

# Failure Resolution of Central Counterparties

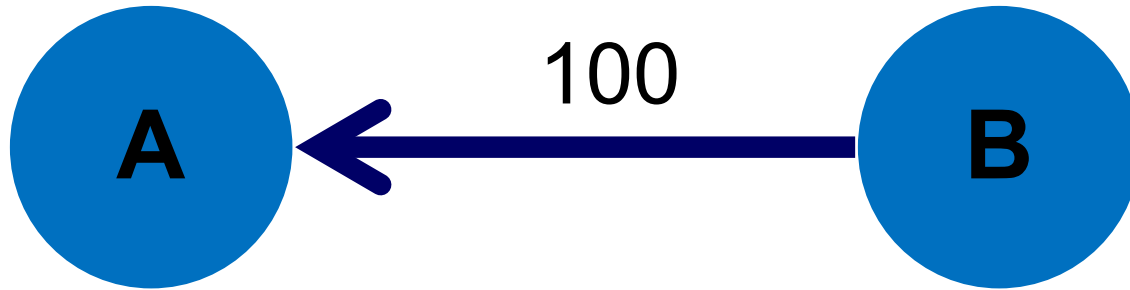
Darrell Duffie, GSB, Stanford University

Third BIS Research Network Meeting

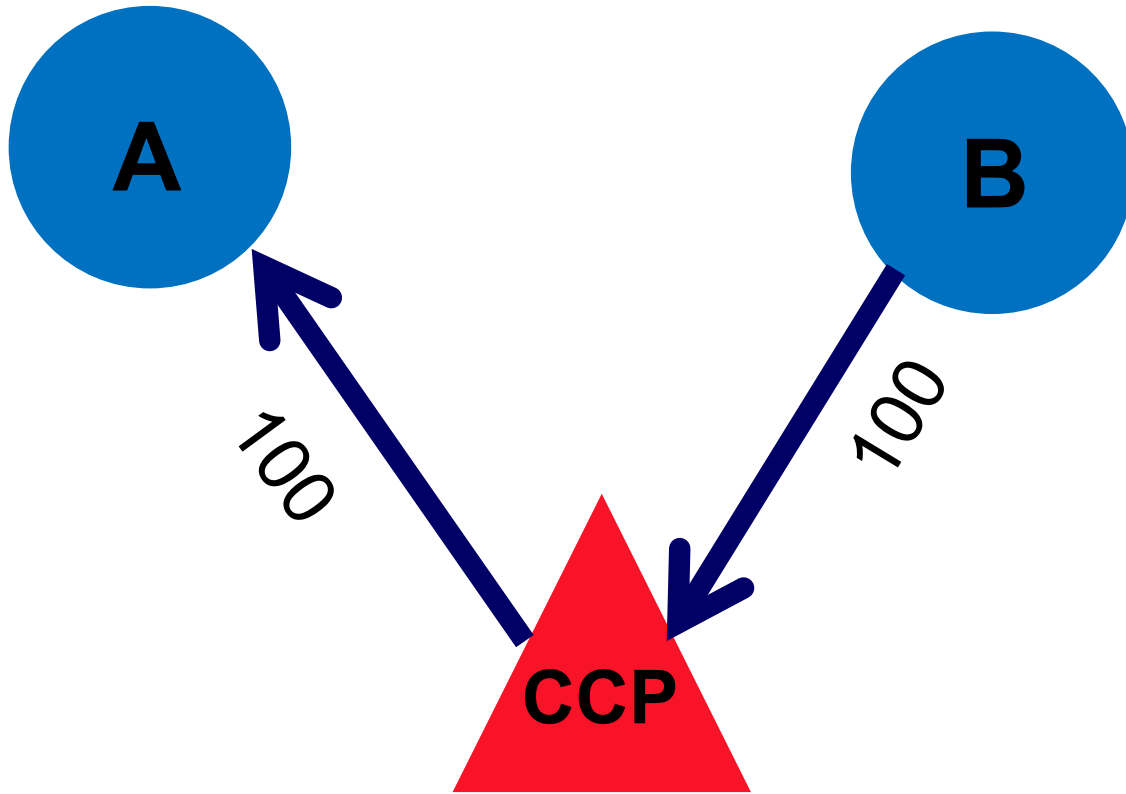
BIS-DNB-Buba: Global Financial Interconnectedness

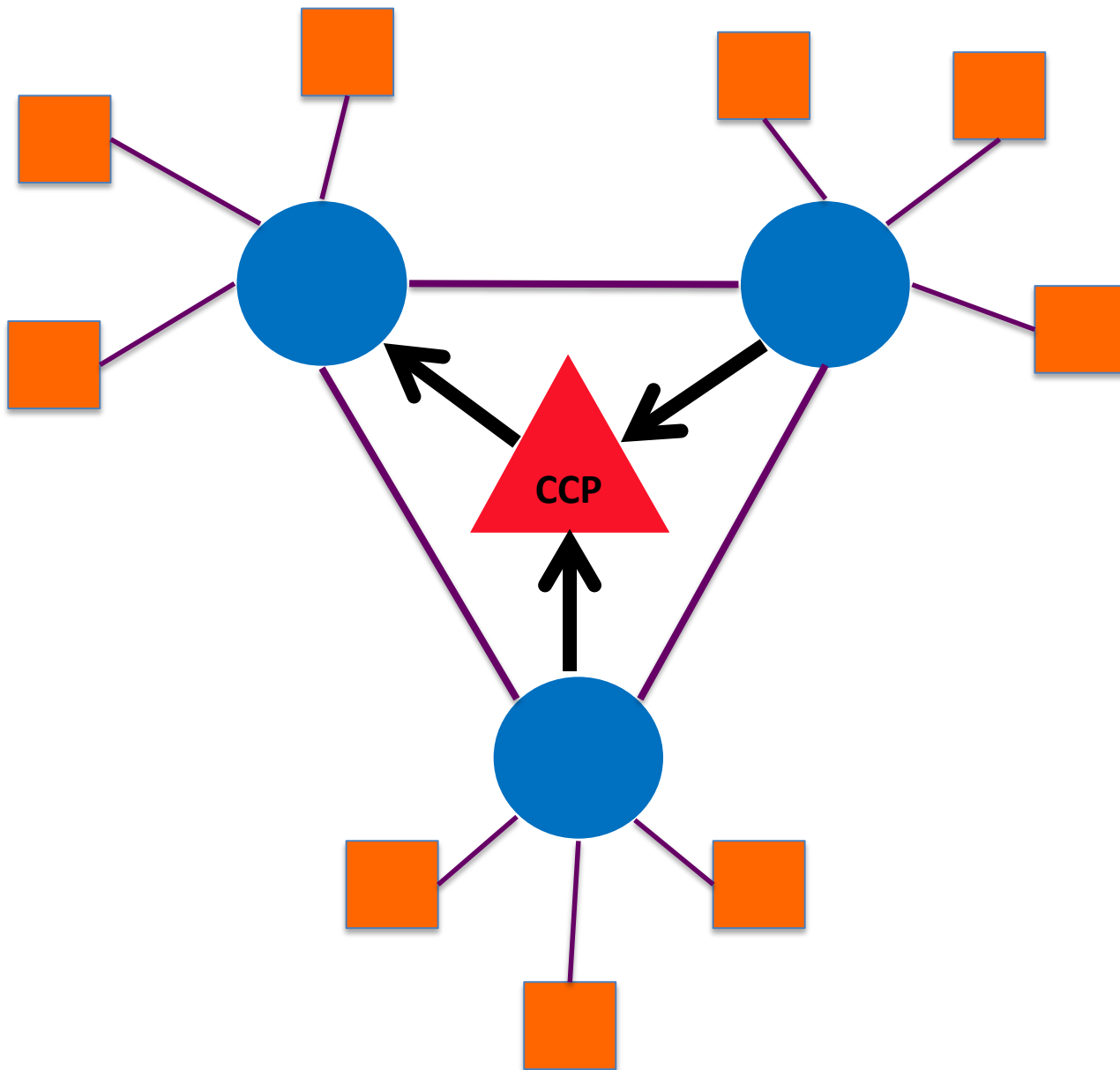
Basel October 1, 2015

**a. Reminder of what a CCP does**

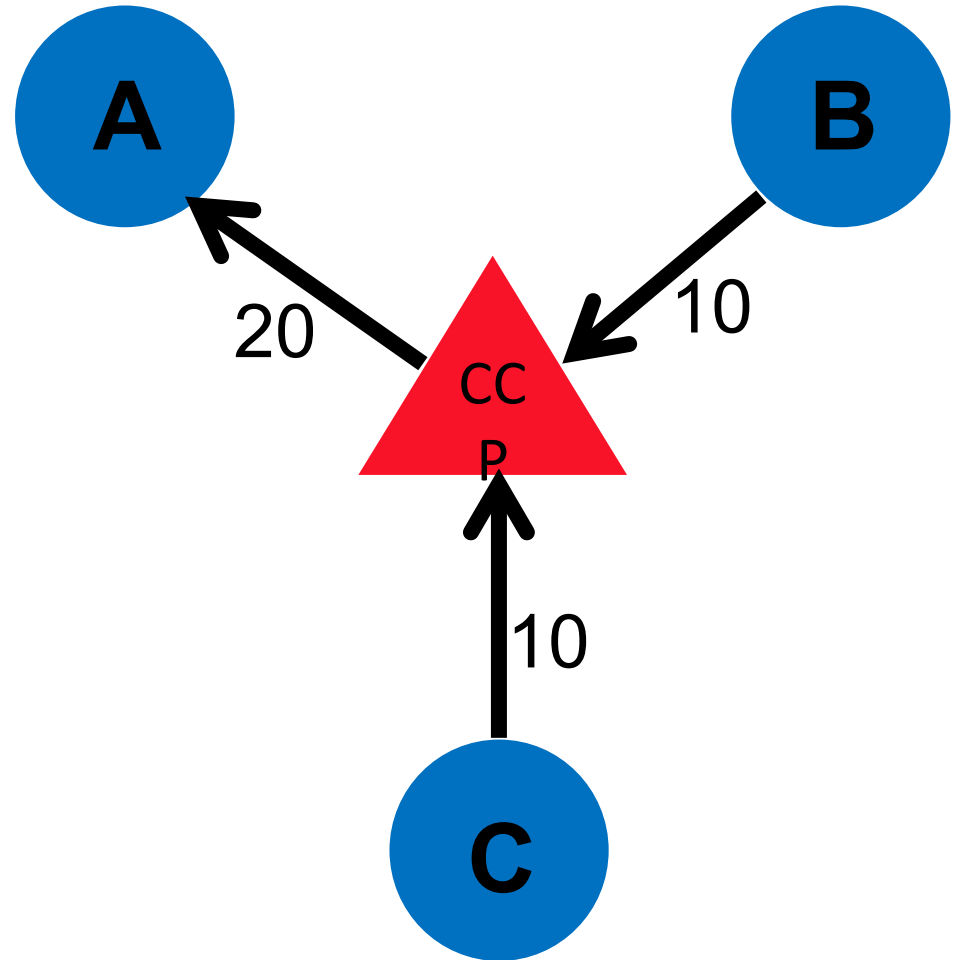
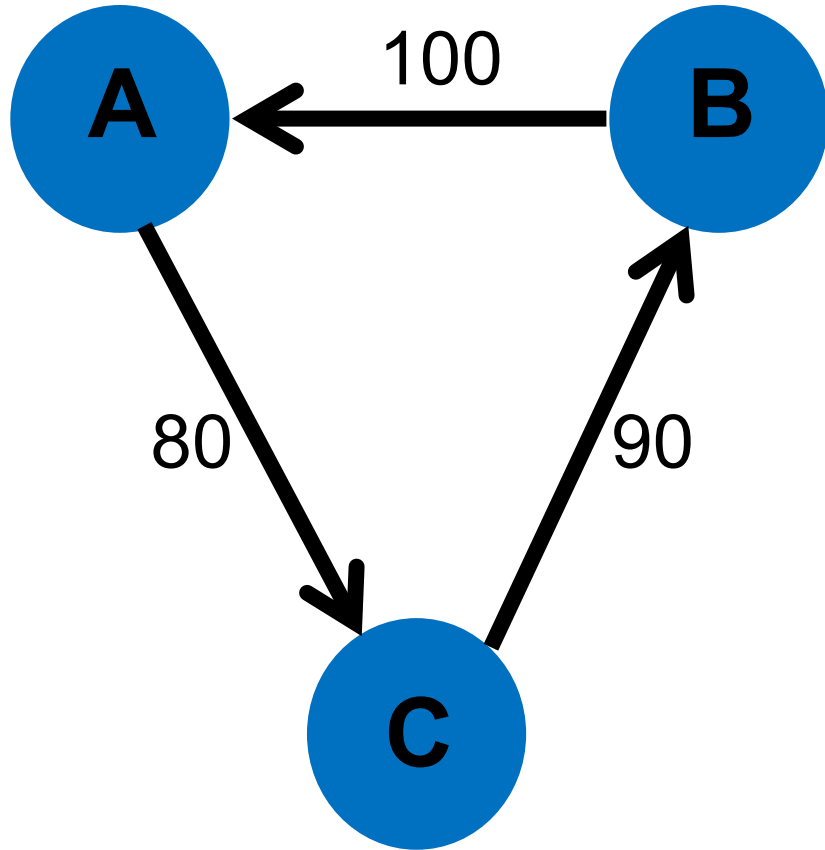


