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Cost-Benefit Analysis of the CFTC's Proposed Margin Requirements for Uncleared Swaps

NERA
Economic Consulting

Authors:

Sharon Brown-Hruska, Ph.D.

Trevor Wagener

(with the research support of Ryan Cummings)

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NERA Economic Consulting
1255 23rd Street, NW, Suite 600
Washington, DC 20037
Tel: +1 202 466 3510
Fax: +1 202 466 3605
www.nera.com

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Executive Summary

On October 3, 2014, the Commodity Futures Trading Commission ("CFTC") published a proposed rule in the Federal Register that would establish initial and variation margin requirements for swap dealers and major swap participants regarding uncleared swaps.[1] The proposed rule would directly affect swap dealers and major swap participants, herein referred to as "covered swap entities," and indirectly affect the counterparties of covered swap entities.

Recognizing the value of expert analysis in informing regulators of the potential costs and benefits of the current rulemaking, the National Economic Research Associates, Inc. authors[2] ("NERA") conducted a detailed quantitative impact study to analyze the potential costs and benefits of these regulations. NERA's study concludes:

> **Regulatory Intent:** The objective of the proposed rule is to reduce systemic risks potentially associated with uncleared swaps.[3]
>
> **Costs:** The expected costs of the regulation are substantial and vary according to assumptions about market conditions. The incremental opportunity costs of investing funds in appropriate collateral for margin purposes are expected to measure nearly **$411 million** per year during periods of normal financial market stress. In addition, pro-cyclical aspects of the proposed rule may increase such costs substantially in times of elevated financial market stress, and aspects of the proposed rule that are stricter than international standards for margin rules may reduce the competitiveness of domestic swap market participants with respect to foreign competitors, threatening domestic derivatives-relates jobs.
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> - **Incremental Opportunity Costs:** NERA's cost-benefit analysis estimates extremely high aggregate incremental opportunity costs for the proposed rule's initial margin requirements.[4] During periods with normal levels of market strain, the initial margin requirements of approximately $24.5 billion would impose **$206 million** in annual aggregate opportunity costs; this figure rises to **$436 million** annually during periods of elevated financial market stress. NERA estimates the proposed rule's variation margin requirements would require firms to hold approximately $10 billion in aggregate, split between cash and liquid risk-free assets, during periods with normal levels of market

[1] Current CFTC Proposed Rule, 79 F.R. 59898. "Margin Requirements for Uncleared Swaps for Swap Dealers and Major Swap Participants; Proposed Rule," October 3, 2014. The proposed rule included a 60-day public comment period ending December 2, 2014.

[2] Sharon Brown-Hruska. Ph.D., is a Vice President in NERA's Global Securities and Finance Practice and Visiting Professor of Finance in the A.B. Freeman School of Business at Tulane University. She is a leading expert in securities, derivatives, regulatory economics, and risk management. Prior to joining NERA, she served as Commissioner (2002-2006) and Acting Chairman (2004-2005) of the CFTC. Trevor Wagener is an Analyst in NERA's Global Securities and Finance Practice. Prior to joining NERA, he traded commodities derivatives at DC Energy.

[3] The Dodd-Frank Wall Street Reform and Consumer Protection Act. Public Law 111-203, 124 Stat. 1376 (2010) ("Dodd-Frank"), provides the statutory authority for the proposed rule, as explained in the proposed rule itself (79 F.R. 59898, pp. 59898-59899). Section 4s(e)(3)(A) of Dodd-Frank attributes "greater risk to the swap dealer or major swap participant and the financial system" to "the use of swaps that are not cleared[.]"

[4] The opportunity costs consist of lost returns as a result of investing funds in appropriate collateral for margin purposes as opposed to investing in assets designed to optimize returns. Current CFTC Proposed Rule, 79 F.R. 59898, p. 59920.

strain, potentially rising to much higher levels in periods of elevated market stress. This would impose aggregate annual variation margin opportunity costs of approximately **$205 million** in normal times.

- **Pro-Cyclicality:** The proposed rule has a number of features that could exacerbate systemic risks, and consequently undermine the very regulatory intent underlying the rulemaking.

  - Monthly initial margin model recalibration under the proposed rule would result in substantial upward shifts in margin requirements as markets come under strain, creating a feedback loop whereby tighter markets lead to increased margin requirements for the same gross notional value of swaps, which in turn leads to even tighter markets. This potentially vicious cycle is further exacerbated by the observation that opportunity costs per dollar of initial margin tend to grow in crisis periods, as risk premia increase yields on risky assets and a flight to quality increases demand for—and hence the price of—risk-free assets, depressing their yields.

  - The prohibition on the use of non-cash collateral for the posting of variation margin creates substantial costs in times of market strain, potentially exacerbating the flight to quality already typically observed in such periods. Firms would need to maintain highly liquid, risk-free assets beyond their initial margin requirements in order to ensure that they could meet their variation margin obligations in the event of mark-to-market losses in a fast-moving market, and would likely need to keep substantial amounts of cash on hand to guard against liquidity crises.

  - The daily variation margin posting frequency for all products has the potential to create enormous liquidity pressures in high-volatility periods, as firms with losses would likely need to liquidate large quantities of similar asset types near-simultaneously to raise the cash required to meet variation margin posting requirements. For instance, a rapid shift from the average interest rate swap volatility from June 2012 to November 2014 to the maximum level in that period would require firms to rapidly exit approximately **$300 billion** in risk-free positions to ensure appropriate cash collateral on hand.

- **Competitiveness:** The proposed rule as currently written includes several provisions substantially stricter than international standards. These divergences from international regulatory norms, such as a $3 billion Material Swaps Exposure threshold rather than an $11 billion threshold, as well as a prohibition on the use of non-cash collateral for variation margin, will place domestic firms at a competitive disadvantage to foreign firms. This, in turn, threatens thousands of US derivatives-related jobs, and may threaten **more than 4,000 industry job listings** in the US.

Benefits: Imposing minimum margin requirements may facilitate systemic risk management and help ensure orderly market function during periods of financial stress. However, even the intended benefits come with inherent and potentially significant trade-offs. For instance, the regulation intends to raise the costs of uncleared swaps relative to cleared swaps in order to promote systemic risk management. Unfortunately, forcing profit maximizing entities, which currently participate in uncleared swap markets, to instead choose sub-optimal portfolios results in loss of market efficiency, increased basis risk, and increased hedging costs. Thus, the intended effects of the proposed rule are predicted to lead to *decreased* use of swaps

for hedging purposes altogether, resulting in decreased liquidity and increased market risk for covered swap entities and their counterparties.

