When Two Become One:
Foreign Capital and Household Credit Expansion

Lukas Diebold (Mannheim University)
Björn Richter (UPF and BSE)

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Motivation

- Credit expansions are associated with crises (Schularick and Taylor, 2012) and worse economic outcomes (Mian et al. 2017)

- Who is financing credit during expansions?

    - Financing counterparty matters for run risk and future repayment flows
    - Kindleberger (1978) emphasized the role of foreign capital
      $\rightarrow$ But: Domestic credit expansion more reliable predictor than current account or capital flows (Jordà et al. 2011, Obstfeld and Gourinchas 2012)

- Does the financing counterparty matter for economic outcomes?

- Difficult to answer: Usually no data on ultimate counterparties of credit

What we do

- New data: Financial accounts data to unveil the ultimate financing sector of household and corporate credit for a panel of 33 OECD economies
    - Approach builds on Mian et al. (2021), who use US FoF Data
    - Ultimate counterparties: domestic households (HH), government (GG), foreigners (RoTW)
    - Mapping of two (or more) financial relationships into one
        - RoTW $\rightarrow$ Banks (FiIn) $\rightarrow$ HH
- Use this data to
    - Document trends in financing counterparties
    - Study link between financing counterparty and economic dynamics
    - Explore channels linking counterparties and outcomes

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        - To: RoTW $\rightarrow$ HH
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What we find

- **Trend:** Financing counterparties changed
    - 1980: Households $\rightarrow$ Non-financial corporates
    - Today: Foreigners (RoTW) $\rightarrow$ Households

- **Cycles:** Financing counterparties matter
    - Foreign-financed household credit predicts GDP and unemployment dynamics
      $\rightarrow$ Domestically-financed household credit does not
    - Foreign-financed household credit predicts financial crises and credit cycle reversals

Why does foreign-financed HH credit predict economic dynamics?

1. Counterparties and financial fragility
   - Banking crises: using 'flighty' foreign capital to finance long-term domestic credit creates maturity mismatches
   - Contraction in lending after crises driven by foreign counterparties

2. Counterparties and debt service payments
   - Credit is associated with a short run boom but low growth in the long run
   - Consumption decreases, while debt service payments to foreigners increase
   - In theory: could be offset by monetary policy, but not if exch. rate is pegged

3. Supply based on global financial cycle unrelated to country-specific fundamentals
   - Results hold in an IV-setting using demand-cleaned inflows as an instrument
   - Business cycle dynamics not anticipated by markets/forecasters

Contribution

1. Credit and business cycles:
   - Empirical: Mian et al. (2017, 2020), Müller & Verner (2020)
   - Theory: Schmitt-Grohé and Uribe (2016)
   - Debt service payments: Drehman et al. (2023)
     $\rightarrow$ Here: Funding source of credit is important for outcomes

2. Capital flows and financial fragility
   - Crisis risk: Reinhart & Rogoff (2009), Jordà et al. (2011)
   - Gross vs. net positions: Bernanke (2005), Shin (2012), Borio (2016)
     $\rightarrow$ Here: Gross capital flows used to finance domestic credit

3. Liquidity and financial fragility
   - Composition of asset holders: Coppola (2021), Bretscher et al., (2022)
   - Foreign capital flight: Broner et al. (2013), Caballero & Simsek (2020)
     $\rightarrow$ Here: Crises are more likely if HH credit is foreign-financed.

4. The Global Financial Cycle
   - Bruno and Shin (2015), Rey (2012)
   - Global and local cycle synchronize around crises: Aldasoro et al. (2020)
     $\rightarrow$ Here: Interlocking balance sheets of HHs, banks, and foreign sector

Data and Unveiling

Data

- Financial Accounts from the OECD, based on System of National Accounts (SNA)
    - SNA93 (1990-2013) and SNA08 (1995-2019)
    - Digitized 'Golden Books' (12 Countries, earliest 1960-1995)
      - Example of early OECD data

- Sectoral Balance Sheets
    - Sectors: HH, GG, NF, FiIn, RoTW
    - Outstanding stocks of assets and liabilities
    - Instruments: bonds, loans, shares, deposits, insurances, derivatives, etc...
    - Sometimes: counterparty information

Unveiling

- Goal: allocate credit to ultimate financing sector
    - Domestic households (HH)
    - Government (GG)
    - Rest of the World / foreigners (RoTW)

- Approach: Who finances household debt?
    1. Which sectors supply household loans? (asset side)
    2. Which instruments finance these sectors? (liability side)
    3. Which sectors hold these instruments as assets? (asset side)

Approaches

- Baseline approach:
  - Allocation based on shares of instrument held by other sectors
    `Resulting network in the US`
 - Proportionality assumption similar to Mian et al. (2021); Vom Lehm & Winberrey (2022)

- Other approaches:
  - Counterparty data: allocation based on counterparty information from early OECD data or recent ECB "who-to-whom" matrices
  - Two additional approaches (no counterparty data)
    1. Subsector unveiling
   2. Mian, Straub and Sufi (2021) structure

Trends

Liability composition of the financial sector, 1980-2018

- Financial sector (all financial institutions) grew from 2 to 5 times GDP
- Share of deposits in total funding mix declined
- Share of derivatives, bonds, and shares in total funding mix increased

