

# Achieving Financial Stability: Challenges to Prudential Regulation

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## Market Infrastructures, Central Clearing and Collateral Management

2016 International Banking Conference  
Federal Reserve Bank of Chicago and European Central Bank

Robert S. Steigerwald  
Federal Reserve Bank of Chicago

4 November 2016

The statements and opinions expressed herein are solely those of the author and not necessarily those of the Federal Reserve Bank of Chicago or the Board of Governors of the Federal Reserve System.

- **Financial Market Infrastructures – Background**
  - Payment systems
  - Trade execution systems
  - ***Post-trade clearing and settlement systems***
    - Securities depositories (CSDs and ICSDs) and other securities settlement systems
    - ***Central counterparty clearing (CCPs)***
    - Multilateral trade compression systems (?)
  - Trade repositories (TRs)

## Market Infrastructures, Central Clearing and Collateral Management

- Financial Market Infrastructures – Central Counterparty (CCP) Clearing



Chicago

New York



CME

London

Zurich



Shanghai

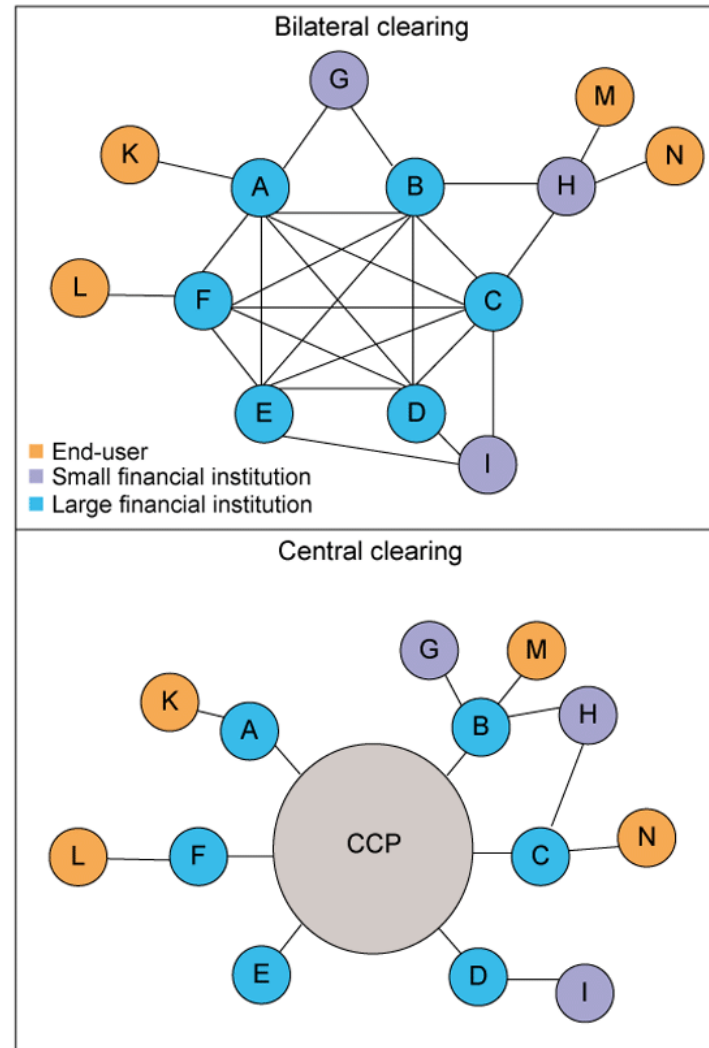
Tokyo

Hong Kong

Singapore

# Market Infrastructures, Central Clearing and Collateral Management

## OTC Derivatives Counterparty Relationships



Source: Reserve Bank of Australia, *Central Clearing of OTC Derivatives in Australia* (2011)

# Market Infrastructures, Central Clearing and Collateral Management

## Credit Default Swaps – Counterparty Relationships

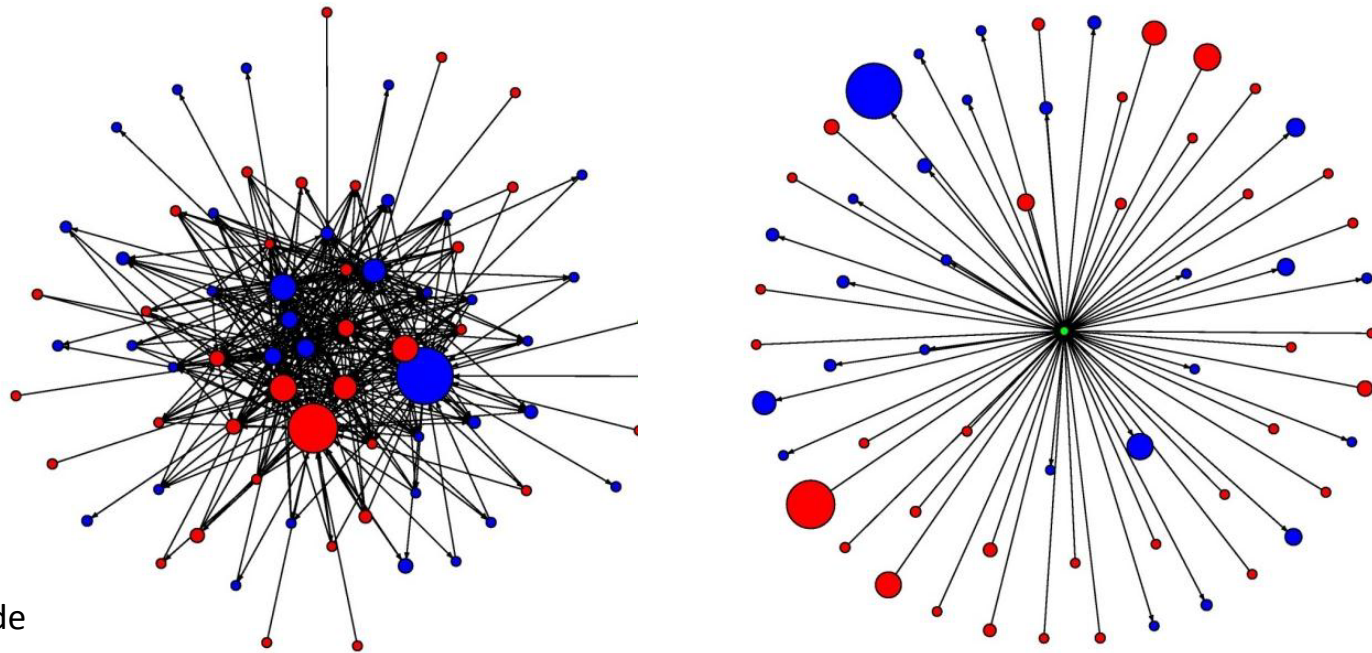
Bilateral (Left) and Centrally Cleared (Right)