NERA's cost-benefit analysis of the proposed rule as currently written finds that the expected costs are exceptionally high while expected benefits are limited; many provisions of the proposed rule actually increase market pro-cyclicality; and several provisions are substantially stricter than international standards, placing domestic firms at a substantial competitive disadvantage. In addition, the intended effects of the proposed rule may reduce participation in the swaps markets altogether, which would be expected to reduce the competitiveness of swaps markets and negatively impact price discovery in those markets.[5]

NERA recommends reducing the expected costs of the proposed rule. There are several ways to do this. While margin requirements may be justified for some concentrated risks, the current proposed rule may effectively apply to at least one side of 75% of uncleared interest rate swaps transactions, according to the CFTC's own analysis.[6] As a result, the proposed rule would affect counterparties whose positions do not substantially contribute to systemic risk, unduly burdening smaller swap market participants with a substantial reduction in expected returns. In addition, the current rule requires that covered swap entities use a fixed 10-day liquidation period in initial margin models, rather than allowing entities to determine appropriate market-based liquidation periods. Allowing firms to use market-based models, subject to CFTC oversight, would reduce the costs of the rule while ensuring appropriate risk management, meeting the regulatory intent behind the proposed rule without reducing the liquidity of the market by disincentivizing the use of swaps to manage risk.

Reducing the proportion of swaps transactions likely to be affected by the proposed rule would also mitigate these investment opportunity costs substantially. To that end, NERA recommends harmonizing the material swaps exposure threshold with international standards, raising the threshold to a gross notional exposure of $11 billion. Other divergences from international standards on margin requirements also warrant correction. As currently written, the proposed rule would limit the eligible collateral for margin purposes relative to international standards, placing US covered swap entities at a substantial disadvantage to foreign competitors. Such divergences directly place thousands of US derivatives-related jobs at risk and potentially discourage prudent risk management practices by US end-users. The proposed rule can be improved by harmonizing initial margin haircuts with international haircut schedules, and by allowing non-cash collateral to be used for the posting of variation margin.

Reducing the pro-cyclical effects of the proposed rule would also reduce costs and potentially improve the rule's prospects for achieving its intended benefits. Specific improvements to the proposed rule that would mitigate likely pro-cyclical effects include allowing non-cash collateral to be eligible for variation margin purposes, as mentioned previously; reducing the frequency of initial margin model recalibration to prevent substantial increases in margin requirements during periods of elevated financial market stress; and extending the allowed period for the full posting of variation margin beyond the end of the current trading day, to prevent liquidity crises in volatile, fast-moving markets.

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[5] These are two of the broad areas of public concern under which costs and benefits of CFTC regulations must be evaluated, according to Section 15(a) of the Commodity Exchange Act. 7 U.S.C. § 19(a)(2), 2013 edition, available at http://www.gpo.gov/fdsys/pkg/USCODE-2013-title7/html/USCODE-2013-title7-chap1.htm, accessed November 27, 2014. See footnote 13 below for a list of the five areas.

[6] The 25th percentile of initial margin amounts on 4,686 cleared interest rate swap portfolios was $66 million, above the $65 million permitted initial margin threshold amount of $65 million. Current CFTC Proposed Rule, 79 F.R. 59898, p. 59905.

In sum, based on the significant costs that covered swap entities and their domestic counterparties would face under the proposed rule and the trade-offs inherent to the intended consequences of the rule, NERA concludes that the expansive margin requirements in the current proposal do not pass a cost-benefit test and are not in the public interest. NERA recommends adjusting the proposed rule to limit its impact to the entities and transactions substantially contributing to systemic risk, ensuring that all aspects of the rule are harmonized with international standards, and that they do not encourage pro-cyclicality in the market.

I. Introduction

On October 3, 2014, the CFTC published a proposed rule that would establish initial and variation margin requirements for swap dealers and major swap participants, the "covered swap entities."[7] The proposed rule sets a permitted initial margin threshold amount of $65 million[8] and establishes a $3 billion threshold for Material Swaps Exposure, the latter of which is approximately $8 billion lower than comparable international standards.

The current proposed rule follows an earlier proposed rulemaking from April 28, 2011,[9] which precipitated 102 comment letters, including many expressing concerns with aspects of the 2011 proposal.[10] The CFTC spent several years revising the proposal, and announced that it had taken these previous comment letters into consideration in producing the current proposed rulemaking, demonstrating the importance the CFTC places on the expert analysis provided by public comments.[11] In addition, Commissioner J. Christopher Giancarlo requested expert comment letters on the current proposed rule in his statement in the Federal Register, and personally requested the authors undertake a study of the costs and benefits of the proposed rule. Recognizing the value of expert analysis in informing regulators of the potential costs and benefits of the current rulemaking, NERA conducted a detailed quantitative impact study to analyze the potential costs and benefits of these regulations.

The aspects of the proposed rulemaking that are explored in detail in this paper include the aggregate quantitative costs of initial and variation margin on the swaps market; the pro-cyclical nature of several specific provisions of the proposed rule, such as requiring monthly initial margin model recalibration, prohibiting the use of non-cash collateral for the posting of variation margin, and requiring full daily variation margin posting; and the provisions placing domestic firms at a competitive disadvantage to international rivals, such as the $3 billion Material Swaps Exposure threshold.

To begin, NERA endeavored to evaluate the proposed rule by examining the regulatory intent thereof. The statutory authority for the proposed rule is derived from an amendment to the Commodity Exchange Act ("CEA") in the Dodd-Frank Wall Street Reform and Consumer Protection Act ("Dodd-Frank"). Section 4s(e)(3)(A) of the statute attributes "greater risk to the swap dealer or major swap participant and the financial system" to "the use of swaps that are not cleared[.]" The proposed rule also states that the intended benefit of the proposal derives from the expectation that it will "lower[] systemic risk from counterparty defaults."[12]

In light of this regulatory intent, NERA has sought to address several questions about the proposed rule, guided by the CFTC's statutory requirements for cost-benefit analysis: [13]

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[7] Current CFTC Proposed Rule, 79 F.R. 59898.

[8] "The intent of … the initial margin threshold [is to] provide smaller counterparties with relief from the operational burden of measuring and tracking initial margin collection amounts that are expected to be below $65 million." Current CFTC Proposed Rule, 79 F.R. 59898, p. 59905.

