Global financial cycles and risk premiums

Òscar Jordà[†] Moritz Schularick[‡] Alan M. Taylor[§] Felix Ward[¶]

AEA Meetings 2018

[†] Federal Reserve Bank of San Francisco; University of California, Davis
[‡] University of Bonn; CEPR
[§] University of California, Davis; NBER; CEPR
[¶] University of Bonn

Motivation

What is the interplay of the financial cycle and the business cycle?

Study the synchronization of economic and financial cycles in the global economy over 150 years

Understand the implications for:

- Monetary policy and its transmission
- International risk sharing
- International economic policy coordination

Research questions & preview of findings

Q 1: Patterns of 150 years of cross country **financial cycle** comovement

A 1: Long-run **upward trend**: synchronization at an all-time high

Q 2: Patterns of 150 years of cross country **business cycle** comovement

A 2: Similar financial–real synchronization; considerable **equity price synchronization** since 1980s via risk appetite

Q 3: Financial center monetary policy and **global risk appetite**

A 3: U.S. monetary policy increasingly a trigger of swings in risk appetite across global asset markets

Data

- 1870-2013, annual, 17 countries:

  Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, U.K., U.S.

- Credit, house prices, equity prices, GDP, consumption, investment and CPI-series

  Jordà-Schularick-Taylor Macrohistory Database
  (Jordà, Schularick & Taylor 2016)
  http://www.macrohistory.net/data

- Dividends and equity return premium

  The Rate of Return on Everything, 1870–2015
  (Jordà, Knoll, Kuvshinov, Schularick & Taylor 2017)

www.macrohistory.net/data

JORDÀ-SCHULARICK-TAYLOR MACROHISTORY DATABASE

The ***Jordà-Schularick-Taylor Macrohistory Database*** is the result of an extensive data collection effort over several years. In one place it brings together macroeconomic data that previously had been dispersed across a variety of sources. On this website we provide convenient no-cost open access under a license to the most extensive long-run macro-financial dataset to date. Commercial data providers are strictly forbidden to integrate all or parts of the dataset into their services or sell the data (see Terms of Use and Licence Terms below).

The database covers 17 advanced economies since 1870 on an annual basis. It comprises 25 real and nominal variables. Among these, there are time series that had been hitherto unavailable to researchers, among them financial variables such as bank credit to the non-financial private sector, mortgage lending and long-term house prices. The database captures the near-universe of advanced-country macroeconomic and asset price dynamics, covering on average over 90 percent of advanced-economy output and over 50 percent of world output.

Assembling the database, we relied on the input from colleagues, coauthors and doctoral students in many countries, and consulted a broad range of historical sources and various publications of statistical offices and central banks. For some countries we extended existing data series, for others we relied on recent data collection efforts by others. Yet in a non-negligible number of cases we had to go back to archival sources including documents from governments, central banks, and private banks. Typically, we combined information from various sources and spliced series to create long-run datasets spanning the entire 1870–2014 period for the first time. The table below lists the available series.

