



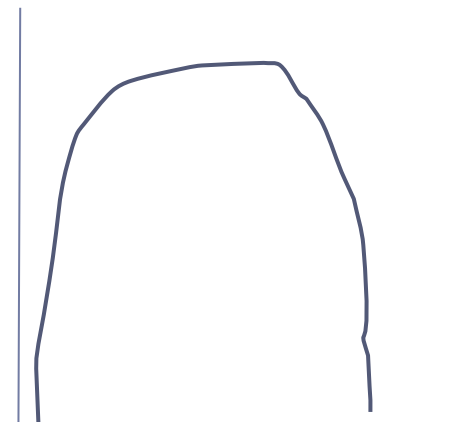
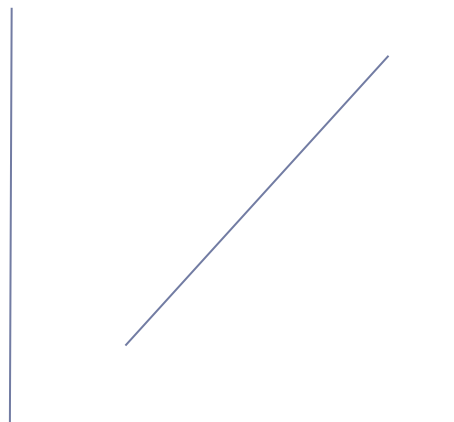
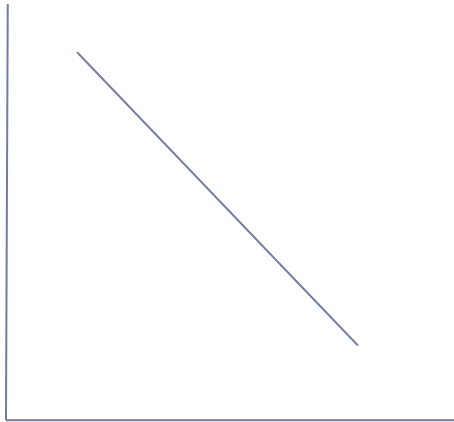
Research on Clearing



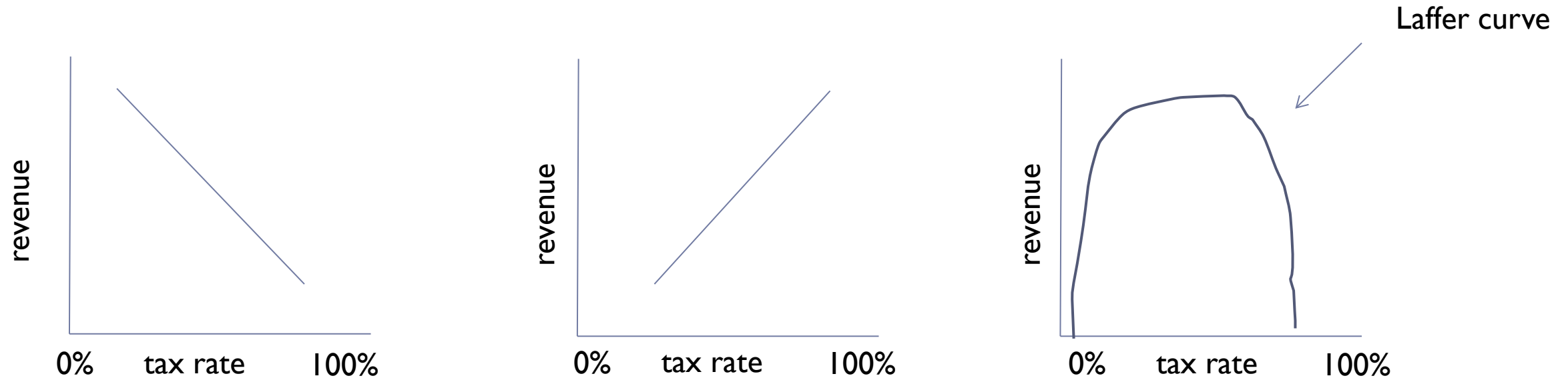
Presentation to MRAC, June 20, 2017

**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?



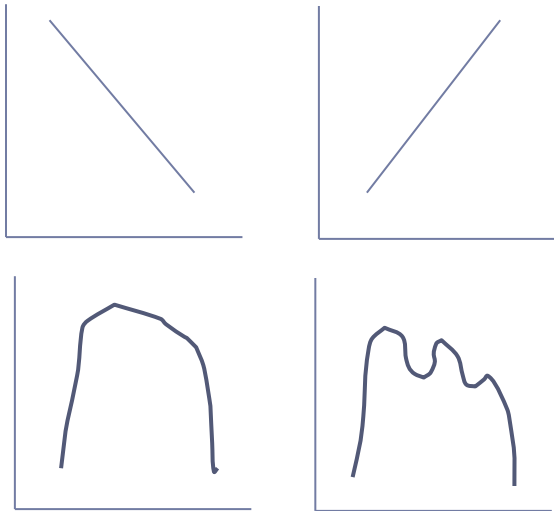
Which world model do we live in? Thinking about taxes