[9] 2011 CFTC Proposed Rule, 76 F.R. 23732, "Margin Requirements for Uncleared Swaps for Swap Dealers and Major Swap Participants; Proposed Rule," April 28, 2011.

[10] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59899.

[11] Ibid.

[12] Ibid., p. 59920.

[13] The CFTC is bound by the CEA to consider the costs and benefits when defining its regulations. Section 15(a) of the CEA requires that the costs and benefits be evaluated in light of five broad areas of market and public concern:

- How much will it cost firms, both covered swap entities and other market participants, to comply with the proposed rule?

- What are the possible negative consequences of the proposed rule that might be difficult to quantify?

- Does the proposed rule reduce systemic risk, and if so, what value would that reduction in systemic risk have?

- How might the proposed rule be adjusted to decrease costs, reduce the likelihood of difficult-to-quantify negative consequences, and further reduce systemic risks?

This report describes the analyses that NERA has performed with regard to the questions posed above and their overall cost-benefit assessment of the proposed rule.

- **Section II** presents data and analysis on the costs that covered swap entities will incur in order to comply with the proposed rule;

- **Section III** presents data and analysis on the costs that all domestic swap market participants will incur in order to comply with the proposed rule;

- **Section IV** examines the potential benefits associated with the proposed rulemakings, including any potential reduction in systemic risk, as well as the trade-offs inherent to the intended effects of the proposed rule; and

- **Section V** summarizes NERA's recommendations for adjusting the proposed rule to reduce costs and increase benefits to the market.

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(1) protection of market participants and the public;

(2) efficiency, competitiveness, and financial integrity of futures markets;

(3) price discovery;

(4) sound risk management practices; and

(5) other public interest considerations.

II. Compliance Costs for Covered Swap Entities

In order to assess the compliance costs of margin requirements for covered swap entities, NERA analyzed the incremental opportunity costs of initial margin requirements and variation margin requirements under a variety of assumptions, and presented expected costs based upon the assumptions deemed to best reflect actual costs. The total incremental opportunity cost calculated by NERA is $411 million in normal markets, consisting of $206 million in initial margin costs and $205 million in variation margin costs, and increases significantly in times of financial stress. A summary of calculations comprising NERA's opportunity cost analysis can be found in **Appendix A.**

A. Initial Margin Costs

The largest cost of initial margin is the opportunity cost of lower returns from investing funds in eligible collateral rather than optimal assets, or from the cost of raising capital to pay for eligible collateral. In order to present a conservative estimate of costs, NERA treats the opportunity costs as the sole contributor to increased costs for this analysis.

The first step in estimating the costs of initial margin is to estimate the size of the affected market. In order to use consistently conservative estimates, it is assumed that current registered swap dealers and major swap participants are the only relevant covered swap entities. There are currently 105 registered swap dealers and 2 registered major swap participants, though those figures are expected to grow.[14] NERA uses the conservative assumption of typical swap dealer gross notional exposure of $11 billion and typical major swap participant exposure of $5 billion,[15] arriving at an estimated affected market of $1.165 trillion.

The next step is to estimate the initial margin amount as a percentage of gross notional amount in order to estimate the total eligible collateral in which firms will have to invest to comply with the proposed rule. The analysis behind the proposed rule estimates a typical initial margin amount of 2.1% of gross notional amount,[16] so NERA uses that figure.

Taking the product of the affected market size and the initial margin amount as a percentage of gross notional amount, the estimated initial margin required is shown to be approximately $24.5 billion.[17] That

[14] Commodity Futures Trading Commission, "Provisionally Registered Major Swap Participants," March 1, 2013, available at http://www.cftc.gov/LawRegulation/DoddFrankAct/registermajorswappart, accessed November 26, 2014; and Commodity Futures Trading Commission, "Provisionally Registered Swap Dealers," November 25, 2014, available at http://www.cftc.gov/LawRegulation/DoddFrankAct/registerswapdealer, accessed November 26, 2014.

[15] The CFTC currently sets an $8 billion minimum threshold for swap dealers and a $5 billion minimum threshold for major swap participants; many swap dealers have much larger gross notional exposures than $8 billion, however. For instance, covered swap entities had $568 trillion in gross notional exposure to interest rate derivatives, a market that is more than 35% uncleared. Therefore, $11 billion is used in this report's calculations regarding swaps dealers' gross notional exposure to uncleared swaps as a very conservative way to account for the much larger exposures of larger covered swap entities. Commodity Futures Trading Commission, "Final Rules Regarding Further Defining Swap Dealer, Major Swap Participant and Eligible Contract Participant," 2012, available at http://www.cftc.gov/ucm/groups/public/@newsroom/documents/file/msp_ecp_factsheet_final.pdf, accessed November 30, 2014; Commodity Futures Trading Commission, "Weekly Swaps Report, Notional Outstanding," available at http://www.cftc.gov/MarketReports/SwapsReports/NotionalOutstanding/index.htm, accessed November 30, 2014.

[16] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59905.

[17] $1.165 trillion * 2.1% = $24.5 billion. Note that the figures are rounded.

figure must then be multiplied by the yield opportunity cost of investing in eligible collateral as opposed to optimal assets, or to raising capital to invest in eligible collateral in order to determine the opportunity cost of initial margin requirements.

The most reasonable estimate of the opportunity cost of holding eligible collateral for initial margin purposes is to compare the typical weighted average cost of capital ("WACC") of a covered swap entity to the typical returns on eligible collateral. In order to be conservative, NERA uses the average of the WACCs of leading financial firms,[18] which are expected to have lower WACCs than smaller and less prominent financial firms. Firm-wide WACCs are reasonable to use in evaluating the cost of swaps because swaps are often used to hedge risks across many lines of a financial firm's business; in essence, they are often used by financial firms in aggregate to manage firm-wide risks.

Comparing leading financial firms' average WACC to risk-free, eligible collateral yields over the period from February 2006 to November 2014, NERA estimated that the yield opportunity cost of initial margin eligible collateral would be 2.2% in normal times, and would rise to 4.7% in times of elevated financial market stress.

Thus, taking the product of the aggregate initial margin required and the yield opportunity cost of eligible margin, the aggregate annual cost of initial margin would be approximately $549 million in normal markets, and $1.2 billion in times of elevated market stress. However, the CFTC determined that the 25th percentile of all initial margin amounts was approximately $66 million, just above the $65 million permitted initial margin threshold.[19] As a result, NERA conservatively assumes that 25% of all transactions would fall below the threshold, leaving aggregate annual costs reduced by a quarter. Ultimately, aggregate annual costs of initial margin are estimated at $412 million in normal markets, and $871 million during periods of elevated financial market stress.

