access to its funds.

Similarly, cash invested through high-quality repurchase agreements (repo), that is, through loans secured by high-quality collateral, are subject to the risk of the failure of repo counterparties. In such cases, the CCP would have to take ownership of the collateral and sell it to raise cash.

Title VIII of Dodd-Frank, mindful of these risks, permitted the Federal Reserve to allow CCPs that have been designated as systemically important to deposit money directly with the Federal Reserve.<sup>20</sup> These deposits are, of course, riskless in terms of U.S. dollars.

While accounts at the Federal Reserve give selected CCPs a truly riskless place to hold funds, they do raise an unsettled policy question. The CCP “industry” is extremely concentrated, which itself presents certain risks to the financial system. Does giving these large CCPs access to Federal Reserve accounts raise barriers to entry? Should Federal Reserve accounts be available to smaller CCPs and potential CCP entrants that meet various registration and regulatory requirements?

The prefunded resources of a CCP that are held in securities are exposed to another sort of liquidity risk. In a crisis, with many market participants selling securities to raise cash, a CCP might find it difficult and expensive to do the same. On the one hand, almost all CCP security holdings are presently in the highest quality government bonds, which tend to be in great demand during a crisis. On the other hand, all such bonds are not equally liquid, and there are no guarantees in a liquidity crisis.<sup>21</sup>

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<sup>20</sup> Title VIII, Section 806(a).

<sup>21</sup> Securities posted as margin are typically subjected to dollar limits and are typically accepted at a “haircut” from their market values. For example, \$100 worth of corporate bonds might count for

It is important, therefore, to continue to be vigilant about the investment of prefunded resources, from diversifying exposures to depositories and repo counterparties to monitoring and managing the liquidity risk of securities holdings. The CFTC examined clearinghouse liquidity along these lines in the 2017 iteration of its CCP stress tests.<sup>22</sup>

Title VIII of Dodd-Frank addresses the liquidity risk of margin held in securities by allowing the Federal Reserve, “in unusual or exigent circumstances,” to make collateralized loans to CCPs designated as systemically important.<sup>23</sup> As a last resort, therefore, should a CCP have trouble selling the securities it holds to raise cash, it can temporarily borrow money from the Federal Reserve, to be repaid as the securities are sold.

This provision of Title VIII raises similar policy issues as the accounts provision. Does the possibility of last-resort lending encourage unhealthy market concentration, and, if so, should that safety net be extended to smaller CCPs and potential entrants? Does the Dodd-Frank change to Section 13(3) of the Federal Reserve Act, requiring that emergency lending be of “broad-based eligibility,” overly restrict what can be done to assist non-designated CCPs?

**Correlated Defaults and Network Effects.** Traditionally, counterparty credit risk management seeks to ensure that an entity could survive the default of its largest counterparties. To that end, it is sometimes assumed that more than one counterparty could default at about the same time. It is challenging, however, to understand the relative likelihoods of numerous, near-coincident defaults.

A next generation of methodologies should explicitly capture correlations across defaults, to gain insight into the probabilities of near simultaneous defaults. One approach relies on correlations across positions at various

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only \$80 against margin requirements. These haircuts are intended to protect against both loss of value and costs of liquidation in stressful market environments.

<sup>22</sup> Commodity Futures Trading Commission (2017).

<sup>23</sup> Title VIII, Section 806(b).

financial institutions.<sup>24</sup> Another approach – of particular interest since the most recent crisis – studies networks of relationships that might spread defaults across the system.

Network analysis would highlight a broad range of connections between financial entities. First, members of one CCP might very well be members of another as well. Second, CCP members are exposed to defaults of their counterparties and customers. Third, all of these entities are linked not only through cleared derivatives exposures, but also through other financial positions, like prime brokerage balances, repo financing, credit lines, uncleared derivatives, commercial paper holdings, and loans.

Analyzing correlations of positions and networks is challenging, of course, because CCPs have regular, detailed information only on the cleared derivatives exposures of their members. The CFTC has information on both cleared and uncleared derivatives exposures of U.S. reporting entities, but not on their non-derivatives exposures.

In any case, correlated defaults and network effects are active areas of regulation and research that deserve continued attention.<sup>25</sup> Meanwhile, near-term comfort may be derived from the CFTC's 2016 stress tests, which showed that clearing members with significant losses at one CCP in a given stress scenario did not tend to have significant stress losses at other CCPs in that same scenario.<sup>26</sup>

**Liquidation of Defaulted Swaps Positions.** Should a clearing member default, its positions have to be replaced by the CCP to restore the matched book. The cost of replacing these positions will depend on the trading liquidity of

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<sup>24</sup> See, for example, Menkveld (2017).

<sup>25</sup> Commodity Futures Trading Commission (2016, 2017), for example, were stress tests that analyzed the concurrent effects of clearing member defaults on all CCPs at which they are members. CPMI-IOSCO (2018) calls for stress tests across multiple CCPs. Relevant and recent academic research includes Glasserman, Moallemi, and Yuan (2016), Heath et al. (2016), and Poledna, S., et al. (2015).

<sup>26</sup> Commodity Futures Trading Commission (2016).

the swaps in question for the position size to be replaced in a stressed market environment.

A significant portion of the total margin collected by CCPs is for protection against liquidation costs.<sup>27</sup> It should be noted, however, that quantifying these costs is particularly difficult. Market savvy traders know how much it costs to liquidate large positions under current market conditions. Anticipating these costs in future, unknown, stressed conditions is an entirely different matter.

The margin charge for liquidation costs should, therefore, continue to be a subject of continued thought and scrutiny. Furthermore, an important criteria for accepting new, less liquid products for clearing should be the ability of CCPs to quantify their replacement costs under difficult market conditions.

**Design of the Waterfall.** As described above, the CFTC sets a standard for the total quantity of prefunded resources, i.e., margin, default fund contributions and skin-in-the-game. The CFTC does not dictate the relative contributions of members in the form of default fund contributions and those of CCP owners in the form of skin-in-the-game.

The issue here is whether incentives are aligned so as to achieve a socially optimal level of risk taking at a CCP. As discussed earlier, CCP owners certainly have incentives to control risk. But owners also have incentives to expand their business, perhaps to the point of taking more than a socially optimal level of risk. CCP members that have contributed to the mutualized default fund have incentives to monitor the owners and prevent excessive risk taking. And members of swap CCPs are, for the most part, large and sophisticated financial institutions with the financial resources to protect their economic interests. Ultimately, this issue touches on broader questions about incentive structures at CCPs.<sup>28</sup>

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<sup>27</sup> See, for example, Roberson (2018).

<sup>28</sup> See, for example, Cox and Steigerwald (2016), McPartland and Lewis (2017), and Saguato (2017).

## **B. Recovery**

The previous section described the mass of resources available at a CCP to cover losses from member defaults. And, even through the most recent financial crisis, no CFTC-registered derivatives clearing organization has needed more to handle a default than the margin of the defaulting counterparty.

But what if, despite all of the regulations, careful risk management and financial buffers described above, the CCP cannot cover all of its losses? To deal with these extreme scenarios, CFTC regulations require that large and systemically important CCPs have credible recovery plans to remain viable as going concerns without resorting to government assistance.<sup>29</sup> In fact, the rule-based nature of CCP operations is what allows for the possibility of reliable recovery tools.

Essential elements of a recovery plan are comprehensively allocating any and all remaining losses, restoring a matched book and replenishing financial resources. One strategy that has gained traction is to combine gains-based haircuts (GBH), which can comprehensively allocate variation margin obligations,<sup>30</sup> with partial “tear-ups,” which can ensure the restoration of a matched book.<sup>31</sup>

Recall that CCP payment obligations arise from the need to make variation margin payments to swaps counterparties whose positions have gained in value. Therefore, a dependable way to limit CCP payments to resources available is to “haircut” variation margin payables. GBH does just that: Variation margin payments due to clearing members and their customers are reduced, *pro rata*, to the point that payables no longer exceed available resources.

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<sup>29</sup> Reg. §39.39, 17 CFR 39.39. Recovery plans are required for systemically important derivatives clearing organizations (DCOs), as well as Subpart C DCOs that have elected to become subject to Subpart C of Part 39 of CFTC regulations.

<sup>30</sup> CPMI-IOSCO (2017), paragraphs 4.212-4.2.16. See also Lukken et al. (2017).

<sup>31</sup> CPMI-IOSCO (2017), paragraphs 4.5.17-4.5.20. See also Lukken et al. (2017).

GBH is not, however, a comprehensive recovery solution on its own. GBH does ensure that a CCP does not owe more in variation margin than it can pay, but it does not ensure that the CCP has enough resources to replace defaulted positions, that is, to restore a matched book.

To that end, the comprehensive strategy being described includes tear-ups. To the extent that a CCP lacks the resources to replace positions, it tears up, according to an *ex ante* formula, some selection of offsetting, non-defaulted positions until the matched book is restored.

The combination of GBH and tear-ups is a comprehensive recovery solution, as required, but is far from a panacea. With respect to GBH, garnishing the gains of counterparties that happen to have had realized gains over a particular clearing cycle is quite arbitrary. It could turn out, for example, that haircutting the payments of those counterparties might cause them to fail on their obligations, thus destabilizing the financial ecosystem even further.

Tear-ups can also be disruptive. Counterparties that had executed cleared swaps to hedge or take on particular market positions must, after tear-ups, do without these hedges or positions or scramble to replace them.

To summarize, since the passage of Dodd-Frank, CCPs and regulators have made substantial progress in putting recovery plans in place. Even in extreme scenarios, a CCP should be able to allocate all losses and restore a matched book using the fallback strategies of GBH and tear-ups. Some challenges remain, however, three of which will be discussed here.

### *Transparency and Predictability*

Recovery plans should be as transparent and predictable as possible. This means that, subject to the constraints of protecting confidential and sensitive business information, market participants should have a solid understanding of what a CCP can and will do in various market scenarios. In this way, clearing

members and their customers can measure, manage and control their own risks as effectively as possible, as CCPs take their extraordinary recovery measures.

While much has been done to articulate recovery plans, indications are that, for whatever reasons, they are not broadly accepted as complete. In one survey, fewer than 20% of investors claimed to understand the waterfall at the CCPs at which they cleared.<sup>32</sup> And many market participants have called for greater transparency and predictability of recovery plans.<sup>33</sup>

### Uncertainty Surrounding Assessments

In terms of direct expense, it is, of course, cheaper for clearing members to commit to make assessments as necessary than to increase prefunded contributions.

But assessments add uncertainty to the recovery process. Although assessments are legally binding, clearing members and market participants might have doubts, in the midst of a crisis, as to who will and who will not honor assessments.

Doubts about the willingness and ability of clearing members to come through with assessments might very well be overblown. Internal CFTC analysis has shown that, for most clearing members, potential assessments are a relatively small percentage of capital. Also, clearing members, by the nature of their businesses, have a strong interest in the continued viability of the CCP and its clearing services.

Nevertheless, it is hard to dispute the assertion that assessments increase the uncertainty surrounding recovery. For that reason, there have been calls to replace assessments with additional prefunded resources.<sup>34</sup>

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<sup>32</sup> McPartland (2015).

<sup>33</sup> See JPMorgan Chase & Co. (2014), pp. 2-3; Kennedy (2017), p. 14; Martin (2017), p. 2.

<sup>34</sup> See, for example, JPMorgan & Chase Co. (2014), p. 3, and Lubben (2017).

### *The Role of Regulators in Recovery Planning*

While regulators must ensure that credible recovery plans are in place, they should be reluctant to mediate the disparate interests of CCPs, swap dealers and end users.

Swap dealers, for example, tend to care most about being “position good.” With very large and complex books of swaps, they want to keep their positions and exposures to the market intact, even at the cost of some losses from GBH over some period of time.

Asset managers, on the other hand, tend to care most about being “money good.” They might prefer one day of GBH followed by full tear-ups, after which they would attain their desired market exposures by means other than cleared swaps.

Regulators should primarily insist on credible recovery plans but, as in the case of rules concerning prefunded resources, remain quite cautious in becoming more prescriptive about the workings of those plans.

#### **C. Resolution**<sup>35</sup>

This final section discusses the situation in which recovery plans have not sustained derivatives clearing activity. Perhaps market participants lost faith in the recovery process, the CCP and its members, so that everyone rushed to close out all swaps positions. Or perhaps recovery was successful, in the sense of fully allocating losses and restoring a matched book, but neither clearing members nor owners of the CCP were willing to replenish guarantee funds and skin-in-the-game so that clearing services can resume.

In such an eventuality, authorities will either need to allow clearing activity to disappear or, instead, to intervene. Before moving on, however, it is worth noting that in this dire scenario, in which several large financial institutions that had been clearing members have defaulted, and in which surviving industry has

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<sup>35</sup> For a more detailed discussion along these lines, see Duffie (2015).



neither the financial strength nor the confidence to put new resources into a CCP, there will almost certainly be systemic problems that are more pressing than preserving or restoring derivatives clearing services.

In any case, prudence dictates that resolution plans be made. Title II of Dodd-Frank provides for the orderly resolution of a CCP should authorities decide to intervene.<sup>36</sup> In this eventuality, resources from the orderly liquidation fund (OLF) could be made available to ensure continuity of clearing services.

The provision of OLF funds under Dodd-Frank is limited, however, to 10% of the balance sheet assets or 90% of the fair value of the assets available for repayment of the financial company in question.<sup>37</sup> These restrictions would appear to be particularly binding when applied to CCPs, which typically do not own significant assets relative to the size of their businesses, as do other financial companies.

But in the case of a CCP that has already experienced member defaults, assets could include first-position claims against the estates of the defaulting

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<sup>36</sup> Some have argued that it is not clear that Title II applies to CCPs. See, for example, Lubben (2015) and Steigerwald and DeCarlo (2016). The view here and elsewhere, however, is that it does. See, for example, JPMorgan Chase & Co. (2014). p. 4. Section 201(a)(11) of the Dodd-Frank Act defines “financial company” to include, among others, companies that are predominantly engaged in activities that the Board of Governors of the Federal Reserve (Federal Reserve) has determined are “financial in nature or incidental thereto” for purposes of section 4(k) of the Bank Holding Company Act of 1956. 12 U.S.C. § 1843(k). In 2013, the Federal Deposit Insurance Corporation (FDIC) issued regulations establishing the criteria for determining whether a company is predominantly engaged in such activities for purposes of Title II. 78 FR 34712. Activities that derivatives clearing organizations (DCOs) typically engage in are explicitly identified as “financial activities.” Furthermore, section 210 of the Dodd-Frank Act confirms that systemically important DCOs are eligible for resolution under Title II. Section 210(m)(1)(B) provides that the FDIC shall, in connection with the liquidation of any covered financial company or bridge financial company that is a commodity broker, “apply the provisions of subchapter IV of chapter 7 of the Bankruptcy Code, in respect of the distribution to any customer of all customer property and **member property**, as if such covered financial company or bridge financial company were a debtor for purposes of such subchapter” (emphasis added). The term “member property” is defined in subchapter IV of chapter 7 of the Bankruptcy Code as “customer property received, acquired, or held by or for the account of a debtor that is a clearing organization, from or for the proprietary account of a customer that is a clearing member of the debtor.” 11 U.S.C. § 761(16). The term “clearing organization” is defined as a DCO that is registered with the Commission. 11 U.S.C. § 761(2). Accordingly, the term “member property” in section 210(m)(1)(B) is a specific reference to a provision that is applicable directly and only to DCOs, and statutory interpretation frowns upon interpreting a provision of a statute as “mere surplusage.”

<sup>37</sup> Dodd-Frank Act, Section 210(n).

members. These claims might provide a base upon which the OLF could advance funds and eventually be repaid. In addition, as provided by Dodd-Frank, any failures to repay OLF advances would be recouped from broad assessments against the financial sector.

The most important work in progress with respect to resolution of systemically important CCPs is coordination between the Federal Deposit Insurance Corporation (FDIC) and the CFTC. Title II of Dodd-Frank provides for the appointment of the FDIC as receiver, given its historical experience in resolving banks. The CFTC, however, has indispensable expertise as the primary regulator of swap CCPs.

The two agencies, therefore, are working closely to coordinate the planning and execution of any CCP resolution.<sup>38</sup> The more transparent the intentions of regulators in a crisis, the better market participants can manage their own risks and minimize cascading disruptions.

#### **D. Conclusion**

The clearing requirement of Dodd-Frank has successfully moved large quantities of over-the-counter derivatives to swaps CCPs. As a result, swaps clearing has become subject to heightened vigilance by market participants, clearing members, the CCPs themselves and regulators.

While much progress has been made along these lines, particularly with respect to daily risk management and recovery planning, this section has pointed out some issues that require further attention. With respect to government initiated and supervised resolutions, the ball is very much in the courts of the FDIC and CFTC.

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<sup>38</sup> In 2017, the CFTC and FCIC established a dedicated joint working group to establish protocols for coordinated action in the event of resolution of systemically important CCPs.

## **2. SWAPS REPORTING RULES**

### **A. Background**

The global swaps market had operated since its birth with a lack of regulatory transparency and broadly disseminated price discovery for market participants. With the passage of Dodd-Frank, the CFTC was given broad responsibility to implement reporting of swap data. The CFTC faced the challenge of creating something that had not existed before. What has resulted thus far is an imperfect reporting regime.

When the CFTC began implementing the trade reporting requirements of Dodd-Frank, the swaps industry lacked uniform data standards that could be applied by all swaps participants in their various internal systems and interactions with counterparties. The legislation provided for new entities called Swap Data Repositories (SDRs) to accept CFTC-prescribed trade data. These SDRs have since developed as separate, but related, businesses tied to existing large conglomerates with preexisting infrastructures and data standards serving particular asset classes and market participants.