1982 (1.9 times GDP) 2007 (5 times GDP) 2018 (5.3 times GDP)
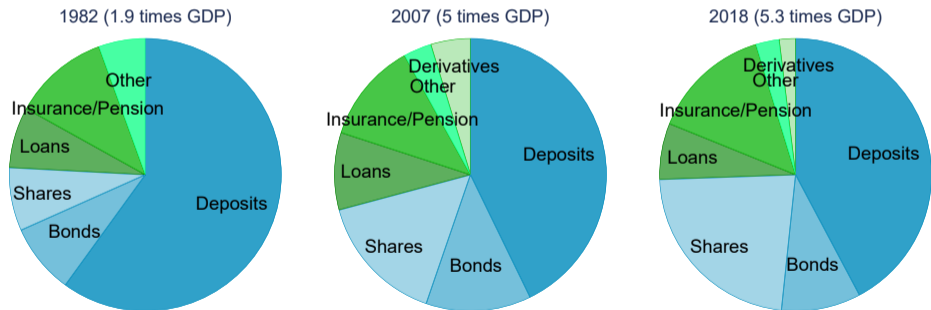
Changes in holdings of assets by sector, 1980-2018

- Financial instruments increasingly held by foreigners
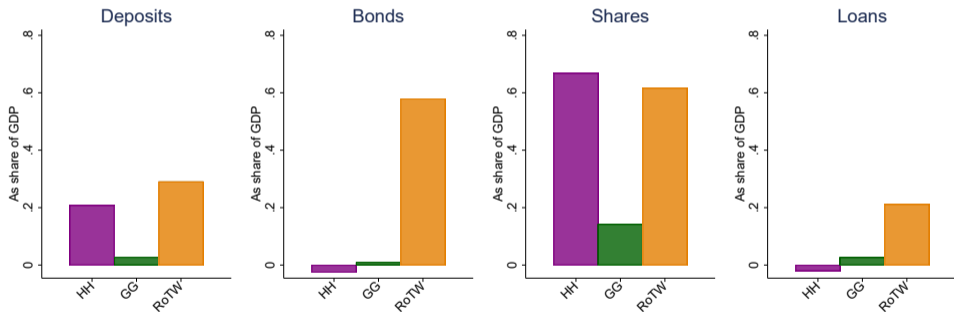
Unveiling results

- Unveiling results for household debt in the US, Spain, Sweden and Sweden
- Household credit funded increasingly by foreign counterparties
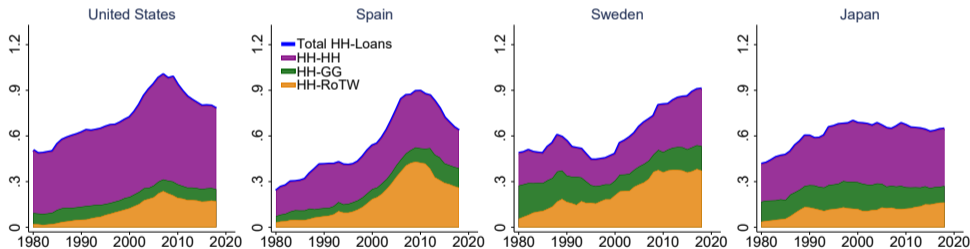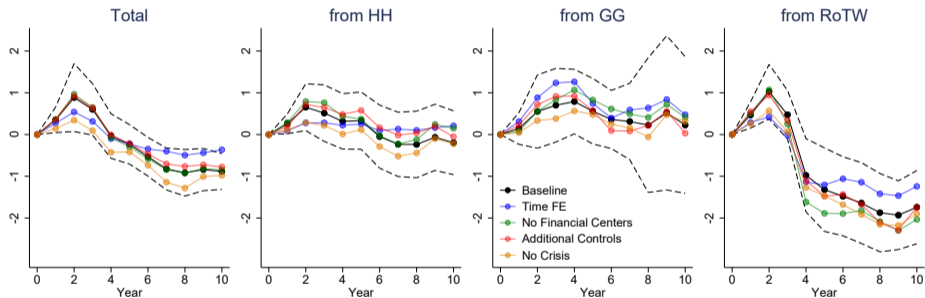

Comparison: Counterparty data   Comparison: Structural and Subsector   Comparison: Mian et al.(2020)

Credit, Business Cycles and Crises

Local Projection Results

$$\Delta_h y_{it+h} = \alpha_i^h + \sum_b^2 \sum_u^3 \beta_{u,b}^h \Delta C_{it}^{u \to b} + \sum_{j=0}^5 \beta_y^{h,j} \Delta y_{it-j} + \gamma X_{i,t} + u_{i,t+h}$$

- GDP response to total HH borrowing (left) driven by RoTW-financed component
- Results strongest under fixed and weakest under floating exchange rate regimes
  Country Heterogeneity Country-level coefficients
- Other specifications: Predicitve Regression   Booms   VAR

Crises

- Narrative evidence: credit before crises financed from abroad (Kindleberger, 1978)
    - Previous literature had to rely on interactions, often using capital account measures
    - Takeaway: private domestic credit works best as a crisis predictor
- But domestic credit can be financed from abroad, reflecting large gross flows (Obstfeld, 2012; Borio, 2016)
- Probit with Laeven and Valencia (2018) crisis dummy:

$$Pr[B_{i,t} = 1 | X_{i,t-1}] = \Phi(\beta X_{i,t-1})$$

Crisis frequencies

Foreign-financed household debt is a powerful crisis predictor

	Benchmark		By counterparty		Only RoTW to HH		All others	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta_3 HH_{i,t-1}$	0.24*** (0.07)	0.46*** (0.18)						
$\Delta_3 NF_{i,t-1}$	0.04** (0.01)	0.14* (0.08)						
$\Delta_3 RoTW \to HH_{i,t-1}$			0.47*** (0.11)	1.15*** (0.27)	0.44*** (0.08)	1.23*** (0.26)		
$\Delta_3 GG \to HH_{i,t-1}$			-0.36 (0.35)	-0.37 (0.57)			-0.09 (0.33)	0.05 (0.52)
$\Delta_3 HH \to HH_{i,t-1}$			-0.05 (0.23)	-0.09 (0.40)			0.06 (0.26)	0.08 (0.39)
$\Delta_3 RoTW \to NF_{i,t-1}$			-0.04 (0.04)	0.06 (0.10)			0.06** (0.03)	0.32** (0.14)
$\Delta_3 GG \to NF_{i,t-1}$			0.16 (0.40)	-0.04 (0.75)			-0.21 (0.35)	-0.82 (0.72)
$\Delta_3 HH \to NF_{i,t-1}$			0.07 (0.13)	0.20 (0.20)			0.05 (0.16)	0.13 (0.27)
$\Delta_3 CA_{i,t-1}$	-0.16 (0.16)	-0.26 (0.34)	-0.15 (0.17)	-0.21 (0.36)			-0.30* (0.18)	-0.60* (0.32)
AUC	0.74	0.77	0.80	0.84	0.80	0.83	0.74	0.78
s.e.	0.05	0.05	0.05	0.04	0.05	0.04	0.05	0.05
Country fixed effects		✓		✓		✓		✓
Observations	739	534	739	534	739	534	739	534

Credit after crises

- Response of credit to b financed ultimately by counterparty u to a financial crisis

$$\Delta_h C_{i,t+h}^{u \to b} = \alpha_{i,h} + \beta_h^{BC} Crisis_{i,t} + Controls + \varepsilon_{i,t+h},$$
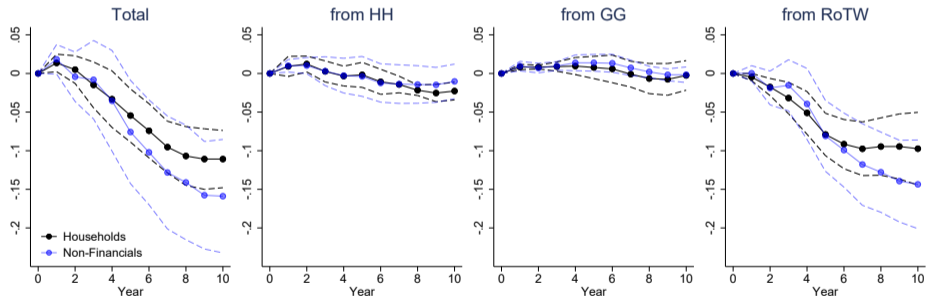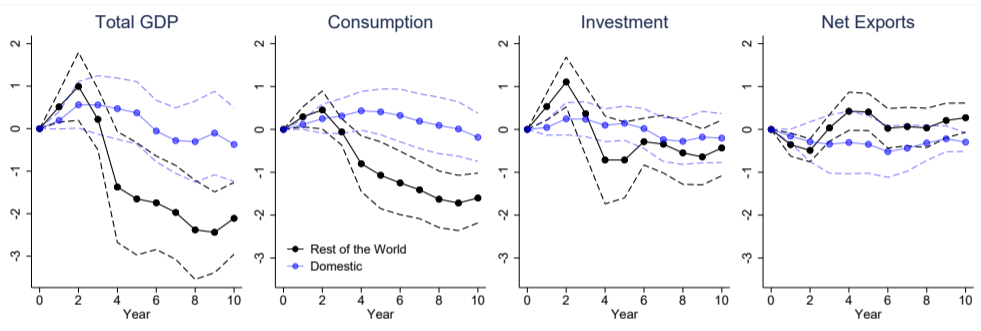

- Decline in lending after crises driven by foreign-financed component

  Distribution beyond crises

Channels

Which component of GDP drives the relation?

- Household borrowing financed from abroad associated initial boom in household consumption and investment
- Consumption after year 3 significantly lower after foreign-financed credit expansion

The role of debt service payments

- Credit allows additional spending until debt service begins (Drehmann et al. 2023)

  1. Debt service to foreigners computed based on BIS DSR database (Method)
  2. Income payments to RoTW from national accounting data

	$\Delta_3 ln(Cons)_{i,t+3}$				$\Delta_3 ln(Y)_{i,t+3}$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$DSR_{i,t}^{HH \to RoTW}$	-1.39*** (0.37)	-1.28*** (0.32)			-3.42*** (0.77)	-3.15*** (0.67)		
$DSR_{i,t}^{HH \to DM}$	-0.44* (0.25)	-0.40** (0.18)			-1.02* (0.54)	-1.13** (0.44)		
$Pay \to RoTW_{i,t}$			-0.38** (0.17)	-0.34** (0.15)			-0.97** (0.34)	-0.89** (0.31)
$Net\ Pay \to RoTW_{i,t}$			0.22 (0.32)	0.30 (0.33)			0.24 (0.64)	0.35 (0.68)
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
LDV	✓	✓	✓	✓	✓	✓	✓	✓
Credit Controls		✓		✓		✓		✓
Additional Controls		✓		✓		✓		✓
p-value, $\beta_{RoTW} = \beta_{DM}$	0.04	0.05			0.01	0.02		
p-value, $\beta_{RoTWPay} = \beta_{RoTWNet}$			0.11	0.11			0.07	0.09
Observations	248	248	248	248	248	248	248	248

Foreign capital supply and expectations

- Foreign capital supply
    - Decompose bilateral flows into demand, supply and common shocks
      Method Decomposition
    - Re-estimate main specifications and instrument $C_{i,t-1}^{HH \to RoTW}$ with demand-cleaned shocks GDP Crises

- Do forecasters and market participants understand the described dynamics?
    - Foreign-financed household credit systematically predicts growth forecast errors and low equity returns Table

Conclusions

- We identify the ultimate counterparties of credit expansions in a panel of 33 advanced economies since the 1970's