- 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

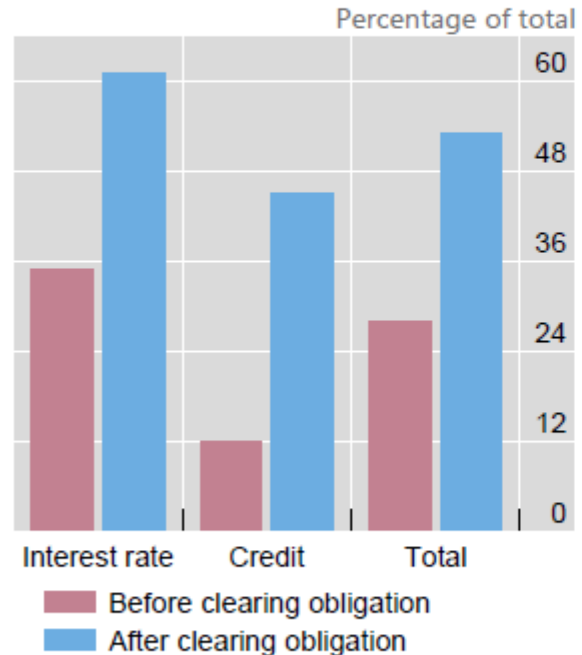
- ▶ Recent regulation, led by the G20 mandates, have placed an emphasis on central clearing
- ▶ A growing amount of academic literature has focused on the place of clearing within the derivatives ecosystem, including the effects on:
 - ▶ Risk management and risk distribution
 - ▶ Relative incentives 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

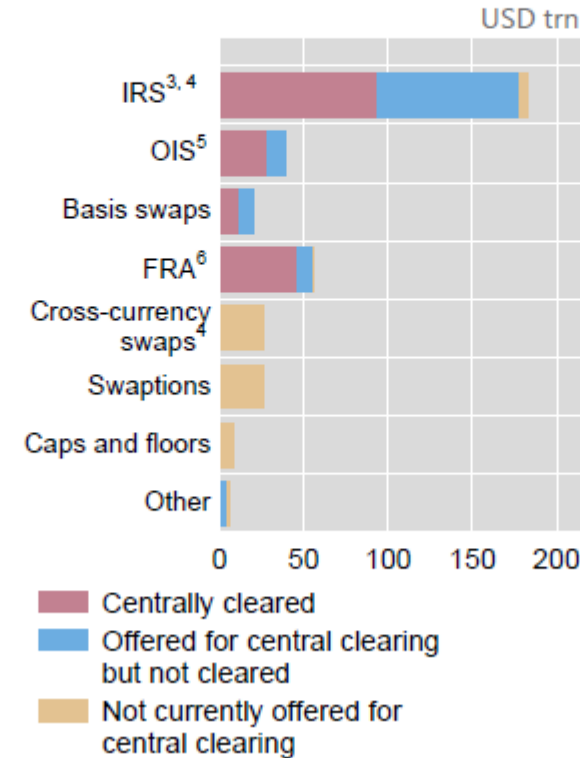
Evolution of the CCP industry

Graph 3

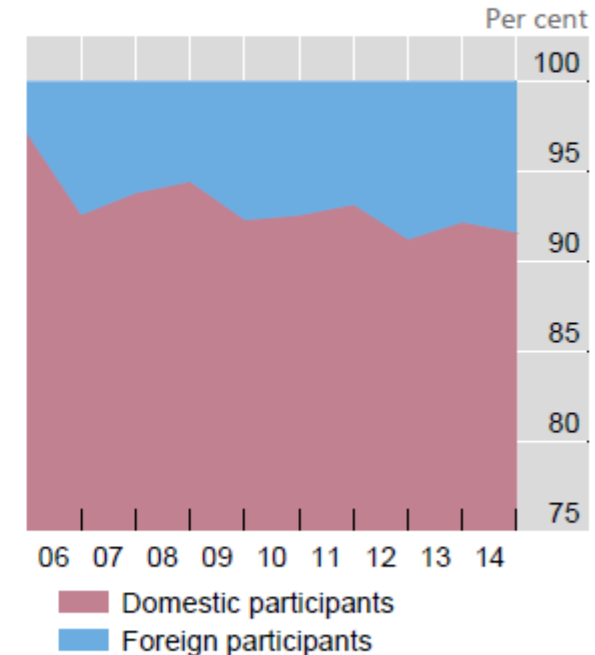
Estimated centrally cleared notional outstanding amounts¹