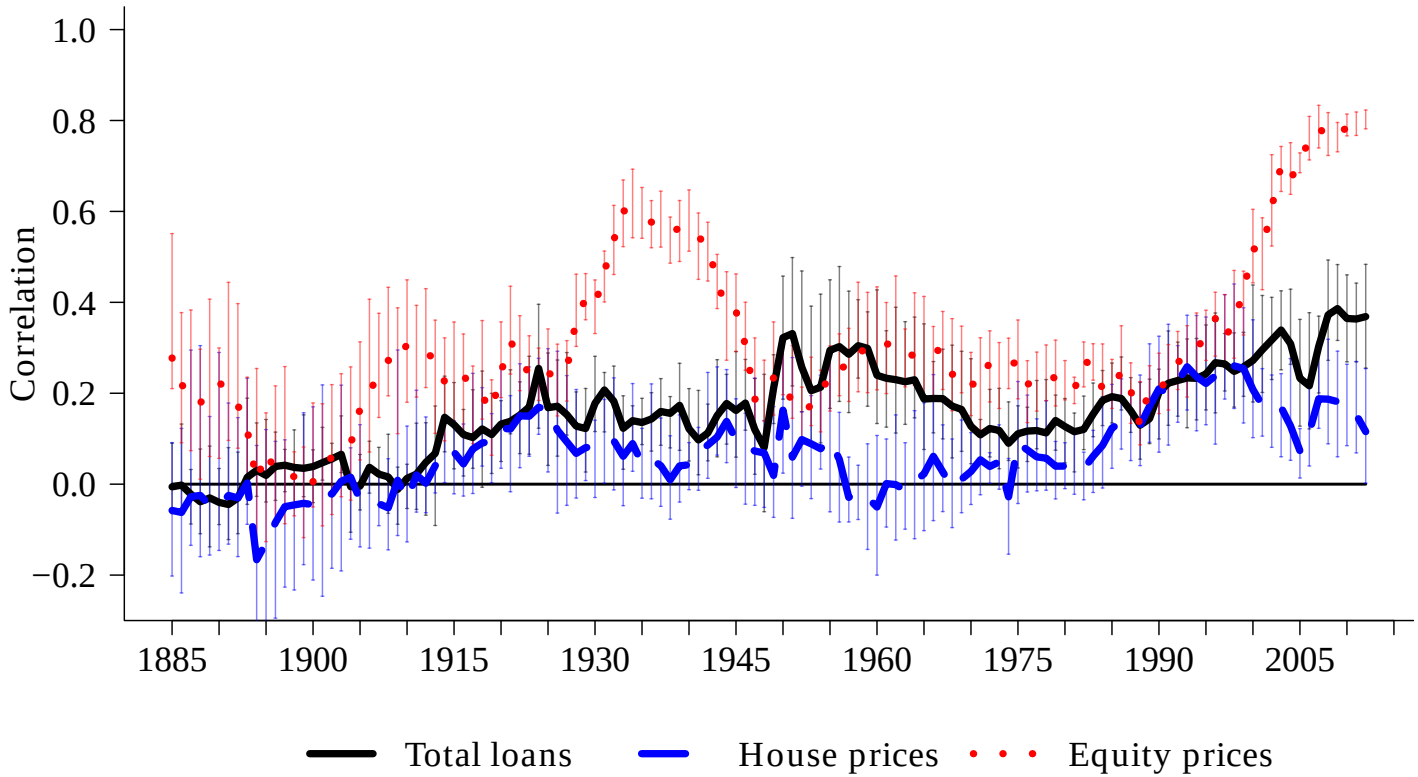
Download Data ▼ | Documentation ▼ | How to Cite ▼ | Research ▼

Filtering and synchronicity

- Baxter-King band-pass filter (findings robust to other filters)
- Financial cycles last longer than business cycles
  $\rightarrow$ use wide 2 to 32 year band
- Report 15-year rolling-window Spearman correlations