- Foreign-financed credit is crucial for understanding linkages between credit expansions and the macroeconomy

- When household credit expansions and capital flows are two sides of the same coin, they
  1. are strongly associated with business cycle dynamics
  2. and exhibit boom-bust dynamics around crisis episodes

Example (with counterparty information)

SPAIN

TABLE 31B/06 *(cont'd)*

OUTSTANDING FINANCIAL ASSETS AND LIABILITIES OF FINANCIAL INSTITUTIONS

Monetary unit: billion pesetas

|	1981	1982	1983	1984	1985	1986	1987
LIABILITIES OF FINANCIAL INSTITUTIONS, to:	26 895.6	32 763.5	39 246.4	46 446.7	51 446.0	57 266.6	66 446.5
a) Institutions of the group	2 065.2	2 850.5	3 163.3	4 031.4	5 060.6	5 163.8	5 193.8
b) Other financial institutions	3 033.4	4 334.6	6 365.3	7 363.6	7 842.3	9 057.1	11 372.3
c) General Government	1 697.9	2 240.9	2 676.3	3 157.7	3 432.8	3 553.1	3 692.9
d) Other domestic sectors	16 183.7	18 831.6	21 601.7	25 019.5	28 287.8	32 470.1	37 998.2
e) Rest of the world	2 893.5	3 054.7	3 482.8	4 138.1	3 679.1	3 897.1	4 254.9
• Not allocated	1 021.9	1 451.2	1 957.0	2 736.4	3 143.4	3 125.4	3 934.4
1. Counterpart of net allocations of SDRs and use of IMF credit, ECUs	41.5	27.1	35.3	42.9	46.8	47.5	45.8
– Counterpart of net allocations of SDRs	41.5	27.1	35.3	42.9	46.8	47.5	45.8
2. Cash and other transferable deposits, *assets of:*	5 577.4	6 393.9	7 308.1	9 974.8	11 088.3	12 473.2	14 218.4
b) Other financial institutions	822.0	1 025.3	1 340.1	3 441.0	3 733.8	4 089.3	4 598.1
c) General Government	196.3	363.7	472.9	616.0	715.3	759.2	849.7
d) Other domestic sectors	4 558.1	5 003.0	5 401.3	5 802.2	6 511.9	7 306.4	8 432.7
e) Rest of the world	1.0	1.9	93.8	115.6	127.3	318.3	337.9
3. Other deposits, *by:*	15 114.4	18 105.9	20 958.8	24 979.7	27 433.2	29 607.5	34 740.6
a) Institutions of the group	1 766.1	2 455.4	2 744.9	3 540.1	4 555.8	4 640.0	4 670.9
b) Other financial institutions	617.4	869.8	1 206.6	1 360.0	1 465.6	1 835.5	3 596.6
c) General Government	42.6	149.2	181.7	242.2	231.1	206.8	196.5
d) Other domestic sectors	10 039.7	11 889.2	13 829.9	16 167.2	17 980.9	19 802.4	22 933.1
e) Rest of the world	2 648.6	2 742.3	2 995.7	3 670.2	3 199.8	3 122.8	3 343.5

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Resulting network

back
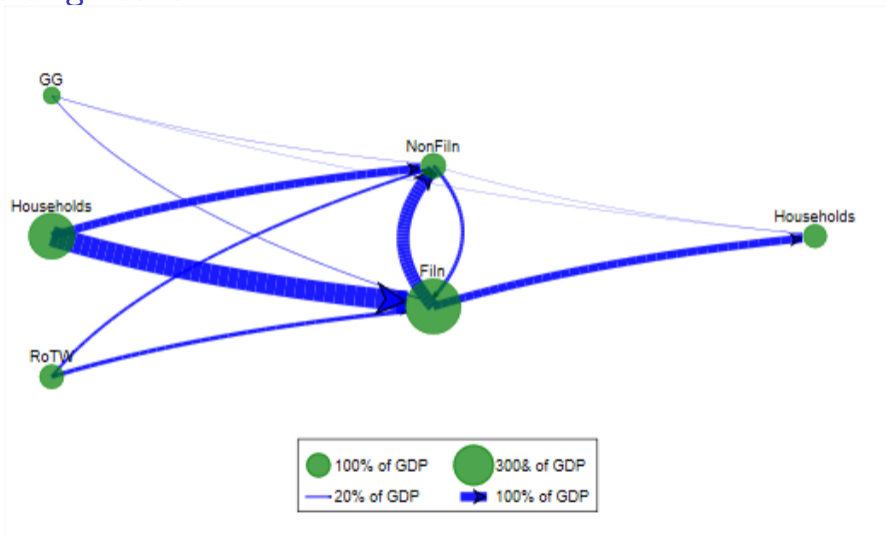
Comparison with estimates using detailed counterparty data
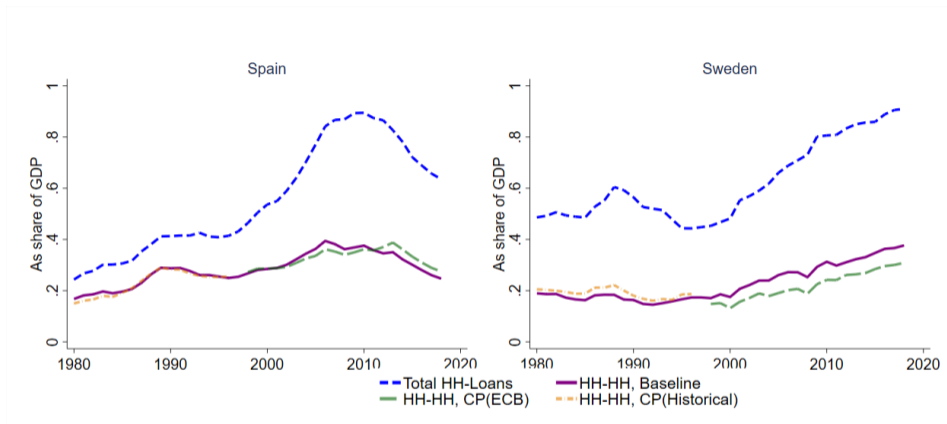
- Household borrowing financed by household sector:
  - Baseline approach (purple)
  - Using counterparty information from ECB (green)
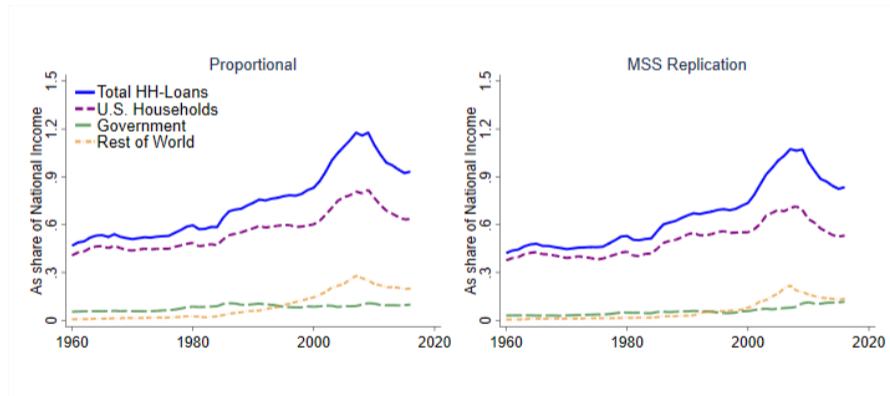 - Using counterparty information from OECD golden books (gold)

