



BANK FOR INTERNATIONAL SETTLEMENTS

# The CCP-bank nexus

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# Motivation

- Central clearing became key feature of derivatives markets
  - after the financial crisis (Lehman failure)
  - (in part) due to regulatory reform agenda of G20
- Strong interlinkages between banks and CCPs
- We need to understand how central counterparties (CCPs) and (systematically important) banks interact through these interlinkages
- CCP-bank nexus: understanding stress scenarios  
Faruqui, Huang and Takats: The CCP-bank nexus,  
BIS Quarterly Review, 2018 December



# Roadmap

1. The market of central clearing
2. CCPs in derivatives clearing: balance sheet dynamics
3. CCPs are special: Understanding the waterfall
  - a) Case studies: CCPs at risk
4. CCP-bank nexus under stress
  - a) Medium stress: initial margin-at-risk
  - b) High stress: default fund-at-risk
  - c) Extreme stress: committed funds-at-risk
5. Conclusion

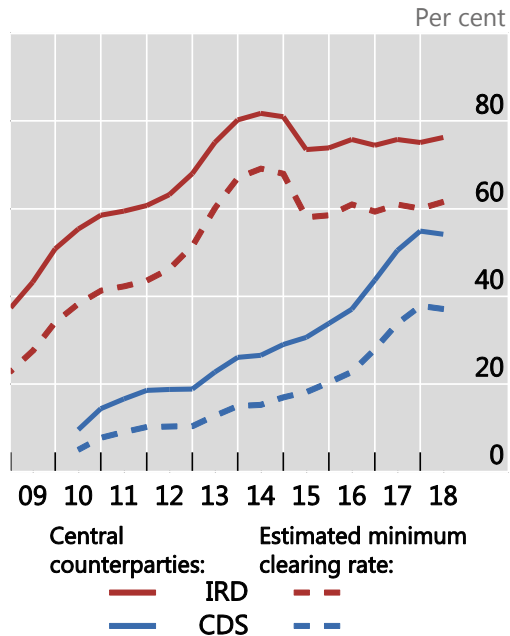


# The market of central clearing: large exposures

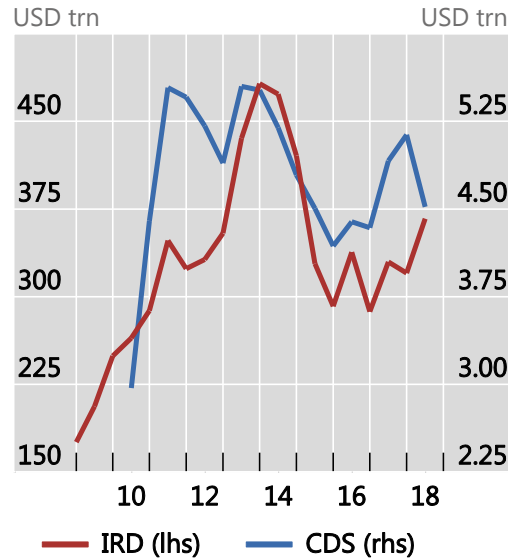
Banks and central counterparties (CCPs) have large exposures to each other

Graph 1

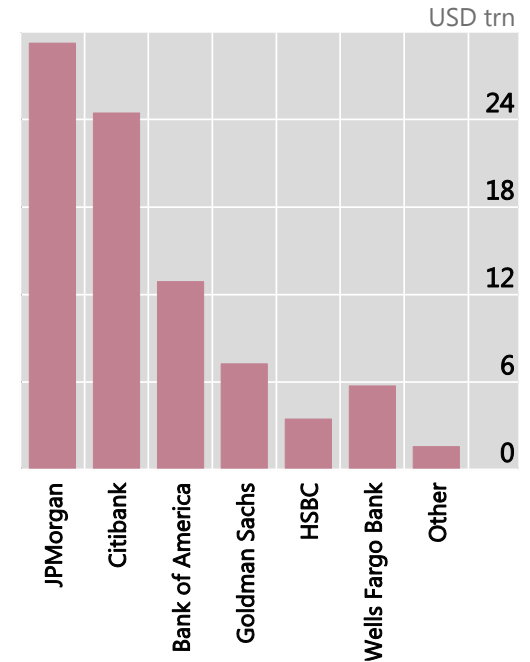
Central clearing rates in OTC derivatives markets<sup>1, 2, 3</sup>