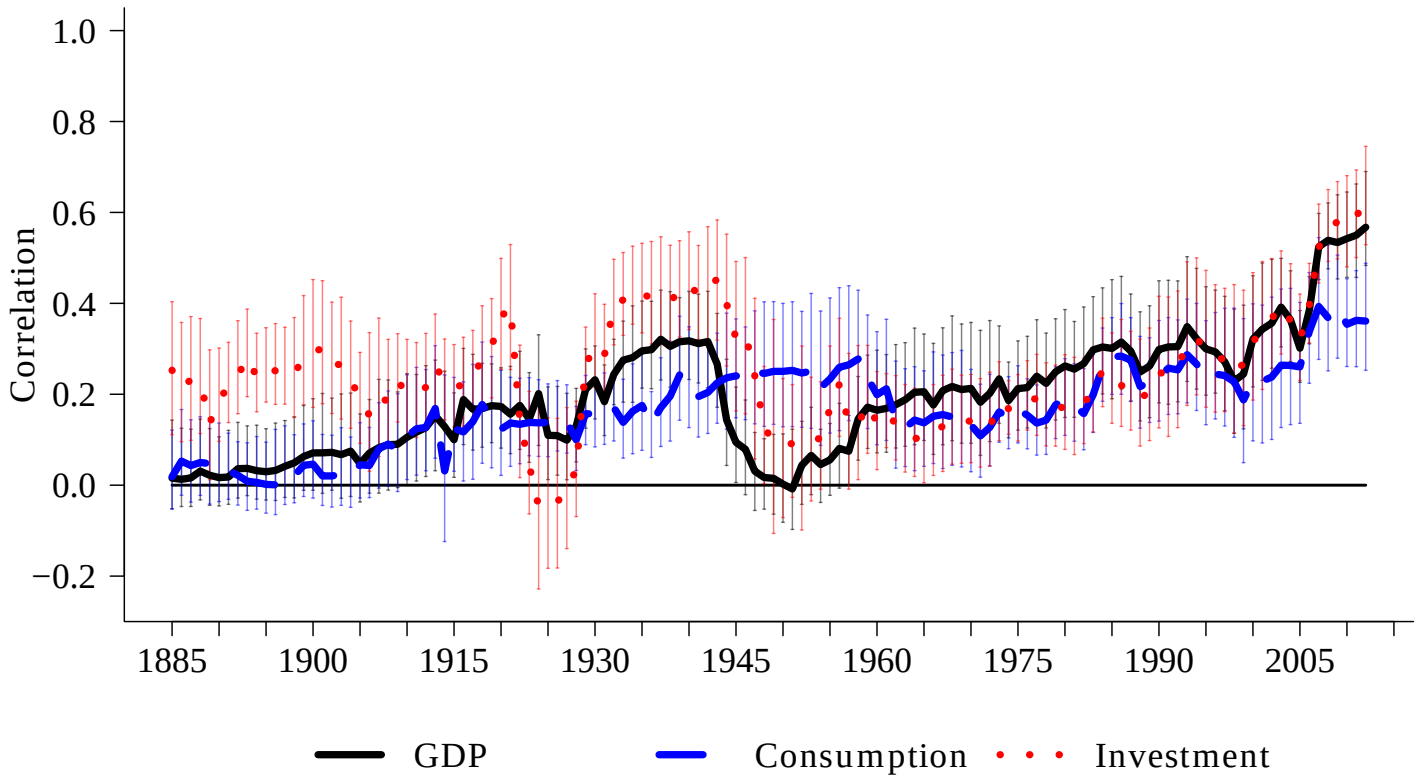
Financial cycle synchronization

Asset prices growing more synchronized, especially equities



Business cycle synchronization

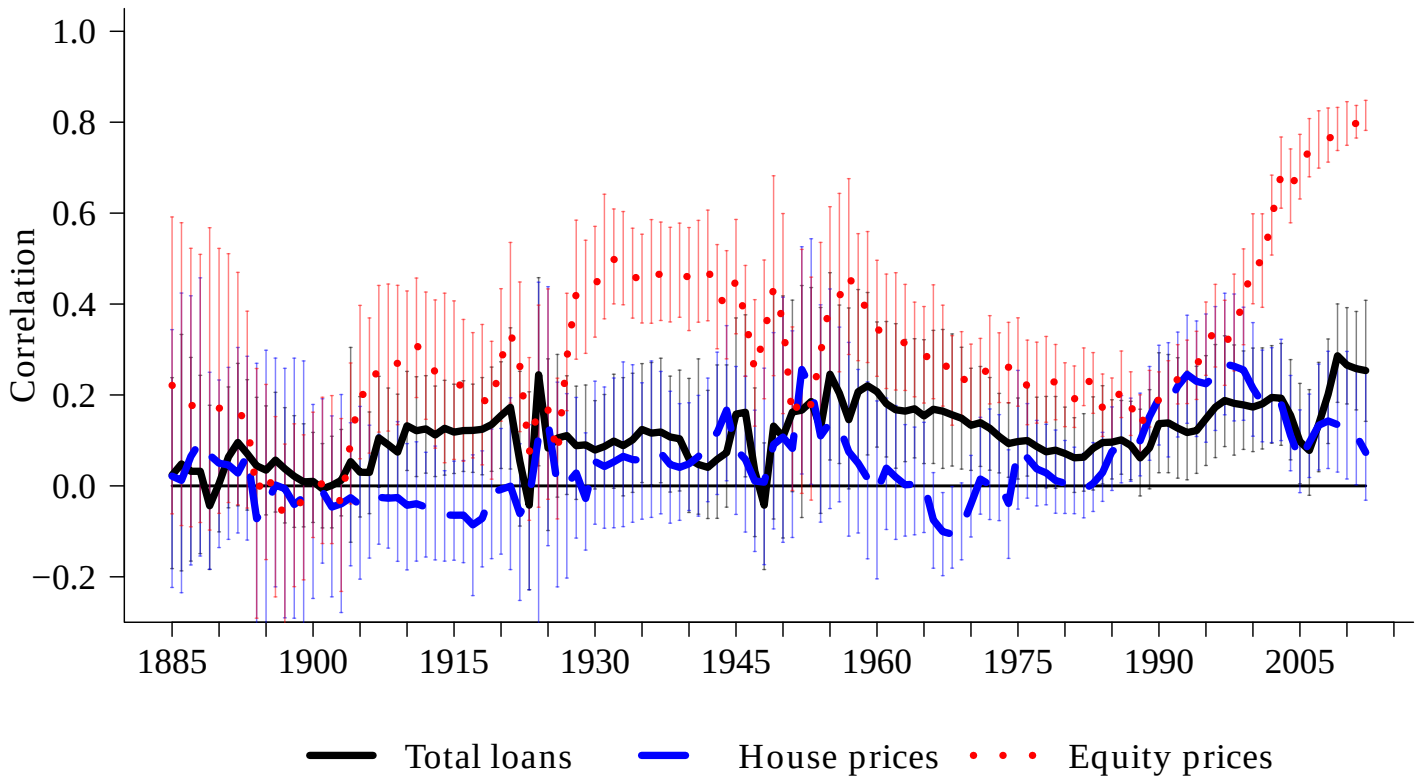
More synchronization, especially after WW2



