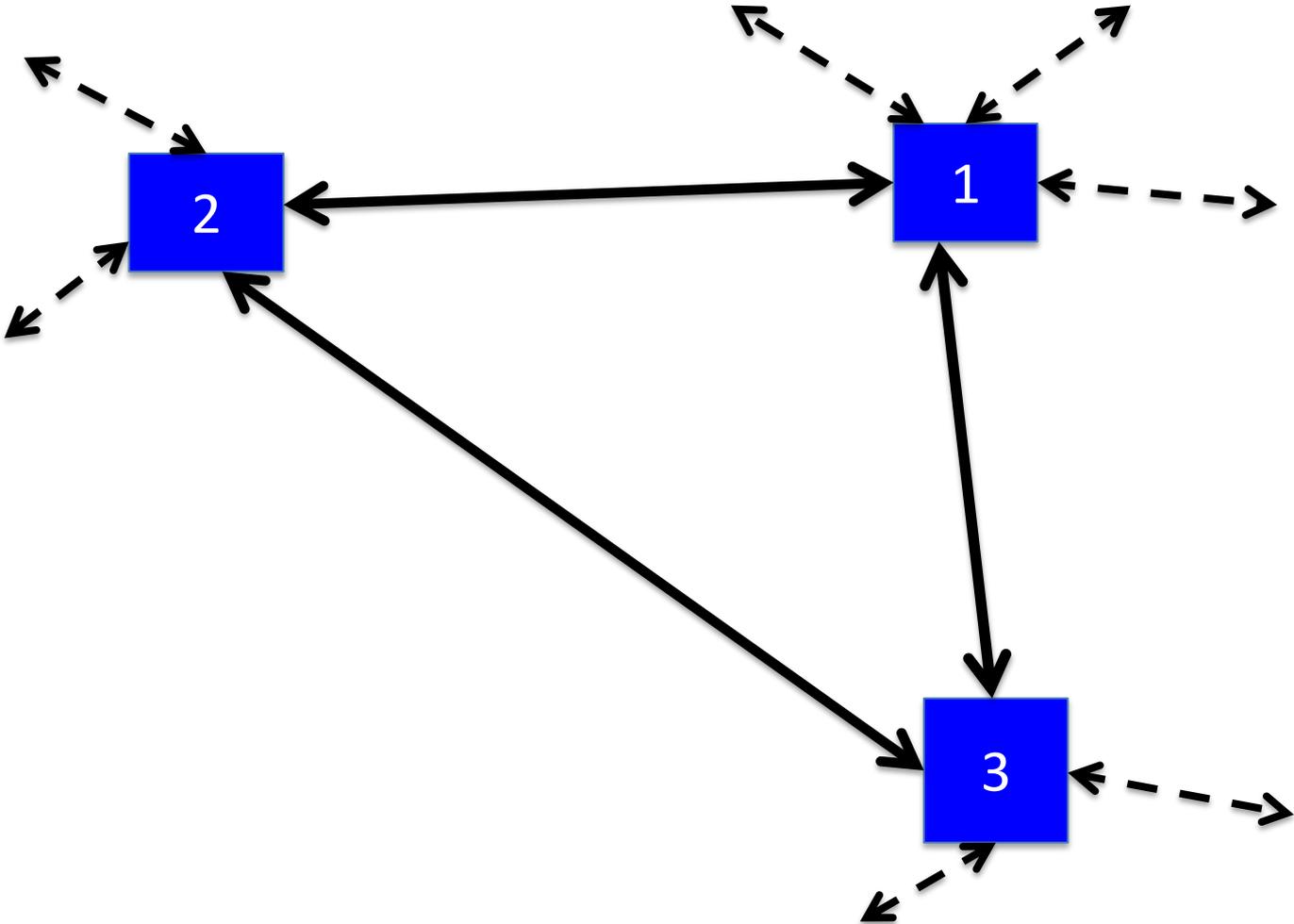


Challenges to Supervision and Regulation of Shadow Banking

Darrell Duffie
Stanford University

Chicago Fed Shadow Banking Conference
November 2013

Transferring risk, capital, and liquidity among ultimate economic agents

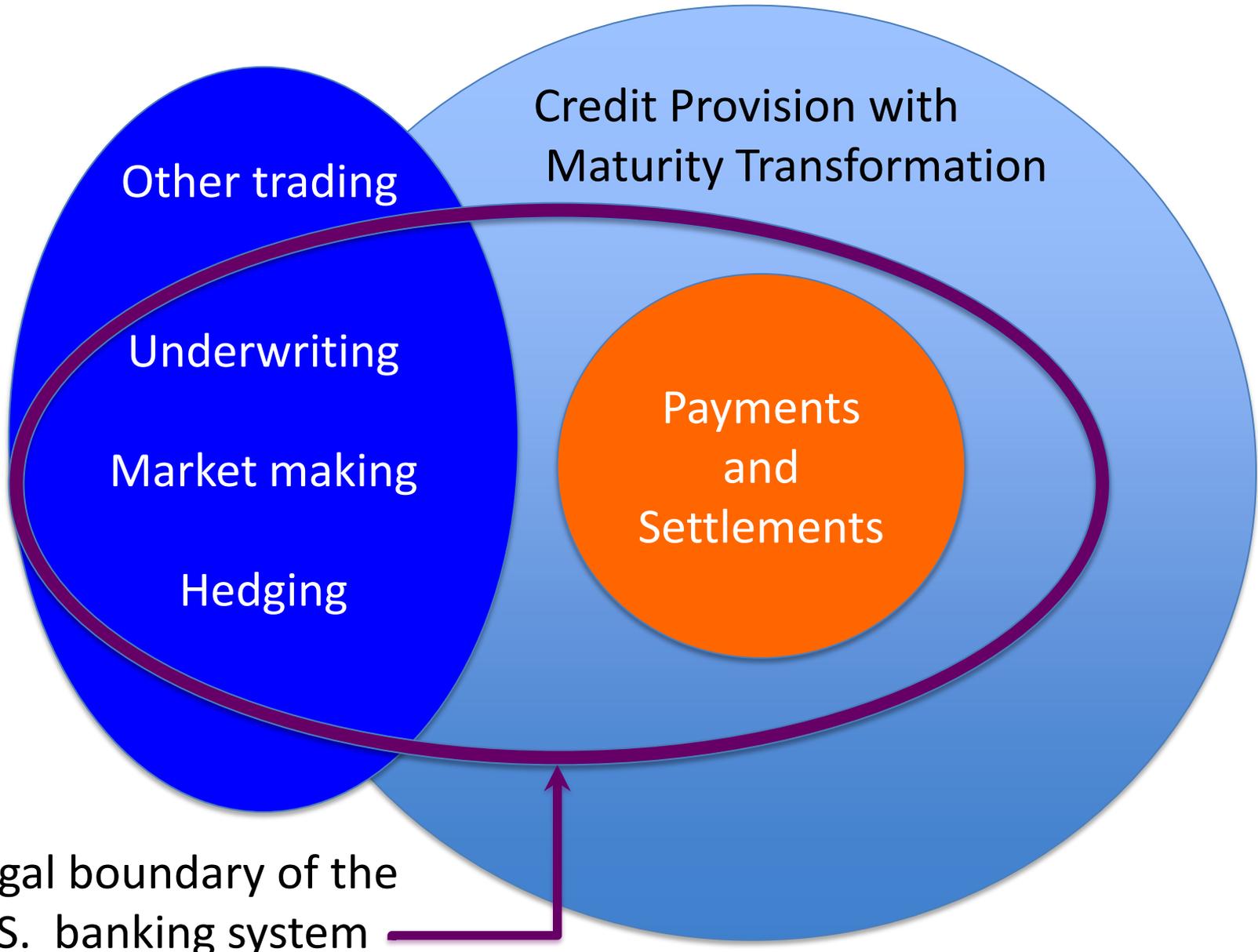


Credit Provision with
Maturity Transformation

The diagram consists of three overlapping circles. A large blue circle on the right contains the text 'Credit Provision with Maturity Transformation'. A smaller orange circle is nested inside the blue circle, containing the text 'Payments and Settlements'. A dark blue circle on the left overlaps with the blue circle, containing the text 'Underwriting', 'Market making', and 'Other trading'.