Banks' outstanding notional cleared by CCPs<sup>1, 4</sup>



US banks' OTC derivatives cleared by CCPs<sup>5</sup>

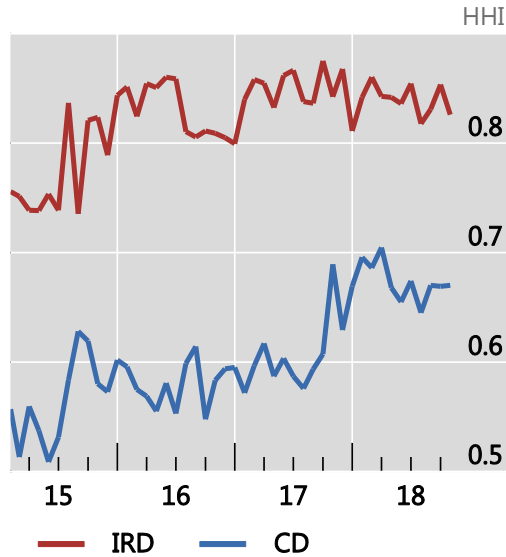


# The market of central clearing: concentration

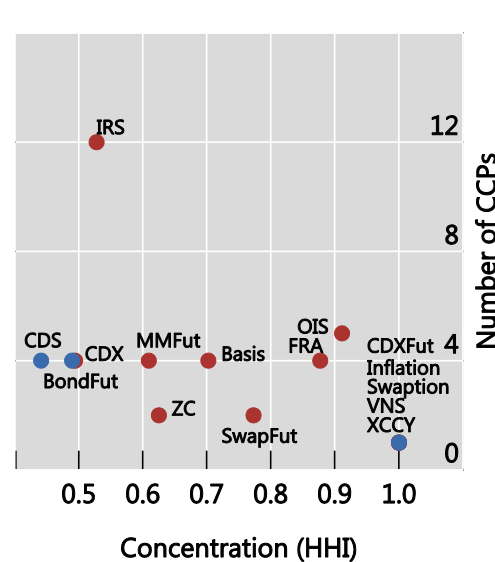
Central counterparties (CCPs) and clearing members are concentrated

Graph 2

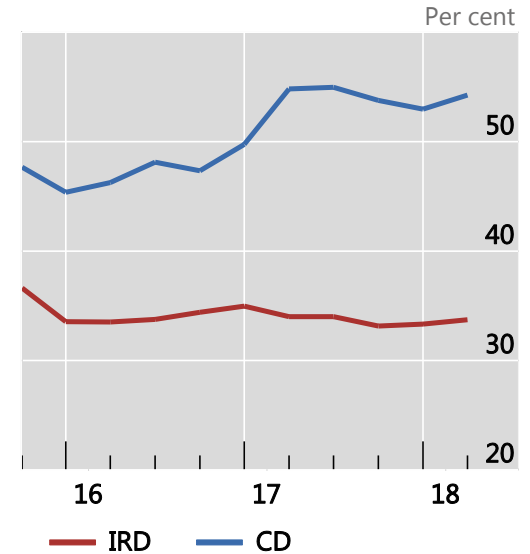
Concentration of CCPs in OTC derivative markets<sup>1, 2</sup>



Concentration of CCPs in individual products<sup>1, 3</sup>



Contribution to CCP prefunded resources of top 5 clearing members<sup>2</sup>

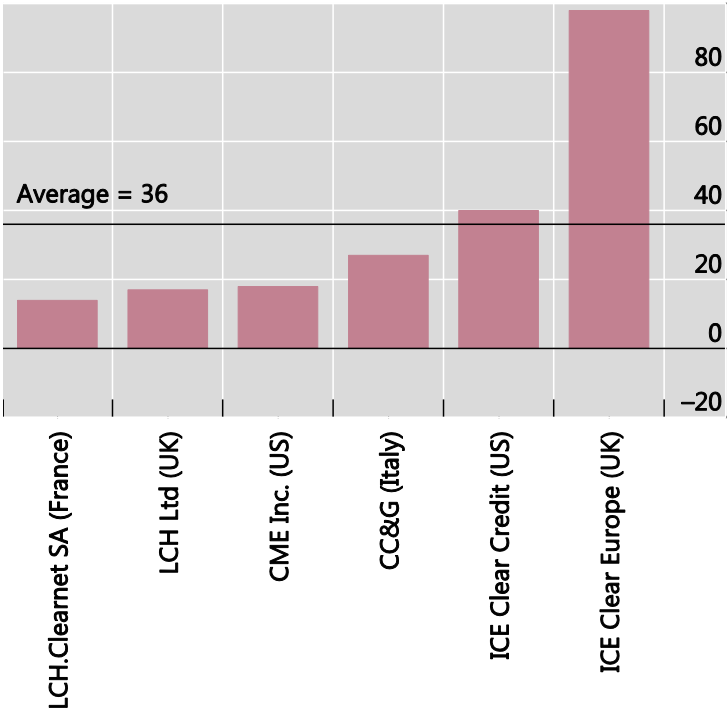


# CCPs are more profitable than banks

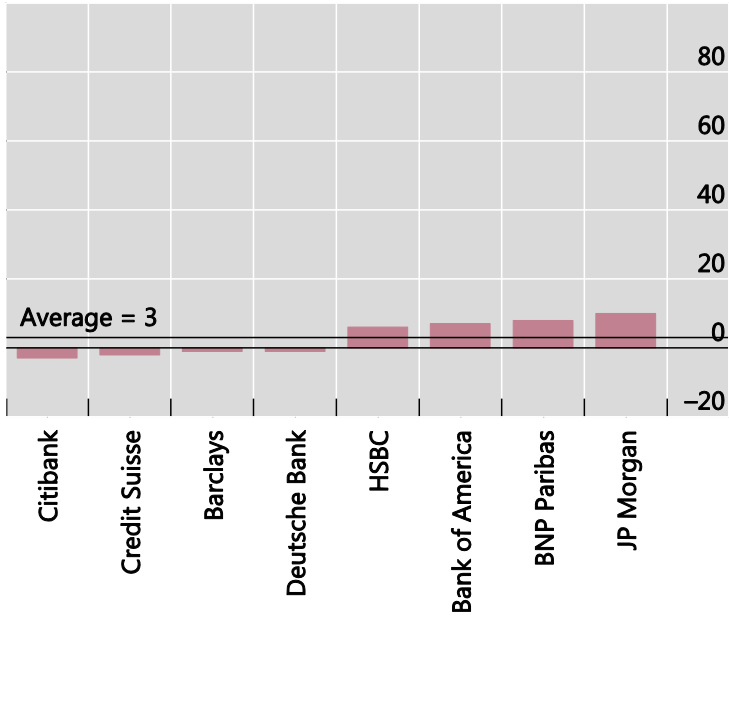
High profitability of CCPs is consistent with high concentration