Excess financial comovement

- $y_{i,t} = \beta_0 + \beta_1 GDP_{i,t} + \beta_2 C_{i,t} + \beta_3 I_{i,t} + \epsilon_{i,t}$

  Excess financial comovement = positive correlation in residuals



What are the sources of equity price comovement?

Equity price components:

- dividends D
- risk-free rate R
- risk appetite ρ

We can directly observe *dividends* and the *risk-free rates*

The equity return premium is a measure for *risk appetite*

Decomposing equity prices

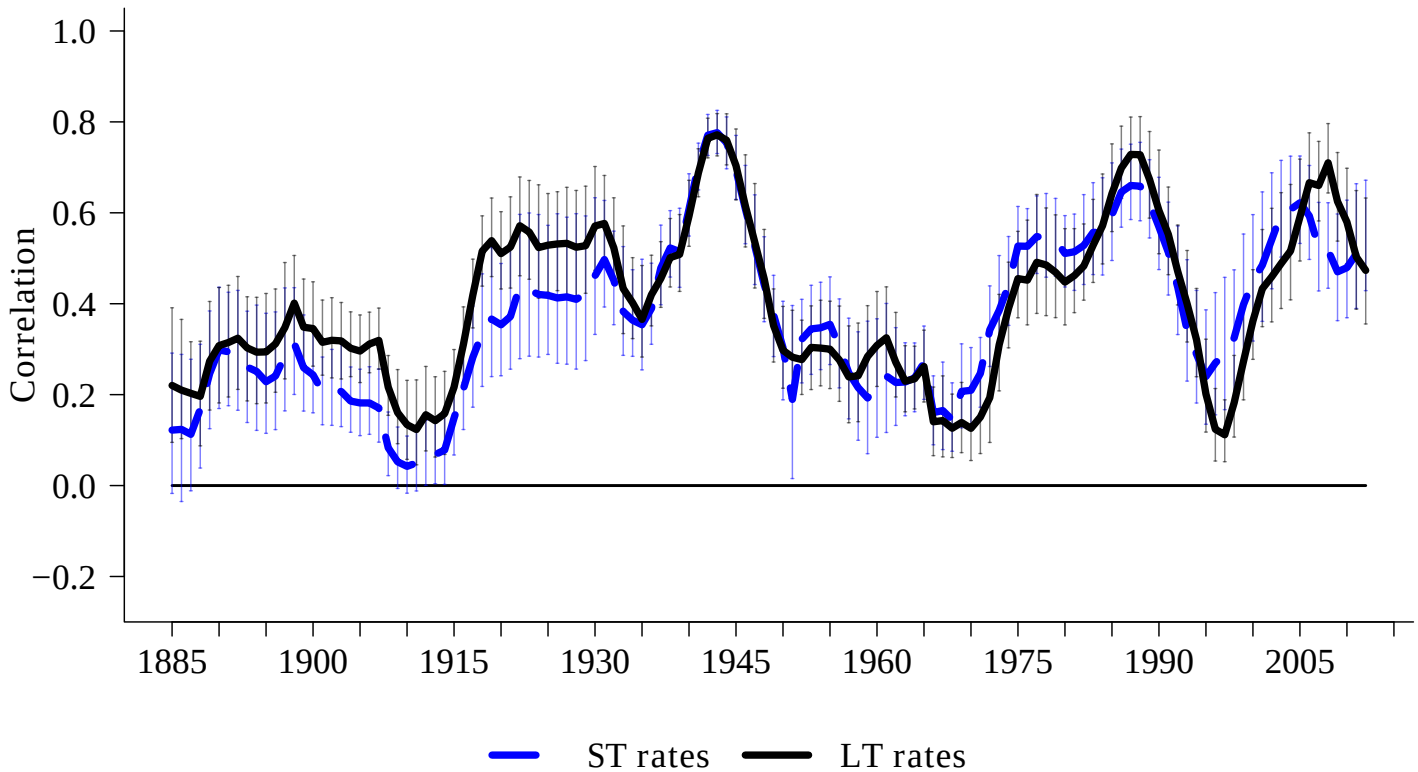
- Let Q be asset price; Q^{RN} risk neutral price; and ρ risk appetite, then:

$$Q_t = Q_t^{RN} \rho_t$$

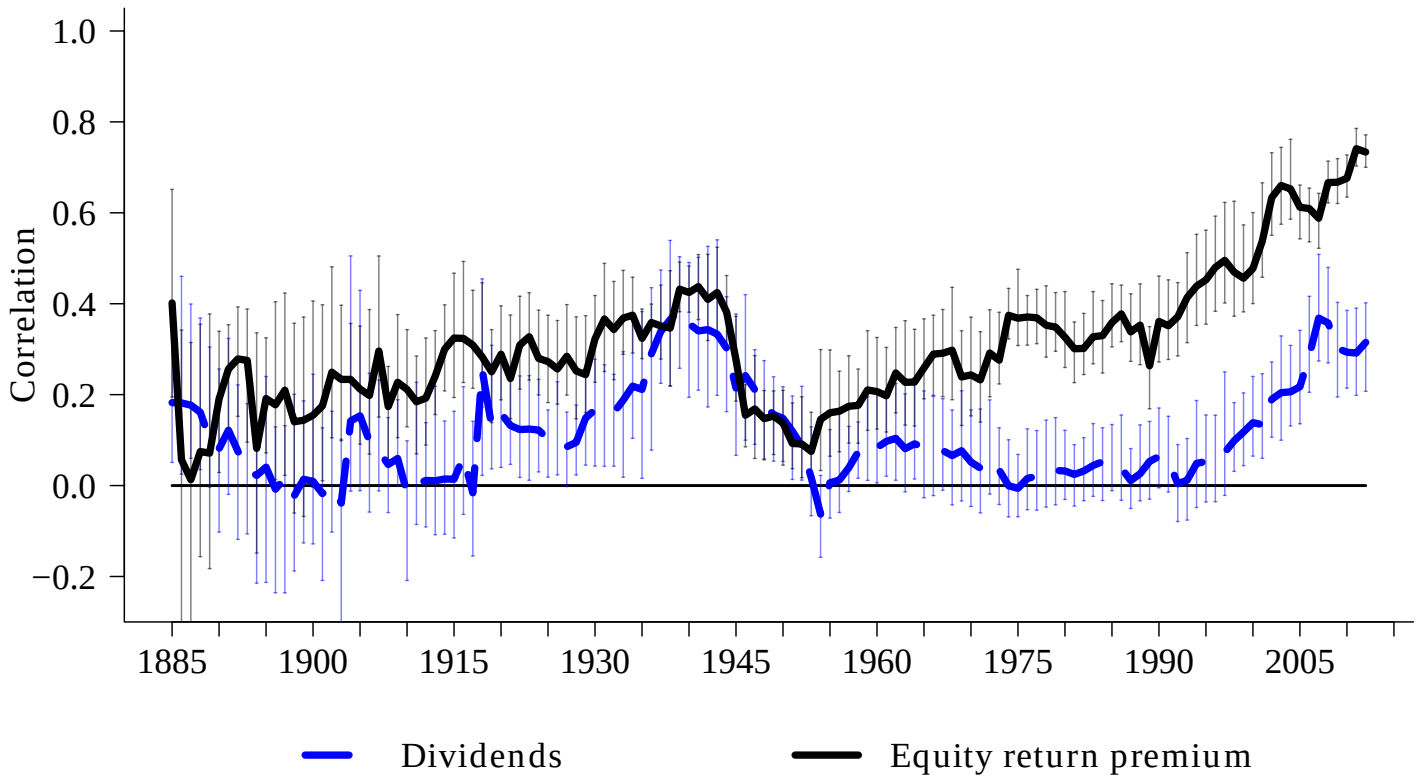
- Let D be dividends; R risk-free rate. Risk neutral price is the present value:

