Corporate indebtedness and macroeconomic stabilisation from a long-term perspective

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The question

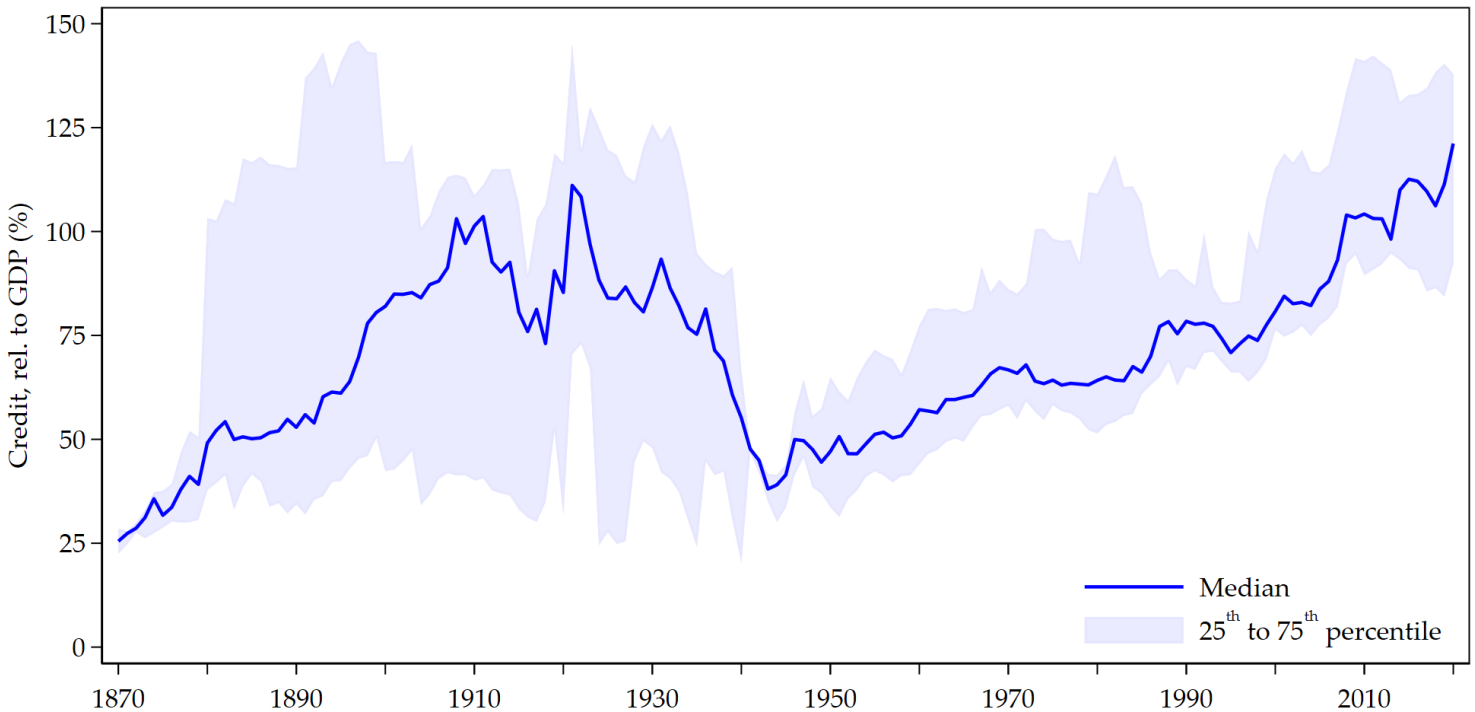
- The pandemic hit after decade-long **corporate debt boom**.
- What does this mean for the recovery?
  - Will **corporate debt overhang** restrain investment?
  - Will roaming **zombie firms** slow down productivity growth?
- Historical admonitions
  - Role of household debt post-2008 (Mian and Sufi 2010; Jordà et al. 2013)
  - Japan in the 1990s (Peek and Rosengren 2005; Caballero et al. 2008)

The approach

- I study the **near-universe of modern business cycles** since the 19th century
- Novel long-run data for business sector **debt liabilities**
  - Loans, bonds and lending from non-bank intermediaries
  - Total of 18 advanced economies since 1870
  - For details see Jordà, Kornejew, Schularick and Taylor (2021)
- Data on **www.macrohistory.net/data**

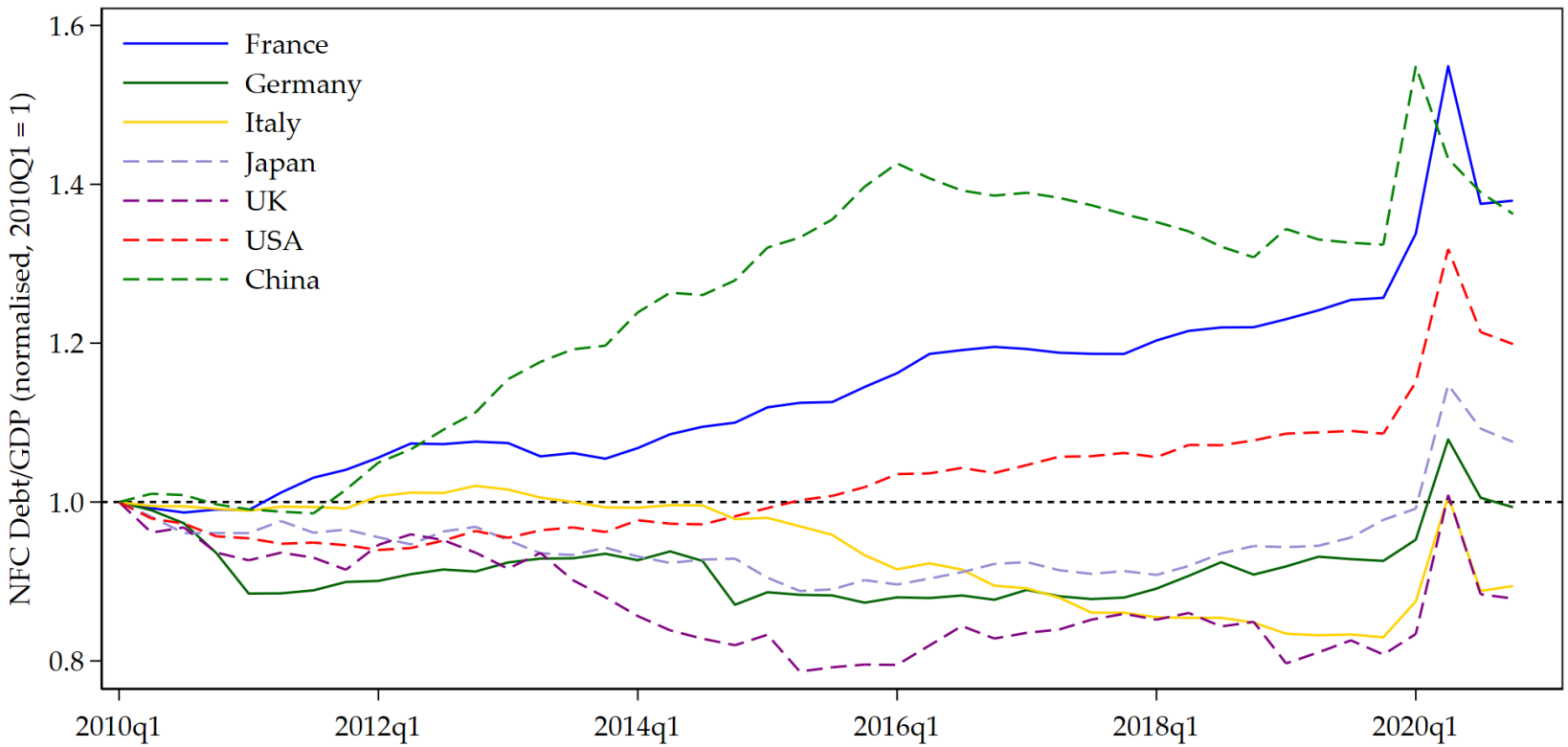
Where do we stand?

Corporate debt over GDP in the long term



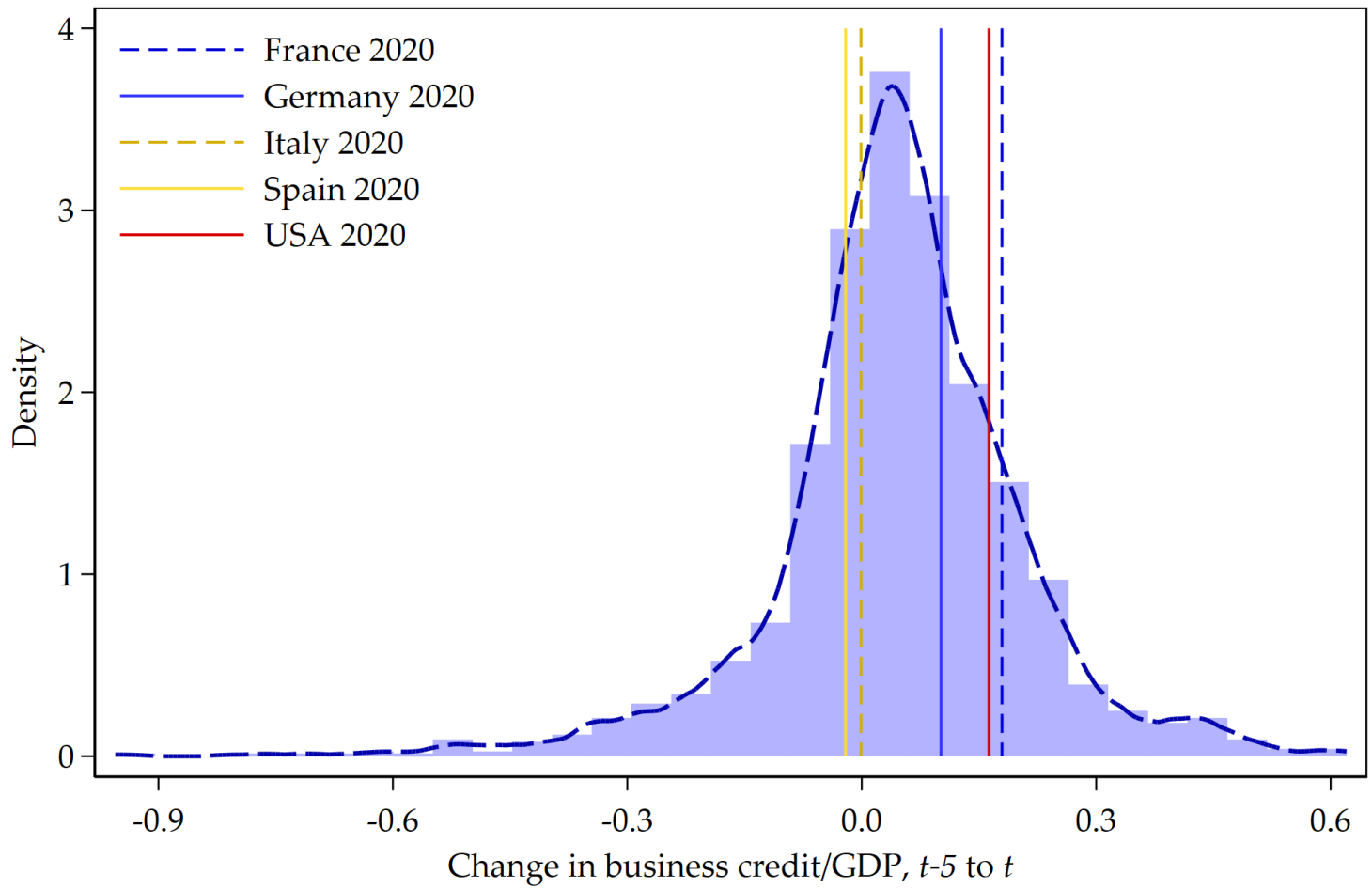
Notes: The figure shows non-financial corporate debt over GDP for our sample of 18 advanced economies. Interquartile range shown as the shaded region. Source: Jorda, Kornejew, Schularick and Taylor (2021).