Underwriting
Market making
Other trading

Payments
and
Settlements



Credit Provision with
Maturity Transformation

Other trading

Underwriting

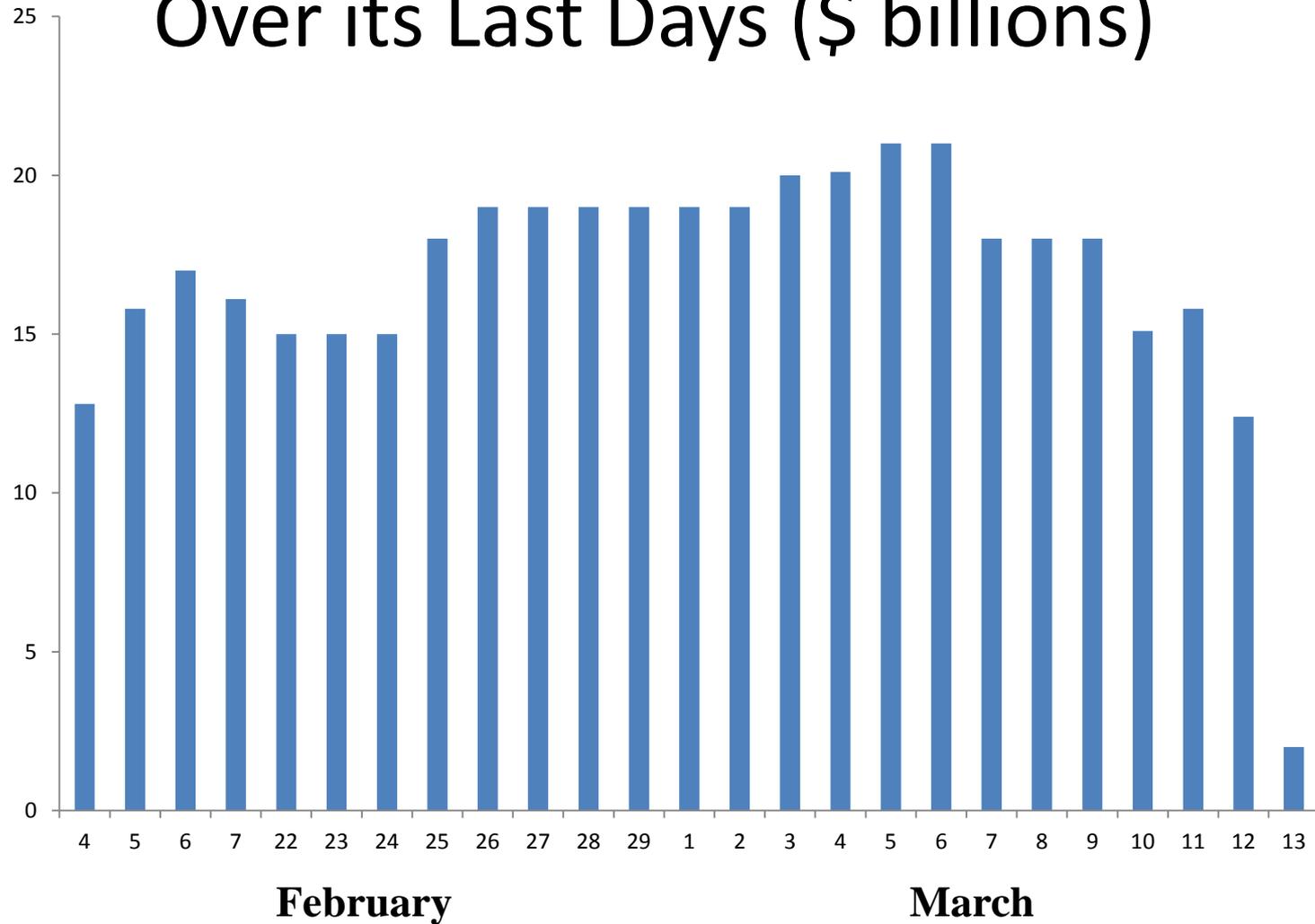
Market making

Hedging

Payments
and
Settlements

Legal boundary of the
U.S. banking system

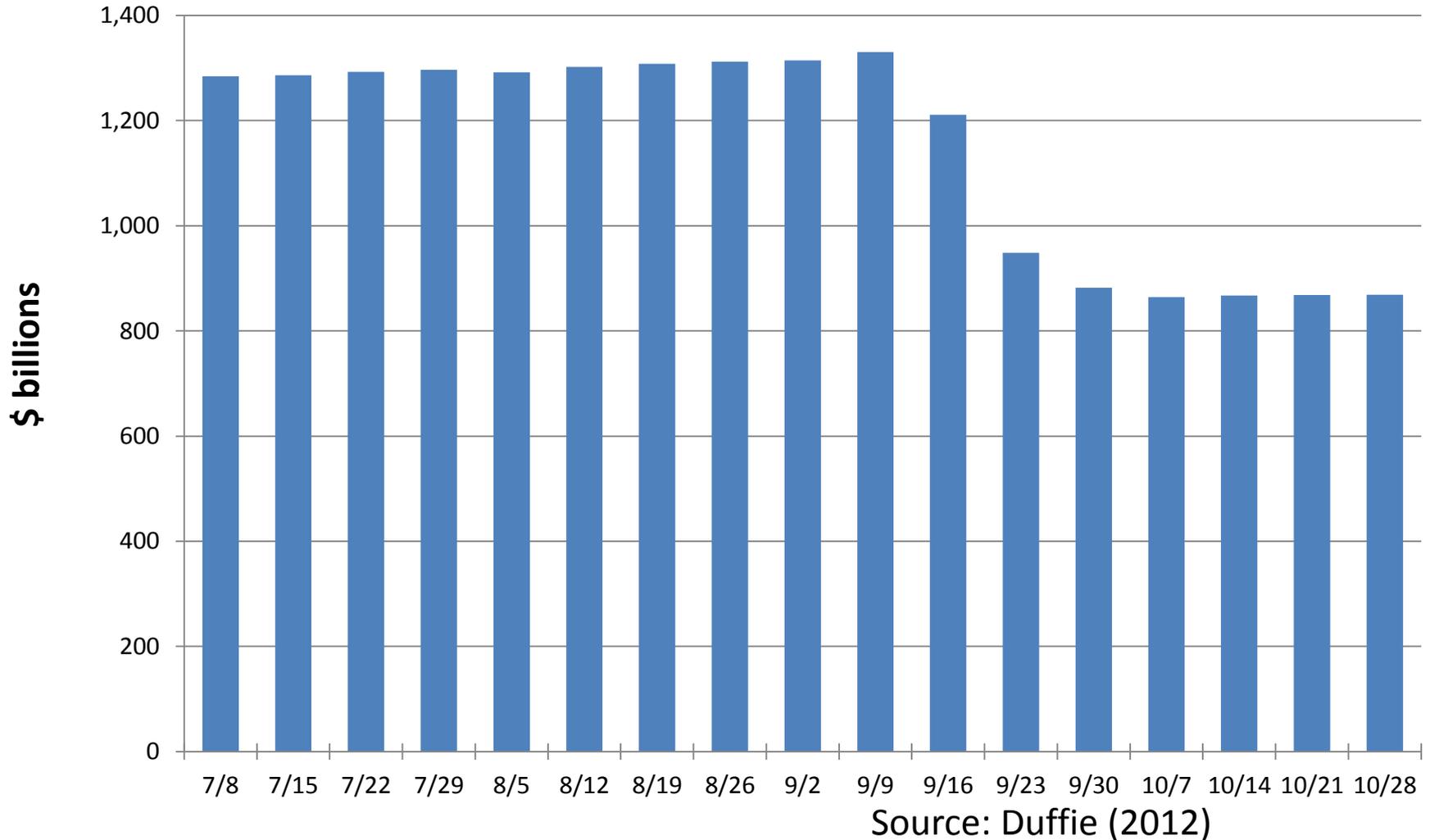
Bear Stearns' Liquidity Pool Over its Last Days (\$ billions)