$$Q_t^{RN} = E_t \left\{ \sum_{k=1}^{\infty} \left(\prod_{j=1}^{k-1} R_{t+j}^{-1} \right) D_{t+k} \right\}$$

Comovement of safe rates R within its historical range



Dividends D and and especially return premiums ρ are up



Takeaways so far

Financial cycle synchronization trending up the past 150 years

Equity price synchronization since 1980s due to global **risk appetite synchronization**

Where does global synchronization in risk appetite come from?

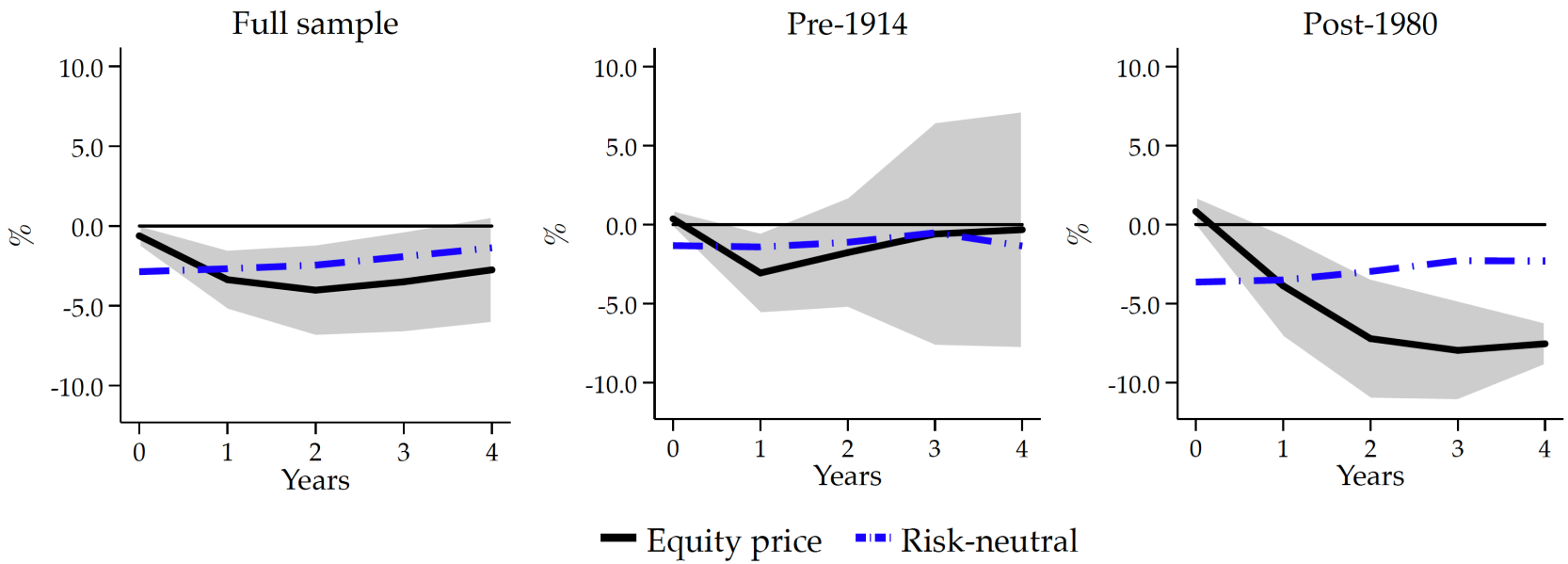
U.S. monetary policy and global risk appetite

Local projections: let y be equity price, dividends, or risk-free rate; ΔR^c first difference in US short-term rate; X_i controls; $h = 0, ..., 4$

$$\Delta_{h+1} y_{i,t+h} = \alpha_i^h + \sum_{k=1}^{5} \beta_k^h \Delta y_{i,t-k} + \sum_{k=0}^{5} \gamma_k^h \Delta R_{i,t-k}^c + \sum_{k=0}^{5} \delta_k^h X_{i,t-k} + u_{i,t+h}$$

How much of the global response is due to dividends and risk-free rates, as opposed to risk appetite?