Change in corporate debt/GDP since 2010: cross-country differences



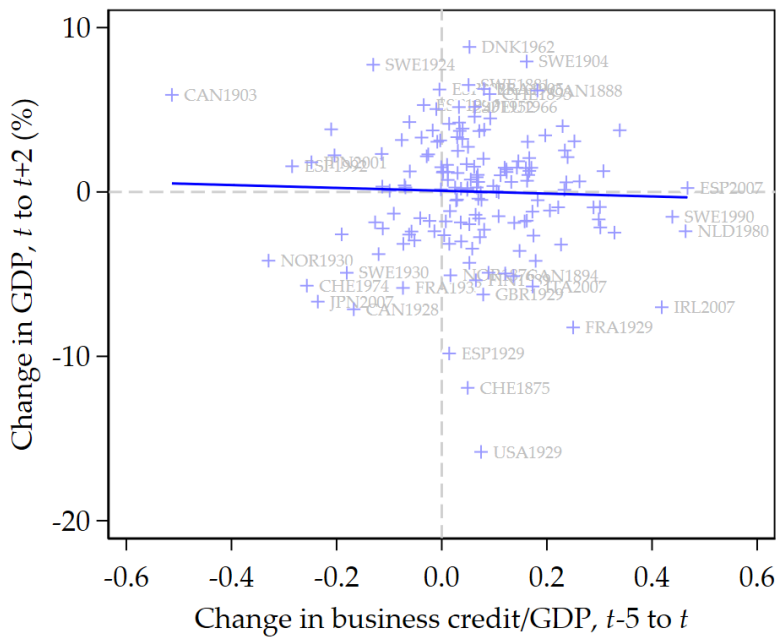
Notes: Data from BIS debt database.

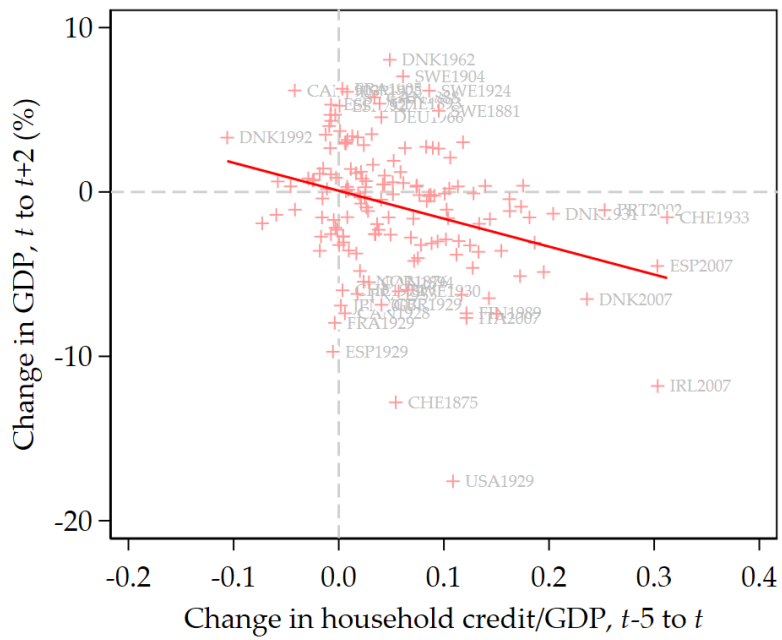
The 2015-2020 corporate debt increase in historical perspective



Corporate debt and the business cycle

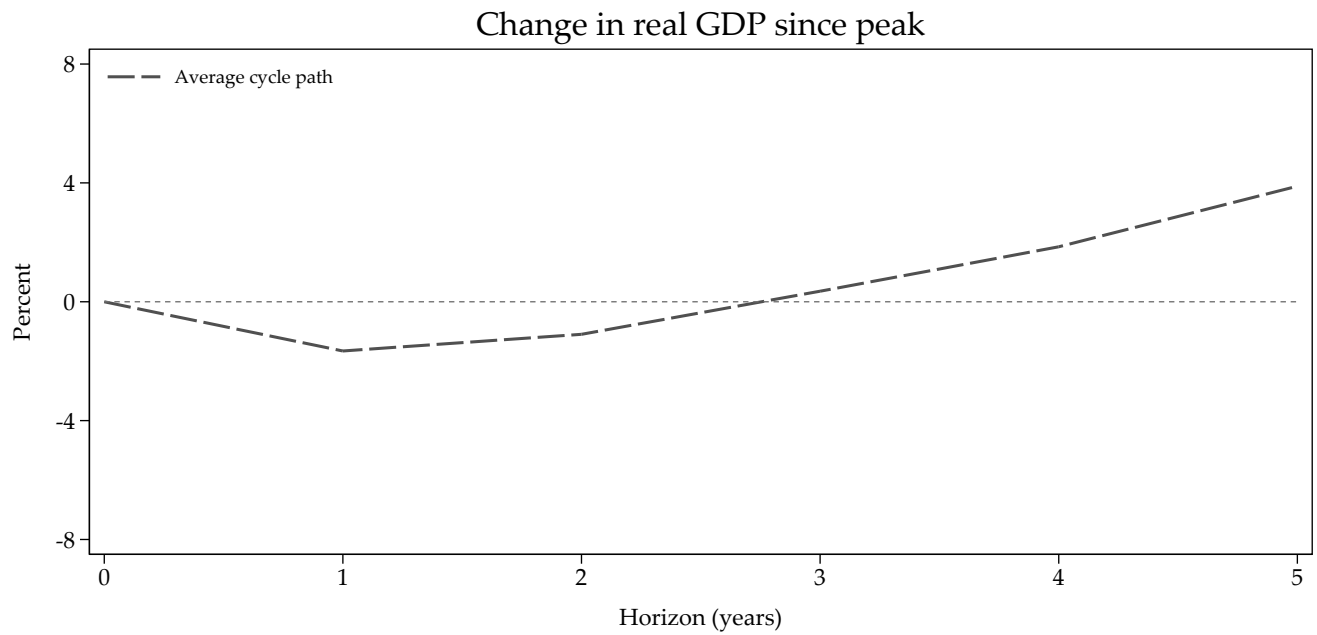
Corporate debt does not predict GDP outcomes; household debt does





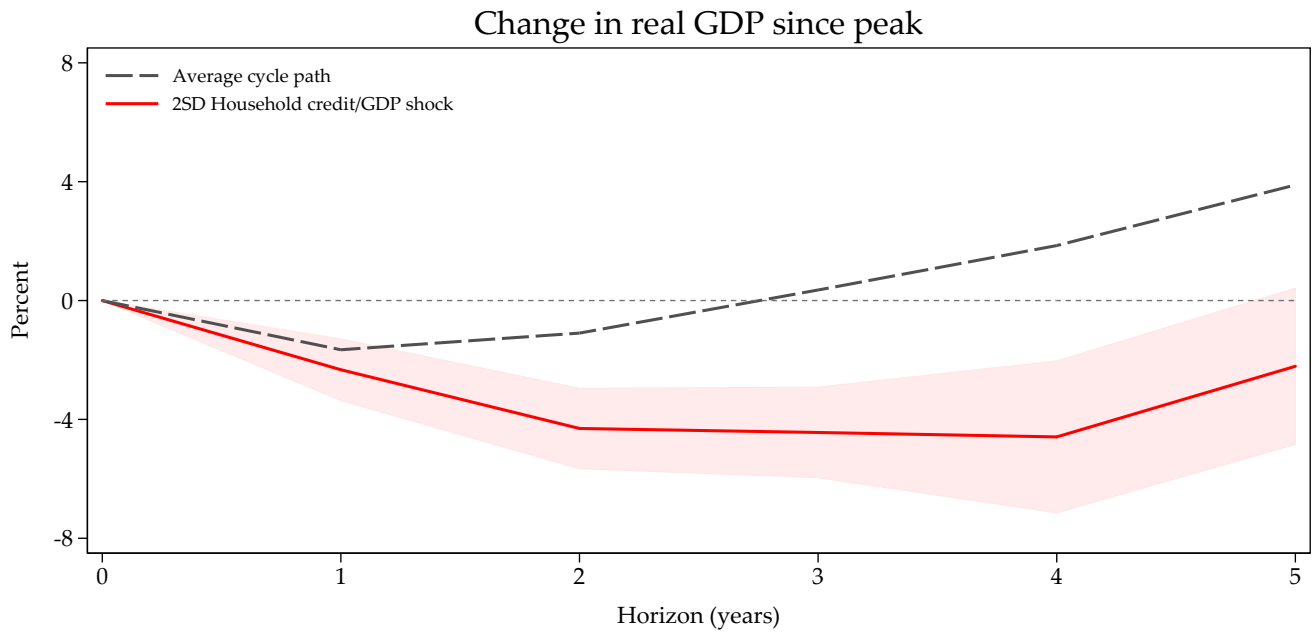
Source: Jordà, Kornejew, Schularick and Taylor (2021)

