Interconnected Banks and Systemically Important Exposures

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Research Question

1. Quantify direct and indirect monetary impact of shocks on banks' securities holdings
2. Identify systemically important securities holdings on the balance sheets of banks
3. Investigate direct and indirect monetary impact under different asset classes allocation strategies

The dataset

In collaboration with ECB[3], we work on supervisory dataset.

- 26 large banks of EU area securities holdings
- exposures towards financial firms, non-financial firms (1-digit NACE code), households
- information about country of the obligor
- interbank bilateral exposures estimated from individual total interbank assets/liabilities (Halaj 2013 CMS)

[3] Macro-Financial Linkages Division of the DG Macroprudential Policy and Financial Stability

Our results

In Euro Area data, for systemically important banks

1. banks' largest exposure is towards the **real economy** – loans to households – and mostly **domestic**
2. banks' second largest exposure is towards **financial sectors** and mostly **cross-border**
3. between banks of the **same country**, the largest *common* exposure is towards **households**
4. between banks of **different countries**, the largest *common* exposure is towards **credit Institutions**
5. with non-zero volatility on securities holdings:
   - for small and intermediate shocks the diversified allocation is more robust than the empirical allocation (approximately domestic)
   - for large shocks the diversified allocation is less robust than the empirical allocation (approximately domestic)

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The leverage framework

The leverage matrices

$$\Lambda^i_{ij} = \frac{A^i_{ij}}{E_i} \quad , \quad \Lambda^e_{icst} = \frac{A^e_{icst}}{E_i}. \tag{1}$$

where A represents banks' assets, and E banks' equity.
The relative equity loss is

$$h_i = \min\left\{1\,,\ \frac{E_i(0) - E_i(t)}{E_i(0)}\right\} \quad , \quad H = \frac{\sum_{i=1}^{N} E_i \cdot h_i}{\sum_{i=1}^{N} E_i}. \tag{2}$$

(Battiston 2016)

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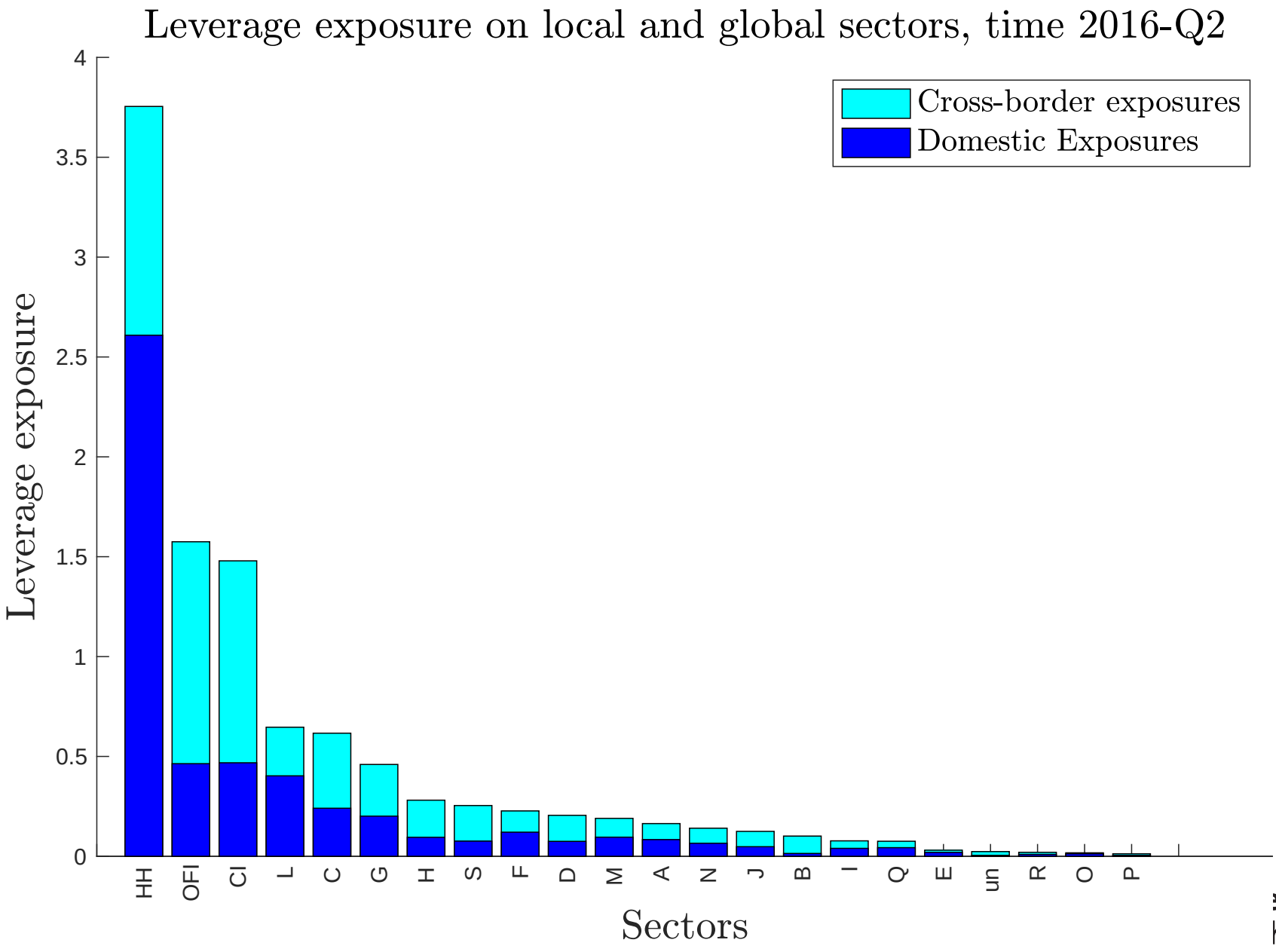
$\Longrightarrow$ For a shock k hitting the sector s of country c at time t