The CFTC adopted a largely principles-based approach to swap data reporting requirements, befitting its tradition as a principles-based regulator of wholesale markets. Data reporting has, however, proven to be an area where specificity is a prerequisite, and uncertainty or optionality regarding what and how to report leads to unsatisfactory data reporting. In the initial swap data reporting regulations, the CFTC did not provide sufficient technical specification clearly illustrating the exact information to be reported, including clear definitions, form and manner, allowable values, and mappings to existing data schema.

Neither the CFTC nor key components of the reporting ecosystem properly addressed through rule-making or the associated comments all the nuances and activities present in swaps markets that needed to be reported, identified all the challenges that reporting would entail, or predicted the unintended consequences of some decisions. SDRs were allowed to apply their

own data schema and develop unique templates for reporting, sometimes accepting whatever their clientele wished to report based on legacy systems or requiring an unnecessary number of data elements to represent the terms of a swap transaction. This construct does not facilitate efficient reporting from counterparties that have been forced either to build new reporting systems from scratch, cobble together existing technology to meet the regulatory need, or rush to press other unrelated reporting mechanisms into service.

## **B. Present Day**

### *Improvements in Swaps Data Reporting*

The current state of swaps data reporting, both for public transparency and regulatory reporting, has improved considerably since the original publication of the CFTC's swap data reporting requirements in 2012. With the benefit of experience, staff, reporting counterparties and SDRs have worked together to ensure that data is more timely, more complete and more accurate, as interested parties have adjusted to the reporting landscape and have gained familiarity with their ongoing obligations to report.

The result is that substantial progress toward improving swap data integrity has occurred. For example, in 2014, roughly half of all reports for the highly standardized credit default swaps (CDS) lacked complete price information, and approximately 15% of all CDS trades lacked a legal entity identifier, making it difficult to identify the counterparty. However, by early 2018, roughly 95% of all CDS trades had complete counterparty and price information.

### *International Swaps Data Harmonization*

Now that other major market regulators around the globe have implemented their swaps regulation, the CFTC is no longer tackling the challenge of reporting swap transactions unilaterally. Today, the CFTC cooperates with the global regulatory community, trade repositories and reporting counterparties to harmonize technical guidance in a coordinated fashion for key derivative terms,

such as transaction and product identifiers via the Committee on Payments and Market Infrastructures (CPMI), the International Organization of Securities Commissions (IOSCO), and the Financial Stability Board (FSB).

The CFTC serves as co-chair of the CPMI-IOSCO Harmonization Group that in 2017 issued final guidance regarding unique transaction identifiers<sup>39</sup> (UTIs) and unique product identifiers<sup>40</sup> (UPIs). UTIs will facilitate consistent global aggregation and analyses of OTC transactions by ensuring that transactions are not double-counted across jurisdictions. UPIs will be assigned to each distinct derivative product, enabling regulators to analyze activity by product type. In April 2018, CPMI-IOSCO published final detailed technical guidance on critical data elements representing data fields that are essential to regulators' ability to perform meaningful analysis on global swap data. In addition to identifying these critical fields, the guidance provides standardized definitions and reporting formats, facilitating global standardization and consistent reporting, so that market participants will be able to report the same field consistently.

#### *Impact of Public Transparency and Trading Liquidity*

Swaps data reporting is intended not only to provide a basis to identify systemic risk, but also to increase market transparency and to foster price discovery, both of which are important to healthy trading liquidity. Transparency and liquidity are cornerstones of the type of swaps trading that the CFTC has a mission to promote: open, transparent, competitive, and financially sound markets.<sup>41</sup> Meeting that mission requires an appropriate calibration of transparency and liquidity.

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<sup>39</sup> See International Organization of Securities Commissioners Committee on Payments and Market Infrastructures (2017a). Last December, the Financial Stability Board issued a final implementation plan for UTIs, recommending that all jurisdictions implement UTIs no later than the end of 2020. See Financial Stability Board (2017).

<sup>40</sup> See International Organization of Securities Commissioners Committee on Payments and Market Infrastructures (2017b).

<sup>41</sup> See CFTC mission statement at CFTC.gov.

Transparency requirements reduce information asymmetries and engender confidence in prices, both of which can reduce transaction costs and ultimately improve liquidity. But post-trade transparency requirements should not be unvaryingly immediate as to make it difficult, especially for reliable liquidity providers, to trade large positions for fear of being “picked off” by a competitor exploiting such transparency. The history of markets tells us that absolute transparency requirements can harm liquidity by driving participants out of the market through the introduction of associated trading risk.<sup>42</sup> The rules should be tailored to the innate liquidity profiles of their associated swaps products. This is especially important for the large-size trades whose liquidity is most sensitive to the reporting requirement related to transparency.

The current reporting regime, in certain instances, allows for a time delay in the public dissemination of a “block trade” that is above a specified notional size. The rules also cap the public dissemination of notional amounts up to a specified size rather than broadcast the actual notional amounts for such transactions. These rules are intended to ensure that (1) public dissemination of large trades does not materially reduce market liquidity and (2) that public dissemination of large trades does not disclose the names or identities of the parties.

Market participants have different opinions on the appropriateness of the current transaction size thresholds and of the current length of the delay in public dissemination based on their particular role in the market. The challenge is to modify the existing reporting regime for large trades through adjustments to transaction size thresholds or dissemination delay duration in order to optimize transparency and price discovery without jeopardizing healthy trading liquidity. The challenge is great, especially considering that standard measures of liquidity, such as bid-ask spreads and market depth, may not be relevant when considering the quality of large trade liquidity and the ability of market participants to buy or sell specific instruments without moving markets.

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<sup>42</sup> See Gemmill (1996).

The CFTC should continue to work with market participants to address these issues. A literature review of contemporary academic and market practitioner research concerning the impact of public transparency, in general, and real-time reporting, specifically, identifies varying benefits and costs associated with market transparency. The existing literature has examined several instances when transparency and reporting rules have changed and provides an opportunity to quantify the relative impacts. One practical difficulty in executing such studies is that data might exist for the period after transparency is implemented, but it is often unavailable during the period before transparency.

The major market change examined in the literature is the introduction of transparency into the OTC corporate bond market through the Trade Reporting and Compliance Engine (TRACE) overseen by the Financial Industry Regulatory Authority (FINRA).<sup>43</sup> Bessembinder, Maxwell, and Venkataraman (2006)<sup>44</sup> examined a database of insurance company bond trades and concluded that, following the introduction of TRACE, trading costs for the bonds in this phase declined by half. They also found a smaller reduction in trading costs also declined for bonds with prices that were not publicly disseminated; they attributed this decline to the use of the newly available public information on prices of some bonds.

In a different study, Asquith, Covert, and Pathak (2013)<sup>45</sup> noted that earlier studies of TRACE implementation focused on relatively high-grade bonds. They concluded that trading activity in the least active, high-yield bonds fell immediately and sharply after transaction prices for those bonds began being disseminated. Bonds in this final phase of TRACE experienced a 41% decline in trading once reporting began. The authors concluded that this decline might reflect the fact that bonds in this group were relatively more opaque than the more active bonds in the earlier groups. This larger quantity of information might

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<sup>43</sup> See <http://www.finra.org/industry/trace>.

<sup>44</sup> See Bessembinder, et al (2006).

<sup>45</sup> See Asquith, et al (2013).

lead to less trading demand. On the other hand, the decline might reflect the response of dealers to the new environment.

We encourage further research and analysis from industry and academia to assist the CFTC in considering adjustments to public reporting requirements to better optimize trading liquidity with the benefits of transparency in the swaps market.

### **C. Next Steps**

CFTC staff has begun the process of assessing the effectiveness of its swap reporting rules with the intent of improving the data reporting requirements, as outlined in the CFTC’s 2017 Roadmap to Achieve High Quality Swaps Data (Roadmap).<sup>46</sup> A wide range of market participants provided feedback via written comments, and interested entities discussed their comments with CFTC staff. Under consideration are changes to the reporting rules, including Parts 43, 45, and 49 of the CFTC’s regulations, with the goal of having more complete, more accurate, and higher-quality data available to the CFTC and to the public, in fulfillment of the purposes of Dodd-Frank and in order to help the CFTC perform its regulatory responsibilities.

#### **Verification of Data Accuracy and Completeness**

The next step in the Roadmap process should be to update requirements for SDRs and swap counterparties to verify<sup>47</sup> the accuracy and completeness of data that has been reported to the SDR. The Commodity Exchange Act<sup>48</sup> section 21(c)(2) requires SDRs to “confirm with both counterparties to the swap the accuracy of the data that was submitted.”<sup>49</sup> The CFTC should update the current confirmation requirements<sup>50</sup> to more clearly require both SDR and reporting

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<sup>46</sup> See Commodity Futures Trading Commission (2017a).

<sup>47</sup> The Commission plans to refer to this process as verification of swap data, as opposed to confirmation of swap data, in order to reduce any confusion caused by the use of the word “confirmation” in multiple contexts within Commission regulations.

<sup>48</sup> 7 U.S.C. § 1, et. seq.

<sup>49</sup> 7 U.S.C. § 24a(c)(2).

<sup>50</sup> See 17 CFR 49.11 (containing the swap data confirmation requirements).



counterparties to perform the verification of swap data, similar to a portfolio reconciliation exercise. This can be accomplished through SDRs providing regular reports detailing the swap data they maintain to the relevant reporting counterparties, followed by the reporting counterparties reviewing the data and responding to the SDR with a verification that the data is accurate or an indication that the data is not accurate. Any incorrect or missing data would then be corrected.

There are other changes worth considering that will provide more clarity for reporting requirements and correction requirements, increase consistency between CFTC regulations related to data reporting, harmonize certain requirements with the requirements of other regulators, and provide the CFTC with more flexibility to adapt to new technology that may improve the efficiency and ease of data reporting.

#### *Validation of Incoming Data*

Another enhancement to the Roadmap process is to include requirements for SDRs to validate data as it arrives. SDRs sometimes validate a subset of data that is reported to them, but current SDR validations are inconsistent and do not always aid in making accurate and complete data available to the public and the CFTC. Providing a unified set of validations that correspond to the updated data fields will provide consistency that will help reporting entities and SDRs comply with the data reporting requirements.

Validations of this nature are very similar to what the European Securities and Markets Authority (ESMA) has already enacted within its jurisdiction. Not only should data quality improve but international harmonization should also improve as the largest global SDs and SDRs are already subject to these requirements and have built appropriate systems in response. The new validation requirements will also make clear that reporting entities must correct and resubmit data that fails a validation in a timely manner in order to satisfy their reporting obligations.

## Changes to Regulatory Reporting – Part 45

Also worth considering are significant changes to Part 45 of CFTC regulations, which relate to swaps recordkeeping and regulatory reporting. Part 45 perhaps best evidences the tremendous implementation challenges imposed by Dodd-Frank. The swaps data quality issues to be remedied stem from that first iteration of regulatory reform.

Part 45 currently requires that market participants submit reports regarding each new swap to an SDR as soon as technologically practicable after execution of the swap. However, the CFTC did not previously define the data fields that are required to be submitted or how swap terms are to be represented within data fields. This lack of specificity gave leave to SDRs and market participants to represent similar swaps and swap terms in varying ways. The general lack of standardization has complicated regulatory use of swaps reports.

It is worth considering allowing market participants to have additional time to submit fewer swap messages per transaction, each containing a more defined list of data fields that describe the swap. The defined list of data fields would not require fewer fields at the expense of effective regulation or exclude information integral to accomplishing the CFTC mission. Allowing additional time for the submission of a swap report may increase the overall quality of data submission.

It is also worth considering whether to adjust the regulatory reporting requirement to a T+1 timeframe, which represents another aspect of harmonization with reporting requirements within overseas regulatory counterparts such as ESMA. The intention is to allow reporting counterparties to complete the confirmation process and agree on the terms of the swap with their counterparty before reporting to the SDR.

Newly defined required data fields and associated allowable values should allow the CFTC to implement the swaps reporting data standards that CPMI-IOSCO published and to remove any uncertainty as to the form, manner, and allowable values of required data elements. The refined list of required data

elements should expand to include additional collateral/margin and valuation data elements to tackle the systemic risk problem. Yet again, this type of risk-related information is already being reported by systemically important players in other jurisdictions. The reporting of fewer, yet better defined and standardized, data fields should improve both the quality of swaps reporting and regulators' ability to utilize swaps data for priority use-cases.

### *Real-Time Public Reporting*

Block trades are eligible for a time delay in their public reporting requirement, as well as exemption from certain other trading rules. In the years since the implementation of CFTC public reporting regime for swaps trading, it is apparent that some aspects of the reporting regime work well and some aspects need additional clarification or modification. This is especially so with respect to block trade classification. Consideration should be given to a pilot program to study the effects of varying cap sizes, block sizes and time delays potentially across different SEFs, asset classes and/or specific products. Such a study should utilize the best data sets possible to generate an actionable and concrete proposal on balancing public transparency and trading liquidity.

Any resulting rule modifications should address the balance between liquidity and transparency for large trades. Instead of making modifications to the block size, cap size and dissemination delays in a vacuum, these levels should be modified based not only on input from market participants but also on CFTC analysis of the reported data over time. Different sectors of the swaps market carry different levels of risk. Thus, a sophisticated and dynamic reporting regime that distinguishes among products, entities, markets and asset classes is needed – not one-size-fits-all.

There are many complexities and confounding variables in the swaps markets. Different asset classes might need different solutions, and even products within a particular asset class may behave differently and have varying liquidity profiles in the context of the block size and dissemination delay. They

therefore may require different block sizes and dissemination delays. Several variables factor into the propriety of a particular rule set: different methods of execution, SEF or OTC execution, and involvement of an introducing broker or not, to name a few. The requisite over-engineering to address these nuances is unlikely to be perfect and would definitely not follow the spirit of keeping regulations simple and straightforward.

In addition to TRACE, the Municipal Securities Rulemaking Board employs a real-time price dissemination tool called Electronic Municipal Market Access (EMMA), which displays all municipal bond transactions. Admittedly, corporate and municipal bonds possess different characteristics than swaps, but that should not discount the lessons that can be learned from these approaches. Similar to swaps, both of these bond product types trade over-the-counter, via voice-based methods, employing blocks, by large asset managers and insurance companies. Further insight must be gained as to why the same concerns that swap market participants express are not prevalent in TRACE and EMMA or how the regulators overcame those challenges in each case.

Also worth considering is the ongoing development of other transparency regimes in the global financial market. Domestically, the Department of Treasury is considering whether Treasury bond secondary market transactions should be publicly disseminated. Currently, the vast majority of swaps that trade in Europe are not subject to any public disclosure within days of trade execution.<sup>51</sup> In contrast, the vast majority of swaps traded in the United States are disclosed publicly, for free, in real time. The current contrast in these two transparency regimes is striking.

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<sup>51</sup> Swap transparency in Europe depends in large part upon whether a product is deemed liquid. If a product is not deemed liquid, trades in that product are subject to a publication delay of between two days and four weeks. The vast majority of products are currently not deemed liquid. See <https://www.esma.europa.eu/policy-activities/mifid-ii-and-mifir/transparency-calculations>.

## **D. The Future**

There is exciting potential on the horizon for continued technological advancement to improve swap data by making reporting systems more reliable, more automated and less expensive. The evolution of distributed ledger technology (DLT) could allow the CFTC and other regulators or entities to access swaps data automatically and seamlessly from reporting counterparties every time a swap is executed or updated on a particular blockchain, without human intervention or the use of other intermediaries. This functionality could increase the speed with which regulators could access data and increase the reliability of the data, while reducing the costs of making the data available to regulators. More specifically, CFTC access could, in the future, be incorporated from the outset into distributed ledgers of reporters. In this way, the Commission would be updated on new or amended swap transactions as they happen, allowing for near-real-time oversight of the swaps markets, including the Commission's surveillance and risk monitoring responsibilities.

### **Sharing of Data and Greater Access via DLT**

As the financial crisis demonstrated in 2008, the derivatives market is global and necessitates regulatory coordination. Access to swaps data across jurisdictional boundaries is a critical step in allowing regulators to perform their supervisory and regulatory functions. It will also help regulators better understand the risks their regulated entities are assuming and the impact of such risks on the broader markets.

The CFTC should collaborate with other authorities to cultivate the development of "regulator nodes" on distributed ledgers. The full potential of DLT in trade reporting is to transcend the fragmented regulatory structure by providing reference to a single, validated record of all financial transactions/positions across regulated markets.

### Reporting and Recordkeeping via DLT

Financial market regulators should encourage innovation and allow the germination of applications in the regulatory space. Blockchain will most likely be adopted for reporting and recordkeeping in financial markets when individual firms discover utilities that decrease operational and expense burdens and present a viable return on investment. DLT would add value if it increased the standardization of information collected and improved the immediacy and robustness of market oversight. Regulatory use of FinTech is affected by a number of variables that could erode the benefits of incorporating these technologies. The use of distributed ledgers will need to be subject to uniform standards that allow regulators to access and utilize the data made available. Right now, data itself and the methods of its transmission are not sufficiently standardized to be fully utilized in regulatory reporting.

Further issues of inconsistency could also arise in the future if the design of distributed ledgers is not subject to uniform standards. With a multitude of various stage DLT solution providers vying for clientele, interoperability across blockchains becomes a concern for regulators hoping to access and understand the data. Without standards, instead of several SDRs with different approaches to data, there could be dozens or even hundreds of different distributed ledger data transmission systems. Such disaggregated data would be nearly unusable by regulators, mooting the benefits of using distributed ledgers for data reporting.

Even if interoperability develops as FinTech matures and extends its uses, through approaches such as the ISDA Common Domain Model, the CFTC would need the technology, expertise and resources to understand and consume information on the blockchain. The CFTC would need to develop a long-term technology plan and determine the return on investment of rebuilding its technology infrastructure and analysis methods to take advantage of FinTech as the reporting and recordkeeping method of the future.