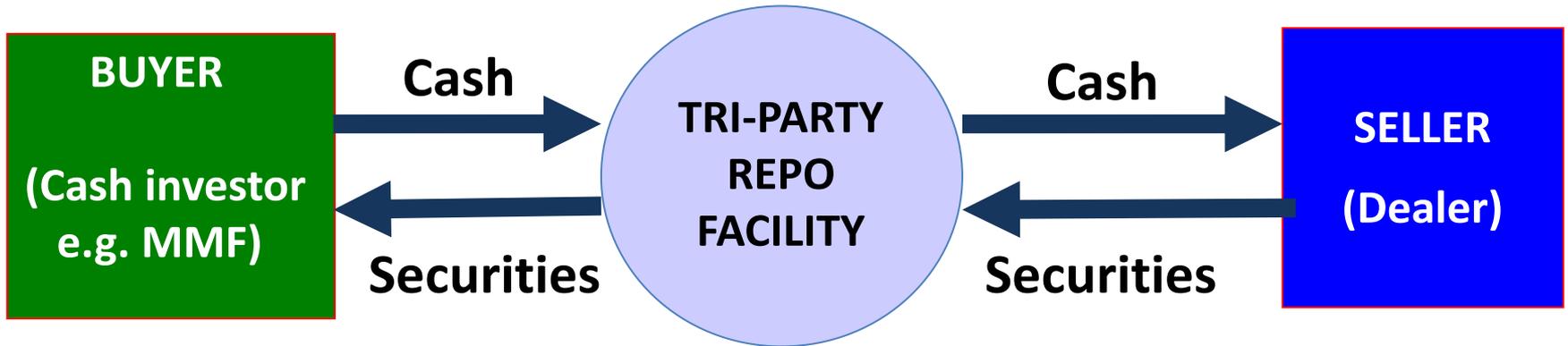
Data Source: Cox (2008)

September 2008 Run on Money Market Funds

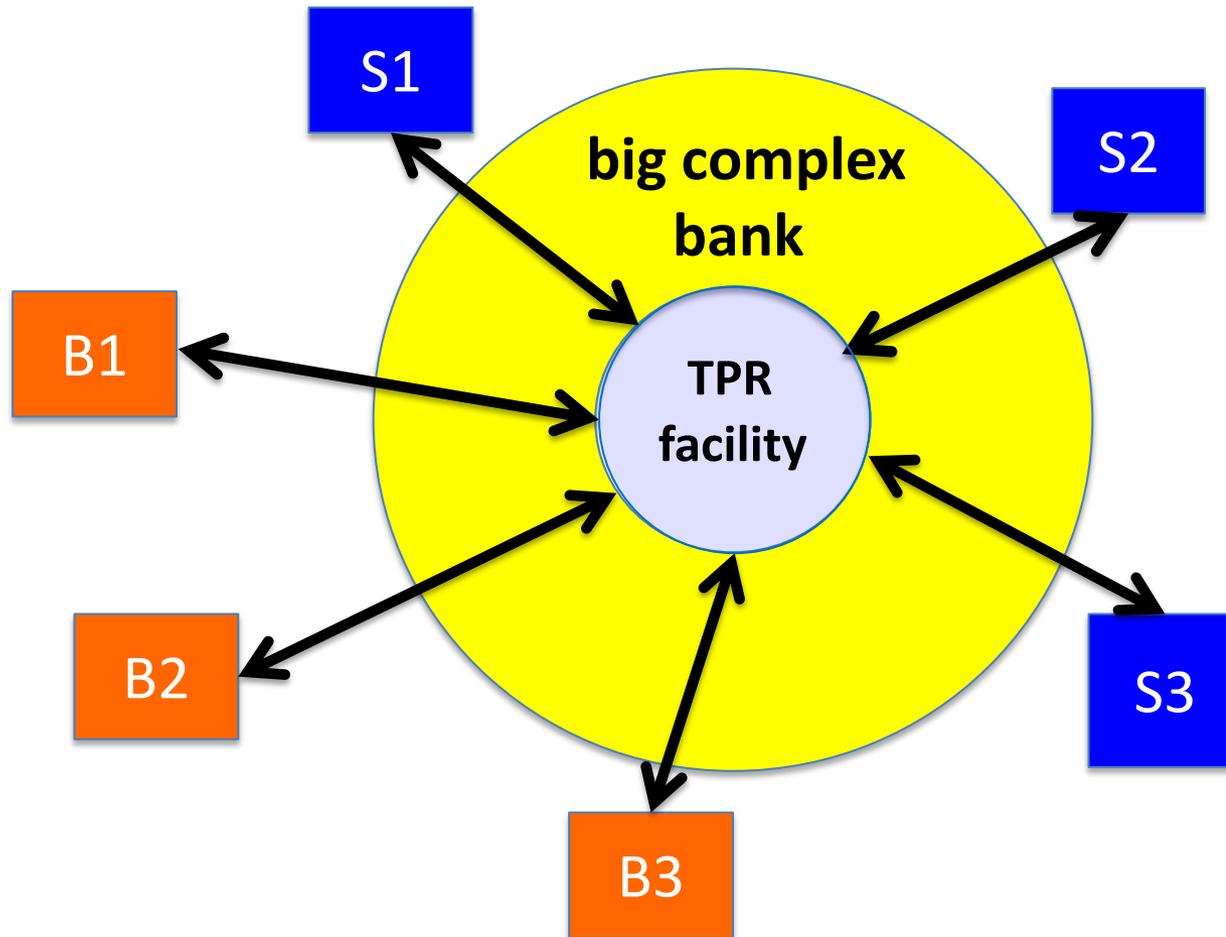
Institutional investment in prime money market mutual funds



