

Standardized Approach to Counterparty Credit Risk (SA-CCR)

May 2019



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Overview

- SA-CCR incorporates key enhancements from the Current Exposure Method (CEM) to reflect industry practices, risk management and regulatory requirements including:
 - Netting of derivatives across multiple margin agreements under the same qualifying master netting agreement (QMNA)
 - Full netting of long and short trades, based on certain netting criteria
 - Differentiation between margined and unmargined trades in the derivative exposure calculations
- However, there are still a number of items that need to be clarified and/or addressed to ensure appropriate implementation in the U.S. If implemented in its current form, the SA-CCR NPR will result in a significant increase in capital requirements for U.S. banks, as shown below:

Industry Impacts¹	RWA Increase
IMM to SA-CCR	122%
CEM to SA-CCR	30%

- This deck focuses on the following topics, which we have covered in our response to the NPR
 - Need for comprehensive study to analyze the impact of SA-CCR on the broader regulatory capital framework
 - Calibration of commodities supervisory factors
 - Calibration of equities supervisory factors
 - Impact on Commercial End Users (CEUs)
 - Application and calibration of alpha

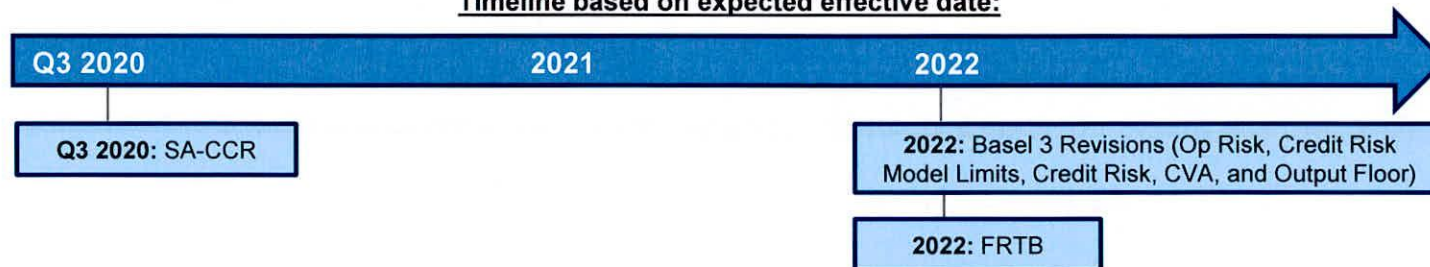
¹ *International Swaps and Derivatives Association, Inc. Re: Standardized Approach to Counterparty Credit Risk ("SA-CCR"), Appendix 2.11*

SA-CCR in the Regulatory Framework

- When issuing the final SA-CCR rule, the U.S. Agencies (Federal Reserve Board, FDIC, and OCC) should consider the interaction of SA-CCR with the broader regulatory framework, including the recently finalized Basel 3 Revisions and stress testing requirements



Timeline based on expected effective date:



¹ Revised standards released; ² Includes secured funding transactions (SFT) framework and equity exposures in banking book
 Estimated capital impacts derived from data analyses provided by the U.S. Agencies and the Basel Committee, as well as individual bank estimates and industry data studies