In order for the CFTC and market participants to reap the benefits of FinTech, a number of considerations need to be accounted for in any longer-term technology strategy. The CFTC should endeavor to ensure that its regulations remain technologically neutral, as much as possible, requiring market participants to comply with principles or set parameters, such as timing requirements or allowable values for data fields, without prescribing how these principles or parameters must be met. As the requirements of CFTC regulations will apply to market participants regardless of the technology they utilize, creators of FinTech – and the market participants that intend to use them – should consider from the outset how new technology will further compliance with CFTC regulations.

In order to facilitate this process of market participants and technology purveyors designing and implementing new technology – and then demonstrating the compatibility of this technology – the CFTC may be assisted by legislative changes that would allow it to be more flexible in accommodating new innovation. The CFTC's LabCFTC<sup>52</sup> initiative provides a key focal point for market participants and technology companies to discuss their ideas with CFTC staff. However, in many instances, legislative changes would be necessary to allow the CFTC to conduct actual testing of new technology products. Throughout any planning, testing or implementation process for any new FinTech, one consideration must remain paramount: security. New technology, even with its potential to greatly improve the efficiency and reliability of data reporting, would carry the potential to be exploited by bad actors looking for illegal access to non-public personal and transaction information. For example, the application of DLT that allows for the instantaneous and seamless availability of up-to-date proprietary, non-public trade data would be a tempting target for hackers who would use the same data for illicit profit.

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<sup>52</sup> See Commodity Futures Trading Commission (2017b). LabCFTC is the agency's focal point to promote FinTech innovation and fair competition by making the CFTC more accessible to FinTech innovators and serving as a platform to inform the CFTC's understanding of new technologies. Further, LabCFTC will be an information source for the Commissioners and the CFTC staff on responsible innovation that may influence policy development. More information about LabCFTC can be found at [www.cftc.gov/labcftc](http://www.cftc.gov/labcftc).

The CFTC, technology purveyors and market participants must consider the security aspects and implications for any new technology during the entire time that it is being tested or is in use. Such security measures must be adequate to protect all sensitive and proprietary data, including the personal information of market participants and their employees and the non-public data related to swap trades. Such measures should include robust controls limiting the data collected to only that which is necessary for the purpose and controls that limit the access to that data to only those persons who need the data for an immediate job function.

The CFTC and market participants should also consider ways to compartmentalize databases in order to prevent a single intrusion from accessing all of the data maintained by an entity or the CFTC. Steps to anonymize data when it is not actively in use would also be prudent. Diligent information security is critical. Even one failure could result in ruined credibility for all those involved, significant financial losses and, potentially, a reluctance to continue using new technology.

## **E. Conclusion**

The future of regulatory reporting and recordkeeping will likely look very different going forward. The openness of the Roadmap process and inclusion of public participation in the CFTC's various data reporting and FinTech work streams signals its aim to be transparent and collaborative – both in getting the reporting standards right and utilizing the next generation of technology through which that data passes. It is beneficial for market participants and technology firms to include the CFTC in their efforts and to collaborate for the mutual benefit of regulators and the derivatives markets.

This paper recommends close collaboration between CFTC staff and market participants to recalibrate the trade data reporting regime so that it is specific, accurate and useful enough to: (1) capture systemic risk in addition to



market abuse and manipulation; (2) harmonize with globally accepted risk data fields; and (3) achieve transparency while promoting healthy trading liquidity.

### **3. SWAPS EXECUTION RULES**

#### **A. Introduction**

Congress provided statutory goals for Dodd-Frank’s new swap execution facility (SEF) framework: “to promote the trading of swaps on [SEFs];” and “to promote pre-trade price transparency in the swaps market.”<sup>53</sup> Congress required that all swaps subject to the clearing requirement (clearing mandate swaps) be executed on a SEF or designated contract market (DCM) unless no DCM or SEF makes the swap available to trade or for swap transactions subject to the clearing exception<sup>54</sup> (the Trade Execution Requirement). Congress chose not to mandate that SEFs utilize any particular method of trading or execution. Instead, Congress defined the term SEF to mean a “trading system or platform in which multiple participants have the ability to execute or trade swaps ... through any means of interstate commerce....”<sup>55</sup>

The CFTC promulgated regulations providing a process that allows DCMs or SEFs to identify clearing mandate swaps that are “made available to trade” (MAT) and thus subject to the Trade Execution Requirement.<sup>56</sup> These swaps must be traded or executed via specified execution methods<sup>57</sup> and not “through any means of interstate commerce.” Additionally, CFTC regulations require that

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<sup>53</sup> CEA section 5h(e); 7 U.S.C. 7b-3(e).

<sup>54</sup> CEA section 2(h)(8); 7 U.S.C. 2(h)(8). The Act and Commission regulations provide a clearing exception where one of the counterparties to the swap is an end user or an affiliated entity of an end user. See CEA section 2(h)(7); 7 U.S.C. 2(h)(7) and 17 C.F.R. 39.6. In addition, Commission regulations provide a clearing exemption for swaps between eligible affiliated counterparties pursuant to 17 C.F.R. 50.52. The preamble to the final rules promulgating the process for determining whether a swap is “made available to trade” (“MAT”) similarly provides that inter-affiliate swaps that are exempt from clearing under Commission regulation 50.52 also are not subject to the Trade Execution Requirement. See 78 Fed. Reg. 33,606 n.1.

<sup>55</sup> CEA section 1a(50); 7 U.S.C. 1a(50).

<sup>56</sup> See 17 C.F.R. 37.10, 37.12, 38.11 and 38.12; “Process for a Designated Contract Market or Swap Execution Facility To Make a Swap Available to Trade, Swap Transaction Compliance and Implementation Schedule, and Trade Execution Requirement Under the Commodity Exchange Act,” 78 Fed. Reg. 33,606 (Jun. 4, 2013).

<sup>57</sup> 17 C.F.R. 37.9(a)(1), 37.9(a)(2), 37.10, and 37.12.

a SEF offer an order book for all swaps it lists, even for non-MAT swaps that are not otherwise subject to the Trade Execution Requirement.<sup>58</sup>

Based on experience with SEFs over the past four years and on feedback from market participants and academics, it is clear that many of the current rules missed the mark set by Congress. They have stunted swaps trading on SEFs in two ways: first, by limiting the execution methods for swaps subject to the Trade Execution Requirement; and second, by adopting an overly narrow definition of what it means for a swap to be “made available to trade,” unnecessarily limiting the swap transactions that are required to be traded on SEFs. The adverse effect of such limitations has been to incentivize a significant amount of price discovery and liquidity formation to take place off-SEF, such as through registered Introducing Brokers. These ad hoc limitations have also fragmented swaps trading into numerous artificial market segments, increased market liquidity risk and hindered swaps market technological innovation, among other adverse consequences.

Congressional goals of conducting swaps trades on SEFs with pre-trade price transparency is best achieved by permitting SEFs to offer any means of interstate commerce and eliminating the artificial requirement that all SEFs create and maintain an Order Book (the Order Book Requirement) for the trading and execution of swaps subject to the Trade Execution Requirement.<sup>59</sup> In addition, this paper proposes eliminating the MAT process and expanding the category of swaps subject to the Trade Execution Requirement to include all swaps that are subject to the Commission’s clearing mandate, unless no SEF or DCM lists the swap for trading.

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<sup>58</sup> 17 C.F.R. 37.3(a)(2).

<sup>59</sup> This paper proposes that the methods of execution available to trade swaps subject to the Trade Execution Requirement should align with the methods of execution currently available to trade swaps not subject to the Trade Execution Requirement.

The rest of this section's discussion focuses on three areas:

- A brief background regarding the Dodd-Frank Act's statutory framework for the Trade Execution Requirement and related CFTC regulations (i.e., the MAT process and execution methods);
- The CFTC's underlying policy rationale and assumptions upon which it predicated its regulatory framework for swaps trading, including the prescriptive methods of execution for swaps subject to the Trade Execution Requirement and the Order Book Requirement and why and how this framework should be reformed; and
- Why it is appropriate to eliminate the MAT process and expand the category of swaps subject to the Trade Execution Requirement to include all swaps subject to the clearing mandate.

#### **B. Background: The Trade Execution Requirement, MAT Process and Execution Methods**

Section 2(h)(8) of the Act establishes the Trade Execution Requirement and requires that all clearing mandate swaps be executed on a SEF or DCM, unless no SEF or DCM has made such swap "available to trade" or the swap is otherwise subject to a clearing exception. The Act, however, does not specify a process for determining whether a clearing mandate swap is "made available to trade." As a result, the CFTC first had to determine whether it should establish a MAT process and, if so, what that process should be. Initially, the CFTC considered whether every clearing mandate swap automatically should be deemed MAT if it were listed by a SEF or DCM. Alternatively, the CFTC considered whether a clearing mandate swap should satisfy additional factors before it is deemed MAT. In the latter case, the CFTC also considered whether the MAT determination should be made by SEFs or the CFTC.<sup>60</sup> Ultimately, the CFTC adopted a MAT process based on stated criteria and driven by SEFs and DCMs.

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<sup>60</sup> See generally 78 Fed. Reg. 33,606 (June 4, 2013).

Under current regulations, both the CFTC and SEFs or DCMs play a role in the MAT process.<sup>61</sup> SEFs and DCMs initiate the MAT process by submitting to the CFTC the SEF's or DCM's determination that a swap is MAT, either for CFTC approval<sup>62</sup> or through the self-certification process.<sup>63</sup> Pursuant to CFTC regulations, a SEF's or DCM's determination must consider at least one of the following criteria:

- (1) whether there are ready and willing buyers and sellers;
- (2) the frequency or size of transactions;
- (3) the trading volume;
- (4) the number and types of market participants;
- (5) the bid/ask spread; or
- (6) the usual number of resting firm or indicative bids and offers.

The CFTC is responsible for reviewing a SEF's or DCM's MAT determination, and may only deny approval or certification of a SEF or DCM filing if it finds that the submission is inconsistent with the Act or CFTC regulations.<sup>64</sup> Otherwise, the swap will be deemed to be MAT, and transactions involving the MAT swap will be subject to the Trade Execution Requirement.<sup>65</sup>

CFTC regulations create two categories of swap transactions, which determine how swaps can be traded and executed on a SEF: (1) Required Transactions (i.e., any transaction involving a MAT swap that is not subject to a clearing exception or exemption),<sup>66</sup> and (2) Permitted Transactions (i.e., any transaction that is not a Required Transaction).<sup>67</sup> Required Transactions must be traded and executed on a SEF through either an Order Book or a request-for-quote (RFQ) system that operates in conjunction with an Order Book and in which the RFQ is sent to at least three unaffiliated participants (RFQ-to-3

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<sup>61</sup> 17 C.F.R. 37.10 and 38.12.

<sup>62</sup> 17 C.F.R. 40.5.

<sup>63</sup> 17 C.F.R. 40.6.

<sup>64</sup> 78 Fed. Reg. pp. 33,607 and 33,610.

<sup>65</sup> See note 6 above.

<sup>66</sup> 17 C.F.R. 37.9(a)(1).

<sup>67</sup> 17 C.F.R. 37.9(c)(1).

System).<sup>68</sup> Permitted Transactions may be traded and executed through any method of execution.<sup>69</sup>

A SEF must offer an Order Book for each swap it lists (the Order Book Requirement).<sup>70</sup> Thus, even if a SEF does not list a MAT swap, the Order Book Requirement obligates SEFs to incur the costs of developing and maintaining Order Books for the trading and execution of Permitted Transactions.

### **C. The CFTC’s Regulatory Framework Should be Reformed**

#### ***The Regulatory Framework Disincentivizes Swaps Price Discovery and Liquidity Formation from Taking Place on SEFs***

Historically, swaps products trading has always taken place in institutional marketplaces. Until the passage of the Dodd-Frank Act, the United States generally had not permitted retail participants to transact swaps products, and that largely remains the case today.<sup>71</sup> Traditionally, swaps traded in two environments: a wholesale marketplace of primary dealer firms intermediated by firms called “inter-dealer brokers;” and a secondary marketplace in which swaps dealers transacted directly with their “buy-side” institutional customers.

Those wholesale marketplaces operated by inter-dealer brokers combined in one location human brokers who acted as agents for their dealer clients soliciting bids and offers and engaging in price discovery via electronic platforms where trades were matched and reported back to their legal counterparties. These inter-dealer platforms were “one-stop shops,” where liquidity could be sourced, prices discovered, bids and offers made, and trades executed.

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<sup>68</sup> 17 C.F.R. 37.9(a)(2).

<sup>69</sup> 17 C.F.R. 37.9(c)(2).

<sup>70</sup> 17 C.F.R. 37.3(a)(2). For purposes of the Order Book Requirement, the Commission defines an “Order Book” to mean: “(i) An electronic trading facility, as that term is defined in section 1a(16) of the Act; (ii) A trading facility, as that term is defined in section 1a(51) of the Act; or (iii) A trading system or platform in which all market participants in the trading system or platform have the ability to enter multiple bids and offers, observe or receive bids and offers entered by other market participants, and transact on such bids and offers.”

<sup>71</sup> With the passage of the Dodd-Frank Act, retail participants (i.e., non-Eligible Contract Participants under CEA Section 1a (18)) were first permitted to trade swaps on DCMs. CEA Section 2(e). By contrast, SEFs are limited to permitting trading by Eligible Contract Participants as defined under the Act. CEA Section 2(e)p; 7 U.S.C 2(e).

Prior to Dodd-Frank, these inter-dealer platforms were not subject to a comprehensive regulatory framework with respect to registration or designation criteria or core principles.<sup>72</sup> This approach was premised on the view that as a marketplace without retail participation, U.S. swaps markets would be adequately self-regulated by its professional participants. Accordingly, inter-dealer brokers of swaps were not subject to CFTC registration.

Dodd-Frank changed that legal framework by requiring that certain swaps transactions be traded and executed on regulated SEFs or DCMs, licensed by the CFTC. It would seem to follow that the CFTC would have imposed similar measures utilized in other regulated asset classes to raise industry conduct: registration of platforms, standardized codes of personnel conduct and personnel proficiency examinations. But besides establishing the basic SEF registration requirement, the CFTC set off on a different path.

Rather than permitting SEFs to operate by “any means of interstate commerce” as Congress provided, the CFTC’s SEF rules constrained swaps trading of “Required Transactions” to two methods of execution: an Order Book or an RFQ-to-3 System. Based on these prescriptive execution methods, the CFTC further grafted into its SEF rules a number of market practice rules from the futures regulatory framework that are antithetical to swaps trading, such as establishing a 15-second “cross-trade” requirement and permitting off-SEF execution of block trades. Additionally, the CFTC interpreted the SEF core principles in ways that are not conducive to the traditional environments in which swaps liquidity is formed and price discovery is conducted.

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<sup>72</sup> Some inter-dealer platforms were exempt commercial markets (ECMs) or exempt boards of trades (EBOTs). ECMs could trade contracts involving exempt commodities (i.e., any commodity other than an excluded commodity and agricultural commodities) on electronic trading facilities between a subset of ECPs known as eligible commercial entities. A facility that elected to operate as an ECM was required to comply with certain informational and recordkeeping requirements. EBOTs were facilities that traded contracts involving commodities (other than securities or securities indexes) that had a nearly inexhaustible deliverable supply and either no cash market, or a cash market so liquid that any contract traded on the commodity was highly unlikely to be susceptible to manipulation. EBOT transactions were limited to ECPs and subject to minimal trading prohibitions, including anti-fraud and anti-manipulation restrictions.

In effect, the CFTC's SEF rules are an attempt to re-engineer the traditional market structures and practices of swaps execution. Instead of raising the standards of conduct of the professionals handling swaps transactions, the SEF rules seek to dictate the business models of swap-trading platforms.

Among other adverse consequences has been sharp fragmentation of global trading liquidity into numerous disjointed market segments. Since the start of the CFTC's SEF regime in October 2013 and accelerating with mandatory SEF trading in February 2014, global swaps markets have divided into separate trading and liquidity pools: those in which U.S. persons are able to participate and those in which U.S. persons are shunned. Liquidity has been fractured between a U.S. person market on one side and a non-U.S. person market on the other.

According to a survey conducted by the International Swaps and Derivatives Association (ISDA), the market for euro interest-rate swaps (IRS) has effectively split.<sup>73</sup> Volumes between European and U.S. dealers have declined 55% since the introduction of the U.S. SEF regime.<sup>74</sup> The average cross-border volume of euro IRS transacted between European and U.S. dealers as a percentage of total euro IRS volume was 25% before the CFTC put its SEF regime in place and has fallen to just 10% since.<sup>75</sup>

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<sup>73</sup> See ISDA (2015) and Stafford (2014). Beginning in October 2013 after the SEF rules' compliance date, European dealers dramatically moved away from trading with U.S. counterparties, beginning to trade almost exclusively with other European counterparties in the market for euro IRS. In October 2013, 91% of euro IRS trades took place between two European counterparties, while only 9% occurred between a U.S. and a European dealer. By August 2014, these numbers moved to 96% and 3%, respectively. Recently, in June 2015, 89% of euro IRS trades were between two European counterparties, while 10% of euro IRS trades were between a European and U.S. counterparty. Compare these figures with those from a month before the SEF rules' compliance date, when 71% of euro IRS trades were between two European counterparties and 29% were between a U.S. and European dealer. This has been a clear shift in trading behavior for European dealers. See ISDA(2015), pp., 3, 15–16. This observation is also supported by an ISDA survey wherein 68% of non-U.S. market participant respondents indicated that they have reduced or ceased trading with U.S. persons. ISDA (2013) pp. 3–4.

<sup>74</sup> ISDA (2015), pp. 2, 18.

<sup>75</sup> ISDA(2015), p. 18.



