Global Financial Systems
Chapter 22
Technology

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To accompany
Global Financial Systems: Stability and Risk
www.globalfinancialsystems.org/
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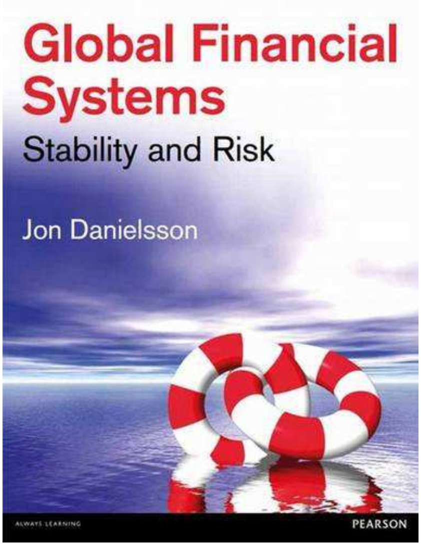
Book and slides



- Updated versions of the slides can be downloaded from the book web page www.globalfinancialsystems.org

Thanks

- Robert Macrae
- Nikola Tchouparov

Technology

- The financial system has always been one of the earliest adaptor of technology
  - Rothschild supposedly used pigeons to get advanced notice of Napoleon's defeat in Waterloo
  - semaphores (conveying information at a distance by means of visual signals)
  - telegraphs
  - computers
  - microwaves
- Now involves fintech, blockchain, cryptocurrencies, smart contracts
- The below deemphasizes computer science as much as possible

Pros and cons of technology

- New technology can make the financial system much more efficient
- The cost of providing financial services is much cheaper
- And services provided faster
- But with all that speed comes the risk of rapidly developing crisis
- Where there is no time to react

Financial innovation

- The creation of new types of financial instruments and activities
- Historically has been quite beneficial
  - checking accounts
  - credit cards
  - ATM machines
  - etc.
- But often associated with unsavory products
  - structured credit — CDO, CDS, SIV
  - exotic derivatives
  - etc.

Controversial

- Generally viewed favorably until 2008 crisis
- At the core of allowing that crisis to happen
- Often only benefits the innovators
- Exploiting retail clients, and even sophisticated firms
- Even other financial institutions

"the most important financial innovation that I have seen in the past 20 years is the automatic teller machine"

Financial innovation "moves around the rents in the financial system", benefiting the inventor, not the clients.

Paul Volcker 2009

Fintech

Creative destruction

- Dates back to Schumpeter in the early 20th century
  - The "gale of creative destruction" is the "process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one"
- How new ideas are continually changing how companies and industries work
- Implying that even if incumbents resist change, society should welcome it
- And that if the government gets involved with "industrial policy" it is more likely to entrench the incumbents and hinder creative destruction
- Even if the intention is otherwise

Digital disruption

- Spinoff of "creative destruction"
- Small company with few resources successfully challenging the incumbents
- Transformation of industries caused by new and emerging digital technologies and business models
- Digital disruption implies a small company with few resources successfully challenging the incumbents
  - Netflix, Airbnb, Facebook, Alibaba,....

Fintech — financial technology

- The use of technology and innovation applied to new and better forms of financial intermediation
  - Includes mobile payments, money transfers, lending (like peer-to-peer), fundraising and asset management
- Promises more efficient and cheaper products for consumers
- And helps alleviate financial exclusion — The 2 billion people without access to financial services

Impact on industry

- Who?
  - incumbents (e.g. existing banks)
  - other companies (e.g. Amazon)
  - startups
- The incumbents have identified fintech as a first order threat and priority

See recording of Axel A. Weber, Chairman UBS,
LINK
www.systemicrisk.ac.uk/events/interplay-markets-and-politics-public-lecture

Official attitude

- All aspects of finance are heavily regulated
- China and Alibaba's Jack Ma — Ant capital
- Some aspects happened without the authorities noticing until too late
  - like Paypal
- Countries
  - enthusiastic supporters: Singapore, Sweden
  - others try to be: UK, Germany
  - and some are neutral or hostile: US, France, Italy, Japan
- Sandbox, a light and supportive regulatory framework for new entrants

Systemic/financial stability impacts

- Macroprudential — more heterogeneity
- Migration away from banks is good in its early stages because initially it decreases monoculture
  - make system more stable
  - concerns about unknown risks
  - and migration of controlled risks away from regulated banks to less regulated sectors
- Not true if we end up with a Google — Alibaba duopoly
- Technology can have increasing returns to scale
- Disruption could *easily* mean disrupter-takes-all

Microprudential

- Increase competition
- Migration of controlled risks away from regulated banks to less regulated sectors
- Better for consumers
- More scope for abuse

illusionofcontrol.org

Artificial intelligence — AI

- modelsandrisk.org/appendix/AI/
- AI is having a significant impact on the financial system, for good and bad

Brief overview

- Consider a continuum
- On one end we have a system with known immutable rules and full information — Like games of chess and go
- On the other we have a once-in-a-lifetime decision involving poorly understood rules that can be changed, very limited information and significant importance
- AI will outperform humans in the first, but not the second
- Then the question is where on the continuum problem lies

Micro-regulations and compliance

- AI is making rapid inroads, in the beginning it might generate new work for humans — identifying new cases to investigate
- Taking over the work of the least skilled workers
- And making new work for the highest skilled
- But over time it will move up the skilfulness chain
- Case: Anti-money laundering and fraud in financial transactions

EURISKO case

- AI called EURISKO payed a naval wargame
- To win it sank its own slowest ships
- AI has to be told that is unacceptable
- A human admiral knows, And doesn't have to be told
- We cannot pre-specify every eventuality

Financial stability implications

- Chooses best practices, and is hence procyclical
- Unknown unknowns and new problems
- Trust
- Optimise against the system