Business cycles and debt dynamics



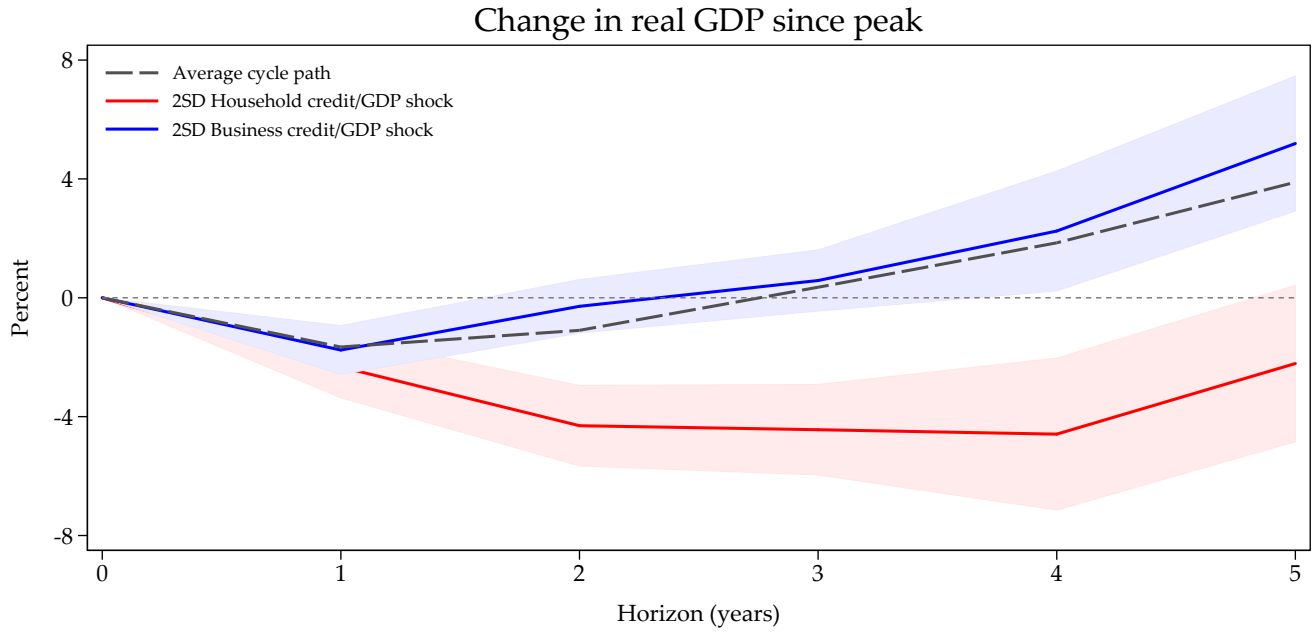
Notes: Average recession trajectory following a business cycle peak at t = 0.

Household debt booms



Notes: Predictive effects on growth of a two-SD credit expansion in the five years preceding the recession for business credit booms and household credit booms. Standard errors clustered on countries. Shaded areas denote 95% confidence intervals.

Corporate debt booms

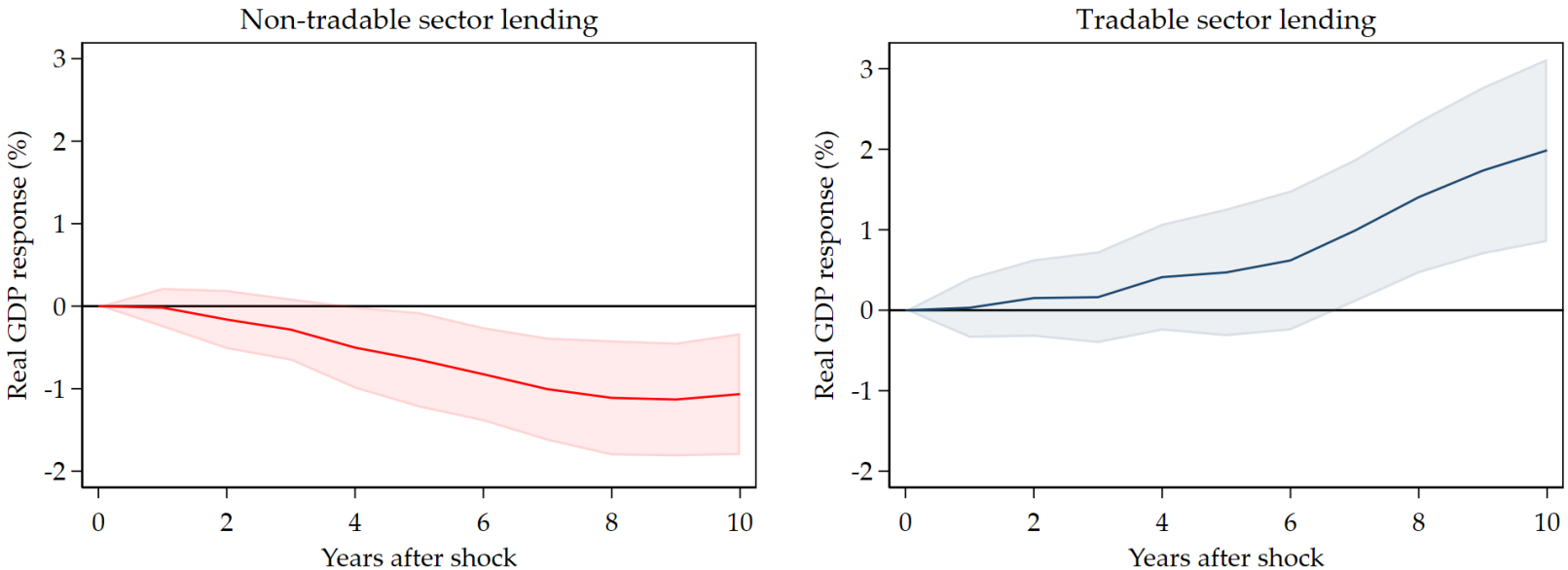


Notes: Predictive effects on growth of a two-SD credit expansion in the five years preceding the recession for business credit booms and household credit booms. Standard errors clustered on countries. Shaded areas denote 95% confidence intervals.