Supervisory Factors for Commodities

- The Basel Committee appears to have calibrated the supervisory factors for commodities based on volatility in rolling spot prices. However, clients typically use derivatives to hedge their long-term business risks; therefore, most commodity derivatives have maturities of at least one year
 - Calibrating to spot prices significantly exaggerates the volatility of the commodities asset class, as spot prices are impacted by many factors that do not carry out in the forward curve, such as weather conditions
 - For example, the average realized annual volatility for rolling spot NYMEX natural gas (Henry Hub) prices over the past 10 years is 47.5%. However, the average realized annual volatility over the same period is only 24.3% for the 2 year forward NYMEX natural gas contract, and only 17.3% for the 3 year forward NYMEX natural gas contract
 - As illustrated on the next slide, a similar pattern is observed for other commodities: spot price volatility is consistently higher than forward price volatility
 - Calibrating to spot prices has resulted in proposed commodities supervisory factors which are significantly higher relative to historical realized derivative market volatility than supervisory factors in other asset classes, such as interest rate products and foreign exchange
 - Supervisory factors for natural gas, crude oil and electricity 2y swaps are set at 1.9x-3.8x the average annual volatility from 2009-2019
 - In contrast, factors for 5y US interest rate swaps and 5y G10 FX forwards are set at .6x-.7x average annual volatility from 2009-2019
-
- We believe that the U.S. Agencies should recalibrate the supervisory factors for commodity asset classes based on forward swap prices. We request that the U.S. Agencies set the supervisory factors for oil, natural gas and electricity to the recommended levels in the ISDA response letter to the NPR
 - If the U.S. Agencies cannot recalibrate the commodity supervisory factors for U.S. implementation of SA-CCR, we believe they should at a minimum ensure that the supervisory factors do not exceed the Basel Committee standards

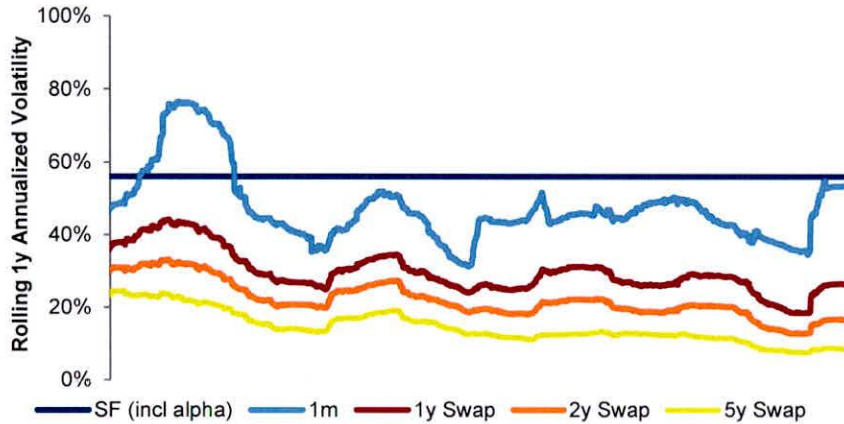
¹ International Swaps and Derivatives Association, Inc. Re: Standardized Approach to Counterparty Credit Risk ("SA-CCR"), Appendix 2.13



