



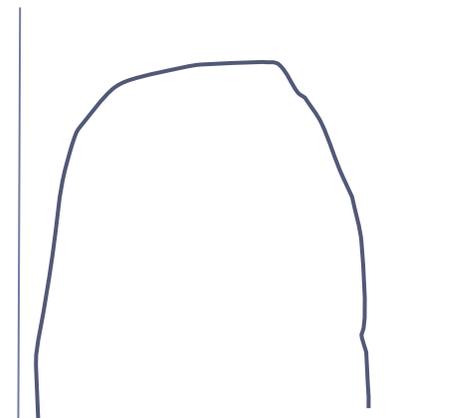
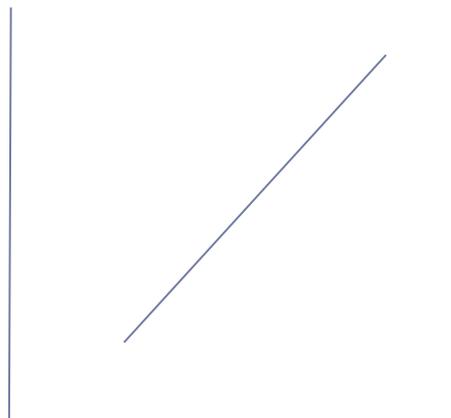
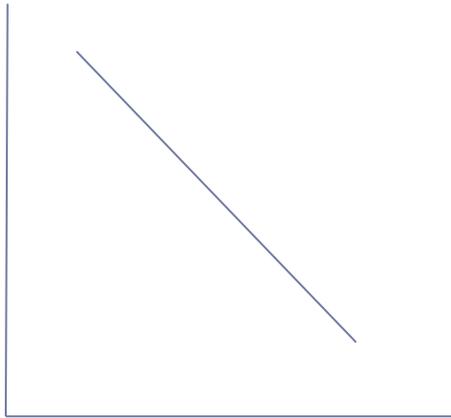
# Research on Clearing



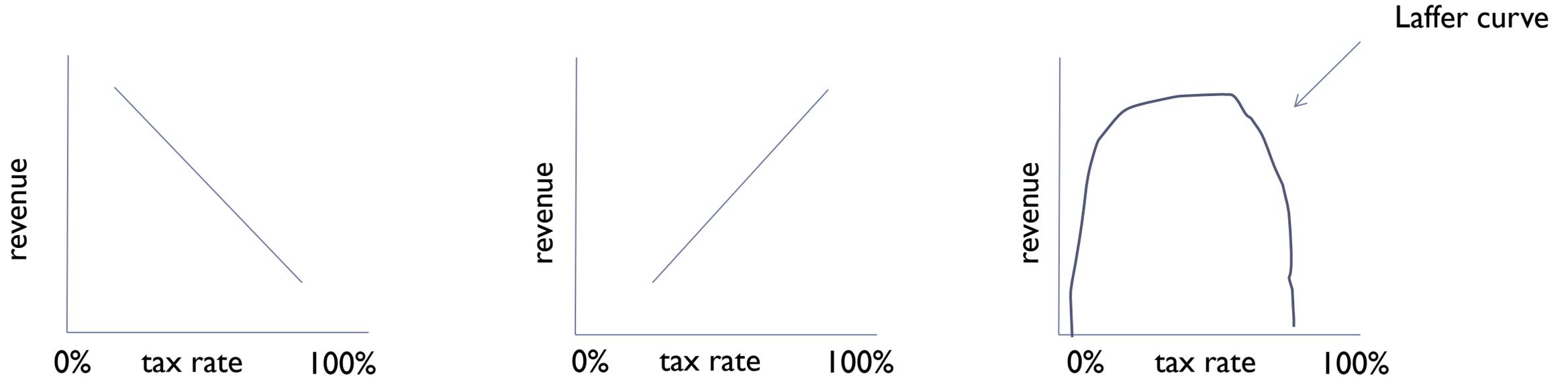
Presentation to MRAC, June 20, 2017

*\*This presentation reflects the opinions of its authors only, and not those of the Commodity Futures Trading Commission (CFTC), any of its Commissioners or the Federal Reserve Bank of Chicago.*