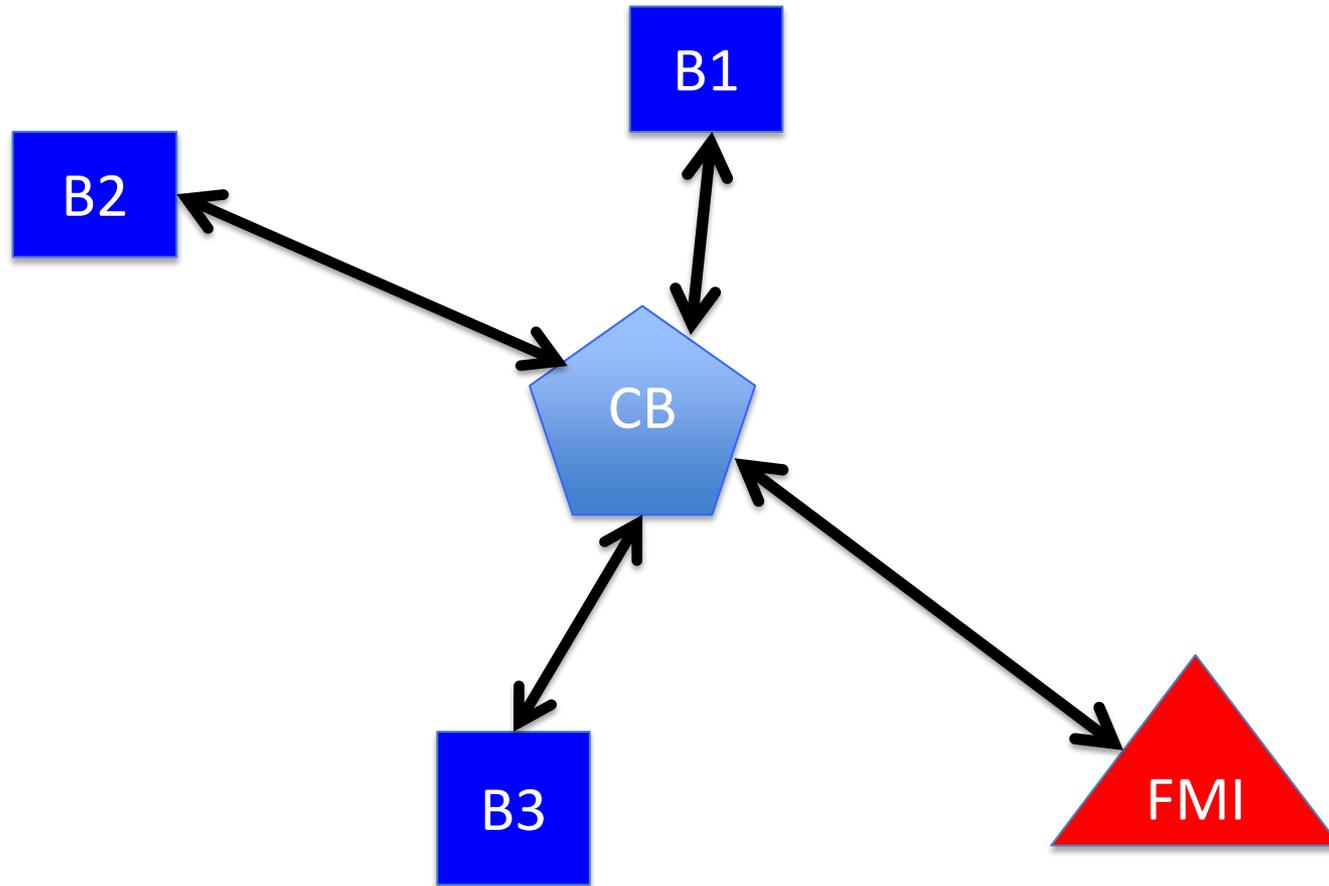
Tri-Party Repo



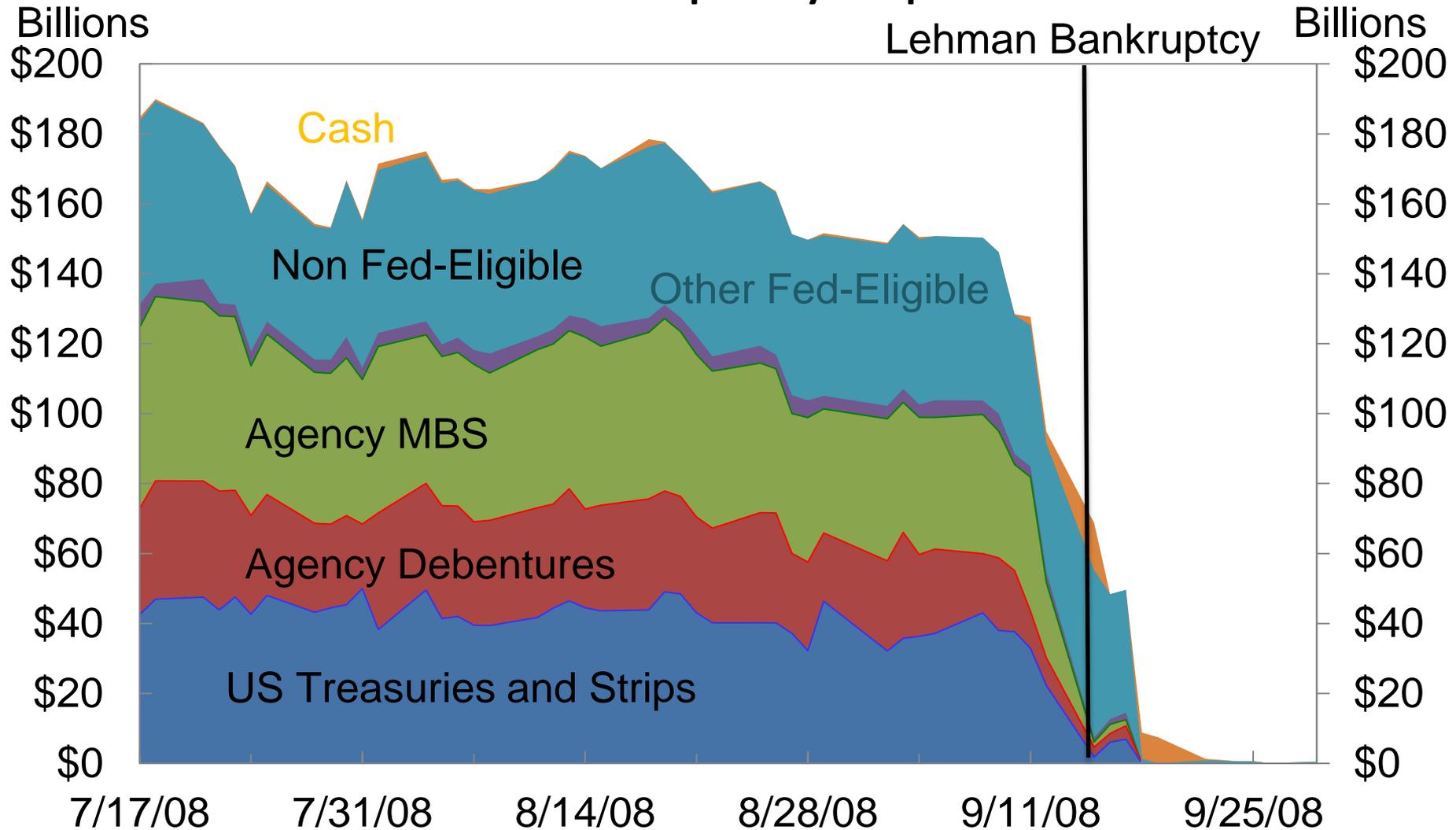
Tri-party Repo Infrastructure



Liquidity to Financial Market Infrastructure

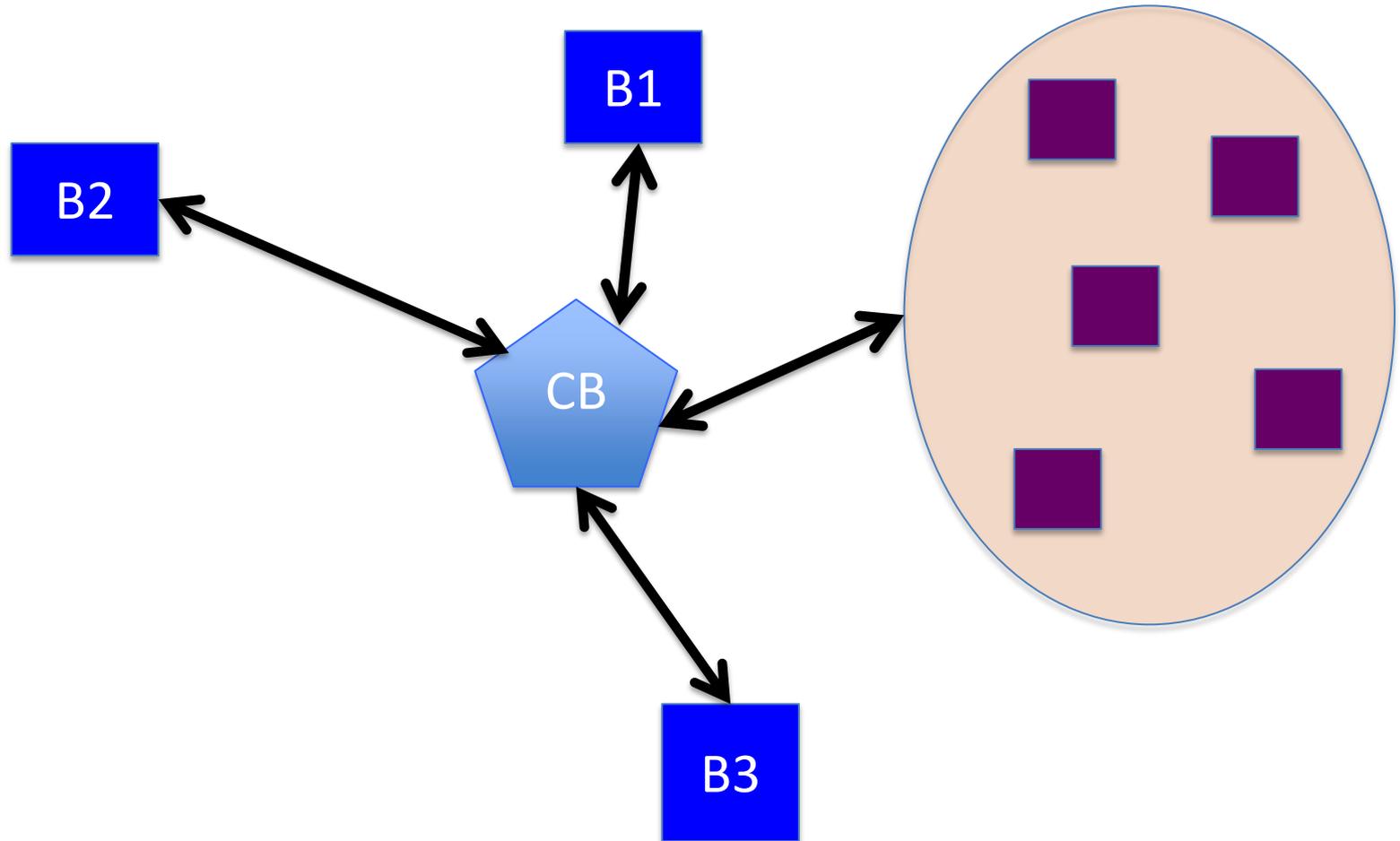