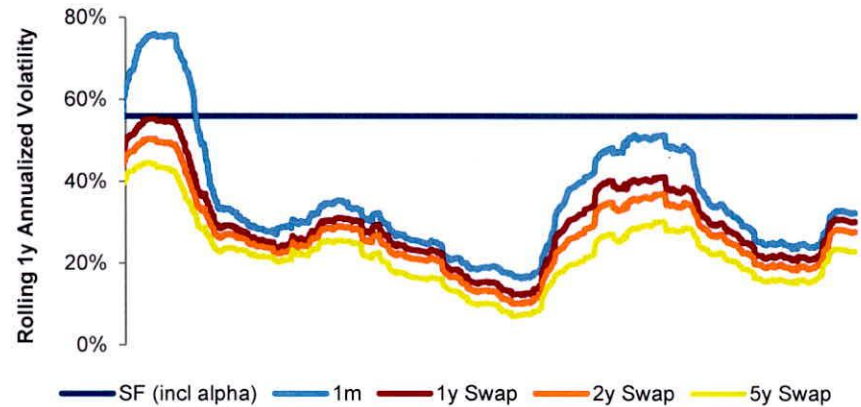
Supervisory Factors for Commodities

Supervisory Factors vs. Realized Volatility

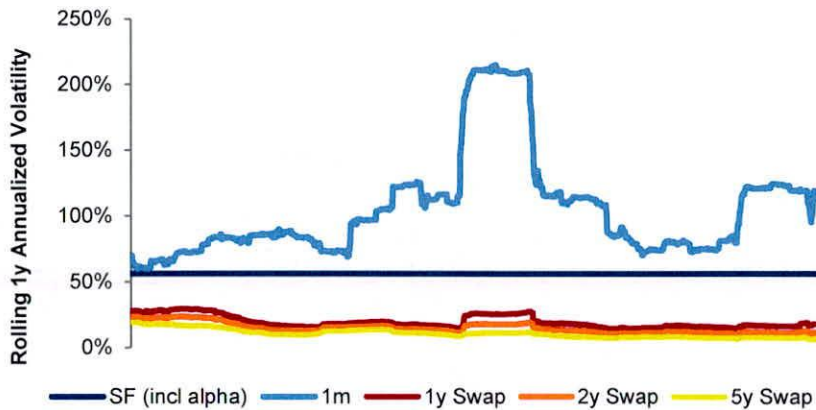
Henry Hub Natural Gas (Jan. 2009 – Jan. 2019)



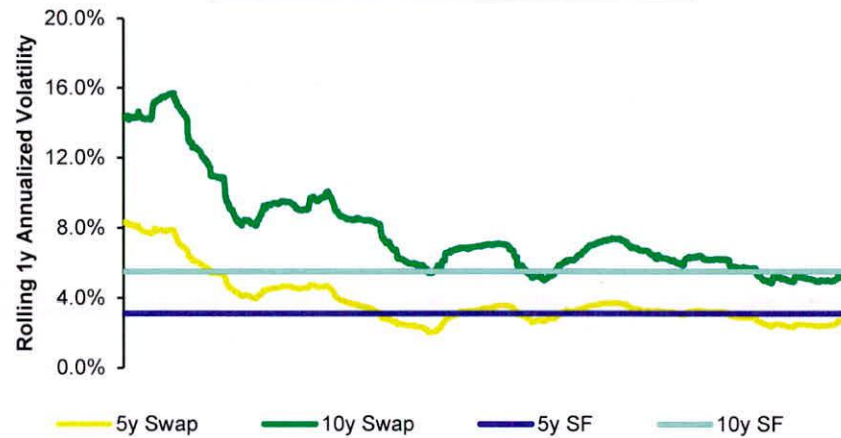
WTI (Jan. 2009 – Jan. 2019)



PJM West Peak Power (May 2009 – Nov. 2018)



Interest Rate Swap (Jan. 2009 – Jan. 2019)



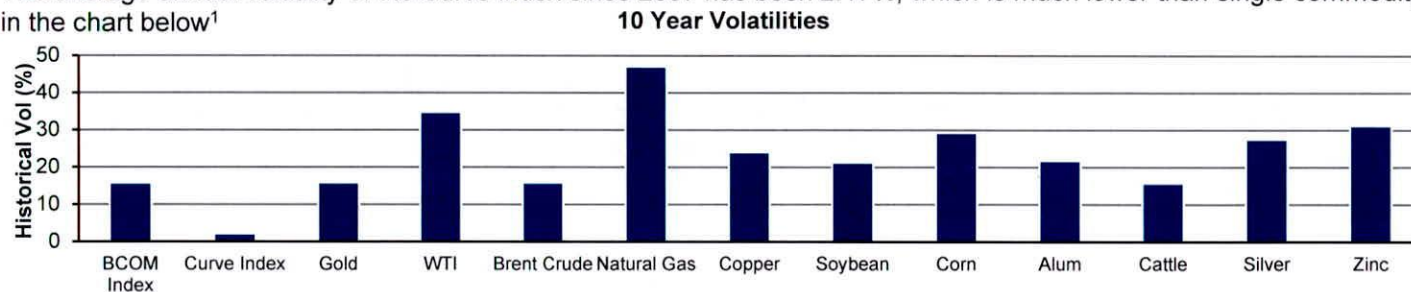
Source: 1m prices from Bloomberg; forward swap prices from GS forward marks