Graph 3

CCP ROE

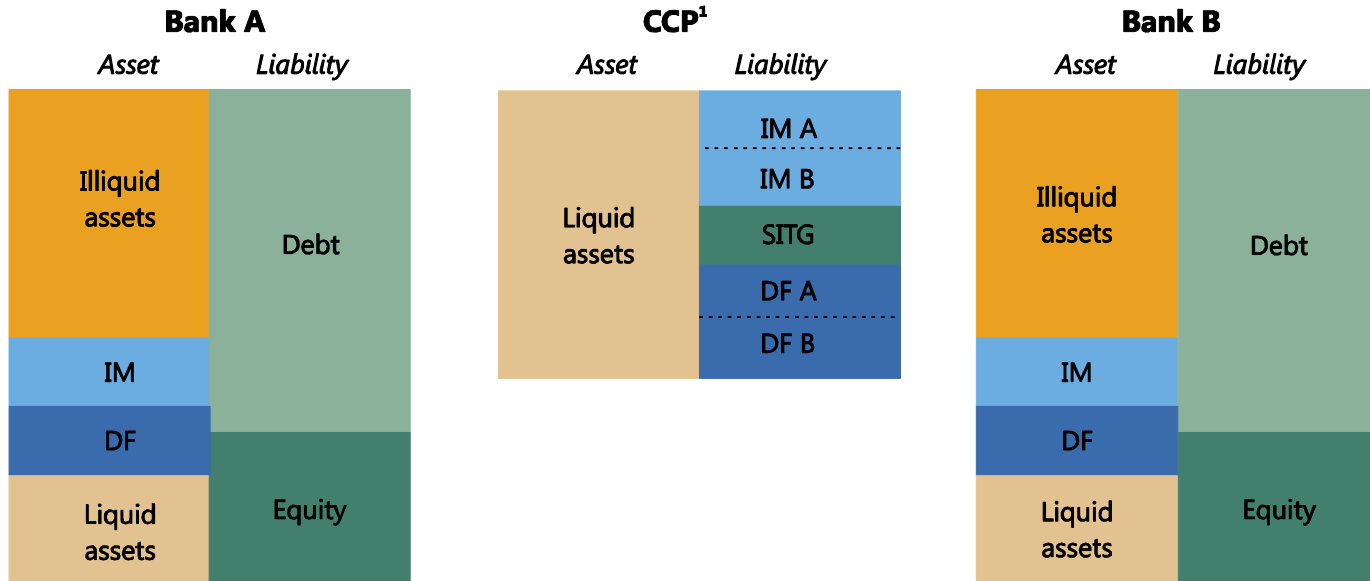


Bank ROE



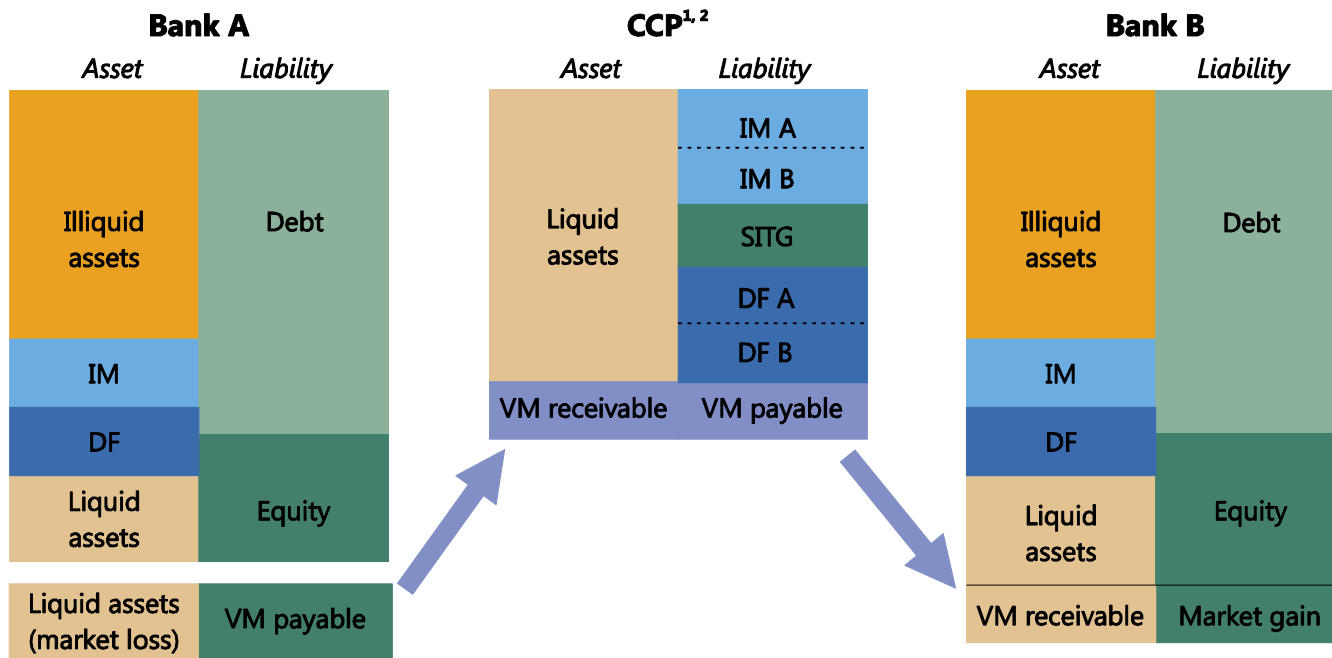
# CCPs in derivatives clearing: balance sheet dynamics (1)