Fragmentation has exacerbated the already inherent challenge in swaps trading – adequate liquidity – and is increasing market fragility as a result.<sup>76</sup> Fragmentation has led to smaller, disconnected liquidity pools and less efficient and more volatile pricing. Divided markets are more brittle, with shallower liquidity, posing a risk of failure in times of economic stress or crisis. Fragmentation has increased firms’ operational risks as they structure themselves to avoid U.S. rules and manage multiple liquidity pools in different jurisdictions (e.g., through different affiliates). As structural complexity has grown, operational efficiency has been reduced.

Instead of establishing the SEF regulatory construct to be salutary to liquidity formation, the CFTC turned SEFs into environments that are un conducive to it. Instead of achieving the desired outcomes of promoting swaps trading on SEFs and pre-trade price transparency, SEF rules have incentivized the shift of swaps price discovery and liquidity formation away from SEFs to introducing brokers (IBs), a regulatory category intended for futures trading. IBs are not appropriate vehicles to formulate swaps transactions under the regulatory framework adopted by Congress. IBs are not subject to conduct, recordkeeping and compliance requirements appropriate for either swaps products or platform trading. Their employees are not required to pass exams for proficiency in serving institutional market participants in over-the-counter swaps markets.

Today, swaps price discovery and liquidity formation largely take place off-SEF rather than on it as Congress intended. Yet, the goal was to have the entire process of swap liquidity formation, price discovery and trade execution take place on licensed SEF platforms. One may call this the law of unintended consequences, the result of regulators trying to re-engineer marketplaces beyond their Congressional mandate, especially markets as complex and sophisticated as over-the-counter swaps.

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<sup>76</sup> Referring to the manifest liquidity split between London and New York, Dexter Senft, Morgan Stanley’s co-head of fixed-income electronic markets, said, “I liken [SEF liquidity] to a canary in a coal mine. It’s not dead yet, but it’s lying on its side.” Hunter (2014), pp. 30-31.

A better approach would be to follow the clear intent of Title VII of Dodd-Frank and allow SEFs to trade swaps “through any means of interstate commerce” instead of through artificial, prescriptive execution methods. Swaps markets have unique challenges in liquidity formation that are only exacerbated by imposing forms and practices taken from highly liquid, exchange-traded futures markets.

Focus, instead, should be on enhancing the professional conduct of swaps execution through licensure, testing and adoption and abidance of codes of professional conduct. The full range of liquidity formation, price discovery and trade execution methods should be encouraged to take place on licensed SEF environments requiring high professional standards and regulatory transparency for the greater benefit and durability of the marketplace.

*The CFTC’s Prescriptive Methods of Execution Impose Costs without the Assumed Benefits*

**The Order Book Requirement.** The Order Book Requirement required SEFs to incur costs to develop and maintain Order Books for every swap listed by a SEF, regardless of whether the swap is classified as a Required Transaction or a Permitted Transaction. The CFTC imposed the requirement based upon its belief, at the time, that market participants would utilize the Order Book to view bids and offers submitted to the SEF, including prices, quantities and order book depth. The CFTC assumed that the access to this type of information would provide all SEF market participants access to the same key information as swap dealers<sup>77</sup> and allow market participants to make informed trading decisions based upon, among other things, price, size and timing.<sup>78</sup> The CFTC also believed at the time that the Order Book Requirement would “facilitate the shifting of trading to the centralized SEF market structure from the bilateral over-the-counter (OTC) market structure where investors may have limited ability to find

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<sup>77</sup> 78 Fed. Reg. p. 33,564.

<sup>78</sup> 78 Fed. Reg. p. 33,564.

one another[.]”<sup>79</sup> Despite the fact that the Act does not mandate an all-to-all market structure, the CFTC theorized that this would lead to an all-to-all market where customers could trade directly with other customers by facilitating “trading among market participants directly without having to route all trades through dealers.”<sup>80</sup>

With the exception of foreign exchange swaps trading and a few other markets, few swaps market participants utilized Order Books prior to passage of Dodd-Frank.<sup>81</sup> However, the CFTC assumed that market participants would utilize Order Books if SEFs were forced to offer them<sup>82</sup> and that the number of transactions in the swaps markets would increase as swaps trading migrates to SEFs and DCMs.<sup>83</sup> Much of the CFTC’s decision-making was informed by the experiences of the securities and futures markets, where trading had migrated from floor trading to electronic trading platforms and increased in transaction volume. As the CFTC explained in the preamble to the Part 37 final rules:

[T]ransaction volume has increased dramatically in securities markets and DCM futures markets that have migrated to electronic trading platforms (such as order books) from open outcry and other non-electronic trading environments. This volume increase is due to a tendency for typical transaction sizes to be much smaller on electronic order book markets and also because order books attract participation from new and alternate sources of liquidity, including participants using automated trading strategies. Transactions levels increased in the securities and futures markets when trading moved to electronic platforms, and the Commission believes that it

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<sup>79</sup> 78 Fed. Reg. p. 33,565.

<sup>80</sup> 78 Fed. Reg. p. 33,565.

<sup>81</sup> See 78 Fed. Reg. p. 33,555 (The Commission noting “the absence of centralized markets (i.e., exchanges) in the OTC swap market . . . .”)

<sup>82</sup> See, e.g., 78 Fed. Reg. p. 33,565. (“These provisions will facilitate the shifting of trading to the centralized SEF market structure from the bilateral OTC market structure . . . .”)

<sup>83</sup> See 78 Fed. Reg. p. 33,561.

is likely that the number of transactions in the swap markets will increase as swap trading migrates to SEFs and DCMs.<sup>84</sup>

However, using those established markets as a basis for adopting the Order Book Requirement was misplaced. Although the CFTC believed that Order Books would “typically work well for liquid Required Transactions,”<sup>85</sup> the Order Book Requirement, as time has shown, has neither caused market participants to utilize Order Books across all of the swaps markets nor has it created vibrant all-to-all swaps markets where customers trade with each other without a role for dealers, as had been assumed.<sup>86</sup> Indeed, in the dealer-to-customer (D2C) index credit default swap (CDS) market, for example, Riggs, Onur, Reiffen and Zhu (2017) found that the Order Books on the two largest SEFs in the index CDS D2C market have “very low activity”<sup>87</sup> with almost no Order Book activity.<sup>88</sup>

Consistent with those findings, CDS transaction data obtained for both dealer-to-dealer (D2D) and D2C SEFs indicates that Order Book usage is relatively small, ranging from less than 1% to less than 3% of total CDS transactions across all SEFs, depending on the CDS products traded.<sup>89</sup> Similarly, for interest rate swap (IRS) products, data shows that Order Book use

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<sup>84</sup> 78 Fed. Reg. p. 33,561.

<sup>85</sup> 78 Fed. Reg. p. 33,564.

<sup>86</sup> See 78 Fed. Reg. p. 33,565.

<sup>87</sup> See Riggs, et al (2017).

<sup>88</sup> We do note that Order Books are used more frequently in other swaps markets, such as the D2D market where, according to one D2D SEF, for example, approximately 90% of its trading is effectuated through various Order Book protocols. However, these Order Book protocols are not necessarily the same type of continuous, central limit order books that the Commission discussed in connection with the securities and futures markets. See Collin-Dufresne, P., B. Junge and A. Trolle (2016).

<sup>89</sup> The data covered index CDS transactions from July 2017 to December 2017. As part of this analysis, the data identified trades that were prearranged by inter-dealer brokers outside of the SEF and then submitted to the Order Book subject to the Commission’s 15-second time delay requirement. The above figures exclude these prearranged trades from the Order Book total on the basis that these trades do not necessarily reflect competitive Order Book liquidity.

also is relatively small, ranging from less than 1% to approximately 20% of total IRS transactions across all SEFs, depending on the IRS products traded.<sup>90</sup>

Central limit order book use in highly liquid markets for securities and futures was a result of organic growth as market participants chose to move away from floor trading toward more efficient methods of execution. By contrast, the Order Book Requirement was an attempt to circumvent organic growth that did not take into consideration the vastly different characteristics of swaps trading, including its more variable and episodic liquidity.<sup>91</sup>

**The RFQ-to-3 System Requirement.** As noted above, CFTC regulations allow SEFs to provide RFQ-to-3 Systems to facilitate trading and execution for “less liquid Required Transactions.”<sup>92</sup> The CFTC recognized that RFQ systems were currently used by market participants in the OTC swaps market and noted that in providing SEFs with the “flexibility to offer alternate execution methods to its market participants, the Commission is leveraging best practices from current swaps trading platforms.”<sup>93</sup>

In contrast to the practice of market participants sending an RFQ to one or two recipients in the OTC markets when warranted, the CFTC adopted regulations that require that an RFQ be sent to three or more unaffiliated recipients. The CFTC believed that this minimum requirement was necessary to

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<sup>90</sup> The data covered EUR-, GBP-, and USD-denominated IRS transactions from July 2017 to December 2017. As part of this analysis, the data identified trades that were prearranged by inter-dealer brokers outside of the SEF and then submitted to the Order Book subject to the Commission’s 15-second time delay requirement. The above figures exclude these prearranged trades from the Order Book total on the basis that these trades do not necessarily reflect competitive Order Book liquidity.

<sup>91</sup> Swap products have unique liquidity characteristics that may differ even from each other, so execution methods conducive to securities and futures trading may or may not be conducive to the trading and execution of different swap products. For a comparison of futures and swaps trading characteristics, see, for example, Giancarlo (2015).

<sup>92</sup> 78 Fed. Reg. p. 33,564-65.

<sup>93</sup> 78 Fed. Reg. p. 33,565. Even though the Commission initially mandated swaps trading for Required Transactions through either an Order Book or RFQ-to-3 System, this quote underscores the importance that the Commission implicitly recognized – even while adopting the current framework – of permitting flexible means of execution that are appropriate based on market practices. For example, the Commission noted that in certain markets, many market participants already chose to send an RFQ to multiple market participants and that the RFQ-to-3 System required “supports a common industry practice. . .” 78 Fed. Reg. p. 33,497.

“ensure that multiple participants have the ability to reach multiple counterparties.”<sup>94</sup> It further believed that this would “increase the likelihood that the requestor will execute at the best possible price”<sup>95</sup> and facilitate pre-trade transparency.<sup>96</sup>

On the other hand, the CFTC considered a number of concerns raised by industry participants in response to the proposed RFQ rule regarding the potential harm of information leakage to the non-executing RFQ recipients.<sup>97</sup> By requiring that an RFQ be sent to at least three recipients, the CFTC found what it believed was an acceptable balance between the benefits of requiring multiple recipients in an RFQ with the costs of potential information leakage.

Time has shown that there is scarce public policy benefit in the one-size-fits-all RFQ-to-3 System requirement. Indeed, market participants note that, when appropriate, they often voluntarily include more than three recipients in their Required Transaction RFQs, and that if the RFQ-to-3 System requirement were eliminated, they would still continue such practice. Consistent with this feedback, Riggs et al. (2017)<sup>98</sup> found that customers in the D2C index CDS markets use RFQ protocols for Required Transactions for almost all transactions and that customers include more than three recipients in an RFQ about 55% of the time, with an average of four recipients.

However, in many situations, the RFQ-to-3 System requirement can harm requestors, thus sending fewer quotes may be desirable. The CFTC recognized in the preamble to the Part 37 rules that while including more recipients in an

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<sup>94</sup> 76 Fed. Reg. 1,220.

<sup>95</sup> 78 Fed. Reg. 33,561.

<sup>96</sup> 78 Fed. Reg. 33,496.

<sup>97</sup> See 78 Fed. Reg. p. 33,561. (“While the Commission believes that the five market participant requirement promotes the statutory goal of pre-trade transparency because the RFQ requester will have access to quotes from a larger group of potential responders, the Commission is sensitive to commenters’ concerns about this requirement, such as the potential for increased trading costs and information leakage to the non-executing market participants in the RFQ. To address these concerns, while still complying with the statutory SEF definition and promoting the goals provided in section 733 of Dodd-Frank, the Commission is revising final § 37.9(a)(3) so that a market participant must transmit an RFQ to no less than three market participants.”)

<sup>98</sup> See Riggs, et al (2017).

RFQ may result in a better quote, each additional recipient included in the RFQ increases the chance that the requestor may be harmed by information leakage because more RFQ recipients will learn that the requestor seeks to execute a certain swap.<sup>99</sup> Moreover, certain market participants have contended that such information leakage may harm the requestor because it may allow RFQ recipients to determine the requestor's proprietary trading strategy or positions,<sup>100</sup> and other RFQ recipients may attempt to front-run the trades of the winning responder.<sup>101</sup> Consistent with these comments, Riggs et al. (2017) found that customers are cognizant of this tradeoff and concluded that price "competition is not the only economic force that drives customers' choice of trading mechanism."<sup>102</sup> Riggs et al. found that when deciding how many dealers to include in an RFQ, customers weigh the expense of potential information leakage against the expense of obtaining a less competitive price.<sup>103</sup>

### *The CFTC Should Permit Flexible Methods of Execution*

When the CFTC finalized the execution framework for SEF transactions, it recognized that the rules would impose significant costs on SEFs and market participants. For example, SEFs would have to incur costs to develop and maintain an Order Book for each swap listed on the SEF, and the RFQ-to-3 requirement could impose information leakage costs on market participants.<sup>104</sup>

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<sup>99</sup> See 78 Fed. Reg. p. 33,497.

<sup>100</sup> See 78 Fed. Reg. p. 33,565.

<sup>101</sup> See 78 Fed. Reg. p. 33,498. The assumption is that the winning RFQ dealer would need to hedge or layoff the risk from the position it took by winning the RFQ transaction, and the non-winning RFQ recipients would be able to front-run this transaction.

<sup>102</sup> See Riggs et al. (2017), p. 2.

<sup>103</sup> See Riggs et al. (2017), pp. 3-5. The authors also found that when choosing to send RFQs, customers are more likely to send to fewer recipients for larger notional amounts, non-standard sizes, or for trading earlier in the day, which Riggs et al. conclude is evidence that customers internalize the potential information leakage faced by dealers. See Riggs et al. (2017), p. 39. Anecdotally, the potential harms of the RFQ-to-3 System requirement were demonstrated by market participant behavior during the phase-in period for the Trade Execution Requirement. During that time, market participants were permitted to send RFQs to two unaffiliated recipients, and the Commission's Office of the Chief Economist observed that a number of market participants in fact sent RFQs to the minimum two recipients. At best, this shows that the RFQ-to-3 System requirement is an unnecessary straight jacket on customer choice, while at worst, it is consistent with the proposition that customers believe that including a third recipient in an RFQ would cause unwanted information leakage for certain swaps.

<sup>104</sup> See 78 Fed. Reg. p. 33,497. See also Id p. 33,561.

Nonetheless, these requirements were imposed based upon assumptions that they would drive more trading on SEFs.<sup>105</sup> As discussed above, the trading volume on SEFs has not met those expectations, and participants have incurred costs that produce little commensurate benefit. A better approach would lessen regulatory burdens by eliminating the current restriction on the methods of execution for Required Transactions and allow SEFs to offer any method of execution for swaps subject to the Trade Execution Requirement. Unshackled by these artificial regulatory constraints, SEF markets would be able to grow organically and be in a better position to innovate and develop efficient execution methods.

Indeed, market experience shows that, unburdened with peculiar trading restrictions, participants will innovate and adopt more efficient methods of execution. For example, prior to Dodd-Frank, certain more liquid swap products already moved toward centralized, electronic trading. For example, the Department of Treasury concluded that imposing the Trade Execution Requirement on foreign exchange (FX) swaps and forwards “would not significantly improve price transparency or reduce trading costs,” since these products already trade in a highly transparent market across a range of electronic platforms.<sup>106</sup>

Further, this type of endogenous evolution from an OTC to a more centralized, electronic market structure is not unique to the FX swaps and forwards markets. Similar to the swaps markets, the corporate bond markets historically had been characterized by off-exchange, bilateral negotiations traded through telephone- and voice-based methods.<sup>107</sup> However, as discussed in a recent study by Hendershott and Madhavan (2015), the bond markets have gradually evolved to include increased electronic trading from the historically

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<sup>105</sup> See 78 Fed. Reg. p. 33,565.

<sup>106</sup> “Determination of Foreign Exchange Swaps and Foreign Exchange Forwards under the Commodity Exchange Act.” 77 Fed. Reg. 69,694, 69,699 (Nov. 20, 2012). (“Approximately 41 percent and 72 percent of foreign exchange swaps and forwards, respectively, already trade across a range of electronic platforms and the use of such platforms has been steadily increasing in recent years.”)

<sup>107</sup> See Hendershott and Madhavan (2015).



voice-traded market structure; the study concludes that this change is “shifting the evolution of the OTC structure and fixed income markets by allowing traders to more easily engage in multilateral trading” even without any regulatory mandate to do so.<sup>108</sup> The authors explain that participants continue to prefer electronic RFQs for relatively liquid bonds where the potential for information leakage is lower and dealers are more likely to bid, resulting in better prices.<sup>109</sup>

The Treasury markets similarly have evolved to include more efficient methods of execution. In a study by Barclay, Hendershott, and Kotz (2006), the authors note that the U.S. Treasury markets have historically operated over the telephone through inter-dealer brokers. However, the authors note that the U.S. Treasury markets, similar to the FX swaps and corporate bond markets, also developed electronic platforms without a regulatory mandate. They explain that the market participants move between primarily electronic trading to voice trading when there is an exogenous decline in trading volume (i.e., when a Treasury security goes off the run).<sup>110</sup> This is consistent with the premise that global markets will continue to innovate and develop new execution methods to best meet market participants’ needs. Unfortunately, CFTC swaps trading rules naively pre-suppose that order book and RFQ methodologies are today – and will always remain – the only suitable technological means for swaps execution. This restrictive approach to swaps execution is not mirrored in the analogous regulations of major overseas markets. It serves to restrict U.S. markets from promising new swaps execution methodologies while the rest of the world proceeds ahead in market innovation.

