The Credit-Driven Household Demand Channel

Atif Mian
Princeton University

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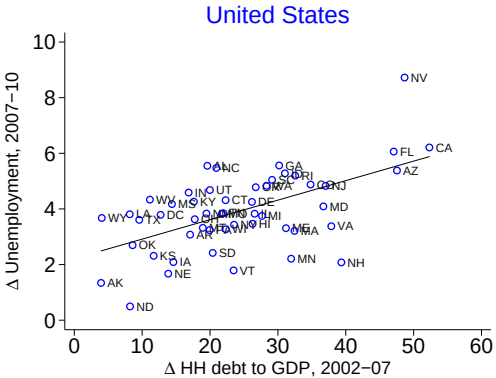
BUSINESS NEWS

MAY 23, 2018 / 8:37 AM / A DAY AGO

Household debt biggest risk to Swedish economy, central bank says

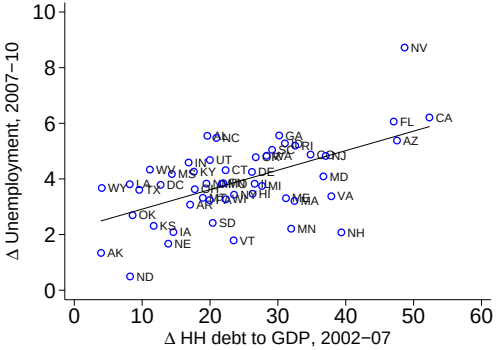
Reuters Staff

STOCKHOLM (Reuters) - High levels of



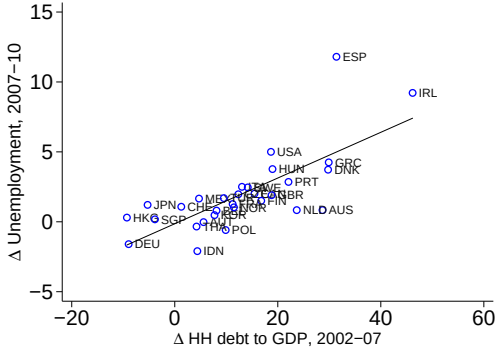
Source: Mian and Sufi (IMF, 2010).

United States

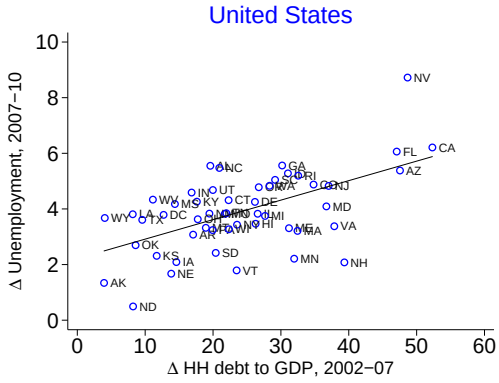


Source: Mian and Sufi (IMF, 2010).

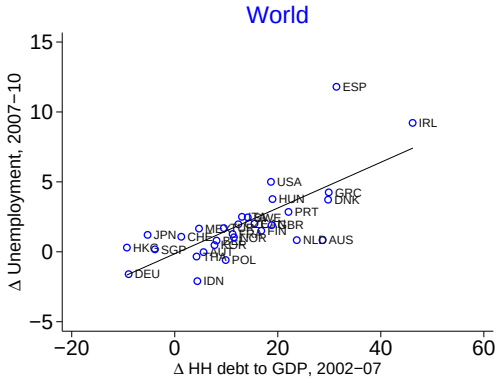
World



Source: Mian, Sufi, and Verner (QJE, 2017).

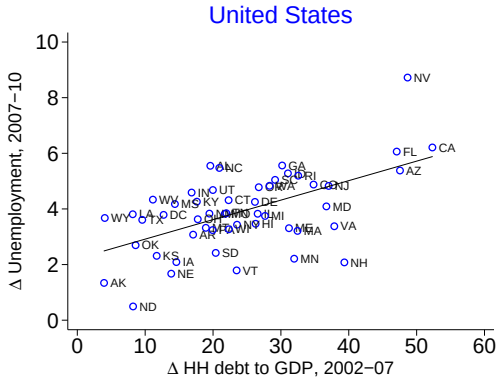


Source: Mian and Sufi (IMF, 2010).

