

# Compressing Over-the-Counter Markets

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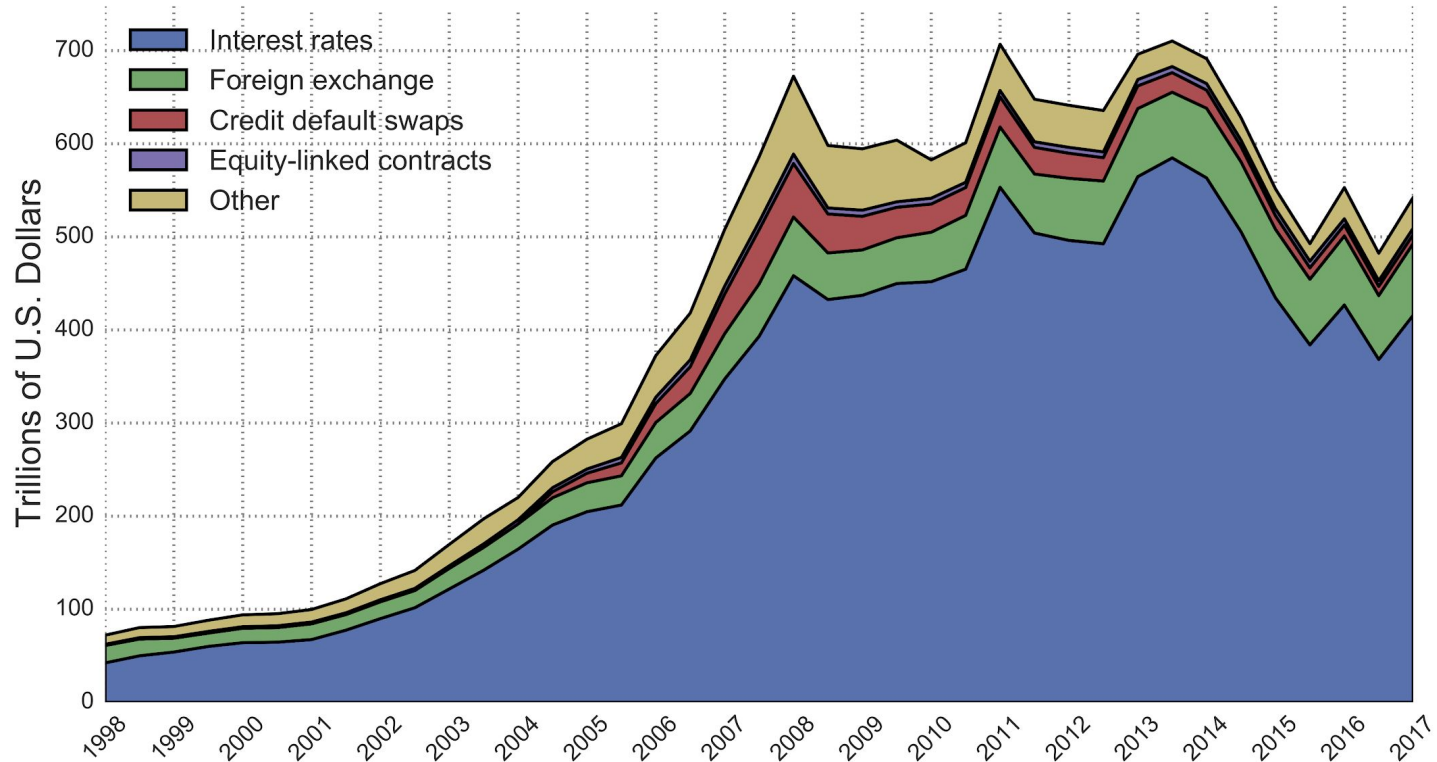
<sup>1</sup> European Systemic Risk Board