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<sup>108</sup> See Hendershott and Madhavan (2015), pp. 445-46. The authors extrapolate their findings directly to the swaps markets and conclude that “[f]rom a public policy perspective the [RFQ] mechanism offers a possible path through technological advances from an OTC structure to centralized, continuous trading [i.e., an electronic central limit order book]. *These are important considerations for recent regulations such as Dodd-Frank that seek to force significant derivatives trading from OTC onto centralized exchanges.*” (emphasis added). *Id.* pp. 446-47.

<sup>109</sup> See Hendershott and Madhavan (2015), p. 420.

<sup>110</sup> See Barclay, et al (2006). The authors explain that “[b]ecause the implicit cost of placing a limit order on an electronic trading system increases significantly when the security goes off the run, traders are more likely to pay the voice brokers’ higher commissions in exchange for the better matching services when trading these securities.”

Consequently, the Order Book and RFQ-to-3 System requirements deny SEF market participants the benefits of organic growth, which is enjoyed by market participants in the FX, corporate bond and U.S. Treasury markets. Instead, the requirements have only served to constrain efficient trading and execution. Permitting flexible means of execution would also free SEFs from allocating resources currently mandated for developing and maintaining Order Books and would encourage the development of more efficient methods of execution.

**D. The Trade Execution Requirement Should be Synonymous with the Clearing Requirement; Eliminating the MAT Process**

The CFTC promulgated MAT regulations that differ from the clearing requirement based on the premise that swaps products with more episodic and reduced liquidity characteristics could be subject to the clearing requirement even though it might not be appropriate to subject them to an Order Book or RFQ-to-3 System, as required for all MAT swaps.<sup>111</sup> This position was informed by comments in response to proposed MAT rules. Specifically, a number of comments noted that if MAT swaps with relatively lower liquidity were required to be traded and executed on a SEF through an Order Book or an RFQ-3 System, market participants could face even lower trading liquidity and more significant costs.<sup>112</sup>

In particular, market participants noted that requiring less liquid swaps to be traded on an Order Book or an RFQ-to-3 System would compound liquidity reduction for those swaps, as market participants would be reluctant to reveal their trading interest in low volume markets. Further, market participants advanced that such premature imposition of the Trade Execution Requirement upon less liquid swaps would likely result in increasing bid-ask spreads and

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<sup>111</sup> 78 Fed. Reg. p. 33,609 (“In contrast, the [MAT] determination process will be initiated by a SEF or DCM and may focus primarily on whether a swap has sufficient trading liquidity to be subject to mandatory trade execution.”)

<sup>112</sup> 78 Fed. Reg. p. 33,609; 33,622 (“With respect to the potential indirect costs imposed upon market participants if illiquid swaps are made available to trade and become subject to the trade execution requirement, the Commission acknowledges the concerns of commenters.”)

trading costs. Another participant commented that the risks of low trading volume would drive market participants to other markets.<sup>113</sup>

Eliminating prescriptive trading requirements and allowing flexible means of execution for all swaps subject to the Trade Execution Requirement would address these concerns, because market participants would be able to use execution methods that are conducive to such swaps' liquidity characteristics.

Accordingly, the MAT determination should be made synonymous with the clearing determination to include all swaps subject to the clearing requirement and listed by a SEF or DCM. This would promote the full range of liquidity formation, price discovery and trade execution on regulated SEFs for a broader range of swaps products. This, in turn, would advance Congress' goal of promoting swaps trading on SEFs<sup>114</sup> and strengthen the role of SEFs in the marketplace. In addition, this would bring "daylight to the marketplace" by subjecting a much broader range of swaps products to SEF recordkeeping and regulatory supervision and oversight. Market surveillance would improve, as previously OTC bilaterally traded swaps would be traded on regulated SEF platforms; this, in turn, would improve the CFTC's ability to conduct market oversight.<sup>115</sup>

## **E. Conclusion**

Congress understood the liquidity challenge in the swaps market and thus sought to direct swaps trading on SEFs while promoting pre-trade price transparency. Congress did not mandate that SEFs utilize any particular method of trading and execution, but rather permitted market participants to execute swaps transactions "through any means of interstate commerce."

Under current CFTC regulations, however, swaps determined to be MAT are subject to the Trade Execution Requirement and must be traded via specified

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<sup>113</sup> See Senft (2012), p. 3, and Pestone (2012), p. 5.

<sup>114</sup> See CEA section 5h(e); 7 U.S.C. 7b-3(e).

<sup>115</sup> For example, such swaps would become subject to SEFs' rules prohibiting abusive trade practices and to SEFs' audit trail, surveillance and disciplinary programs.

methods of execution and not “through any means of interstate commerce.” Additionally, CFTC regulations require that a SEF offer an Order Book for all swaps it lists, even for non-MAT swaps that are not otherwise subject to the Trade Execution Requirement.

This White Paper posits that the CFTC’s MAT, mandatory Order Book and prescriptive trade execution requirements have not met Congressional goals. These requirements have stunted swaps trading on SEFs in two ways: first, by unduly limiting what it means for a swap to be “made available to trade” – unnecessarily restricting the swap transactions that are required to be traded on SEFs; and second, by reducing the execution methods for swaps subject to the Trade Execution Requirement. The adverse consequences have been to fragment global trading liquidity, increase market liquidity risk, restrict technology innovation, and incentivize a significant amount of price discovery and liquidity formation to take place off-SEF.

To address these deficiencies, this paper proposes eliminating the requirement that SEFs maintain an Order Book and also permitting SEFs to offer any means of interstate commerce for the trading or execution of swaps subject to the Trade Execution Requirement. In addition, this paper proposes expanding the category of swaps subject to the Trade Execution Requirement to include all swaps that are subject to the clearing mandate. Such expansion would better promote the full range of price discovery, liquidity formation and trading of swaps taking place on SEFs as Congress intended.

#### **4. SWAP DEALER CAPITAL**

Of the approximately 100 swap dealers registered with the CFTC, about 50% are banks and an additional 30% are subsidiaries of bank holding companies. Consequently, the details of bank capital rules are extremely relevant to the conduct of the swap dealing business and to the efficiency of swap markets.<sup>116</sup>

For the most part, bank capital requirements tend to be strongly risk-based, that is, the amount of capital required to be held against a particular asset is strongly dependent on the risk profile of that asset. There are many instances, however, in which bank capital rules deviate from this overarching approach.

The purpose of this section is to describe how these latter components of the bank capital regime result in a bias against risk taken through swaps markets. In short, some components inappropriately rely on swap notional amount to measure risk; some do not sufficiently recognize offsetting swap positions with a single counterparty; and some do not sufficiently acknowledge the risk mitigation of posted margin.

Banking regulators can correct the current system's biases against swaps in two ways: (1) continue to iterate, and most likely complicate, prescriptive, regulatory models of risk; or (2) ascertain how to rely more heavily but confidently on the internal risk models used by banks and their swap dealer affiliates.<sup>117</sup>

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<sup>116</sup> Section 4s(e) of the Commodity Exchange Act authorizes the prudential regulators (i.e., the Board of Governors of the Federal Reserve, the Office of the Comptroller of the Currency, the Federal Deposit Insurance Corporation, the Farm Credit Administration, and the Federal Housing Agency) to adopt capital rules for banking entities and authorizes the Commission to adopt capital rules for swap dealers that are not banking entities, including non-bank subsidiaries of bank holding companies. The Commission has proposed capital rules that would allow swap dealers subject to its jurisdiction to elect either bank-based or non-bank-based capital requirements (i.e., the Commission's and Securities and Exchange Commission's capital rules for futures commission merchants or broker-dealers, or, for other entities, a rule based on tangible net worth). The Commission anticipates that most swap dealers that are subsidiaries of bank holding companies will elect the bank-based capital approach since they are consolidated into bank holding companies.

<sup>117</sup> Internal risk models are those in which a bank has discretion over the many choices that arise in creating a model to measure risk. Models to calculate Value at Risk, for example, are internal models, since banks have to select risk factors, map the risk sensitivities of positions to those

While recent developments have moved toward the first of these solutions,<sup>118</sup> the second is most in spirit with the rest of this White Paper.

### **A. The Uneasy Consensus on Risk-Based Capital Requirements**

There is a broad consensus – though hardly unanimous – that capital requirements for financial institutions should reflect the risk characteristics of their business in a relatively granular way.<sup>119</sup> Subprime mortgages, for example, which are more likely to default than commercial paper,<sup>120</sup> should be funded by a correspondingly greater amount of capital.

The principle of risk-based requirements is, for the most part, independent of the magnitude of capital requirements. Requiring that subprime mortgages be funded with ten times as much capital as commercial paper, for example, is equally consistent with absolute requirements of 10% for mortgages and 1% for commercial paper, or with 50% and 5%, respectively.

The main alternative to this approach is one that depends in a less granular way on risk, like a leverage ratio. A hypothetical, stand-alone leverage

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factors, and calibrate the probability distribution of the risk factors from historical data. Internal risk models stand in contrast with standardized models, or standardized model components, which are defined in a subsequent footnote.

<sup>118</sup> See Basel Committee on Banking Supervision (2017), p. 1, paragraph 4. More specifically, Basel III moves away from internal models in two ways. First, the Counterparty Value Adjustment (CVA) risk capital charge is to be computed with a “basic” or “standardized” approach. See Basel Committee on Banking Supervision (2017), pp. 109-127. Second, the Fundamental Review of the Trading Book uses standardized models as a floor on measured market risk. See Basel Committee on Banking Supervision (2016b).

<sup>119</sup> Basel III clearly continues reliance on risk-based capital metrics, albeit with a leverage ratio backstop; see, for example, Basel Committee on Banking Supervision (2017), p. 1, paragraphs 2-4. The “Minneapolis Plan,” sets minimum capital as a relatively high percentage of risk-weighted assets, because “a leverage ratio... treats all assets as equally risky and thus can also not accurately set capital relative to the risk the bank takes on,” Federal Reserve Bank of Minneapolis (2016), p. 7, footnote 5. According to Tarullo (2017), p. 8, leverage ratios “are a good check on banks becoming too debt-dependent, but they encourage more risk-taking, insofar as they impose the same capital charge for every asset.” Some, however, are more skeptical of granular risk-based requirements, e.g., George (2014), who stresses supervision over complex models, and some advocate for using a leverage ratio in place of risk-based requirements, e.g., Hoenig (2012). And there are some proposals to abandon traditional capital ratios completely and require, instead, the issuance of contingent convertible instruments (CoCos). See Haldane (2011) and Calomiris (2012).

<sup>120</sup> Subprime mortgages are particularly risky because of some combination of borrowers’ poor credit quality and high loan-to-value ratios. Commercial paper, which is used as a short-term loan to the highest-quality corporate borrowers, is very unlikely to default.

ratio of 10%, for example, would require a firm with \$100 of subprime mortgages and \$100 of commercial paper to have at least \$20 of capital, which is 10% of its total assets of \$200.

A leverage ratio does capture the fact that firms with larger balance sheets have greater risk and should have commensurately more capital. But by not making finer risk distinctions across the components of a balance sheet, a leverage ratio might very well cause firms to increase risk.

Continuing with the example, the leverage ratio requirement might very well encourage the firm to increase its exposure to subprime mortgages and decrease its exposure to commercial paper. Since subprime mortgages have a higher expected return than commercial paper, while both require 10% capital, increasing exposure to mortgages increases the firm's expected return on capital.

The firm cares about risk as well, of course, and knows full well that a greater investment in subprime mortgages with a fixed amount of capital increases its likelihood of failure. Hence, even in the absence of regulation, this firm is not likely to shift to 100% mortgages and 0% commercial paper.

But the main presumption of government-imposed capital requirements is that firms take more risk than is socially optimal because they do not take into account the costs that their failures impose on the financial system.<sup>121</sup> From this perspective, then, a leverage ratio, in isolation, is self-defeating: It encourages firms to increase the risks of their business profiles.<sup>122</sup>

One response to this critique is to set the leverage ratio capital requirement much higher, say at 30%, so as to ensure systemic stability regardless of firm portfolio choice. While some argue that a capital requirement

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<sup>121</sup> More specifically, failing institutions do not bear the full costs of compensating government-insured depositors, of post-failure government interventions, and of damages inflicted on the real economy. For a fuller description of the last of these, see Acharya, Pederson, Philippon, and Richardson (2017), footnote 3.

<sup>122</sup> See, for example, Greenwood, Hanson, Stein, and Sunderam (2017).

of this order of magnitude would have no appreciable effect on economic efficiency,<sup>123</sup> others disagree. The latter argue that capital requirements of these magnitudes would overly discourage relatively safe financial intermediation,<sup>124</sup> would inefficiently allocate capital by hampering the ability of financial institutions to raise funds,<sup>125</sup> and would excessively restrict the production of safe and liquid assets, like deposits and wholesale funding.<sup>126</sup>

It is beyond the scope of this discussion to pursue this debate. Suffice it to say that current bank capital rules comprise risk-based capital requirements with a relatively low leverage ratio “backstop,” or floor, to cope with situations in which risk-based calculations result in very low capital requirements. Furthermore, many – but not all – components of capital requirements may be computed by firms with their own internal models, subject to regulatory approval and supervision.

Current bank capital rules, however, are not as granularly risk based as they might be:

First, while intended as an overall backstop, the Supplementary Leverage Ratio (SLR) in the United States is binding on the margin for many business lines. One important example is borrowing and lending cash on the collateral of U.S. Treasuries. While extremely safe, the SLR requires that the largest banks

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<sup>123</sup> The core of the argument is the capital structure irrelevance principle of Modigliani and Miller (1958). Recent applications to banking include Admati and Hellwig (2013), Admati and Pfleiderer (2010), and Admati, DeMarzo, Hellwig, and Pfleiderer (2013).

<sup>124</sup> The idea is that firm owners will not raise new equity to fund relatively safe projects because the benefits accrue largely to creditors. This “debt overhang” effect was described by Myers (1977). For an application to the Supplemental Leverage Ratio today, see Duffie (2016).

<sup>125</sup> Dagher et al. (2016), p. 28, conclude from existing studies that optimal capital requirements can be anywhere between 8% and 20% of risk-weighted assets. Calomiris (2012), pp. 48-50, argues that the particular difficulty of assessing bank risks makes equity financing expensive and reviews empirical evidence showing that higher capital requirements cause banks not to raise more equity, but to reduce lending. Aiyar, Calomiris, and Wieladek (2012) present additional empirical evidence to this point. Miller (1995) points out that Modigliani and Miller (1958) applies to having equity, not raising new equity.

<sup>126</sup> See DeAngelo and Stulz (2015), Gale and Yorulmazer (2017), and Stein (2012). Pozsar (2011) documents the relative scarcity of deposit-like assets.



fund this business with 5% capital, a requirement that has resulted in an increase in bid-ask spreads and a significant decline in volume.<sup>127</sup>

Second, while risk-based requirements are designed so as not to distort capital allocations across business lines, any coarseness or errors in modeling risk across products will do exactly that.<sup>128</sup> This can be particularly problematic to the extent that standardized model components<sup>129</sup> are required in place of internal models for fear that firms will abuse their modeling privileges.

## **B. An Overview of the Risks of Swaps Businesses**

A prerequisite to understanding how the current bank capital regime can be biased against swaps businesses is an understanding of the risk profiles of swap dealers.

A swaps dealer enters into agreements that comprise simultaneous assets and liabilities. In an interest rate swap, for example, a dealer might promise to make fixed interest payments at 5% on a notional amount of \$100 million in exchange for receiving some short-term, floating market rate on that same \$100 million.

Swaps are subject to market risk. Continuing with the interest rate swap example, if interest rates fall, the dealer will receive less on the floating side of the swap, but will continue to have to make 5% payments on the fixed side. To take the example one step further, if interest rates had fallen from 5% to 4% on a

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<sup>127</sup> The 5% requirement applies to Global Systemically Important Banks (GSIBs); 6% applies to GSIBs that are also insured depository institutions. Recent proposals by the Federal Reserve Board would change these levels. See Board of Governors of the Federal Reserve (2018). Greenwood et al. (2017) show that CCAR's SLR constraint is binding on most of the largest banks. For more details on Treasury repo and the SLR, see Duffie (2016). Also, Acosta-Smith et al. (2018) argue that the leverage ratio has led to a reduction in the willingness to provide client clearing services in the U.K.

<sup>128</sup> On the difficulties of setting non-distorting risk weights, see, for example, Glasserman and Kang (2014), Gordy (2003), and Rochet (2008), Chapter 8.

<sup>129</sup> The Current Exposure Method, for example, which is described later in the text, is a standardized model. Its calculations are completely specified by regulators. Banks simply input their positions into the required calculations and obtain the outputs.

\$100 million notional ten-year swap, the value of the swap to the dealer would be worth about negative \$8 million.

Swaps are also subject to credit risk, usually referred to as counterparty risk. In the event that either counterparty defaults, both the asset and liability sides of the swap are canceled.

In the interest rate swap example, say that rates had risen from 5% to 6% so that the value of the swap to the dealer is positive \$8 million. If the dealer's counterparty defaults, the dealer would no longer receive the promised floating rate payments, but it would no longer have the obligation to make its 5% fixed payments. Hence, the loss to the dealer is only the change in the value of the swap, that is, \$8 million. The full \$100 million notional amount is never at risk.

In fact, the loss to the swap dealer would normally be much less, if not close to zero, because of margin, which is the collateral posted by the counterparty to safeguard its performance under the swap. In the interest rate swap example, a dealer would typically not tolerate a situation in which a counterparty essentially owed \$8 million in value without having posted margin against that value.