Supervisory Factors for Commodities

Commodity Indices

- The U.S. Agencies should also consider introducing a new asset class for commodity indices, similar to those for credit and equity indices, to recognize the diversification benefit inherent in many index products
- There are generally three broad classes of commodity indices that are actively traded:
 - Long-only, single commodity sub-class indices: these indices do not offer much diversification benefit and should be treated similarly to single commodity derivatives
 - Long-only, diversified across commodities sub-classes: The Bloomberg Commodities Index (BCOM) is an example of a diversified long-only commodities index. It provides exposure to absolute commodity price levels, but is significantly less volatile than single-commodity swaps as it benefits from diversification across different commodity groups, including energy, agriculture, and precious metals
 - The average annual volatility of BCOM index since 2007 has been 15.8%, which is much lower than individual commodity volatility, as shown in the chart below
 - Long/short indices: Indices which include both long and short positions across multiple commodity sub-classes or maturities. These indices have very low volatility, as they provide exposure only to the difference in prices between two commodity contracts, rather than to absolute price levels. The Goldman Sachs Commodity Curve Strategy RP09 is an example of a long/short index product
 - The average annual volatility of the Curve index since 2007 has been 2.17%, which is much lower than single commodity classes as shown in the chart below¹



- The U.S. Agencies should allow banks to include index products in their own hedging sets (similar to the treatment of basis and volatility swaps), because indices do not belong to any specific asset class prescribed in the current NPR
- We request that the U.S. Agencies set the supervisory factors for long-only index and long/short index at 4% and 1%, respectively²
- The U.S. Agencies should also clarify that banks should include index products in their own hedging sets (similar to the treatment of basis and volatility swaps), as indices do not belong to any specific asset class prescribed in the current proposal

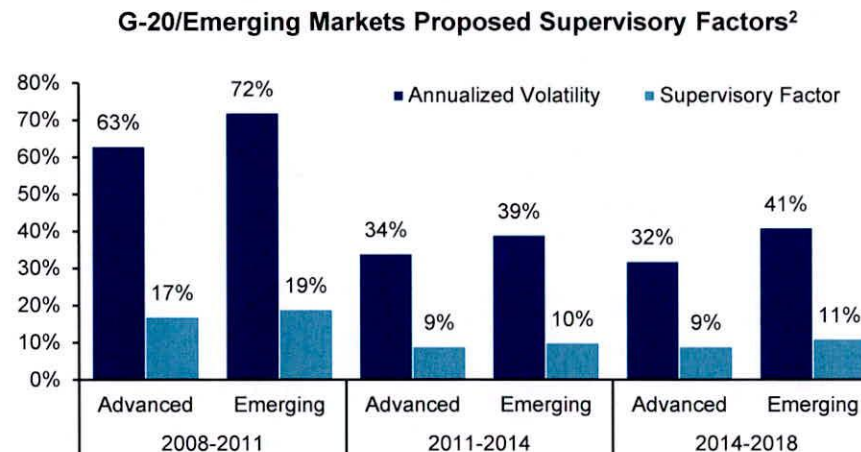
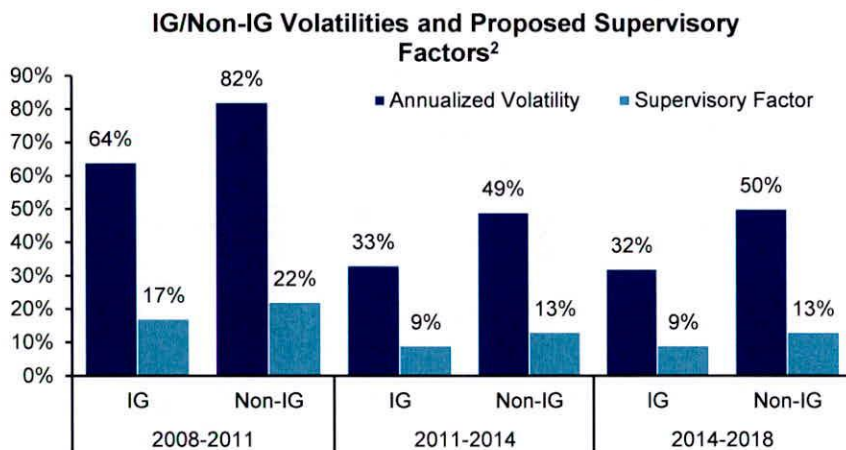
¹ Goldman Sachs Commodity Curve Strategy RP09 is an example of GS commodity proprietary strategies and its prices are available publicly on Bloomberg. Long/short indices typically take offsetting long and short positions to a diversified universe of commodities across Energy, Base Metal, Agriculture, Livestock and Precious Metal commodity markets