### Key

**Red** – protection sellers

**Blue** – protection buyers

Size of node indicates magnitude of open positions

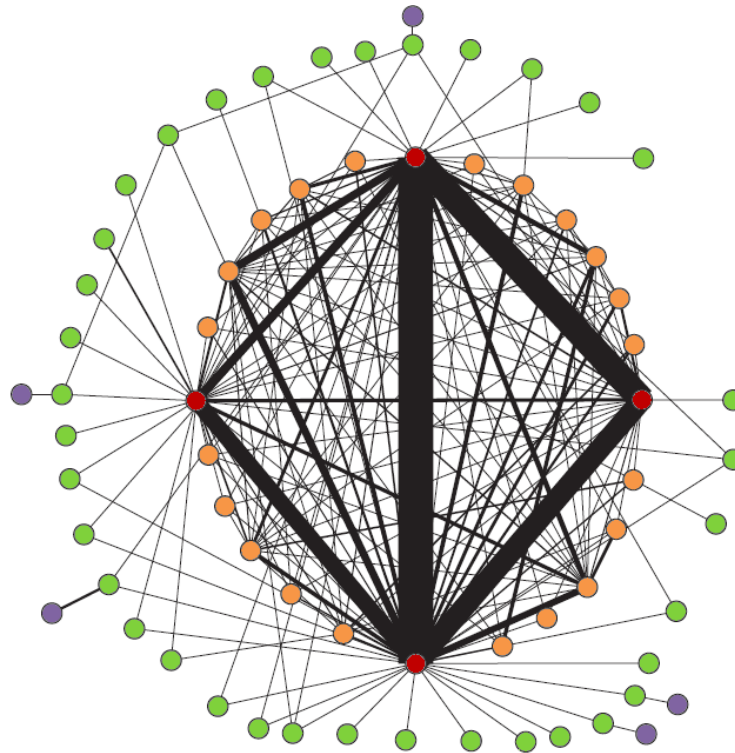


Source: Yellen (2013)

# Market Infrastructures, Central Clearing and Collateral Management

## Federal Reserve – Fedwire Funds Transfer System

(66 banks representing 75% of value transfers, 25 banks “completely connected”)



Source: Soramäki, Bech, Arnold, Glass & Beyeler (2007)

# Market Infrastructures, Central Clearing and Collateral Management

## Bank of Korea – BoK-Wire+ Funds Transfer System

### Key

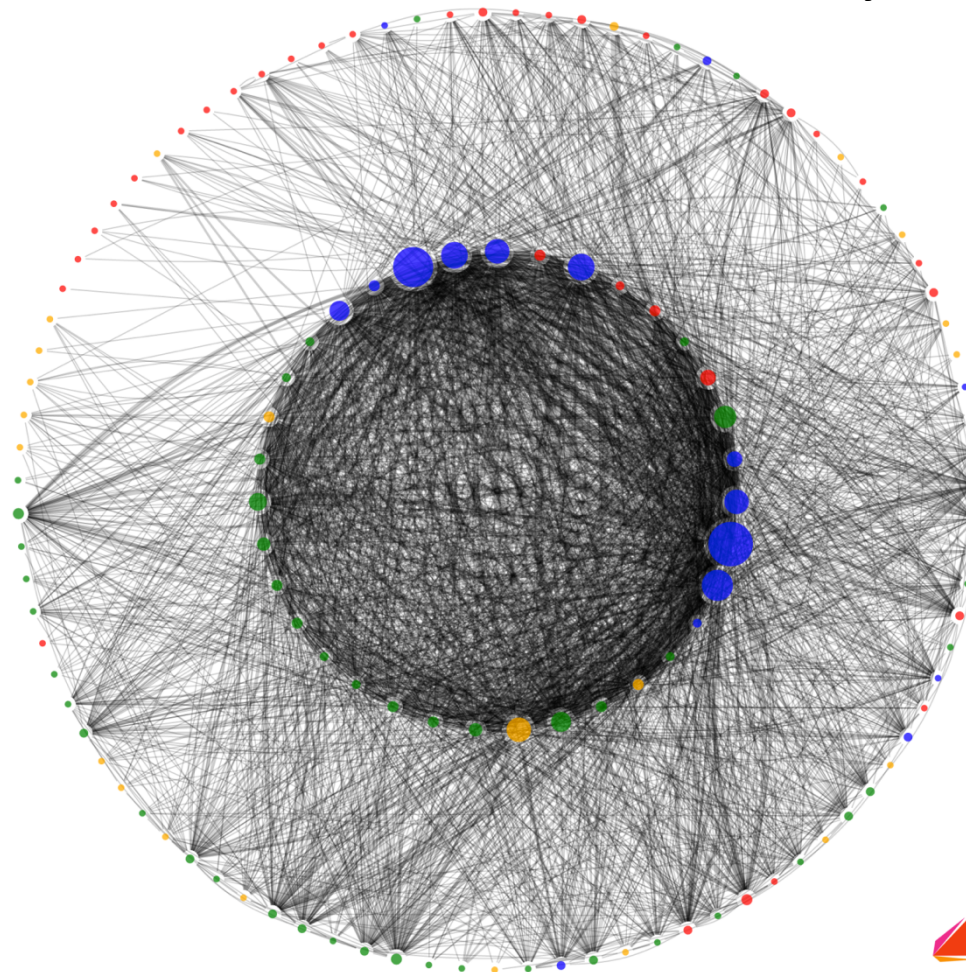
**Blue** – domestic banks

**Red** – foreign banks

**Green** – non-bank financial intermediaries

**Orange** – other financial institutions

Size of node indicates importance of system participants, based on SinkRank methodology



Sources: Financial Network Analytics (FNA) and Baek, Soramäki & Yoon (2014)

# Market Infrastructures, Central Clearing and Collateral Management

Chart 1: Global Financial Network: 1985

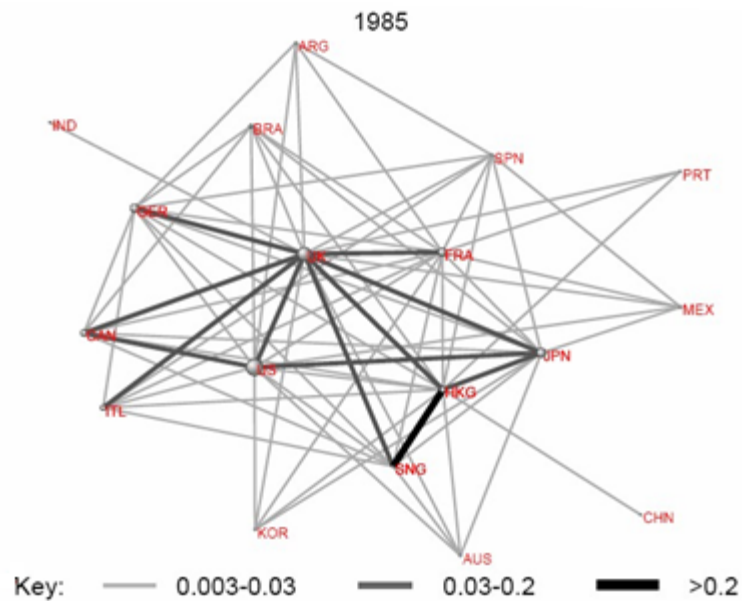
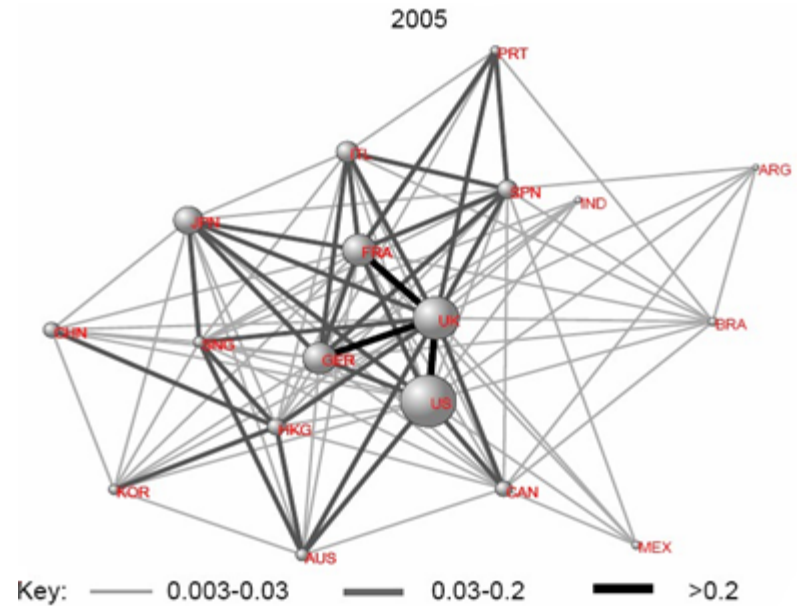