Consider a \$100 million ten-year interest rate swap, which has a daily value standard deviation of about \$500,000,<sup>130</sup> the dealer might ask for initial margin equal to three standard deviations of value changes, or \$1.5 million. Then, if the market moves such that the swap is worth \$1 million to the dealer and the counterparty defaults, the dealer can make itself whole by keeping \$1 million of the initial margin.

Furthermore, in addition to initial margin, the dealer often collects (or pays out) daily variation margin. As the value of the swap to the dealer increases, its

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<sup>130</sup> A ten-year swap might have a dollar value of a one-basis-point change (DV01) of about eight cents per basis point per 100 face amount, or \$80,000 per basis point per \$100 million. The volatility of the ten-year swap rate is about six basis points per day. A one standard deviation change in the value of \$100 million of the swap, therefore, is \$80,000 times six, or \$480,000, which is rounded up to \$500,000 in the text.

counterparty would have to post more and more collateral, in the form of variation margin payments, so that the dealer is protected in the event of a counterparty default.

In the context of the example in which rates rose from 5% to 6% and the swap was worth \$8 million to the dealer, the counterparty would have posted \$8 million in variation margin to the dealer, in addition to the \$1.5 million of initial margin.<sup>131</sup> As a result, in this example, the dealer suffers no loss in the event of a counterparty default.

The dealer would lose money, of course, if two events happen on the same day: (1) The swap's value moved in the dealer's favor by more than the \$1.5 million of initial margin; and (2) The counterparty defaulted before making its variation margin payment. The loss to the dealer, in this case, would be the difference between the change in the value of the swap and the \$1.5 million. This is a very unlikely event, however: The \$1.5 million of initial margin was calibrated to be a three standard deviation change in the swap's value.<sup>132</sup>

An additional feature of counterparty risk in swaps businesses arises from the fact that dealers often have offsetting positions with the same counterparty.

A pension fund, for example, upon receiving pension contributions and incurring a corresponding set of liabilities, might receive fixed in swap to hedge the interest rate risk of those liabilities. Subsequently, however, as it invests the contributions in the bond market, it might pay fixed in swap to take off some of that hedge. And, importantly, market practice in swaps markets often reverses a

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<sup>131</sup> Recently, cleared swaps have moved to "variation margin as settlement," which is discussed later in the text. The details of the example here are more strictly applicable to an uncleared swap.

<sup>132</sup> Some might say that buying protection in the form of credit default swaps (CDS) is an exception, with a great amount of market and counterparty risk. In almost all cases, however, buyers of protection will have portfolios of CDS from sellers of protection. And, in a portfolio context, when several simultaneous defaults are extremely unlikely, the risk and margining arguments of the text do apply. AIG was extremely unusual in that it exclusively sold protection on highly correlated outcomes and posted no collateral until its rating triggered a collateral requirement.

hedge by putting on a new swap, in the opposite direction, instead of taking off an existing swap.

Dealers also wind up both paying and receiving fixed against the same counterparty because of clearing. If a dealer pays fixed in one swap and receives fixed in another, and if both swaps are cleared by the same clearinghouse, then, legally and operationally, the dealer is paying fixed and receiving fixed to the same counterparty, that is, to the clearinghouse.

The fact that dealers are often paying fixed and receiving fixed to the same counterparty means that their counterparty risk is much less than indicated even by the notional amount of their trades. To continue the example of the pension fund, say that the dealer had paid fixed on a \$100 million notional amount to the pension fund and subsequently received fixed on \$75 million notional from that same pension fund. The dealer's notional amount of swaps is defined as the sum of the notional amount of its trades or, in this case \$175 million. But, in risk terms, the dealer is really just paying fixed on \$25 million.

To recap, the exposure of a dealer's book of swaps is determined by its net position with each counterparty; limited to changes in the market value of its net position with each counterparty; and offset by collateral posted by each counterparty.

### **C. Problems with Swap Capital Requirements in the Current Regime**

Capital requirements are computed from many individual components. Market risk and credit risk are key components, which, in turn, are divided into subcomponents, like exposure at default or stressed Value at Risk (VaR). Many subcomponents rely on firms' internal models, but others require the use of standardized models created by the regulators.

There are good reasons to allow firms to use their own risk models, subject to regulatory approval. The internal model of a firm is likely, by construction, to be particularly well suited to the business of that firm. An

internally developed model in a well-managed firm is also likely to be complex enough to capture the relevant risks, but not so complex as to be overly difficult to interpret or overly expensive to create and maintain.

One reason *not* to allow internal models is the fear that firms will, through an overly optimistic view of the world or outright deceit, persuade regulators to approve a framework that understates risk. Another reason is that using standardized models makes it easier for regulators to compare the output of risk models across firms.

Current banking regulation is a mix of these considerations, allowing internal models in some places (e.g., VaR), and requiring the use of standardized models in others. While hard to generalize, standardized models are used when conceptually required – like the SLR, which is purposefully *not* granular with respect to risk – and when modeling of risk is considered particularly difficult, like the risk that the credit quality of issuers and counterparties worsens significantly.

Turning now to the treatment of swaps, internal models tend to be carefully risk-based. They are usually built around sensitivities to various risks, like shocks to interest rates or credit spreads, or around other risk measures, like volatility or value at risk. As a result, internal models will normally assess the risks of swaps comparably with the risk of other assets and securities.

Standardized models, however, include a number of risk biases against swaps. Most of these biases reflect the failure of these models to recognize that notional amount is not representative of credit risk; netting is an integral part of the way swaps are positioned and their risks managed; and margin arrangements play an essential role in mitigating credit risk.

The discussion now gives an overview of the ways in which the current regime for calculating capital requirements treats swaps harshly relative to risk. The appendix to this section provides much greater detail with respect to the relevant calculations.

A methodology to compute credit risk, which dates back to the 1980s, is the Current Exposure Method, or CEM.<sup>133</sup> One problem with CEM's treatment of swaps is that margin collected is allowed to offset only the current market value of the swap – the fact that the present value of a swap to a firm is \$8 million – but not the swap's potential future exposure, the risk that this present value increases to \$9 million or \$10 million or more. The economic reality, of course, is that margin held by the firm offsets both risks.

Another problem with CEM is the computation of potential future exposure. CEM assumes that the potential future exposure of a swap is a percentage of the notional amount and then adds these exposures to get the potential exposure of the portfolio. This computation is not very granular, but is often adequate for outright positions, that is, positions that are either all long or all short.

But CEM's computation overstates potential exposure dramatically when some positions are long and some are short and also for options, with exposures that need to be adjusted for delta.<sup>134</sup> Recognizing this, CEM attempts to give offsets against this overstated exposure, but the offsets are not strongly risk-based and, as a result, range from inadequate to arbitrary.

Aware of the problems with CEM in treating swaps, international regulators have developed a replacement, the Standardized Approach for Counterparty Credit Risk (SACCR),<sup>135</sup> although it has not yet been implemented in the United States. SACCR computes potential exposure in a more strongly risk-based manner, although, as with all standardized models, the assumptions are quite rigid. SACCR is still particularly hard on swaps, however, because, while it does allow margin to offset potential exposure in part, these offsets are significantly less than dollar-for-dollar.

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<sup>133</sup> For detailed descriptions of CEM, see, for example, Basel Committee on Banking Supervision (2014b, 2016a), Davis Polk (2014) and Görg (2014).

<sup>134</sup> The delta of an option gives its sensitivity to the price of its underlying security. A 0.25-delta \$100,000 option, for example, has a notional value of \$100,000, but, to first order, is equivalent in risk to only \$25,000 of the underlying security.

<sup>135</sup> See Basel Committee on Banking Supervision (2014a) and Görg (2014).

In computing capital requirements against credit risk, firms use internal models. For this direct purpose, therefore, the drawbacks of CEM (and, in the future, of SACCR) are not relevant. But other significant components of the regulatory regime require the use of CEM: the credit value adjustment VaR component of market risk, according to the final Basel III standard; the size component of the GSIB (Global Systemically Important Bank) capital surcharge;<sup>136</sup> and the off-balance-sheet exposure from swaps in the SLR.

One somewhat bizarre, unintended consequence of CEM has been the change in the risk measurement of interest rates swaps as a result of the shift to treat variation margin of cleared swaps as settlement.

In over-the-counter swaps markets, variation margin given from counterparty A to counterparty B traditionally served as collateral against a future obligation to pay, but remained the property of counterparty A. When treated as settlement, the variation margin payment becomes the property of counterparty B and correspondingly reduces the future obligation to pay.

The shift of variation margin to settlement for cleared swaps occurred, at least in part, because CEM was particularly punitive for swaps, as described. Treating variation margin as settlement, however, reduced the capital requirement of swaps.

Taking interest rate swaps as an example, CEM recognizes the higher risk of long-term swaps by setting the exposure of five-year or longer swaps as 1.5% times notional amount, of swaps between one and five years as 0.5% of notional, and swaps shorter than one year as 0%.<sup>137</sup> By treating variation margin as settlement, so that the value of swaps is settled every day, all interest rate swaps were considered very short term and were calculated as having no exposure. The ten-year interest rate swap and the one-year interest rate swap were considered as having the same lowest category of exposure.

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<sup>136</sup> See Fed. Reg. 80, p. 49,082.

<sup>137</sup> This discussion ignores a floor in the calculation of potential future exposure.

In other words, the pressure from CEM's poor measure of swaps risk led, at least in part, to a change that reduced the exposure of swaps in another, risk-insensitive manner.

The current capital regime's treatment of swaps fails to recognize fully the role of margin in reducing counterparty risk not just through CEM and SAACR, as described above, but in another way as well.

In SLR calculations, because cash margin collected is on balance sheet, cash margin increases assets and, therefore, increases required capital. This is perverse, of course, because margin collected reduces risk. This feature of the SLR has changed market behavior, with cash margin deposits being restructured to take them off balance sheet and with customers being asked to post securities instead, which are off balance sheet.

While most likely misconceived, pushing margin deposits off balance sheet may not be harmful in itself, but it might very well pose an efficiency cost to dealers and their customers. Having securities instead of cash margin might increase liquidity risk for dealers and might be inconvenient and costly for customers. The relevant point for this discussion, however, is that these actions now are being driven not by economics but by a quirk of capital regulation.

A final point to be made here is that questionable treatment of netting appears not only in CEM, and to a lesser extent in SACCR, but also in the capital regime for non-bank swap dealers. In the CFTC's and Securities and Exchange Commission's (SEC's) proposed Net Liquid Asset Approach,<sup>138</sup> current assets minus current liabilities minus market and credit risk charges must exceed the greater of some fixed dollar amount or 8% of hypothetical margin. The problem arises when the latter of these is binding.

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<sup>138</sup> For the CFTC proposal, see 81 Fed. Reg., p. 91,252.



When calculating margin for this particular purpose, netting is not allowed across cleared swaps, uncleared swaps, and uncleared security-based swaps.<sup>139</sup> For example, the hypothetical margin against a long aluminum futures position and a short uncleared aluminum position for the same client would be calculated as the sum of the hypothetical margins on each position, even though much of the risk nets out. In short, disallowing risk-reducing netting when computing capital requirements may fail to reward sound risk management.

#### **D. Conclusion**

While the debate has not been conclusively settled, the current regulatory regime seems to have endorsed the principle of granularly risk-based capital requirements. However, because regulators have not allowed regulator-approved internal models in all cases, many parts of the current regime are not as granular with respect to risk as they might be.

For the reasons described in this paper, these less granular elements of the regulatory framework are biased against swaps. This appears to be an unintended consequence of regulation, which should be corrected.

One approach to correcting the problem is to continue to refine, and by necessity complicate, the standardized models imposed on market participants. Another approach is for regulators to improve their capabilities with respect to approving and monitoring the use of internal models. The latter approach may be challenging with respect to both expertise and resources, but model supervision is an essential and indispensable part of an effective and efficient regulatory regime.

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<sup>139</sup> The CFTC has given no-action relief to allow the netting of uncleared swaps and uncleared security-based swaps.

## **5. END USER EXCEPTION**

### **A. Introduction**

Derivatives markets exist to serve end users: the wheat producer that hedges against falling grain prices; the airline that hedges against rising fuel prices; the pension fund that hedges against falling interest rates; and a myriad of other applications by both large and small enterprises.

The Dodd-Frank Act of 2010 dramatically changed the regulation of over-the-counter (OTC) derivatives, or “swaps.” Among other changes, the statute codified that swaps markets, financial institutions and the financial system would be safer if standardized swaps were cleared through a central counterparty (CCP) and if dealers<sup>140</sup> collected margin on non-standardized, uncleared swaps.

Both Dodd-Frank and its legislative history, however, recognized that clearing and uncleared margin requirements could easily increase the cost of hedging for end users and perhaps dissuade them from hedging at all. To balance these concerns against the objective of systemic risk mitigation, Dodd-Frank incorporated several means of accommodating end users:

- Commercial end users were excepted from the clearing requirement;
- Regulators could exempt certain small financial institutions from the clearing requirement;
- Dealers were explicitly required to collect margin against uncleared swaps, but commercial end users were excepted and regulators could except others as well; and
- Regulators were given broad discretion to determine the rules governing the calculation of uncleared margin requirements.

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<sup>140</sup> The text of the Dodd-Frank Act refers both to “swap dealers” and “major swap participants,” but in practice, there are only dealers. Hence, to simplify the text, reference to major swap participants is omitted.

The purpose of this section is to reexamine the decisions made by regulators in accommodating end users, both with the benefit of hindsight and through the application of the broad principles set out in this White Paper.

This section concludes that the swaps regulatory framework can be improved in several ways, though many changes will require international coordination. In particular, recommendations include the following:

- The CFTC should continue to provide relief to small banks from clearing requirements by codifying existing no-action relief and considering incremental regulatory changes;
- “Material swaps exposure” thresholds, below which entities are exempted from uncleared margin requirements, should be reworked, measured in units more meaningful than notional amounts, and should apply to variation margin as well as initial margin;
- A material swaps exposure threshold should be applied against the clearing requirement, as well; and
- Rules governing uncleared initial margin calculations should be much less prescriptive and should not be biased in favor of cleared products.

## **B. Relief for Small Bank Holding Companies**

From a policy perspective, the benefits of imposing clearing and margin requirements should be weighed against the costs of imposing those requirements. In the case of commercial end users, however, Dodd-Frank prejudged the decision and exempted these end users.<sup>141</sup>

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<sup>141</sup> Dodd-Frank did not address whether international financial institutions, such as the World Bank or the International Monetary Fund, would be eligible to elect the end user exception. In the adopting release to the end user exception final rule, the CFTC stated that 17 such institutions should not be subject to the clearing requirement, given that such institutions operate with the benefit of certain privileges and immunities under U.S. law, among other reasons. End User Exception to the Clearing Requirement for Swaps, 77 Fed. Reg. 42,560, 42,561-42,562 (July 19, 2012). Subsequently, CFTC granted no-action relief from the clearing requirement to four additional international financial institutions. CFTC Letter 13-25 (June 10, 2013) (Corporación Andina de Fomento); CFTC Letter 17-57 (Nov. 7, 2017) (Banco Centroamericano de Integración Económica); CFTC Letter 17-58 (Nov. 7, 2017) (European Stability Mechanism); and CFTC

While Dodd-Frank did not except small banks from the clearing requirement, it specifically invited the CFTC to do so. The Act names “depository institutions,” “farm credit system institutions” and “credit unions” and suggests a threshold of \$10 billion of assets. The CFTC complied, issuing a regulation permitting such depository institutions to elect the end user exception.<sup>142</sup> Relatedly, CFTC staff issued no-action relief to bank holding companies and savings and loan holding companies whose consolidated assets total no more than \$10 billion.<sup>143</sup> The agency should codify this relief into rules and consider further reducing burdens on these market participants by additional, incremental regulatory changes.

### **C. Financial End Users: Derivatives Rules and the Reduction of Systemic Risk**

Apart from the small banks just discussed, Dodd-Frank specifically includes financial end users in the clearing requirement but leaves their uncleared margin requirements to the discretion of regulators. To analyze appropriate policy here, the discussion turns to the benefits and costs of Dodd-Frank’s swaps rules.

The direct benefits of Dodd-Frank’s swap rules to end users arise from the extent to which they gain access to cleared swaps. The opportunity to outsource collateral and risk management to a CCP makes it easier for the smallest end users to participate in the market. In addition, relative to facing many different swap counterparties, facing a single CCP reduces net initial and variation margin requirements.<sup>144</sup>

But Dodd-Frank’s derivatives requirements are very much intended to benefit society at large by reducing systemic risk, particularly by regulating the derivatives activities of large financial intermediaries. The failures of these

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Letter 17-59 (Nov. 7, 2017) (North American Development Bank). The agency should consider codifying this relief into rules.

<sup>142</sup> CFTC regulation 50.50(d).

<sup>143</sup> CFTC Letter 16-01 (Jan. 8, 2016).

<sup>144</sup> See, for example, Cont and Kokholm (2014), Duffie and Zhu (2011), and Hull (2010).

entities, which move significant amounts of cash and credit through the financial system, are likely to spread economic disruption and start a cascade of bankruptcies.

Small banks, by contrast, are unlikely to be sources of systemic risk. Businesses and individuals borrowing from a failing small bank will be hurt by the loss of credit, and lenders to that bank will suffer losses. But, by definition, the failure of a small bank is local, rather than systemic, in its effect.

Similarly, the failures of commercial end users, even large ones, are unlikely to be sources of systemic risk. The suppliers, customers and employees of a failing commercial business might suffer, but without any significant damage to systemically important financial intermediaries, cash and credit will continue to flow through the system, and other businesses will gradually fill the role of the failed one.

The analysis is more difficult in the case of financial end users. The CFTC concluded in its final rule on uncleared margin that “financial firms generally present a higher level of risk than other types of counterparties... are more likely to default during a period of financial stress... [and] pose greater systemic risk.”<sup>145</sup> This very broad finding requires further discussion, however, particularly when applied to an important class of financial end users, namely, relatively small pension funds and insurance companies.