At trade initiation (t=0)



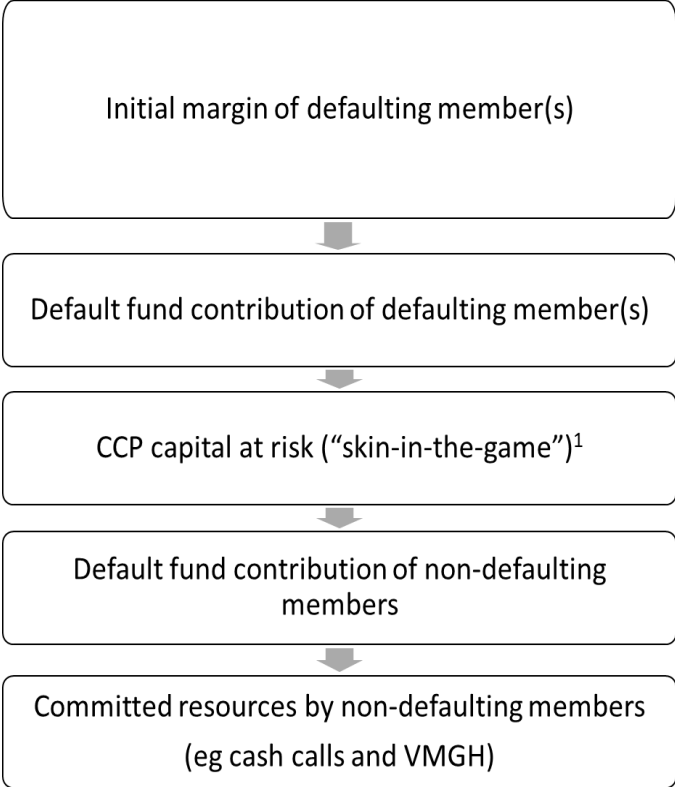
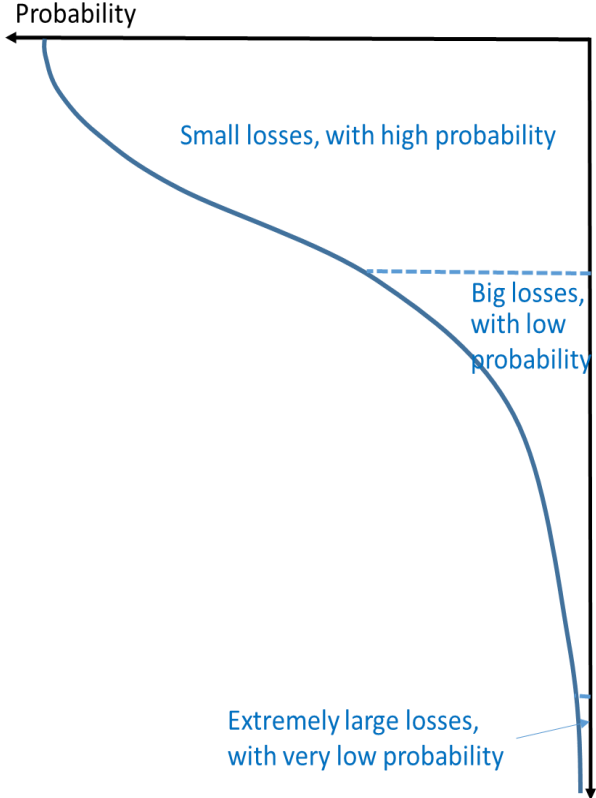
# CCPs in derivatives clearing: balance sheet dynamics (2)

After market price move (t=1)





# Default waterfall



# Material risks remain

- CCP performed well during the financial crisis
  - Lehman bankruptcy clear up
- Yet, there is a (short) history of clearinghouse failures
  - Caisse de Liquidation des Affaires et Marchandises (1974)
  - Kuala Lumpur Commodity Clearing House (1983)
  - Hong Kong Futures Guarantee Corporation (1987)
- And near failures
  - Chicago Mercantile Exchange (1987)
  - Options Clearing Corporation (1987)
  - BM&F CCP (Brazil) (1999)
- And severe stress even under benign conditions
  - Korean CCP (2013)
  - Nasdaq AG (2018 September)