Chart 3: Global Financial Network: 2005

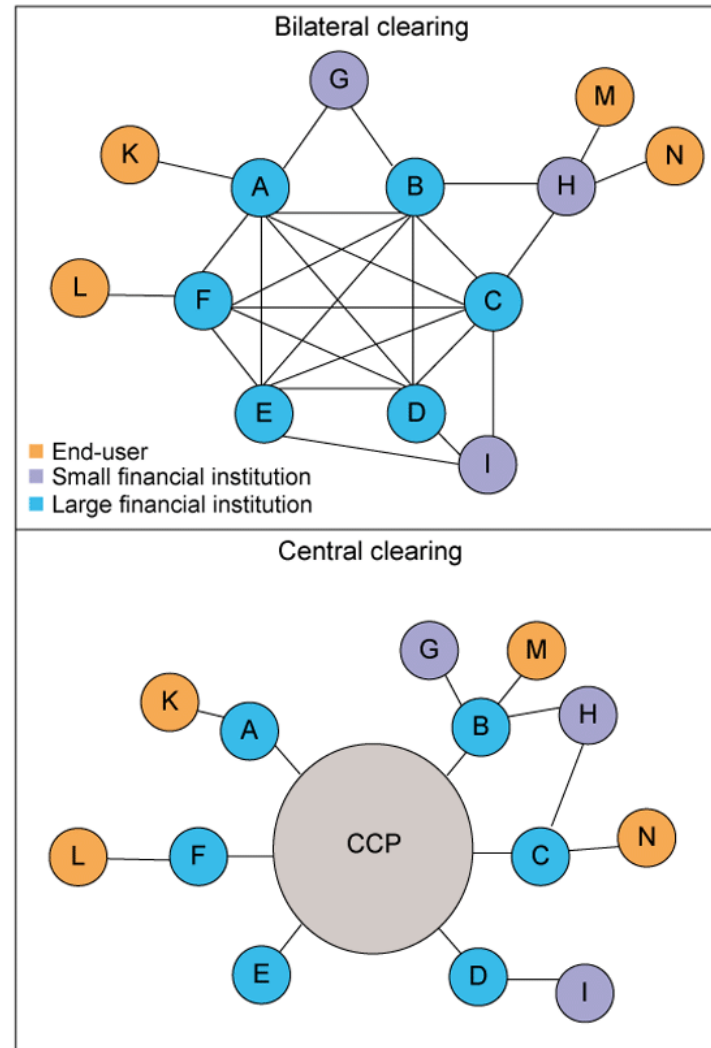


Source: Haldane (2009)