Pension funds and insurance companies collect cash, in the forms of pension contributions and insurance premiums, in exchange for incurring future liabilities, in the form of retirement benefits and policy distributions. The cash thus collected is invested in a portfolio of assets, which is used, over time, to make good on the incurred liabilities.

Derivatives are used in these businesses to manage asset-liability exposure, that is, the risk that asset portfolios will prove insufficient to pay off

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<sup>145</sup> 81 Fed. Reg., p. 640.

liabilities. Like commercial end users, therefore, these entities use derivatives to reduce the risk of inflows falling short of outflows.

There are some senses, however, in which pension funds and insurance companies and, more generally, other types of financial end users, are indeed riskier than commercial end users. The balance sheets of financial firms tend to be more opaque<sup>146</sup> and more easily changed<sup>147</sup> than those of commercial firms.

The assets of an oil producer may be subject to price volatility, but it is relatively clear what they are and that they cannot be readily sold and exchanged for other assets. The risks of the financial assets and liabilities of a bank, by contrast, or those of pension funds and insurance companies, can be harder to understand. And, furthermore, financial entities can change the risk characteristics of their balance sheets relatively quickly, particularly through derivatives trades.

In short, financial institutions with simple business models and balance sheets do resemble commercial end users. Financial institutions with complex businesses, however, may very well be riskier than commercial end users and, to the extent that they serve as significant financial intermediaries, may pose greater systemic risk. The largest insurance companies, for example, fall in the latter category. While chartered as insurance companies, they share many features of large financial conglomerates.<sup>148</sup>

#### **D. Financial End Users: The Costs of Derivatives Rules**

Against the benefits of Dodd-Frank's rules, particularly the extent to which they reduce systemic risk, are the costs they impose on end users. Three of the major categories of costs are discussed here:

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<sup>146</sup> See, for example, Morgan (2002), which demonstrates the opaqueness of both banks and insurance companies.

<sup>147</sup> See, for example, Flannery (1994) and Myers and Rajan (1998).

<sup>148</sup> See, for example, Ellul et al. (2018) and Kojien and Richardson (2017).

1. The operational costs of clearing may very well exceed those of an OTC derivatives relationship,<sup>149</sup> particularly for end users that trade small volumes of swaps.<sup>150</sup>
2. Posting margin can result in significant opportunity costs, particularly when margin has to be posted in cash or low-yield investments. Consider pension funds or insurance companies, which hold portfolios of corporate bonds and equities against their liabilities and use derivatives to hedge their asset-liability mismatches. Unless these companies can post as margin the particular securities they hold as assets, they will be forced into a suboptimal holding of assets, which are acceptable as margin.<sup>151</sup>
3. Posting variation margin introduces liquidity risk that can increase the risk of an end user's business. Many financial examples could be cited,<sup>152</sup> but the concept is most easily understood in the commercial context. Consider an oil producer that enters into a swap to lock in the

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<sup>149</sup> See, for example, Wilkerson (2017), p. 2, "The significant expense and burdens of mandatory clearing far outweigh any benefits, particularly in light of new margin requirements on uncleared swaps..."

<sup>150</sup> See, for example, Foster (2017), p. 34: "... any entity that enters into a single swap that is subject to mandatory clearing is required to clear... and, as a result, engage in significant operational and economic undertaking in terms of identifying and engaging an FCM, which includes negotiating and executing additional clearing documentation, and incurring additional FCM fees... for certain entities... [that] would merely enter into a limited number of swaps for hedging and risk management purposes, the mandatory clearing requirement has made it operationally and cost prohibitive to do so." See also Zubrod (2017), p. 6: "FCMs charge minimum monthly fees, which typically run \$10,000 per month or more... On a per transaction basis, these fees may be quite material – even prohibitive for entities trading episodically..."

<sup>151</sup> See, for example, Wilkerson (2017), p. 2. In addition, for these entities, the clearing requirement might be particularly costly. CCPs, given their unique role in the financial system, are less likely to be flexible in the collateral they accept. Also, the netting benefits of clearing are not particularly valuable for pension funds and life insurance companies, which tend to hold directional portfolios of swaps.

<sup>152</sup> Here are two examples. 1) An investment vehicle buys a portfolio of corporate bonds or mortgages and hedges some of the rate or credit risk with swaps. The portfolio of assets and swaps is safe, by construction, but variation margin due on the swaps might require premature, distressed sales of the assets. 2) From a single counterparty, an end user borrows money to purchase an asset and hedges the value of that asset with a uncleared swap. Since variation margin payments on the loan and the swap offset, there is never a need to come up with cash. Forcing the swap into clearing, however, means that variation margin payments no longer offset. The counterparty, at times, will need cash from the end user to make variation margin payments on the swap to the CCP. Note that variation margin is at the heart of the problem when required clearing splits uncleared netting sets. See, Duffie et al (2015), Ghamami and Glasserman (2017), and Marshall and Steigerwald (2013).

price on a sale of oil at the end of the year. The combined cash flows from the future sale of oil and the swap are, by construction, quite safe. But if variation margin payments are required on the swap, and if oil prices rise, the producer might run out of cash: Variation margin will be due during the year on the swap, but the oil assets throw off no cash until the end of the year.

## **E. Financial End Users: Redesign the “Material Swaps Exposure”**

### **Threshold**

Given that there are significant costs to clearing and posting margin, good policy would impose these costs only when the benefits – here in the form of reduced systemic risk – justify imposing the costs. Because commercial end users and small banks are unlikely to pose much systemic risk, Dodd-Frank’s and the CFTC’s excepting these entities from clearing is very much in line with cost-benefit considerations.<sup>153</sup>

With respect to uncleared margin requirements, Dodd-Frank requires that swap dealers collect margin on uncleared swaps, which fits the cost-benefit paradigm in that dealers are typically significant sources of systemic risk. By contrast, all those excepted from clearing are exempt from uncleared margin requirements, which also fits the paradigm, since commercial end users and small banks do not pose much systemic risk. Dodd-Frank leaves regulators to decide on uncleared margin rules for everyone else, which are mainly financial end users.

Guided by the view quoted above – that financial firms were particularly risky – the CFTC chose not to widen the exception for uncleared margin beyond

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<sup>153</sup> The CFTC could use its 4(c) authority to establish a material swaps exposure threshold from clearing. Various non-commercial end users have requested to be exempted from the clearing requirement, arguing that the burden to them outweighs any benefits with respect to risk reduction. See, for example, Wilkerson (2017), p. 2: “Life insurers are unique end users of derivatives because derivatives are predominantly used to hedge risk, as required by state insurance laws. The significant expense and burdens of mandatory clearing far outweigh any benefits... Properly tailored, effective regulation of derivatives should not include mandatory clearing for life insurers.”



those excepted from clearing.<sup>154</sup> The Commission did try to reduce the burden on financial end users, like pension funds and insurance companies, in three ways.

First, the original rule proposal, which required that margin be posted as cash, was changed to allow for an expanded list of acceptable collateral. While very useful in theory, “acceptable collateral is not necessarily the same as accepted collateral.”<sup>155</sup> In other words, dealers facing the capital and liquidity constraints of current regulatory regimes may very well not accept the broad range of collateral permitted by rule.

Second, the Commission created a \$50 million payment threshold for initial margin, below which initial margin need not be posted. This threshold provides some relief from the operational and opportunity costs of posted collateral. But because the threshold is an absolute dollar amount, it is useful only for the very smallest entities, not, in particular, for larger entities that have small swap books relative to the size of their businesses.

The Commission could have, but did not, create an equivalent payment threshold for variation margin. On the one hand, variation margin by end users protects a swap dealer from end user defaults. Also, unlike initial margin,

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<sup>154</sup>The principle difference in scope between the entities exempt from the clearing requirement and the entities exempt from the uncleared margin requirement is attributable to the fact that entities “predominantly engaged in activities that are financial in nature, as defined in sec. 4(k) of the Bank Holding Company Act” are required to comply with the clearing requirement (sec. 2(h)(7) of the Commodity Exchange Act precludes them from electing the end-user exception), whereas not every entity falling within that class may be required to comply with the uncleared margin regulations (the definition of financial end user in CFTC regulation 23.151 requires most, but perhaps not all, such entities to comply with at least some of the uncleared margin regulations).

<sup>155</sup>Broadridge Financial Solutions (2017), p.7. This study, which focuses mostly on Europe, reports that “the buy-side has found banks much less willing to accept non-cash collateral as variation margin against bilateral positions. Because of the treatment of non-cash assets held on the balance sheet... under the LCR and NSFR, banks face significantly higher costs if they accept anything other than cash as variation margin. As a result, no respondents reported their sell-side providers were broadening the types of collateral they were prepared to accept.”

exchanges of variation margin do not reduce the total amount of liquid assets circulating through the system.<sup>156</sup>

On the other hand, as explained above, a key cost of requiring end users to post variation margin is the introduction of liquidity risk into their businesses. Also, end users are much less able to manage liquidity risk than swap dealers who are, in fact, in the liquidity business. And finally, there are many other regulations, like capital and liquidity ratios, to ensure the safety of swap dealers. It is easy to imagine cost-benefit considerations, therefore, that would recommend the introduction of a variation margin payment threshold.

The third way in which the Commission tried to reduce the burden of margin requirements on financial end users was to create a “material swaps exposure” (MSE) threshold, currently at \$8 billion notional amount of swaps, below which size entities are exempt from initial margin requirements. This concept, which exempts small end users, is certainly consistent with cost-benefit considerations, but there are a number of problems with its implementation.

Most importantly, the MSE threshold, like many other parts of today’s broader regulatory regime, is expressed in terms of notional amount. But notional amount is an inadequate measure of the size of derivatives positions, mostly because it adds offsetting long and short positions together. Put another way, putting on risk-reducing trades could put an entity over the threshold.

Regulators need to use better metrics when setting thresholds. One possible alternative is the CFTC’s Entity-Netted Notionals (ENNs), which net longs and shorts within pairs of legal counterparties, within product classes and within currencies, but not across those silos.<sup>157</sup>

Another problem with the current MSE threshold is that it is an absolute amount. Entities with small absolute swaps positions are unlikely to pose systemic risk, but so are entities with small swaps positions relative to the size of

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<sup>156</sup> See, for example, Basel Committee on Banking Supervision (2015), 2(e), p. 9.

<sup>157</sup> See Haynes, Roberts, Sharma, and Tuckman (2018).

their businesses. For this reason, a relative threshold – e.g., the ratio of ENNs to assets, which would capture the complexity of a business with respect to swaps – could be a useful addition to the regulatory toolkit.

A final problem with the current MSE threshold is that it excepts end users only from initial margin requirements. As discussed above, however, in the context of payment thresholds, cost-benefit considerations argue for excepting from variation margin requirements firms that do not pose much systemic risk and for whom liquidity considerations are not part of their day-to-day business.

It will be challenging for the CFTC to implement these recommendations on its own. While they are all consistent with the requirements of Dodd-Frank, they are not consistent with the rules of other domestic regulators or international standards or guidance. More specifically, notional amounts are the current norm with respect to setting thresholds, and variation margin payments are currently required without threshold.<sup>158</sup>

In addition to an MSE threshold, the Commission might provide relief to end users by reconsidering how it interprets the definition of a financial entity in the Commodity Exchange Act 2(h)(7)(C)(i). A narrower definition, consistent with other terms used in that section, could bring additional clarity and relief to a variety of end users, including treasury affiliates, certain types of special purpose vehicles, and even some energy firms.<sup>159</sup>

#### **F. Uncleared Margin Requirements Should Not be Prescriptive**

Dodd-Frank describes the standard for setting uncleared margin requirements as follows:

“To offset the greater risk to the swap dealer ... and the financial system arising from the use of swaps that are not cleared,” the margin requirement “shall help ensure the safety and soundness of

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<sup>158</sup> See Basel Committee on Banking Supervision (2015), Requirements 2.1 and 2.5, p. 10.

<sup>159</sup> On the desire for such relief, see, for example, Coalition for Derivatives End-Users (2017), pp. 7-11, and Giancarlo (2015), section I, part B.

the swap dealer... and be appropriate for the risk associated with the uncleared swaps held as a swap dealer...”

This standard is somewhat challenging to understand from an economic perspective. The latter part of the standard clearly states that margin on a swap should be set according to the risk posed to the swap dealer. Of what relevance, then, is the premise that uncleared swaps present greater risks to the dealer and the financial system?

To highlight the problem, what if a particular uncleared swap (e.g., an interest rate swap with highly customized cash flows) is less risky than a particular cleared swap (e.g., a swaption)? The “appropriate for the risk” part of the standard would say that required margin for the uncleared swap should be lower, but this outcome would violate the starting premise.

The ambiguity of the statute may very well be a patchwork of two distinct standards. One standard, which considers only counterparty risk, appeared in earlier drafts of the legislation.<sup>160</sup> According to this standard, uncleared margin safeguards swap dealers and, in so doing, reduces systemic risk. Furthermore, requiring uncleared margin to be comparable with cleared margin removes opportunities for a regulatory arbitrage in which counterparties alter derivatives contract terms solely to avoid clearing and cleared margin requirements.<sup>161</sup>

Another standard, however, starts with the premise that uncleared swaps are particularly dangerous with respect to systemic risk. From this perspective, uncleared margin should be set higher than cleared margin so as to discourage the use of uncleared products.

This standard is most clearly evident in the text of international standards, where uncleared margin requirements are described as having “two main

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<sup>160</sup> See 155 Congressional Record H14747. This draft does not include the introduction, “To offset the greater risk...,” but the rest of the standard is, word-for-word, nearly identical.

<sup>161</sup> This regulatory arbitrage possibility is a strong argument in favor of the Commission’s requirement of two-way initial margin on uncleared swaps. If the counterparty to the dealer alone had to post, which is a reasonable reading of the statute, then there would be a strong incentive to avoid clearing and the two-way margin requirements of CCPs.

benefits,” namely, the “reduction of systemic risk” and the “promotion of central clearing.”<sup>162</sup>

But the standard also appeared in some remarks leading up to Dodd-Frank. CFTC Chairman Gary Gensler, for example, in a speech in Europe in March 2010, called for higher margin on uncleared swaps, which “leave institutions with greater risk” and “leave the system more interconnected.”<sup>163</sup> And Senator John Kerry, a few months before passage of Dodd-Frank, said that margin on uncleared swaps would “offset the greater risk they pose to the financial system and encourage more trading to take place in transparent, regulated markets.”<sup>164</sup>

The difficulty is that these two standards for uncleared margin are not compatible from a policy perspective. Margin requirements on uncleared derivatives can either be set to reflect counterparty risk, thus avoiding regulatory arbitrage, or they can be set higher, to discourage uncleared trades and promote clearing.

These conflicting standards were sufficiently present for the matter to be addressed in a letter from two leading, majority Senators, Christopher Dodd and Blanche Lincoln, to two leading, majority Representatives, Barney Frank and Collin Peterson, just after the final conference report leading up to Dodd-

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<sup>162</sup> Basel Committee on Banking Supervision (2015), p. 3. The text there goes on to say as follows: “Margin requirements for non-centrally cleared derivatives would be expected to reduce contagion and spillover effects by ensuring that collateral is available to offset losses caused by the default of a derivatives counterparty. Margin requirements can also have broader macroprudential benefits, by reducing the financial system’s vulnerability to potentially destabilizing procyclicality and limiting the build-up of uncollateralised (*sic*) exposures within the financial system... Margin requirements on non-centrally cleared derivatives, by reflecting the generally higher risk associated with these derivatives, will promote central clearing, making the G20’s original 2009 reform programme (*sic*) more effective.”

<sup>163</sup> Gensler (2010): “... we must explicitly regulate derivatives dealers. In so doing, we can set higher capital requirements as well as specific margin requirements for tailored and other bilateral transactions. Without being brought to central clearing, these so-called “bespoke” transactions leave financial institutions with greater risk, leave the system more interconnected and justify higher requirements.”

<sup>164</sup> Kerry (2010).

Frank.<sup>165</sup> Senators Dodd and Lincoln, “to provide some additional background on legislative intent,” come down squarely in favor of the counterparty risk standard:

“In cases where a Swap Dealer enters into an uncleared swap with an end user, margin on the dealer side of the transaction should reflect the counterparty risk of the transaction. Congress strongly encourages regulators to establish margin requirements for such swaps... in a manner that is consistent with Congressional intent to protect end users from burdensome costs...

“It is... imperative that regulators do not assume that all over-the-counter transactions share the same risk profile... As regulators set capital and margin standards... they must set the appropriate standards relative to the risks associated with trading... Regulators should seek to impose margins to the extent they are necessary to ensure the safety and soundness of the Swap Dealers...”<sup>166</sup>

The Dodd-Lincoln letter failed in its purpose, however. The CFTC’s first rule proposal rejected the comparable standard:

“Given the Congressional reference to the “greater risk” of uncleared swaps and the requirement that margin for such swaps “be appropriate for the risk,” the Commission believes that establishing margin requirements for uncleared swaps that are at least as stringent as those for cleared swaps is necessary to fulfill the statutory mandate.”<sup>167</sup>

The CFTC’s final rule in 2016 no longer contained this language, but the pure risk-based standard was never implemented. In his statement about the

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<sup>165</sup> Christopher Dodd was chair of the Senate Committee on Banking, Housing, and Urban Affairs. Blanche Lincoln was chair of the Senate Committee on Agriculture, Nutrition, and Forestry. Barney Frank was chair of the House Financial Services Committee. Collin Peterson was chair of the House Committee on Agriculture.

<sup>166</sup> Dodd and Lincoln (2010).

