Regulation
And Financial Innovation

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Achieving Financial Stability: Challenges to Prudential Regulation

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Financial innovation:

- **Bad reputation:** “The major impulses to financial innovations have come from regulations and taxes.” (Miller 1986)
- **However also many success stories:** “Credit scoring, as a cost- and time-saving technology that became a central element of credit underwriting during that period, likely has contributed to improved credit availability and affordability.” (Board of Governors 2007)

Overall: it probably helps growth but also increases vulnerability (Allen 2011, Beck 2012) => need for a balanced approach by regulators.
How should regulation deal with financial innovation

Rationale for regulation:

• Positive externalities, e.g. a more widespread access to credit and risk sharing which could increase growth and smooth cycles.

⇒ The traditional approach to internalize these effects would be to grant patents to financial innovations

• However patenting financial innovations is relatively controversial and such patents have high litigation rates (Lerner 2010).
Rationale for regulation:

- **Negative externalities**, e.g. higher leverage which amplifies cycles and leads to boom-bust dynamics.

⇒ three possible, non-mutually exclusive approaches:

- **FEMA**: “strengthen the security and resilience of the Nation against earthquakes”: increase capital to build resilience.
- **FDA**: “responsible for advancing the public health by helping to speed innovations that make medicines more effective, safer, and more affordable”: subject complex products to regulatory approval, demand a safe default option in all complex contracts.
- **NRA**: “guns don’t kill people, people kill people”: emphasize personal rather than corporate responsibility, shift from buyer beware to duty of care standards.
The next wave of financial innovation could reshape the financial system and its regulation:

1. **Big Data + AI**

   ⇒ transform soft information into hard data and (most) uncertainty in risk
   ⇒ This allows firms to design state-contingent contracts

2. **Increase in computing power**

   ⇒ progressive reduction of transaction costs.

**Overall effect: markets become more complete (Bisin, 1998).**
How will financial innovation affect regulation

Arrow (1969): externalities can be seen as a missing market.

In a world with (nearly) complete markets (in which for example banks would be redundant), what would still justify the existence of financial regulation?

1. The transition to the new equilibrium.
2. The existence of economies of scale.
3. True Knightian uncertainty.
The transition to a new equilibrium:

• With complete markets and low transaction costs, the boundaries of firms become much more flexible. A variety of providers of financial services could emerge.

• Adding new securities to incomplete markets is not necessarily beneficial (Hart, 1975). Some might actually be detrimental.

• The financial sector might need to grow significantly to manage a system based on state-contingent contracts. Such a system would be very sensitive even to small market imperfections (Caccioli et al, 2009).

⇒ Regulation should target functions rather than firms (Merton, 1995) and keep pace with increasing complexity to mitigate new forms of risk and amplification mechanisms.
Economies of scale could matter more in the future:

- For the infrastructure needed to process massive amounts of data and the development of software to analyze it.
- Because of network effects in the collection of data.

⇒ High fixed costs and price competition could lead to instability due to strategic interaction of few large players: endogenous boom-bust dynamics due to market dynamics.

⇒ Regulatory answer to such situations in other industries: separate the infrastructure - and regulate it as a utility - from the provision of services which would be open to competition. Could finance go the same way?
How will financial innovation affect regulation

True Knightian uncertainty:

- Black swan events will still be hardly quantifiable.
- They might even be difficult to imagine and therefore embed in a state-contingent contract.

⇒ Simple metrics might be effective in understanding them (Aikman et al, 2014).
⇒ How to protect the financial system against such events? Balance between building resilience against (un)known unknowns and minimizing impact ex post. Key features of macroprudential policy: design and manage a backstop and devise structural measures to reduce the impact of uncertainty.
Even going towards more complete markets financial regulation’s ultimate goal is still financial stability but with different means:

• **Shift focus from institutions to functions or even contracts.**
• **Invest heavily in understanding complexity: data, analysis, infrastructure.**
• **Perhaps develop state-contingent policy instruments with stabilizing features and embed them in the system (e.g. CoCos are an example in the current framework).**
• **Concern itself more with market structure than business models. Integration with competition policy.**
• **Move from cyclical concerns to backstops for worst-case scenarios. Devise structural policies to deal with uncertainty.**