

# **Industrial Structure and Systemic Risk in the Financial Sector**

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**ESE: Financial Supervision - Ready for Future Challenges?**

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# Industrial Structure and Systemic Risk

**1. Banking Industry**

partial equilibrium

**2. Financial Sector**

general equilibrium

# Industrial Structure:

## 1. Natural industrial structure: Shaked, Sutton, 1982/83

- exogenous sunk costs (variety): **fragmentation**
- endogenous sunk costs (quality): **concentration**
- **intermediated markets tend to be concentrated (Gehrig, 1996)**

## 2. Need for regulation? **market failure**

- „excessive“ competition? structure regulation
- **„excessive“** risk taking? prudential regulation
- **systemic risk**
- **vehicle for political interests** **funding of sovereign budget**

# Industrial Structure:

## 1. horizontal features:

- switching costs
- local information
- **regulation / supervision**

**variety**

**soft information**

## 2. vertical features:

- resilience
- trust
- diversification
- networks and liquidity

**quality**

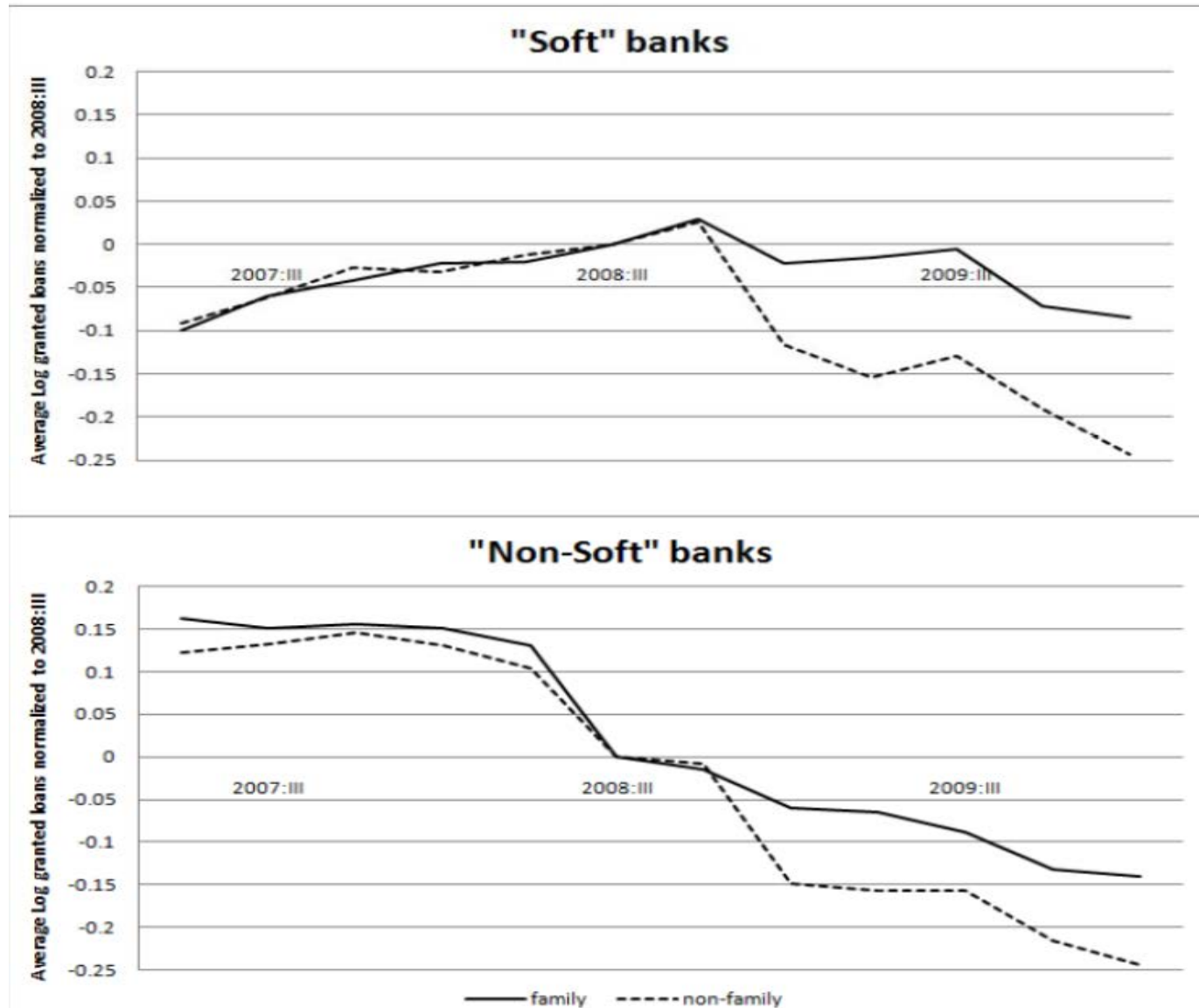
**prob(non-default)**

**prob(money back)**

**prob(match)**

# Local Information and Resilience of Lending

Figure 2: Bank lending and heterogeneity in screening technologies



# Capitalization and Funding Advantages

Market conditions prior to the Basel Process: International **competitive advantage** of banking systems with a high degree of capitalization (Zimmer, McCauley, FRBNY, 1991)

		GE	J	UK	US
Cost of capital (80-88)	Banks	<b>6.9</b>	<b>3.0</b>	<b>9.8</b>	<b>11.9</b>
	Industry	9.8	6.7	10.6	<b>10.5</b>
Capital ratio (Basel I) (88)		<b>10%</b>	<b>11.5%</b>	<b>10%</b>	<b>7%</b>