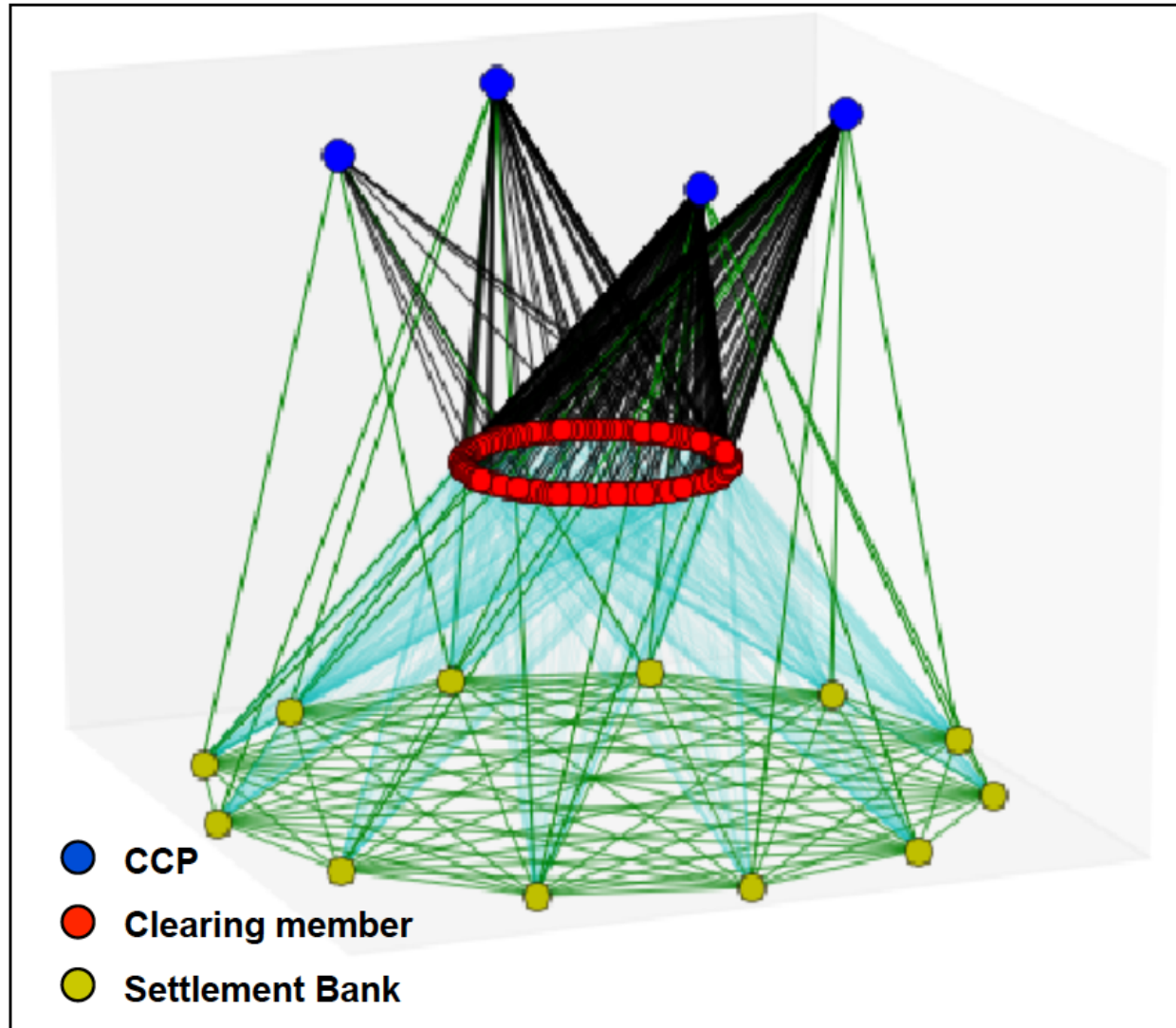
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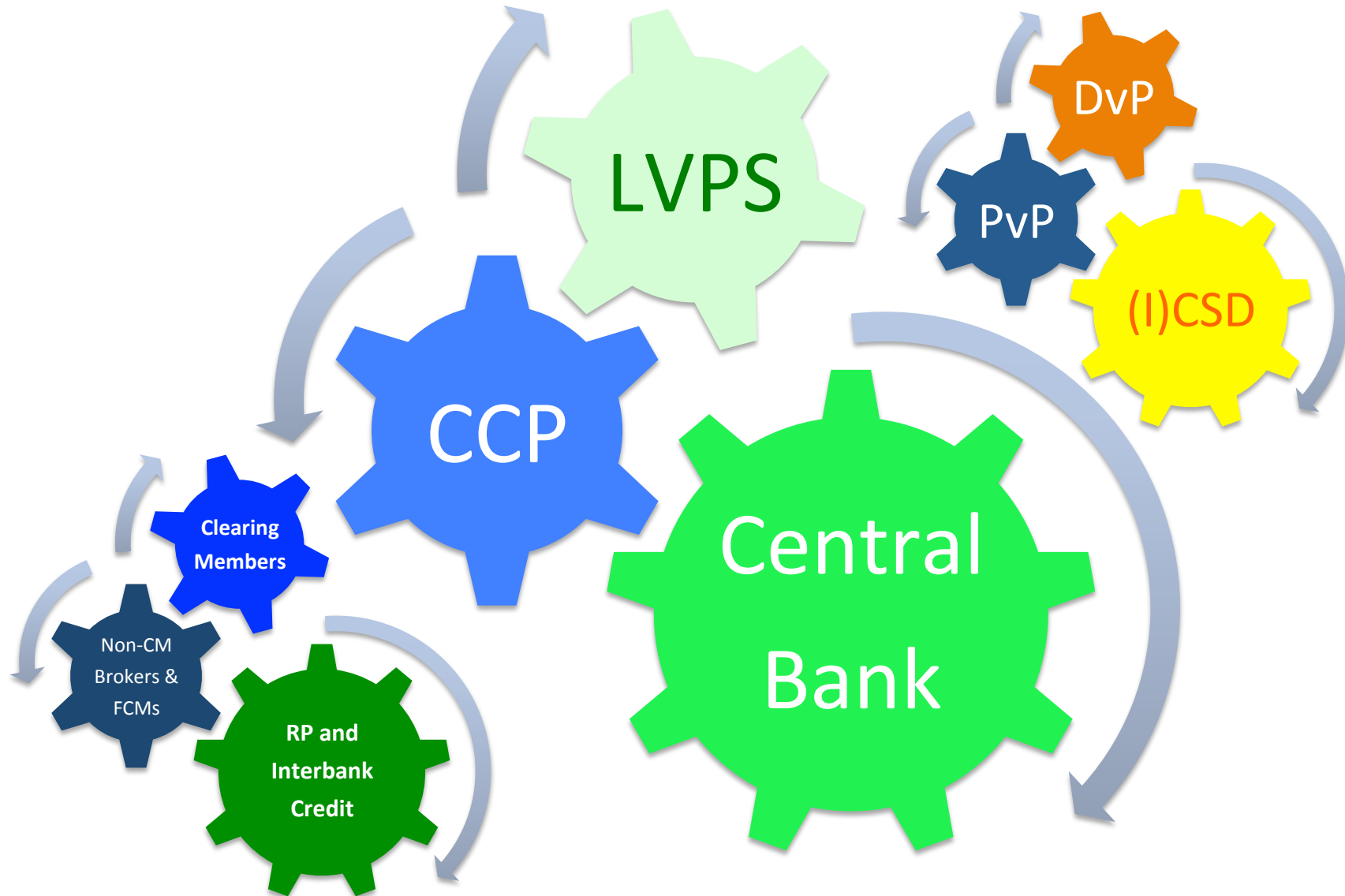
Source: Reserve Bank of Australia, *Central Clearing of OTC Derivatives in Australia* (2011)

# Market Infrastructures, Central Clearing and Collateral Management



Source: Ruffini, et al. (work in progress)

# Market Infrastructures, Central Clearing and Collateral Management



## Market Infrastructures, Central Clearing and Collateral Management

1. **CCPs are “commitment mechanisms” that assure contract performance (CCPs are not banks)**

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- 2. Counterparty substitution (novation) matters**

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- 3. Risk management and policy implications – CCP capital, other financial resources, stress testing, etc.**

## Market Infrastructures, Central Clearing and Collateral Management

### 1. CCPs are “commitment mechanisms” that assure contract performance (CCPs are not banks)

*“[T]rust [in counterparty performance] must be supported by formal, institutionalized safeguards.”*

Edward J. Green, Clearing and Settling Financial Transactions Circa 2000, in Anthony M. Santomero, Staffan Viotti & Anders Vredin (eds.), *Challenges for Central Banking* (2001)

## Market Infrastructures, Central Clearing and Collateral Management

### 1. CCPs are “commitment mechanisms” that assure contract performance (CCPs are not banks)

“In the context of financial transactions, the *convenience, safety and trust* required for national and global markets to function are largely provided by *clearing and settlement arrangements*.”

Edward J. Green, Clearing and Settling Financial Transactions Circa 2000, in Anthony M. Santomero, Staffan Viotti & Anders Vredin (eds.), *Challenges for Central Banking* (2001)



### 1. CCPs are “commitment mechanisms” that assure contract performance (CCPs are not banks)

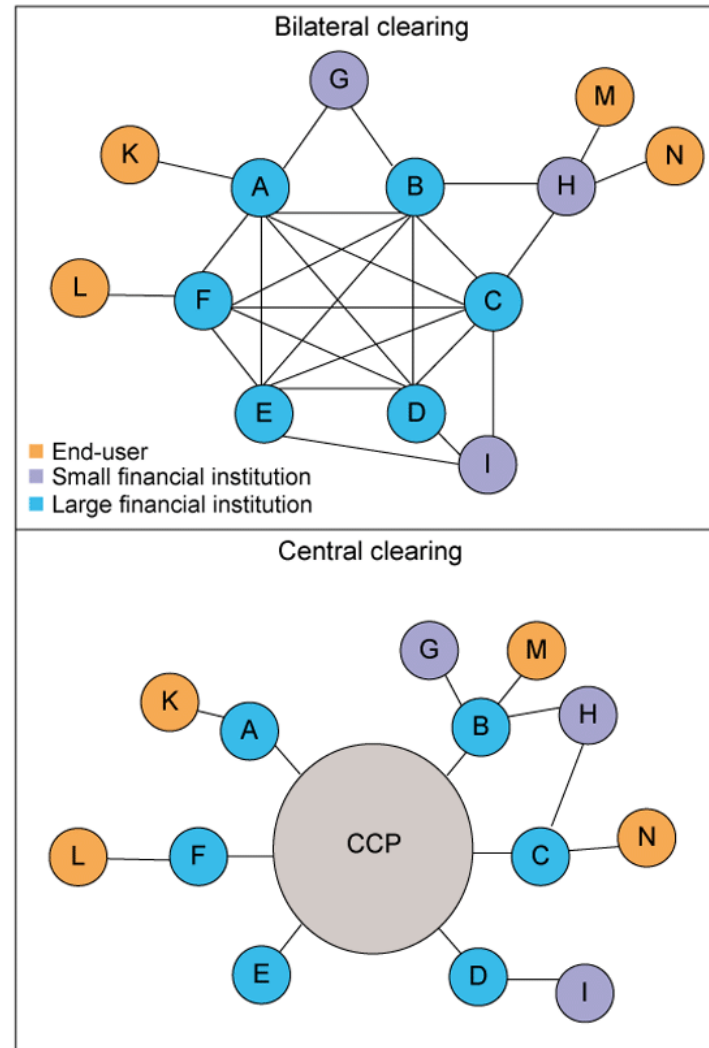
- Origins in 19<sup>th</sup> century bank (payments) clearinghouses
- Based on “*club*” *structure governed by rules*, rather than law, to collectively manage specific risks
- Evolution distinct from the rest of the financial system
- Key role of *loss mutualization*