However, to calculate the *incremental* initial margin costs of the proposed rule, that is, those costs that the rule would impose above the costs of the status quo, existing collateral agreements must be taken into account. The International Swaps and Derivatives Association's ("ISDA's") 2014 Margin Survey found that 90% of uncleared swaps had a collateral agreement, and $1.2 trillion in initial margin was expected to be posted according to such agreements.[20] NERA estimates that the incremental margin for firms subject to the proposed rule would roughly double the margin posted by a regulated firm compared to the but-for scenario, in which they would have a 90% chance of using a less strict collateral agreement. This is a conservative figure, as $1.2 trillion in initial margin collateral is less than half of the initial margin that would be required if the proposed rule affected all swaps transactions. Indeed, if *only* the $123 trillion uncleared interest rate derivatives market[21] were subject to the proposed rule, and the 2.1% initial margin rate from the proposed rule were applied to that entire market, nearly $2.6 trillion in initial margin would be posted—more than double the $1.2 trillion currently being posted under collateral agreements. Thus, the proposed rule is expected to more than double initial margin costs for regulated entities. NERA

[18] The financial firms in the S&P 100's top ten firms by index weight listing.

[19] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59905.

[20] International Swaps and Derivatives Association, Inc., "ISDA Margin Survey 2014," April 2014, p. 9, available at http://www2.isda.org/attachment/Njc3NQ==/2014%20ISDA%20Margin%20Survey.pdf, accessed November 20, 2014.

[21] International Swaps and Derivatives Association, "Size and Uses of the Non-Cleared Derivatives Market," April 2014, p. 4, available at http://www2.isda.org/attachment/NjQ0MA==/FINAL%20-%20Size%20and%20Uses%20of%20the%20Non-Cleared%20Derivatves%20Market.pdf, accessed November 24, 2014.

conservatively assumes that the incremental initial margin costs are just half of the calculated total initial margin costs, and hence estimates initial margin's incremental cost at $206 million in normal markets and $436 million in stressed markets.

B. Variation Margin Costs

A similar methodology applies to determining the incremental opportunity costs of variation margin. As with initial margin, the opportunity costs of variation margin are treated as the sole contributor to increased costs in NERA's analysis in order to present a conservative estimate of costs.

As with initial margin, NERA used the conservative assumption of typical swap dealer gross notional exposure of $11 billion and typical major swap participant exposure of $5 billion, arriving at the same estimated affected market size, $1.165 trillion.

In order to estimate the variation margin liquidity management needs of covered swap entities, NERA used the CBOE Interest Rate Swap Volatility Index ("SRVX").[22] The average SRVX volatility measure has been 0.88%, suggesting a prudent aggregate variation margin liquidity cushion of approximately $10.3 billion for swap market participants.[23]

NERA assumed that firms' alternative to carrying substantial cash-on-hand would be risk-free assets, since some liquid assets would be needed to make periodic swap payments, albeit less often than daily. The variation margin liquidity cushion of $10.3 billion is multiplied by the average risk-free yield over the same period used for initial margin calculations, 4%,[24] to determine the total opportunity cost of holding cash reserves: approximately $410 million. This figure assumes that firms would not have held any cash-on-hand.

However, estimating the incremental opportunity cost of variation margin requires making assumptions about the "but-for" strategies of swap market participants. Under the proposed rule, firms would be required to fully post variation margin daily.[25] This means that firms must have sufficient cash-on-hand to post variation margin based upon market movements by the end of each business day. In the absence of variation margin requirements, however, firms would still need to manage their liquidity to ensure that they had sufficient liquid assets to make prompt payments according to the terms of the contract, which would be less often than daily but still generally at regular intervals.

As a conservative approach, NERA assumed that the but-for scenario consists of firms holding cash equivalent to half of their expected variation margin in order to ensure liquidity, which reduces the estimated cost of variation margin by 50%, from $410 million to $205 million.

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[22] CBOE, "CBOE Interest Rate Swap Volatility Index (SRVX)," available at http://www.cboe.com/micro/srvx/default.aspx, accessed November 29, 2014.

[23] $1.165 trillion * 0.88% = $10.3 billion. Note that the figures are rounded.

[24] From Federal Reserve H.15 Selected Interest Rates, available at http://www.federalreserve.gov/releases/h15/update/, accessed November 30, 2014.

[25] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59928 at § 23.153 (b).

III. Compliance Costs for the Broader Swaps Market

Though the proposed rule is intended to apply to covered swap entities and their financial end-user counterparties, several aspects of the proposal are likely to have broad effects on the swaps markets as a whole. These include aspects promoting pro-cyclicality and aspects placing domestic swap market participants at a competitive disadvantage to foreign competitors.

A. Pro-Cyclical Aspects of the Proposed Rule

The proposed rule contains provisions that promote pro-cyclicality of the broader swaps market, which undermine the very intent of the regulation. The aspects include initial margin model recalibration requirements, the prohibition on the use of non-cash collateral for variation margin purposes, and an inflexible daily variation margin posting requirement. They simultaneously increase systemic risk in times of elevated financial market stress and increase the costs of compliance with margin requirements. As a result, it is of paramount importance that these issues be addressed by appropriate modifications to the proposed rule prior to finalization.

The proposed rule appropriately allows covered swap entities to use regulator-approved models to determine initial margin calculations, but includes a pro-cyclical provision requiring monthly initial margin model recalibration.[26] Such a high frequency of model recalibration could result in substantial upward shifts in margin requirements as markets come under strain, creating a probable feedback loop whereby tighter markets lead to increased margin requirements for the same gross notional value of swaps, which in turn leads to even tighter markets for those products. This potentially disastrous cycle is further exacerbated by the observation that opportunity costs per dollar of initial margin tend to grow in crisis periods, as risk premia increase yields on risky assets and a flight to quality increases demand for—and hence the price of—risk-free assets eligible as collateral, depressing their yields.[27]

Appropriate adjustments to the rule to reduce these pro-cyclical impacts would be to make model recalibration less frequent, such as quarterly, semi-annually, or annually, and to grant firms the flexibility to phase-in increased margin requirements following recalibration over a period of several months during periods of market stress. This flexibility would prevent excessive liquidity tightening of swaps markets in times of stress, whereas the current rule would exacerbate such pressures.