<sup>2</sup> KU Leuven

10th ECMI Annual Conference

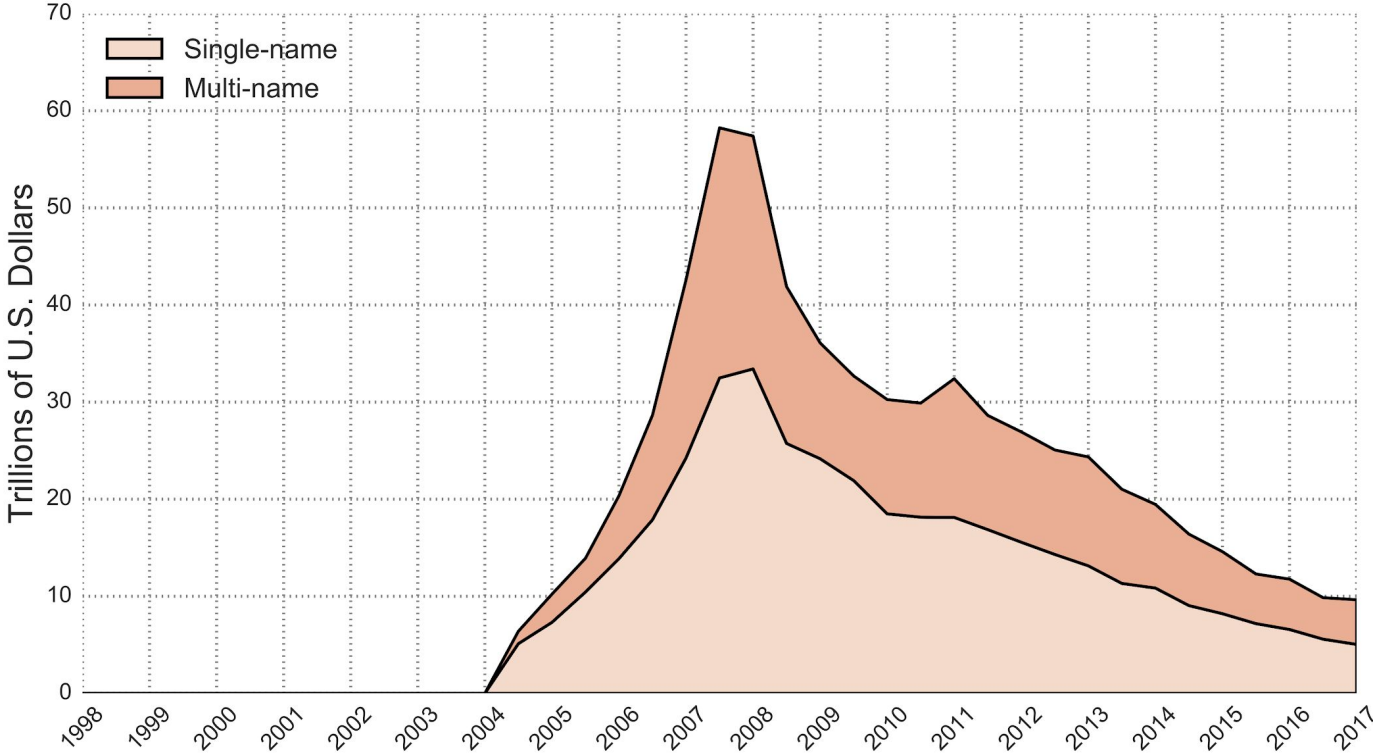
Nov 5 2020

# Size of OTC derivatives markets



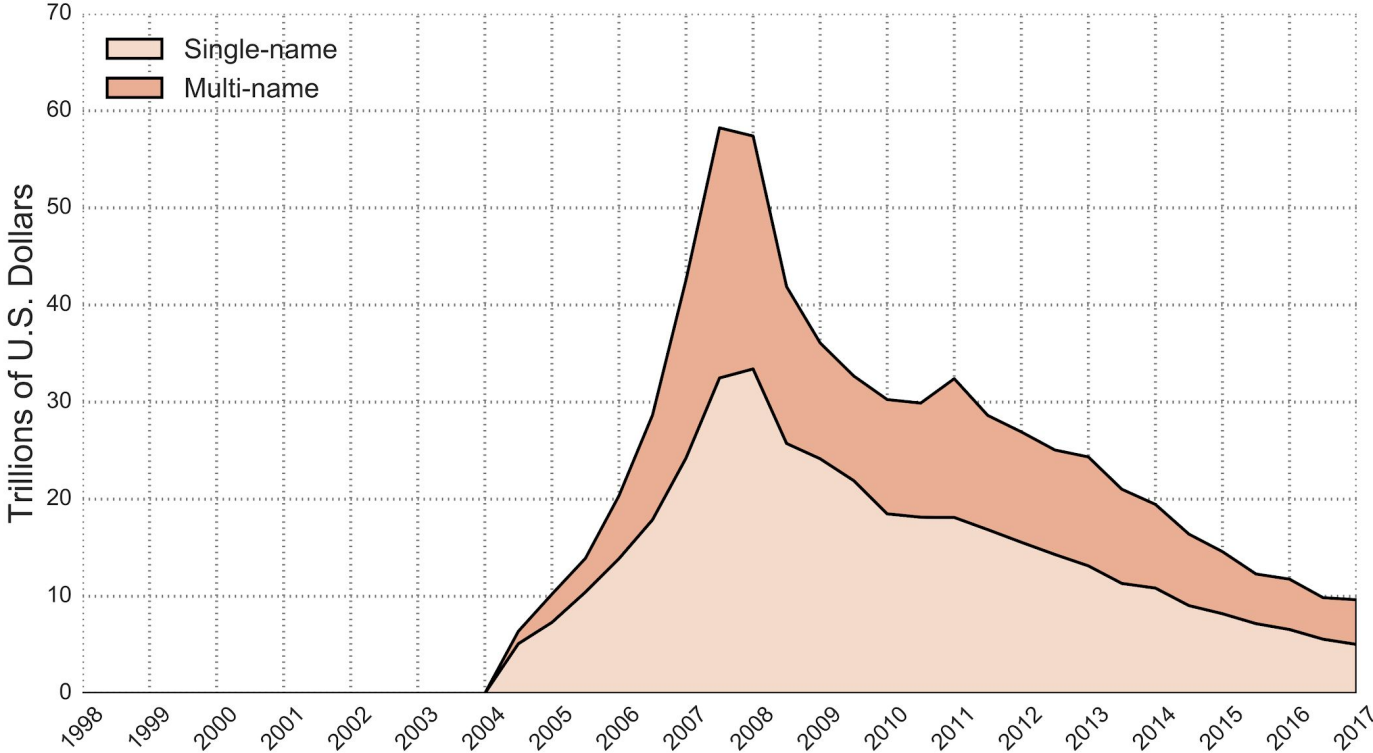
Source: BIS OTC derivatives statistics

# Size of OTC CDS markets



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What drives this reduction in size?

