

Lecture 9

Finance II

Matti Sarvimäki

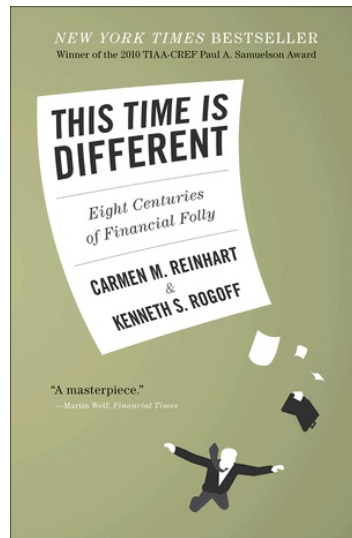
History of Economic Growth and Crises
9 February 2022

- 1 The Malthusian Era
- 2 Fundamental causes of growth
- 3 Innovation and crises
 - 1 Technology
 - 2 **Finance: crises**
 - 1 A panorama of financial crises
 - 2 An example: the Finnish Great Depression of the 1990s
- 4 Unleashing talent

This time is different (again)

Reinhart, Rogoff (2009)

- Much of this lecture draws from the 2009 book by Reinhart and Rogoff (and the related NBER WP)
 - systematic documentation of financial crises in 66 countries over several centuries
- Roadmap
 - 1 default on external sovereign debt
 - 2 ... on domestic debt (inc. inflation)
 - 3 banking crises



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 - because they do not *want* to pay (not because they cannot)
 - about half of middle-income countries’ defaults take place at debt level below 60% of the GDP
 - governments rarely sell their assets to pay debt

External Sovereign Debt

Reinhart, Rogoff (2009, Ch 4)

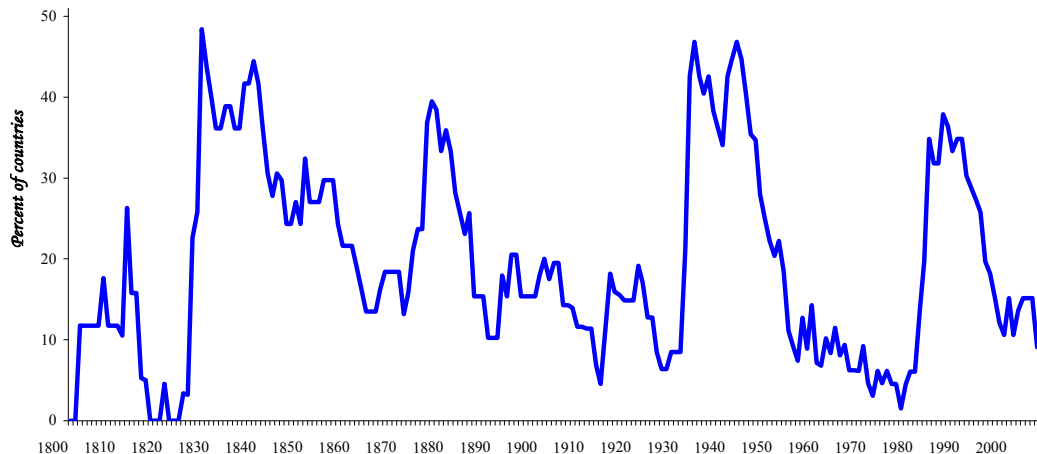
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 - about half of middle-income countries’ defaults take place at debt level below 60% of the GDP
 - governments rarely sell their assets to pay debt
- Governments pay when costs of default exceed the benefits
 - future access to borrowing, broader reputational concerns
 - legal rights of the lenders in borrowers own courts
 - no international enforcement mechanism, but penalties can work through disruption in trade etc. (in the 19th century, superpowers sometimes also invaded countries because of unpaid debt)

- Illiquidity vs insolvency
 - much of government debt is short-term
 - liquidity crisis occur when country is willing and able to serve its long-term debt, but cannot roll over short-term debt
 - could happen due to a coordination failure, i.e. even a small shock can push the country into a bad equilibrium
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 - this is why institutions like the IMF can be extremely helpful
- Defaults are almost always partial (or “rescheduling”)
 - even a tiny part of the debt defaulted after the Russian Revolution was paid 69 years later
 - typically the partial repayment is significant