### 2. Counterparty substitution (novation) matters

- Upon acceptance of a trade, a CCP becomes a ***substituted principal*** to each of the original counterparties
- The legal rights and obligations between the original counterparties are ***terminated***
- CCPs are ***not*** mere “clearing agents,” “backstops,” or facilitation mechanisms
- The challenge of the ***“persistence of the bilateral”***
  - “The only parties left are those who are left”

# Market Infrastructures, Central Clearing and Collateral Management

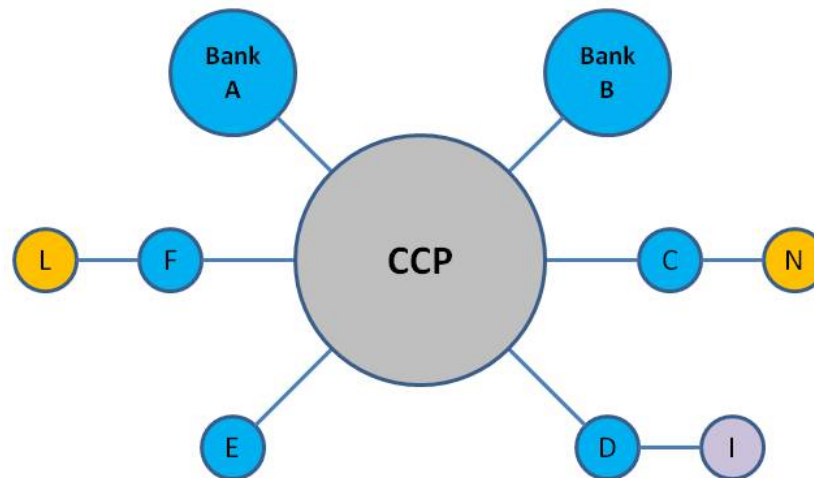
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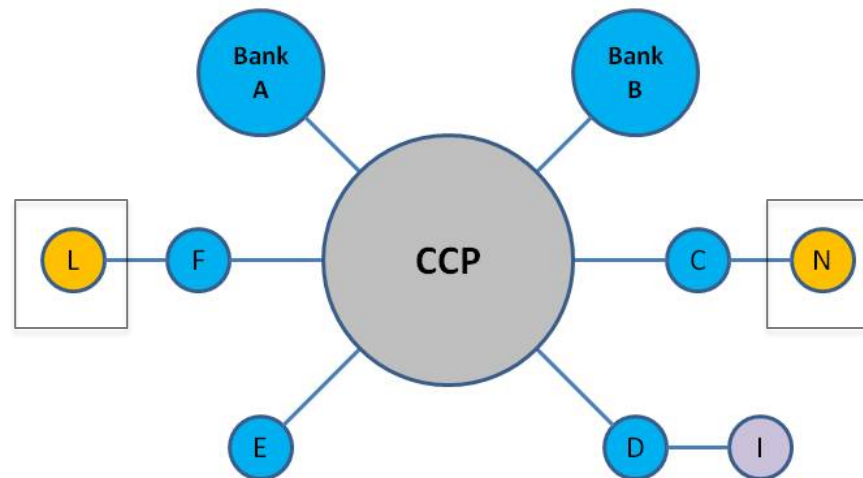
# Market Infrastructures, Central Clearing and Collateral Management

## 2. Counterparty substitution (novation) matters



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## **Market Infrastructures, Central Clearing and Collateral Management**

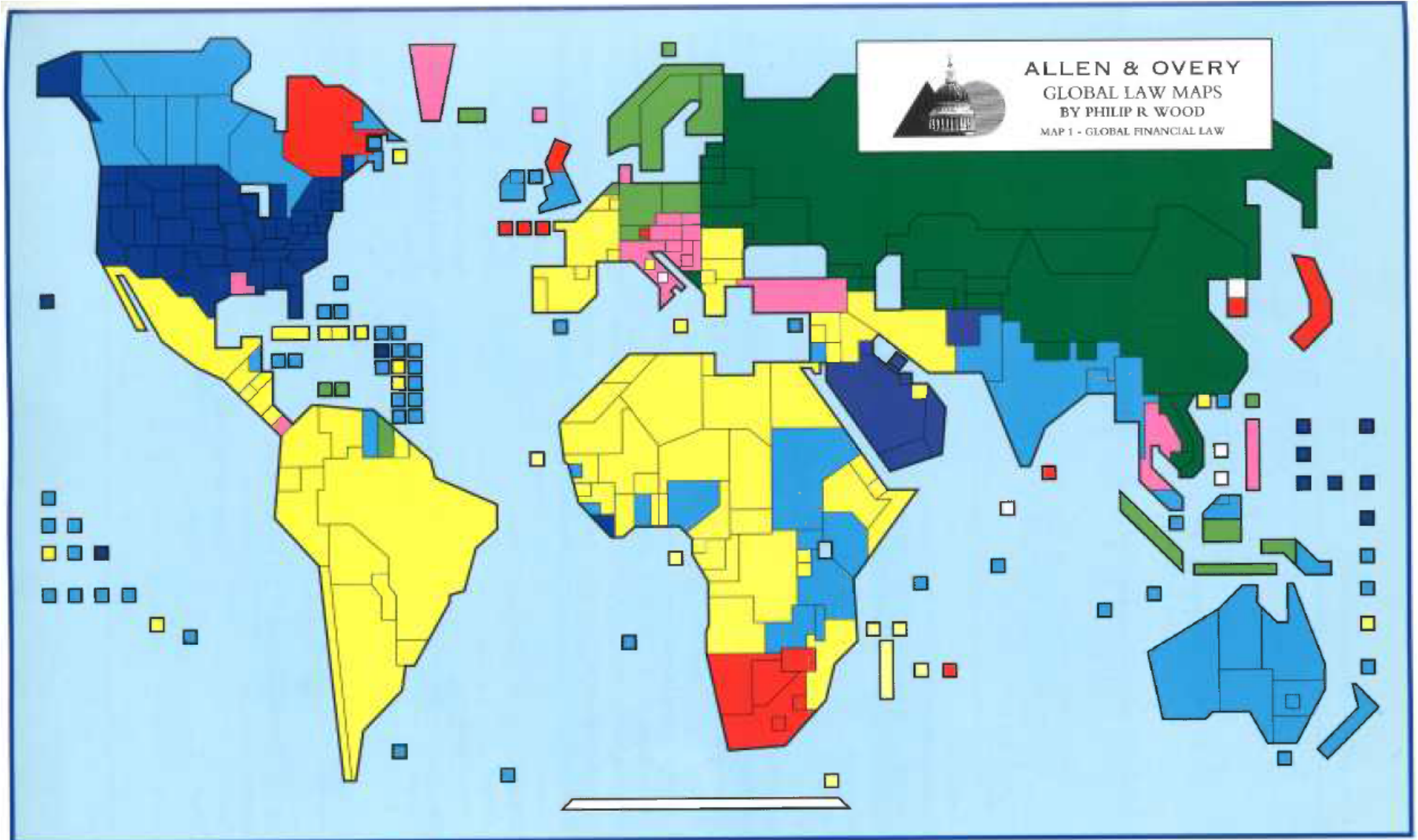
**3. Risk management and policy implications – CCP capital, other financial resources, stress testing, etc.**