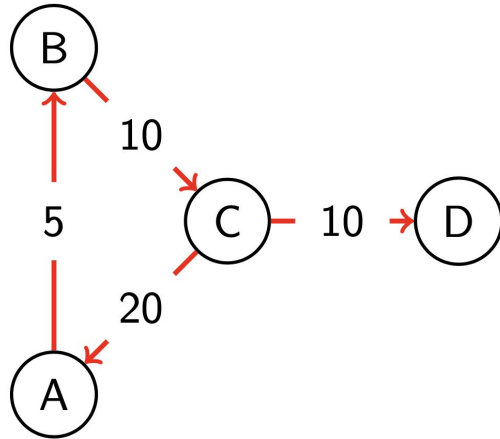


*“Banks have turned to a tool known as **portfolio compression** [...] The tool was a **key driver** of the fall in outstanding notional.”*

**Financial Times, May 5, 2016**

# Portfolio compression

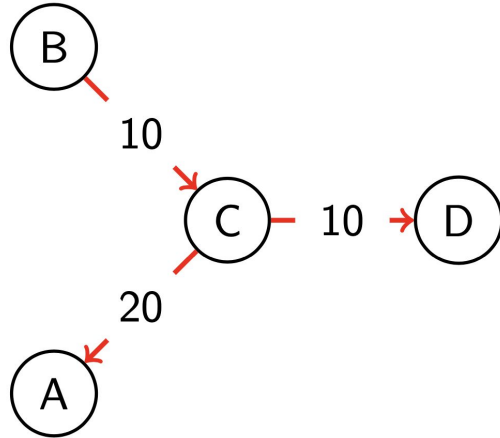
*Post-trade technology that reduces gross positions while maintaining net balances*



<u>Gross</u>	<u>Net</u>
$V_A^g = 25$	$V_A^n = -15$
$V_B^g = 15$	$V_B^n = +5$
$V_C^g = 40$	$V_C^n = +20$
$V_D^g = 10$	$V_D^n = -10$
$V^g = 45$	$V^n = 0$

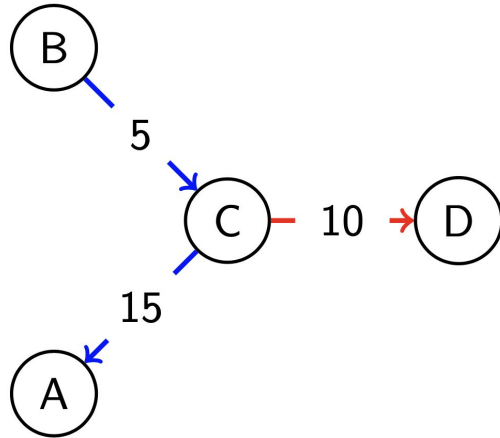
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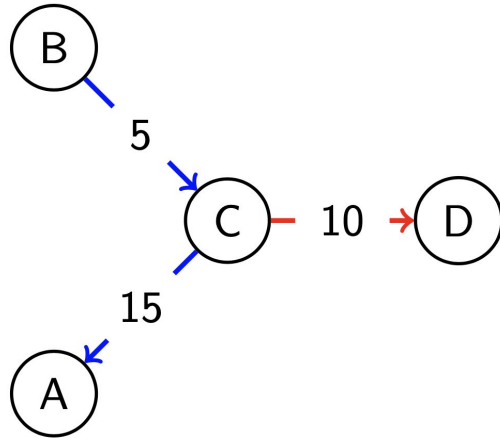
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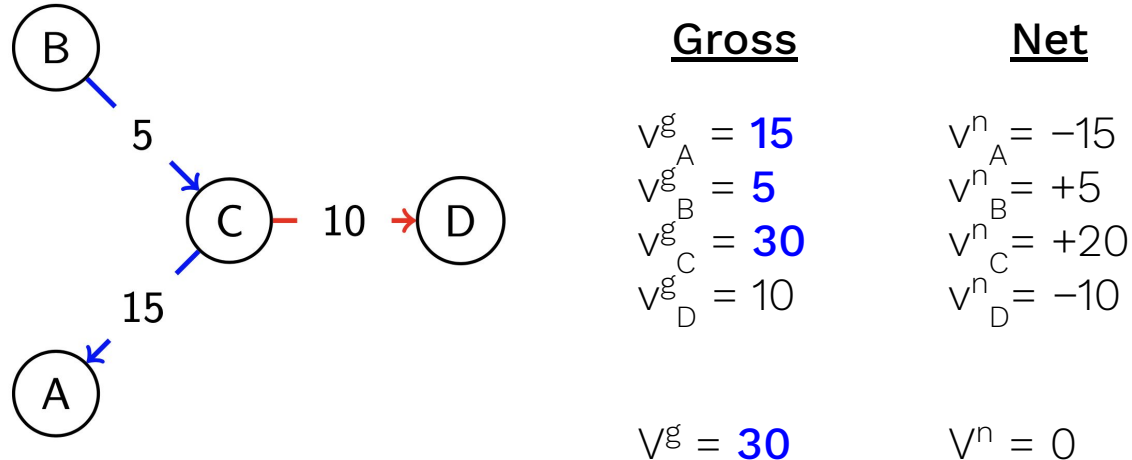
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<u>Gross</u>	<u>Net</u>
$V_A^g = 15$	$V_A^n = -15$
$V_B^g = 5$	$V_B^n = +5$
$V_C^g = 30$	$V_C^n = +20$
$V_D^g = 10$	$V_D^n = -10$
$V^g = 30$	$V^n = 0$