² Foundations of the Standardised Approach for Measuring Counterparty Credit Risk Exposures Equation 22 https://www.bis.org/publ/bcbs_wp26.pdf



Supervisory Factors for Equities

- SA-CCR applies single add-ons for equity single names and for equity indices
- As evidenced by the industry data study, this “one-size-fits-all” approach does not accurately reflect the nature of the underlying risks in equities
 - During the period 2008 – 2011, the maximum annualized volatility did not exceed ~65%, which translates to a supervisory factor of ~17%¹ for Investment Grade (IG) or Advanced Markets equities



- We recommend the following:
 - Introduce granular supervisory factors for equities, differentiating between IG and non-IG as well as advanced and emerging markets
 - Recalibrate the supervisory factors for equities

¹ Foundations of the Standardised Approach for Measuring Counterparty Credit Risk Exposures Equation 22 https://www.bis.org/publ/bcbs_wp26.pdf

² International Swaps and Derivatives Association, Inc. Re: Standardized Approach to Counterparty Credit Risk (“SA-CCR”)

Impact on Commercial End Users

- We are concerned about the outsized impact SA-CCR will have on transactions with commercial end users (CEUs), which are typically unmargined
 - As noted in the proposal, the U.S. Agencies expect exposure for unmargined derivatives to increase by 90%, compared to a 44% decrease for margined exposures
- The increase for CEUs occurs because SA-CCR does not consider the unique nature of CEU derivatives:
 - Many CEU transactions are exempted from the mandatory margin requirements and are not collateralized with cash margin. This exemption ensures that CEUs are not burdened with the financing cost and potential liquidity drain of margining
 - CEUs are typically unable to benefit from increased netting of long/short positions under SA-CCR, as they are hedging bona fide business risks that are one-way in nature
- Trades with CEUs are inherently less risky than similarly unmargined positions with financial intermediary counterparties:
 - CEUs are hedging actual business risks rather than speculating; their derivative position with the bank nets against a bona fide risk position in the business itself to reduce earnings volatility in the future
 - These derivative positions often benefit from right-way risk
 - For example, a natural gas producer enters into a derivative with a bank to hedge against a decline in natural gas prices. As natural gas prices increase, the bank's credit exposure to the company increases; however, the value of the company's assets generally also increases. Thus, the credit quality of the counterparty improves as the bank's exposure increases
 - CEUs often provide non-financial collateral such as letters of credit or liens on assets, which provide meaningful exposure reduction in the event of a default
- CEUs ability to hedge their risks through derivatives is critical to their forward business planning
- Punitive treatment of CEUs could make it difficult for them to access the derivatives market
 - If derivatives become more expensive or less available, CEUs would find it more difficult to hedge their risks, which could increase their costs of providing goods and services and potentially result in higher costs for their customers
- We recommend that the Agencies reduce the capital burden on CEUs by removing the alpha factor from derivatives with CEUs and recognizing certain forms of non-cash collateral within the calculation of exposure to CEUs



Impact on Commercial End Users

Non-Cash Collateral: Letters of Credit (LCs) and Asset Liens

- While banks frequently trade derivatives with CEUs without requiring cash margin collateral, they may require CEUs to provide other forms of collateral to secure their (or the banks') exposure
- Two forms of non-cash collateral include
 - Letters of credit (LCs)
 - Liens on assets owned by the CEU (Asset Liens)
- Each of these forms of collateral meaningfully reduce a bank's credit exposure on derivatives
 - LCs are typically given the same value as cash collateral by banks for credit exposure reduction purposes, while other forms of collateral (corporate bonds, equities, etc) are meaningfully haircut if accepted at all
- The derivative trading documentation between the bank and the CEU will include specific requirements as to the provision and maintenance of these forms of non-cash collateral
- Failure to maintain these other forms of collateral entitle the bank to exercise its contractual rights under the documentation, including potentially the right to terminate and close-out the transactions