The prohibition on the use of non-cash collateral for the posting of variation margin[28] also potentially exacerbates market stress. Firms would need to maintain highly liquid, risk-free assets beyond their initial margin requirements in order to ensure that they could meet their variation margin obligations in the event of mark-to-market losses in a fast-moving market, and would likely need to keep substantial amounts of cash on hand to guard against liquidity crises. Holding additional risk-free assets imposes opportunity costs due to the trade-off whereby the same funds might have been invested in assets designed to optimize returns; holding cash involves a further reduction in expected return and hence an even larger opportunity cost.

Just as appropriate haircuts protect initial margin collateral holders from risks involved in accepting non-cash assets for margin purposes, haircuts can protect recipients of variation margin collateral. Allowing

[26] Ibid., p. 59930 at § 23.155 (b) (3) (xiii).

[27] NERA analysis of Federal Reserve H.15 release data on 30-year Treasury yields, Aaa corporate bond yields, and Baa corporate bond yields.

[28] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59932 at § 23.156 (b) (1).

non-cash assets to be eligible for variation margin would substantially reduce the expected costs of variation margin requirements, as firms can enjoy the risk-free yield as opposed to holding unproductive cash or near-cash equivalents in sizable quantities.

Related to the aforementioned aspect of the rule, the daily variation margin posting frequency for all products[29] may create enormous liquidity pressures in high-volatility periods, as firms with losses would likely need to liquidate large quantities of similar asset types near-simultaneously to raise the cash required to meet variation margin posting requirements. For instance, a rapid shift from the average interest rate swap volatility from the period June 2012 to November 2014 to the maximum level in that period would require firms to rapidly exit approximately **$3 billion** in asset positions to ensure appropriate cash collateral on hand, and that entire period was considered non-stressed. Actual financial market stress might force rapid liquidation an order of magnitude larger in scale, potentially leading to fire sales of the swap and the underlying asset the swap is designed to hedge.

As the proposed rule requires all financial end-users trading with covered swap entities to post variation margin,[30] smaller and less sophisticated end-users are likely to be caught by this rule. Such a rapid exit may be difficult for smaller financial end-users whose portfolios may contain less liquid assets; the issue of liquidity, forced by the daily variation margin requirement, could force solvent firms to engage in economically unjustifiable asset sales in order to comply with regulatory obligations. This in turn might spark or contribute to mutually reinforcing fire sale price spirals of the sort observed in the recent financial crisis.

An adjustment to the rule allowing variation margin to be posted incrementally over a small number of days following a day's trading results could mitigate the liquidity pressures that the rule would otherwise exacerbate in periods of elevated financial market stress.

B. Divergences from International Standards in the Proposed Rule Place US Firms at a Competitive Disadvantage

Aspects of the proposed rule that impose stricter requirements on domestic firms than international standards impose on foreign firms may place domestic firms at a competitive disadvantage. Two particular provisions of the rule stand out as disadvantaging domestic firms, namely the $3 billion Material Swaps Exposure threshold, and the aforementioned restrictions on eligible collateral for variation margin purposes.

The prohibition on the use of non-cash collateral for variation margin is substantially stricter than the international proposal set out by the 2013 Basel Committee on Banking Supervision and Board of the International Organization of Securities Commissions joint report ("BCBS/IOSCO Report"), which suggested making high quality assets like government and corporate bonds eligible collateral.[31] As the ability to use higher yielding assets than cash to satisfy variation margin requirements reduces the opportunity costs of margin requirements, this may raise the costs of US firms relative to foreign competitors.

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[29] Ibid., p. 59928 at § 23.153 (b).

[30] Ibid., p. 59928 at § 23.153 (a).

[31] Basel Committee on Banking Supervision/Board of the International Organization of Securities Commissions, "Margin Requirements for Non-Centrally Cleared Derivatives," September 2013, pp. 16-17, available at http://www.bis.org/publ/bcbs261.pdf, accessed November 20, 2014.

In addition, the proposed rule sets a $3 billion threshold for Material Swaps Exposure, a status for financial end-users that obliges covered swap entities to post and collect initial margin for swaps transactions.[32] This threshold is substantially lower than the threshold set in the BCBS/IOSCO Report, which established an €8 billion gross notional uncleared swaps exposure threshold before subjecting financial end users to initial margin requirements.[33] As of the publication date, this amounted to approximately $11 billion.

The proposed rule states that this divergence from international standards is expected to reduce systemic risk;[34] however, the proposal does not establish to what extent it believes firms with swaps exposure greater than $3 billion and less than $11 billion increase systemic risk. Without such a quantification, it is difficult to assign any expected benefits to the stricter standard, while the costs are apparent: a lower Material Swaps Exposure threshold increases aggregate costs for domestic firms by applying initial margin requirements to a larger subset of swaps transactions. Foreign firms, by contrast, will face lower compliance costs, because fewer counterparties will be affected by the higher threshold.

Such competitive disadvantages incentivize firms to avoid trading with US covered swaps entities, and, if possible, to trade with foreign competitors instead. Where such a substitution is not feasible, some current swaps market participants may reduce or cease market participation in order to reduce costs. A potential loss in trade volume and revenue, in turn, threatens highly compensated derivatives-related jobs in the US. There are more than 4,000 such job listings on LinkedIn, and more than 1,000 on Monster in New York City alone;[35] such listings for positions could well be the first casualty of a competitive disadvantage for domestic firms.

Note that the costs contributing to competitive disadvantages for domestic firms would affect firms that are not covered swaps entities, as covered swaps entities would either pass on costs to counterparties or exit markets rendered unprofitable by the new compliance costs, possibly reducing overall swaps markets liquidity in the process. Such potential reductions in liquidity may reduce the efficiency of price discovery and reduce market competitiveness.

[32] Current CFTC Proposed Rule. 79 F.R. 59898, p. 59927 at § 23.151.

[33] BCBS/IOSCO Report (September 2013), p. 8.

[34] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59905.

[35] From searches of linkedin.com and monster.com on November 25, 2014.

IV. Potential Benefits and Inherent Trade-offs

In its discussion of the costs and benefits of the proposed rule, the CFTC acknowledges that the rulemaking creates an inherent trade-off between various costs that are likely to be incurred due to minimum collateral standards and benefits that may potentially result from such standards.[36] The benefits outlined by the CFTC and the Prudential Regulators center on the reduction of systemic risk[37] and, to a lesser extent, the promotion of central clearing of derivatives.[38] In considering the costs and benefits, however, the CFTC's analysis falls short in quantifying the extent to which covered entities that fall within its jurisdiction pose systemic risk or how current practices employed by these entities do not adequately address counterparty credit risk. Further, if the proposed margin requirements introduce or increase pro-cyclicality and tie up liquidity, credit risk and systemic risk may well be increased rather than mitigated.