back

Alternative Unveilings
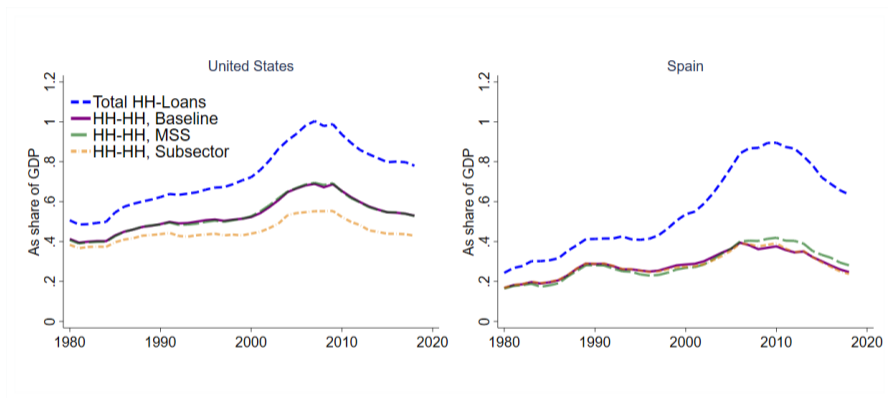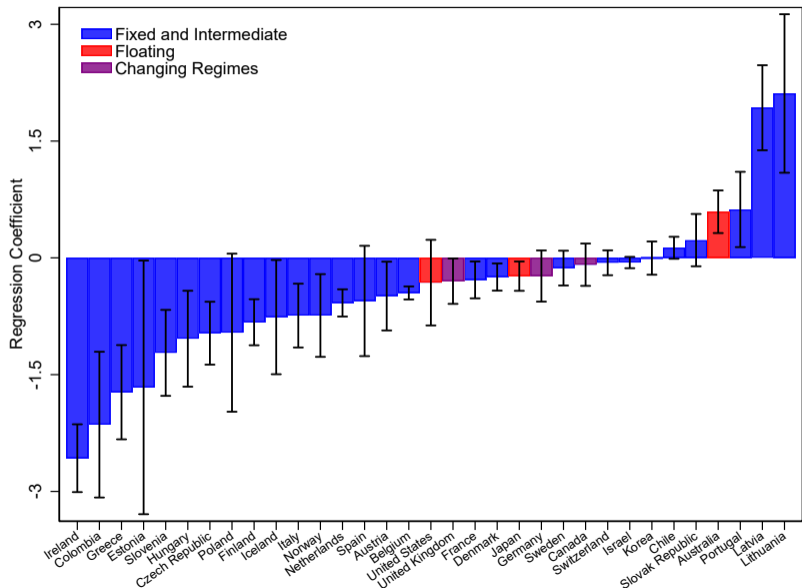
Comparison with Mian, Sufi and Straub (2020) for US

- Baseline estimates for United States compared to estimate by Mian, Straub and Sufi (2020)

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Medium term relationship, Sample Heterogeneity