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“Is it not an absurd and terrible thing that what is true in one village is false in another? ***What kind of barbarism is it that citizens must live under different laws?*** When you travel in this kingdom you change legal systems as often as you change horses.”

Voltaire, as quoted by P. Wood, *Maps of World Financial Law* (1997)

# Market Infrastructures, Central Clearing and Collateral Management

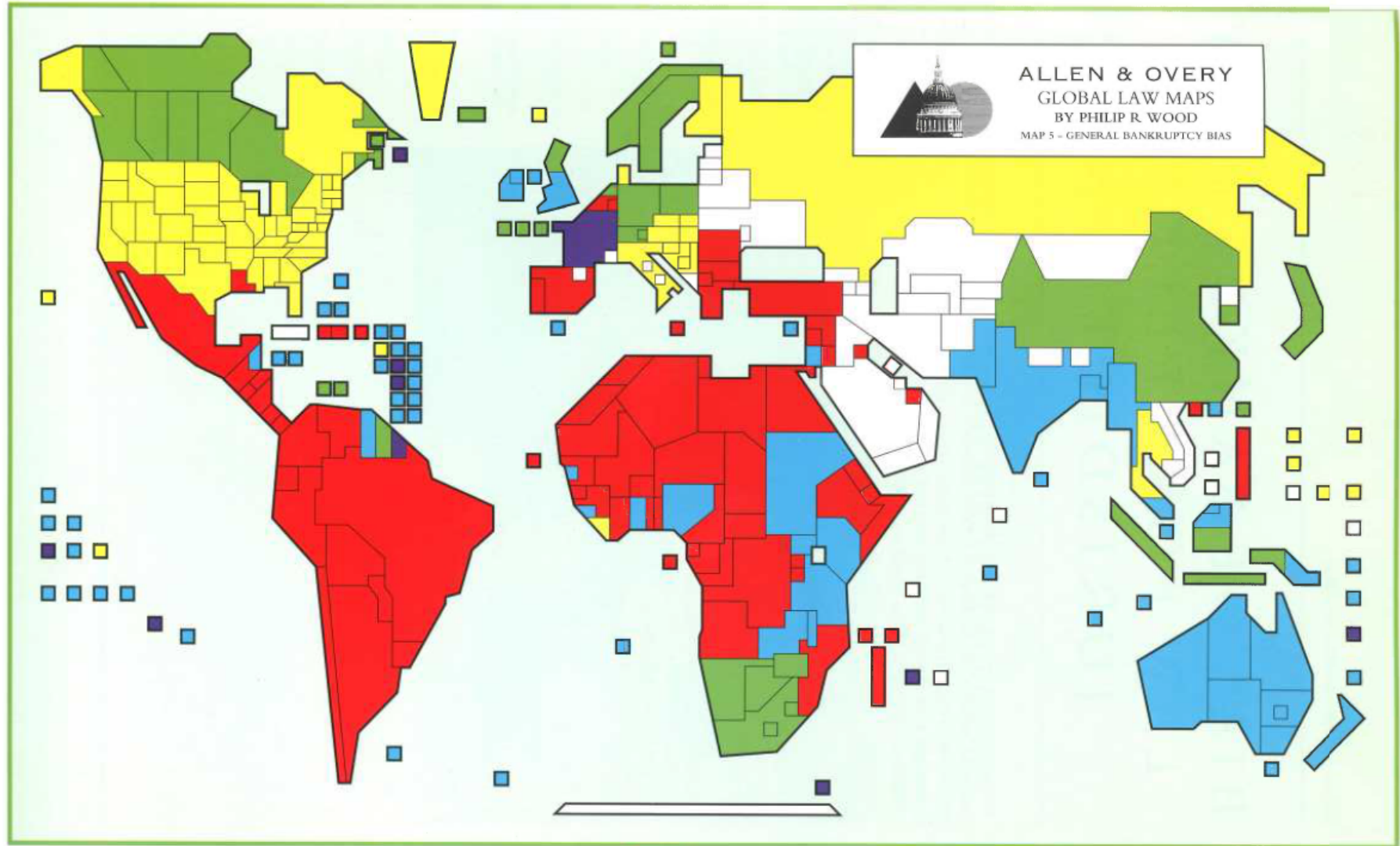


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 Based on LAW AND PRACTICE OF INTERNATIONAL FINANCE  
 (Sweet & Maxwell) 1995) By Philip R Wood  
 ALLEN & OVERY, 1 NEW CHANGE, LONDON EC4M 9QQ  
 FAX: UK (+44) LONDON (0)171 318 9799

- |   |                                      |  |   |   |                           |
|---|--------------------------------------|--|---|---|---------------------------|
|  | English common law jurisdictions     |  | Germanic & Scandinavian jurisdictions     |  | Emerging jurisdictions    |
|  | American common law jurisdictions    |  | Mixed Franco-Latin/Germanic jurisdictions |  | Islamic jurisdictions     |
|  | Mixed Roman/common law jurisdictions |  | Franco-Latin jurisdictions                |  | Unallocated jurisdictions |