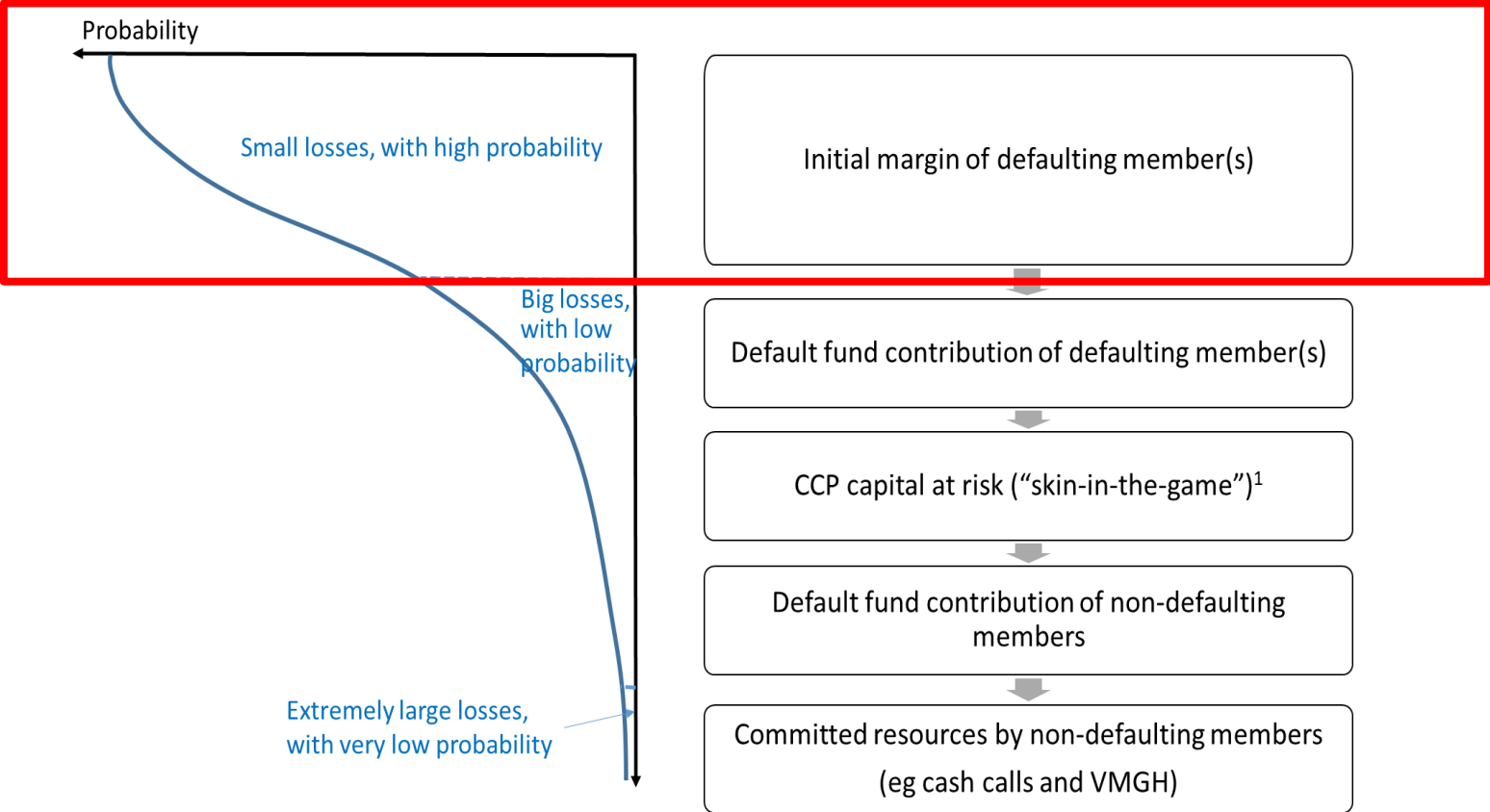


# CCP-bank nexus under stress

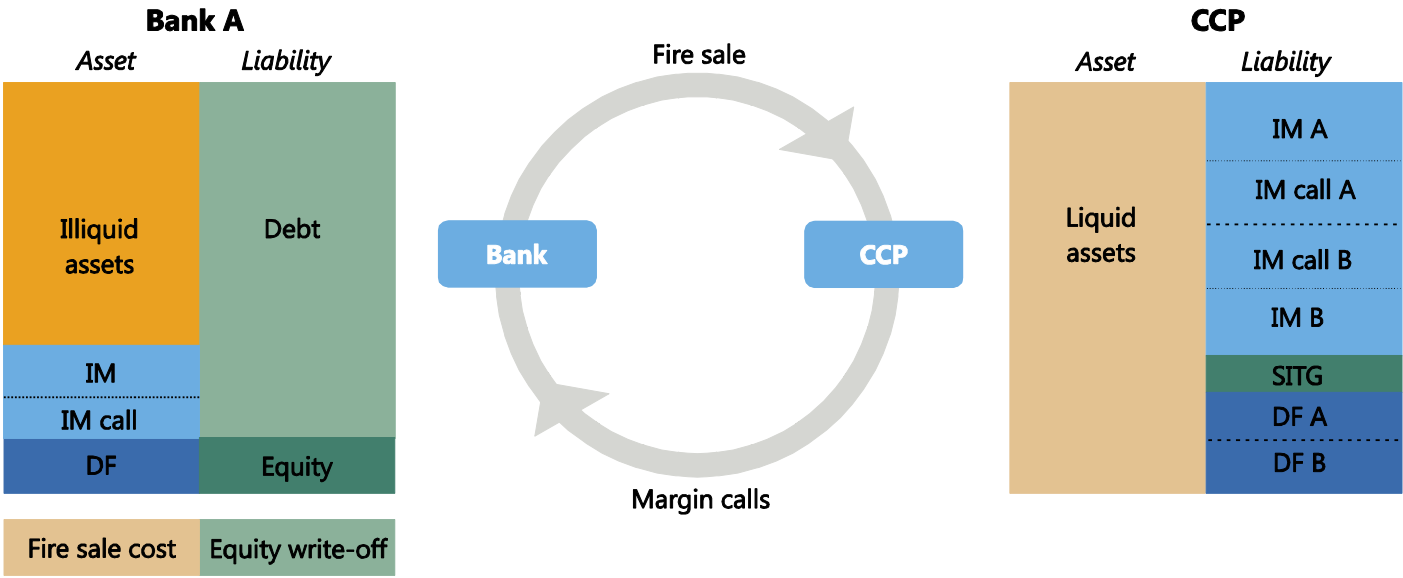
- Medium stress: initial margin-at-risk
- High stress: default fund-at-risk
- Extreme stress: committed funds-at-risk