| | $\Delta_3 ln(Y)_{i,t+3}$ | | | | | | |
| | Exchange Regime | | | | | Country Size | |
Sample:	Full (1)	Float (2)	Peg (3)	Euro (4)	Peg$\notin$Euro (5)	Small (6)	Large (7)
$\Delta_3 RoTW \rightarrow HH_{i,t-1}$	-0.87***	-0.13	-1.00***	-1.23***	-0.73***	-0.97***	-0.61**
	(0.19)	(0.34)	(0.18)	(0.24)	(0.17)	(0.21)	(0.15)
$\Delta_3 HH \rightarrow HH_{i,t-1}$	0.18	0.22	0.06	0.29	-0.16	0.13	0.28
	(0.17)	(0.21)	(0.26)	(0.43)	(0.23)	(0.26)	(0.22)
$\Delta_3 GG \rightarrow HH_{i,t-1}$	-0.39	-0.76	-0.33	-0.64	-0.25	-0.35	-0.64
	(0.30)	(0.57)	(0.35)	(0.97)	(0.31)	(0.34)	(0.58)
$\Delta_3 CA_{i,t-1}$	0.24**	0.55	0.20*	0.69**	0.10	0.18	0.82**
	(0.12)	(0.43)	(0.11)	(0.29)	(0.11)	(0.12)	(0.24)
R^2	0.361	0.362	0.405	0.449	0.421	0.378	0.375
Country fixed effects	✓	✓	✓	✓	✓	✓	✓
LDV	✓	✓	✓	✓	✓	✓	✓
NF Credit	✓	✓	✓	✓	✓	✓	✓
Mean (in %): $\Delta_3 RoTW \rightarrow HH_{i,t-1}$	2.99	1.75	3.3	4.25	2.59	3.31	2.01
SD (in %): $\Delta_3 RoTW \rightarrow HH_{i,t-1}$	5.53	3.4	5.9	6.36	5.46	5.89	4.12
Observations	667	132	534	233	291	501	166

Country-level time series regression

Medium term relationship - GDP and unemployment

	$\Delta_3 ln(Y)_{i,t+3}$				$\Delta_3 Unemployment_{i,t+3}$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta_3 RoTW \rightarrow HH_{i,t-1}$	-0.90***	-0.74***	-0.71***	-0.70***	0.30***	0.25***	0.22***	0.20***
	(0.20)	(0.17)	(0.17)	(0.18)	(0.05)	(0.04)	(0.03)	(0.03)
$\Delta_3 HH \rightarrow HH_{i,t-1}$	0.20	0.20	0.20	0.14	0.04	0.04	0.04	0.04
	(0.17)	(0.13)	(0.14)	(0.15)	(0.06)	(0.06)	(0.06)	(0.06)
$\Delta_3 GG \rightarrow HH_{i,t-1}$	-0.46	-0.28	-0.22	0.10	-0.08	-0.10	-0.13	-0.23*
	(0.30)	(0.28)	(0.27)	(0.31)	(0.09)	(0.10)	(0.10)	(0.12)
$\Delta_3 CA_{i,t-1}$			0.20*	0.15			-0.17***	-0.16***
			(0.11)	(0.10)			(0.04)	(0.04)
R^2	0.351	0.586	0.591	0.616	0.453	0.601	0.625	0.664
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
LDV	✓	✓	✓	✓	✓	✓	✓	✓
NF Credit	✓	✓	✓	✓	✓	✓	✓	✓
Year fixed effects		✓	✓	✓		✓	✓	✓
Additional Controls				✓				✓
p-value HH, $\beta_{RoTW} = \beta_{HH} = \beta_{GG}$	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Observations	678	664	663	596	634	621	620	566

VAR GDP response to household credit, by source

- VAR including all 6 decomposed credit variables
- Replication of Mian, Sufi and Verner (2017) result in the left panel
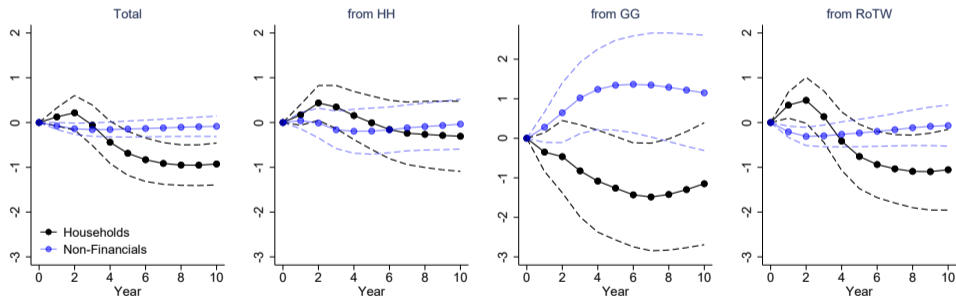
Household credit booms and macroeconomic outcomes

|	$\Delta_3 ln(Y)_{i,t+3}$				$\Delta_3 Unemployment_{i,t+3}$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HH Boom$_{i,t-1}$	-0.07***	-0.06**			0.02**	0.02**		
	(0.02)	(0.02)			(0.01)	(0.01)		
RoTW $\rightarrow$ HH Boom$_{i,t-1}$			-0.10***	-0.08***			0.04***	0.03***
			(0.03)	(0.03)			(0.01)	(0.01)
DM $\rightarrow$ HH Boom$_{i,t-1}$			-0.03	-0.02			0.01	0.00
			(0.02)	(0.02)			(0.01)	(0.01)
R^2	0.244	0.299	0.271	0.321	0.308	0.395	0.347	0.420
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
LDV	✓	✓	✓	✓	✓	✓	✓	✓
NF Boom		✓		✓		✓		✓
Additional Controls		✓		✓		✓		✓
p-value HH, $\beta_{DM} = \beta_{RoTW}$			0.01	0.03			0.00	0.01
Observations	667	667	667	667	623	623	623	623

- Boom: increase in credit (HH, NF) over past 3 years above 80th percentile
- Foreign-financed booms: more than half of increase financed from abroad
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# Medium term relationship - GDP and unemployment, Reallocation Dynamics