▸ Coefficient estimates

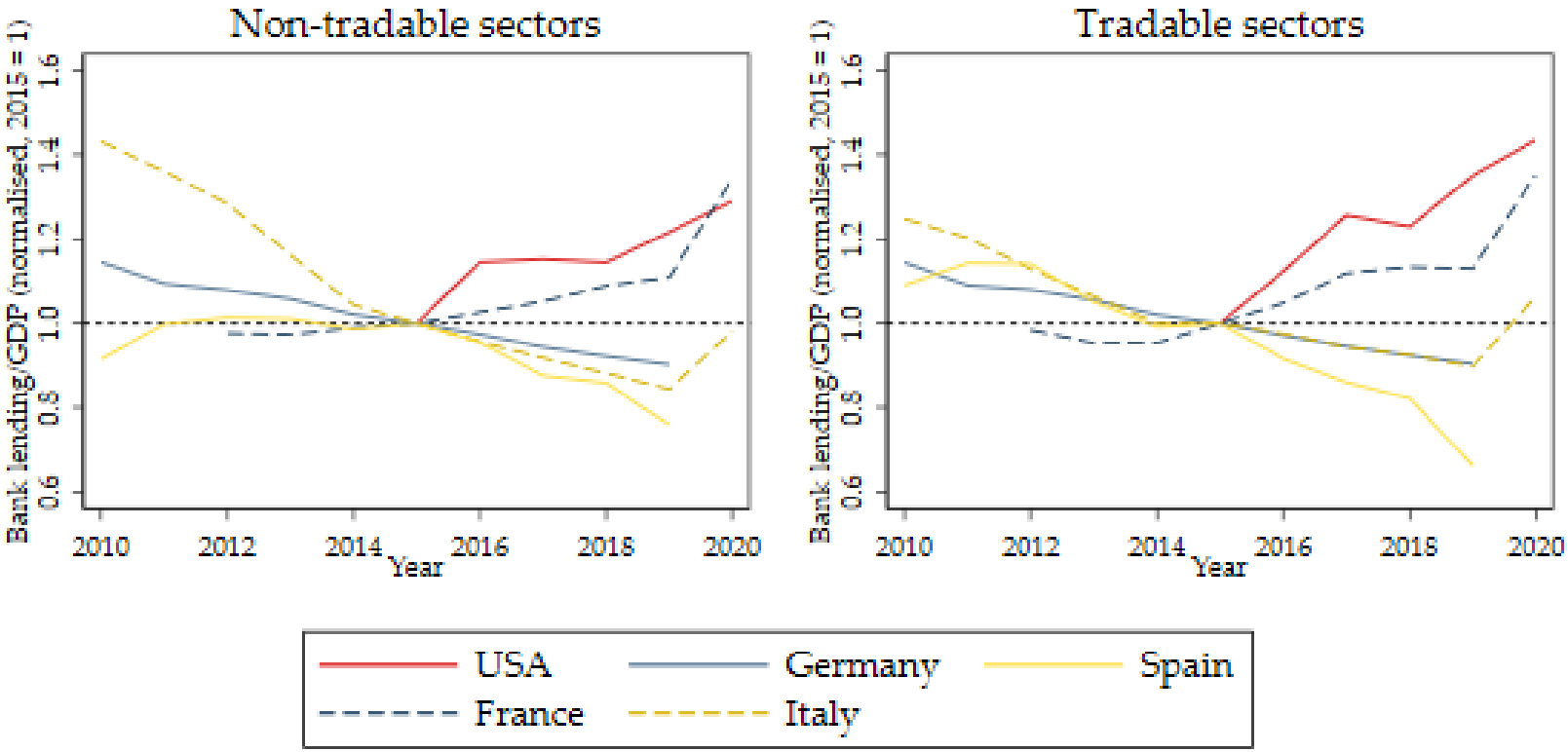
Three caveats

Caveat 1: the sectoral composition matters



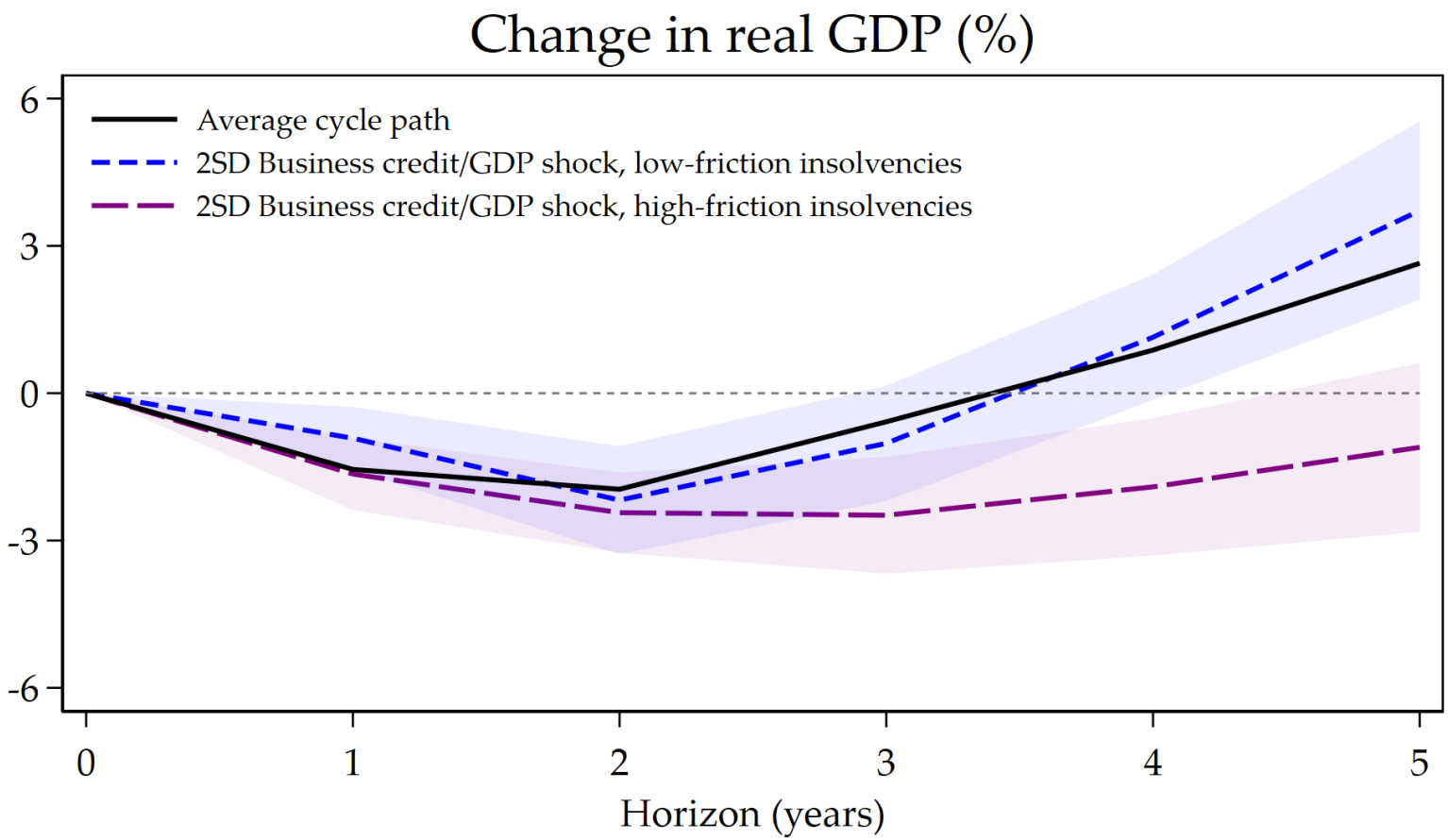
Notes: Mueller and Verner (2021)

Sectoral composition of corporate debt: 2010-2020



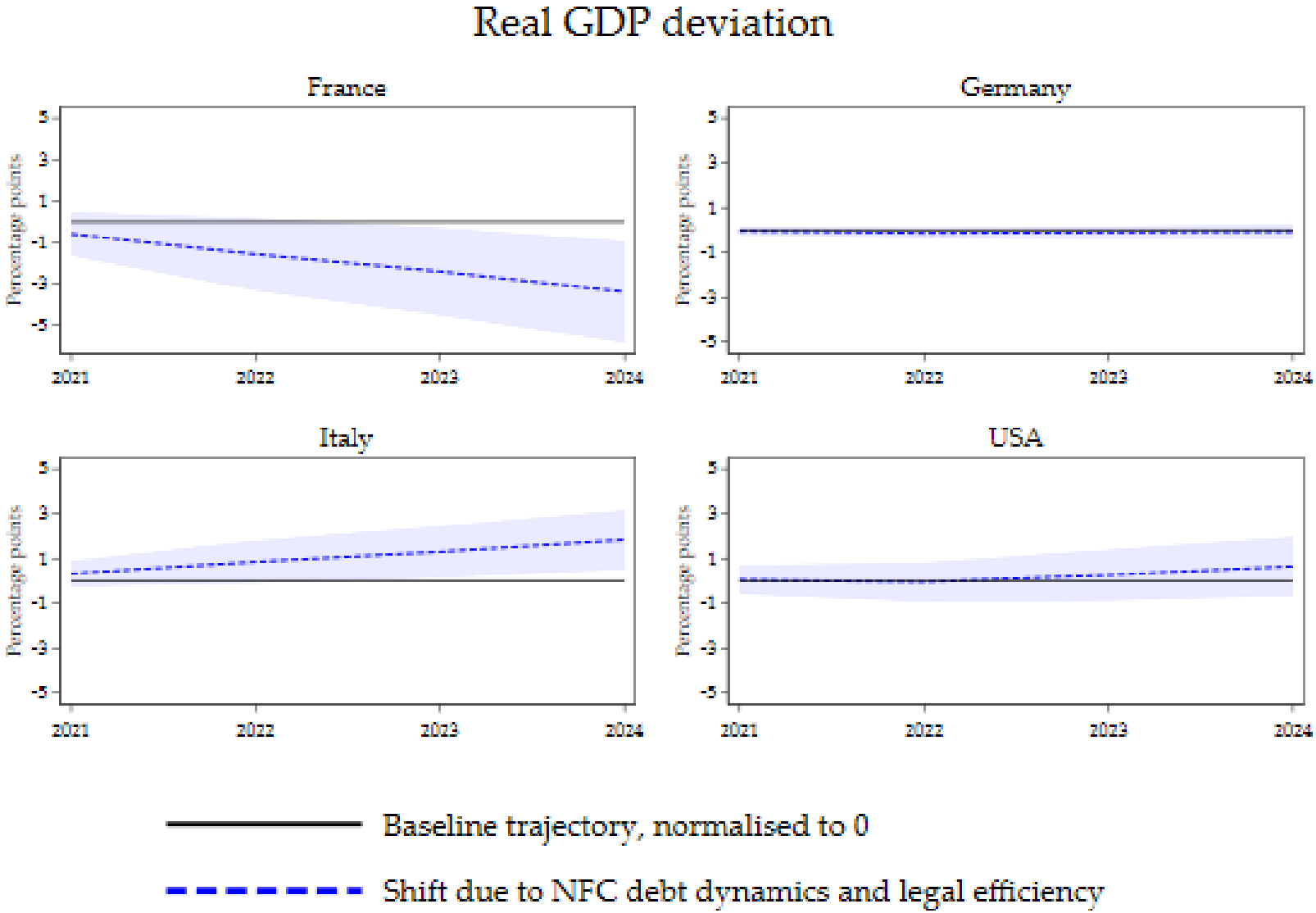
Notes: Data from Bloomberg and BIS debt database.

Caveat 2: debt reorganization frictions



Notes: Jordà, Kornejew, Schularick and Taylor (2021)

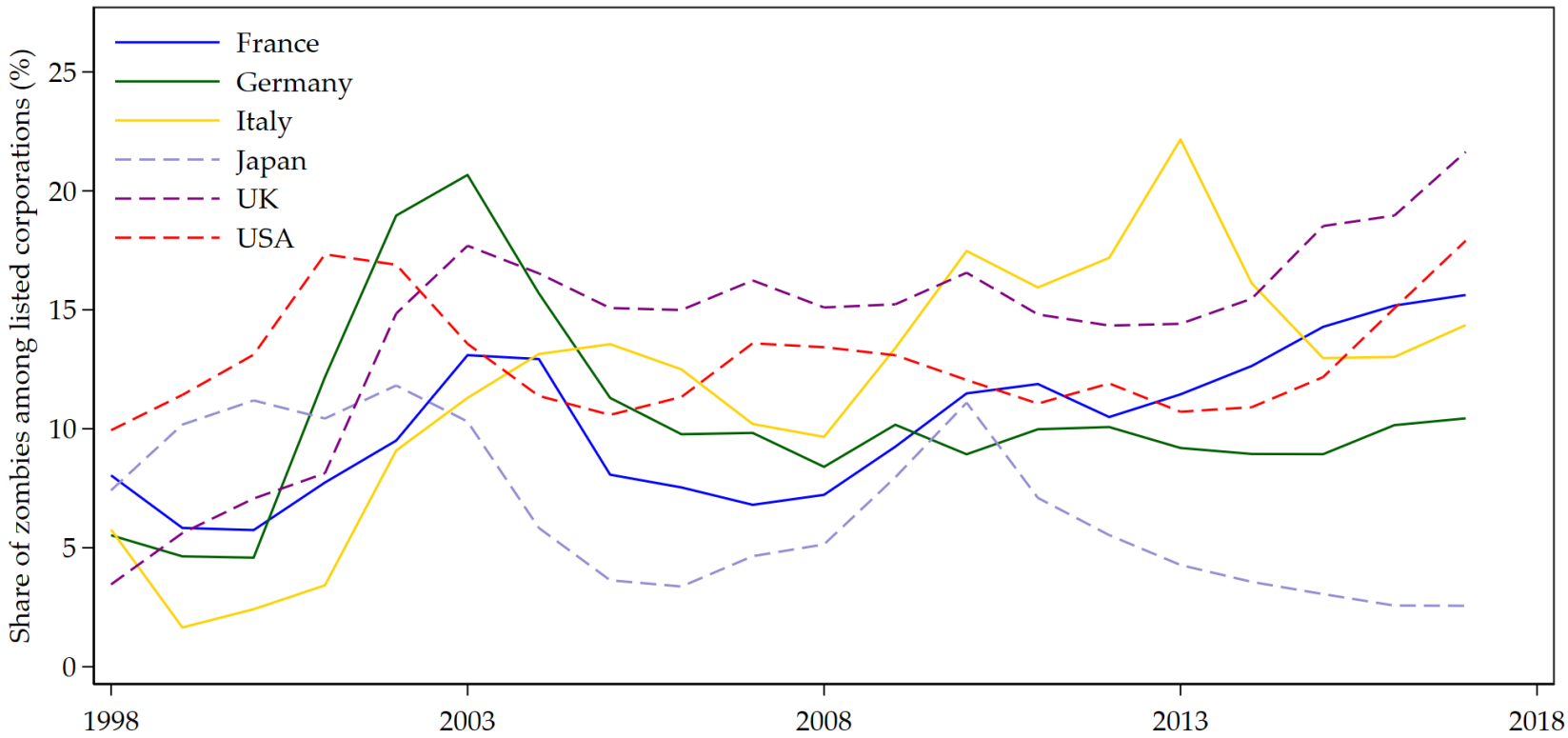
Projections



Notes:

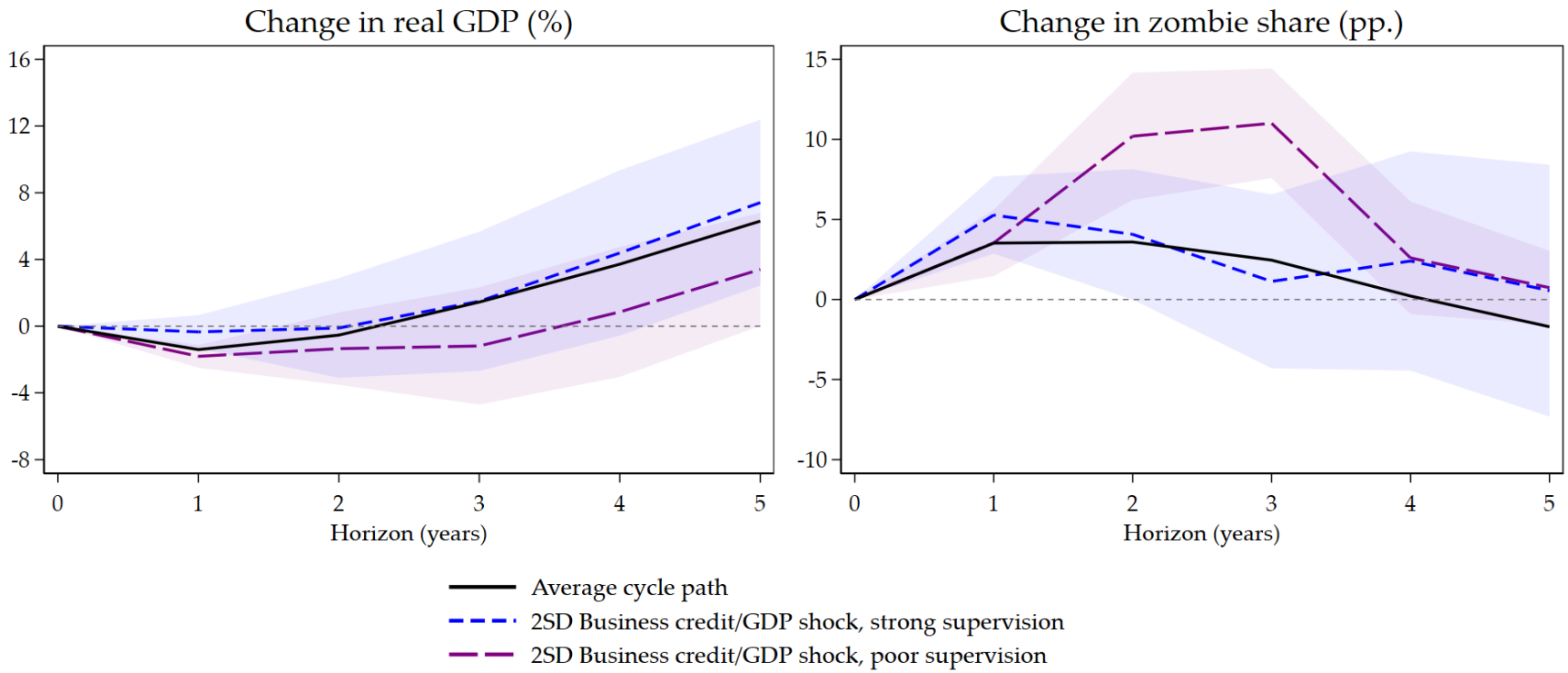
Caveat 3: banking supervision and corporate zombies

Share of zombies among listed companies



Notes: Data and definitions from Banerjee and Hofmann (2021).

Bank supervision and zombies



Conclusions

What do we know?

- The aftermath of business credit booms is typically benign
- Three main caveats, but none currently raises red flags:
  - Sectoral composition not tilted towards non-tradable side.
  - Weaknesses in debt reorganization regimes persist, but do not overlap with the boom countries.
  - Bank supervision much improved, but zombie lending problem undead (cf. Andrews and Petroulakis 2019).

Conclusion

- Fears of post-pandemic headwind to growth caused by corporate debt overhang are likely unfounded.
- Efficient reorganization and liquidation frameworks are crucial: Europe has some work to do towards a unified system.
- No clear evidence for rising zombie shares and a role for monetary policy.
- It's not only about old companies: aggregate demand conditions are paramount for the success of start-ups and firm formation (Ignaszak and Sedlacek 2021)

Thank you!

Set-up

$i, t(p)$ Sample of country-years at business cycle peak

$\Delta_h y_{it(p)+h}$ h-year change of log real GDP pc. (cumulative)

$\Delta_5 x^B_{it(p)}$ five-year change in business credit/GDP

$\Delta_5 x^H_{it(p)}$ five-year change in household credit/GDP

$\boldsymbol{w}_{it(p)}$ Dynamic macro-financial controls

▸ Details

Local projections

$$\Delta_h y_{it(p)+h} = \alpha_h + \alpha_{hi} + \beta_h^B \Delta_5 x_{it(p)}^B + \beta_h^H \Delta_5 x_{it(p)}^H + \gamma_h \boldsymbol{w}_{it(p)} + \epsilon_{it(p)}, \quad h = 1, .$$

α_h Average recession path (demeaned regressors)

α_{hi} Country fixed effects, summing to zero

$\alpha_h + \beta_h^j \Delta_5 x_{it(p)}^j$ Recession/recovery path for given $\Delta_5 x_{it(p)}^j, j = B, H$

Controls: contemporaneous plus 2 lags of

- real GDP growth
- inflation
- real investment growth
- short-term interest rates on government debt
- real household credit growth
- real business credit growth

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Coefficient estimates

	(1) $h = 1$	(2) $h = 2$	(3) $h = 3$	(4) $h = 4$
Average cycle α_h	-1.66***	-1.09***	0.36**	1.88***
	(0.08)	(0.14)	(0.17)	(0.24)
Business credit/GDP expansion $\Delta_5 x^B_{it(p)}$	0.25	2.14	-0.68	0.17
	(1.13)	(1.56)	(2.38)	(3.81)
Household credit/GDP expansion $\Delta_5 x^H_{it(p)}$	-5.05	-22.04***	-32.90***	-43.60***
	(3.97)	(4.73)	(5.55)	(8.80)
Macro controls	Yes	Yes	Yes	Yes
$\beta^B_h = \beta^H_h$ (p-value)	0.213	0.000	0.000	0.000
R^2	0.15	0.35	0.41	0.44
Cycles	150	150	150	150

Notes: Within-estimator, standard errors clustered on countries in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Credit expansion denotes past 5-year change in credit/GDP ratio.

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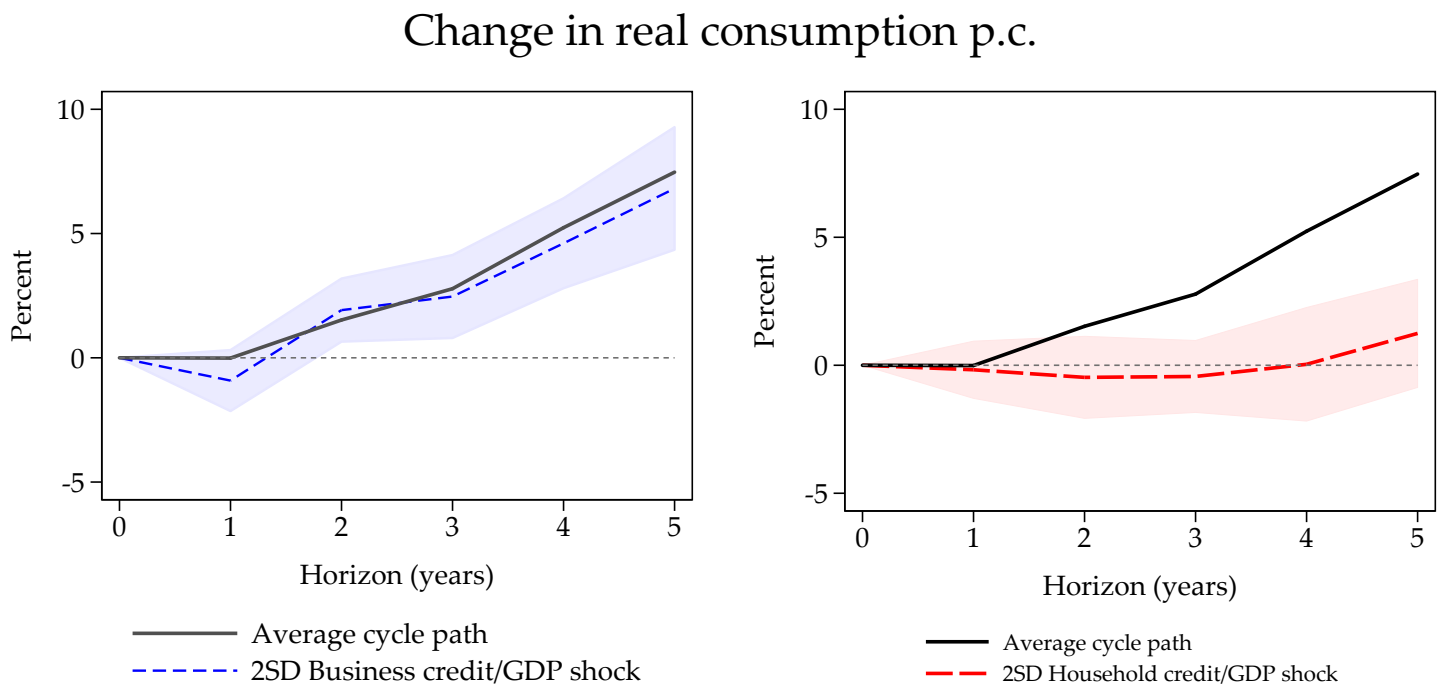
Effects on other macroeconomic aggregates

- ▸ Real consumption
- ▸ Real investment
- ▸ Unemployment
- ▸ Inflation
- ▸ Real business credit
- ▸ Real household credit
- ▸ Real stock prices
- ▸ Real house prices

Effects on other macroeconomic aggregates



Notes: Standard errors clustered on countries. Shaded areas denote 95% confidence intervals.