$$h_i = \min\left\{1\,,\ k \cdot \Lambda^{e}_{icst}\right\}. \tag{3}$$

(Battiston 2016)

Exposure statistics



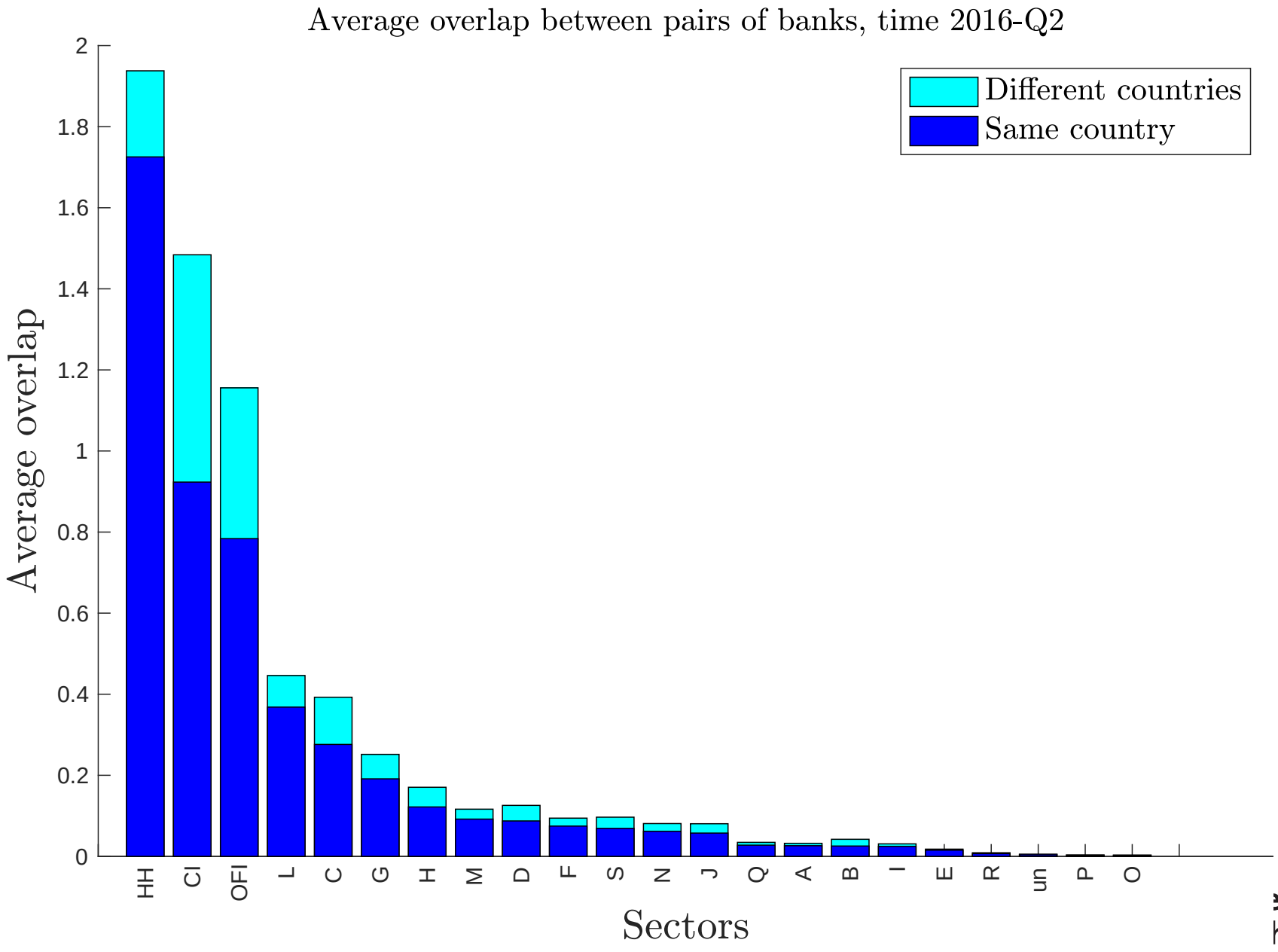
The overlap

The overlap O measures to which extent the portfolios (expressed in units of leverage) of two different banks (i, j) are similar.

