Financial Institutions, Markets and Regulation: A Survey

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Starting point

- The recent crisis has led to intense discussions on
  - Role of financial systems – growth versus stability
  - Regulatory reforms – need, scope, effects
  - Role of financial innovation - risk sharing versus risk taking
- Main tension
  - Regulatory reforms tend to be backward looking
  - Financial innovation is more forward looking
- Many questions
  - Where do we stand?
  - What is the optimal balance between financial stability and innovation?

Structure of the survey

- Reasons for financial regulation – market failures
- Typology of financial regulation
- Main regulatory reforms
- European financial system 6 years after the crisis
- Pros and cons of financial innovation
- Banks versus markets
- Looking ahead: Creating arbitrage-safe regulatory frameworks

Structure of the survey

- Market failures in the financial system
- Typology of financial regulation
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➢ Vast use of theoretical and empirical research

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Financial regulation and market failures

- Regulation seems to be more a response to past crises
- Problems in designing regulation
  - Balance between fragility and provision of credit/innovation
  - Political process
- Our stance: regulation should preserve **systemic** stability
- Market failures in the financial system
  - Panics, runs and fundamental crises
  - Inefficient liquidity in interbank markets
  - Bank interconnections, systemic risk and contagion
  - Bad incentives, bubbles and crises

Panics, runs and fundamental crises

- Context
  - Banks provide liquidity insurance to risk adverse depositors
  - Banks invest in long term assets, which are costly to liquidate
- Reasons behind runs
  - Coordination problems among depositors (Diamond and Dybvig, 1983) – multiple equilibrium and *panics*
  - Information-based response by depositors (Jacklin and Bhattacharya, 1988) – *fundamental* crises
- Global game approach (Goldstein and Pauszner, 2005)
- Market discipline

Inefficient liquidity in interbank markets

- Context
  - Banks face idiosyncratic liquidity shocks
  - Interbank markets redistribute liquidity from banks in excess to banks in shortage
- Problems of externalities, insufficient liquidity provision and market freezes
  - Aggregate uncertainty and fire sales (Allen et al., 2009)
  - Overhang of illiquid securities (Diamond and Rajan, 2009)
  - Asymmetric information (Acharya et al, 2009; Heider et al., 2009)
  - Strategic complementarities (Bebchuk and Goldstein, 2011)

Bank interconnections, systemic risk and contagion

- Two sources of systemic risk
  - Aggregate shock (real estate bubble, panics, fire sales, etc.)
  - Contagion: idiosyncratic shock and propagation mechanism
- Propagation mechanisms
  - Interbank connections (Allen and Gale, 2000)
  - Information spillover (Chen, 1999))
  - Portfolio readjustments (Goldstein and Pauszner, 2004)
  - Fire sales and common exposures (Allen and Carletti, 2008)
- Some empirical evidence of both direct and indirect forms of contagion

Bad incentives and bubbles

- Bubble: significant price increase above fundamentals
  - Real estate bubbles are the most important
  - Financial liberation and credit extension
- Theories of bubbles
  - Agency problems (Allen and Gale, 2000)
  - Financial accelerator (Bernanke and Gertler, 1989)
  - Role of collateral (Kyotaki and Moore, 1997)

Financial Regulation: Typology

- Micro and macroprudential regulation
  - Individual bank versus systemic stability
- Main regulatory tools
  - **Capital regulation** should absorb losses; maintain confidence; protect creditors; *provide incentives* (focus of micro theories)
  - **Liquidity regulation** should reduce panics, fire sales and mispricing of assets (*new* regulation introduced in Basel III)
- Safety nets
  - **Central bank** (Rochet and Vives, 2004; Allen et al., 2009)
  - **Deposit insurance and government guarantees** (Diamond and Dybvig, 1993; Allen et al., 2015)