# Which ~~world~~ model do we live in?



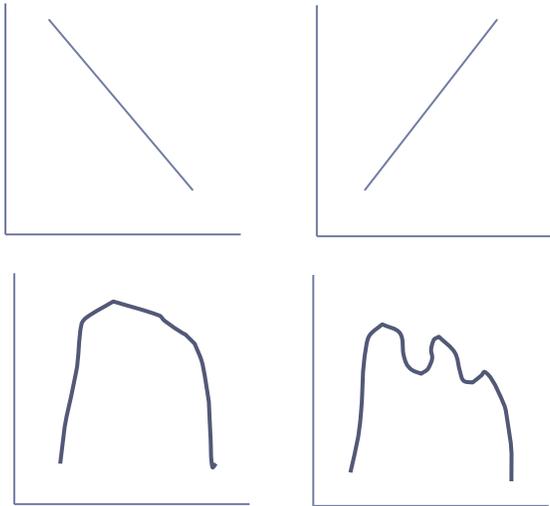
# Which world model do we live in? Thinking about taxes



- Shape depends on # of variables in the model
- Choices involve trade offs
- “Where you want to go depends on where you are”

# Which world model do we live in?

## Thinking about CCPs – *Skin in the Game* maybe?



What is an objective  
measure of resilience?

?

Where am I today?  
What are the trade-offs?

- What percent of what?
- Senior, mezzanine, junior?
- Where in the water-fall?
- How about CCP and CM incentives conditional on regulations?

# Overview

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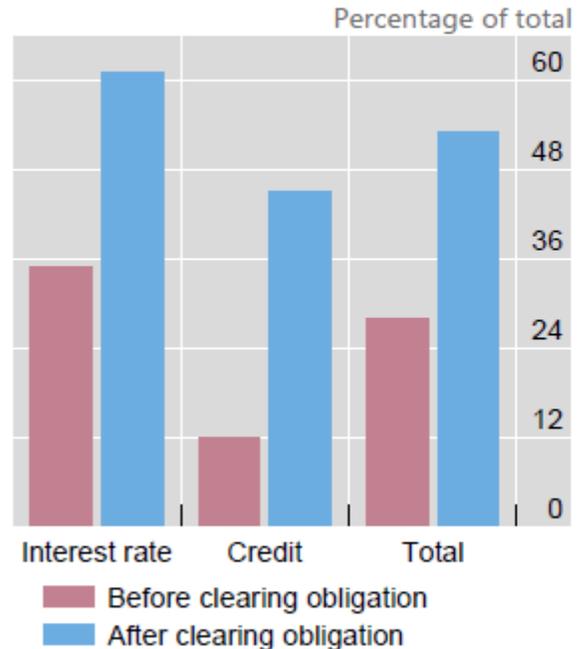
- ▶ Recent regulation, led by the G20 mandates, have placed an emphasis on central clearing
- ▶ A growing amount of academic literature has focused on the place of clearing within the derivatives ecosystem, including the effects on:
  - ▶ Risk management and risk distribution
  - ▶ Relative incentives of different market actors
  - ▶ Potential loss distributions and contagion after a market default
- ▶ Key to this literature is the differing incentives across clearing actors
  - ▶ Multiple participant groups: clearinghouses, clearing firms, clearing customers
- ▶ We will focus on a few topics with clear trade-offs in policy choices