	$\Delta_3 ln(\frac{Y_{NT}}{Y_T})_{i,t}$		$\Delta_3 ln(\frac{Emp_{NT}}{Emp_T})_{i,t}$		$\Delta_3 ln(\frac{Inv_{Housing}}{Inv_{Other}})_{i,t}$	
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta_3 RoTW \to HH_{i,t}$	0.56***	0.57***	0.14**	0.20***	1.01***	1.25***
	(0.12)	(0.14)	(0.06)	(0.06)	(0.36)	(0.39)
$\Delta_3 HH \to HH_{i,t}$	0.08	-0.06	0.36***	0.35***	1.21***	0.98
	(0.21)	(0.22)	(0.10)	(0.12)	(0.41)	(0.69)
$\Delta_3 GG \to HH_{i,t}$	0.20	0.10	0.59***	0.58***	0.70	0.36
	(0.23)	(0.22)	(0.15)	(0.16)	(0.82)	(0.85)
$\Delta_3 RoTW \to NF_{i,t-1}$	-0.01	0.05	0.06	0.06	-0.09	-0.10
	(0.12)	(0.12)	(0.04)	(0.05)	(0.11)	(0.12)
$\Delta_3 HH \to NF_{i,t-1}$	0.15	0.06	0.14	0.15*	0.45	0.25
	(0.14)	(0.12)	(0.09)	(0.09)	(0.33)	(0.45)
$\Delta_3 GG \to NF_{i,t-1}$	-0.11	0.02	-0.33*	-0.36*	-1.46	-1.00
	(0.24)	(0.24)	(0.19)	(0.20)	(1.15)	(1.25)
R^2	0.249	0.283	0.324	0.332	0.234	0.244
Country fixed effects	✓	✓	✓	✓	✓	✓
Additional Controls		✓		✓		✓
p-value, $\beta_{RoTW,HH} = \beta_{GG,HH} = \beta_{HH,HH}$	0.08	0.05	0.02	0.12	0.87	0.58
Observations	620	618	584	582	733	676

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Crisis frequency for different credit expansion bins
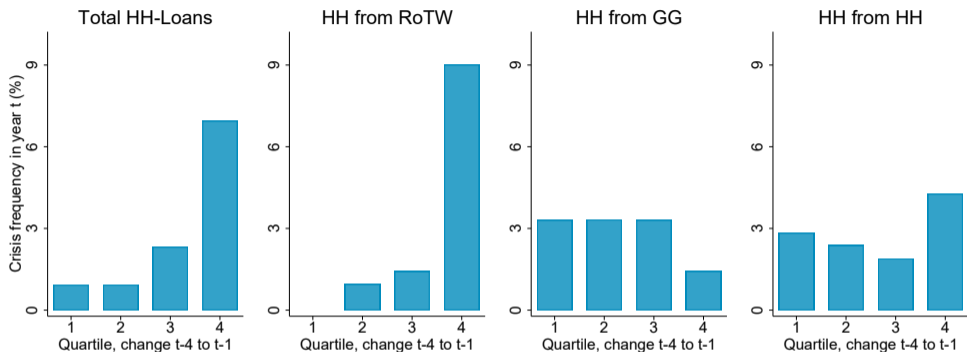
- Left panel: crisis frequency increases in 3-year household credit expansion - 7% for highest quartile of HH credit expansion
- 3 right panels: crisis frequency increases in foreign-financed component of HH credit expansion, but not for domestically financed HH credit

back

HH credit expansion, conditional on share of foreign financing
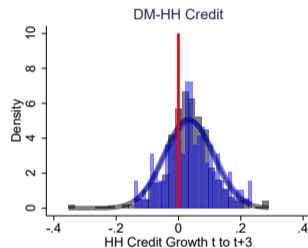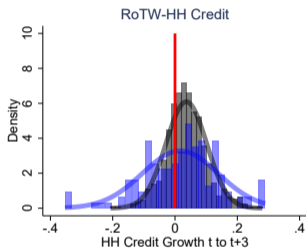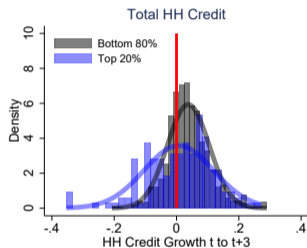
The role of debt service

- Household credit allows additional spending until debt service kicks in (see Drehmann et al. 2018)

- Debt service to foreigners based on BIS DSR database:

$$DSR^{HH \to RoTW} = DSR^{HH} \frac{C^{RoTW \to HH}}{C^{HH}}$$

  - Debt service associated with income flowing abroad
  - Similar measure: income payments to RoTW from national accounting data

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Foreign Supply or Domestic Demand?

- Decompose bilateral banking flows (BIS, LBS) according to Amiti et al., 2019
   - Estimate the following equation using WLS:

    $$\frac{L_{c,b,t} - L_{c,b,t-1}}{L_{c,b,t-1}} = \alpha_{b,t} + \beta_{c,t} + \varepsilon_{b,c,t}.$$

    - Where:
        - $L_{c,b,t}$ are claims of creditor system c on borrower system b
        - $\alpha_{b,t}$ and $\beta_{c,t}$ are country specific demand and supply effects
    - Allows for exact decomposition of foreign liability change $\Delta D_{b,t}$, when including a common shock $\hat{c}_t$ (the median bilateral growth rate)

    $$\Delta D_{b,t} = \hat{c}_t + \hat{\alpha}_{b,t} + \sum_c \left(\frac{L_{b,c,t-1}}{\sum_c L_{b,c,t-1}} \times \hat{\beta}_{c,t} \right)$$

- $\Delta_3 Supply_{i,t-1}$ are cumulated common and supply shocks relative to GDP