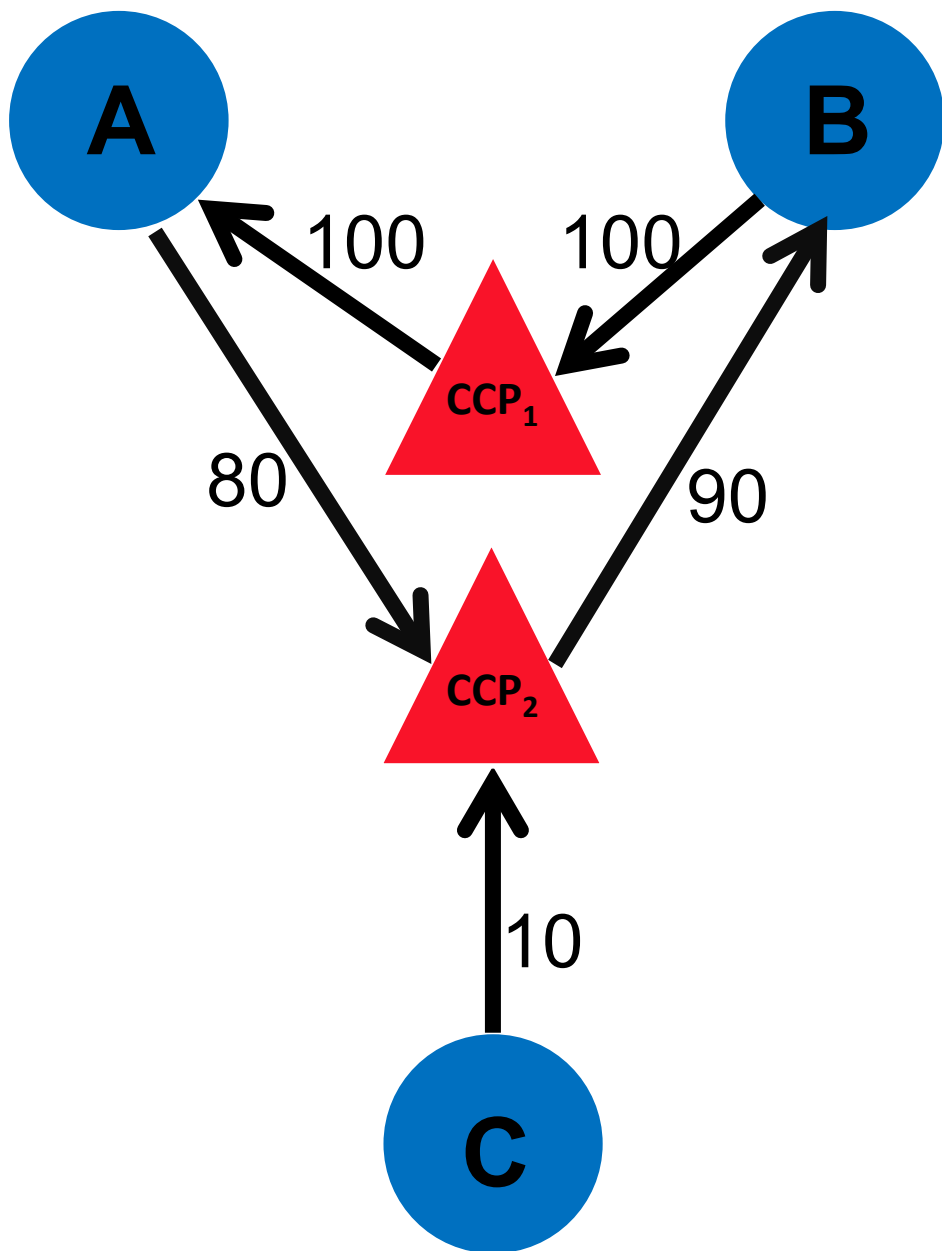
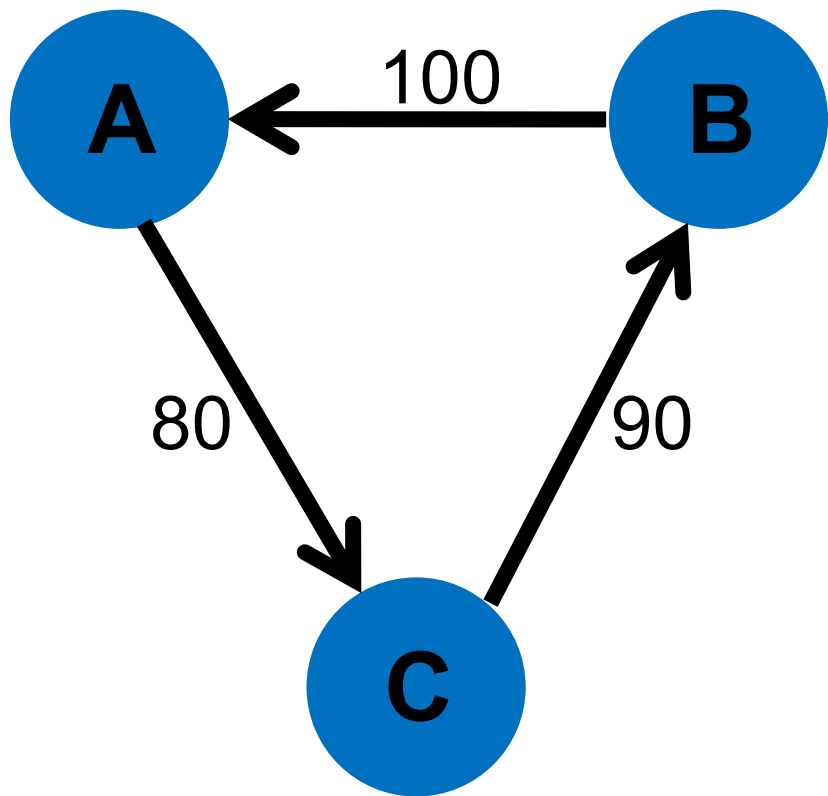
# Central clearing



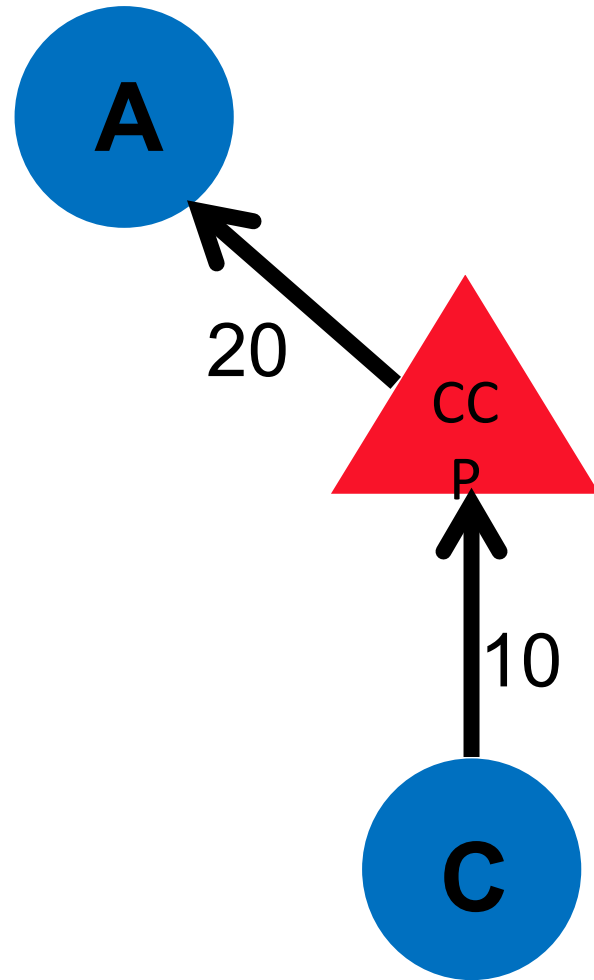
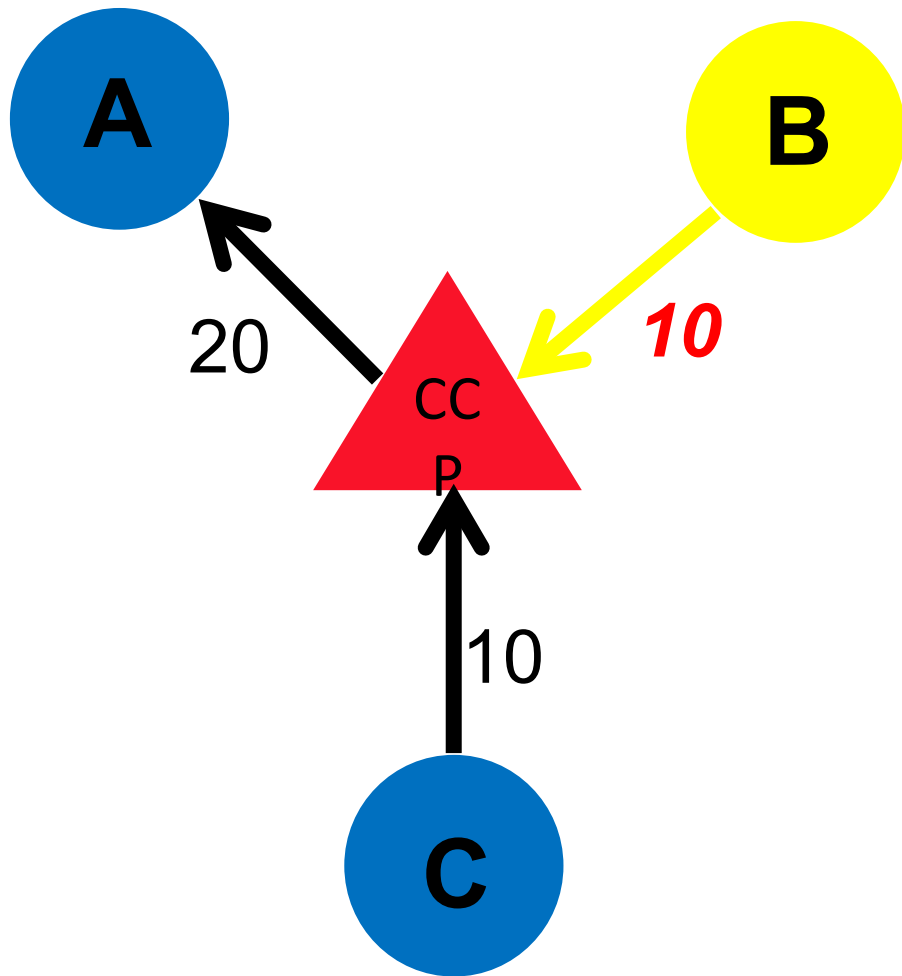