G and J: common stock

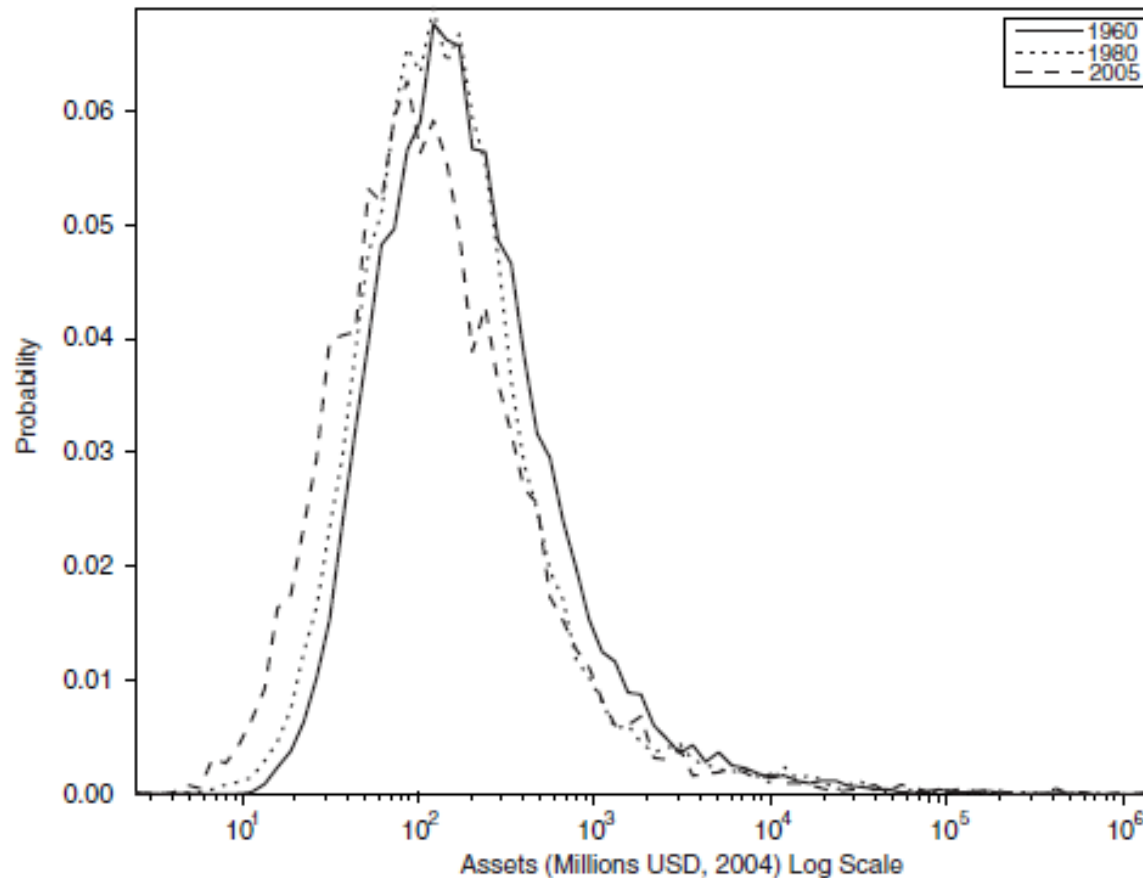
hidden reserves

UK and US: includes hybrid forms of equity

no hidden reserves

# Industrial Structure – US 1960-2005

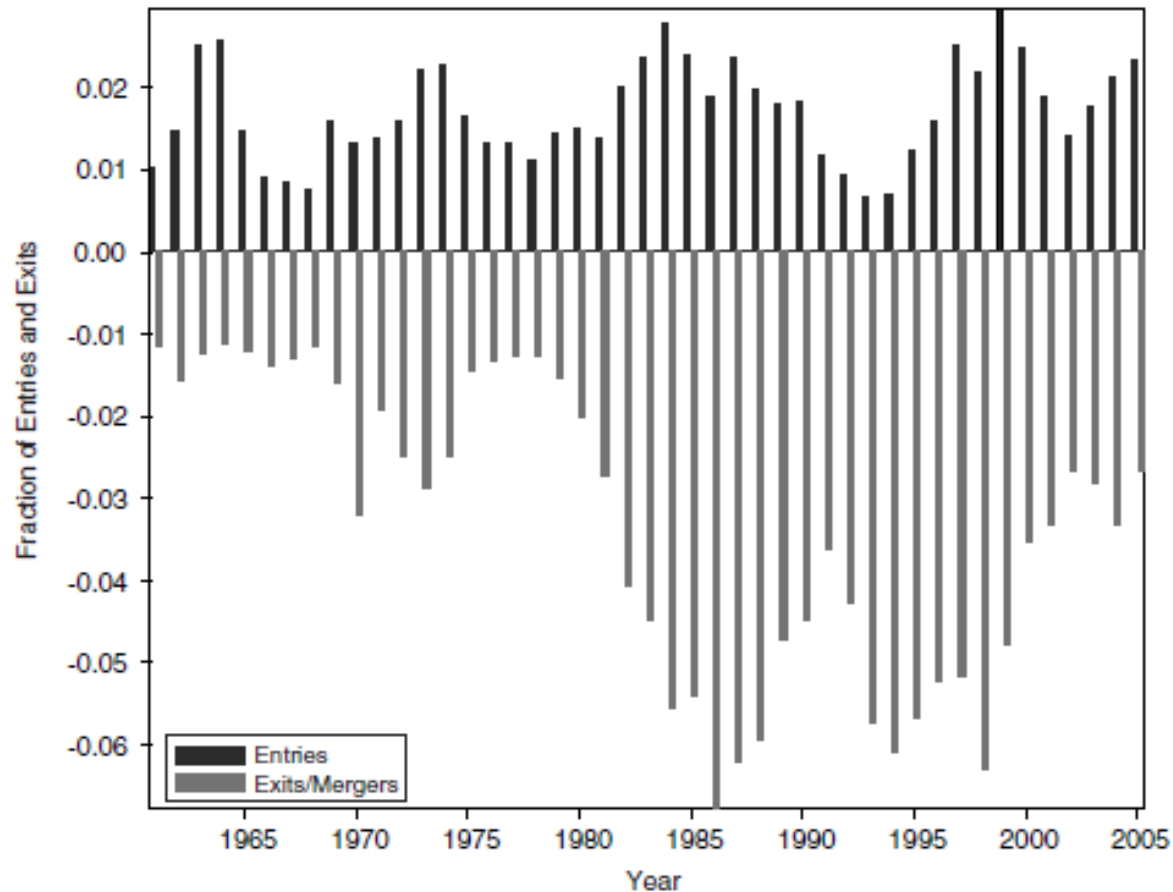
Figure 3 Change in Bank Size Distribution Over Time



Notes: Each line is a probability distribution of bank size as measured by assets for a given year.

# Openness in US: Consolidation cum Entry

Figure 8 Fraction of Banks that Enter and Exit by Year



Notes: The chart reports the gross flow of banks that enter and exit expressed as a fraction of banks in each year.



# Systemic Risk

## 1. NOT market risk

- systematic and undiversifiable

## 2. NOT business risk

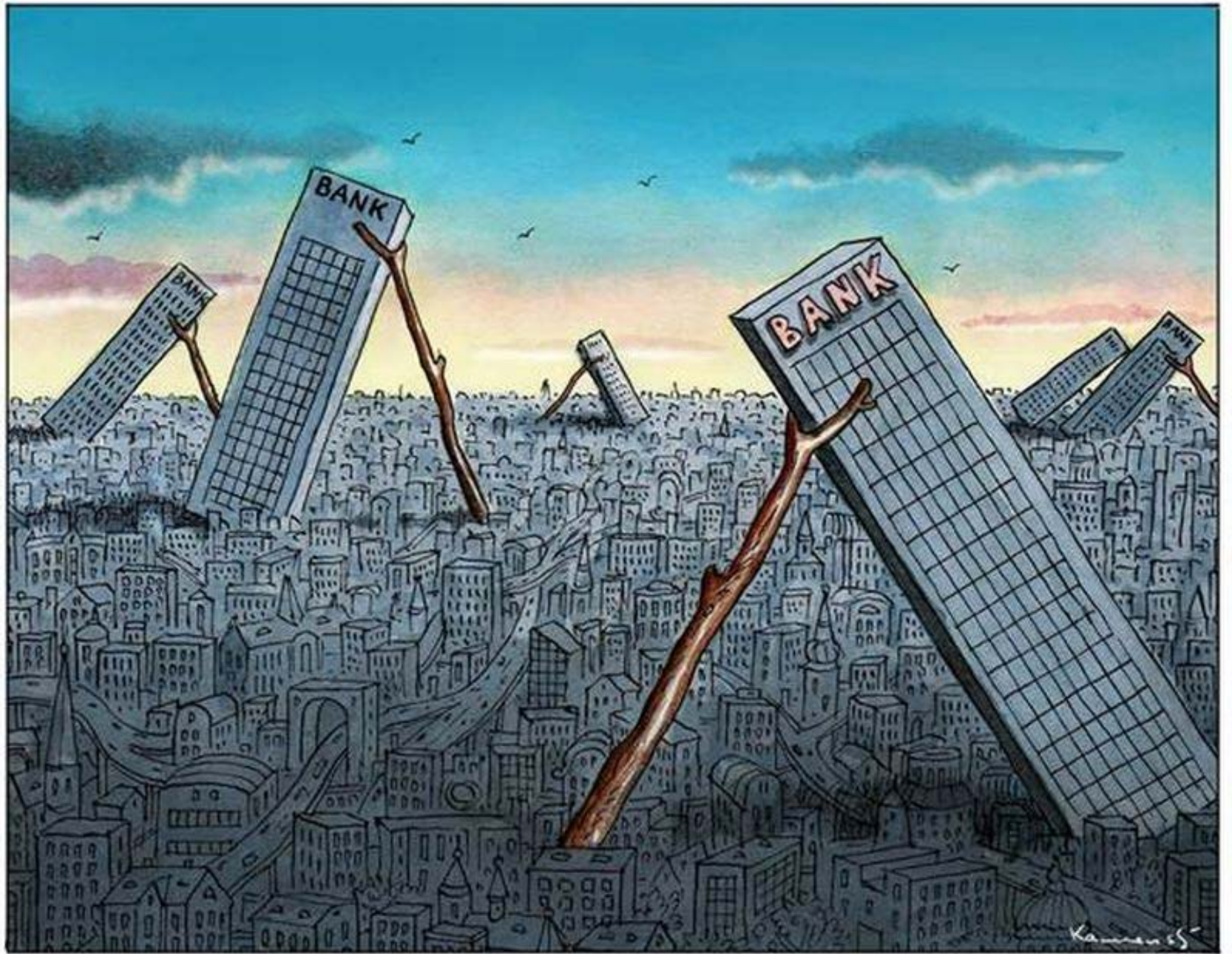
- exit/entry: market selects business models