Lehman's tri-party repo book

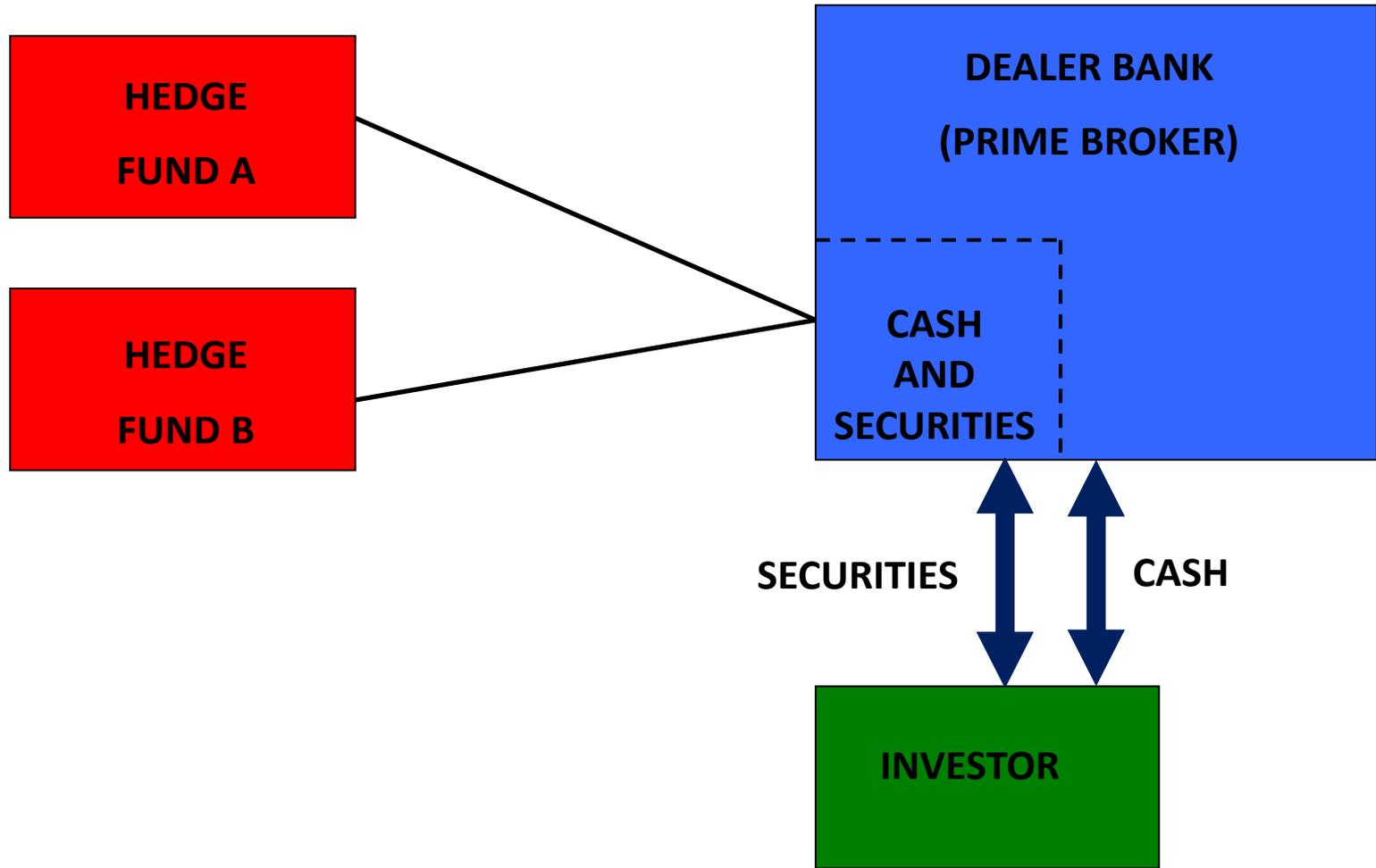


Source: Copeland, Martin, Walker (2011) FRBNY

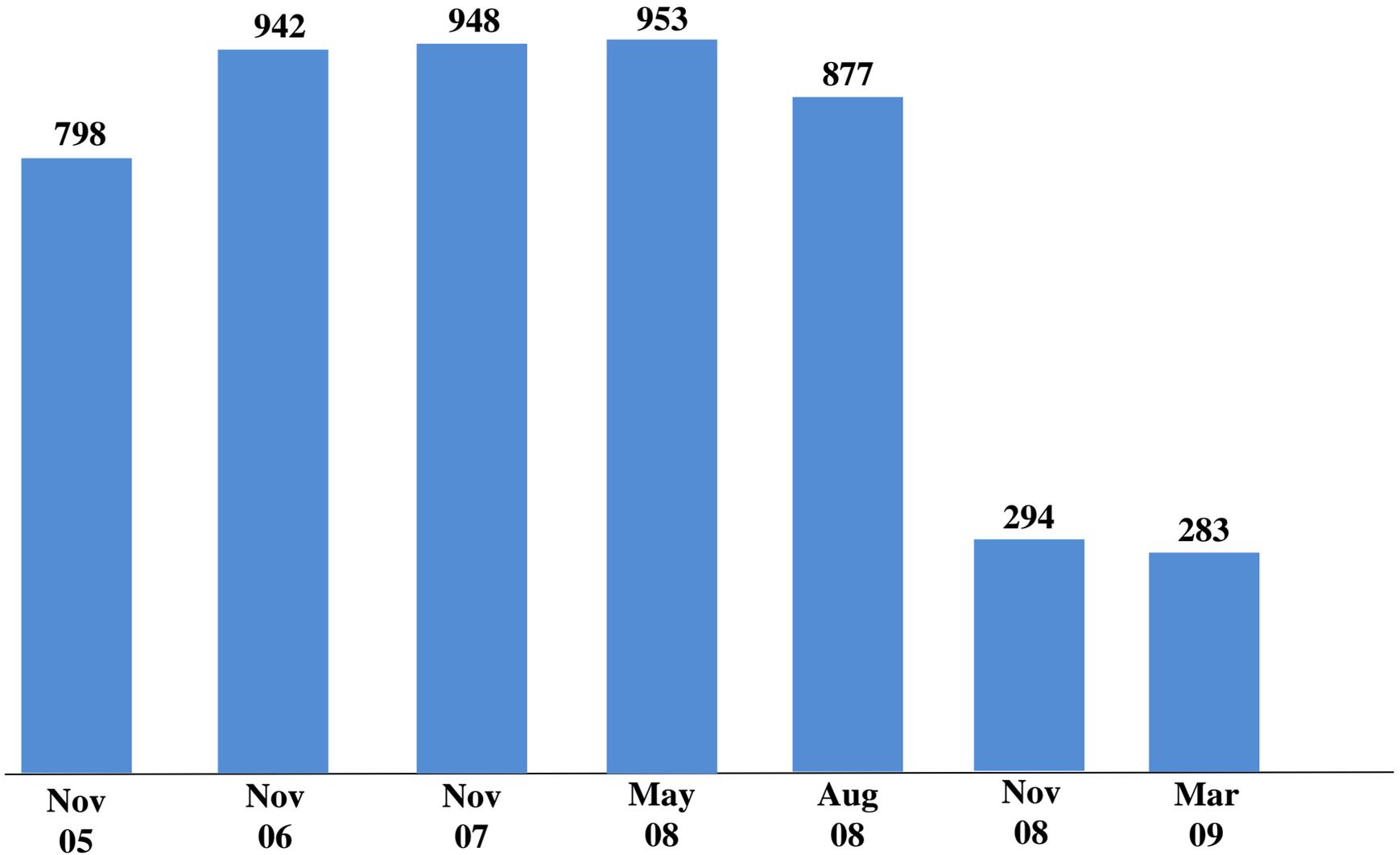
Broad Programmatic Emergency Lending



Prime-Brokerage