Impact on Commercial End Users

Impact of Reducing Alpha for CEUs

- Removal of alpha for CEUs would reduce the significant incremental regulatory burden of SA-CCR, and harmonize the treatment of end users' derivatives under the U.S. Agencies' capital rules and margin rules
 - Alpha was originally calibrated, in part, to address wrong-way risk that is rarely observed in CEU hedging activity:
 - Derivatives with CEUs often present right-way risk as the value of the CEU's assets tends to increase along with bank's derivative exposures, given the objectives of hedging. Likewise, when CEU assets decrease in value, bank exposure will also decline
 - Even with this adjustment, SA-CCR would be meaningfully more conservative than IMM
 - Based on the data collection exercise performed by the industry, SA-CCR would result in an increase in RWAs by 50% compared to CEM¹
- We recommend removal of the alpha factor that would otherwise be applied to derivatives with CEUs

¹ International Swaps and Derivatives Association, Inc. Re: Standardized Approach to Counterparty Credit Risk ("SA-CCR"), Appendix 2.13



Alpha Multiplier

- We welcome the U.S. Agencies' recent updates to modernize certain aspects of the counterparty credit risk framework
 - We ask that these efforts be expanded to the entirety of the framework, including alpha
 - Academic research at the time alpha was calibrated showed that a calibration of **1.1 – 1.2** was appropriate.¹ ISDA also estimated the calibration of alpha in 2017, yielding an alpha **below 1.1**²
- The proposal states that the rationale for alpha is to maintain conservatism over IMM, and the U.S. Agencies have indicated they would expect SA-CCR to be more conservative than IMM on a transaction level
 - However, the industry QIS demonstrates that SA-CCR results in a very significant increase of 77% in exposure and 122% in RWA when compared to IMM
- We consider that alpha should not apply to the replacement cost (RC) as RC is a balance sheet amount that represents a bank's official valuation of its derivative book, verified by independent auditors and not subject to unusual model risk
 - Alpha was introduced under Basel II to address perceived shortcomings of IMM, including model risk, wrong way risk, and stressed parameters¹; many of these risks have been captured in other rules

- Impact of removing alpha from RC:

Industry Impact	NPR as Written	Without Alpha Applied to RC
CEM to SA-CCR RWA	30% increase	20% increase

- We recommend the following:
 - **Remove alpha from RC:** RC should not be subject to any alpha multiplier, irrespective of counterparty, as it is equivalent to a firm's books and records valuation of derivatives
 - **Recalibrate alpha for the application to the Potential Future Exposure (PFE):** Research indicates that an alpha less than 1.4 was appropriate under Basel II. Basel III has now explicitly addressed many risks alpha was intended to capture, but alpha has not been recalibrated

¹ ISDA-TBMA-LIBA (2003); ² "SA-CCR: Why a Change is Necessary" briefing note highlights findings of a quantitative impact study by ISDA and FIS using Basel hypothetical portfolios



Appendix



Commodity Volatilities and Proposed Supervisory Factors

- The annualized volatility in the below table represents the maximum rolling one year annualized volatility based on daily returns between 2009 and 2019. The supervisory factor is inferred from the annualized volatility based on: Supervisory factor¹ = $\frac{\sigma}{\left(\frac{3}{2}\sqrt{2\pi}\right)}$

Asset Class	Quality / Location	1y forward		2y forward		3y forward	
		Annualized Vol	Supervisory factor	Annualized Vol	Supervisory factor	Annualized Vol	Supervisory factor
Electricity	PJMW Peak	29%	8%	24%	6%	21%	5%
	PJMW Base	26%	7%	22%	6%	19%	5%
	ERCOTN Peak	41%	11%	31%	8%	26%	7%
	ERCOTN Base	41%	11%	31%	8%	26%	7%
Oil	WTI	56%	15%	50%	13%	47%	13%
Gas	Henry Hub	42%	11%	32%	8%	27%	7%