## 3. systemic risk:

- negative externalities due to decentralized market feedback
- requires coordinated response

# Industrial Structure and Systemic Risk

- **TBTF Too-big-to-fail (implicit) guarantee**
  - Are firms large because of their competitive market strength?
    - market valuation
    - funding costs
    - network size and placement power
  - Are firms large because of political intervention?
    - implicit TBTF-guarantees
    - political (national) champions
    - private funding channel (for political means)

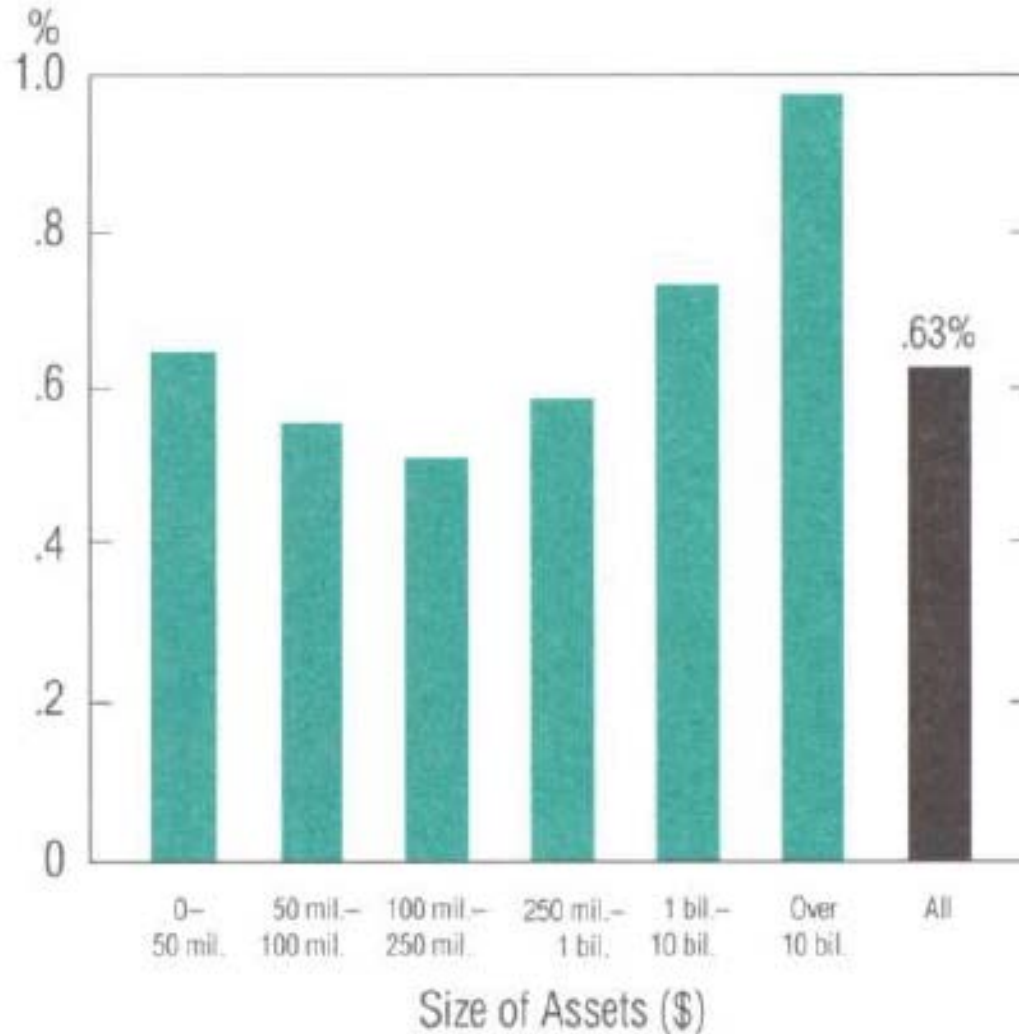


# Industrial Structure and Systemic Risk

- **TBTF Too-big-to-fail - Problems**
  - **distortion of competition**
    - unpriced subsidy
    - invites risk taking
    - distorts pricing structure
    - distorts industrial structure - too many large / too few medium firms
  - **TBTF as a source of systemic risk**
    - race for TBTF status
  - **Unintended:**
    - TBTF generates the very problem that it is supposed to solve!