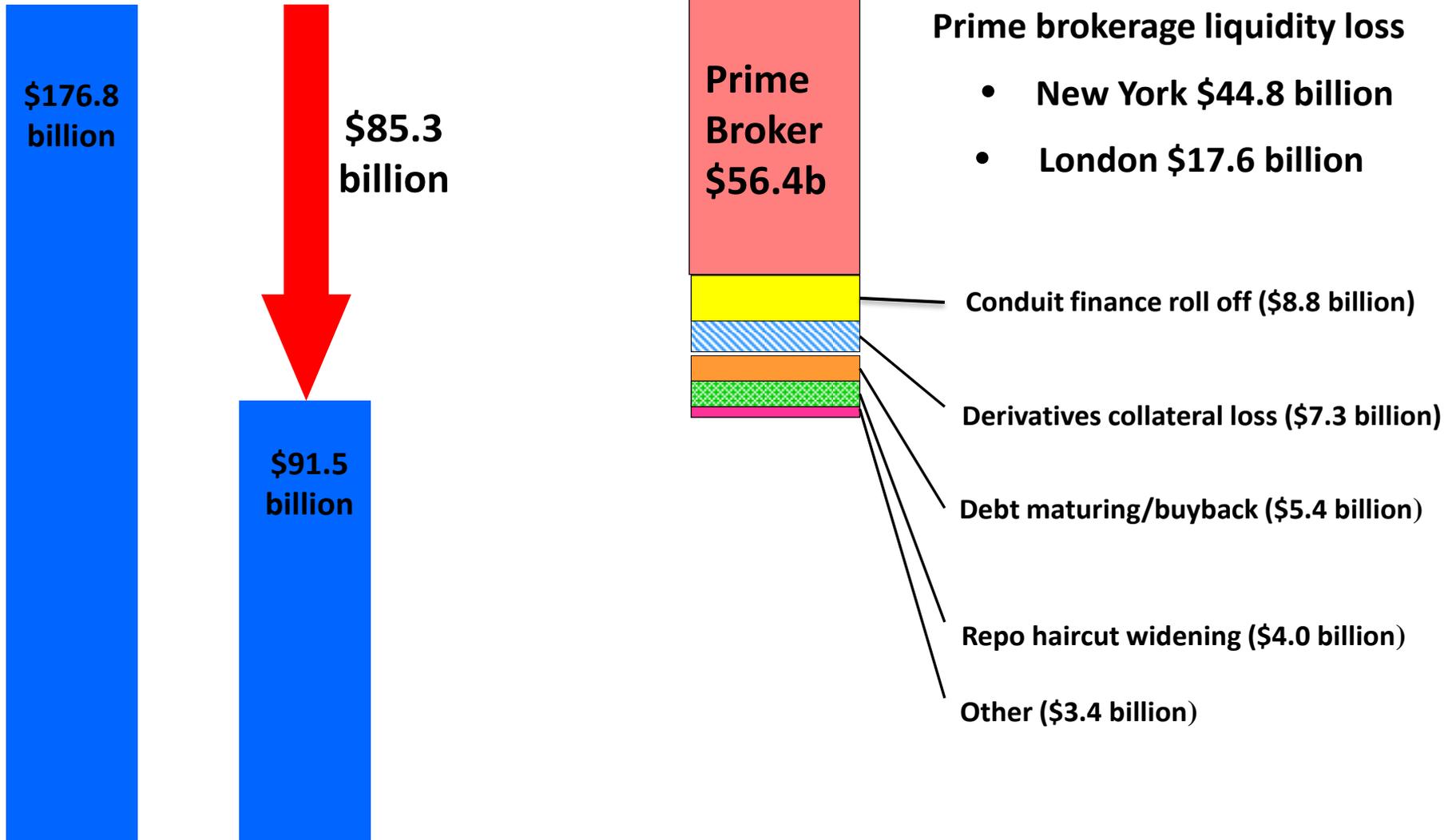


Morgan Stanley collateral received that can be pledged (\$ billions)



Data Source: Singh (2009)

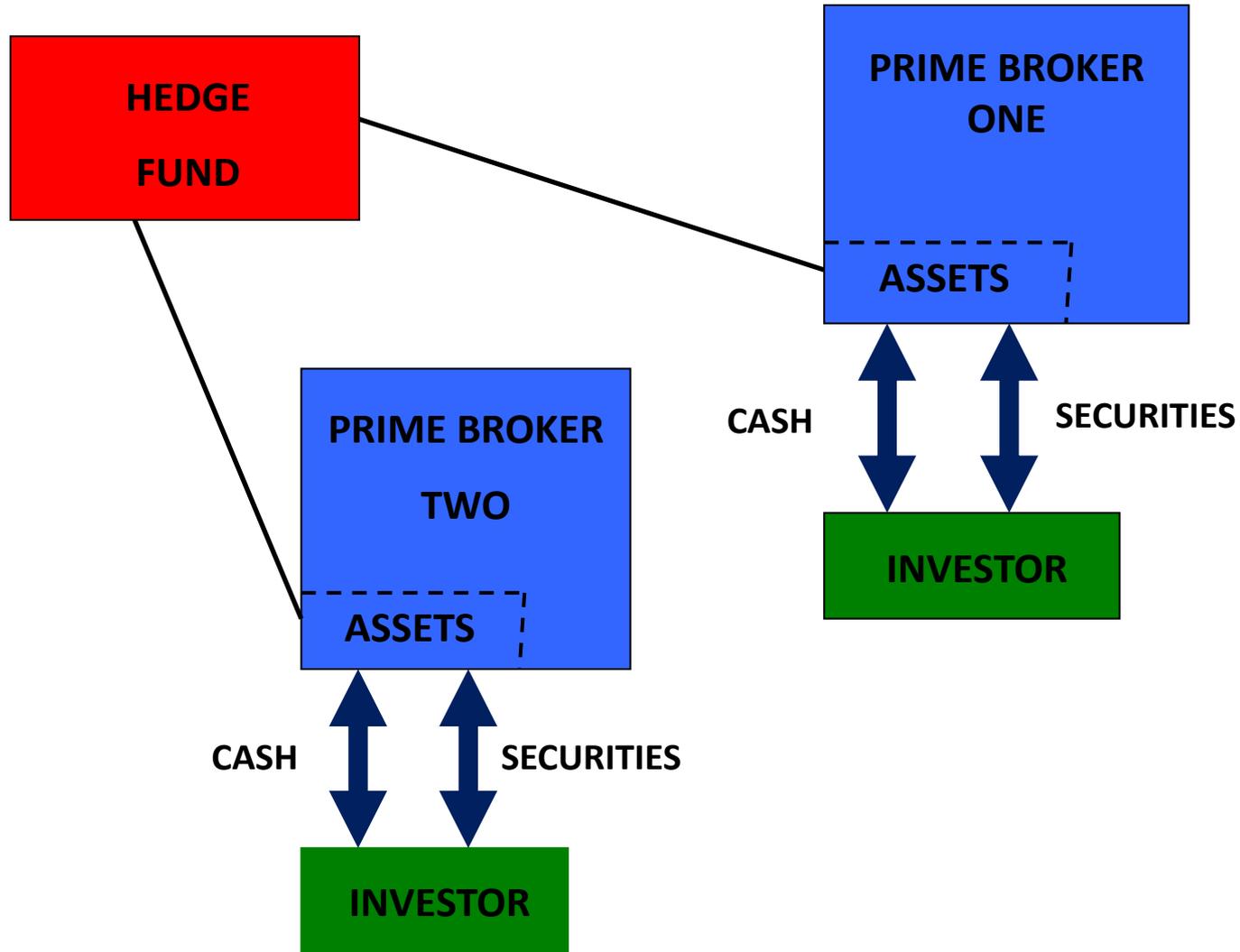
Morgan Stanley's Liquidity Loss Sept. 12-22, 2008



