

# Measuring Margin

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- How much exposure is there to derivatives in the aggregate?
- How is this exposure split across different asset classes?
- How sensitive is required collateral (margin) to changes in estimated correlations?

- The estimated outstanding gross notional amount of derivatives globally as of June 30, 2010 was \$466.8 trillion. (ISDA and BIS)
  - This number by definition includes positions that are offset (notional overhang)
  - The vast majority (93%) are interest rate derivatives, with CDS second at about 5%
  - Over 10% of the interest rate derivatives are options
- OTC contracts raise at least two policy concerns related to credit risk:
  - Notional overhang — offsetting a position with a similar position from a different counterparty — creates interlocking credit exposures
  - Positions may not be margined, or may be margined less than a clearinghouse would require (e.g, AIG)

## Central Clearing Mandate

- A main thrust of Dodd-Frank is increased use of clearinghouses for “standardized” derivative contracts
- Clearinghouses would require margin of all participants, should reduce notional overhang, and should facilitate reporting of positions
- For non-standard contracts, there is intended to be “real-time” reporting of transactions and swap data repositories for position data.
  - Analyzing this data centrally is likely to be difficult
- Dodd-Frank requires margin on all non-cleared swaps, but there will likely be an “end-user exemption”

- We don't know
  - How large clearinghouses will get
  - How many clearinghouses there will be
  - How international integration and resolution will function
  - How empirically important the end-user exemption will be.
  - How much market-making business will flee traditionally-regulated entities (e.g., banks subject to Basel III)
- The question is what information will be useful across different future configurations of activity

## Exchanges are Relatively Small

- The mandate for clearing may have unintended consequences — the exchange-traded universe is currently small relative to OTC
- The CMEGroup and Eurex, for example, typically hold margin of less than \$10 billion each
- Estimates of additional collateral with a widespread move to clearinghouses are orders of magnitude greater than current clearinghouse margin

## Proposed End-User Exemption

- Proposed Treasury *et al* margin and capital requirements for covered swap entities, April 2011:

*... a covered swap entity would not be required to collect initial or variation margin from a nonfinancial end user counterparty as long as the cover swap entity's exposures to the nonfinancial end-user were below the credit exposure limits that the covered swap entity has established ... (p. 25)*

- One can envision loopholes (e.g., splitting positions across multiple dealers, imposing risk on the system if not on any one dealer)

## The Role of Margin

- Margin is a buffer against counterparty credit risk
- Most derivative users seek a defined exposure but typically do *not* seek exposure to counterparty credit risk
  - User would endogenously seek counterparty margin or other credit protection
  - Dealer banks may be willing to bear credit risk for a fee as part of their business
- Empirically, firms and banks oppose margin rules
- Current common practice in the OTC market is to post no initial margin (the “independent amount”) but to mark the position to market
  - This leaves counterparties with no buffer against an overnight failure, a liquidity event, or a systemic event



## Why is There a Controversy About Margin?

- Margin benefits the counterparty. Shouldn't this be reflected in pricing?
- There are possible externalities
  - Perception that derivatives can be unwound quickly; this may generate runs
  - Perception that rescue will occur if there is a crisis.
  - Traders don't internalize costs of a failure
- The existing bankruptcy regime has given derivatives special status
- With one very notable exception, derivatives narrowly-defined were not a huge issue in 2008.
- So end-users may try to continue to minimize margin

## Portfolio Margining

- There is widespread use of “portfolio margining” at clearinghouses, but this is currently limited to cross-margining within asset classes (e.g. equity indexes)
  - Probably this is done more comprehensively at dealers
- Clearinghouses in the future may compete on margin rules, so wider future application of portfolio margining seems likely
  - One can imagine margining CDS against equity derivatives
- Portfolio margining necessarily makes assumptions about correlation
  - AAA Mortgage CDOs are an extreme example of portfolio margining — the non-AAA tranches provide sufficient protective margin if the assumption of zero correlation is correct

- Cross-margining can reduce margins either by assuming high or low correlations
- Spread positions can receive low margins with the assumption that positions are positively correlated (e.g. corn across time)
- Margins can be lowered by assuming that correlation is not one (specialty stock indexes)

## What Information would be Useful?

- Gross and net aggregate open interest are relatively uninformative about net risk borne by traders
- Measuring aggregate *margin* would provide a better proxy for total derivatives risk
- Measuring margin by asset class is interesting but difficult because of cross-margining
  - One could measure notional aggregate margin, by asset class, by eliminating portfolio margin reductions
  - A large difference between notional and true margin would signal increased demand for collateral if correlations change
- Increases in category margin could signal economic developments (e.g. increase in CDS use signaling diversity of opinion about defaults)

## The Importance of the End-User Exemption

- We don't know if the value of the end-user exemption will be big or small
- One can view the exemption as if the dealer lends the margin amount to the end-user
- The aggregate values of these loans could be reported and potentially even carried as debt

## Trade via a Clearinghouse

- Assume the clearinghouse has no credit risk and that debt is the marginal source of short-term finance

End-user			
Assets		Liabilities	
Risky asset	$A$	Financing	$A$
Derivative	$0$	—	—
Cash (Margin)	$M_E$	Debt	$M_E$

Dealer			
Assets		Liabilities	
—	—	Derivative	$0$
Margin	$M_D$	Debt	$M_D$

## OTC Derivatives Trade

- If an end-user and dealer enter into an OTC contract with both posting initial margin, the economic balance sheets look like this:

End-user			
Assets		Liabilities	
Risky asset	$A$	Financing	$A$
Derivative	$0$	—	—
Cash (Margin)	$M_E$	Debt (3rd party)	$M_E$
<i>Dealer Margin</i>	$M_D$	<i>Exposure to Dealer</i>	$M_D$

  

Dealer			
Assets		Liabilities	
—	—	Derivative	$0$
Cash (Margin)	$M_D$	Debt (3rd party)	$M_D$
<i>End-user Margin</i>	$M_E$	<i>Exposure to end-user</i>	$M_E$

## Non-Cleared Transactions

- If an end-user and dealer enter into a non-cleared derivatives contract, with neither posting initial margin, balance sheets *conceptually* look like this (note the inside loans):

End-user			
Assets		Liabilities	
Risky asset	$A$	Financing	$A$
Derivative	$0$	—	—
<i>Margin</i>	$M_E$	<i>Debt (from dealer)</i>	$M_E$
<i>Loan to dealer (Margin)</i>	$M_D$	<i>Exposure to Dealer</i>	$M_D$
Dealer			
Assets		Liabilities	
—	—	Derivative	$0$
<i>Margin</i>	$M_D$	<i>Debt (from end-user)</i>	$M_D$
<i>Loan to end-user (margin)</i>	$M_E$	<i>Exposure to end-user</i>	$M_E$



## Measuring Non-cleared, Exempt Transactions

- In the last case, none of the debt and exposure items appear on the balance sheet, so there is systematic understatement of leverage by both dealers and end-users
- It would be possible for both dealers and end-users to report the margin they are *not* posting.
  - This would be analogous to debt on the balance sheet
  - Reporting by asset class, with cross-margining adjustments, could be the same as for clearinghouses and margined OTC trades

## Data for Systemic Risk Assessment

- The push to central clearing will create new systemically important financial utilities, some of which will be too big or interconnected to fail
- During a systemic event, there will likely be losses, a demand for collateral, and an increase in correlations
- The goal is to know how much collateral is supporting which kinds of positions
  - This should help regulators and market participants assess the risk of aggregate positions and changes in the level of risk
- As portfolio margining becomes more widespread, it may be important for market participants and regulators to understand the importance of correlation assumptions