Default is common

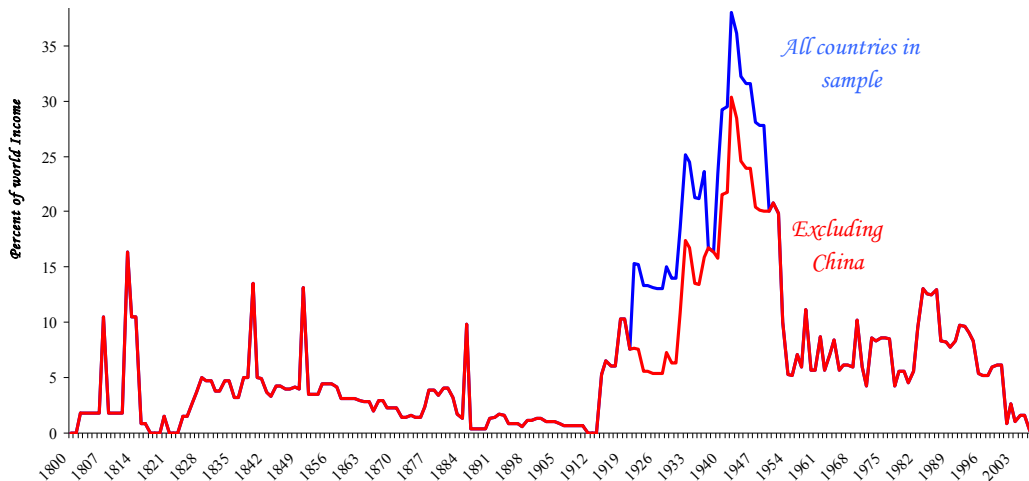
Reinhart, Rogoff (2008, 2009, Ch 5)



Share of countries in external default or restructuring. Data: 66 countries that cover at least 90% of world's GDP in 1800–2006. RR08: “the current period can be seen as a typical lull that follows large global financial crises”

Defaults weighted by share of world income

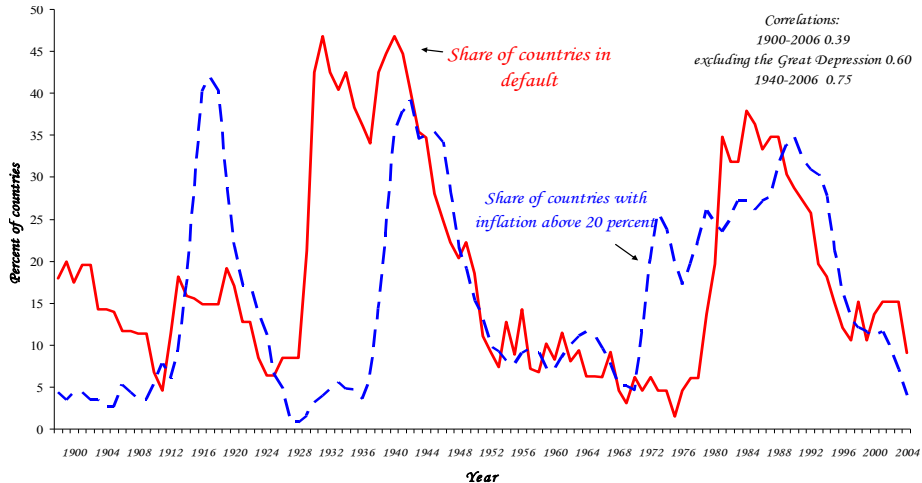
Reinhart, Rogoff (2008, 2009, Ch 5)



“Only the two decades before World War I—the halcyon days of the gold standard—exhibited tranquility anywhere close to that of the 2003-to-2007 period. Looking forward, one cannot fail to note that whereas one and two decade lulls in defaults are not at all uncommon, each lull has invariably been followed by a new wave of default.”