Foreign Supply or Domestic Demand?
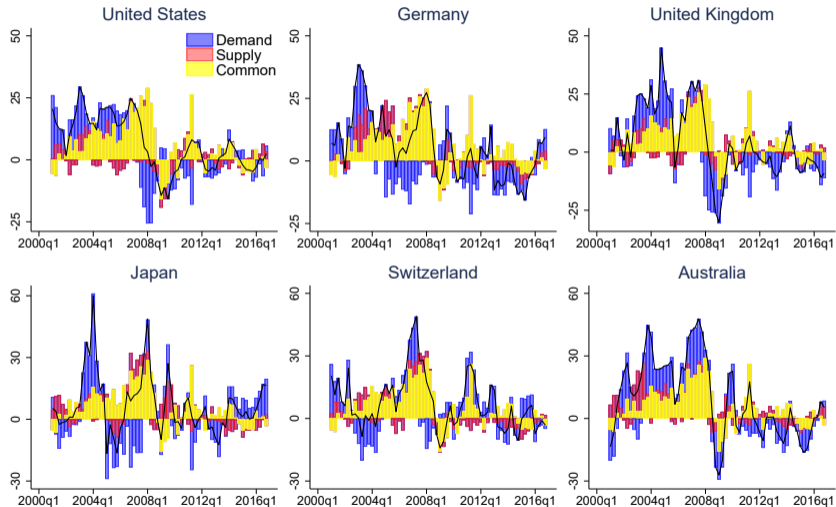
Instrumental variable estimates - business cycle

	$\Delta_3 ln(Y)_{i,t+3}$			$\Delta_3 Unemployment_{i,t+3}$		
	Baseline (1)	Reduced (2)	IV (3)	Baseline (4)	Reduced (5)	IV (6)
$\Delta_3 RoTW \rightarrow HH_{i,t-1}$	-0.83*** (0.17)		-1.90*** (0.57)	0.23*** (0.04)		0.27*** (0.07)
$\Delta_3 Supply_{i,t-1}$		-0.25*** (0.05)			0.05*** (0.02)	
Country fixed effects	✓	✓	✓	✓	✓	✓
LDV	✓	✓	✓	✓	✓	✓
Credit Controls	✓	✓	✓	✓	✓	✓
Current Account	✓	✓	✓	✓	✓	✓
Kleibergen-Paap Weak ID	.	.	22.37	.	.	11.93
Observations	653	653	653	609	609	609

Back   Excluding large economies

IV estimates - financial crises

- Foreign-financed household credit expansion associated with financial crises
- IV estimates larger than baseline probit

	Baseline (1)	Reduced (2)	IV (3)	Baseline (4)	Reduced (5)	IV (6)
$\Delta_3 RoTW \to HH_{i,t-1}$	0.44*** (0.09)		0.92*** (0.29)	1.13*** (0.24)		2.89*** (0.51)
$\Delta_3 Supply_{i,t-1}$		0.18*** (0.06)			0.62*** (0.11)	
Credit Controls	✓	✓	✓	✓	✓	✓
Current Account	✓	✓	✓	✓	✓	✓
Country fixed effects				✓	✓	✓
Kleibergen-Paap Weak ID			25.55			14.97
Observations	725	725	725	523	523	523

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	$\Delta_3 ln(Y)_{i,t+3}$				$\Delta_3 Unemployment_{i,t+3}$			
	Baseline (1)	Reduced (2)	IV (3)	IV (4)	Baseline (5)	Reduced (6)	IV (7)	IV (8)
$\Delta_3 RoTW \to HH_{i,t-1}$	-0.93*** (0.19)		-2.20*** (0.79)	-2.19*** (0.80)	0.27*** (0.04)		0.33*** (0.08)	0.30*** (0.08)
$\Delta_3 Supply_{i,t-1}$		-0.25*** (0.06)				0.06*** (0.02)		
$\Delta_3 HH \to HH_{i,t-1}$	0.01 (0.20)	-0.40* (0.21)	0.48 (0.40)	0.48 (0.40)	0.09 (0.09)	0.23* (0.12)	0.05 (0.09)	0.05 (0.09)
$\Delta_3 GG \to HH_{i,t-1}$	-0.41 (0.27)	-0.48* (0.26)	-0.18 (0.44)	-0.17 (0.44)	-0.03 (0.08)	-0.06 (0.09)	-0.04 (0.08)	-0.03 (0.08)
$\Delta_3 CA_{i,t-1}$				0.04 (0.13)				-0.13*** (0.05)
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
LDV	✓	✓	✓	✓	✓	✓	✓	✓
NF Credit	✓	✓	✓	✓	✓	✓		✓
Kleibergen-Paap Weak ID	.	.	16.07	17.50	.	.	7.49	8.18
Observations	498	498	498	498	465	465	465	464

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Credit expansion and growth forecast errors

- Foreign-financed HH credit predicts negative forecast errors
- Asset returns are lower (negative for highest percentiles)

	$e_{t+3\|t}$		$R_{t\to t+3}^{BankEquity}$		$R_{t\to t+3}^{HP\ Real}$	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
$\Delta_3 RoTW \to HH_{i,t-1}$	-23.28*** (7.59)	-40.20** (16.26)	-5.13*** (1.30)	-15.41*** (4.37)	-1.25*** (0.20)	-1.66** (0.81)
$\Delta_3 GG \to HH_{i,t-1}$	0.61 (4.79)	2.45 (4.98)	-2.72 (2.52)	-1.65 (2.97)	-0.64 (0.54)	-0.62 (0.54)
$\Delta_3 HH \to HH_{i,t-1}$	-5.59 (3.72)	-0.26 (8.40)	-1.16 (1.57)	0.28 (2.01)	-0.20 (0.38)	-0.09 (0.45)
Country fixed effects	✓	✓	✓	✓	✓	✓
NF Credit	✓	✓	✓	✓	✓	✓
Current Account	✓	✓	✓	✓	✓	✓
p-value, $\beta_{RoTW} = \beta_{HH} = \beta_{GG}$	0.00	0.02	0.01	0.01	0.00	0.34
Kleibergen-Paap Weak ID		13.57		34.85		13.03
Observations	594	594	523	523	585	585

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