# The push has resulted in higher clearing levels

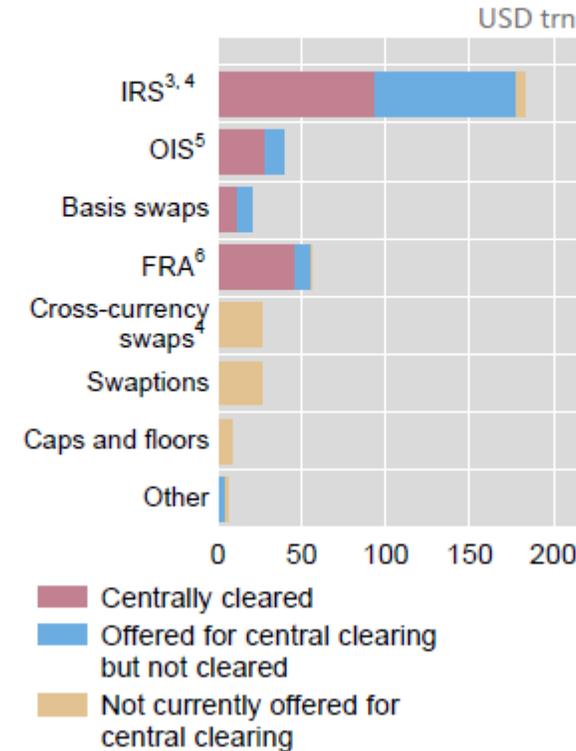
Evolution of the CCP industry

Graph 3

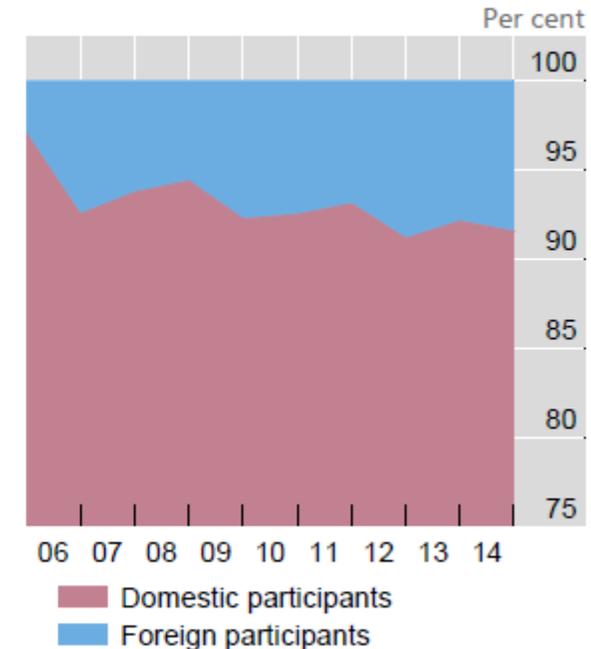
Estimated centrally cleared notional outstanding amounts<sup>1</sup>



Central clearing of OTC interest rate by product<sup>2</sup>



Average share of domestic and foreign membership<sup>7</sup>



# Clearing can reduce risks, but also transforms risks

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- ▶ A move to clearing for standardized products (as recommended by the G20) can provide
  - ▶ Higher level of risk management standardization
  - ▶ Higher risk transparency (market + regulators)
  - ▶ Potential increase in the ease of contract netting
  - ▶ Reduction in independent counterparty credit risk
- ▶ CCPs can reduce counterparty risks, but can also increase liquidity demands (Marshall + Steigerwald)
  - ▶ “Conservation” of risk – credit risk transformed into liquidity (and operational) risk

# The benefits of centralization are dependent on market structure

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- ▶ **Legal structure vs counterparty:**
  - ▶ Bilateral markets provide more flexible contractual arrangements, though with a smaller set of potential counterparties
  - ▶ Centralized markets provide standardized product set with wide set of participants
- ▶ **A number of papers have compared collateral demands in the cleared vs uncleared space**
  - ▶ Theoretical papers – Duffie/Zhu, Cont/Kokholm; relative demand dependent on market structure - a fragmented CCP ecosystem could increase collateral demand due to the lack of netting across products
  - ▶ Empirical – Duffie et al consider data from the CDS market and find lower collateral demand for cleared trades; benefits are largest for those with large, well-diversified portfolios