Inflation and External Default: 1900-2006

Reinhart, Rogoff (2008, 2009, Ch 7)



This figure illustrates a striking correlation between the share of countries in default on debt at one point and the number of countries experiencing high inflation (defined as inflation over 20 percent per annum). Since World War II, inflation and default have gone hand-in-hand. Why? Perhaps because inflation is one way to default on domestic debt.

Default through debasement: examples

Reinhart, Rogoff (2009, Ch 11)

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 - stamped each one-drachma coin with a two-drachma mark
 - ... and used them to pay off his debts

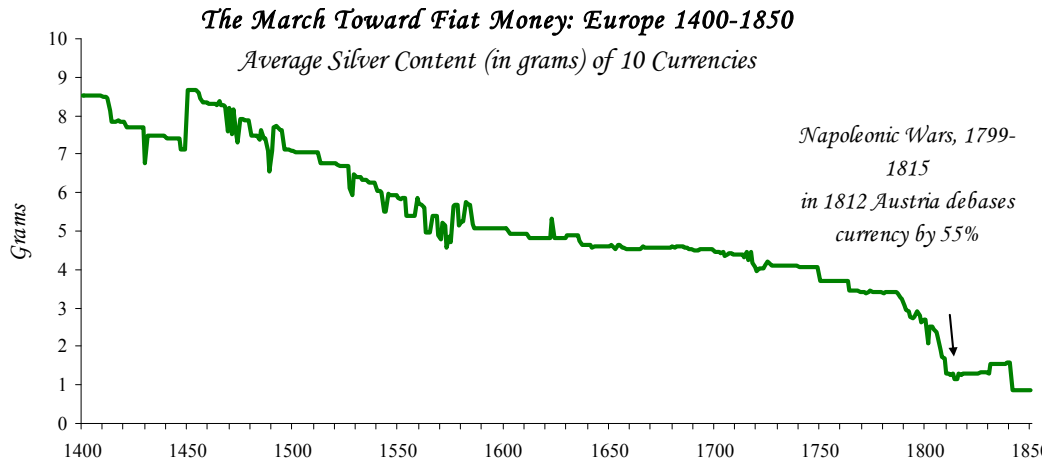
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- Henry VIII
 - inherited a huge fortune, confiscated the church's assets
 - ... and resorted to an epic debasement where the silver pound lost 83% of its silver content between 1542–47

Default through debasement

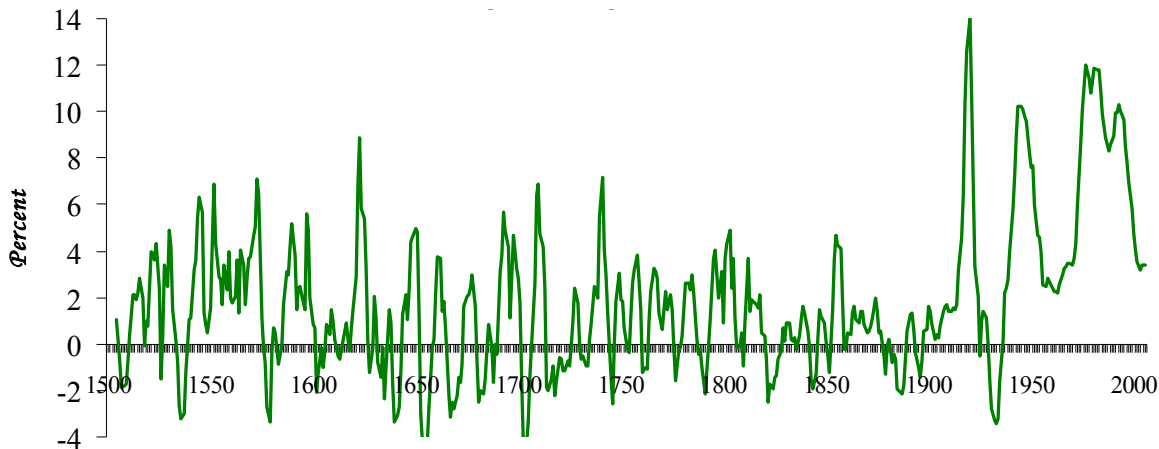
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“Although some writers seem to believe that inflation only really became a problem with the advent of paper currency in the 1800s, students of the history of metal currency will know that governments found ways to engineer inflation long before that. The main device was through debasing the content of the coinage, either by mixing in cheaper metals, or by shaving down coins and reissuing smaller coins in the same denomination.”