The response of global equity markets



⇒ Excess equity price responses are a new phenomenon

Do exchange rate regimes make a difference?

Equity price response, full sample:

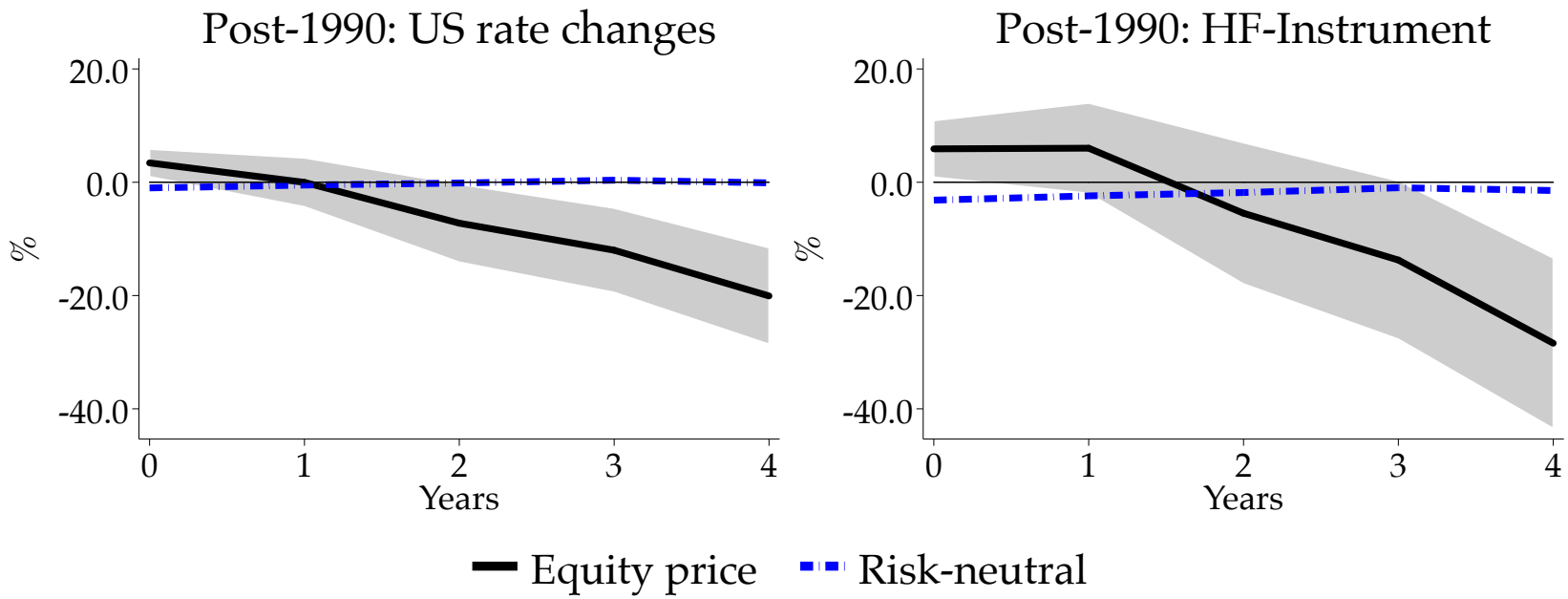
	(1) Year 0	(2) Year 1	(3) Year 2	(4) Year 3	(5) Year 4
Pegs	-0.88	-2.91***	-2.22	-0.46	0.16
	(0.69)	(1.08)	(1.52)	(1.80)	(2.01)
Floats	0.46	-0.50	0.00	-0.74	-0.52
	(0.40)	(0.62)	(0.88)	(1.04)	(1.16)
Peg=Float (p-value)	0.05*	0.02**	0.14	0.87	0.73
Observations	810	810	810	810	810
R^2	0.57	0.57	0.44	0.37	0.31