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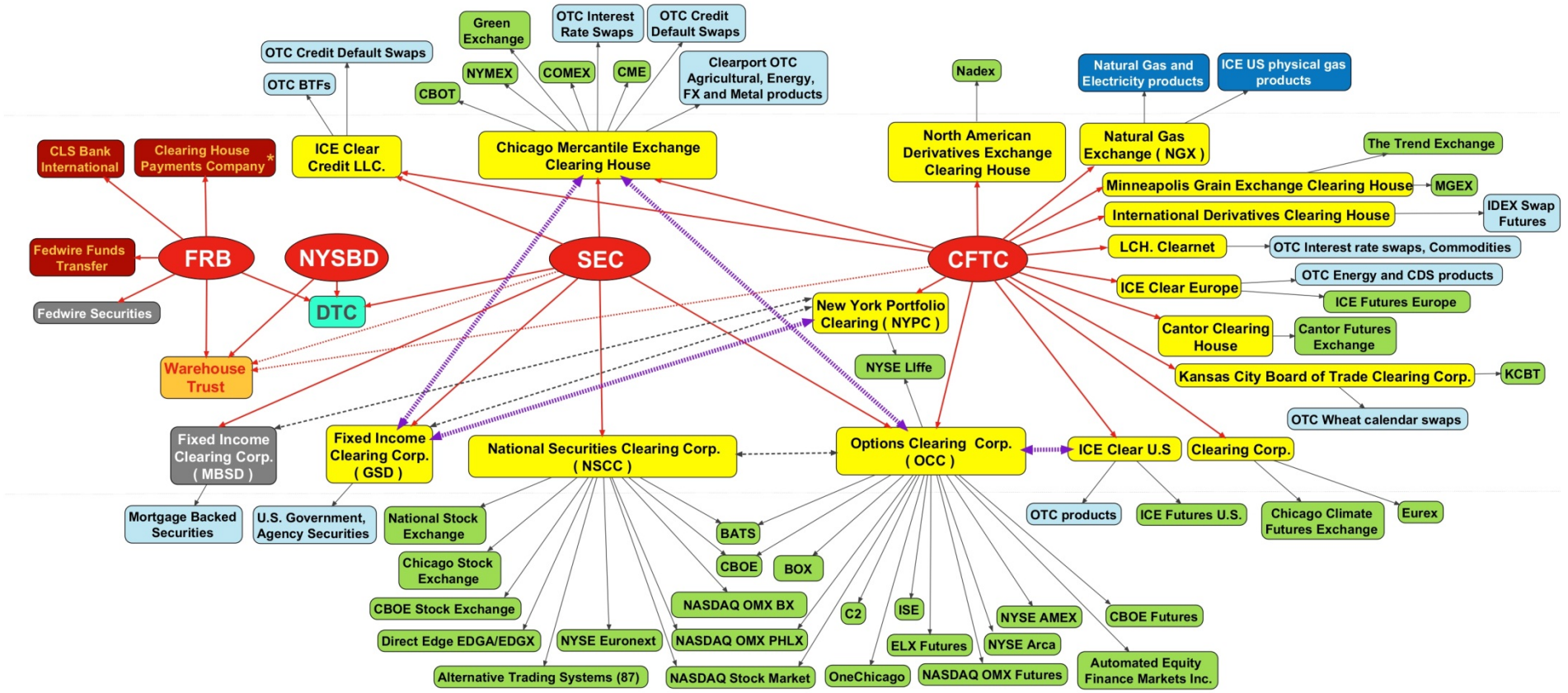


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- |   |   |
|---|---|
| <span style="color: blue;">■</span> Strong pro creditor | <span style="color: red;">■</span> Mild pro debtor      |
| <span style="color: green;">■</span> Mild pro creditor  | <span style="color: purple;">■</span> Strong pro debtor |
| <span style="color: yellow;">■</span> Medium            | <span style="color: white;">■</span> Unallocated        |

# Market Infrastructures, Central Clearing and Collateral Management

## U.S. Regulatory Authority over Payment, Clearing and Settlement Systems



<b>Regulatory Agency</b>	<b>Central Counterparties (CCP)</b>	<b>Securities Settlement Systems (SSS)</b>	<b>Central Securities Depository (CSD)</b>	<b>Payment Systems</b>	<b>Trade Repository</b>	<b>Exchanges or other trading venues</b>	<b>Selected OTC Products</b>	<b>Selected Listed Products</b>
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→ Regulatory Authority      → Clearing Agreement      ↔ Cross Margining Arrangement  
 ←--- Information Sharing      -.-.- Proposed Supervision      \* Supervised by other agencies (not shown)

Current\* as of April 09, 2012  
 Source: Federal Reserve Bank of Chicago Financial Markets Group  
 \* Derived from publicly available information

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- 3. Risk management and policy implications – CCP financial resilience, stress testing, etc.**

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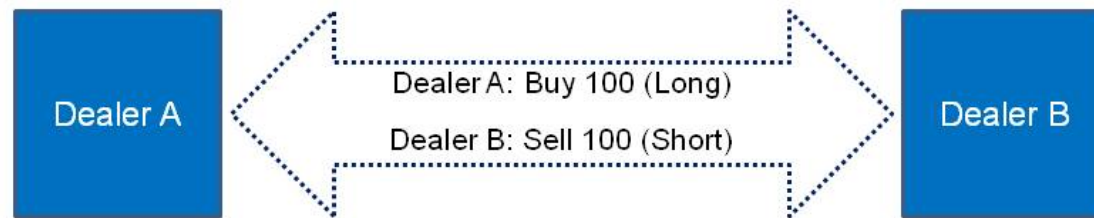
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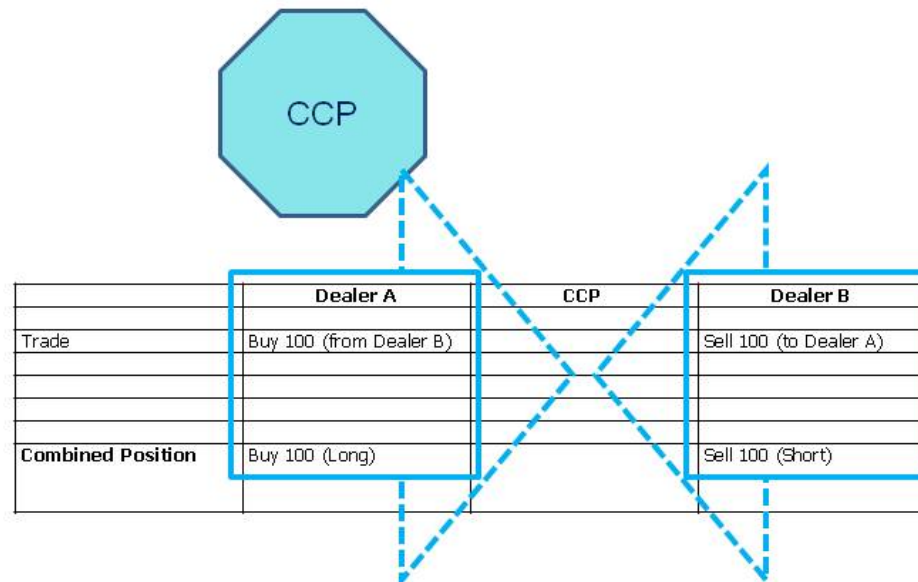
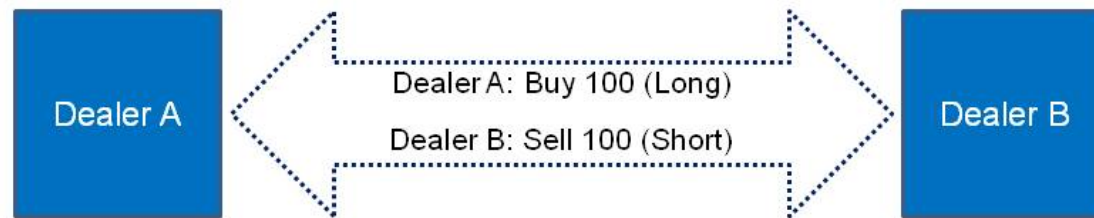
## 2. Counterparty substitution (novation) matters



	Dealer A	CCP	Dealer B
Trade	Buy 100 (from Dealer B)		Sell 100 (to Dealer A)
<b>Combined Position</b>	Buy 100 (Long)		Sell 100 (Short)