Median inflation rate: 1500–2007

Reinhart, Rogoff (2008, 2009, Ch 12)



However spectacular some of the coinage debasements, paper money brought inflation up to a whole new level. There is clear inflationary bias throughout history (with some periods of deflation due to business cycles, poor crops, etc.), but starting in the 20th century, inflation spikes radically.

Defaulting on domestic debt

Reinhart, Rogoff (2009, Ch 7, 11)

- These examples illustrate that
 - inflation is a popular way to default on domestic debt (and international debt when possible)
 - governments are creative & coercive in engineering defaults
- RR also document 70 outright domestic defaults since 1800
 - almost certainly an underestimate
 - comparison: 250 defaults on external debt since 1800

- Bank run
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- Systematic banking crises
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 - banks tend to hold similar portfolios
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“Although many now-advanced economies have graduated from a history of serial default on sovereign debt or very high inflation, so far graduation from banking crises has proven elusive”

Amplification during the Great Depression

Reinhart, Rogoff (2009, Ch 10)

- Friedman and Schwartz (1963): *A Monetary History of the United States, 1867-1960*. Princeton University Press.
 - failure of almost 1/2 of US banks in the early 1930s worsened the Depression mainly through reduction of money supply
- Bernanke (1983): Nonmonetary Effects of the Financial Crisis in Propagation of the Great Depression. *American Economic Review* 73(3): 257-76
 - widespread banking panics led to many banks to close and forced even the surviving ones to constrain lending
 - declining output and falling prices lessened the capacity of firms and households to pledge collateral
 - both channels decreased the availability and allocation of credit and contributed to deeping the depression

Sources of banking crises

Reinhart, Rogoff (2009, Ch 10)

- Capital flow bonanzas
 - countries are more likely to experience a banking crises within three years of surge in capital inflows
 - other forms of financial liberalization also seem to be associated with banking crises
- Housing prices
 - banking crises tend to occur either at the peak of a boom in real housing prices or right after the bust
 - real housing prices tend to collapse at similar magnitudes in emerging and advanced economies
- Real equity prices
 - “pure stock market crashes” tend to be associated with much milder banking crises than housing price crashes

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 - motivation: to prevent a credit crunch
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Fiscal legacy of banking crises

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- Instead, they advocate examining total government debt
 - average 3-year increase in government debt: 86%
 - Finland's 1990s crisis: more than 250%

“arguably, the true legacy of banking crisis is greater public indebtedness—far over and beyond the direct headline cost of big bailout packages”

- Malmendier and Nagel (2011) examine variation *across* birth cohorts in the US and show that individuals who have experienced low stock market returns
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- Knüpfer, Rantapuska and Sarvimäki (2017) examine *within* birth cohort variation in labor market experiences during the Finnish Great Depression and find that
 - individuals who worked in the most affected labor markets in 1991–93 invest significantly less in risky assets in 2005
 - robust to *very* rich set of control variables; cannot be fully explained by the impact on income and wealth
 - individuals whose family members and neighbors experienced adverse circumstances also avoid risky investments

The Finnish Great Depression

Honkapohja, Koskela ('99); Kiander, Vartia ('98), Gorodnichenko, Mendoza, Tesar ('12)

- The Finnish Great Depression of 1991–1993
 - deepest peacetime economic contraction in Finnish history, worst among rich countries between 1940s and 1990s
 - real GDP declined by 11%, real consumption by 10%, investment fell to 55% of its 1990 level, value added in the private sector fell 20% from its trend, unemployment from 3.5% to 16.5%, stock market lost 60% of its value...