Central clearing of OTC interest rate by product²



Average share of domestic and foreign membership⁷



Clearing can reduce risks, but also transforms risks

- ▶ 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

- ▶ **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

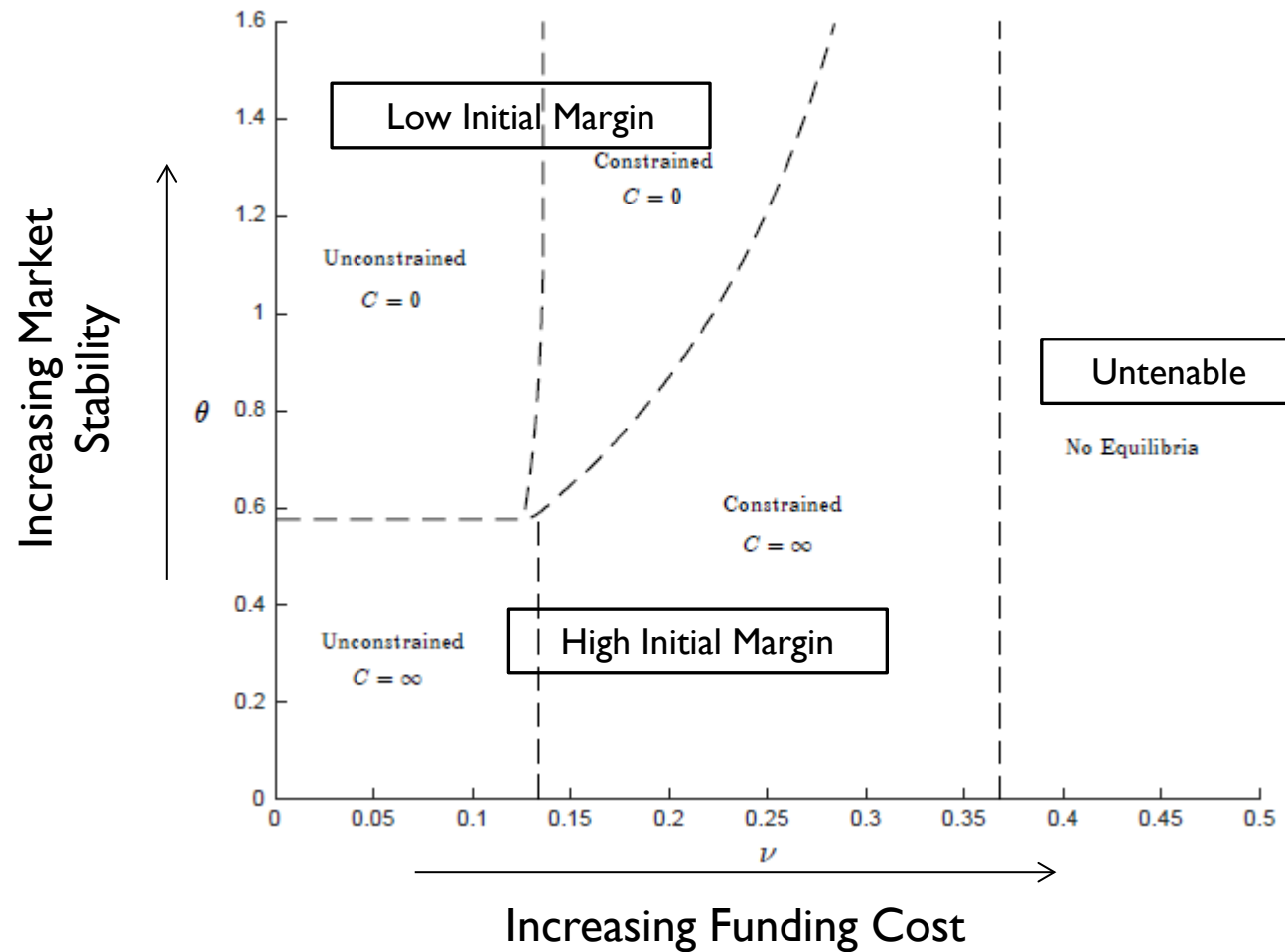
▶ Default preparation

- ▶ 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

▶ 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)