¹ Foundations of the Standardised Approach for Measuring Counterparty Credit Risk Exposures Equation 22 https://www.bis.org/publ/bcbs_wp26.pdf



Bifurcation of Equities Supervisory Factors

IG/Non-IG and Advanced/Emerging Market Support

- ISDA¹ gathered empirical data supporting the introduction of IG/Non-IG and Advanced/Emerging market supervisory factors

— The table below includes empirical data supporting the introduction of IG/Non-IG supervisory factors, given volatility associated with Non-IG names has historically been 30-60% higher than IG names

Credit Quality	2008-2011			2011-2014			2014-2018		
	Market Cap (in \$MM)	Annualized Volatility	Supervisory Factor	Market Cap (in \$MM)	Annualized Volatility	Supervisory Factor	Market Cap (in \$MM)	Annualized Volatility	Supervisory Factor
IG	27,963,686	64.4%	17.1%	38,452,587	33.2%	8.8%	45,710,072	32.0%	8.5%
Non-IG	1,325,752	82.0%	21.8%	1,768,893	49.3%	13.1%	2,932,701	50.4%	13.4%
NR	6,365,904	64.3%	17.1%	7,924,169	38.6%	10.3%	9,183,868	39.2%	10.4%
Grand Total	35,655,342	65.1%	17.3%	48,145,649	34.7%	9.2%	57,826,641	34.1%	9.1%

— The table below includes empirical data supporting the introduction of Advanced/Emerging market supervisory factors, given volatility associated with Emerging market equities has been 15-25% higher than Advanced markets

Country Class	2008-2011			2011-2014			2014-2018		
	Market Cap (in \$MM)	Annualized Volatility	Supervisory Factor	Market Cap (in \$MM)	Annualized Volatility	Supervisory Factor	Market Cap (in \$MM)	Annualized Volatility	Supervisory Factor
Advanced	26,889,280	62.7%	16.7%	38,312,289	33.6%	8.9%	45,922,485	32.3%	8.6%
Emerging market	8,766,062	72.4%	19.3%	9,833,360	38.7%	10.3%	11,904,156	40.9%	10.9%
Grand Total	35,655,342	65.1%	17.3%	48,145,649	34.7%	9.2%	57,826,641	34.1%	9.1%

¹ International Swaps and Derivatives Association, Inc. Re: Standardized Approach to Counterparty Credit Risk ("SA-CCR"),



Letters of Credit (LCs)

- A Letter of Credit (LC) is a letter issued by a bank guaranteeing the payment by one party to another party of amounts owing under a contract
- Generally there are three parties involved in the LC:
 - The LC Issuer: bank issuing the LC
 - Account Party: requests the issuance of the LC and is obligated to repay the LC Issuer if the LC is drawn. In the derivative context, the CEU is the Account Party
 - Beneficiary: person entitled to draw under the LC. In the derivative context, GS is the Beneficiary
- In receiving an LC, the Beneficiary is switching its credit exposure from that of the CEU to that of the LC Issuer
- LCs are fairly uniform in terms and conditions
 - Refers to a specific legal agreement between the Account Party and the Beneficiary (e.g., an ISDA)
 - States that if the Beneficiary notifies the LC Issuer that an amount is owing under the ISDA yet has not been paid by the Account Party, the LC Issuer is obligated to pay Beneficiary the amount specified in the drawing notice (subject to maximum amount available under the LC)
 - LC Issuer does not perform an independent assessment of whether a default exists under the ISDA; the LC is payable on demand and the Issuer is obligated to pay based upon the Drawing Notice sent by the Beneficiary
 - Specifies that amounts drawn will be paid within a specified number of days (normally not more than 5 days) or says that the amounts will be paid promptly
 - Payments are made by the LC Issuer by wire transfer to an account designated by the Beneficiary in the drawing notice
- The LC Issuer, not the Beneficiary, seeks reimbursement / repayment from the CEU
- When requiring an LC to secure its exposure to CEUs, the trading documentation will set out specific requirements for the LC, typically including
 - LC Issuer must be a large third-party commercial bank having a minimum credit rating (GS typically requires A/A2 or better)
 - A stated amount available for drawing
 - A term equal to or greater than the term of the derivative transaction (or renewal or replacement requirements to cover such term)



Asset Liens

What are Asset Liens and Why are They Used?