Recent reforms

- Basel III and CRD IV
  - Capital: definition, size supplements, two dynamic buffers, leverage ratio, liquidity requirements)
  - Liquidity: Liquidity Coverage Ratio and Net Stable Funding Ratio
- Banking Union
  - Single Supervisory Mechanism (SSM) and Single Resolution Board (SRB)
  - Single Rulebook
  - Bank Recovery and Resolution Directive (BRRD)
- Activity restrictions
  - Vickers and Liikanen reports

(Some) open questions

- Much more is needed on the effects of new regulation on banks (and markets)
  - Systemic risk and macroprudential regulation
  - Relationship micro-macro prudential regulation
    - Role and cost of capital and liquidity regulation
  - Guarantees, bail-outs and bail-in instruments
  - Ban on banks of certain actions such as trading for speculative motive
- Both theoretical and empirical research
  - General equilibrium type of approach
  - Causual effect of regulation – scope for controlled experiments?

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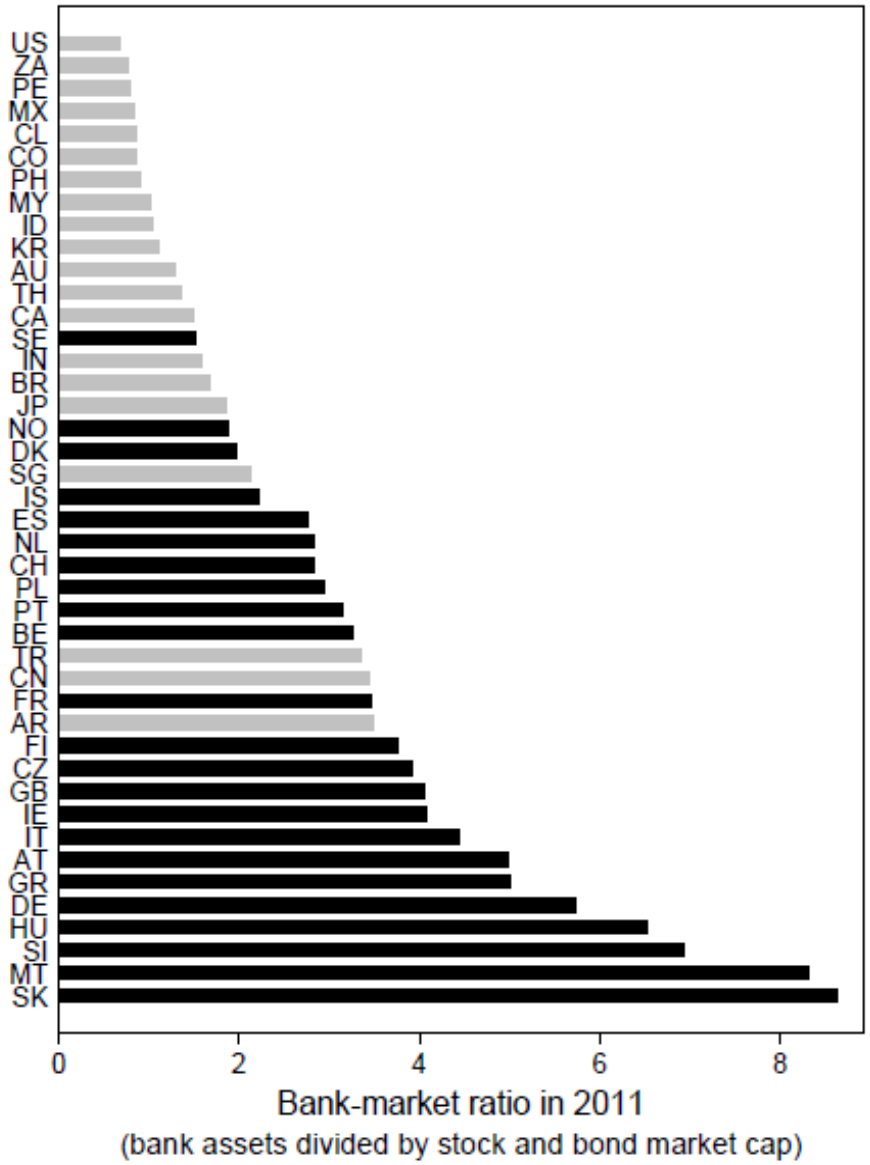
Six years after the crisis