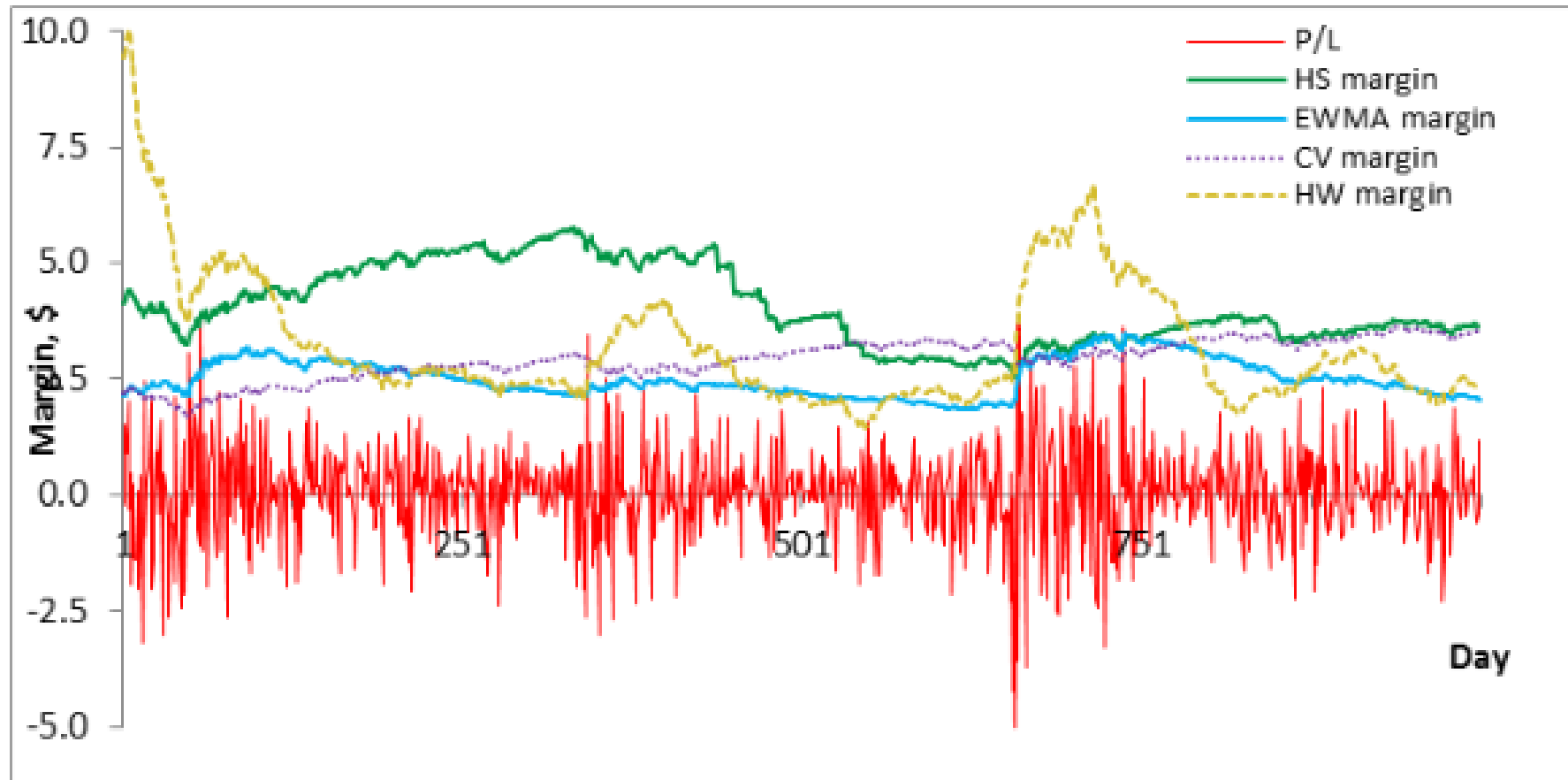
▶ Initial margin haircutting (Duffie, Elliott)

- ▶ 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

- ▶ 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

- ▶ 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