# Risk Taking US-S&L (1983-1991)

Chart 19 Loan Loss Provisions as a Percentage of Assets



# Industrial Structure and Systemic Risk

## What is the Relevant Market?

### 1. Banking Industry

partial equilibrium

- national perspective
- **European perspective**
- global perspective

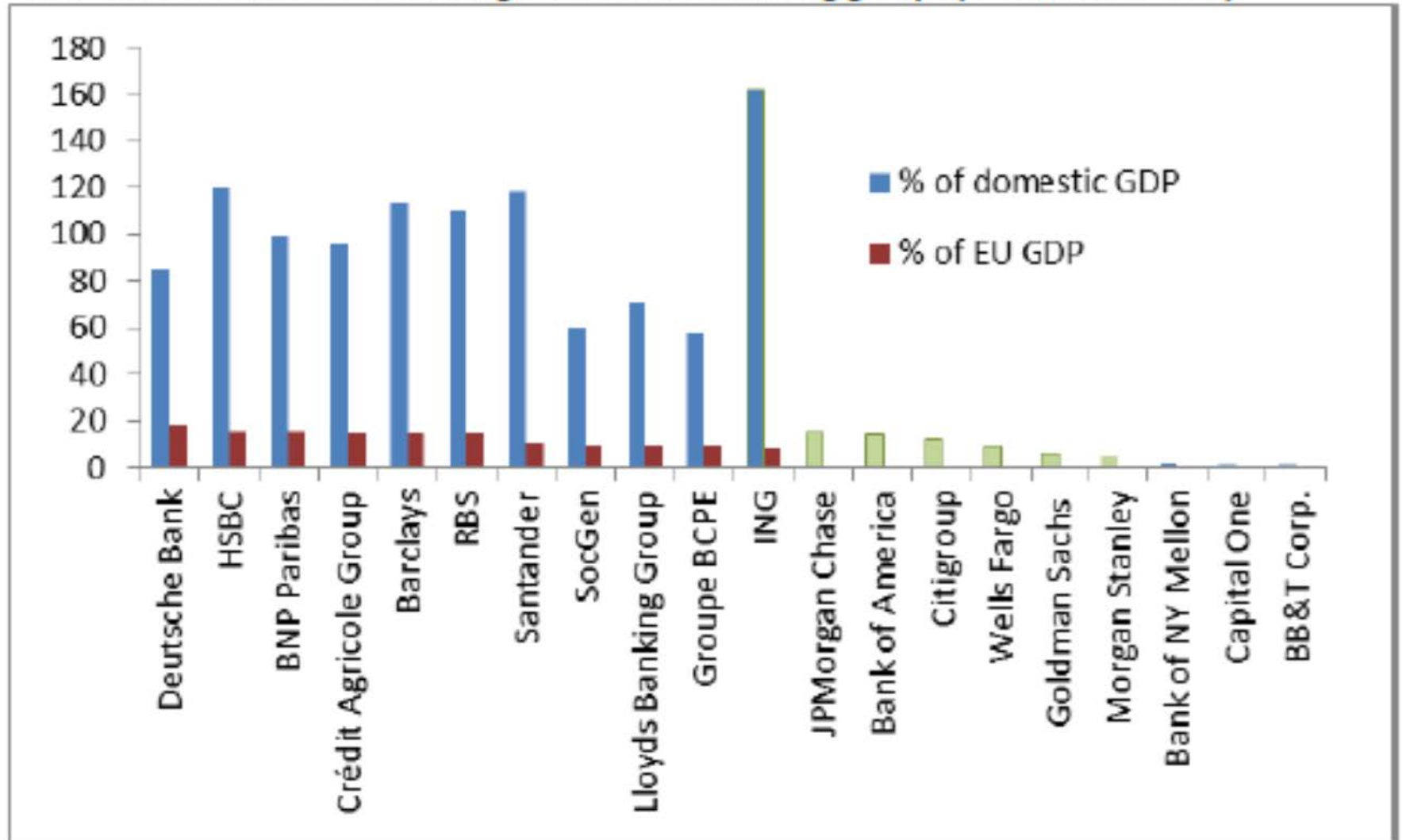
### 2. Financial Sector

general equilibrium

- national perspective
- **European perspective**
- global perspective

# Options for a European Banking Market?

Chart 3.4.2: Total assets of the largest EU and US banking groups (2011, in % of GDP)



Source: Data from SNL Financial. Eurostat for GDP data.

# Health Status of Banking Systems

## Banks' price-to-book ratios in key regions

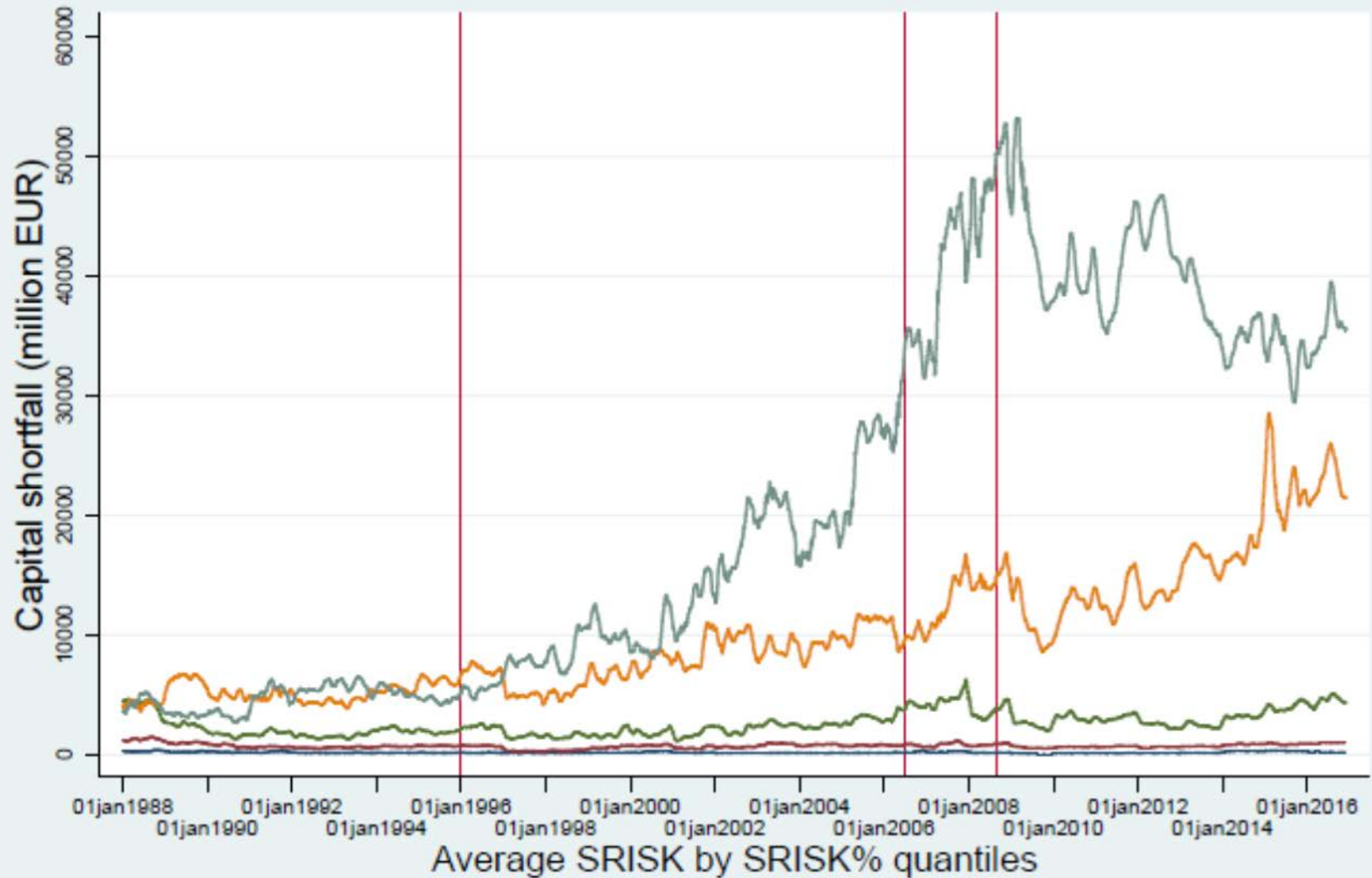
(1 Jan. 2015 - 1 Jul. 2016, weekly data)



Sources: Bloomberg, Datastream and ECB.