# Central clearing netting benefit



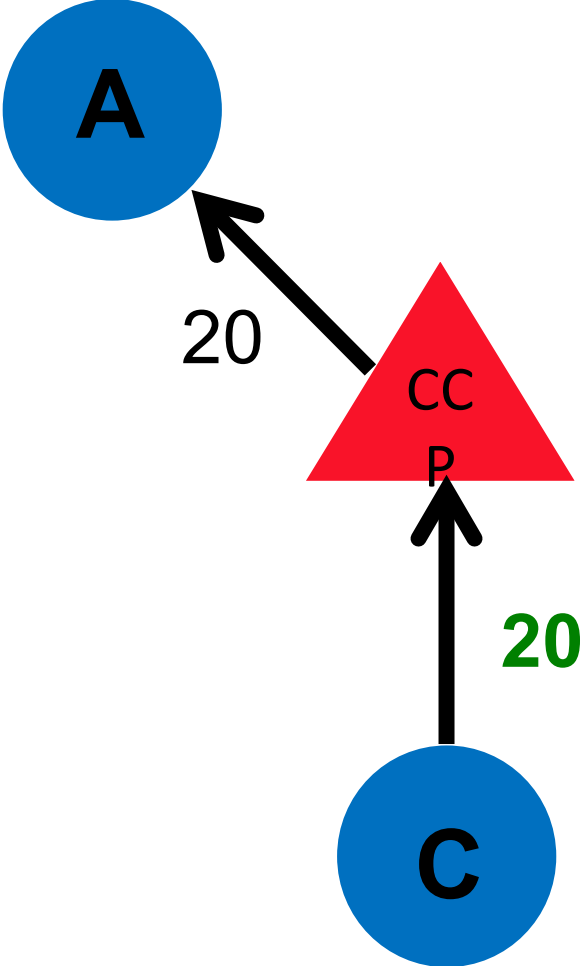
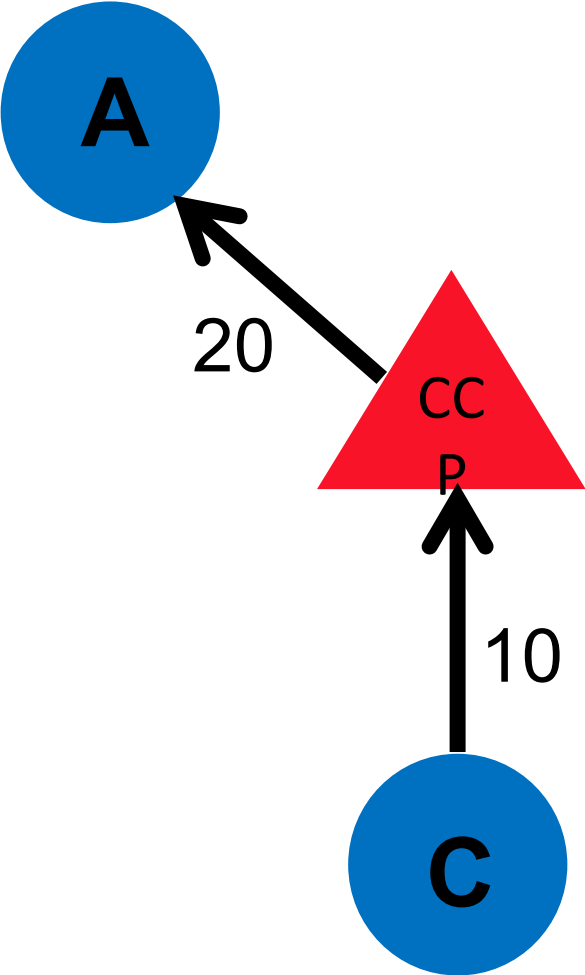


When B Fails, the CCP is short 10



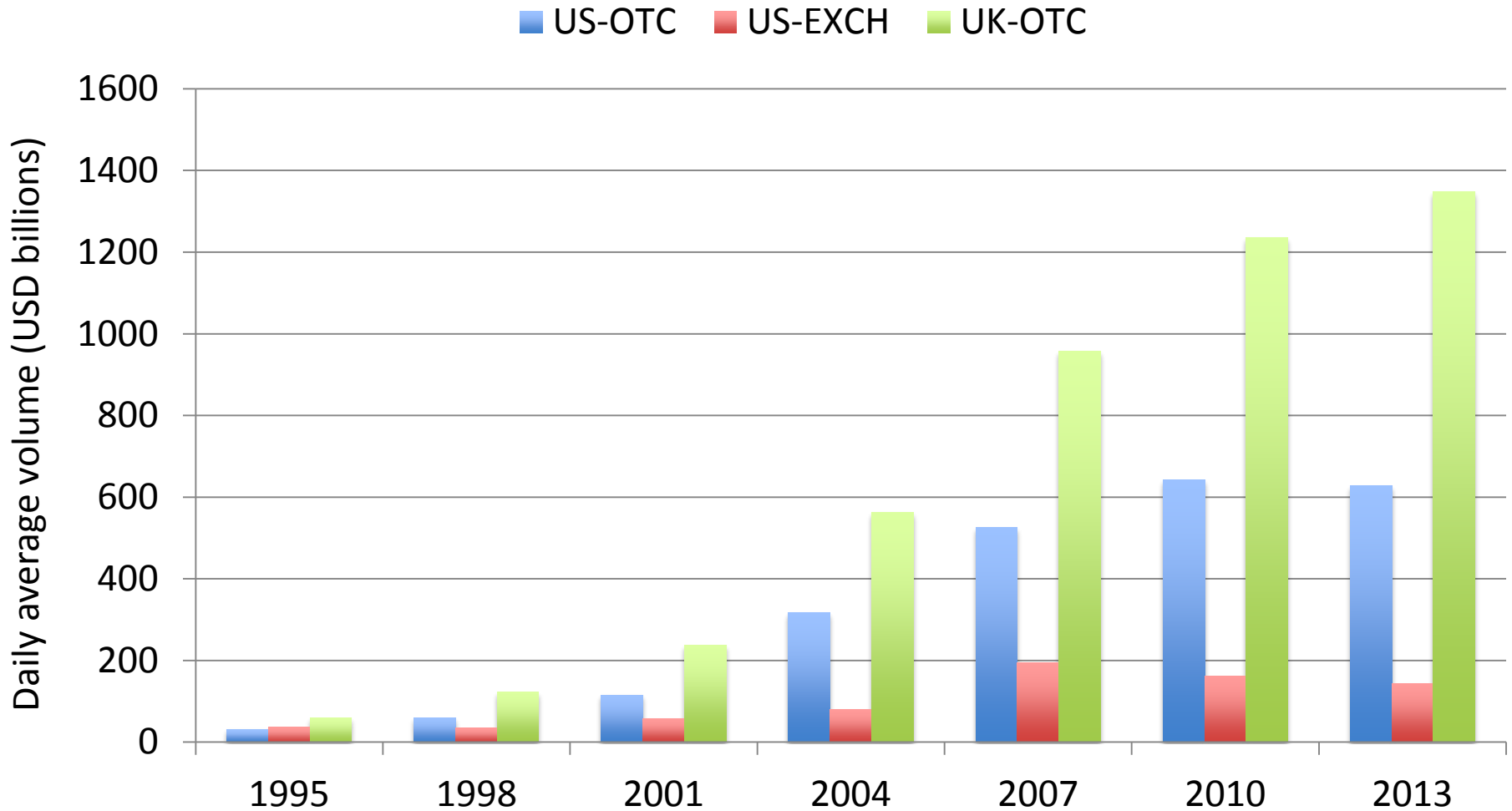


The CCP buys 10 from C to regain balance



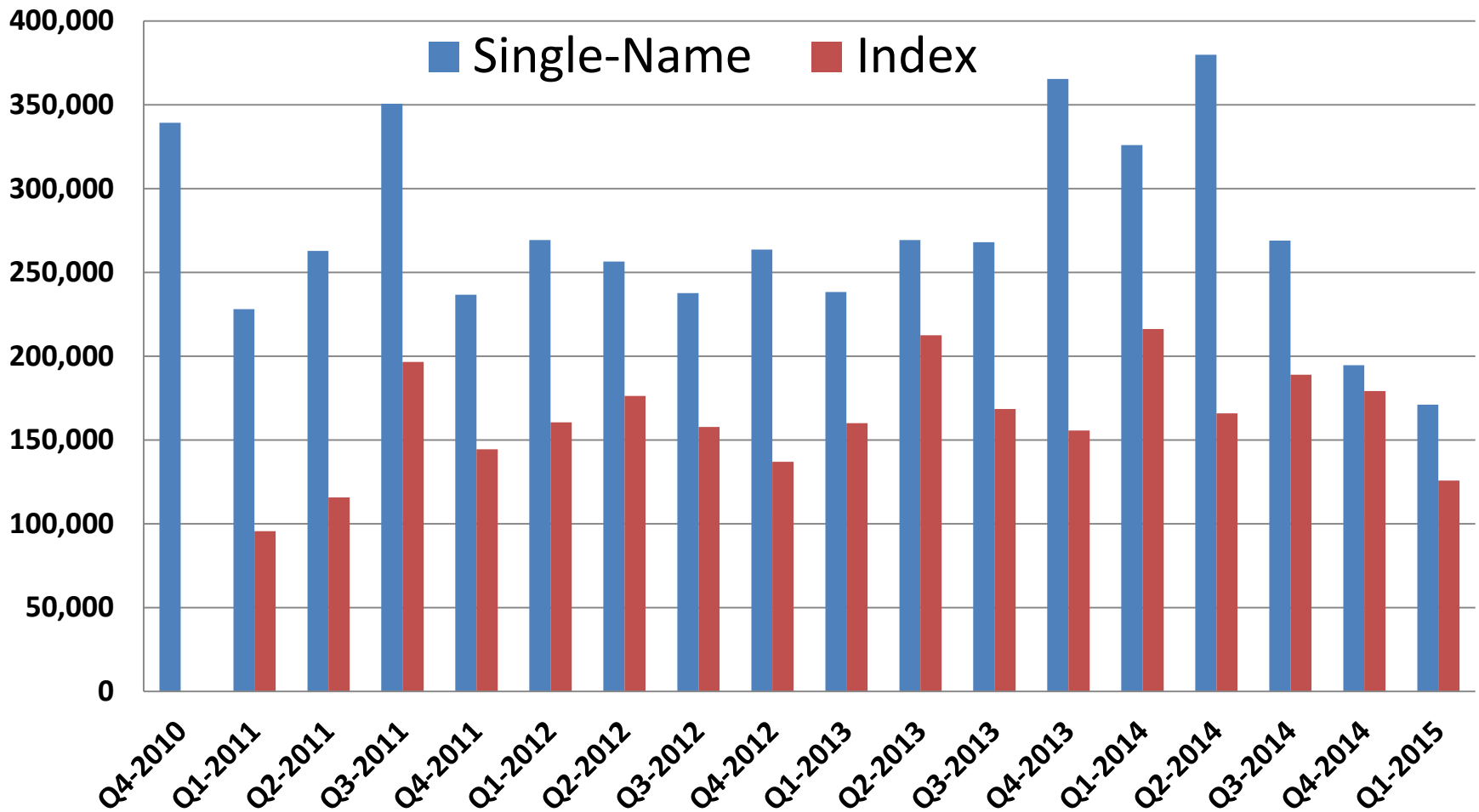
## **b. Background changes in market structure**

# Daily average volume of interest rate derivatives



Data sources. BIS: OTC Triennial (April), U.S. exchanges Table 23A (March).