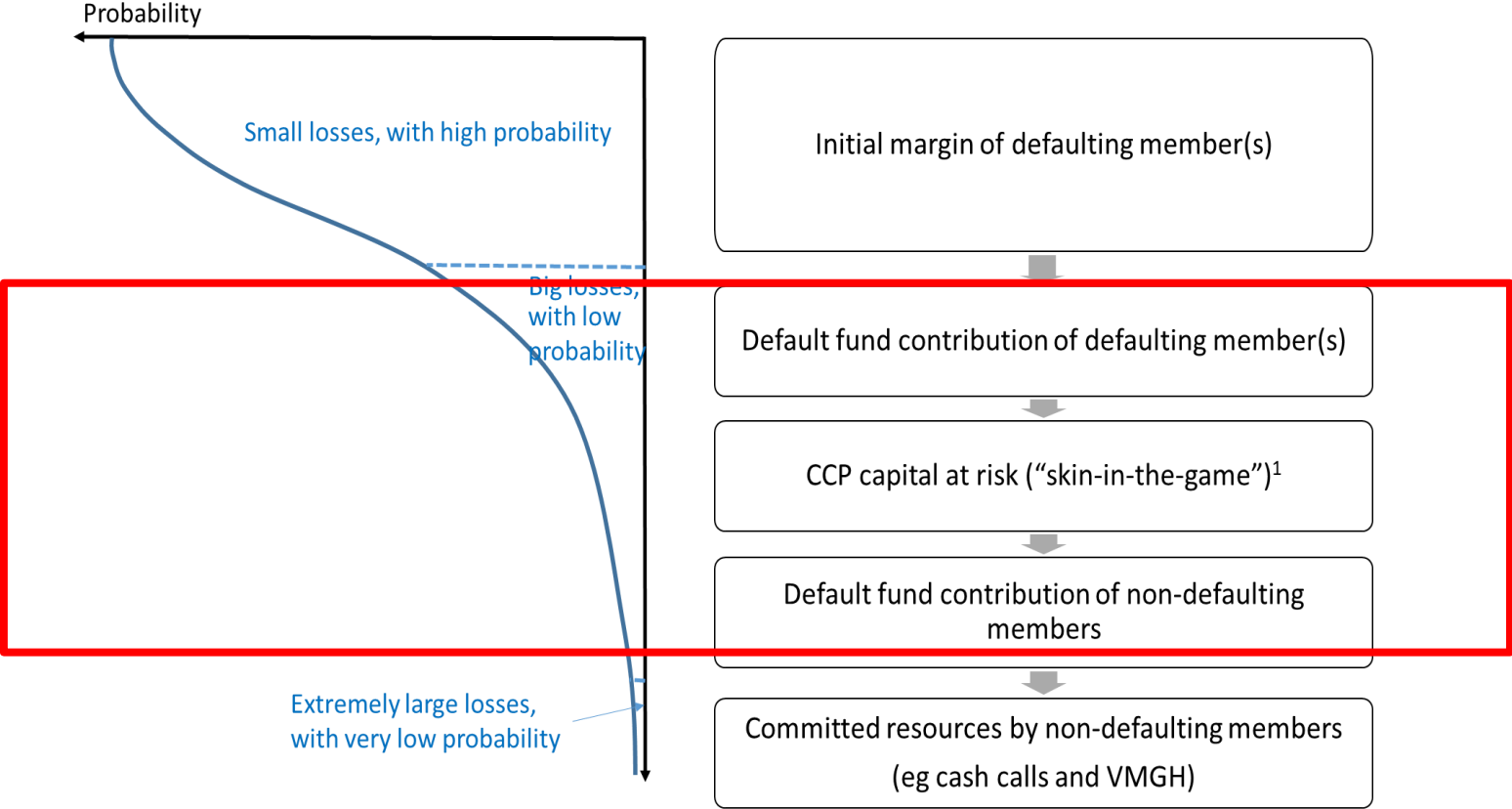
# Medium stress: initial margin-at-risk



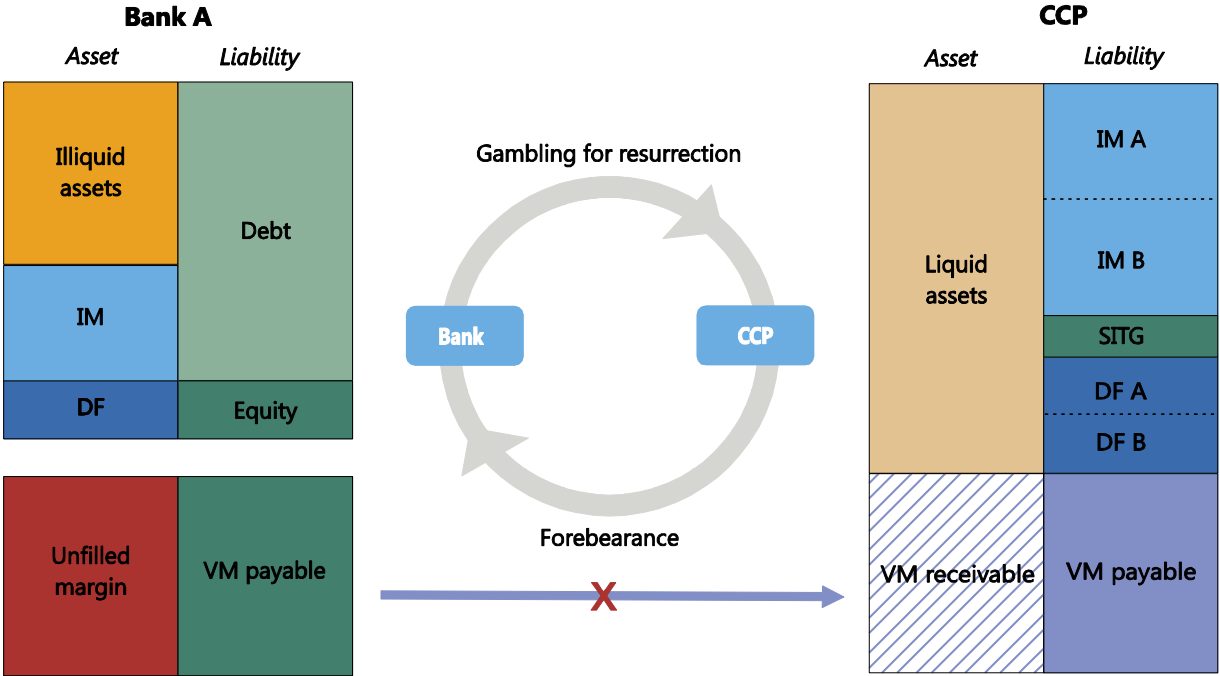
# Medium stress: initial margin-at-risk



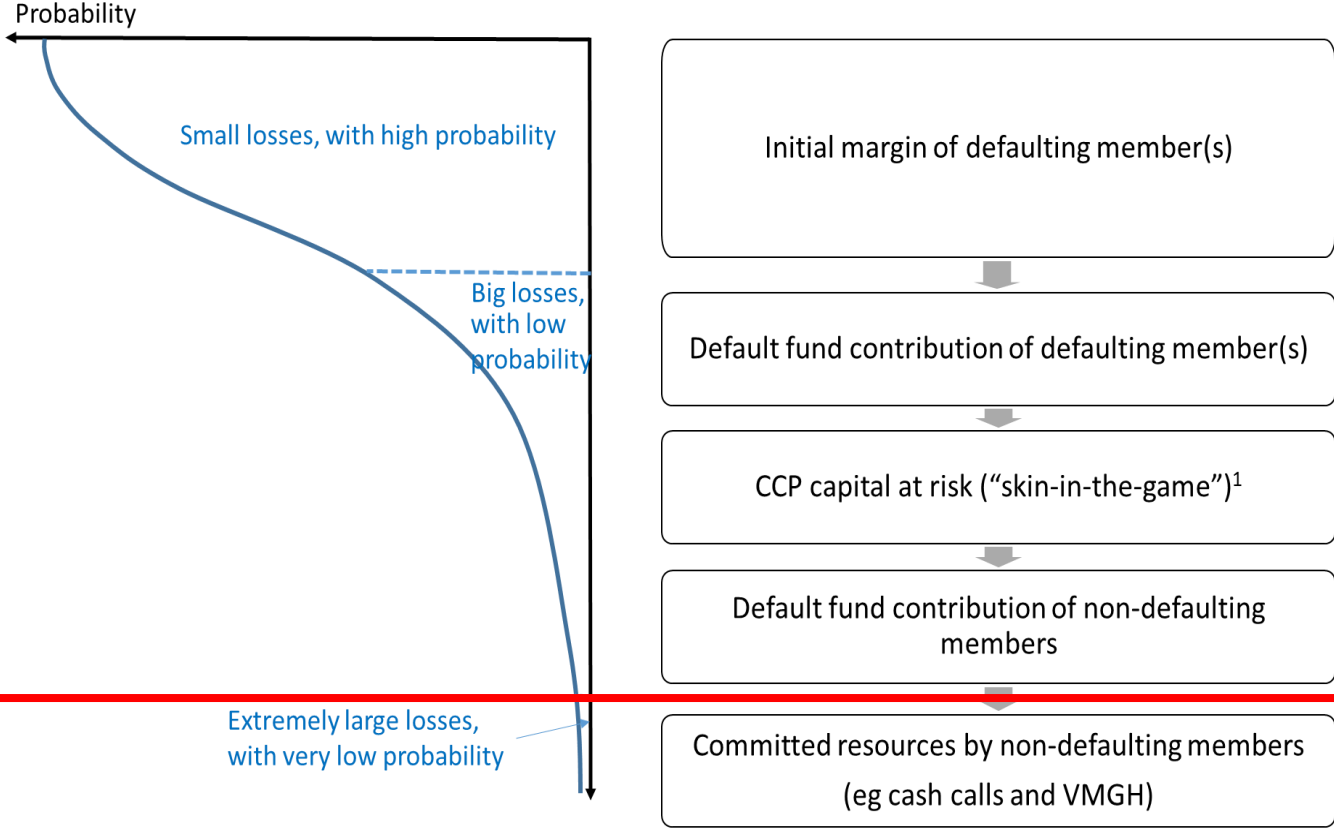
# High stress: default fund-at-risk



# High stress: default fund-at-risk