# Challenges for a European Banking Market

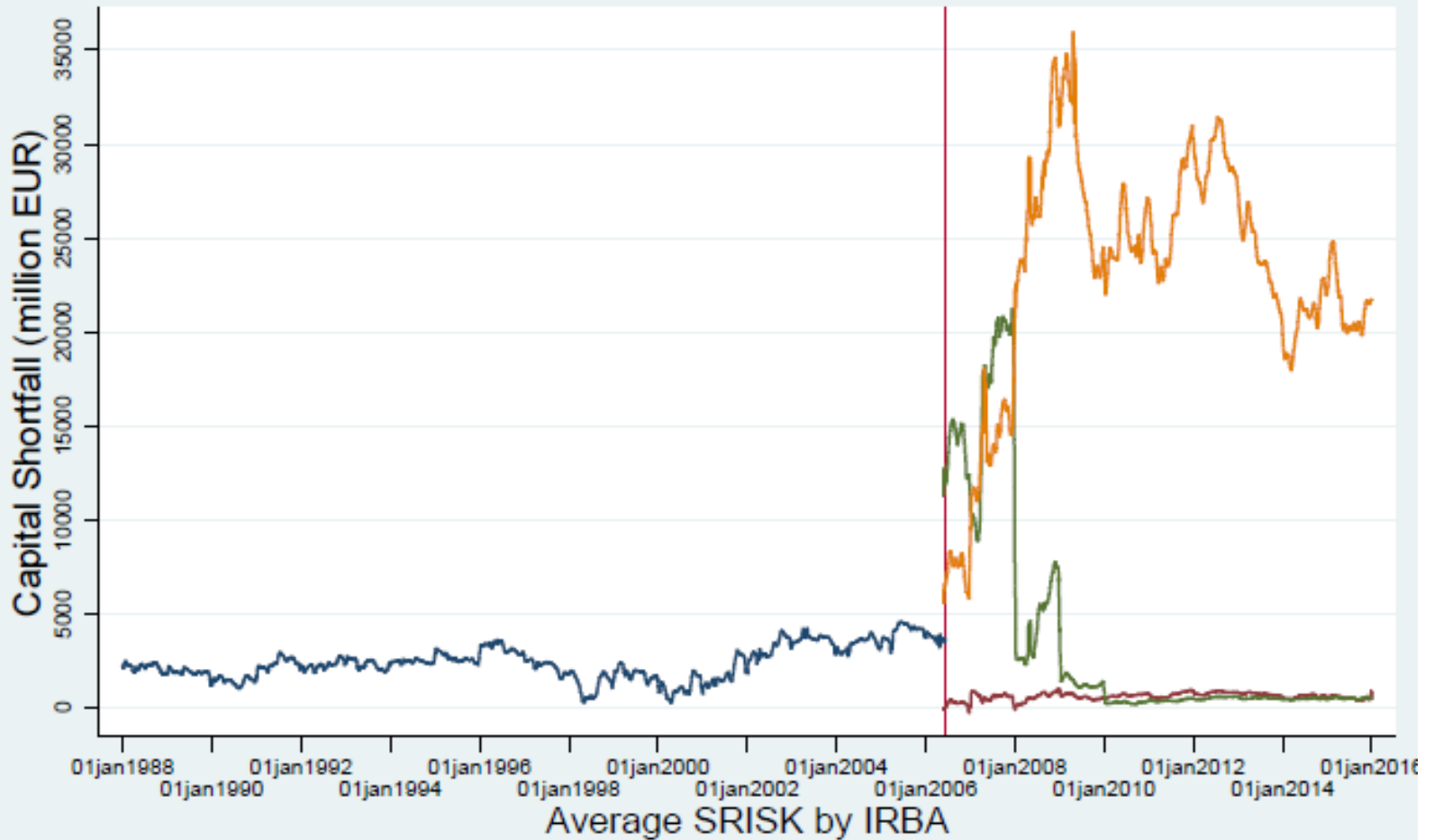


# Market Based Measures of Systemic Risk

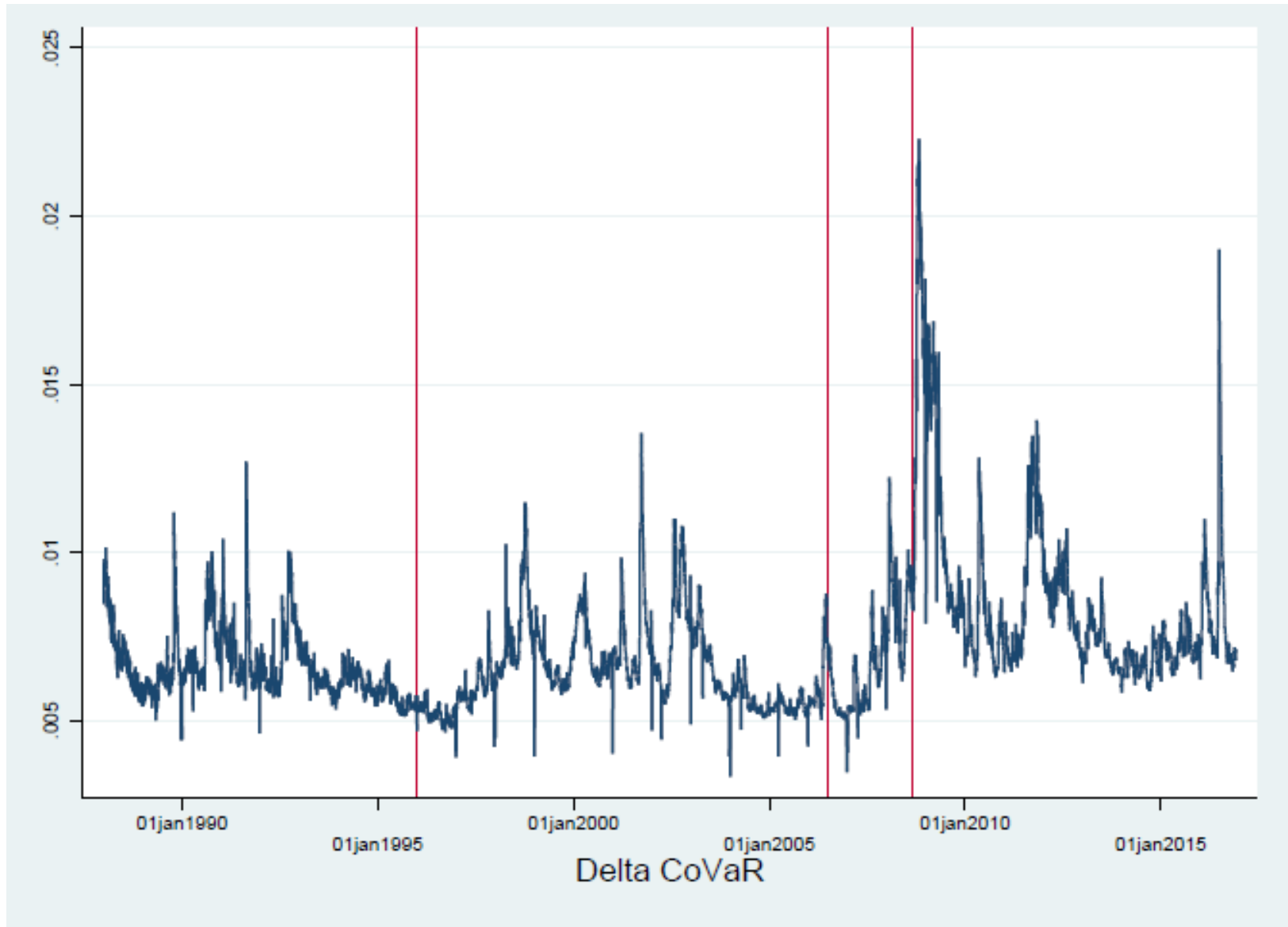
- **Contribution risk – Delta CoVar** (Adrian, Brunnermeier, 2016)
  - estimate of contagion of distress to other institutions
  
- **Exposure risk – SRISK** (Brownlees, Engle, 2017)
  - estimate of costs of meeting regulatory capital requirements in a major crisis
  - conditional (crisis) capital shortfall measure