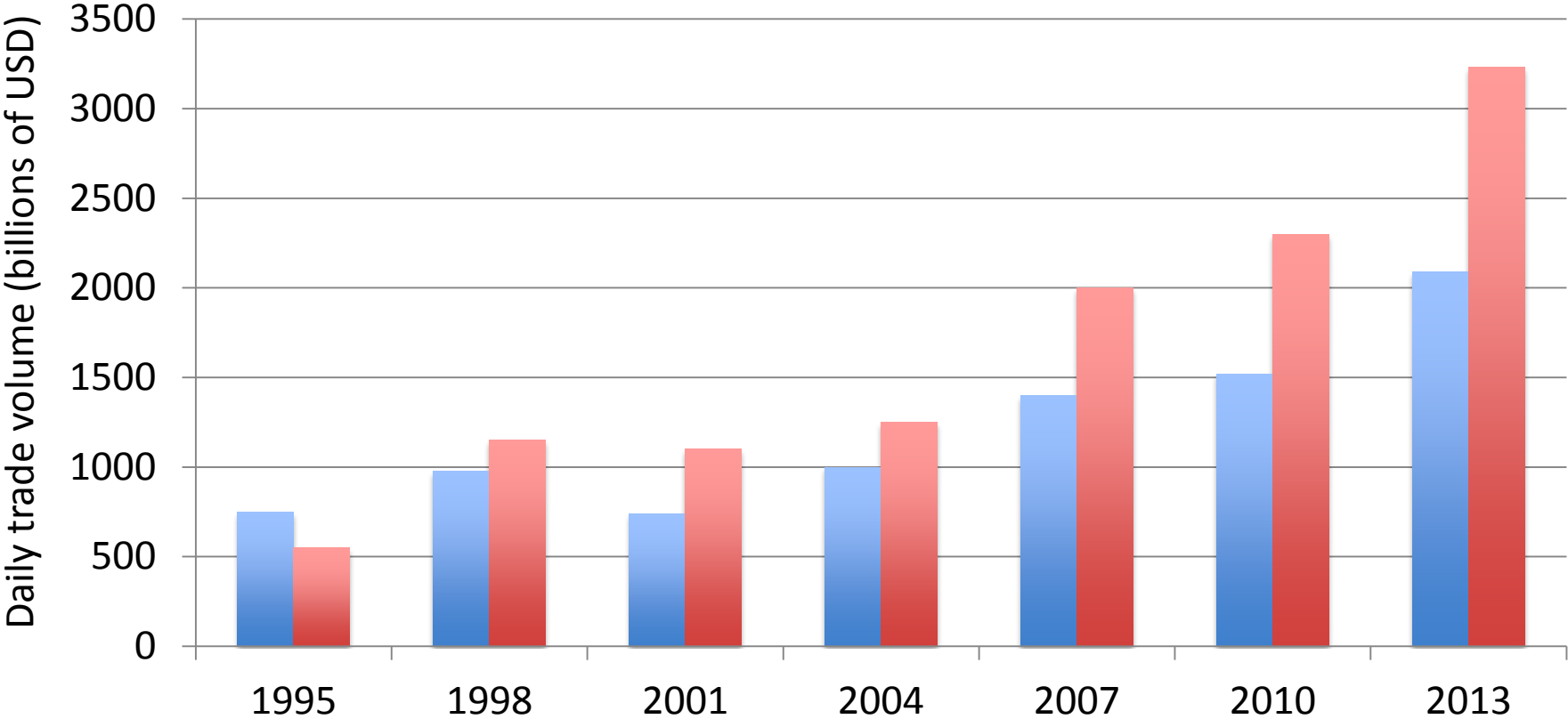
# Number of CDS trades per quarter



Data source: DTCC

# Growth of FX Platform Trading Market

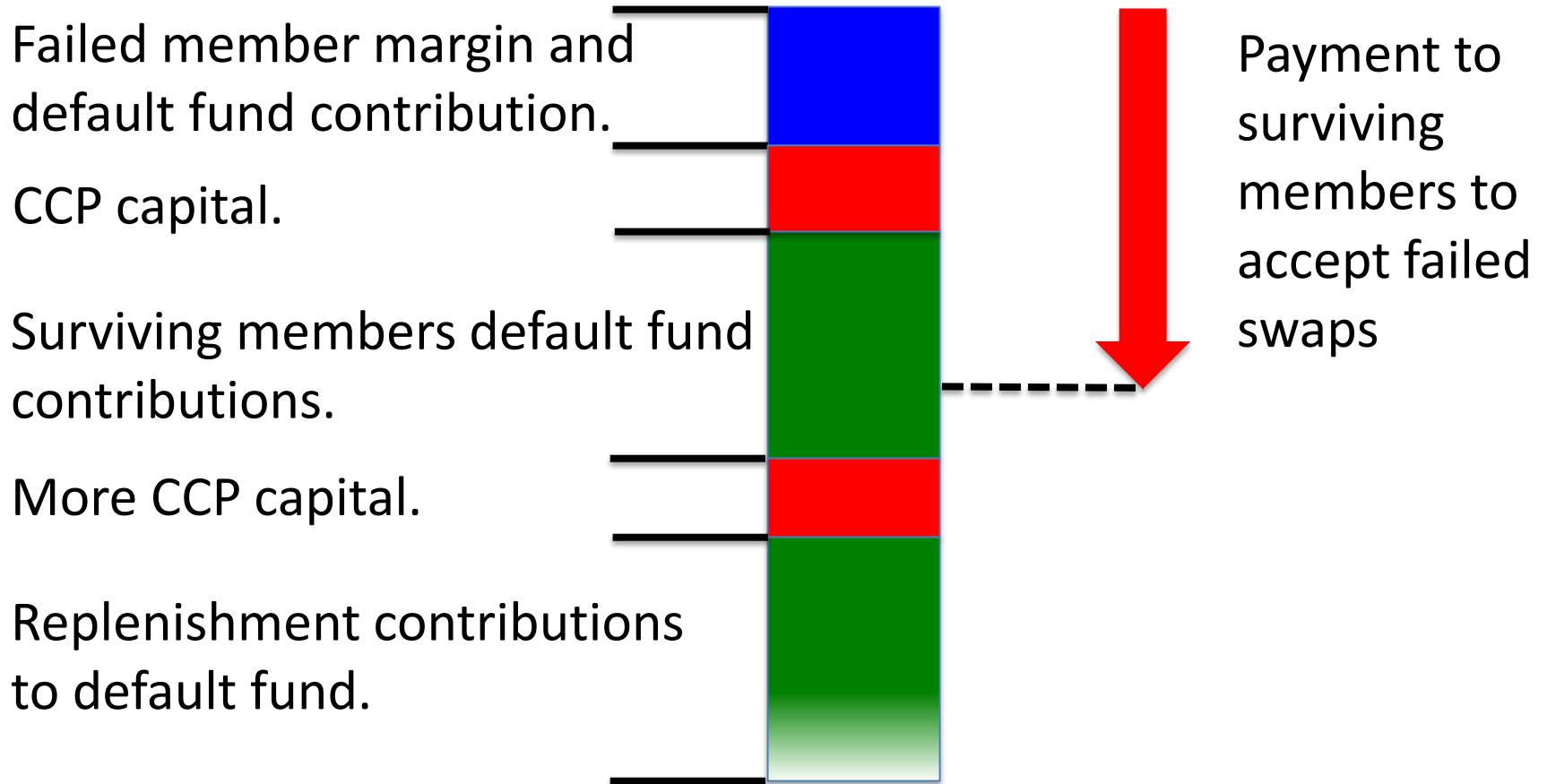
■ Dealers ■ Non-dealers



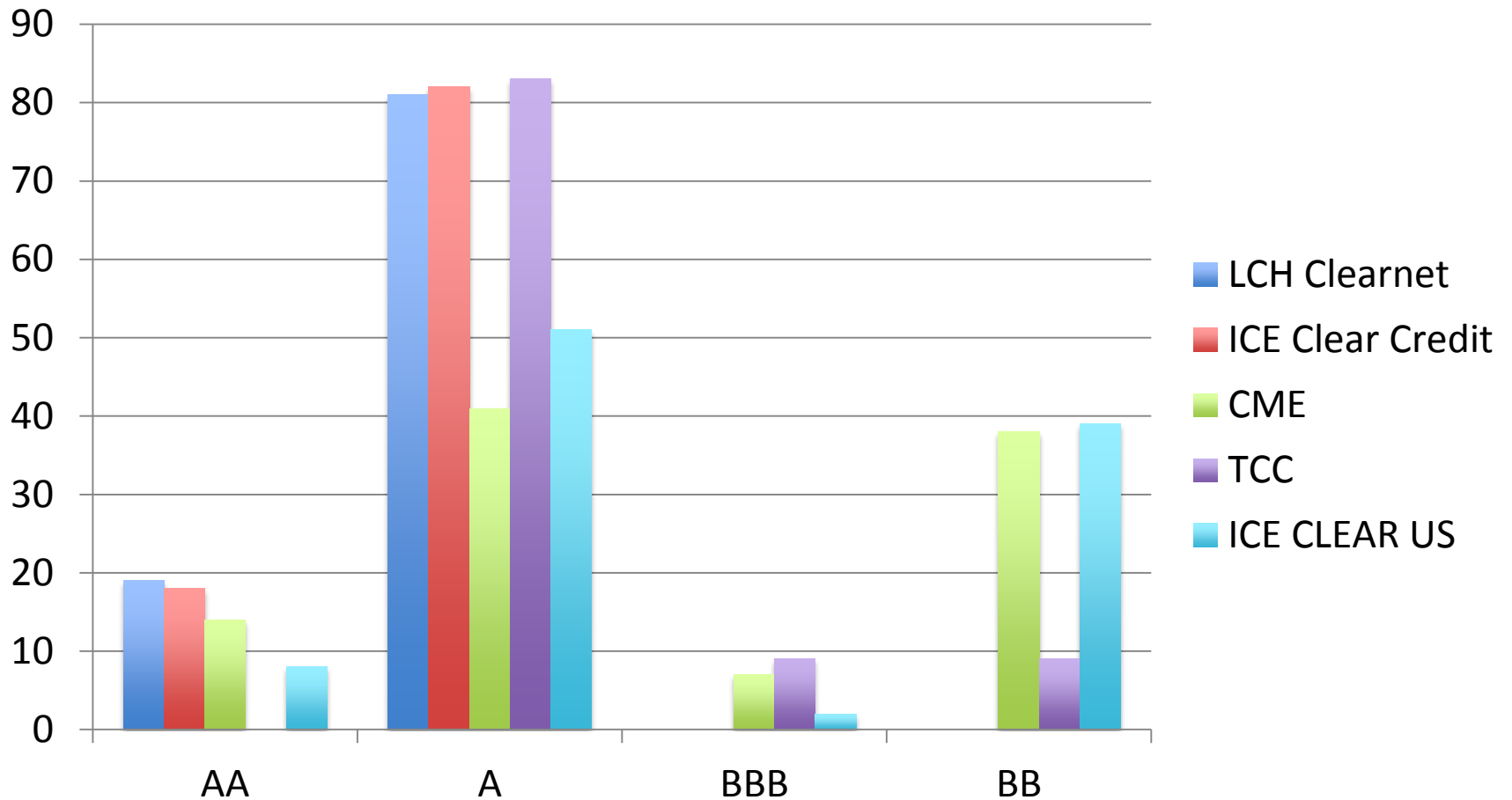
Source: Rime and Schrimpf (2014) (BIS data)

**c. Recovery and resolution of CCPs.**

# CCP Default Management Waterfall



# Distribution of clearing member ratings



Source: Armakola and Laurent (2015)



# IRS CCP pre-funded waterfall resources (billions)

	Initial Margin	Operator Capital	Default Fund
<b>CME Clearing U.S.</b>	133 USD	0.150 USD	2.37 USD
<b>LCH.Clearnet Ltd.</b>	89 EUR	0.046 EUR	3.62 EUR

Source: Armakola and Laurent (2015)

# CCP skin in the game

CCP	Guarantee Fund	Operator Capital	Skin-in-the-game
LCH Swapclear	2487 (EUR)	45 (EUR)	1.27%
ICE Clear Credit	1834 (USD)	50 (USD)	2.73%
CME futures	3338 (USD)	100 (USD)	3.00%
CME (IRS)	2473 (USD)	150(USD)	6.07%
Eurex (OTC)	3310 (EUR)	50 (EUR)	1.51%

Source: Albuquerque, Perkins, Rafi (Citibank, RISK, 2015)

Note 1: The authors' recommended SIGs are 8.1% for IRS, 11.4% for CDS.

Note 2: SGX SIG is now 25%.