- Sluggish credit recovery (slower than in U.S. due to delayed bank restructuring)
- Supply vs. demand-side constraints
- Shortage of long-term finance
  - Giovannini et al. (2015): on average, not, but with wide cross-country variation
  - recent increases in long-term funding have been more on the debt side, in the form of bank lending and corporate bonds, less on equity side (IPO and SEO)

Banks vs. markets – a new structure debate

- First generation of research showed insignificance of financial structure in growth regressions, BUT: more recent research...
- For less developed countries, development of banking systems seems more important, while for more more developed countries, markets seems more important (Demirgüç-Kunt, Feyen und Levine, 2013, Cull und Xu, 2013)
- Capital market development enhances firm innovation (as measured by patents) while banking sector development might actually be damaging (Hsu, Tian und Xu, 2014)
- Countries with bank-based financial system have lower growth, especially during crisis times (Langfield und Pagano, 2015)

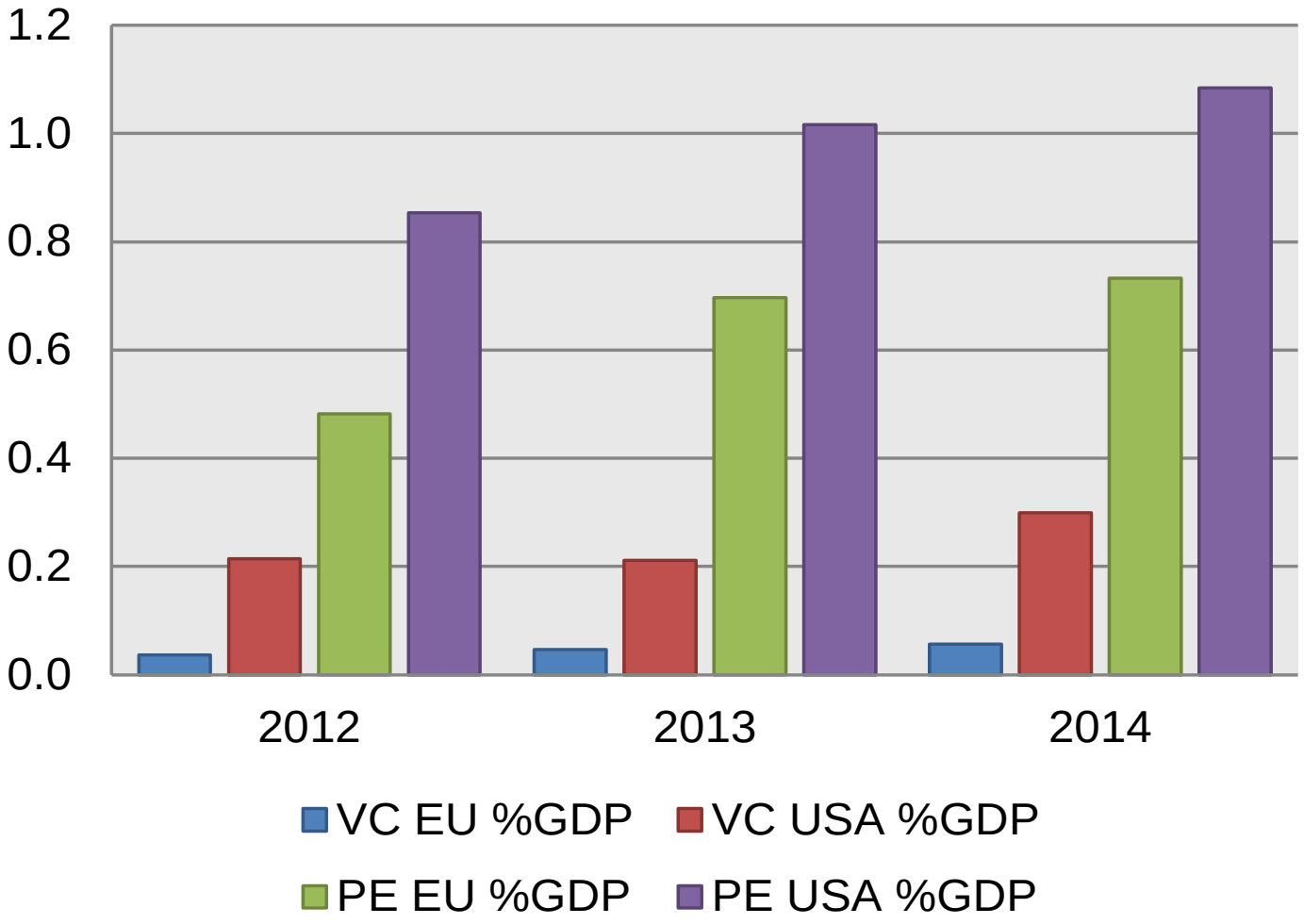
Financial structure in Europe - heavily bank-based