# Portfolio compression

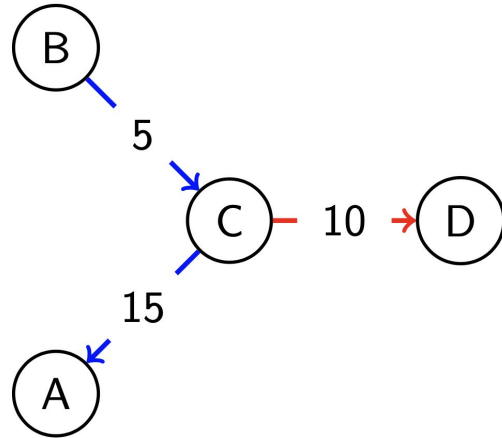
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Reduction in aggregate gross notional: 15

# Portfolio compression

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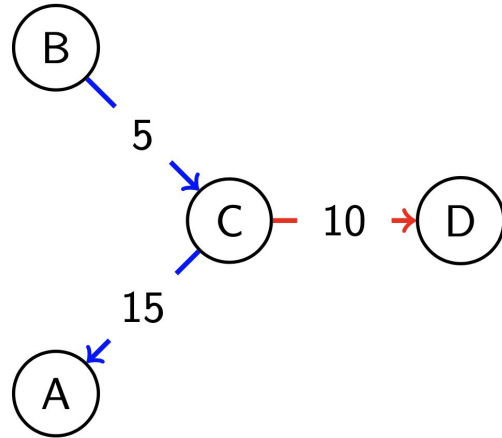
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## Remark 1

Over-the-counter markets exhibit some redundancy in notional

# Portfolio compression

*Post-trade technology that reduces gross positions while maintaining net balances*



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## Remark 2

Compression is a multilateral netting technique that does not require a Clearinghouse or Central Counterparty

# Taking stock

## Why?

New Regulatory Framework

↳ Capital and collateral requirements ~ Leverage ratios

↳ Demand for new post-trade services (Duffie, 2017),(FSB,2017)

## How much?

TriOptima (TriReduce): \$1,855 trillion (2003-2020)

Other companies: LMRKTS, Quantile, Capitalab

ISDA: 67% reduction of IRD markets (2010-2016)

## Regulation

Defined in MiFIR / Dodd-Franck

Supported adoption under EMIR and Dodd-Franck

However...

**What are the systemic implications of widespread adoption?**

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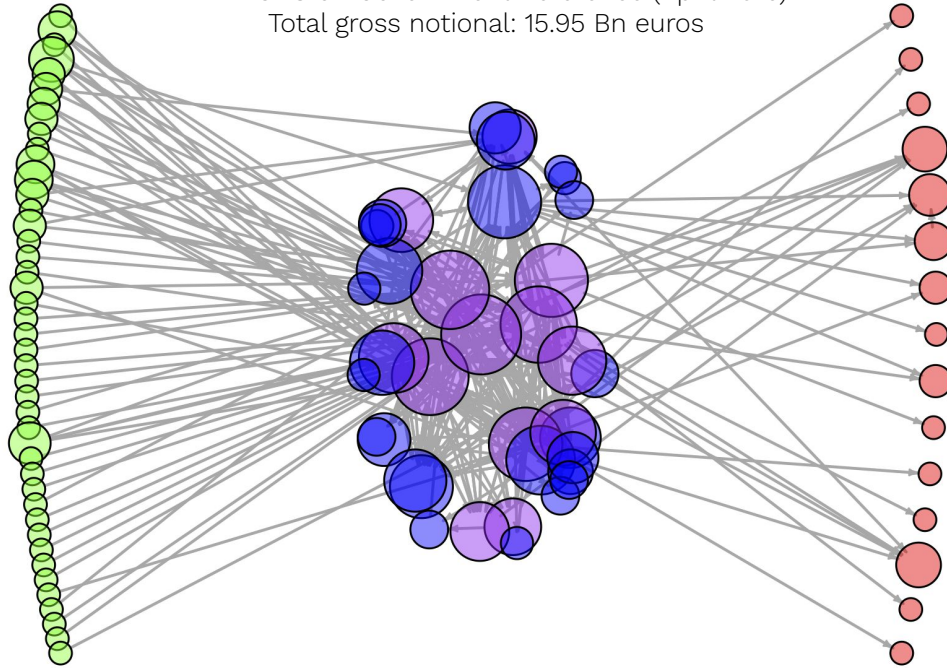
## Today