# In case of insufficient CCP funds

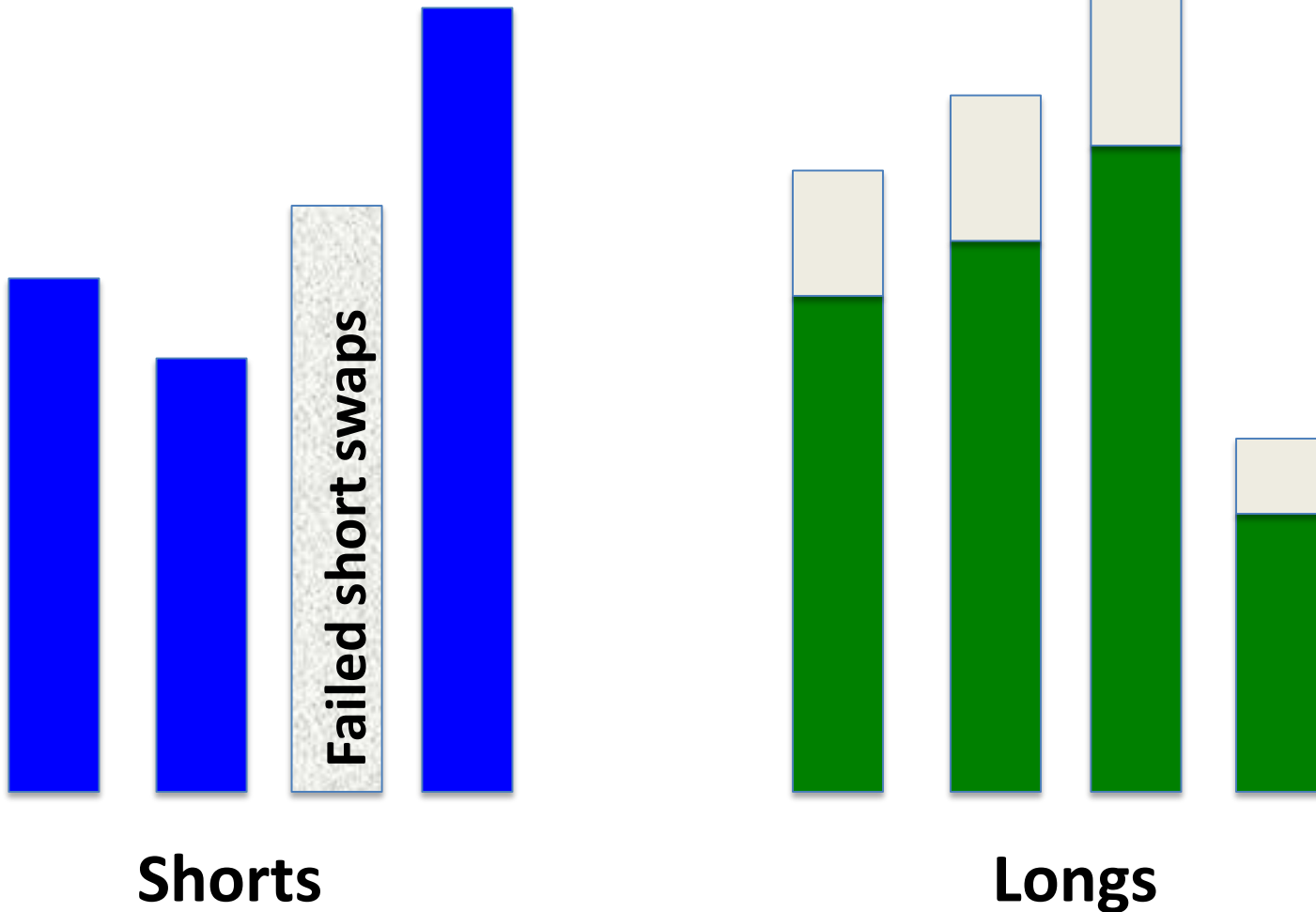
- Possible contractual haircut of variation margin payments.
- Possible contractual tear up of some or all swaps.

## END OF CONTRACTUAL DEFAULT MANAGEMENT PROCESS

- Enter CCP failure resolution process.
- Stay contractual termination of swaps.
- Allocate losses.
- Liquidate or recapitalize the CCP.

# A partial tear-Up

Partially torn up long swaps



# Key CCP failure risks

- Large default-management losses to clearing members, resulting in contagion.
- Disorderly unwind of CCPs, fire sales.
- Loss of continuity of system-critical clearing services.

# Failure resolution plan - Stage 1

- Verify the conditions for a failure resolution process.
- Consult with relevant foreign authorities.
- Stay the termination of clearing agreements (except interoperability agreements).
- If appropriate, replace senior CCP governance. Retain key personnel.
- Assess the liquidity needs of the CCP and obtain the necessary cash.
- In the event of insufficient cash, interrupt payments to clearing members.
- Enter claims on the estates of failed clearing members.

# Resolution Plan: In case of continuity

1. Clearing members and CCP replenish the guarantee fund to the extent that is systemically safe. Add new or “stored” capital.
2. Rebalance CCP positions by trade or tear-ups.
3. Re-allocate CCP equity and debt claims.
4. Resume clearing.
5. Update the CCP’s rules, clearing agreements, and risk management procedures.
6. Permit clearing member resignations after a cooling-off period.

# Resolution Plan: In case of liquidation

1. Wave regulatory clearing rules as needed.
2. Plan alternatives to the CCP in resolution.
3. Transfer needed technology to successor CCPs.
4. Tear up or novate remaining positions.
5. Evaluate claims against the assets of the CCP held by clearing members and other creditors.
6. Liquidate the CCP's remaining assets.
7. Assign the liquidated assets of the CCP to claimants.

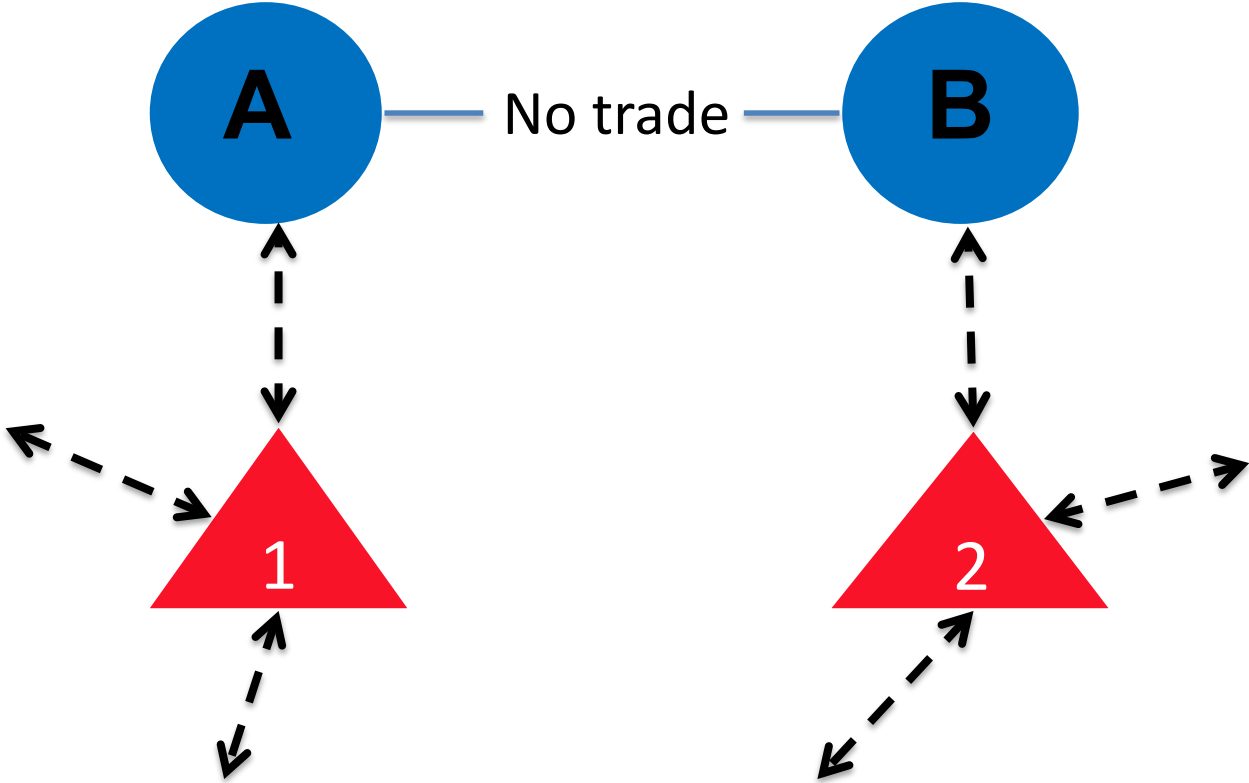


# Policy Suggestions

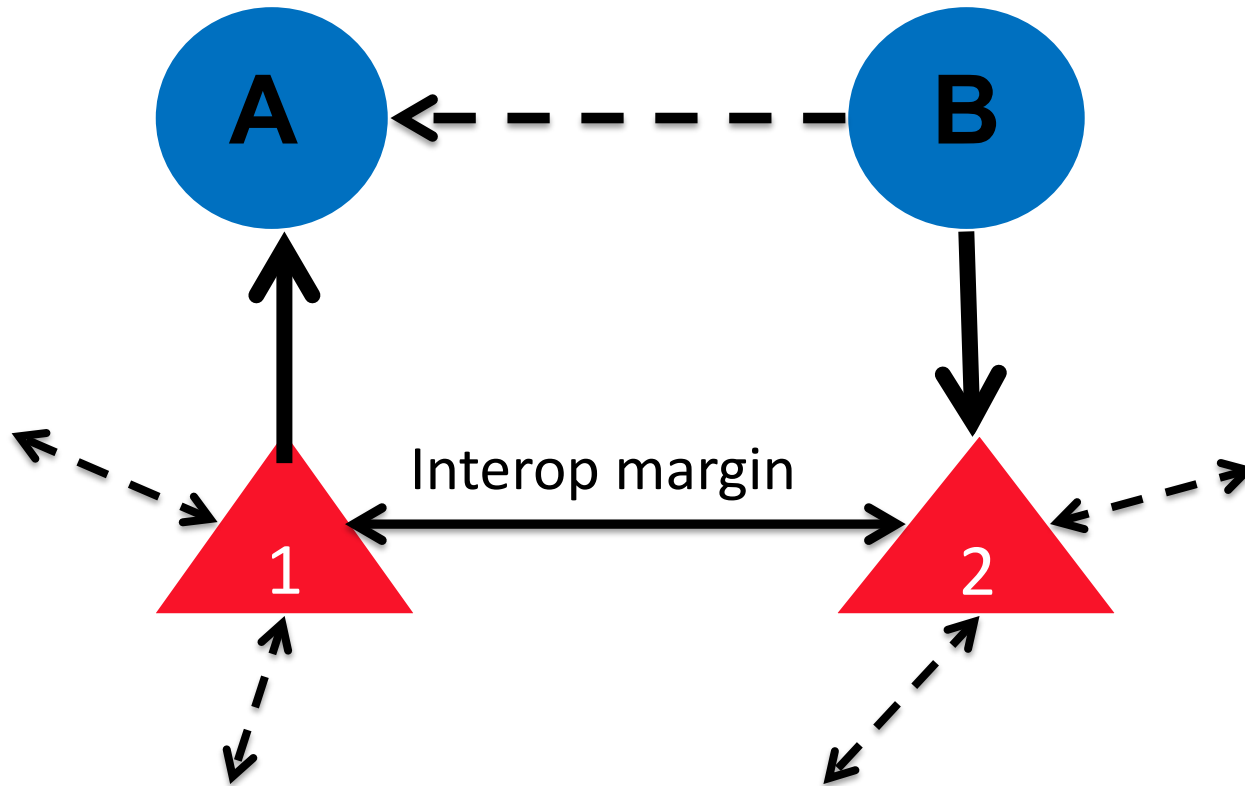
- Mandate disclosure of clearer default-management plans.
- Ensure clear regulatory authority and regulatory resolution planning, including cross-CCP failure drills.
- Conduct research on contractual (voluntary) access to initial margin at the end of the waterfall.
- Cap default guarantee fund contributions.
- Regulate CCP resignation notice periods.
- Tailor exemptions from contractual and resolution stays.
- Encourage consolidation of CCPs.
- Design better failure management auctions.
- Mandate CCPs for some FX derivatives.