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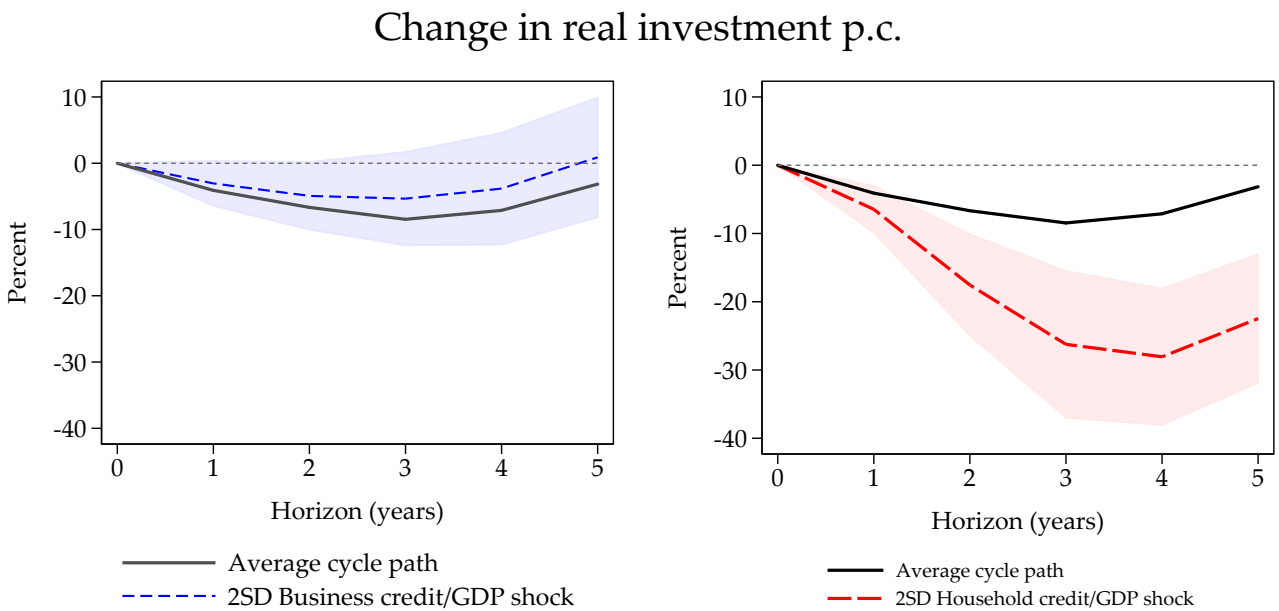

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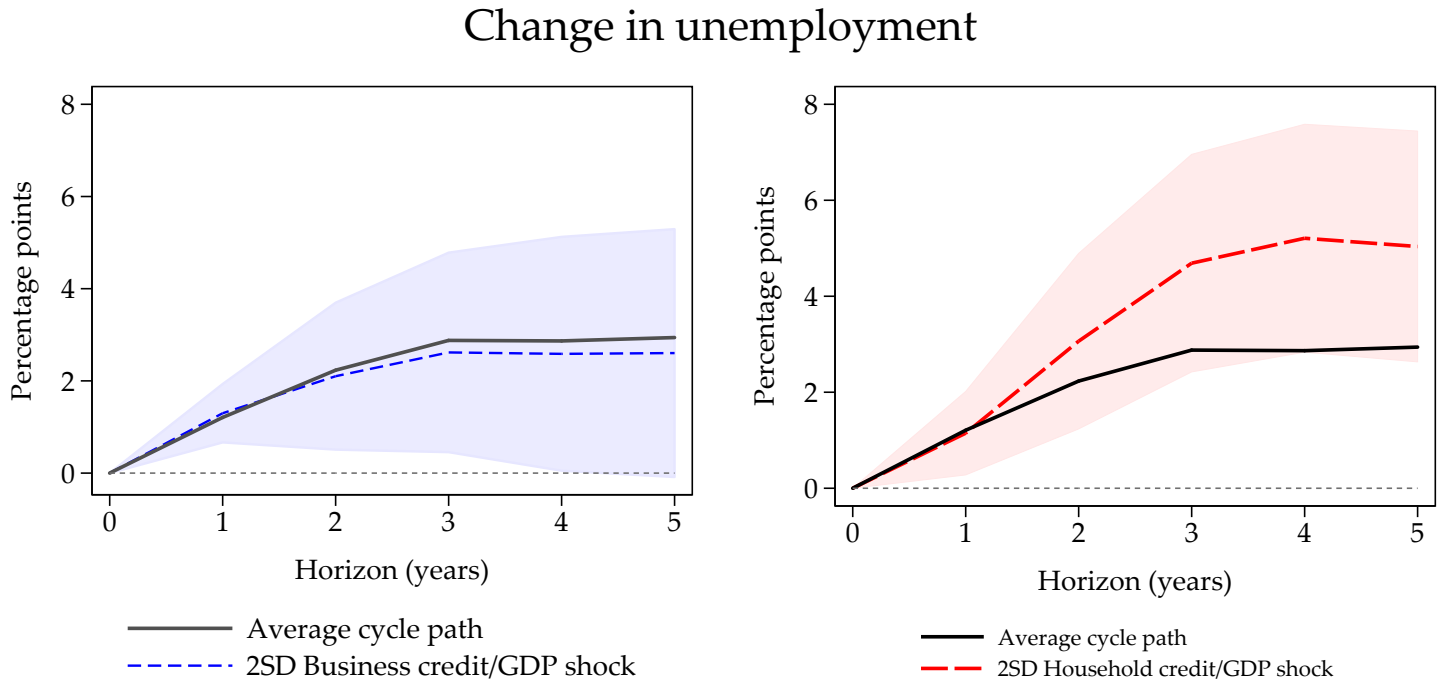

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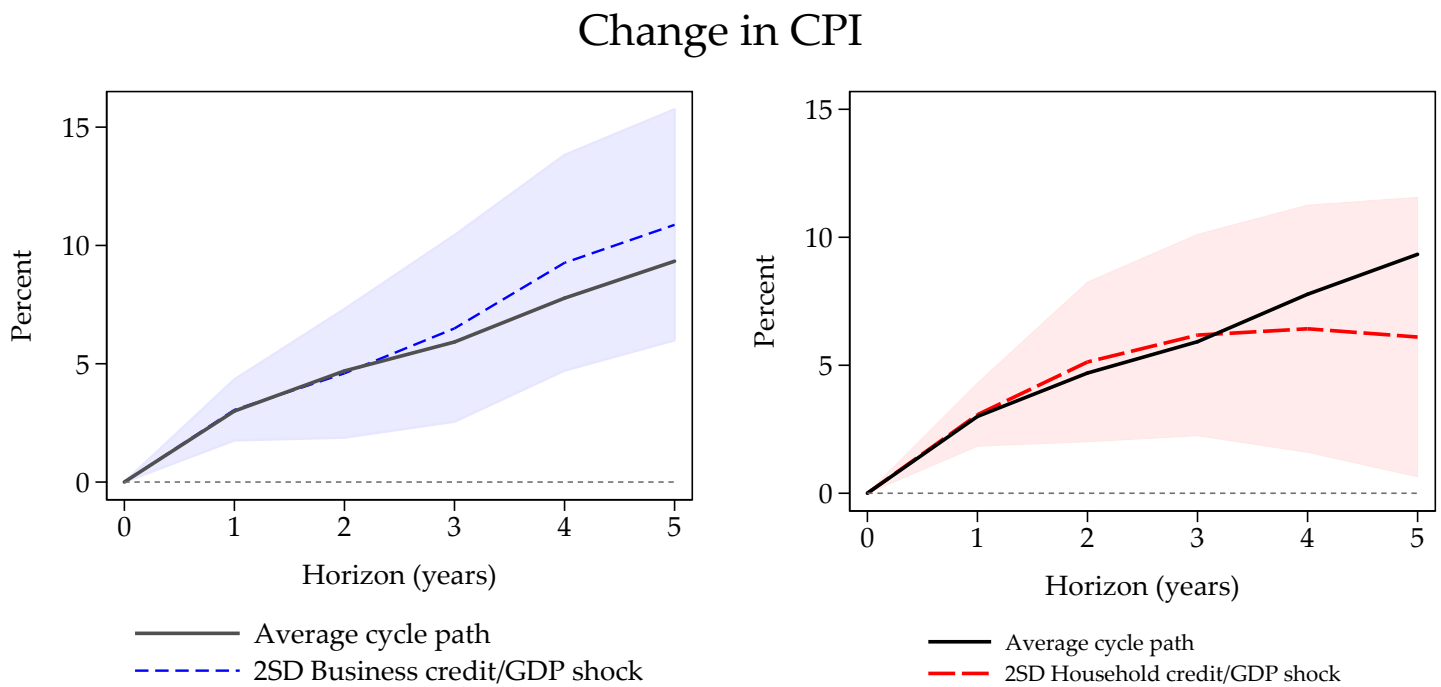

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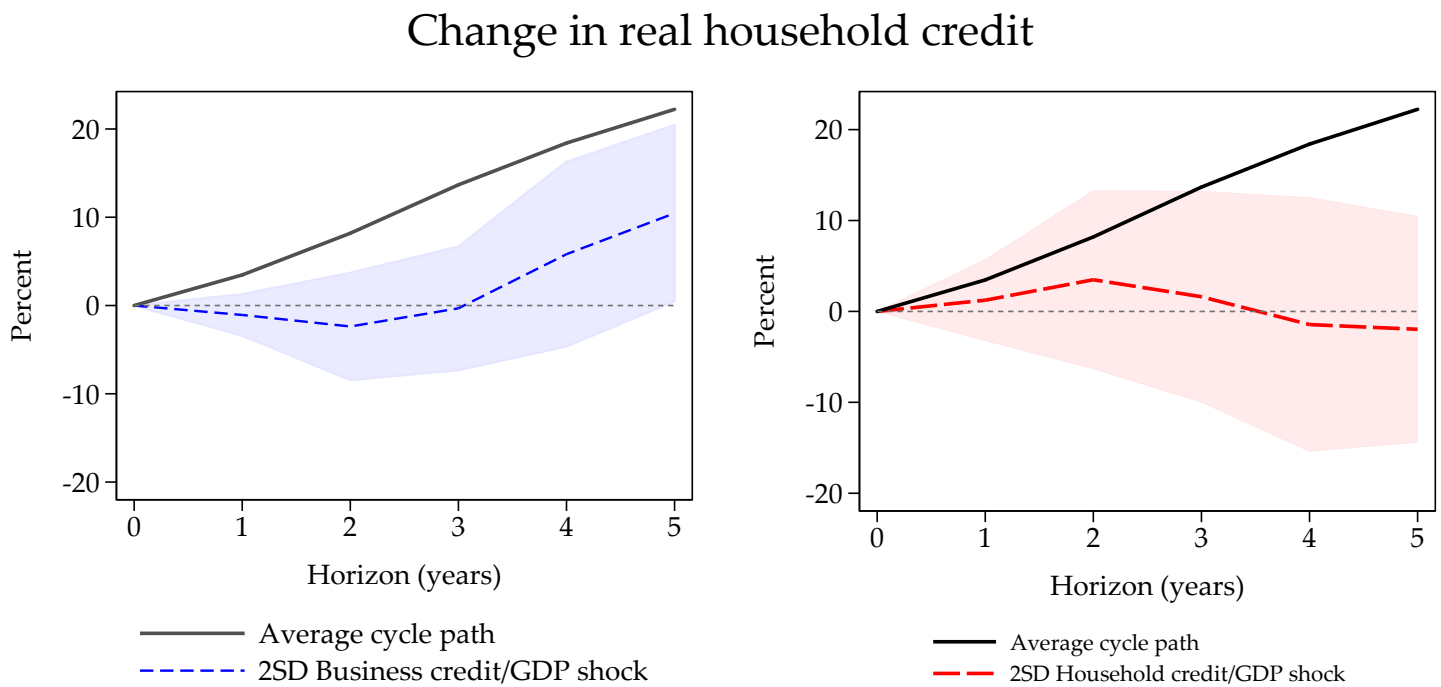