Asset Liens are liens granted to the Bank (Secured Party) by the CEU over the assets of the CEU

- The assets subject to these liens are not limited to physical assets and may include real property, inventory, personal property, equipment, bank accounts, securities accounts, accounts receivable, investments, intellectual property rights, and financial instruments
- Frequently the “collateral package” pledged to the Secured Party includes assets owned by all of the CEU’s subsidiaries. Equity pledges (lien over the stock or shares of the CEU or its subsidiaries) are also frequently included
- Typically, derivatives secured by Asset Liens share those liens with lenders to the CEU
 - A CEU enters into a loan facility with a lending syndicate and to secure the CEU’s obligations under the loans, the CEU grants Asset Liens in favor of the Lending Syndicate.
- Why are Asset Liens used so frequently for derivatives with CEUs?
 - Pledging cash as collateral is a costly and inefficient use of cash for CEUs and drains cash from making capital investments, hiring, etc.
 - The collateral value of the CEU’s assets may be substantial due to mismatch between cash flows and variation margin calls
 - As many CEUs have already granted Liens in favor of their lenders, allowing a derivative hedge counterparty to also benefit from those same liens is an efficient use of the CEU’s assets
 - Since hedging is frequently viewed by the lenders as a prudent and effective risk management tool for its CEU borrower, many loan facilities permit or even require the CEU to enter into hedging transactions. Lenders allow derivative hedge counterparties to share in their asset lien collateral as an alternative to requiring cash collateral posting, which would be expensive and could impact the CEU’s liquidity
 - Most prominently with commodity derivatives, Liens are a valuable risk management tool due to the “right-way risk” associated with many of these derivatives



Asset Liens

Right-Way Risk

- One significant reason that derivatives secured by asset liens are a valuable risk management tool is the right-way risk associated with many derivatives with CEUs, most prominently in the commodity space
- 'Right-way risk' arises when a bank's exposure under its derivative contract with the CEU increases at the same time that the value of the CEU's assets is growing
- As an example, under a fixed for floating hedge with a natural gas producer (where the bank pays a fixed amount and the producer pays the floating amount to the bank), as the value of the company's assets increases as natural gas prices rally, the bank's credit exposure to the company also increases. Thus, the credit quality of the counterparty improves as the bank's exposure increases
- Conversely, when the price for natural gas goes down, there is a likely corresponding reduction in the creditworthiness of the natural gas producer; however under the fixed / floating derivative, the bank is no longer exposed to the natural gas producer. In this case, if the natural gas producer ultimately fails and files for bankruptcy, the bank normally would owe the natural gas producer under the derivative and not need to make a claim against the assets subject to Asset Liens (which have less value in this scenario)
- Our experience is consistent with the foregoing as we have found that when a commodity producer files for bankruptcy (often as a result of a low commodity price environment), the result of the termination and liquidation of the derivative contracts results in GS owing money to the CEU (and therefore having no credit risk)



Asset Liens

How do They Work?

- How do Asset Liens work?
 - When a bank under a derivative with a CEU (Secured Hedging Bank) shares Asset Liens with a Lending Syndicate, provisions are included in the loan documents that state that the Secured Hedging Bank is named as a “secured party” benefitting from the Asset Liens. The Syndicate Lenders are also “secured parties” benefitting from the same Asset Liens
 - A collateral agent (Agent) acting for all “secured parties” holds the Assets Liens
 - In a typical scenario, the documents provide that upon a default of the CEU and foreclosure and sale of the assets of the CEU subject to the Asset Liens, the Agent ensures that the proceeds of sale are shared proportionately among all secured parties on a ‘pari passu’ basis
 - E.g., if the collateral proceeds = \$75 and there is \$100 of principal outstanding on the loans and \$50 owed under the derivative, the Agent would distribute \$50 to the lenders and \$25 to the Secured Hedging Bank