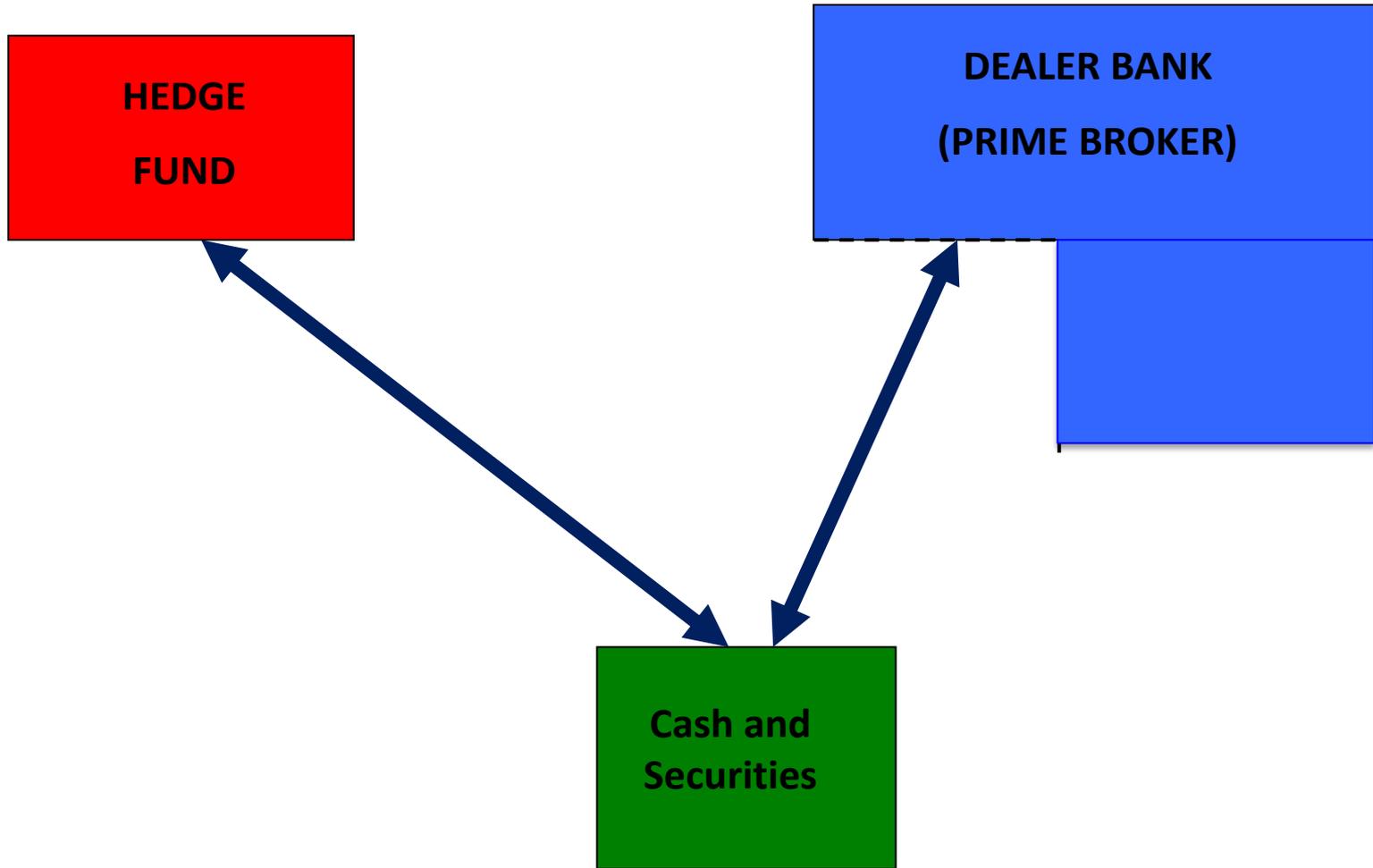
Duffie (2011)