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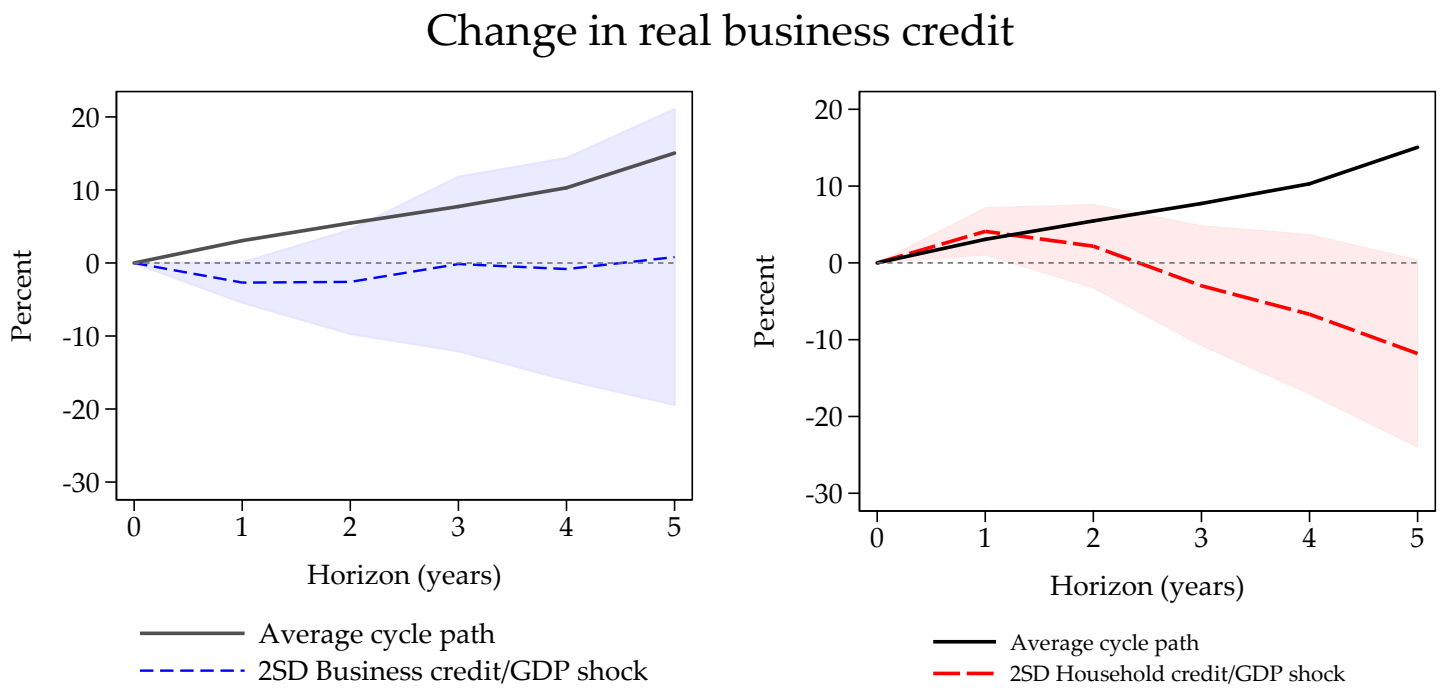

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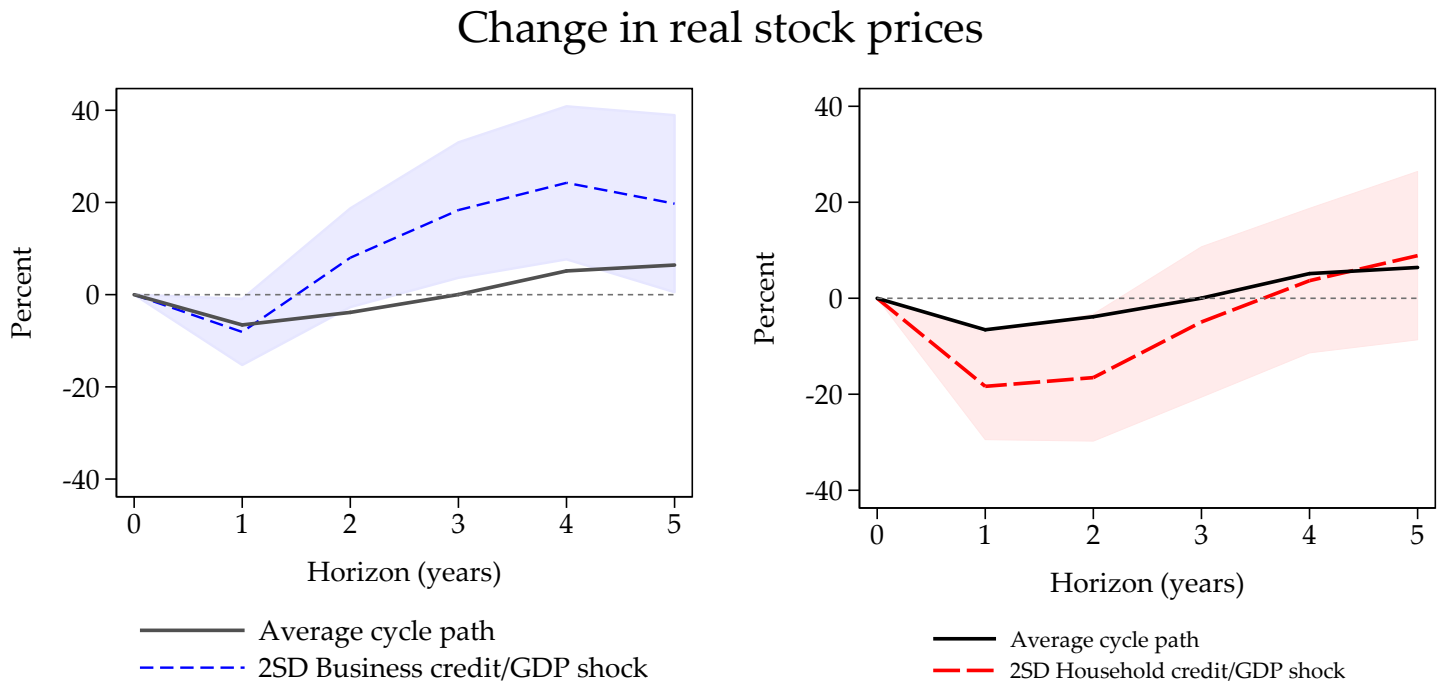

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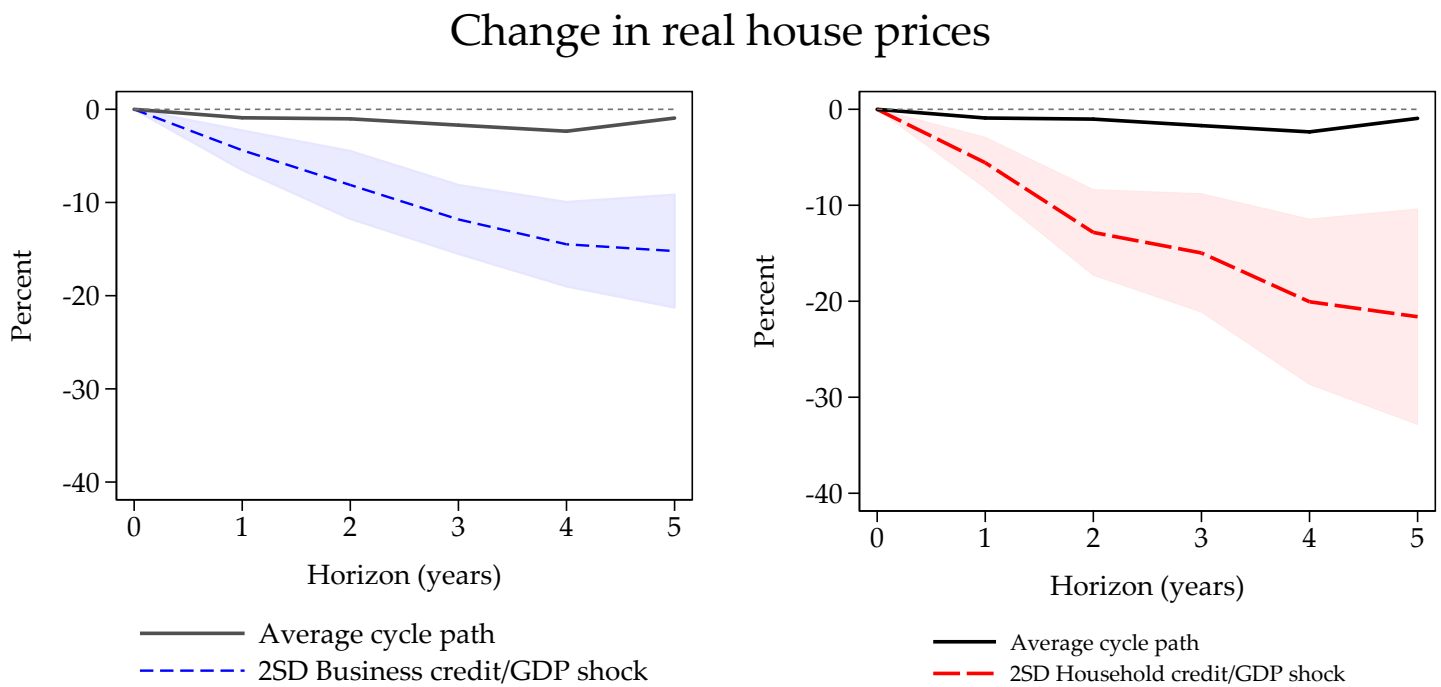

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Business cycle peaks followed by normal recessions

Australia	1961, 1973, 1976, 1981, 2008
Belgium	1957, 1974, 1980, 1992, 2011
Canada	1891, 1894, 1903, 1928, 1953, 1956, 1981, 1989, 2007
Denmark	1880, 1887, 1931, 1962, 1973, 1979, 1992, 2011
Finland	1957, 1975, 2008, 2011
France	1905, 1907, 1926, 1933, 1974, 1992, 2011
Germany	1898, 1905, 1908, 1966, 1974, 1980, 1992, 2001
Ireland	1955, 1974, 1982
Italy	1974, 2002, 2011
Japan	1973, 2001, 2007
Netherlands	1957, 1974, 1980, 2001, 2011
Norway	1876, 1881, 1885, 1893, 1902, 1957, 1981, 2007, 2012
Portugal	1973, 1982, 1992, 2002, 2010
Spain	1927, 1952, 1958, 1980, 1992
Sweden	1876, 1881, 1883, 1885, 1888, 1890, 1899, 1901, 1904, 1924, 1980, 2011
Switzerland	1875, 1880, 1886, 1890, 1893, 1899, 1902, 1906, 1933, 1951, 1957, 1974, 1981, 1994,
UK	1896, 1899, 1902, 1907, 1925, 1929, 1951, 1957, 1979
USA	1926, 1953, 1957, 1969, 1973, 1979, 1981, 1990, 2000