- ↳ fundamentals of the technology
- ↳ estimates of a market wide impact
- ↳ policy implications

# OTC Networks

## Dealers and customers

EMIR CDS on Government Reference (April 2016)  
Total gross notional: 15.95 Bn euros

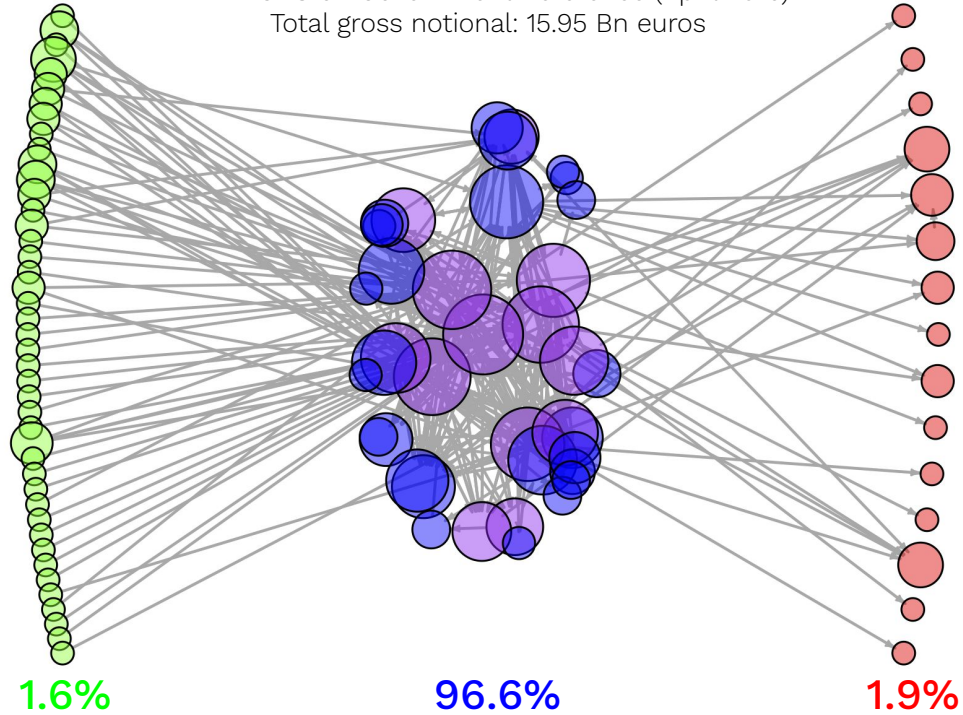




# OTC Networks

## Dealers and customers

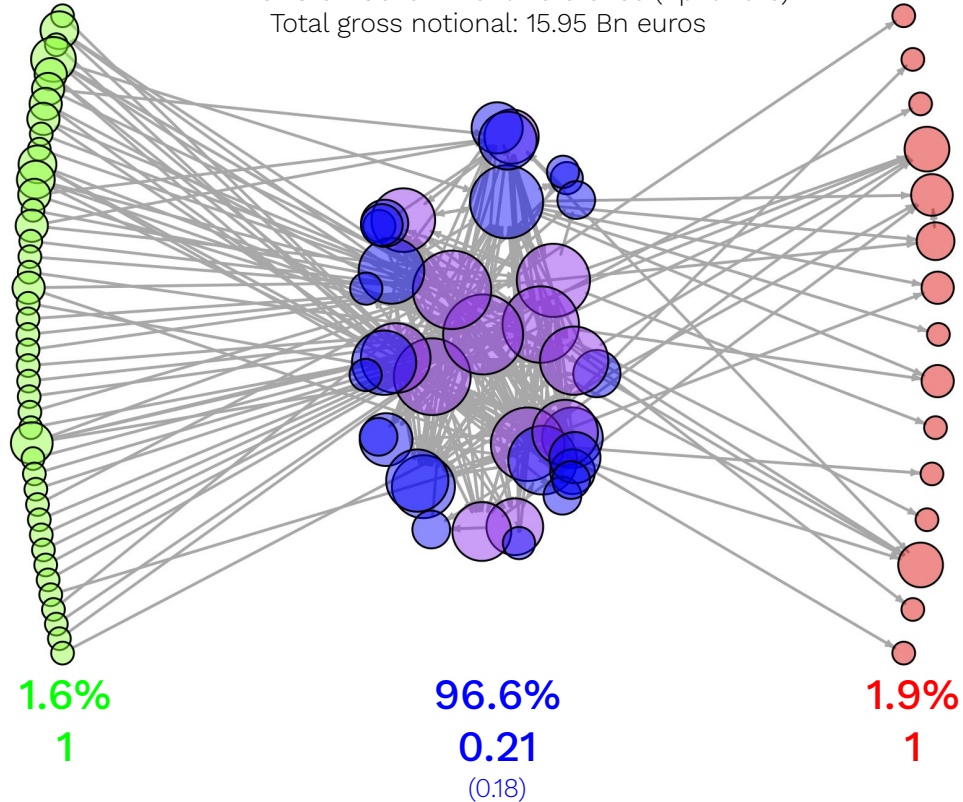
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$$\Delta = \sum_{i,j} e_{ij} - \frac{(\sum_i | \sum_j e_{ij} - \sum_j e_{ji} |)}{2}$$