One of the expected benefits of the margin regime, the promotion of cleared derivatives, may actually be a cost if the cleared product is suboptimal for assumption and management of risk. Forcing profit-maximizing entities to choose sub-optimal portfolios results in loss of market efficiency, increased basis risk, and increased hedging costs. This leads to decreased use of derivatives for hedging, which increases firms' concentrations of risks that derivatives are designed to—and heretofore have—managed. Thus, any reduction in credit risk, to the extent that a transfer of risk from financial firms to concentrated, too-big-to-fail clearinghouses can be considered a reduction, comes at a cost of increases in other risks to firms. Further, by interceding in the choice between cleared and uncleared contracts, the proposed margin requirements necessarily result in a reduction of market efficiency by impeding the completion of markets enabled by customized derivatives contracts. The proposed rule acknowledges as much, stating "rules that make standardized [cleared] swaps relatively less expensive [than uncleared swaps] may induce some entities to forego some customized swaps that may better match their exposures."[39]

The *intended* effects of the proposed rulemaking to promote cleared swaps are predicted to lead to *decreased* use of swaps for hedging purposes altogether, and to disproportionately harm end-users with specialized risk management needs. As in 2012, when the issuance of the CFTC's final rule defining swaps for regulatory purposes[40] coincided—presumably causally—with an uptick in the use of "swap futures" contracts that had economically similar terms to some swaps but were designed to trade as—and be regulated as—highly standardized futures contracts. The wider use of swap futures occurred concomitant with a decline in transactions for the swap versions of those contracts, suggesting that this market shift was the result of regulatory arbitrage rather than market forces.[41] Driving many market participants away from customized contracts via regulation directly harms entities with specialized needs however, as potential counterparties are driven away, and they must either accept increased basis risk or pay more for their desired position.

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[36] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59920.

[37] Ibid.

[38] Ibid., 79 F.R. 59898, p. 59924.

[39] Ibid.

[40] 77 F.R. 48207, August 13, 2012, available at http://www.cftc.gov/LawRegulation/FederalRegister/FinalRules/2012-18003, accessed November 30, 2014.

[41] Will Acworth, "Futurization: Dodd-Frank Drives Swaps-to-Futures Migration," *Futures Industry*, January 24, 2013, available at http://www.futuresindustry.org/futures-industry.asp?iss=209&a=1531, accessed November 30, 2014.

As the regulatory regime created by Dodd-Frank has taken shape, some market participants have grown alarmed by the complexity and cost of compliance and have turned instead to the futures markets in search of a simpler and more cost-effective alternative to cleared swaps—where the costs being mitigated are those imposed by regulations. This "futurization" trend is not without inherent trade-offs; while some more liquid swaps may be standardized and traded as swap futures, for more customized contracts this may not be possible. In all likelihood, this will lead to less availability and liquidity in customized swaps contracts as liquidity providers such as covered swap entities pull back. If entities forego hedging that they otherwise would have undertaken due to increased cost or unavailability of customized products, the proposed rule would be expected to reduce liquidity and increase market risk for end-users with specialized needs and others not intended to be affected by the rule.

If swaps were the most economically viable risk management tool for many firms, and the proposed rule raises the costs associated with swaps, then one would expect liquidity in swaps to decline. Moreover, given that futures contracts were less economically appealing to some firms or did not meet their specialized needs at the outset, and the proposed rule does nothing to make futures more attractive, simply making swaps less so, one would expect that not all declines in swap market participation would result in futures market participation. Instead, some market participants will opt to not use any derivative contracts for risk management purposes. Some entities will forego hedging that they otherwise would have undertaken due to increased cost or unavailability of customized products, and as such, the rule is expected to reduce swaps liquidity and increase market risk for end-users and others not intended to be affected by the rule.

Another aspect of the rule that is likely to raise the cost of using uncleared swaps is the requirement that initial margin models utilize a fixed 10-day liquidation period for uncleared swaps.[42] The CFTC is only requiring five-day initial margins for cleared swaps, and the proposed rule explicitly states that "these rules promote the use of more standardized cleared swaps at the expense of more customized and opaque swaps."[43] This justification—that standardized, cleared swaps are preferred by regulators to customized, uncleared swaps—ignores the inability of many firms to find sizable markets meeting their customized needs. In the absence of a large market of similarly situated end-users, it may not be economical to create a standardized, cleared contract. In essence, the CFTC is forcing firms with specific risk management needs to choose between regulation-imposed costs from an extended initial margin requirement on the customized swaps meeting their needs, or to accept increased basis risk by using standardized swaps. The likely consequences of the 10-day initial margin requirements are thus increased costs, decreased use of uncleared swaps, and decreased use of swaps overall for risk management purposes, as some firms react to an increase in costs and/or basis risk by withdrawing from the swaps market altogether.

This is not to say that *some* uncleared swaps should not have extended initial margin close-out periods in their models relative to cleared swaps, but rather to say that liquidation periods will necessarily vary by swap contract. More customized contracts tailored to more specific risks may indeed require a 10-day initial margin, but many uncleared swaps do not require nearly as long. As industry participants have affirmed, liquidation periods vary based on the type of swap and the asset class.[44] Various swaps that may not be amenable to clearing and standardization of the level required for offering on a swap

[42] The proposed rule requires that the initial margin model calculate potential future exposure using a one-tailed 99 percent confidence interval with a required 10-day close-out period. Current CFTC Proposed Rule, 79 F.R. 59898, p. 59909.

[43] Ibid., p. 59925.

[44] See, for example, Federal Deposit Insurance Corporation, "BlackRock Comments on Proposed Margin Requirements for Uncleared Swaps," p. 3, available at https://www.fdic.gov/regulations/laws/federal/2011/11c53ad79.PDF, accessed November 30, 2014.

execution facility or designated contract market are not, as the CFTC asserts, necessarily more risky than their exchange-traded cousins, Allowing entities to determine market-based margin liquidation periods, subject to regulatory approval, rather than mandating a fixed 10-day close-out period, would help reduce negative effects on the use of customized swaps to manage risk and the liquidity of the markets.