# Role of Internal Credit Risk Models



# Delta CoVar - Europäische Banken



# Challenges for a European Banking Market

## Heterogeneous evolution of systemic exposure risk

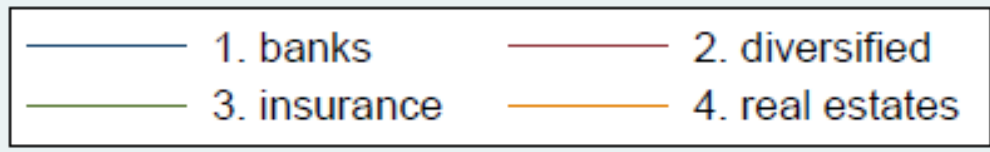
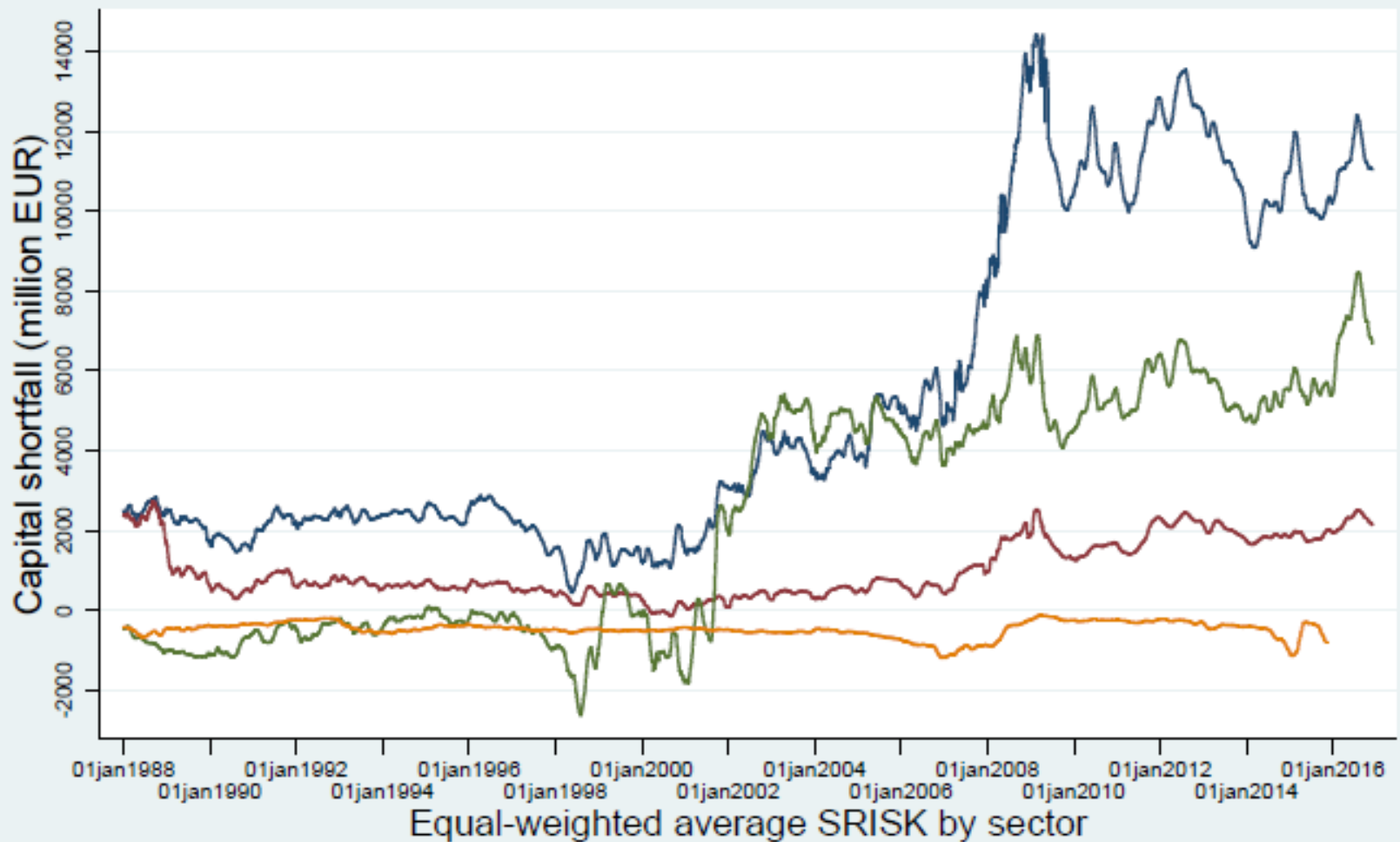
- **capital shortfall systemic risk measure peaks at largest firms**
  - most successful firms?
  - funding advantages?
- **second quintile is still increasing systemic exposure risk even under Banking Union**
  - **race to TBTF-status for Euro-area?**

# Challenges for a European Banking Market

Remember the stated goals of the Basel Accord 1988:

- safety and soundness
  - level playing field
- industrial structure?**

# Challenges for a European Financial System



# Spillovers to the Insurance Sector

## Average SRISK

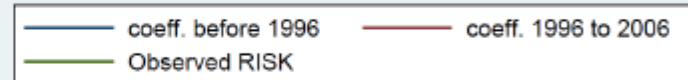
### Sector 1



### Sector 2



### Sector 3





# Spillovers to the Financial Sector

- **spillovers** from banking regulation (Basel II) to **insurance**
  - changes in underlying business models?
    - long-term lending
    - private-public-partnerships
- shadow banking
- real estate
- ...

# Conclusions

1. **TBTF** and/or preferential treatment of **national champions** contributes to concentration in the financial sector and thus **increases systemic risk**.
2. Price competition is tighter in **homogenous** financial systems. This generates **concentrated** industrial structures and leads to **higher exposure to TBTF-interventions**.
3. Price competition is more relaxed in **differentiated** markets allowing for a richer **fragmented** industrial structure and **less exposure to TBTF-interventions**.

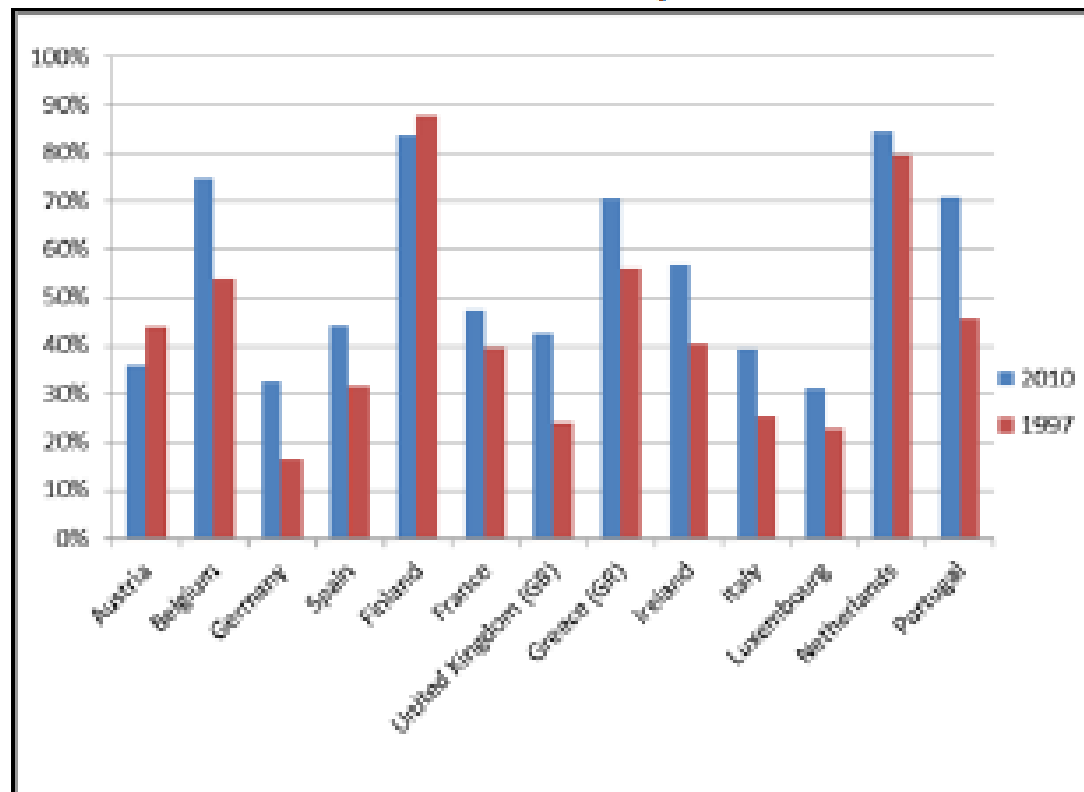
# References

- D`Aurizio, L., T. Oliviera and L. Romano (2014): Family Firms, Soft Information and Bank Lending in a Financial Crisis, CSEF-DP 357.
- Brownlees, C. and R. Engle (2017): SRISK: a conditional shortfall measure of risk, *Review of Financial Studies* 30(1), 2017.
- Boyd, J. and M. Gertler (1994): Large Banks, *Quarterly Review*, Fed. Res. Minneapolis.
- Gehrig, T. (1996): Natural Oligopoly and Customer Networks in Intermediated Markets, *International Journal of Industrial Organization* 14(1), 1996.
- Gehrig, T. (1998): Competing Markets, *European Economic Review*, 42(2), 1998.
- Gehrig, T. and M.C. Iannino (2017): Did the Basel Process of Capital Regulation Enhance the Resiliency of European Banks?, CEPR-DP. 11920,  
[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3017166](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3017166).
- Shaked, A. and J. Sutton (1983): Natural Oligopoly, *Econometrica* 51(5), 1983.
- Zimmer, S. and R. McCauley (1991): Bank cost of capital and internal competition, *FRBNY Quarterly Review*.