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- Why did this happen?
 - HK, KV: twin currency-banking crisis
 - GMT: collapse of the trade with USSR

(these views are not mutually exclusive and all accounts acknowledge both root causes, but differ in their emphasis)

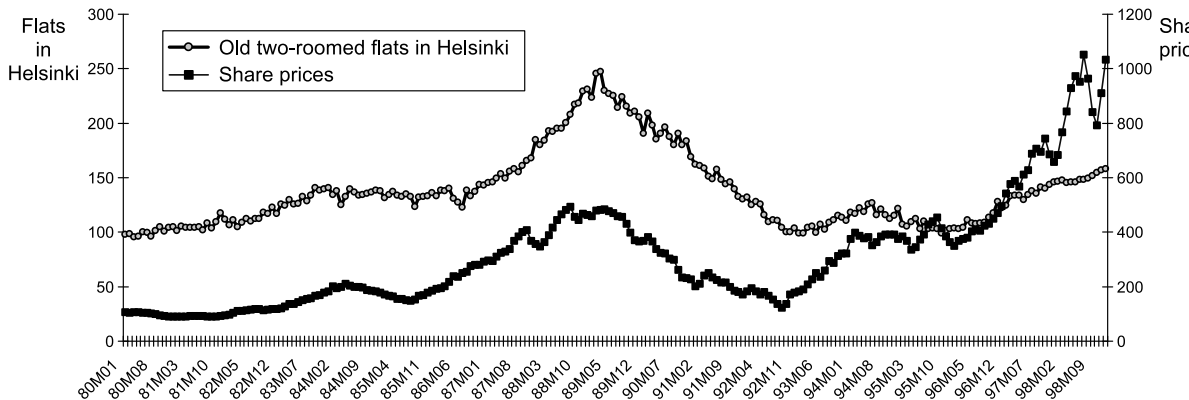
Financial deregulation in the 1980s

Honkapohja, Koskela (1999), Kiander and Vartia (1998)

- Background
 - strictly regulated financial markets
 - emergence of shadow banking system
(e.g. “excess liquidity” among firms participating in exporting to the USSR)
- Financial system deregulation in the 1980s
 - 1980–1985: smaller reforms
 - 1986: abolition of regulation of domestic bank lending rates
 - 1987: lifting of restrictions on private firms’ borrowing from abroad
(for households in 1990)
- Decisions that look like mistakes (with the benefit of hindsight)
 - no changes in prudential regulation and bank supervision
 - tax system favouring debt financing not reformed
 - lending rates liberalized earlier than deposit rates
 - timing: coincided with a boom, tightening of monetary policy

Real asset prices

Honkapohja, Koskela (1999)



“[Financial deregulation] contributed to an exceptionally rapid growth in bank lending. Much of the borrowing was used for investment in real estate and other assets, which resulted in a doubling of real asset prices”

Fixed exchange rate regime

Honkapohja, Koskela (1999), Kiander and Vartia (1998)

- Background: inflation-devaluation cycle
 - exchange rate was fixed ... but inflationary pressures resulted in major devaluations (1957, 1967, 1977 devaluations of roughly 30%)
- Early 1980s onwards: attempt to stop this cycle
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 - financial deregulation → inflows of capital created pressures for the *markka* to appreciate, markka revaluated in 1989
- 1990 onwards: *markka* under speculative pressure
 - an attempt to defend *markka* lead to high real interest rates
 - this follows from the simple interest rate parity:

$$(1 + i_{\$}) = \frac{E_t(S_{t+k})}{S_t} (1 + i_{mk})$$

where $E_t(S_{t+k})$ is the expected future spot exchange rate at time $t + k$

The crisis

Honkapohja, Koskela (1999), Kiander and Vartia (1998)

- Aggregate output starts to decline in the second quarter of 1990, unemployment rate increases rapidly
 - e.g. quarter of manufacturing jobs lost in 1990–93
 - this leads to reduction of tax income, increase in transfers
 - government responds with an austerity program in 1992–93
- Devaluation of *markka*
 - eventually central bank's reserves run out
 - Nov 1991: forced devaluation by 12.3%
 - Sept 1992: *markka* floated
 - Oct 1996: Finland joins ERM