Business cycle peaks followed by financial recessions

Australia	1989
Belgium	2007
Canada	1907
Denmark	1883, 1987, 2007
Finland	1989
France	1929, 2007
Germany	1890, 2008
Ireland	2007, 2010
Italy	1992, 2007
Japan	1997
Netherlands	2008
Norway	1897, 1930, 1987
Portugal	2008
Spain	1925, 1929, 2007
Sweden	1879, 1907, 1930, 1990, 2007
Switzerland	1929, 1990, 2008
UK	1889, 1973, 1990, 2007
USA	1929, 2007

Quantile local projections

Let a quantile $\tau \in [0, 1]$ of $\Delta_h y_{it(p)+h}$ conditional on $\boldsymbol{X}_{it(p)}$ be given by

$$Q\left(\Delta_h y_{it(p)+h} | \boldsymbol{X}_{it(p)}\right) = \boldsymbol{X}_{it(p)} \boldsymbol{\theta}_{h,\tau}$$

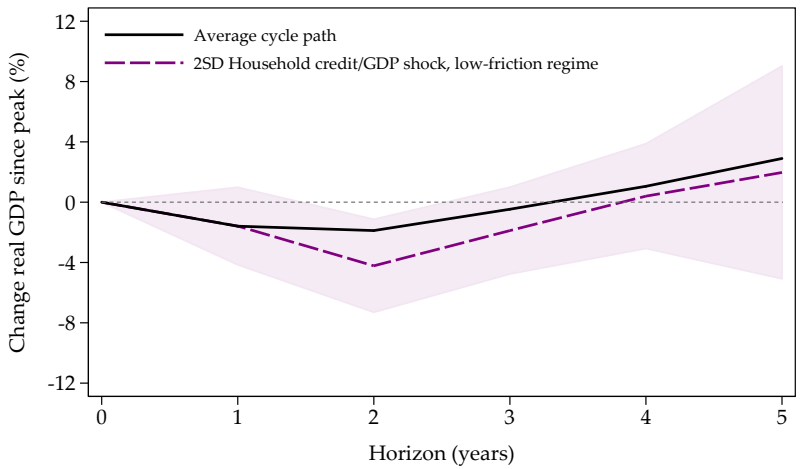
Quantile regression consistently estimates $\boldsymbol{\theta}_{h,\tau}$ by weighting residuals asymmetrically, depending on which quantile is targeted:

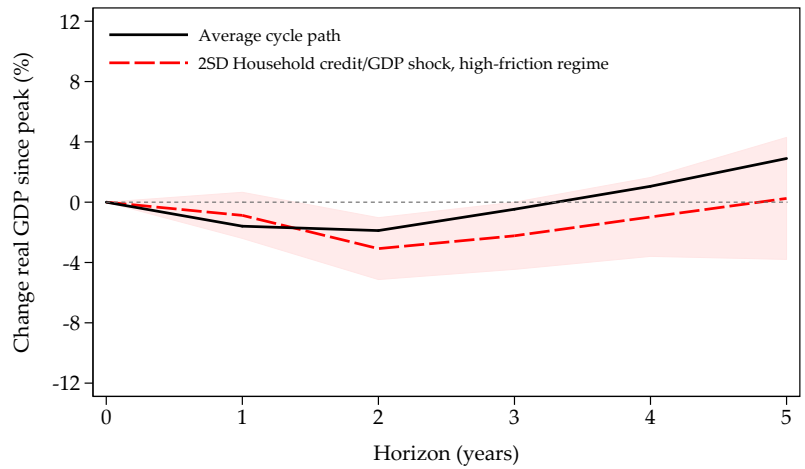
$$\hat{\boldsymbol{\theta}}_{h,\tau} = \underset{\boldsymbol{\theta}_{h,\tau}}{\operatorname{argmin}} \sum \Big(\tau \mathbf{1}(\Delta_h y_{it(p)+h} \geq \boldsymbol{X}_{it(p)} \boldsymbol{\theta}_{h,\tau}) | \Delta_h y_{it(p)+h} - \boldsymbol{X}_{it(p)} \boldsymbol{\theta}_{h,\tau} |$$

$$+ (1-\tau) \mathbf{1}(\Delta_h y_{it(p)+h} < \boldsymbol{X}_{it(p)} \boldsymbol{\theta}_{h,\tau}) | \Delta_h y_{it(p)+h} - \boldsymbol{X}_{it(}$$

▸ Back

Legal regime placebo with household credit





Notes: Household credit/GDP changes interacted with business bankruptcy regime indicator. Standard errors clustered on countries. Shaded areas denote 95% confidence intervals.

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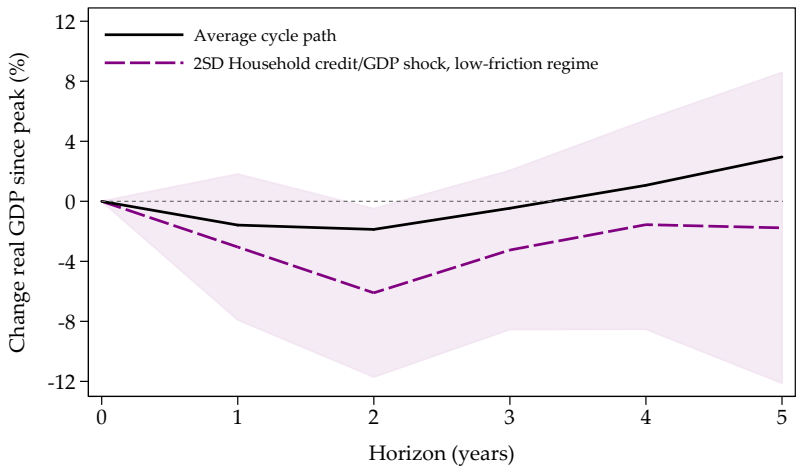
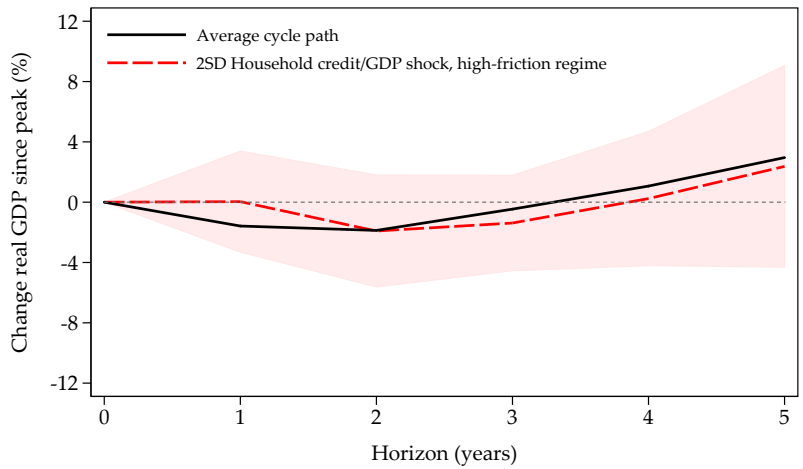
Legal regime placebo with household credit: IV





Notes: Household credit/GDP changes interacted with business bankruptcy regime indicator. Legal indicator instrumented by legal origin. Standard errors clustered on countries. Shaded areas denote 95% confidence intervals.

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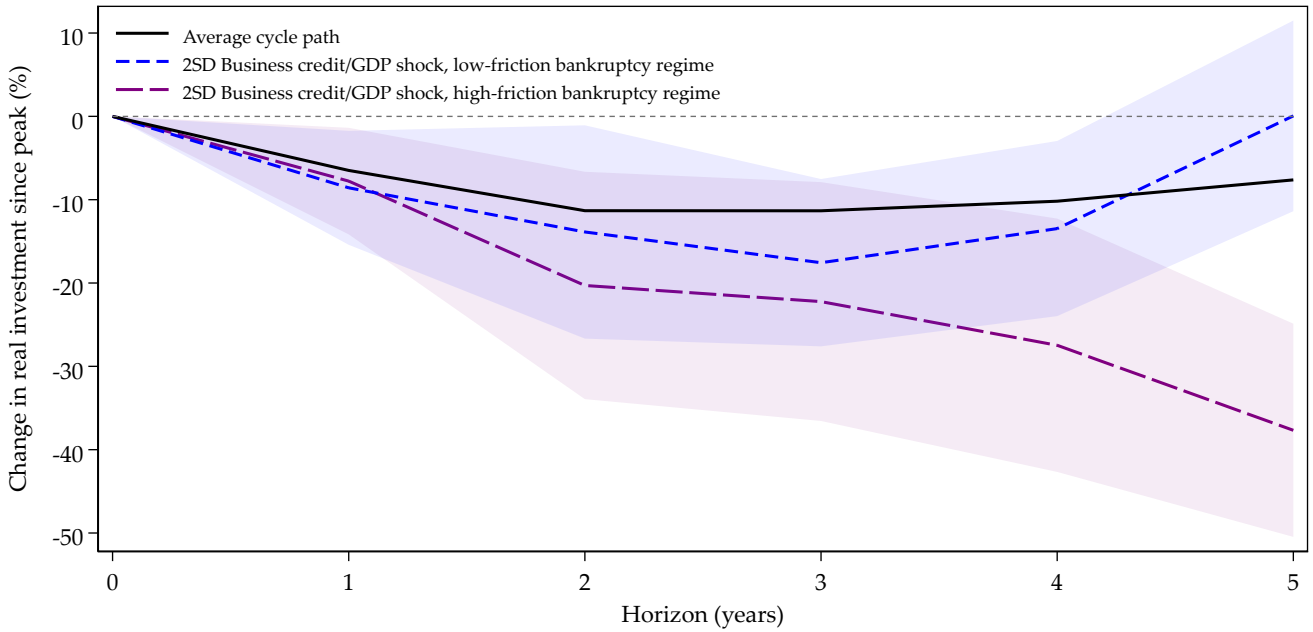
Legal origin IV: investment effects



Notes: Predictive effects on real investment of a two-SD quinquennial business credit build-up preceding the recession. In low (high) friction bankruptcy regimes. Shaded areas denote the 95% confidence interval.

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Corporate zombies

- High levels of business debt can intoxicate lending relationships.
  - high default risk
  - high exposure of financial intermediaries
- Dreading losses, weak banks may channel funds to near-bankrupt borrowers (*Peek, Rosengreen, 2005*).
- Risk to business dynamism and productivity growth (*Caballero, Hoshi, Kashyap, 2008*)

Measuring bankruptcy institutions

1978–2003 Djankov, McLiesh and Shleifer (2007): Index of *creditor rights*

- Strong creditor rights...
- ... reduce liquidation costs.
- ... induce owners to renegotiate.

2003–2019 World Bank, based on Djankov, Hart, McLiesh and Shleifer (2008)

- High "Recovery rate" ...
- ... indicates low-cost liquidation.
- ... indicates swifter restructuring.

Construct joint "legal efficiency" index L_{it} based on deciles of each sub-index