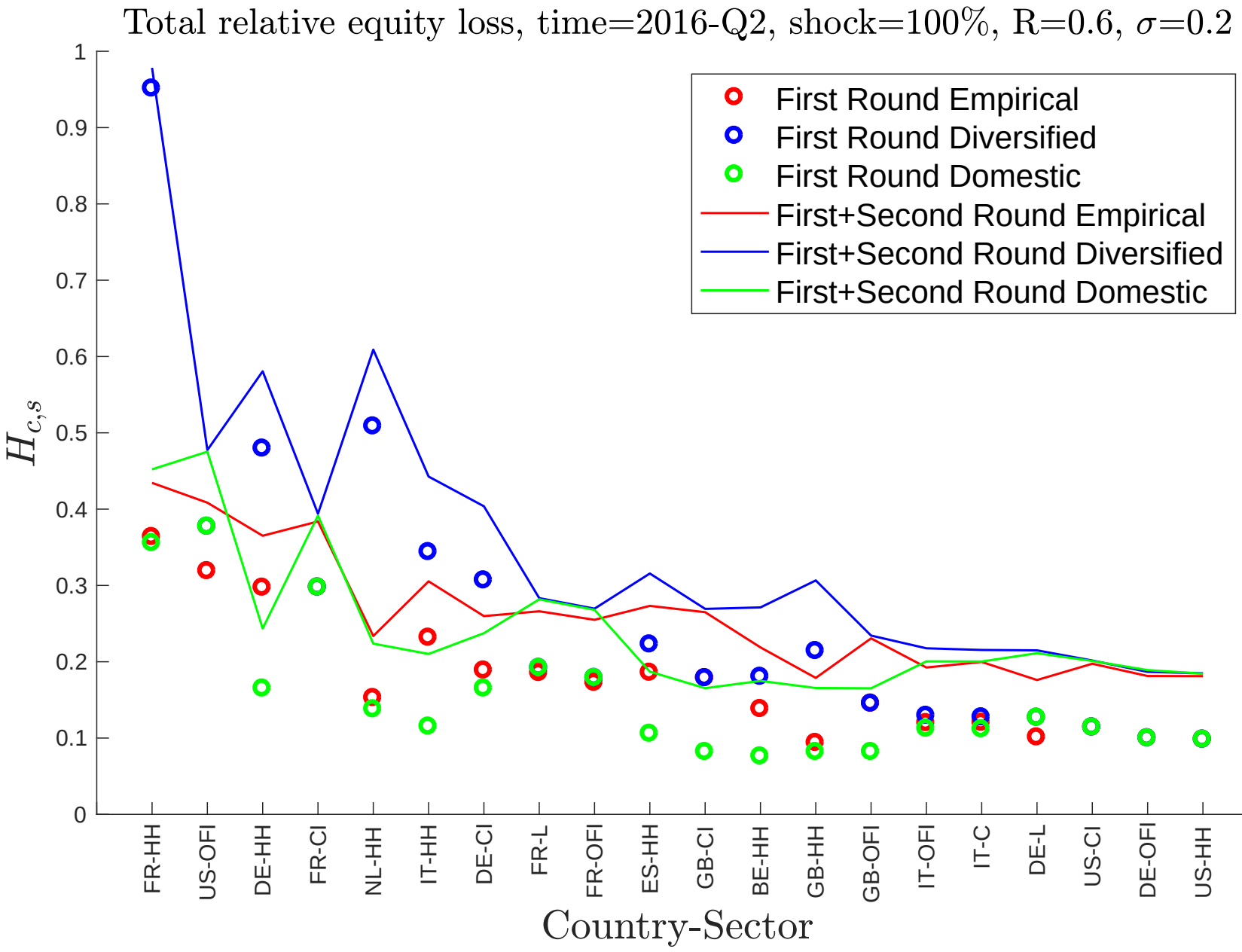
$$O_{ijcst} = \min \left\{ \Lambda^{e}_{icst} , \Lambda^{e}_{jcst} \right\} . \tag{4}$$

In particular, it captures the common relative equity loss suffered by the two banks, conditional upon a shock on an external asset class.