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↓↓

Gross notionalMinimum notional

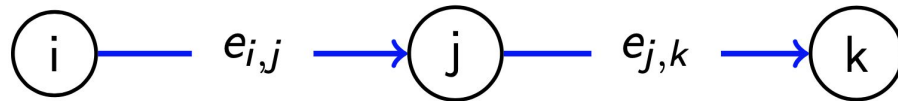
# Notional excess

$$\Delta = \underbrace{\sum_{i,j} e_{ij}}_{\text{Gross notional}} - \frac{(\sum_i |\sum_j e_{ij} - \sum_j e_{ji}|)}{2}$$

↓ ↓  
Minimum notional

## Theorem

*In a market of fungible and outstanding trades: There is **excess**  $\Leftrightarrow$  there is **intermediation** in the market*



# Compression benchmarks

## Conservative

*Relationship constraints*

## Non-conservative

*No constraints*

## Hybrid

*Intra-dealer → Non-conservative*

*Dealer-customer → Conservative*

**When?**  
(feasibility)

**How much?**  
(efficiency)

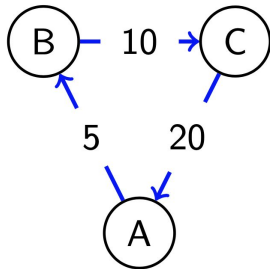
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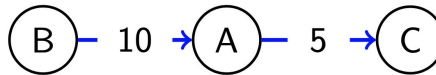
*Relationship constraints*



**Closed chains of intermediation**

## Non-conservative

*No constraints*



**Chains of intermediation**

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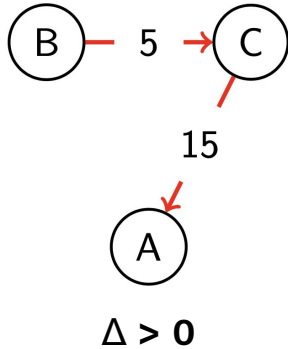
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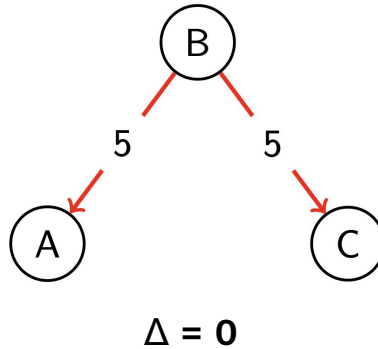
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## Hybrid

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*Dealer-customer  $\rightarrow$  Conservative*



# **Application**

# Approach

## Data

Trade state report under EMIR: EU-wide Credit Default Swaps (single name)

- □ Oct 2014 - Apr 2016
- 100 most traded instruments (ref. entity + maturity) ≈ 70 Bn euros

## Implementation

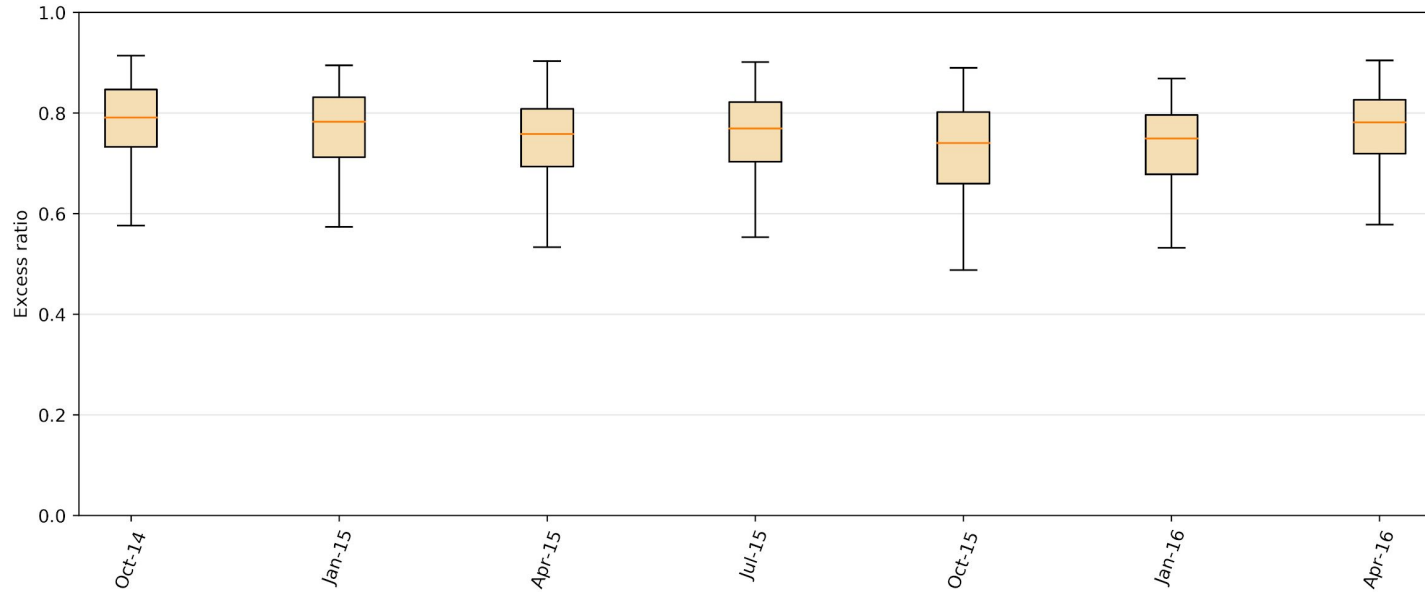
- Design optimal solution for each benchmark