# Appendix

# Concentration in Europe

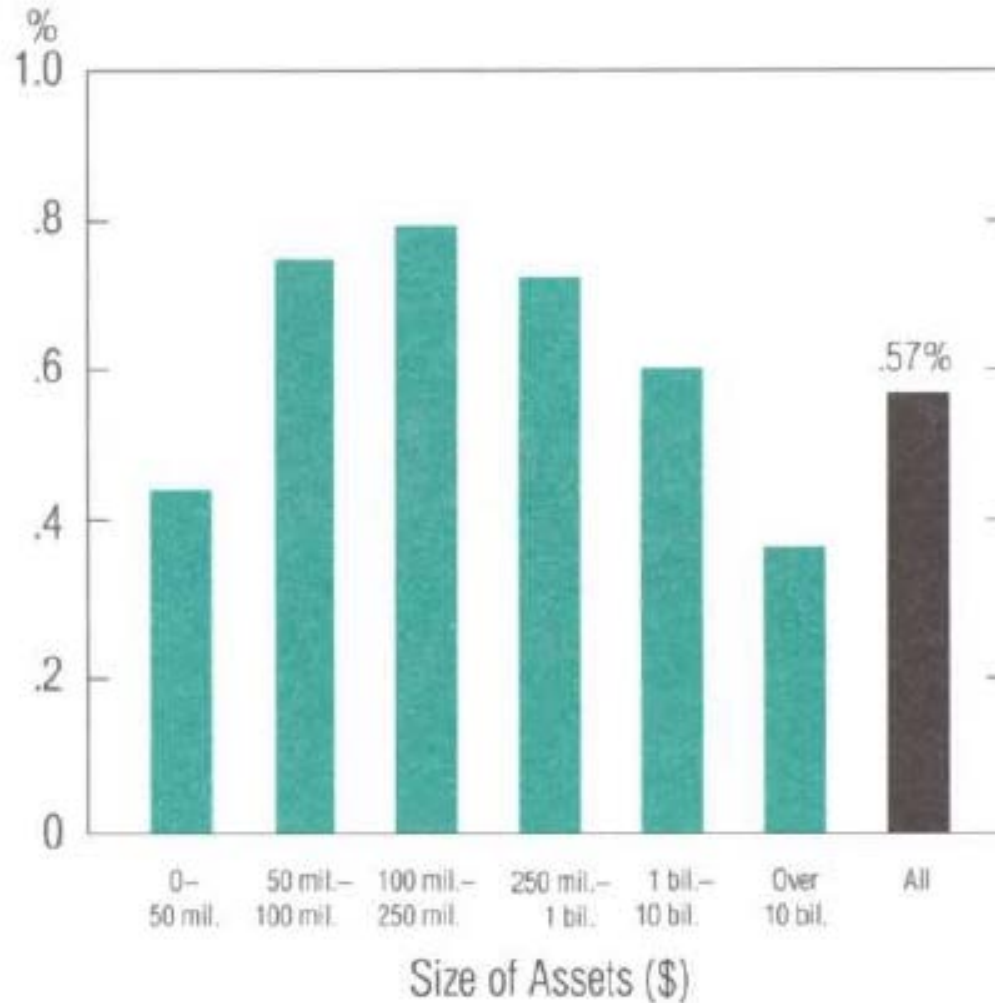
Chart 2.3.14: Concentration ratio (market share of top 5 banks in total assets)



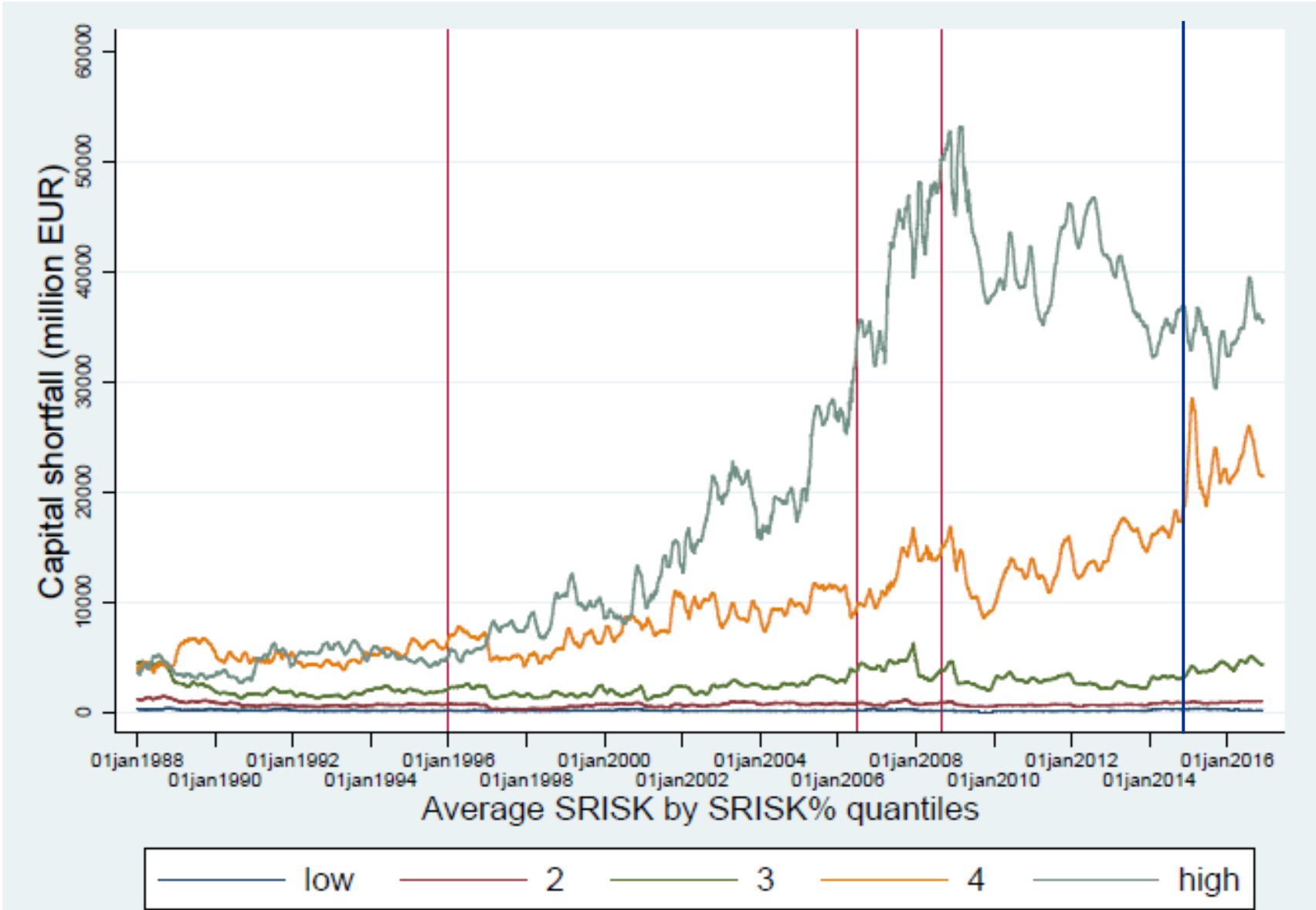
Source: ECB data.