# Clearing incentives can adjust relative to circumstances

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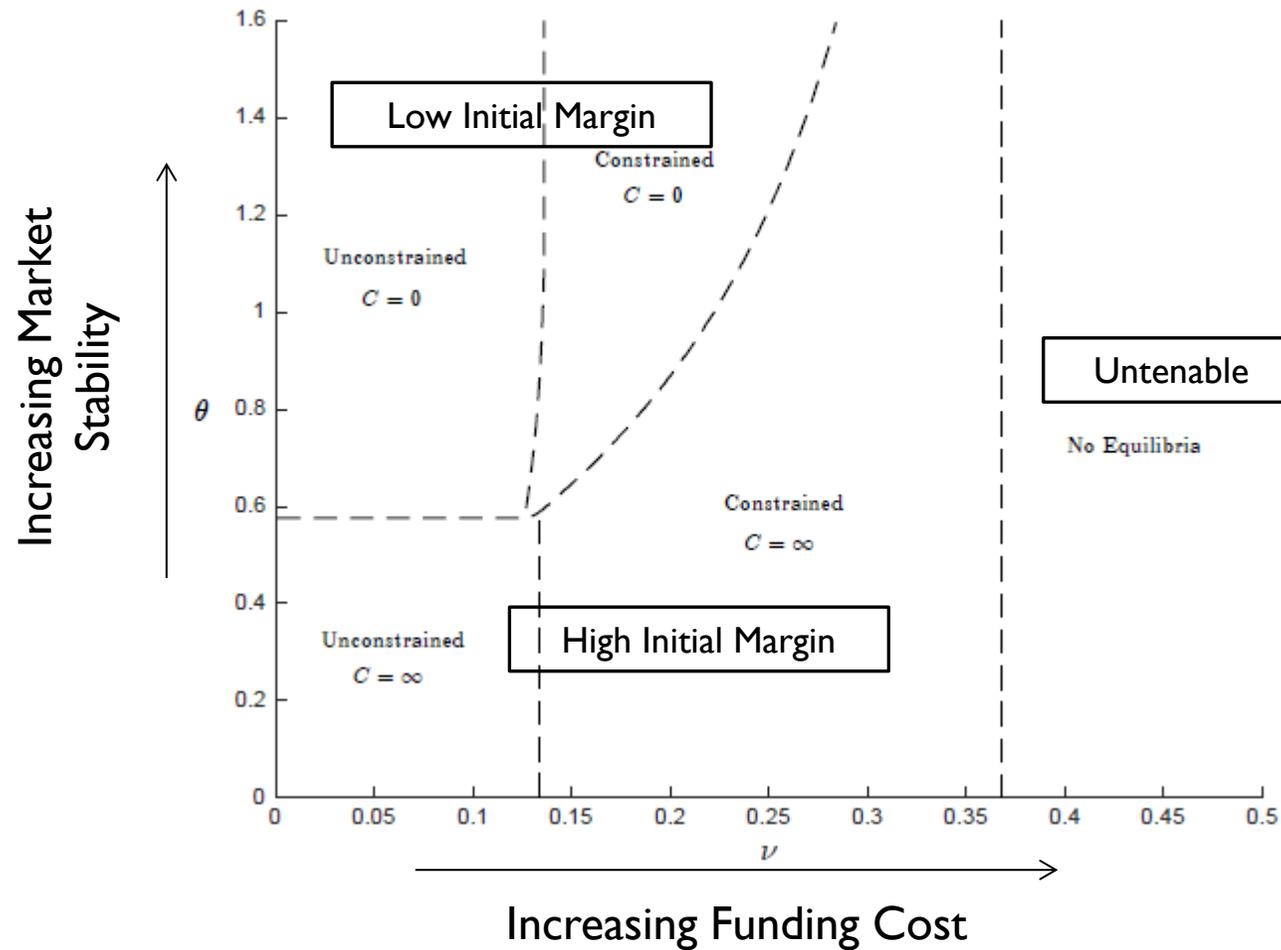
## ▶ Default preparation

- ▶ Mutualized vs unmutualized risk: defaulter pay (first line of defense) vs survivor pay (additional resources)
- ▶ Skin-in-the-game provides additional protection by third participant category (CCP)
- ▶ Low rate environment can correlate with higher margin requirements – Capponi et al
- ▶ Heterogeneity across members and customers may lead to higher initial margins (Capponi)

## ▶ During default

- ▶ The goal is to return to a matched-book
- ▶ Returning to a matched book will likely require potentially significant loss allocation
- ▶ Loss allocation rules are pre-specified, but ex ante impossible to know how it will affect individual clearing actors
- ▶ Loss allocation is distinct from returning to a matched book

# Possible Collateral “Worlds”



# End of the waterfall

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## ▶ Variation margin gains haircutting

- ▶ Similar to bankruptcy rules – haircut to “bondholders”/those with positive value of assets (Cont, Duffie)
- ▶ Unlike bankruptcy rules, impossible to anticipate who will be on the “winning” side of positions at the time of default
- ▶ How should contract values be set to determine haircut? (Elliott)