## Analysis

1. Excess levels
2. Efficiency of market wide adoption
3. (Interaction with Central Counterparties (CCPs))

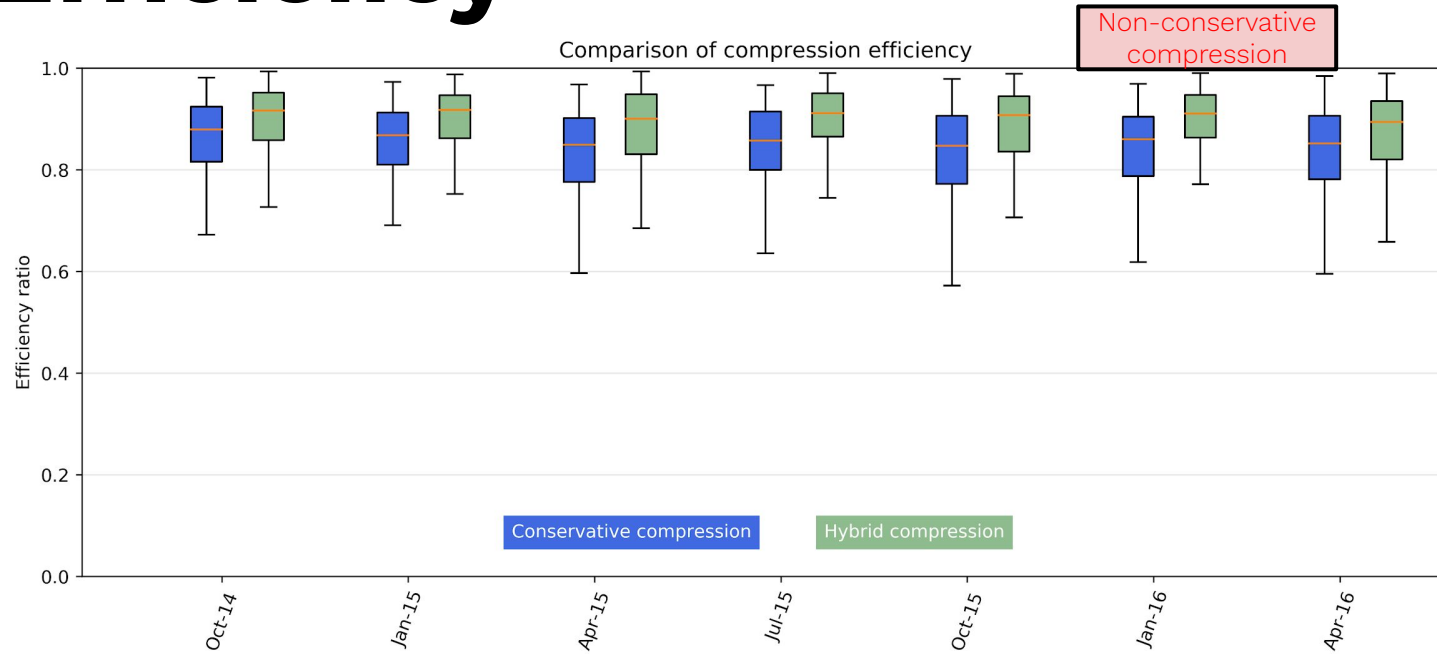
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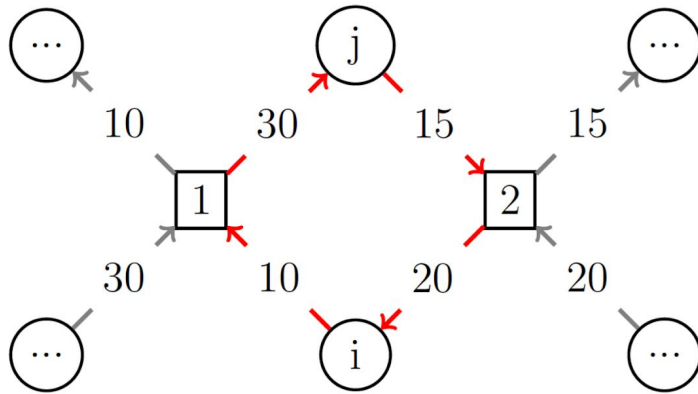