<sup>167</sup> 76 Fed. Reg., p. 23734.

final rule, Commissioner Giancarlo highlighted the CFTC's adoption of the standard to promote clearing in light of statutory language:

“Today’s rule ... reflect[s] a disingenuous reading of the Dodd-Frank Act to favor cleared derivatives over uncleared swaps. In fact, there is no provision in the law directing regulators to set punitive levels of margin to drive hedging market participants toward cleared products. Imposing punitive margin levels will hazard a range of adverse consequences from raising the commercial cost of risk hedging to reducing trading liquidity in uncleared swaps markets and incentivizing... products... unsuitable for clearing into clearinghouses... More critically, punitive margin on uncleared swaps will increase the amount of inadequately hedged risk exposure on America’s corporate balance sheets...”

The most obvious manifestation in the rules of the standard to promote clearing is that uncleared margin must be set to a ten-day margin period of risk (MPOR), that is, to cover ten days of market risk before a position is liquidated, or “closed out.” Margin at clearinghouses, on the other hand, is required to cover only a five-day MPOR. In volatility terms, the risk of uncleared swaps is thus assumed to be about 40% higher than that of cleared swaps.<sup>168</sup>

Not only does this standard favor cleared over uncleared swaps, but it is also remarkably coarse. Since there are many different kinds of uncleared swaps, the assumption that a ten-day MPOR is appropriate for all of them is, to say the least, heroic.

The essential problem with the uncleared margin rule, however, is its over-prescriptiveness. Assuming that there is a fixed waiting time before close out and then that close out happens at prevailing market prices is but one approach

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<sup>168</sup> At least part of the reason for adopting the ten-day MPOR was that it had already been accepted as a Basel capital standard. In any case, since volatility increases with approximately the square root of time, the ratio of the volatility of a ten-day close-out period to a five-day close-out period is the square root of 2, or about 1.4.

to calculating margin, and not even up to industry standards. One better approach, for example, is to calculate market risk for a waiting period appropriate for that portfolio, add an assumed market impact cost for hedging the portfolio at that time, and then assume a gradual liquidation and lifting of the hedge without further market impact.

This alternate approach has two advantages. The first, and most obvious, is that it is portfolio specific. The second is that it focuses attention on the real risk of defaults and liquidations: the market impact cost of the hedge. The regulatory modeling approach pushes attention away from this key element of swaps default risk.

Another example of the over-prescriptiveness of the margin rule is portfolio offsets. The rules require that each swap be placed into one of four product types: commodities, rates/currency, credit, and equity. Risks, or volatilities, are then calculated within each product type and added together. As a result, offsetting long and short exposures, and risk offsets due to correlations across swaps, are recognized *within* but not *across* product types.

Offsets are, indeed, a tricky problem in finance. Correlations that prevail in normal times might very well not prevail in a crisis. But the regulatory solution is very prescriptive and coarse. Consider, for example, an investment firm that specializes in convertible bonds. Its whole business is to cross rates, credit and equity markets, and it should devote resources to designing appropriate risk models. Forcing the current regulatory margin framework on this business seems counterproductive.

An unintended consequence of the over-prescriptiveness of the rules is that the industry has collectively produced the Standard Initial Margin Model (SIMM) for uncleared swaps, which has been approved by regulators (subject to firm specifics and controls). But having a single, global model for swaps is not desirable.



First, with the availability of a globally approved standard model, businesses have less incentive to come up with better models.

Second, no model is perfect. And if all businesses use the same imperfect model, risk will eventually accumulate in the products that are treated too leniently by the model. Evidence of this phenomenon is just in the rear view mirror. One of the greatest regulatory errors leading up to the 2007-2009 financial crisis and the European sovereign debt crisis was the imperfect setting of Basel capital risk weights on mortgage-backed securities and peripheral European government bonds. Banks then herded into those risks, and the comeuppance, when it came, was systemic.<sup>169</sup>

In fact, small fractures in the uncleared margin framework are becoming apparent. Because the rules impose a higher MPOR on uncleared products but pay little attention to the market impact costs of liquidation, SIMM charges too much for small, relatively liquid positions and too little for large, relatively illiquid positions.<sup>170</sup> This result is ironic. Despite the regulatory intent to set higher margin on uncleared products, the rules have unintentionally resulted in setting too low a minimum for particularly dangerous situations, namely large positions in relatively illiquid, uncleared swaps.

Widespread adoption of SIMM might also fail in regulatory cost-benefit considerations. Large and sophisticated end users, who might pose the most systemic risk and who have the resources and incentives to design better models, are pushed into a relatively coarse framework. Smaller and less intensive end users of derivatives, however, who pose little systemic risk and for whom swaps risk management is expensive, are forced into a complex and hard-to-use framework.

This paper recommends a non-prescriptive regulatory standard – e.g., margin must cover a 99 percentile adverse event. Then, let market participants

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<sup>169</sup> See Acharya and Richardson (2009) and Acharya and Steffen (2014).

<sup>170</sup> See Roberson (2018) and Cuntinho (2014).

come up with appropriate, business-specific models, which would then have to be approved by their respective regulators. Third-party vendors of margin models will, as under current rules, be encouraged. Regulators can continue to offer relatively simple, and, by necessity, conservative, models for those that choose not to invest in their own or in third-party models: If an entity lacks the sophistication, resources or incentives to master margin models, a simple, conservative model may then be appropriate.<sup>171</sup>

Regulators will certainly find it a challenge, with respect to both expertise and resources, to examine, approve and exercise surveillance over uncleared margin models. But, once the assumption has been made that the financial industry cannot be relied on to police itself, the active scrutiny of models is an essential dimension of regulation.

## **G. Conclusion**

The Dodd-Frank Act required various market participants to clear standardized swaps and required swap dealers to collect margin on uncleared swaps. With respect to reducing systemic risk, the benefits of these requirements were judged to be worth the concomitant costs.

At the same time, Dodd-Frank exempted commercial end users from these requirements. These market participants are not sources of systemic risk and would find the requirements particularly costly. The fate of many financial end users, by contrast, was not as clear, particularly with respect to uncleared margin requirements.

This paper argues that smaller financial end users should be excepted from the requirements through a material swaps exposure threshold, for the same reasons that commercial end users are exempt. Larger financial end

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<sup>171</sup> Some argue that a proliferation of internal models will lead to disputes over posted margin. First of all, market participants settle on prices of a myriad of securities each day. Surely they can also come to agreements about how much margin to post. Second, disputes over margin models are productive and will likely lead to better and better models.

users, however, that may well be sources of systemic risk, should be subject to the clearing and uncleared margin requirements.

This paper also argues, along the lines of other issues in this White Paper, that uncleared margin rules can – and should – achieve their objectives without being as prescriptive as under current law. A less prescriptive approach would encourage sound and innovative risk management and would be less likely to encourage model herding, which is itself a source of systemic risk.

## **APPENDIX: TREATMENT OF SWAPS BY COMPONENTS OF CAPITAL REQUIREMENTS**

### **Current Exposure Method (CEM)**

Common metrics for counterparty risk are Exposure at Default (EaD), which is the sum of Current Exposure (CE) and Potential Future Exposure (PFE). To illustrate how CEM evaluates counterparty risk through these metrics, consider the example shown in Table 1, which elaborates on an example presented earlier.

A dealer had paid fixed to a pension fund on \$100 million notional of a ten-year interest rate swap and, just recently, received fixed on \$75 million notional of a matched-maturity swap from that same pension fund. Interest rates have risen since the initiation of the initial swap, such that the market value of the swap to the dealer is positive \$8 million. The dealer has collected this \$8 million from the pension fund over time in the form of variation margin.

In addition, the pension fund posts an additional \$375,000 as initial margin. As reported above, the dealer estimated that a three standard deviation move in the market value of a \$100 million ten-year swap was \$1.5 million. Proportionately, then, its estimate of the corresponding move on the pension fund's net \$25 million notional amount is one-fourth that \$1.5 million, or \$375,000.

The counterparty risk to the dealer of this swap position is very small. The dealer has \$8,375,000 in collateral against a CE of \$8 million and an estimated PFE of \$375,000.<sup>172</sup> CEM, by contrast, does not recognize this swap position as having very low risk because it does not appropriately account for the risk-reducing effects of netting and margining.

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<sup>172</sup> The dealer's estimate of the PFE can be too low, of course, but that possibility is not relevant here. In this example, the volatility estimates of the dealer and CEM are exactly the same.

CEM starts with the assumption that the PFE for an interest rate swap is a multiplier times notional amount, where the multiplier takes on one of three values, depending on the maturity of the swap. For swaps with more than five years to maturity, the multiplier is 1.5% of notional.

This 1.5% multiplier is quite reasonable for a ten-year swap, and the example here was constructed to be consistent with that parameter: The dealer also assumed that \$1.5 million was the right amount of initial margin on a \$100 million ten-year swap. Similarly, as shown in Table 1, the PFE of \$75 million notional is the proportionate \$1.125 million.

CEM proceeds, however, by drawing an unreasonable conclusion about the PFE of the portfolio. The basic idea is to allow some offset against the sum of the PFEs, in this case, \$2.625 million. The offset, however, is based on the net market value of the position relative to its gross market value. But the market value of a trade depends on current interest rates relative to the interest rates at the time a trade was initiated. Market values have very little to do with market risk, that is, with the volatility of future changes in market value. Hence, CEM's offset is not risk-based.

Proceeding with the example, then, CEM computes the ratio of net to gross market value, in this case \$8 million divided by \$8 million, which equals 1, and then computes PFE as  $40\% \times \$2.625 \text{ million} + 60\% \times 1 \times \$2.625 \text{ million}$ , or \$2.625 million.<sup>173</sup> (The 40% and 60% are fixed parameters of CEM.) In other words, in this example, CEM gives no offset for the fact that the dealer is paying fixed on one swap and receiving fixed on the other.

To emphasize how CEM is insensitive to risk, consider the alternate market values shown in Table 1. In this case, the ratio of net to gross market value is \$9 million divided by \$15 million, or 0.6. The PFE according to CEM is  $40\% \times \$2.625 \text{ million} + 60\% \times 0.6 \times \$2.625 \text{ million}$ , or \$1.995 million. CEM gives

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<sup>173</sup> This example is simplified: CEM actually uses market values since the last exchange of variation margin. This simplification does not change the point, however, that CEM's netting calculations are far from risk-based.

a long-short offset in this case, but the risk of the position has not changed!<sup>174</sup> And, of course, the \$1.995 million PFE is still much higher than the economic reality.

**Table 1. Current Exposure Method: Illustration From the Dealer Perspective**

Notional Amount	PFE	Market Value	Collateral	Alternate Market Value
\$100 mm (Paying fixed)	\$1.5 mm	\$8 mm	\$8.375 mm	\$12mm
\$75 mm (Receiving fixed)	\$1.125 mm	\$0		-\$3mm

An additional problem with CEM is that, in calculating EaD, it does not properly account for margin. EaD should equal CE plus PFE minus margin. For the moment, then, returning to the original market values and accepting CEM's large estimate of PFE, EaD should be the \$8 million CE, plus the \$2.625 million PFE, offset by the \$8.375 million of margin, for a net EaD of \$2.25 million.

CEM, however, does not allow margin to offset PFE. Hence, the \$8 million CE is offset by the \$8.375 million of margin, but none of the \$2.625 million PFE is offset. As a result, according to CEM, EaD is equal to the PFE of \$2.625 million in the measurement of an essentially riskless position.

In short, CEM fails as a risk-based measure of swaps counterparty risk. It does not net swap exposure in a risk-based manner, and it does not allow the full use of margin to reduce exposure. In other words, from the perspective of required capital, CEM does not provide risk-based incentives for dealers to reduce risk by putting on offsetting trades or by collecting more margin.

<sup>174</sup> An even stranger situation can arise in which the dealer is paying or receiving fixed on both swaps, but one has a positive market value and one a negative market value. Then, CEM would give an offset between the two, even though the risk of both is in the same direction!

A final problem with CEM applies to options positions. An option has a “delta,” which denotes its sensitivity to the price of an underlying security. Consider, for example, \$100 notional amount of a 0.5-delta option on the stock of company XYZ. That option has the same sensitivity to the price of XYZ stock as  $\$100 \times 0.5$ , or \$50, of stock. CEM, however, in computing the exposure of this option, uses the \$100 notional amount of the option, with no delta adjustment.

### **Standardized Approach for Counterparty Credit Risk (SACCR)**

SACCR was designed to address the shortcomings of CEM. The calculation of PFE is significantly more reflective of risk. With respect to interest rate risk, for example, in place of CEM’s three coarse maturity buckets, SAACR uses duration, which is a direct measure of interest rate sensitivity. SACCR also adjusts the notional amount of options for their deltas.

SACCR handles netting of the PFEs of individual trades by dividing the overall portfolio into “hedging sets,” for example, swaps on the same commodity, interest rate swaps in the same currency and the same maturity bucket, and foreign-exchange swaps on the same pair of currencies. PFE offsets are generally allowed within but not across hedging sets, although some offset is allowed across maturity buckets for interest rate swaps in the same currency.

SACCR’s treatment of netting is still, in many ways, coarse and arbitrary, but that is the nature of prescriptive, regulatory models. By necessity, netting boils down to a set of assumptions about how individual securities or swaps change in value relative to one another, and those assumptions might not, as the future unfolds, be realized. An internal risk model would posit a set of correlations and, in best practice, test the robustness of the results by stressing those assumed correlations. Prescriptive, regulatory models are more likely to make simpler and more conservative assumptions, like full netting within and limited or no netting across hedging sets.

With respect to margin, CEM allows margin to offset current exposure but not PFE. Margin offset in SACCR depends on the application. When SACCR is

used in connection with leverage ratio calculations, any excess margin may not offset PFE, as in CEM. In connection with market risk calculations, however, SACCR allows excess margin to offset PFE, though less than dollar-for-dollar. To take one data point for the purposes of illustration, if excess margin equals PFE, SACCR allows PFE to be reduced by about 40%.

In summary, SACCR is more risk-based than CEM, but is still highly prescriptive with respect to risk offsets. Also, depending on the application, SACCR ranges from disallowing any margin offset to PFE to allowing quite limited offsets.

### **Global Systemically Important Bank (GSIB) Capital Surcharge**

The GSIB surcharge is designed to increase capital levels at banks that are deemed to be systemically important. The U.S. implementation of the surcharge uses five indicators: size, cross-jurisdictional, inter-connectedness, complexity, and short-term wholesale funding.

The size indicator is computed using CEM. As a result, GSIB inherits all of the problems of CEM with respect to swaps: inadequate netting and margin offsets, and the failure to adjust options to their delta exposures.

The complexity indicator is affected by swaps through notional amount. While notional amount is typically misleading with respect to market risk or counterparty risk, it is a reasonable proxy for complexity. A swap dealer's book may be perfectly hedged with respect to market risk, and it may have collected sufficient margin to virtually eliminate counterparty risk. But if a dealer's book has a very large notional amount, created by hundreds of thousands of positions, there is operational risk and "complexity."

### **Supplementary Leverage Ratio (SLR)**

The fundamental idea of the Basel III leverage ratio, and its U.S. implementation, the SLR, is to require a minimum amount of capital as a percentage of total assets. But since some "assets" are off balance sheet, the



SLR applies to total “exposure,” which equals on-balance-sheet assets plus off-balance-sheet exposure.

The definition of total exposure with respect to the SLR fails to capture a firm’s true exposure to swaps.

First, customer cash deposited as margin, which is on a firm’s balance sheet, is part of the calculated total exposure. But collected margin reduces the risk of a firm’s swaps book! Firms have been figuring out ways to remove margin from their balance sheets, mainly by structuring the administration of these balances to remove any economic interest of the firm. While this trend does not seem particularly harmful, it may involve efficiency losses for the firm and its customers.

Second, to measure the off-balance-sheet exposure due to swap, SLR uses CEM. As noted above, however, CEM’s treatment of swaps is problematic. And while there are plans to migrate from CEM to SACCR, SACCR’s treatment of swaps also has problems. Aside from the prescriptive determination of netting, SACCR, applied to the SLR, does not allow margin to offset PFE.

### **Net Liquid Asset Approach**

The CFTC’s proposed capital rules would allow a swap dealer to elect to use the traditional Futures Commission Merchant (FCM) and Broker-Dealer Net Liquid Asset Approach. The SEC’s proposed rules for security-based swap dealers and major security-based swap participants are also based on this approach. The basic idea is that “net liquid assets,” defined as current assets minus current liabilities minus market and credit risk charges, should exceed the greater of some fixed dollar amount or 8% of hypothetical margin requirements.

The Net Liquid Asset Approach is somewhat conservative in that risk is reflected both through the market and credit risk charges and again, though with only an 8% multiplier, through margin requirements. With respect to the themes

of this section, however, the Net Liquid Asset Approach can overstate the risk of swaps in two ways.

First, as described above, to the extent that standardized models are used to compute risk charges, swaps may be overcharged.

Second, while the margin requirement of a portfolio is, by definition, a good proxy for its risk, margin for this purpose is the sum of the separately computed requirements of cleared positions, uncleared swap positions, and uncleared security-based swap positions.<sup>175</sup> Given the diversified nature of most portfolios, however, the margin of the overall portfolio is likely to be significantly less than the sum of the margin requirements on subsets of the portfolio. Hence, the 8% requirement is imposed on a quantity that can be substantially greater than the risk of the portfolio.

A simple example can illustrate this point. Say that a swaps dealer is long aluminum swaps with its clients, which it hedges by being short aluminum futures contracts. Assume also that the dealer posts and receives initial margin on the swaps and the futures and that variation margin is posted or received according to changes in market values.

In this example, the risk of the dealer's position is minimal. But because the 8% requirement applies to the sum of the margin on the swaps and the margin on the futures, the capital requirement on this position is much larger than the risk.

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<sup>175</sup> The CFTC has issued no-action relief permitting the computation of margin for uncleared swaps and security-based swaps as a portfolio.

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