Data source: Morgan Stanley-FRB NY FCIC disclosure

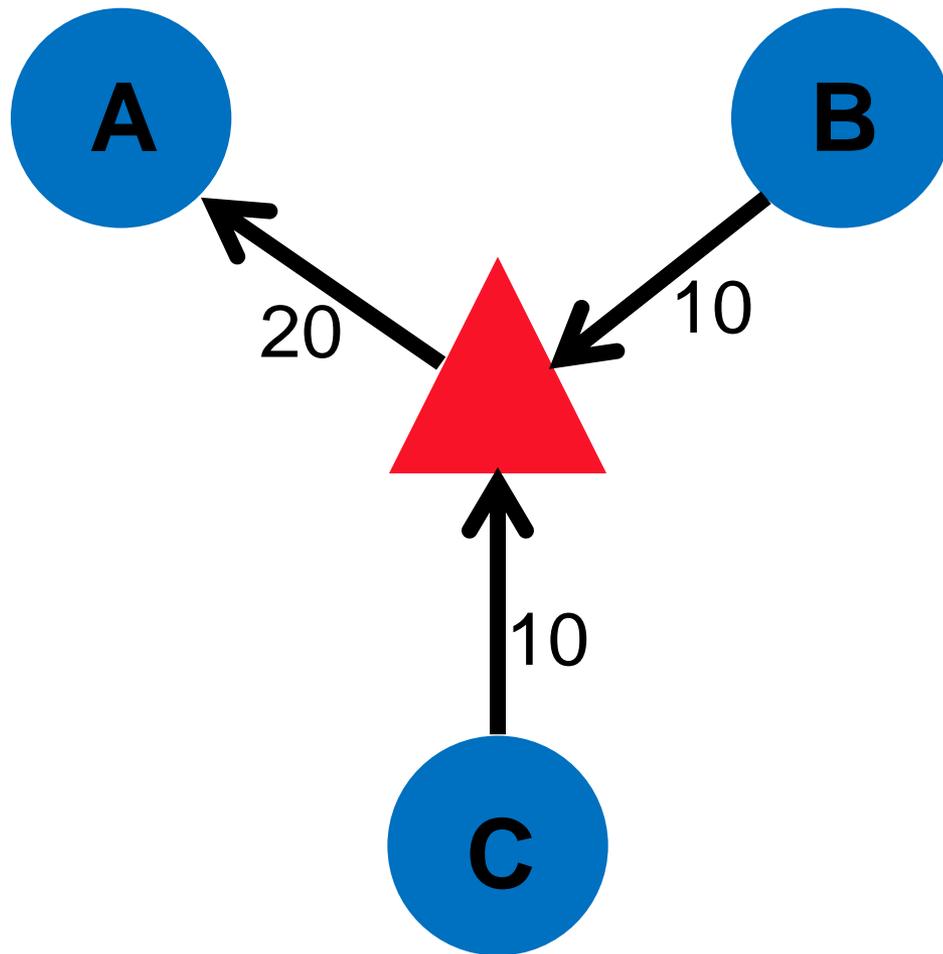
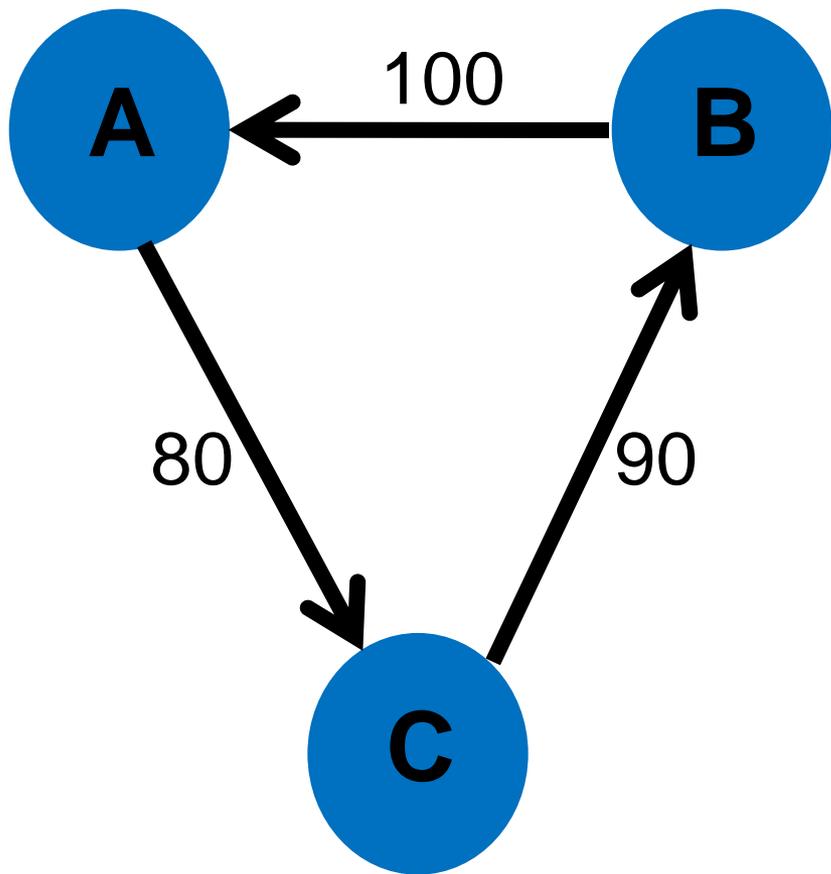
Multiple prime brokers



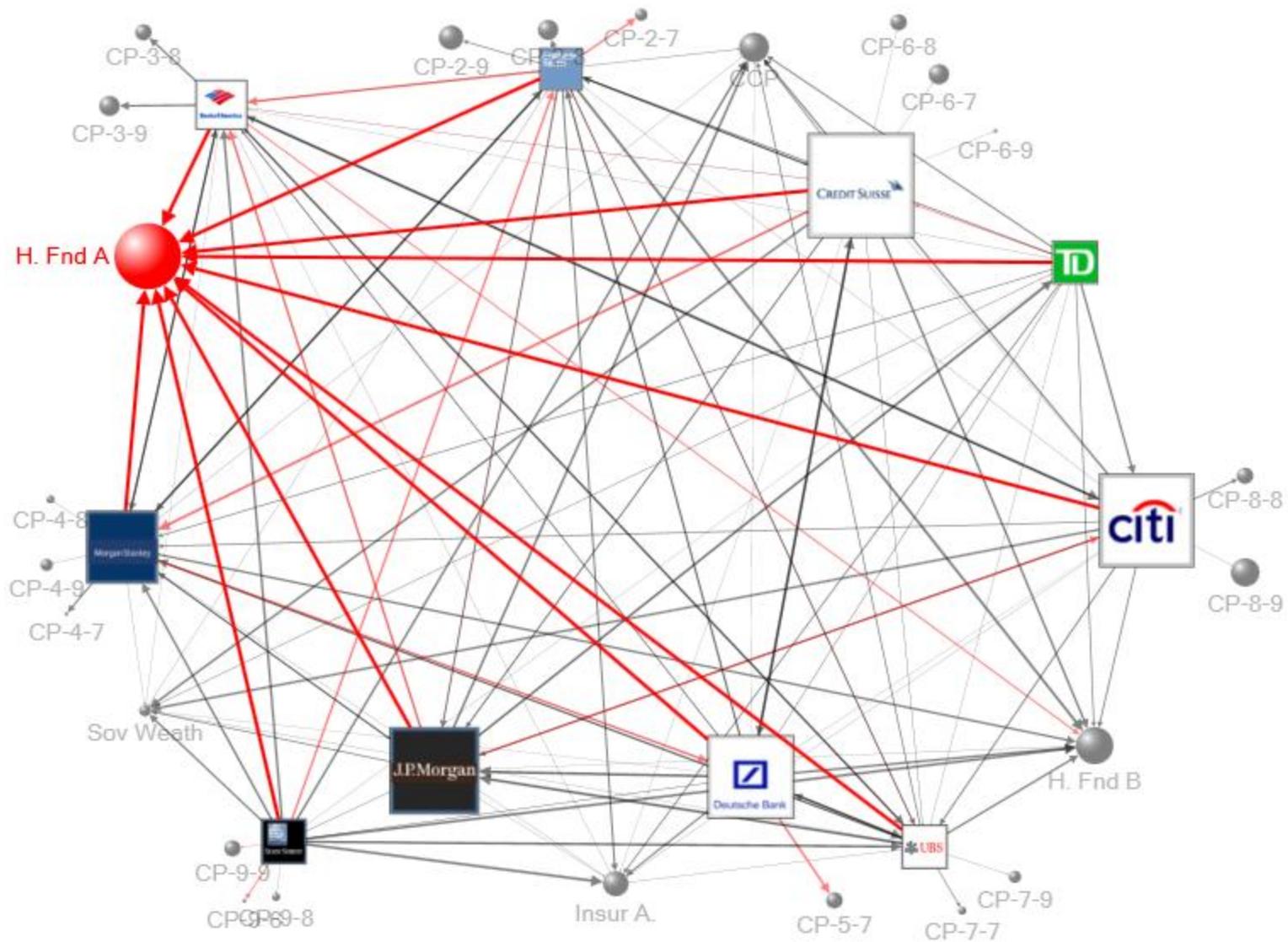
Prime-Brokerage Custodian



Central Clearing of Derivatives



10-by-10-by-10 Network Risk Monitoring



A Bank's 10-by-10-by-10 Submission

	Stress 1	...	Stress j	...	Stress 10
Self					
Counterparty 1					
⋮					
Counterparty i					
⋮					
Counterparty 10					
⋮					
Counterparty 10					
⋮					
Counterparty 10					

The table illustrates a 10-by-10-by-10 submission structure. The columns represent stress scenarios (Stress 1, Stress j, Stress 10) and the rows represent counterparties (Self, Counterparty 1, ..., Counterparty i, ..., Counterparty 10). A blue dashed box highlights the intersection of Counterparty i and Stress j, labeled "Ctpy ID & Exposure".