**d. Supplementary issues: CCP interoperability, FX derivatives margining, CPMI FMI Principle 9, automatic stays and resolution protocols.**

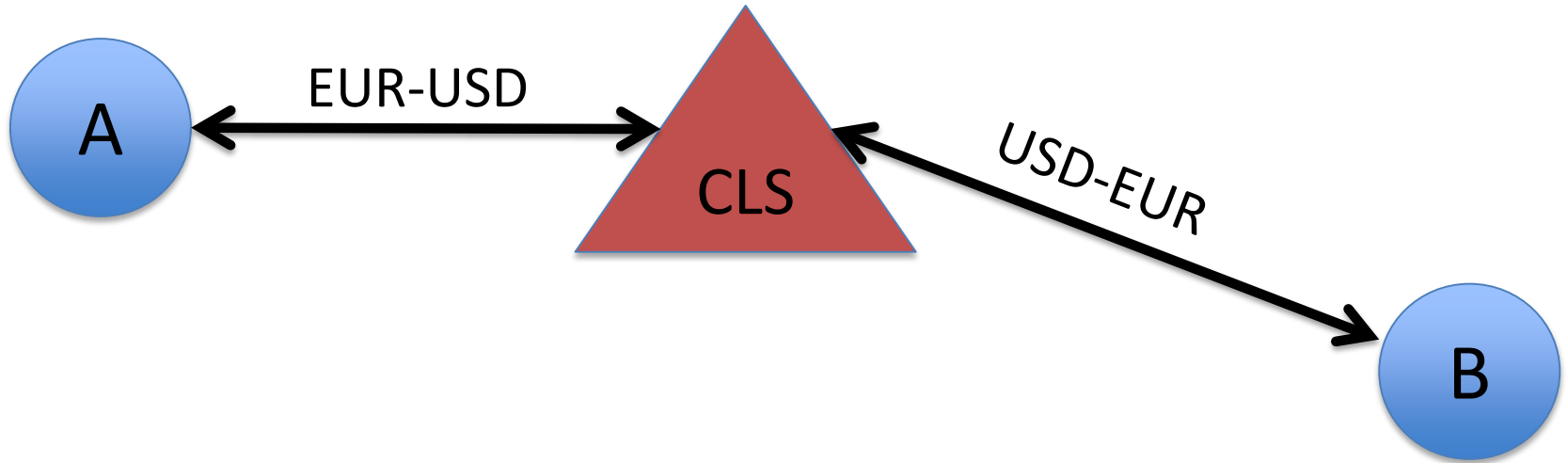
# Without CCP Interoperability



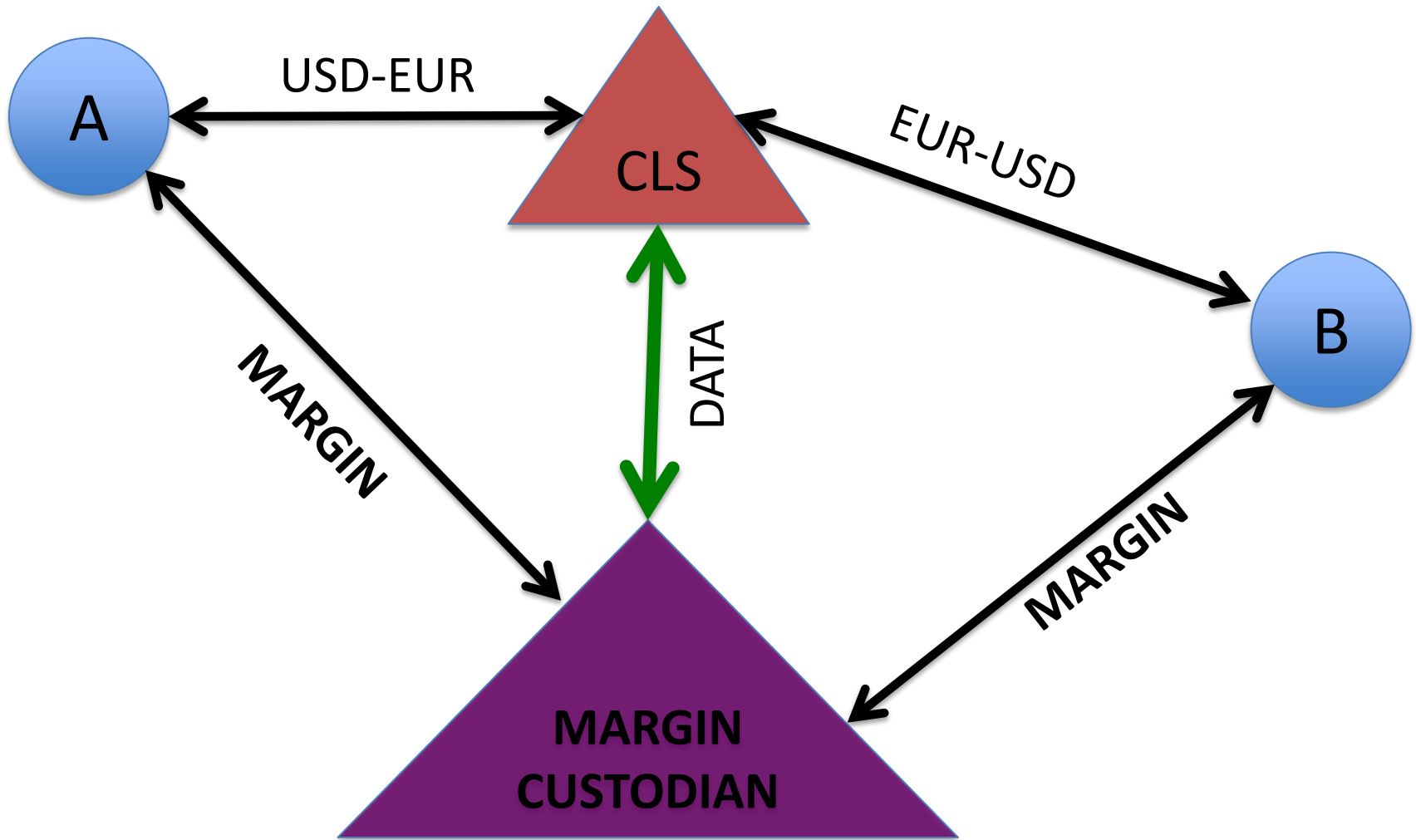
# CCP Interoperability



# Uncleared Foreign Exchange Derivatives



# Margining of FX Derivatives

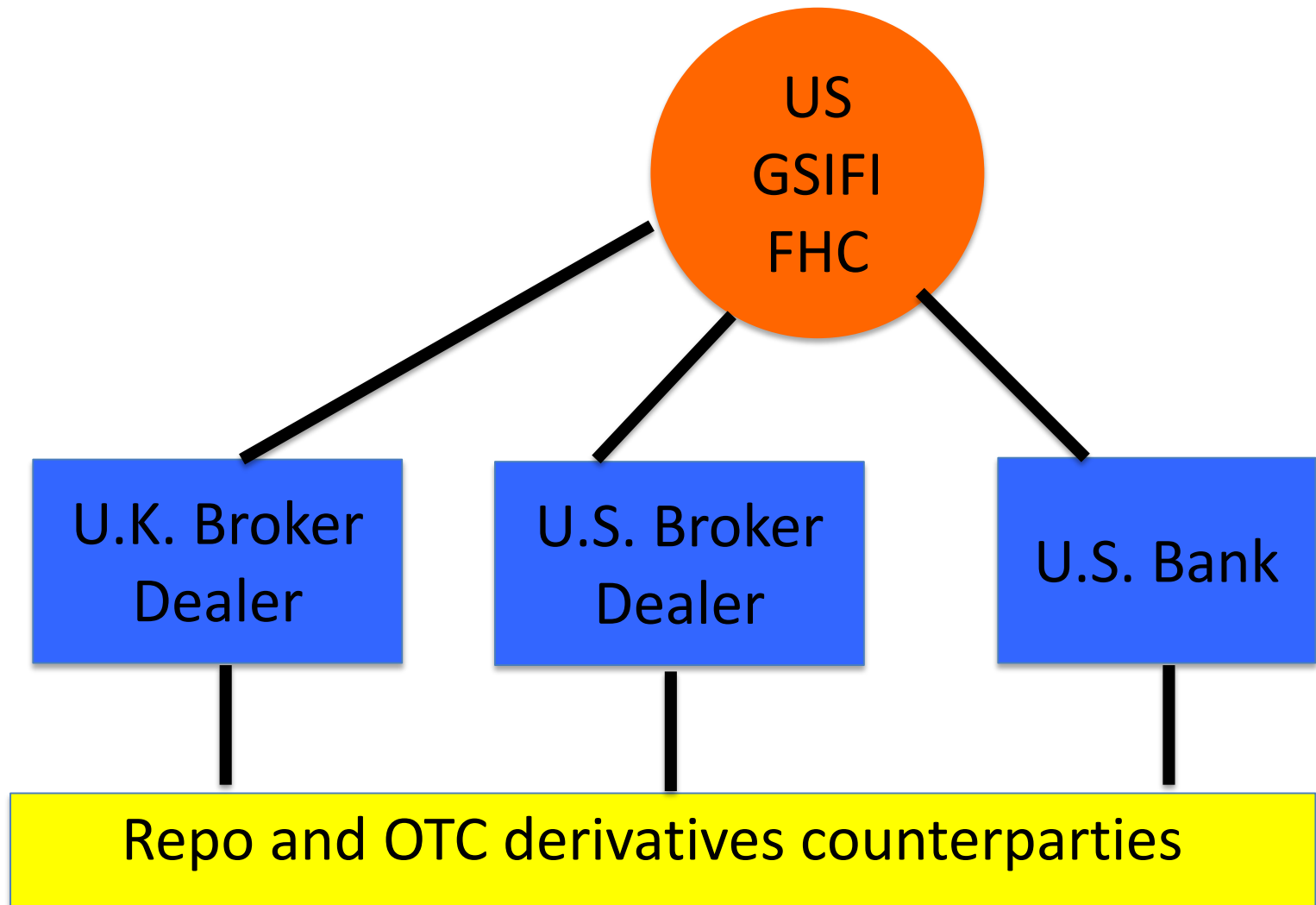


## CPMI FMI Principle 9

***“An FMI should conduct its money settlements in central-bank money where practical and available.***

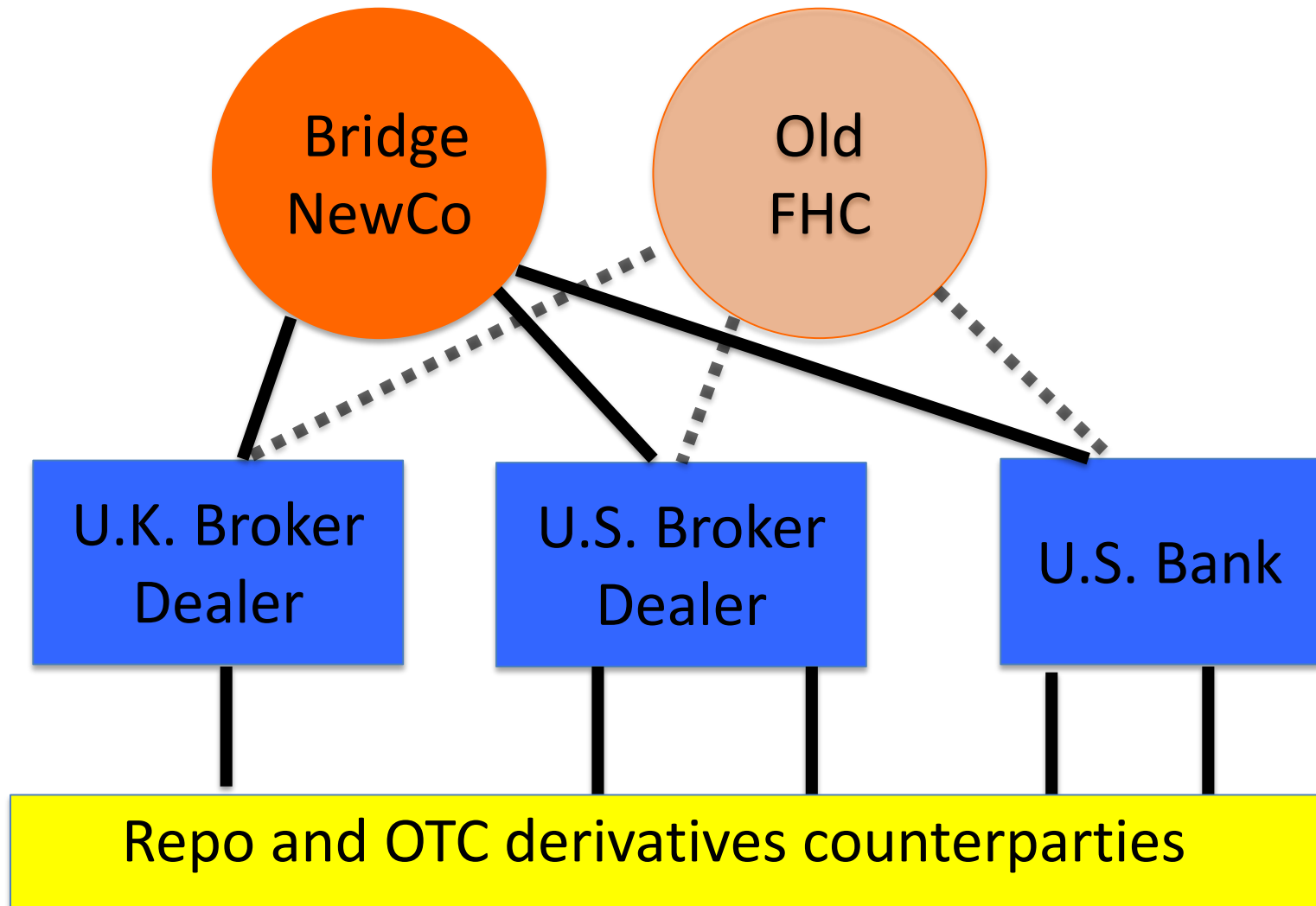
***If central bank money is not used, an FMI should minimize and strictly control the credit and liquidity risk arising from the use of commercial bank money.”***