The CFTC observes that minimum collateral standards help to mitigate counterparty credit risk.[45] Even so, inducing one to clear or post collateral through margin policy does not necessarily reduce counterparty credit risk, and may eliminate or make more costly choices in contracting that otherwise enable entities to efficiently manage risk. Central counterparty clearing does not operate like a magic wand that reduces the underlying credit risk of a party entering a cleared transaction, rather it transfers that credit risk to the central counterparty, essentially a pool of collateral posted by all market users. Similarly, the collection of collateral in over-the-counter derivatives can transform credit risk from a "survivor-pay" to a "defaulter-pay" risk allocation, but this does not necessarily reduce the credit risk inherent in the underlying transaction.[46] Since the "survivor" is also protected by a capital buffer of significant proportion, this transformation cannot be assumed to reduce credit risk, only to redistribute it. Requiring margin on uncleared swaps also introduces possible third-party credit risk into the transaction by, for instance, requiring the involvement of third-party custodians.[47]

The CFTC states that the minimum collateral standards could result in increased margin requirements, "which would require market participants to post additional collateral."[48] The CFTC acknowledges the opportunity cost and the potential for lost returns to investment, but does not consider the size or effect of the collection of so much additional margin on liquidity. Requiring collateralization of, for instance, inter-affiliate swaps—which do not substantially contribute to systemic risk—would magnify the negative effect on liquidity of the swaps markets, and discourage large corporate groups from centrally managing risk despite clear efficiency gains from doing so.[49] Requiring daily variation margin exchange would accentuate pro-cyclicality, further drain liquidity during periods of market stress, and potentially discourage participation in fast-moving markets meeting customized risk needs. Once again, intended outcomes of the proposed rule such as increased collateralization carry inherent trade-offs, many of which may discourage market participation, and others of which will lead to sub-optimal implementations in terms of efficiency.

A. Reducing Systemic Risk

The overriding rationale for the adoption of a uniform margin regime is in its potential to reduce systemic risk. But the CFTC fails to demonstrate that the entities that would fall under the margin regime in its jurisdiction pose systemic risk. While American International Group ("AIG") presents a compelling case study of the perils of non-margined derivatives, the CFTC's analysis does not seek to estimate whether any of the entities within its jurisdiction are as large as AIG or have the magnitude of non-margined derivatives exposure of AIG. On the contrary, the CFTC cites ISDA's 2014 Margin Survey, which shows that 90% percent of derivatives already have collateral agreements.[50] The CFTC interprets the baseline as

[45] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59925.

[46] BCBS/IOSCO Report (September 2013), p. 3.

[47] Current CFTC Proposed Rule, 79 F.R. 59898, p. 59914.

[48] Ibid., p. 59920.

[49] Ibid., p. 59936.

[50] International Swaps and Derivatives Association, Inc., "ISDA Margin Survey 2014," April 2014, p. 9, available at http://www2.isda.org/attachment/Njc3NQ==/2014%20ISDA%20Margin%20Survey.pdf, accessed November 20, 2014.

evidence that the requirements are less onerous since the vast majority of respondents already engage in the use of collateral, rather than considering the possibility that market participants can and have optimally collateralized contracts in which they enter.

B. Effects on Smaller Market Participants

In its analysis of the proposed rule's effect on small entities, the CFTC does not consider the effect of margin requirements on swap prices and the potential for those costs to be passed on to users of swaps. Part of the CFTC's responsibility under the Regulatory Flexibility Act is to assess the costs and benefits of its rulemakings, and specifically to consider whether the regulations will have a significant economic impact on a substantial number of small entities.[51] Since small entities not subject to the margin requirements will nonetheless face the same swap prices as those who are, the requirements will have a measurable economic impact on a substantial number of small entities. The CFTC does not undertake an analysis to estimate the cost of the margin requirements in terms of their impact on swap prices, which would enable it to estimate whether the economic impact arising from that consequence of the margin requirements would be significant.

Small entities, including farm cooperatives, elevator operators, ranchers, merchants, and numerous other small businesses, have found use of swaps tailored to their specific risk, enabling them to save on interest and funding costs and avoid tying up liquidity associated with posting and maintaining margin to exchange clearing houses. Often these same entities engage in swaps transactions that are intermediated by covered swap entities regulated under the proposed rulemaking. The fundamental mismatch between daily settlement imposed under the variation margin requirements and the less frequent realization and payment of gains and losses on the underlying asset being hedged will doubtless increase costs for such small entities, and may discourage swaps market participation.

Typically, intermediaries tailor swaps for small entities that more closely match the underlying cash flows so as not to expose small entities to intolerable volatility and margin calls due to temporary fluctuations in prices. These intermediaries then would centrally manage risks associated with their swaps books through the use of netting and exchange-traded derivatives. To the extent that covered swap entities enter into tailored swaps with small entities (for example, tailored swaps for their customers with less frequent payment streams), the potential exists for these entities to pass on the cost of margin requirements if those costs are unduly onerous.

[51] 5 U.S.C. 604(a).

V. Summary and Recommended Adjustments to the Proposed Rule

The results of the cost-benefit analysis performed by NERA indicate that the CFTC did not consider the full extent of the costs and unintended consequences imposed by its rulemaking on swaps market participants. The proposed rule, as currently written, is excessively onerous in several respects, and applies over-broadly in ways likely to have unintended consequences that run directly counter to the regulatory intent of the proposal. The potential impacts of the rulemaking on competition, price discovery, and overall efficiency are likely to be detrimental.

Further, many purported benefits that the CFTC attributes to the regulations, such as reductions in systemic risk and increases in use of cleared swaps, carry inherent trade-offs that may create inefficiencies and disincentives to the use of swaps for hedging certain risks. The combination of increased costs for uncleared swaps and an explicit regulatory preference for cleared swaps may reduce overall swap market participation, harming swap market efficiency, price discovery, and competition.

Given incremental opportunity costs of margin requirements estimated at $411 million per year in normal markets, multiple pro-cyclical aspects of the proposed rule, and provisions placing domestic covered swap entities at a competitive disadvantage relative to foreign firms, the proposed rule would benefit from carefully considered adjustments to reduce the costs and the unintended consequences of its provisions in order to combat systemic risk effectively without hindering the efficient use of the swaps market.

The first and foremost means of reducing the costs of the proposed rule is to limit its applicability to firms substantially contributing to systemic risk. The simplest way to do so is to harmonize the Material Swaps Exposure threshold with international standards by raising it from $3 billion to $11 billion. This will prevent firms with gross notional swaps exposures too small to contribute significantly to systemic risk from coming under the proposal's costly initial margin requirements, and in the process reduce the aggregate annual cost of initial margin requirements.