- Banking crises
 - households and firms start to default on their loans, particularly after the devaluation in 1991 (much borrowing in foreign currency)
 - decreases in asset prices affected banks' balance sheets
 - 1989: SKOP's first trouble in raising capital from the markets
- Bailout and restructuring
 - Sept 1991: the Bank of Finland takes control of SKOP
 - 1992–94: public funds injected into the banking system
 - 1992: most of the 250 saving banks merged into SSP
 - 1992: STS collapses and is merged with KOP
 - 1993: good parts of SSP split between KOP, SYP, Osuuspankki group and Postipankki
 - ... and the rest transferred to Arsenal ("bad/junk bank")
 - 1996: merger KOP and SYP (leading eventually to Nordea)

- Government started to tighten fiscal policy in the fall of 1991
 - combination of spending cuts and raising taxes
 - new austerity packages followed in six month intervals (e.g. the 1992 “Sailas package” including spending cuts for 20b markka)
- Nevertheless, huge deficits in 1992–95
 - around 15% of GDP in 1992–94
 - public debt increased more than 2.5-fold
 - ... but peaked at 65% of GDP in 1995 (i.e. not exceptional)

The Curious Finnish-USSR Trade Arrangement



Ministers Nikolai Patolitšev, A. N. Manzhulo, Ambassador V. M. Sobolev, General Director Ahti Karjalainen and Trade Minister Esko Rekola after signing yet another Finnish– USSR 5-year trade deal in December 1982.

Trade between Finland and USSR

Gorodnichenko, Mendoza, Tesar (2012)

- Finland had a peculiar trade agreement with the Soviet Union
 - series of five-year, highly regulated trade agreements
 - established the volume and composition of trade (roughly: Finnish manufactures for Soviet crude oil)
 - trade was supposed to be balanced annually

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 - series of five-year, highly regulated trade agreements
 - established the volume and composition of trade (roughly: Finnish manufactures for Soviet crude oil)
 - trade was supposed to be balanced annually
- December 6, 1990: the Soviet authorities declare that all trade arrangements were cancelled without any transitional period
 - imports of oil from 8.2m to 1.3m tons between 1989–1992
 - exports down by 84 percent over the same period
- GMT argue that this shock was a major reason for why the Finnish Great Depression was so severe

Quantifying the impact of the USSR trade shock

Gorodnichenko, Mendoza, Tesar (2012)

- In order to evaluate the quantitative importance of the USSR trade shock, we need a way to construct a counterfactual
 - what would have happened if USSR trade had persisted?

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- In order to construct this counterfactual, GMT build and calibrate a structural model
 - aims to capture the essential features of the Finnish economy
 - requires many (*many!*) simplifying assumptions
- Using this model, they conclude that
 - “a major cause of the Finnish Great Depression was the costly restructuring of the manufacturing sector and a sudden, sharp increase in energy costs caused by the demise of the [USSR].”

- Economic growth is created primarily by "real" factors
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- However, financial factors have a crucial supporting role
 - efficient allocation of capital, sharing and diversifying risk

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 - labor, capital, natural resources, technology
- However, financial factors have a crucial supporting role
 - efficient allocation of capital, sharing and diversifying risk
- At the same time, financial innovation creates new risks
 - designing efficient regulation vital, but requires an understanding of the origins and dynamics of financial crises
 - producing this information is hard because financial crises occur at macro level → limited scope for (quasi-)experiments
 - thus research on financial crises necessarily relies heavily on theory and more "traditional" historical narratives

- Rajan, Ramcharan (2015): The Anatomy of a Credit Crisis: The Boom and Bust in Farm Land Prices in the United States in the 1920s. *American Economic Review*
 - Credit availability directly inflated land prices and amplified the relationship between positive fundamentals and land prices. When fundamentals soured, areas with higher credit availability suffered a greater fall in land prices and had more bank failures. The negative effects persist for decades.
- Mian, Sufi (2009): The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis. *Quarterly Journal of Economics*
 - In 2000s, the expansion in mortgage credit to subprime ZIP codes (and the subsequent default crisis) is closely correlated with the increase in securitization of subprime mortgages