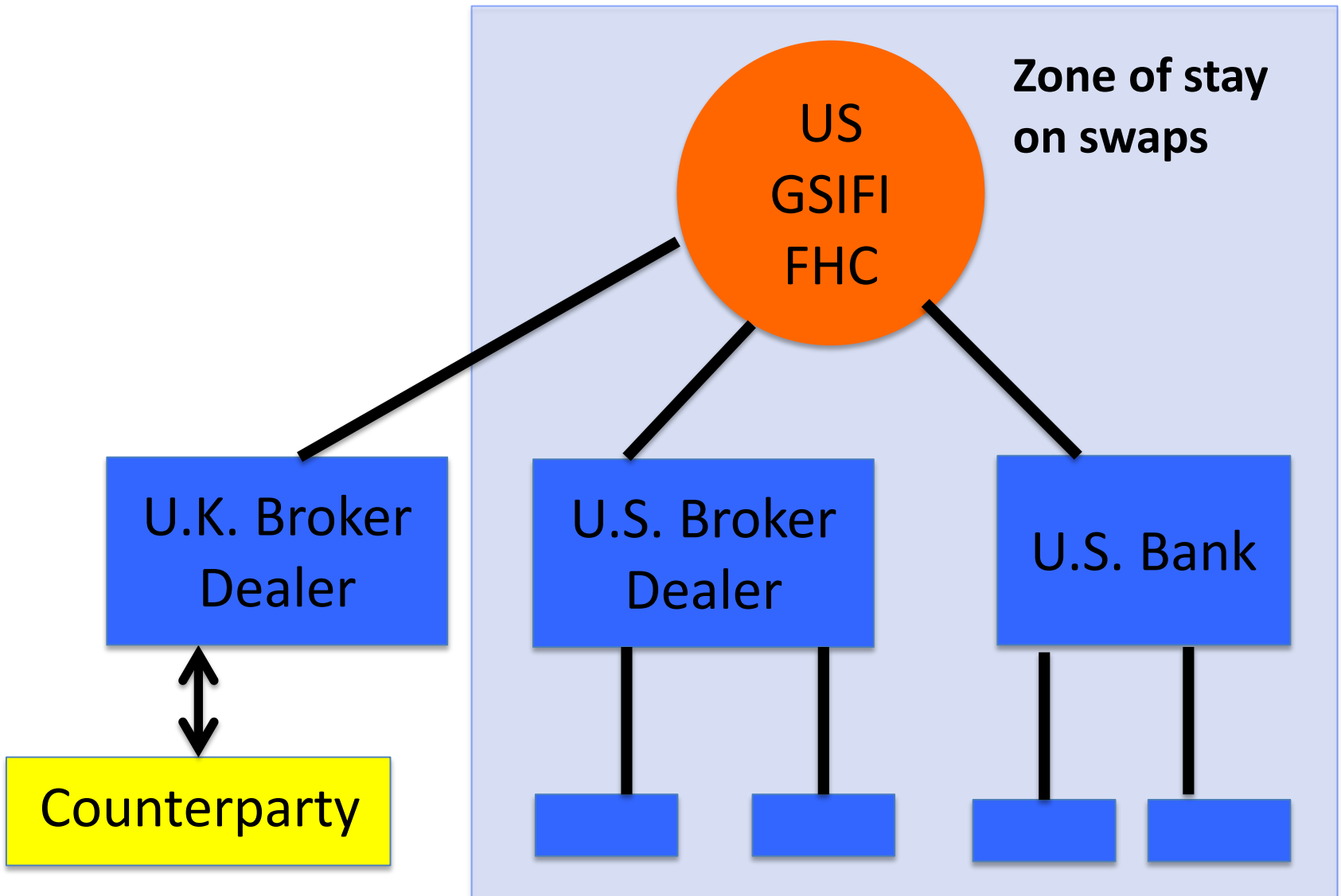
“One way an FMI could minimize these risks is to limit its activities and operations to clearing and settlement and closely related processes.” (CHIPS)





# Single Point of Entry Failure Resolution

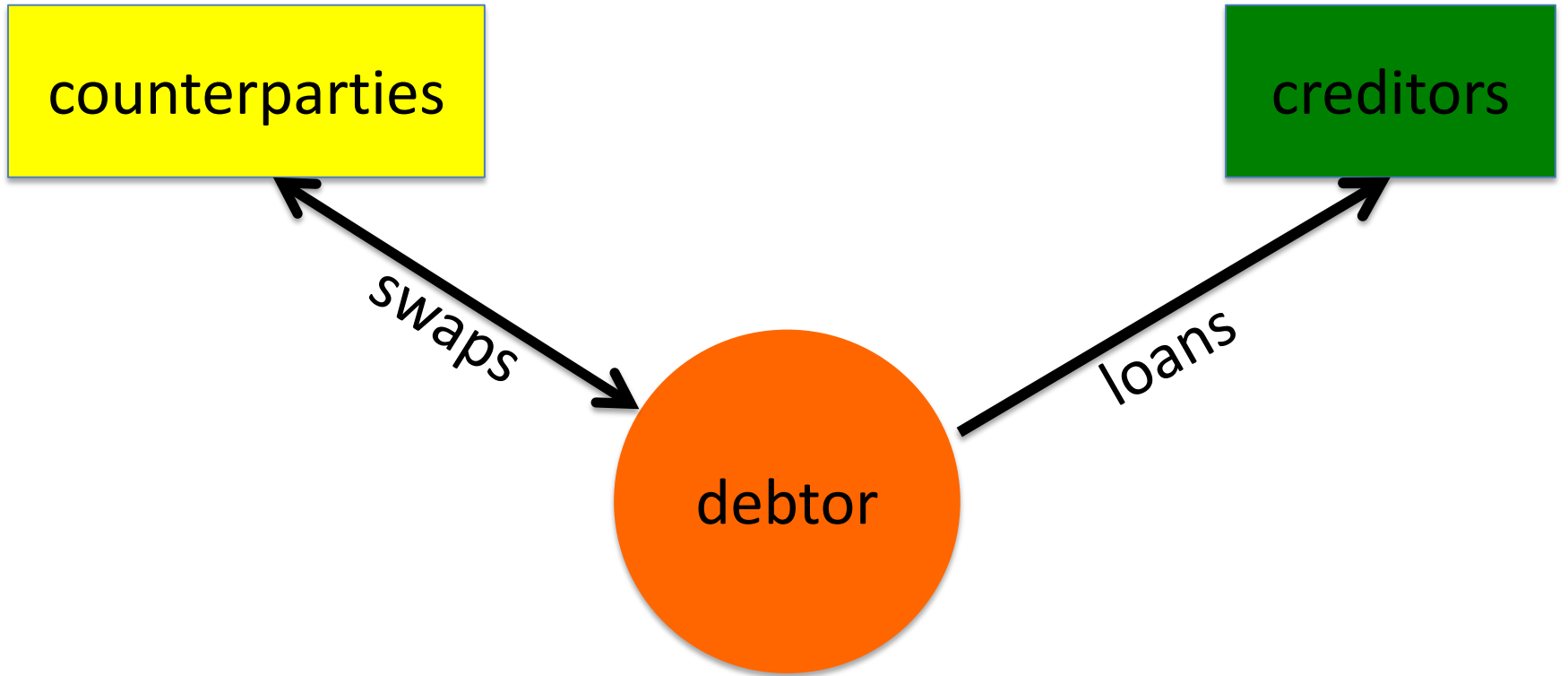




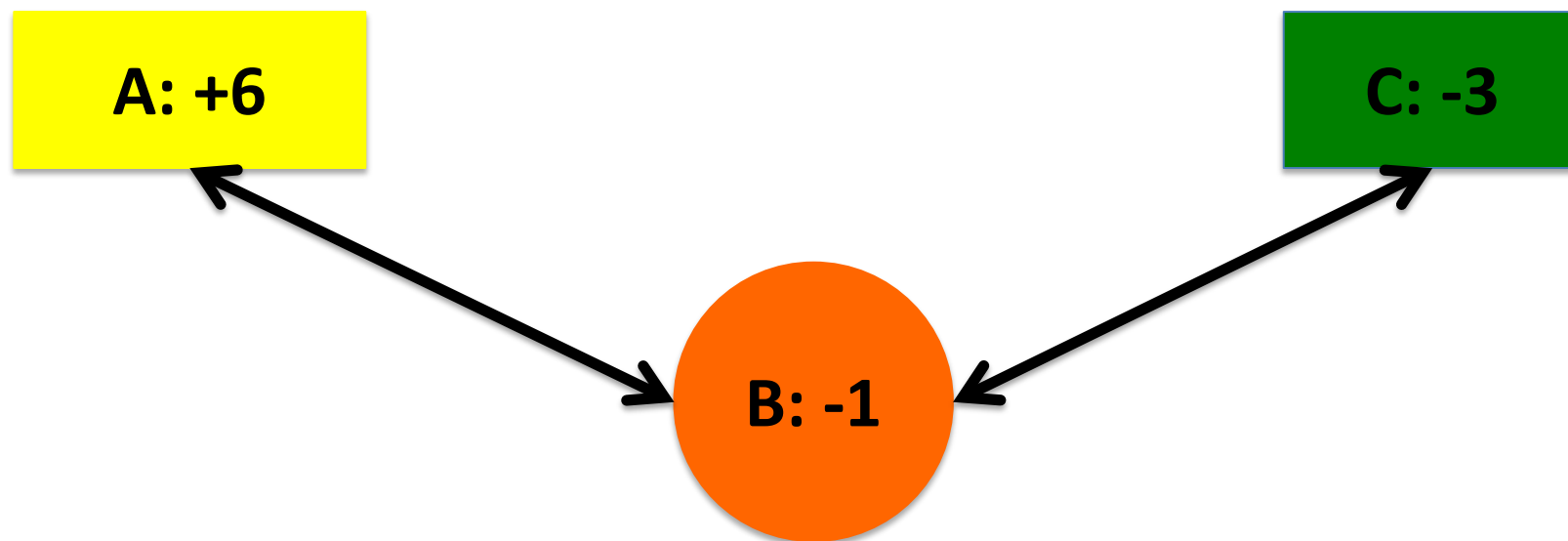
# ISDA Protocol for Resolution Stay

“We believe it is essential for ... ISDA documentation to provide for a short-term suspension of early termination rights on the basis of the commencement of an insolvency or resolution proceeding .... Such a provision would allow ... the exercise of all applicable types of resolution powers.”