Exposure statistics



First and Second round losses



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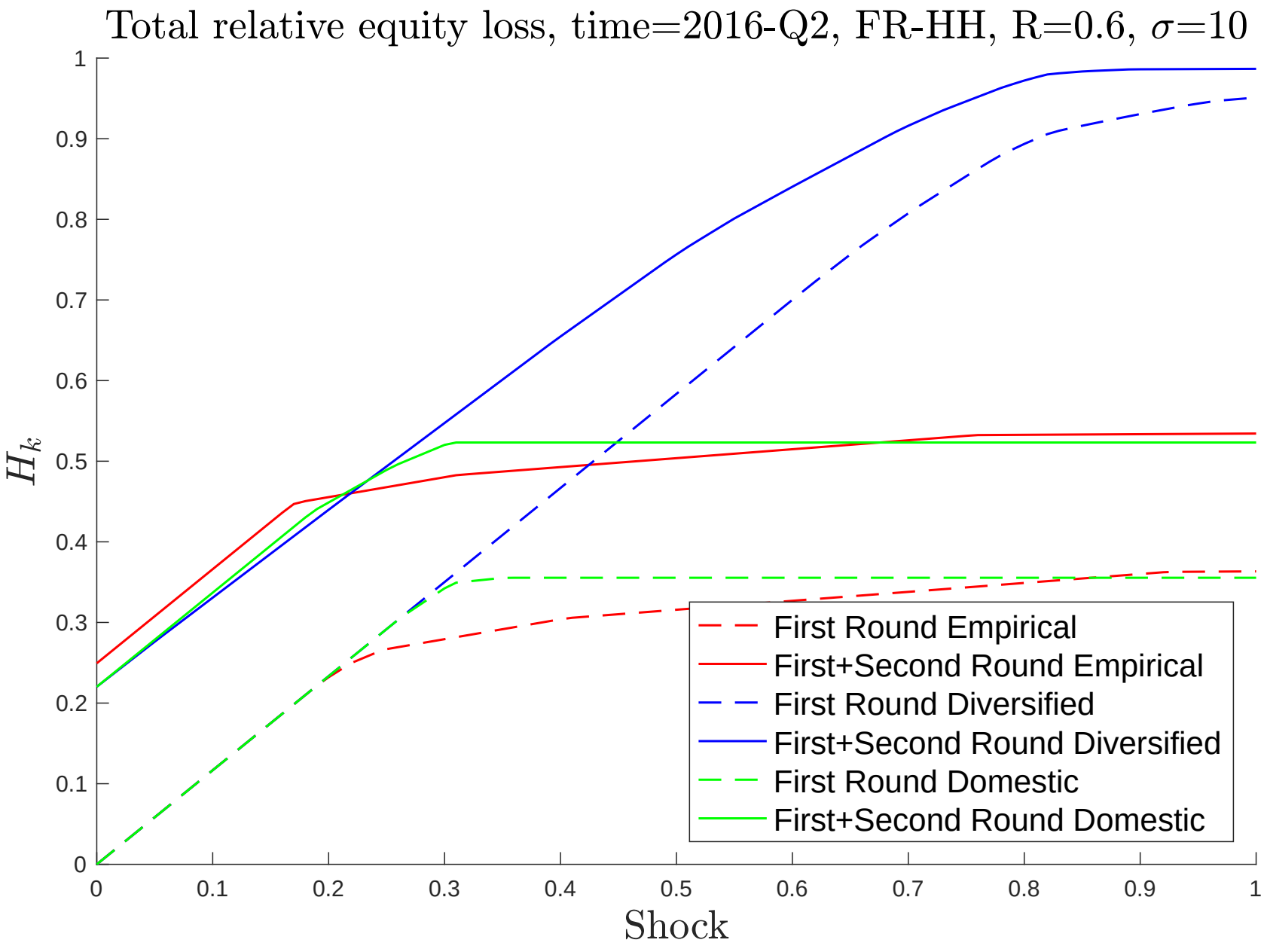

Conclusion

Main results:

1. Securities holdings might be systemically important for two main reasons:
   - because of their size (*HH*),
   - because of their position in the network (*CI* and *OFI*).
2. A network structure which is "always better" does not exist.

Implications:

- Relevant for the discussion on the EU Capital Market Union.
  - For large shocks a more diversified allocation is less robust than a domestic one.