Source: Langfield and Pagano (2015)

- Or is it rather an issue of missing market segments?

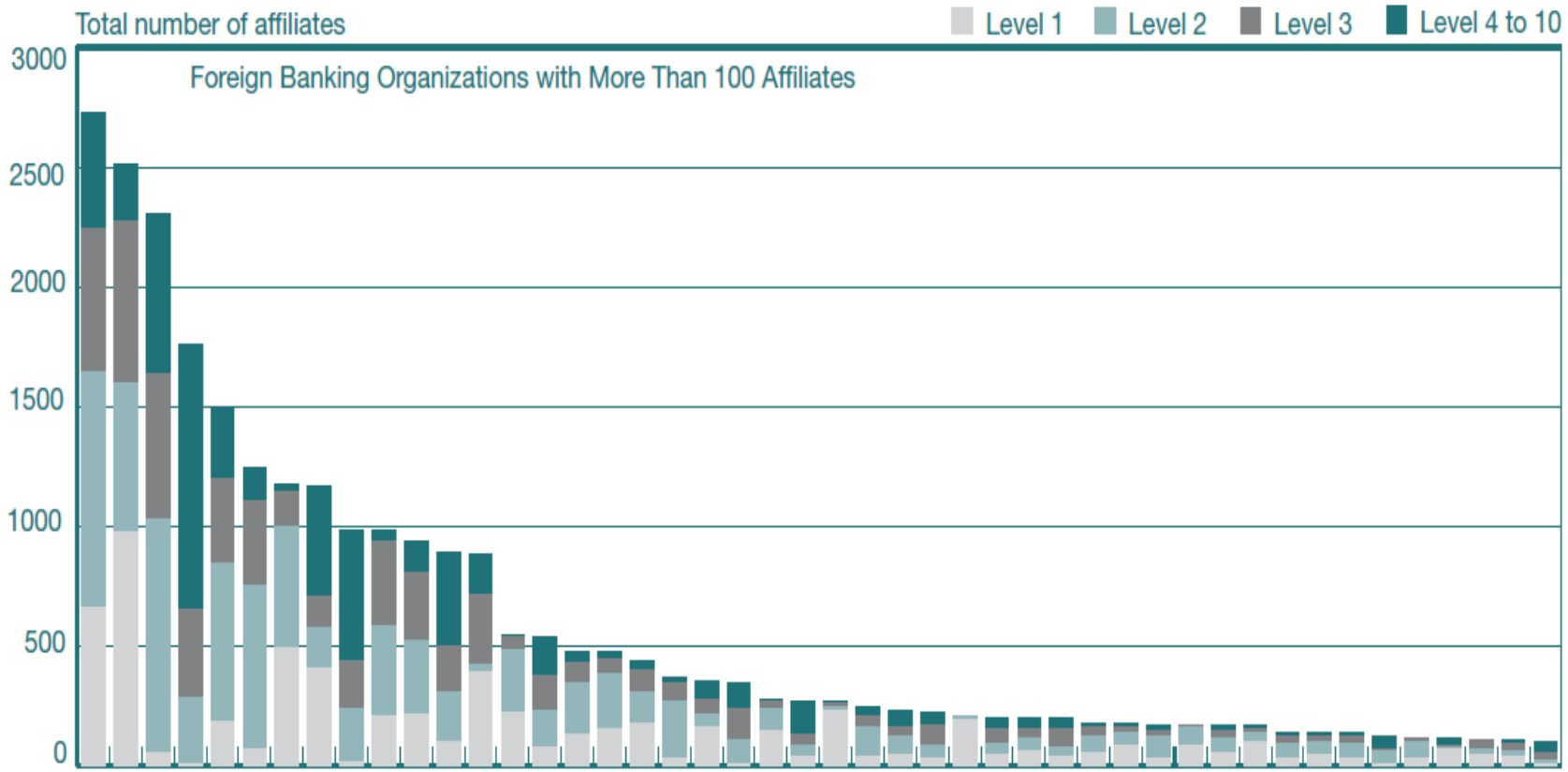
Limited private equity in Europe



Complexity

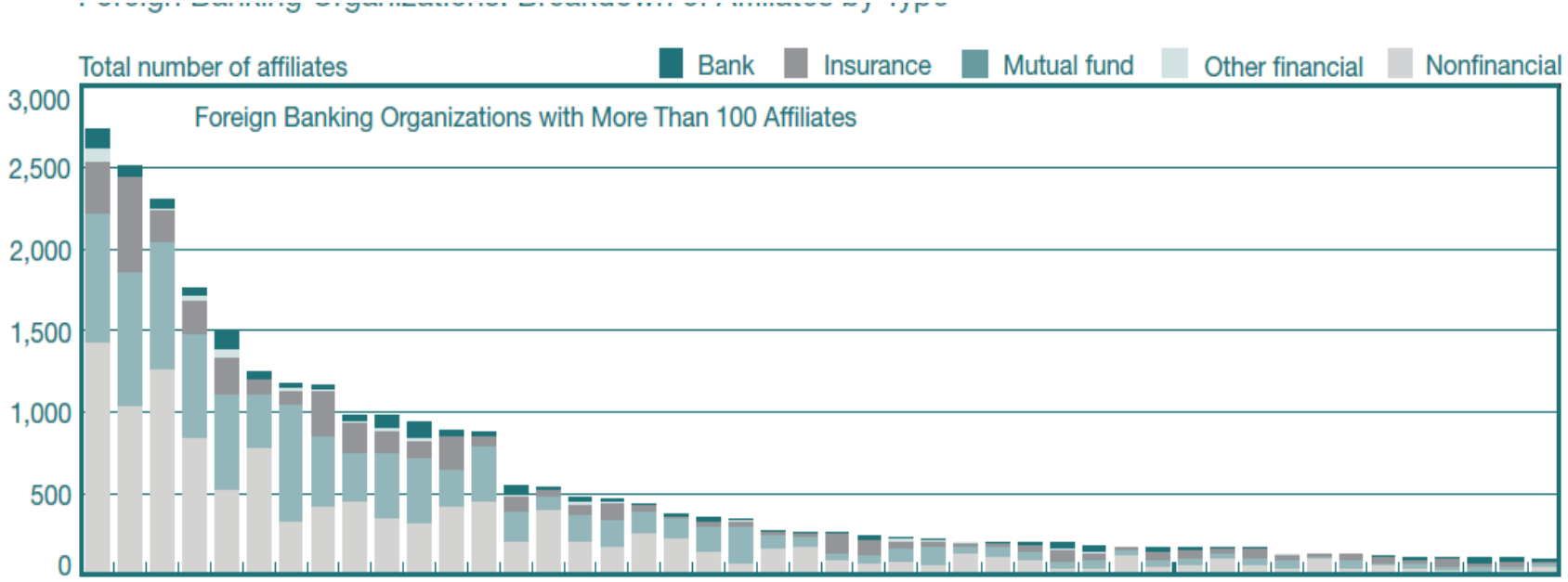
- More complex organizational structure of financial institutions
  - in 1990 only one U.S. bank holding company had more than 1,000 subsidiaries,
  - in 2012 at least half a dozen had (Cetorelli and Goldberg, 2014)
  - Structure across up to four layers
- Different dimensions:
  - Number of subsidiaries
  - Different activities
  - Cross-border
- Implication for supervisory efficiency
- Regulatory capture by sophistication (Hakenes and Schnabel, 2014)