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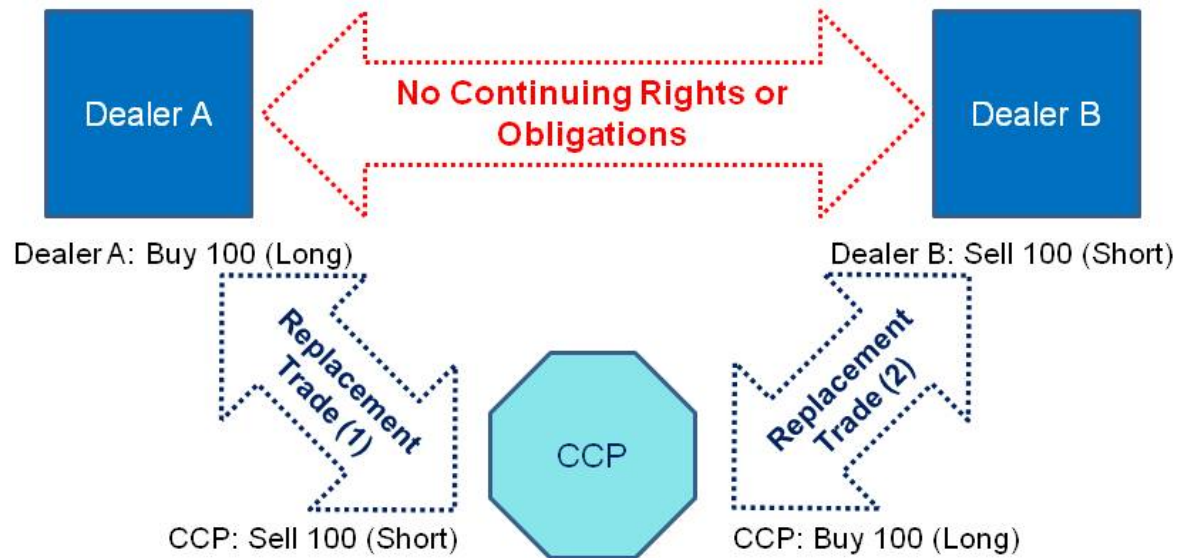
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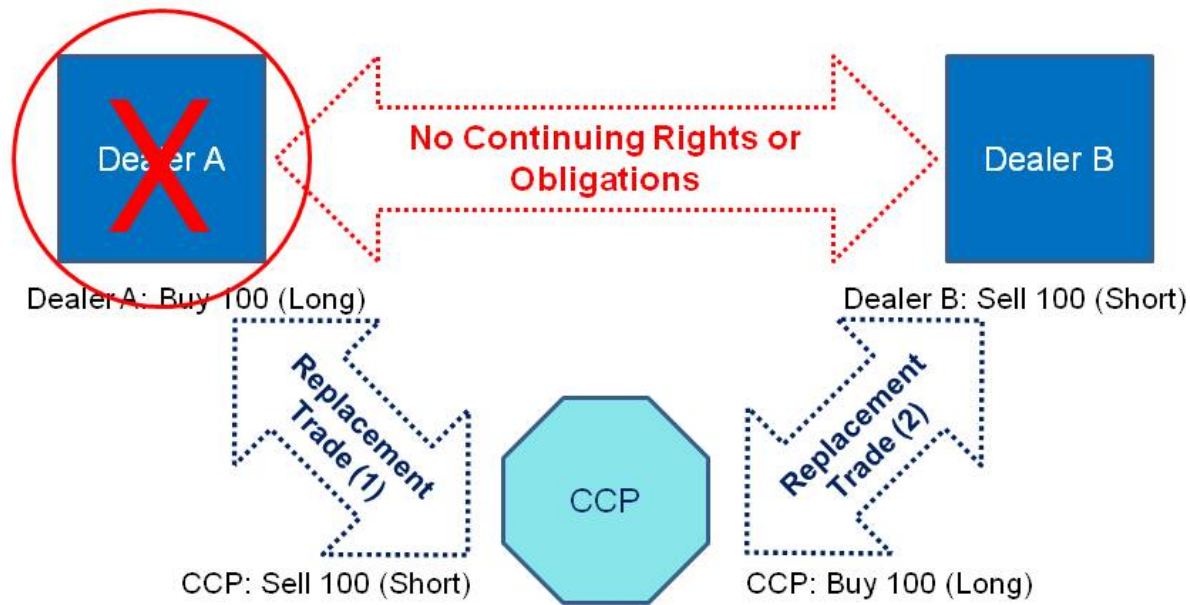


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Replacement Trade (1)	Buy 100 (from CCP)	Sell 100 (to Dealer A)	
Replacement Trade (2)		Buy 100 (from Dealer B)	Sell 100 (to CCP)
<b>Combined Position</b>	Buy 100 (Long)	Offsetting (Neutral)	Sell 100 (Short)



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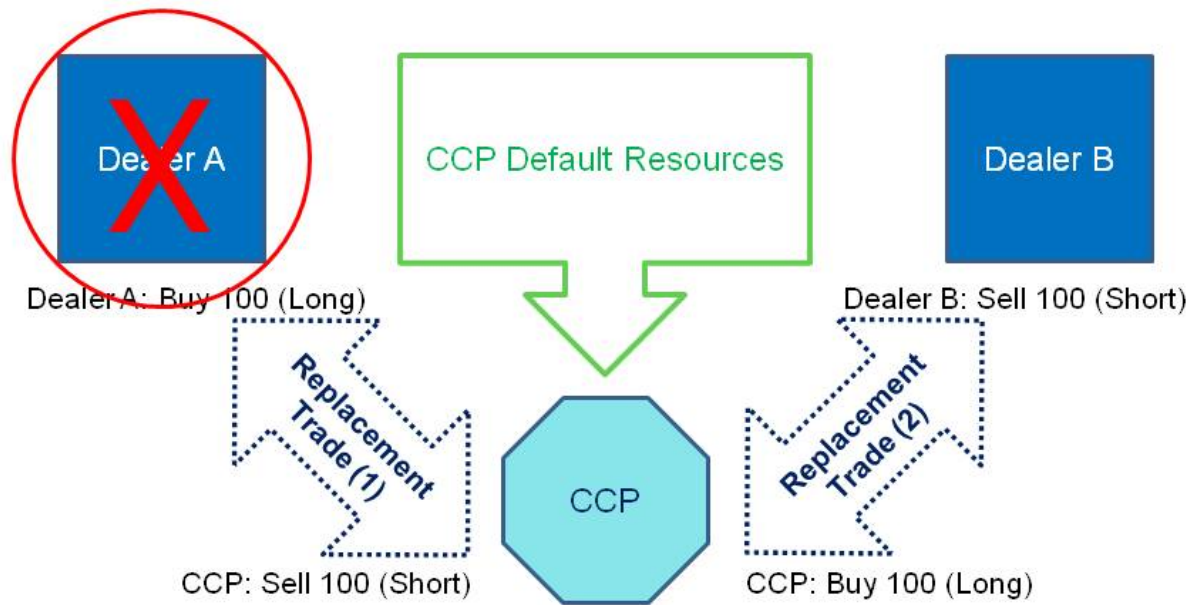
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		Buy 100 (Long)	

## Defaulter's Resources

- Initial margin and concentration margin
- Defaulting clearing member's default fund contribution

### Fault Line 1

## Mutualized Resources

- Tranche of CCP's capital
- Default fund contributions of surviving clearing members
- Assessments or any unfunded default fund contributions

### Fault Line 2

## Terra Incognita

- Voluntary cash calls on surviving clearing members
- Variation margin gains haircutting
- Partial or complete "tear-ups" and forced allocation

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