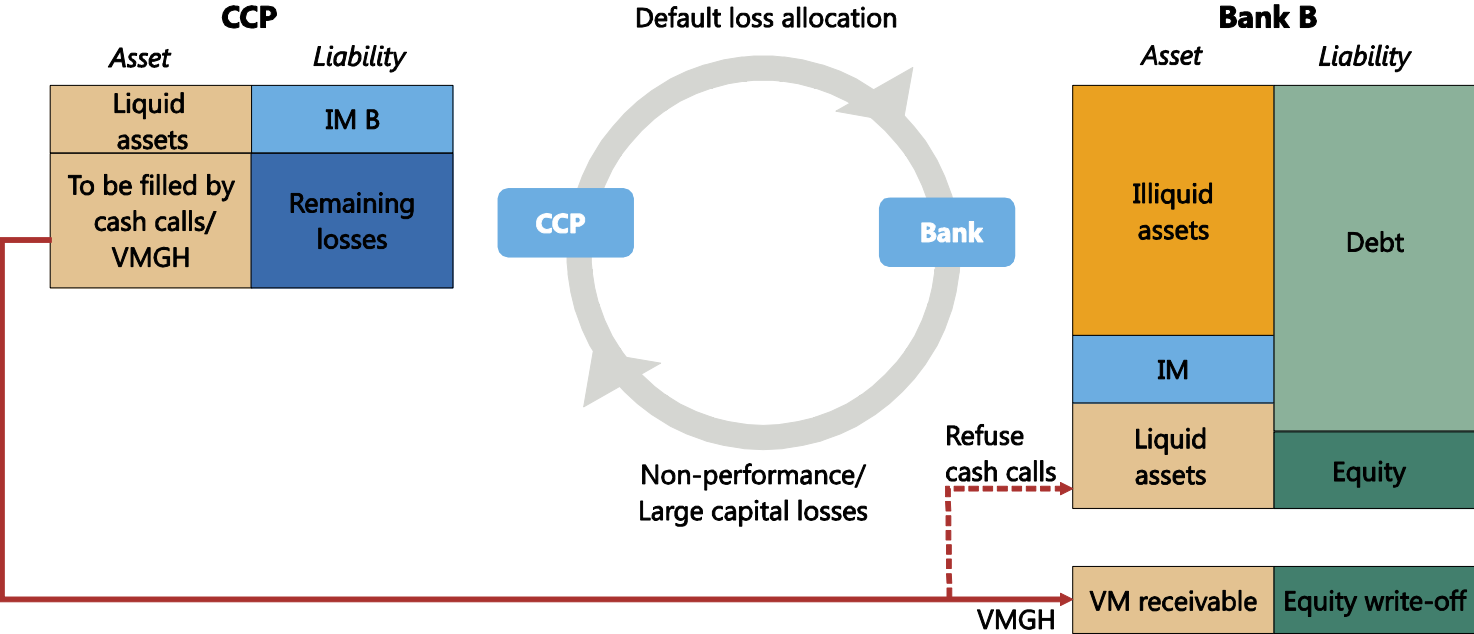


# Extreme stress: committed funds-at-risk





# Extreme stress: committed funds-at-risk



# Conclusion

- Potential destabilising feedback loop between banks and CCPs
- Need to think about bank and CCP risk jointly, rather than in isolation
- Risk is dynamic and endogenous not static and exogenous
- There is some awareness of these issues in regulation, but full incorporation is demanding
- We hope this article is helpful for policymakers, regulators, the financial industry and academics interested in central clearing