Number of subsidiaries for largest foreign banks in the US



Source: Cetorelli and Goldberg, 2014

Number of subsidiaries across different financial segments for largest foreign banks in the US



Source: Cetorelli and Goldberg, 2014

Financial innovation

- What is financial innovation: new financial products and services, new financial intermediaries or markets, and new delivery channels
  - Examples: ATM, mobile money, peer-to-peer lending
- *Innovation-growth view*: financial innovations help reduce agency costs, facilitate risk sharing, complete the market, and ultimately improve allocative efficiency and economic growth, thus focusing on the bright side of financial innovation
  - Investment banks to finance railroad expansion in US in 19th century
  - Venture capitalists to support IT start-ups in 20th century
- *Innovation-fragility view:* financial innovations contribute to systemic risk
  - Allows bank to take more risk
  - Better risk diversification might result in higher systemic risk
  - Financial innovations as the root cause of the recent Global Financial Crisis,
  - Financial innovation used for regulatory arbitrage (example: SPV)

Regulatory perimeter

- Traditional prudential focus on banks
- Over the years, other financial institutions have started taking on bank-like features:
  - Example: Money market funds (a fixed net asset value)
  - Subject to bank runs
- Repercussion: in systemic crisis, financial safety net might have to be extended to them
- Heavy regulatory focus on banks might push banking activities outside the prudential regulatory perimeter
- Shadow banking system

Where do we stand

- Regulatory reform to prevent the last crisis
- Regulation focused on institutions and markets, less on product
- Financial innovation (potentially welfare enhancing) to evade new regulation
- Financial sector always ahead of regulators – regulatory dialectic (Kane)
- How to create **arbitrage-safe regulatory frameworks** that escapes the feedback loop

Looking beyond the feedback loop – creating arbitrage-safe regulatory frameworks

- **Complexity vs. simplicity:**
  - Fine-tune risk-weights vs. leverage ratio
  - Europe: sovereign exposure (risk weight, concentration limit); leverage ratio too low
  - Comprehensive assessment: leverage ratio not taken into account
- **Complement micro- with macro-prudential regulation**
  - Both cross-sectional and time-series dimensions
  - Learning by doing
  - Europe: too limited powers on Eurozone level

Looking beyond the feedback loop – creating arbitrage-safe regulatory frameworks (2)

- **Focus on resolution**
  - Knowing that you will lose your shirt in case of failure can reduce incentives to take aggressive risk
  - Europe: complete banking union
- **Dynamic approach to regulation**
  - functional rather than institutional regulation "if it looks like frog and it quacks like a frog…."
  - Adjust regulatory perimeter over time
  - Can SSM do this?

Future research

- Complexity vs. simplicity
  - Assess impact of new regulation
    - Theory and empirics
  - Effectiveness of different frameworks for capital requirements
  - General equilibrium approach, taking into account second-round effects
- What works best in macro-prudential regulation?
- Design features of resolution frameworks
- Expand analysis of systemic risk sources beyond banking system
  - General equilibrium effects
  - Koijen and Yogo (2014): life insurance segment

Thank you

Elena, Itay and Thorsten