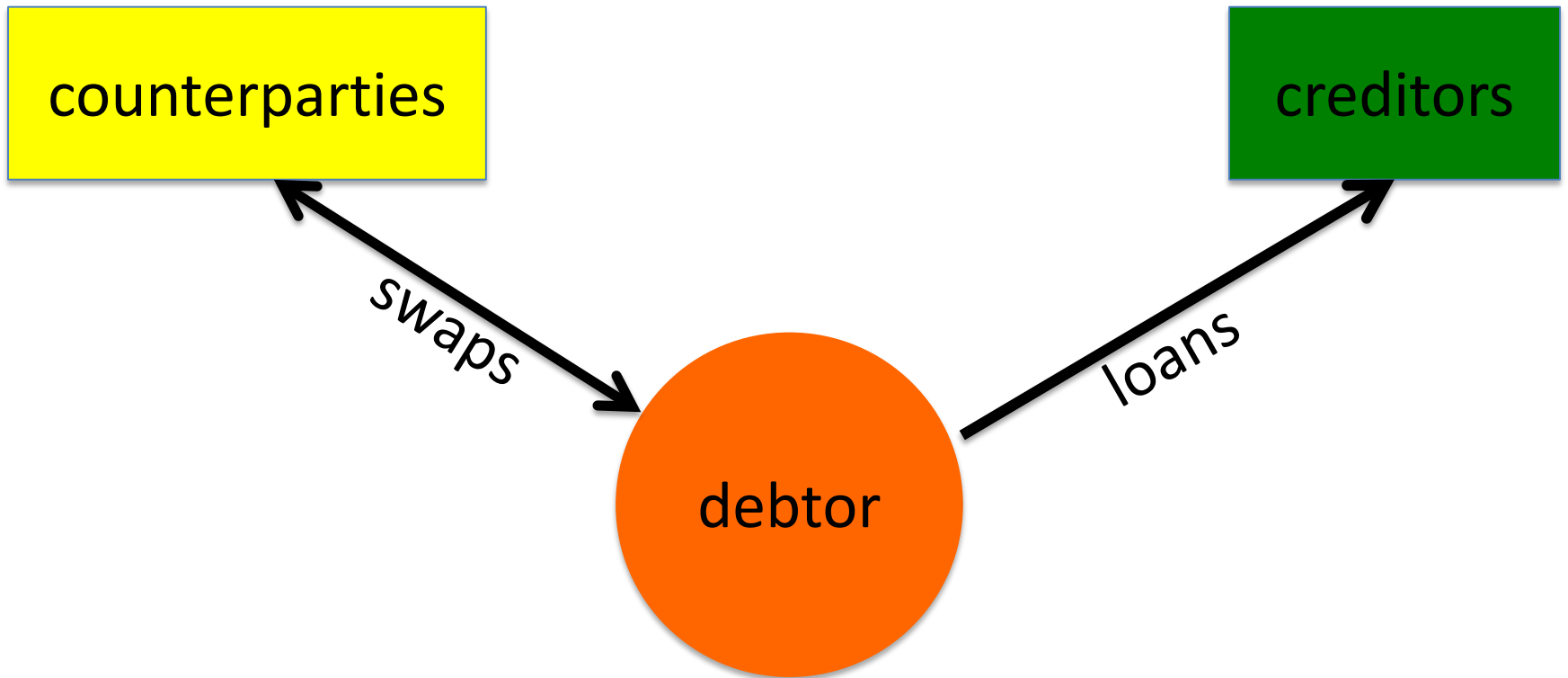
*Letter from FSB, FDIC, BaFin, and Swiss FMSA  
to ISDA’s Chairman.      November, 2013.*



Would a change in contractual termination rights that increases aggregate benefits actually be negotiated?

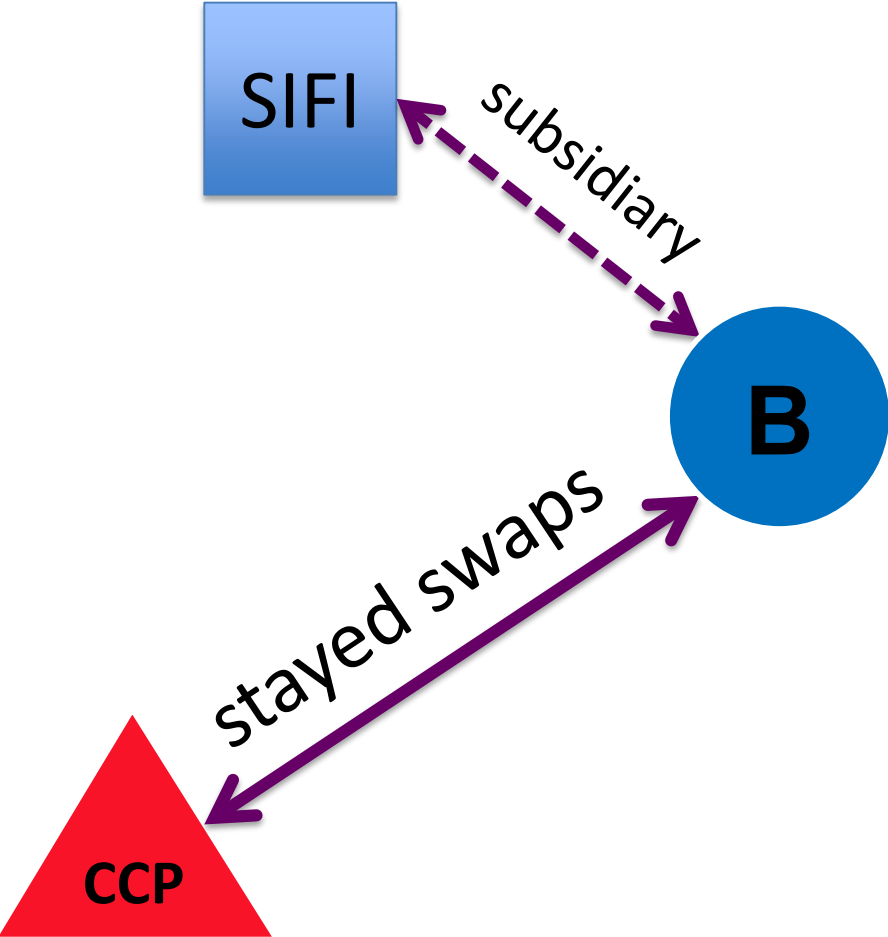


Conditions for the social efficiency of bilateral contracting in network markets: Duffie and Wang (2014).



other market participants subject to spillover costs such as fire-sale risk

# At The Failure Resolution of A Systemic Firm



## **e. Additional reading and sources**



# Additional reading and sources

Acharya, Viral, and Sabri Oncu. 2013. “A Proposal for the Resolution of Systemically Important Assets and Liabilities: The Case of the Repo Market,” *International Journal of Central Banking*, January, 2013.

<http://www.ijcb.org/journal/ijcb13q0a14.pdf>

Albuquerque, Vijay, Chris Perkins, and Mariam Rafi. 2015. “CCPs Need Thicker Skins – Citi Analysis,” Risk.net August 2015.

Armakola, Angela, and Jean-Paul Laurent. 2015. “CCP Resilience and Clearing Membership,” Working paper. PRISM, Université de Paris 1, Panthéon-Sorbonne.

Bank of England. 2014. “The Bank of England’s Sterling Monetary Framework,” Bank of England, November. <http://www.bankofengland.co.uk/markets/Documents/money/publications/redbook.pdf>

Blackrock. 2014. “Central Clearing Counterparties and Too Big to Fail,” BlackRock Viewpoint, April.

CDS Default Management Working Group. 2011. “Principles and Best Practices for Managing a Defaulting Clearing Member’s Remaining Portfolio and Shortfall in Available Funds,” January.

DTCC. 2015. “CCP Resilience and Resources – A White Paper to the Industry,” DTCC, June 2015.

# Additional sources, continued

The Clearinghouse. 2012. "Central Counterparties: Recommendations to Promote Financial Stability and Resilience," December, <http://www.theclearinghouse.org/index.html?f=074643>

Committee on Payment and Settlement Systems, Board of the International Organization of Securities Commissions. 2012a. "Principles For Financial Market Infrastructure," Bank for International Settlements, April, <http://www.bis.org/cpmi/publ/d101a.pdf>.

Committee on Payment and Settlement Systems, Board of the International Organization of Securities Commissions. 2012b. "Recovery and Resolution of Financial Market Infrastructures," consultative report, July, <http://www.bis.org/publ/cpss103.pdf>; comments, <http://www.bis.org/publ/cpss103/comments.htm>.

Committee on Payment and Settlement Systems, Board of the International Organization of Securities Commissions, "Recovery of Financial Market Infrastructures," Consultative Report, August, 2013.

Committee on Payment and Settlement Systems, Board of the International Organization of Securities Commissions. 2014. "Recovery of Financial Market Infrastructures," consultative report, October.

# Additional sources, continued

Dembo, Amir, Jean-Dominique Deuschel, and Darrell Duffie. 2004. "Large Portfolio Losses," *Finance and Stochastics*, Volume 8, pp. 3-16.

[Duffie, Darrell, "Systemic Risk Exposures: A 10-by-10-by-10 Approach," in \*Systemic Risk and Macro Modeling\*, Markus K. Brunnermeier and Arvind Krishnamurthy, editors, University of Chicago Press, 2015.](#)

[Duffie, Darrell. 2014. \*Resolution of Failing Central Counterparties\*, " Working Paper, Graduate School of Business, Stanford University, December, 2014.](#)

Duffie, Darrell, and David A. Skeel. 2012 "[A Dialogue on the Costs and Benefits of Automatic Stays for Derivatives and Repurchase Agreements](#)," in *Bankruptcy Not Bailout: A Special Chapter 14*, ed. K. E. Scott and J. B. Taylor. Stanford, CA: Hoover Press.

Duffie, Darrell, and Chaojun Wang, "Efficient Contracting in Network Markets," Working paper, Stanford University, 2015.

Duffie, Darrell. 2014. "Financial Market Infrastructure: Too Important to Fail," in *The U.S. Financial System – Five Years After the Crisis*, edited by Martin Bailey and John Taylor, Hoover Institution and Brookings Institute, 2014. <http://darrellduffie.com/uploads/policy/DuffieTooImportantToFail2014.pdf>

[Duffie, Darrell, and Haoxiang Zhu. 2011. "Does a Central Clearing Counterparty Reduce Counterparty Risk?" \(with Haoxiang Zhu\), \*Review of Asset Pricing Studies\* 2011, Volume 1: 74-95.](#)

# Additional sources, continued

Elliott, David. 2013. "Central Counterparty Loss-Allocation Rules." Bank of England, Financial Stability Paper 20, April, [http://www.bankofengland.co.uk/research/Documents/fspapers/fs\\_paper20.pdf](http://www.bankofengland.co.uk/research/Documents/fspapers/fs_paper20.pdf)

European Commission. 2012. "Consultation on a Possible Recovery and Resolution Framework for Financial Institutions other Than Banks," Directorate General, Internal Markets and Services.

European Securities and Markets Authority. 2012. "Draft technical Standards under the Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC Derivatives, CCPs and Trade Repositories, Final Report," September, [http://www.esma.europa.eu/system/files/2012-600\\_0.pdf](http://www.esma.europa.eu/system/files/2012-600_0.pdf)

European Union. 2012. "Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC Derivatives, Central Counterparties and Trade Repositories," Official Journal of the European Union, June 12, <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:201:0001:0059:EN:PDF>

European Union. 2014. "Directive 2014/59/EU of The European Parliament and of the Council of 15 May 2014, Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms," Official Journal of the European Union, June 12, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L .2014.173.01.0190.01.ENG>

Financial Stability Board. 2013. "Application of the Key Attributes of Effective Resolution Regimes to Non-Bank Financial Institutions," Consultative Document, Financial Stability Board, August 2013.

Financial Stability Board. 2014. "Key Attributes of Effective Resolution Regimes for Financial Institutions," Basel, October 15.

Gregory, Jon. 2015. "Formalising CCP Risk." Note. June 15, 2015.

# Additional sources, continued

H.M. Treasury. 2014. "Secondary Legislation for Non-Bank Resolution Regimes," consultation outcome, June. <https://www.gov.uk/government/consultations/secondary-legislation-for-non-bank-resolution-regimes/secondary-legislation-for-non-bank-resolution-regimes>.

ISDA. 2013. "CCP Loss Allocation at the End of the Waterfall," August, 2013.

ISDA. 2014. "Resolution Stay Protocol," November, <http://assets.isda.org/media/f253b540-25/958e4aed.pdf>

ISDA. 2014. "Principles for CCP Recovery," Position paper, ISDA, November, 2014.

ISDA. 2015, "CCP Default Management, Recovery and Continuity: A Proposed Recovery Framework," Position paper, ISDA, January, 2015.

J.P. Morgan Chase & Company. 2014. "What is the Resolution Plan for CCPs?" Office of Regulatory Affairs, September.

Morrison, Edward, Mark Roe and Christopher Sontchi. 2014. "Rolling Back the Repo Safe Harbors," *Business Lawyer*, [http://www.newyorkfed.org/research/conference/2014/wholesalefunding/RollingBacktheRepoSafeHarbors\\_Roe.pdf](http://www.newyorkfed.org/research/conference/2014/wholesalefunding/RollingBacktheRepoSafeHarbors_Roe.pdf)

SIFMA. Standard Master Repo Agreement <http://www.sifma.org/services/standard-forms-and-documentation/mra,-gmra,-msla-and-msftas/>