Equity price response, Post-1945:

	(1) Year 0	(2) Year 1	(3) Year 2	(4) Year 3	(5) Year 4
Pegs	-1.46	-8.36**	-6.94	3.05	6.63
	(2.23)	(3.79)	(5.55)	(6.46)	(7.17)
Floats	0.94*	-3.10***	-1.17	0.12	-0.06
	(0.57)	(0.97)	(1.43)	(1.66)	(1.85)
Peg=Float (p-value)	0.27	0.15	0.29	0.64	0.34
Observations	577	577	577	577	577
R^2	0.74	0.70	0.55	0.52	0.48

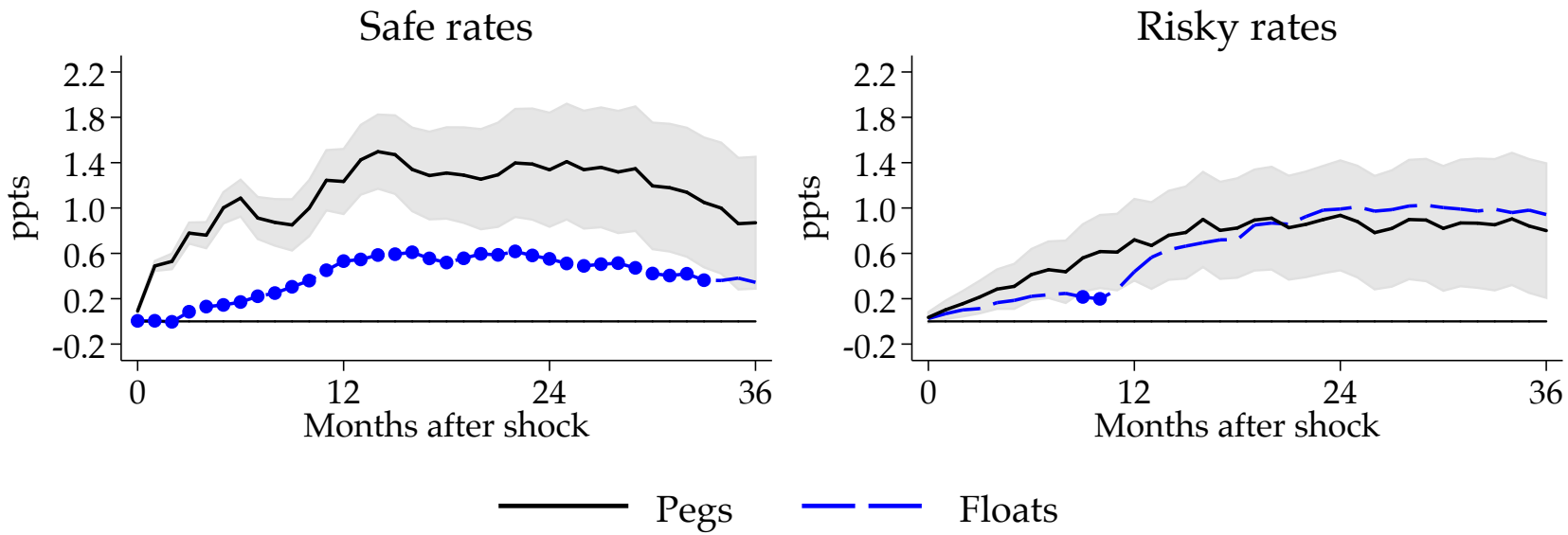
$\Rightarrow$ Peg-float distinction blurs in the second half of the sample

Robustness: high frequency instrument



$\Rightarrow$ OLS results robust to using Gertler-Karadi IV

Risk spillovers into lending rates



See Felix Ward 2017. **Global risk taking, exchange rates, and monetary policy.** (Job Market Paper)

Conclusions and policy implications

Conclusions

- **Financial cycle synchronization** up for past 150 years
- **Increasing equity price synchronization** since 1980 due to **global risk appetite synchronization**
- **U.S. monetary policy a trigger of risk appetite** across global equity markets

Policy implications

- Risk-appetite spillovers can confound monetary policy and financial stability targets
- Potential role for macropru and capital account policies
- Benefits to international economic policy coordination