## ▶ Initial margin haircutting (Duffie, Elliott)

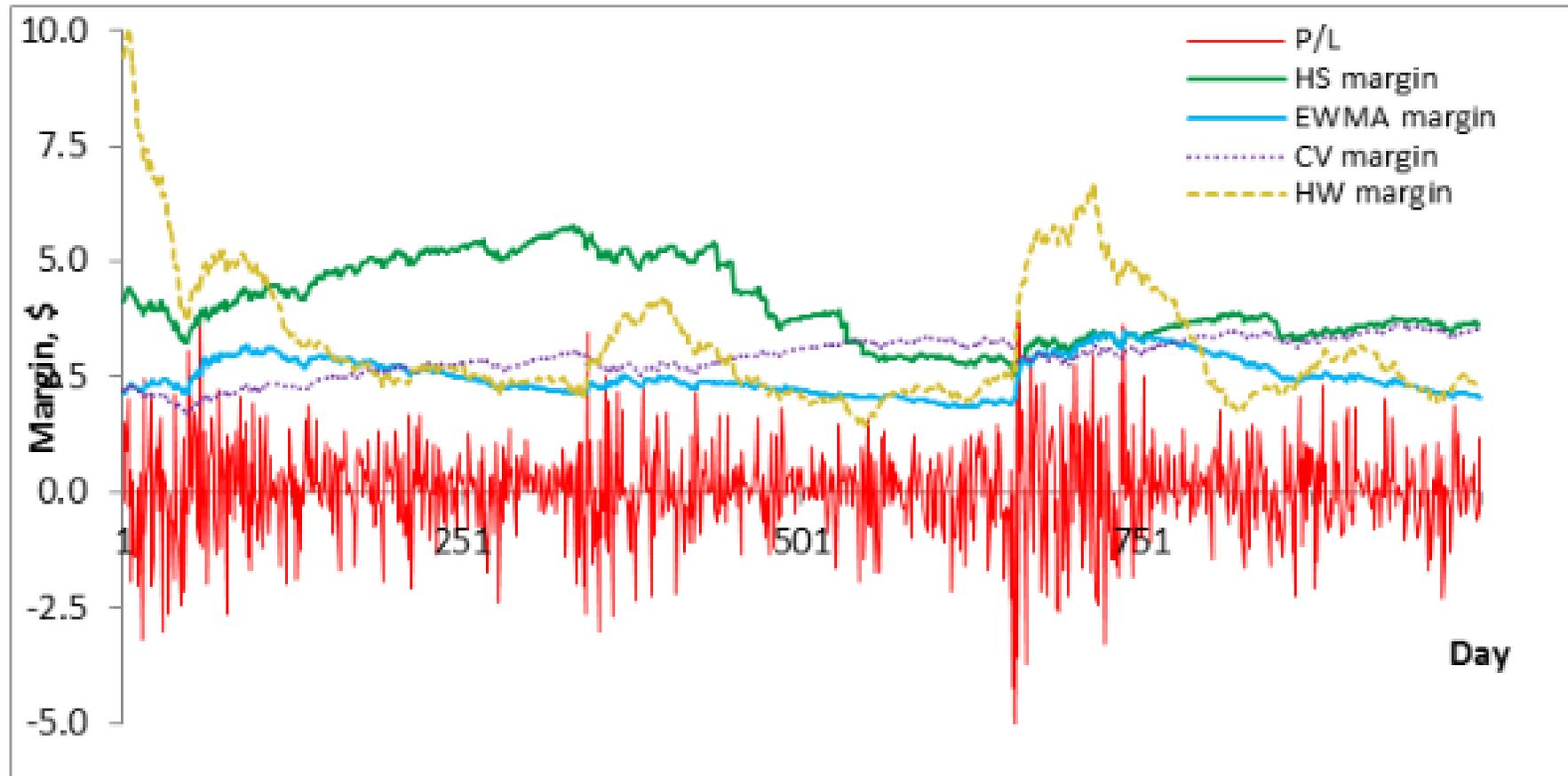
- ▶ Losses are proportional to the risk held at the CCP
- ▶ Initial margin is not under the ownership of the CCP, so legally difficult, and funds must be replaced
- ▶ Incentivizes clearing firms to keep initial margin levels low

# Procyclicality

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- ▶ Margin requirements (both initial and variation) can be positively correlated with market volatility/stress
- ▶ Potential mitigants
  - ▶ Countercyclical charges
  - ▶ Higher back-testing weighting on stressed periods
  - ▶ Longer look-back periods
- ▶ Too high: Can be destabilizing during periods of stress – large initial and variation margin calls (Murphy)
- ▶ Too low: Can be unduly expensive during low volatility periods, disincentivizing clearing (Glasserman and Wu)

# Sample margins from four models



# Conclusion

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- ▶ Recent policy efforts have pushed for a larger role of clearinghouses in financial market infrastructure
- ▶ The push has led to questions about risk management and risk incentives
  - ▶ Aim to balance interests of CCPs, members and clients
- ▶ Inherent to these efforts is taking account of the policy trade-offs
  - ▶ Some of these trade-offs are clear ex ante (and have been discussed) – others may evolve within the stages of resolution/recovery
  - ▶ Many trade-offs depend on where we currently stand today