A minor adjustment to threshold measurements and initial margin requirements can also serve to reduce the costs of the rule without allowing additional systemic risk. Inter-affiliate swaps, which do not contribute to systemic risk substantially, should not be subject to initial margin requirements, nor should they be counted toward the Material Swaps Exposure threshold.

In addition, the costs of initial margin requirements can be substantially reduced by allowing firms to use market factors to determine appropriate close-out periods in their initial margin models, rather than by using a fixed 10-day initial margin for all uncleared swaps. By requiring that the use of such market factors in initial margin models meet regulatory guidelines, and by maintaining the authority to approve or reject firms' initial margin models, the CFTC can reduce the costs imposed by the proposed rule while ensuring that initial margin calculations will adequately manage risks.

Given the proposal's intention to reduce systemic risk, pro-cyclical provisions that would actually increase systemic risk need to be adjusted or there may be no realized benefits of the proposal at all. To that end, initial margin model recalibration requirements need to be made more flexible by reducing the frequency thereof, allowing for the gradual implementation of initial margin requirement increases, or a combination of both proposed adjustments. Likewise, the prohibition on the use of non-cash collateral for variation margin purposes should be replaced with a more flexible haircut schedule that allows firms to exchange high quality non-cash assets as eligible collateral, reducing both the opportunity costs of variation margin and the pro-cyclical potential for a liquidity drain in the event of market turmoil. Finally, adding flexibility to the daily variation margin posting requirement—whether by allowing an extra day for the full posting of margin, or by consistently allowing gradual posting of margin over a more extended

period such as a week—would substantially reduce the potential for a liquidity crisis, and give more time for a concerted regulatory and central bank response to a crisis.

Finally, a number of provisions that reduce the competitiveness of domestic covered swaps entities vis-à-vis foreign firms should be adjusted for the sake of the public interest; there is no reason to reduce the profitability of domestic firms and threaten thousands of highly compensated jobs across the country when such functions will simply move overseas as a result of such provisions. Harmonizing the Material Swaps Exposure threshold with international standards and adding flexibility regarding variation margin eligible collateral as per NERA's previous recommendations are the two most prominent ways to prevent domestic firms from facing a regulatory disadvantage.

Appendix A

A. Initial Margin Costs

Initial margin is collateral posted up-front that a firm would otherwise not have to post but-for the proposed rule, so the baseline assumption, or "but-for" scenario, is that firms would hold an even mix of assets matching financing costs and risk-free assets instead of holding all risk-free eligible collateral.

Exhibit 1
Covered Swap Entity
Calculation of Opportunity Cost of Initial Margin ("IM")

	Yields		
Yield Type	**Normal Market**	**Stressed Market**	**Stress Spread**
30-year Risk-Free Rate[1]	4.00%	3.66%	-0.34%
Leading Financial Firms' Average WACC[2]	6.25%	8.41%	2.16%
Corporate Aaa-rated Debt[1]	4.87%	6.55%	1.68%
Corporate Baa-rated Debt[1]	6.05%	9.54%	3.49%

	Yield Opportunity Cost = Financing Yield - 30 Year Risk-Free Rate		
Financing Method	**Normal Market**	**Stressed Market**	**Stress Spread**
WACC Financing	2.24%	4.75%	2.51%
Aaa Corproate Debt Financing	0.87%	2.89%	2.02%
Baa Corporate Debt Financing	2.05%	5.88%	3.83%

	Size of Affected Market = # of Entities x Swaps Exposure		
Component	**# of Entities**	**Swaps Exposure**	**Total Size of Affected**
Swap Dealers	105	$11 billion	$1.155 trillion
Major Swap Participants	2	$5 billion	$0.01 trillion
Total			**$1.165 trillion**

	IM Amount Above $65 Million Threshold = Size of Market x Avg. IM Rate x 75%		
Size of Affected Market	**Average IM Rate**	**IM Amount Total**	**IM Amount Above Threshold**
$1,165,000,000,000	2.10%	$24,465,000,000	$18,348,750,000

	Opportunity Cost = IM Amount Above Threshold x Yield Opportunity Cost		
Financing Method	**Normal Market**	**Stressed Market**	**Stress Spread**
WACC Financing	$ 411,806,501	$ 871,565,625	$ 459,759,124
Aaa Corproate Debt Financing	$ 159,484,032	$ 530,278,875	$ 370,794,843
Baa Corporate Debt Financing	$ 375,999,282	$ 1,078,906,500	$ 702,907,218

	Incremental Opportunity Cost = 50% x Opportunity Cost		
Financing Method	**Normal Market**	**Stressed Market**	**Stress Spread**
WACC Financing	$ 205,903,250.44	$ 435,782,812.50	$ 229,879,562.06
Aaa Corproate Debt Financing	$ 79,742,016.11	$ 265,139,437.50	$ 185,397,421.39
Baa Corporate Debt Financing	$ 187,999,641.11	$ 539,453,250.00	$ 351,453,608.89

1. From Federal Reserve H.15 Release of Selected Interest Rates.
2. From Bloomberg, L.P.

B. Variation Margin Costs

Variation margin is collateral for the mark-to-market value of the swap. Prudent risk management might dictate holding liquid assets sufficient to meet likely variation margin needs given daily posting frequency, so the baseline assumption, or "but-for" scenario, is that firms would hold assets equivalent to variation margin needs in risk-free assets.

Exhibit 2
Covered Swap Entity
Calculation of Opportunity Cost of Variation Margin ("VM")

Size of Affected Market	Average SRVX[1]	VM Amount Total
$1,165,000,000,000	0.88%	$10,252,000,000

Yield Type	Normal Market	Stressed Market	Stress Spread
30-year Risk-Free Rate	4.00%	3.66%	-0.34%
Half 30-Year Risk-Free Rate, Half Cash	2.00%	1.83%	-0.17%
Cash	0.00%	0.00%	0.00%

	Opportunity Cost = VM Amount Total x (Risk-Free Rate - Collateral Yield)		
Collateral For Compliance	**Normal Market**	**Stressed Market**	**Stress Spread**
Collateral all Risk-Free Assets (Status Quo)	$ -	$ -	$ -
Collateral Half Risk-Free, Half Cash	$ 205,081,931	$ 187,611,600	$ (17,470,331)
Collateral all Cash	$ 410,163,861	$ 375,223,200	$ (34,940,661)

1. Interest Rate Swap Volatility Index, from CBOE.