# Size Distribution of Income US (1983-1991)

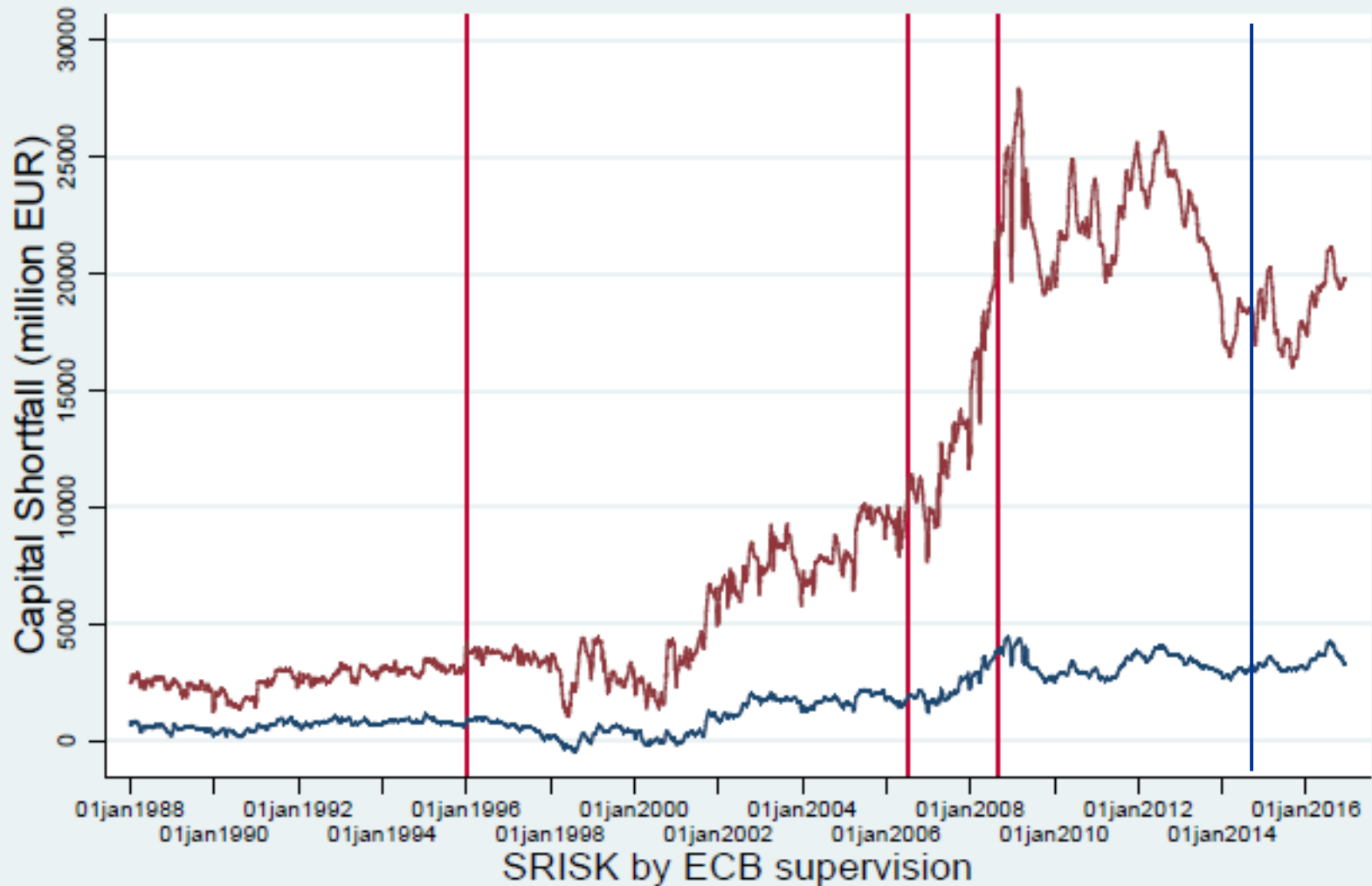
Chart 20 Net Income as a Percentage of Assets



# SRISK - Quintile Europäischer Banken



# SRISK in Banking Union



— non-ECB — ECB



Figure 1: Average Capital/Asset Ratio of Commercial Banks in Europe 1850-1994

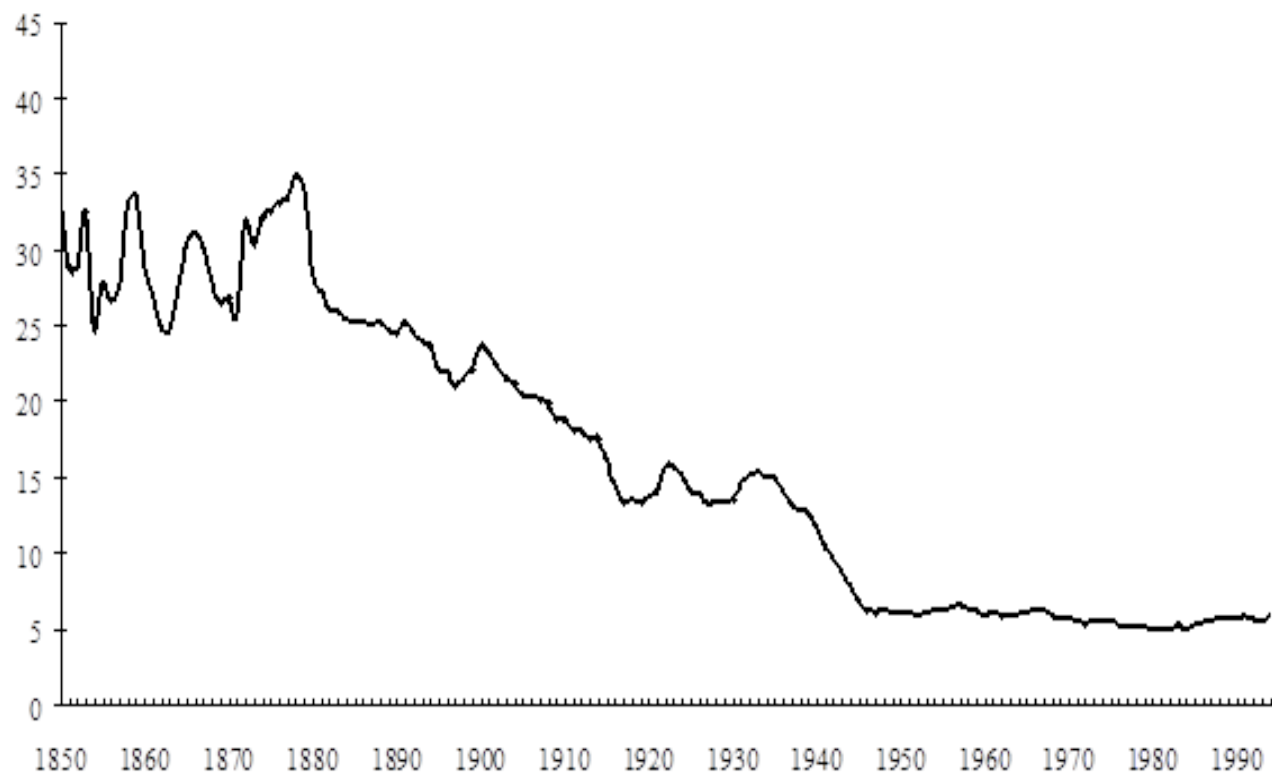


Figure 2: Average Capital/Asset Ratio of Non-Financial Companies in Europe  
1978-1997