# Efficiency

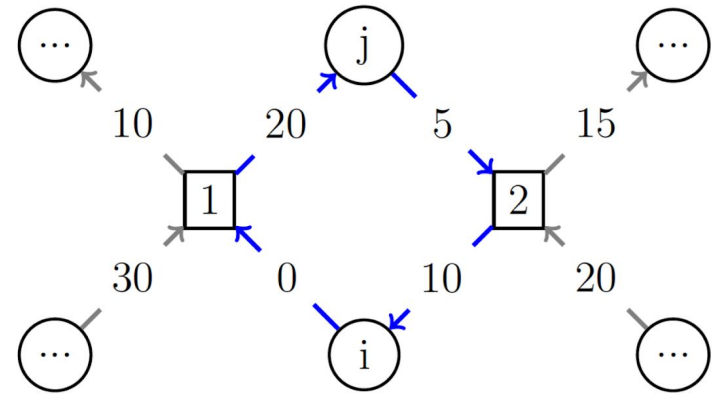
# Efficiency



# CCP and compression

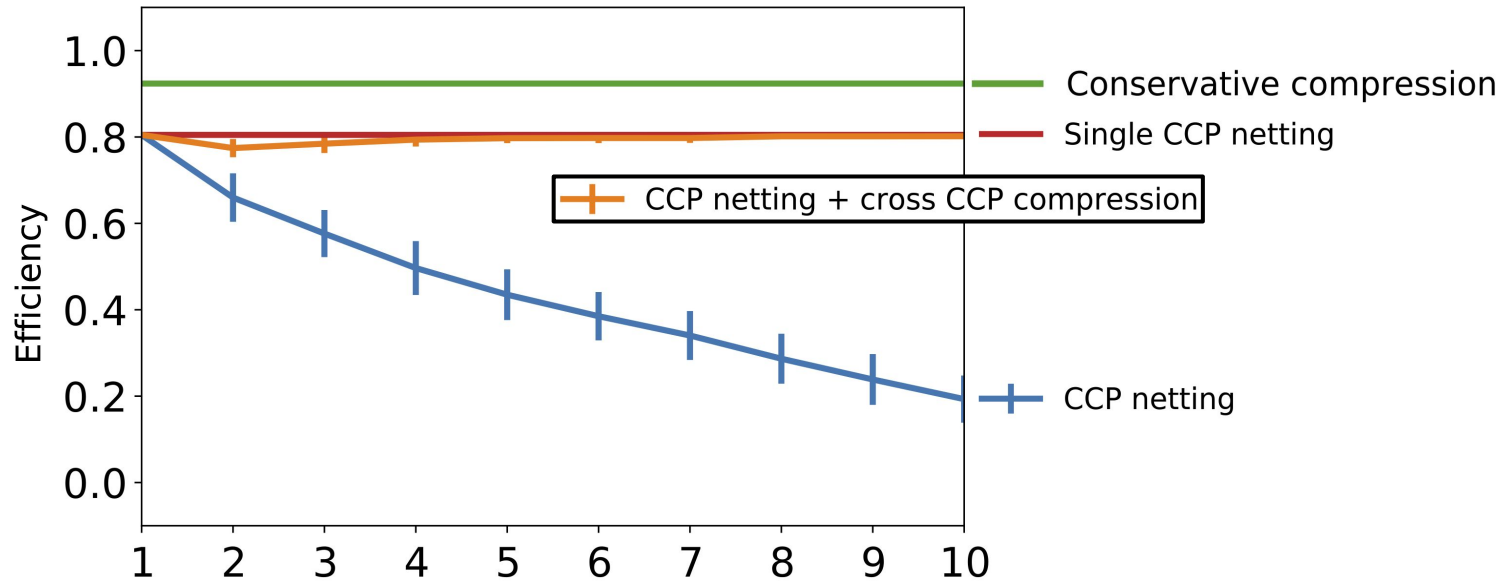


(a) Before Compression



(b) After Compression

# CCP and compression





# Conclusion

Over-the-counter markets generate large **excess** when intermediation

Average > 75% of total notional

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Excess can be removed by **compression**

- **Coordinated mechanism** leading to rapid reduction in aggregate notional
- **Private demand** driven by **regulatory cost** of excess
- This demand on its own can explain the large reduction in size in CDS

*Tightly-knit structure of OTC markets*

Conservative compression: Average > 80%

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Over-the-counter markets generate large **excess** when intermediation

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*Tightly-knit structure of OTC markets*

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## Policy implications

- **Distortion** of aggregate assessments
  - Liquidity, inventory capacity, etc.
- Monitor **risk redistribution** effects and **harmonize** participation
  - Intra-dealer vs customers | banks vs non-banks
- Utility beyond the private demand
  - **Systemic risk management** tool

**Thank you!**

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Working paper available here