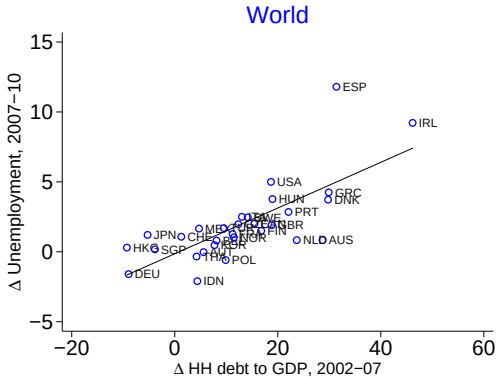


Source: Mian, Sufi, and Verner (QJE, 2017).

The credit-driven household demand channel



Source: Mian and Sufi (IMF, 2010).



Source: Mian, Sufi, and Verner (QJE, 2017).

The credit-driven household demand channel

↑ credit supply ⇒ ↑ household aggregate demand ⇒ ↓ future GDP growth.

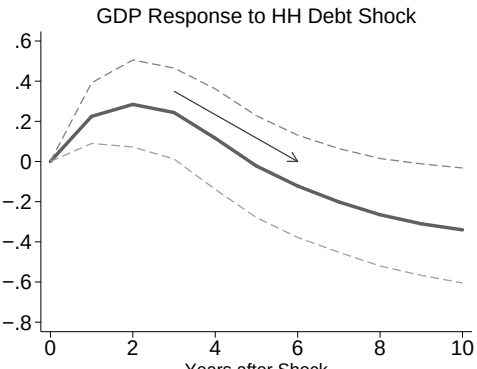
Outline

- Evidence from business cycles internationally, as well as regional business cycles within the U.S., over the last half-century
  - International evidence - including a new out of sample test of previous findings
  - A natural experiment using the U.S. banking deregulation wave from the 1980s
  - U.S. regional evidence from the Great Recession
- Implications of the credit-driven household demand channel for
  - Macroeconomic theory and long run fundamentals
  - Public policy (monetary policy, macro-prudential policy, and crisis response)

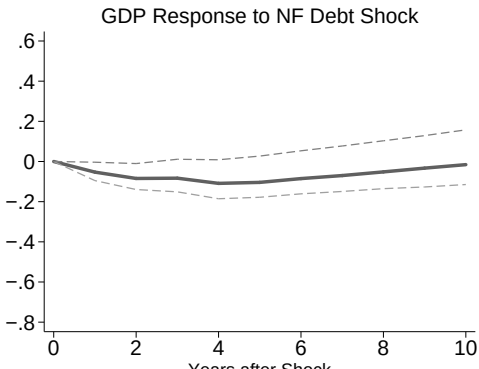
Empirical Challenges

- How to isolate credit supply expansion?
  - $\uparrow$ in quantity and $\downarrow$ in spreads, deregulation/policy experiments, differential pass-through of global shocks (e.g. oil, securitization, savings glut)
- How to identify change in household aggregate demand?
  - Focus on nontradable/tradable sectors, relative size and prices
  - Asymmetry between household and non-financial firm credit
- Use of micro data and regional variation

International Evidence



Source: Mian, Sufi, and Verner (QJE, 2017)



Source: Mian, Sufi, and Verner (QJE, 2017)

International Evidence

	MSV2017 30 Countries					
	(1) $\Delta_3 \frac{C_{it}}{Y_{it}}$	(2) $\Delta_3 \frac{NX_{it}}{Y_{it}}$	(3) $\Delta_3 s_{it}^{MC}$	(4) $\Delta_3 \ln\left(\frac{L_{it}^{NT}}{L_{it}^{T}}\right)$	(5) $\Delta_3 \ln\left(\frac{P_{it}^{NT}}{P_{it}^{T}}\right)$	(6) $\Delta_3 y_{i,t+4}$
$\Delta_3 d_{it}^{HH}$	0.058*	-0.15**	0.055*			
	(0.024)	(0.051)	(0.025)			
$\Delta_3 d_{it}^{F}$	0.038**	-0.00036	-0.012			
	(0.012)	(0.031)	(0.021)			
Country fixed effects	✓	✓	✓			
R^2	0.087	0.062	0.012			
Observations	816	832	858			

Standard errors in parentheses

30 countries, 1962-2012. Source: Mian, Sufi, and Verner (QJE, 2017).

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

International Evidence

	MSV2017 30 Countries					
	(1) $\Delta_3 \frac{C_{it}}{Y_{it}}$	(2) $\Delta_3 \frac{NX_{it}}{Y_{it}}$	(3) $\Delta_3 s_{it}^{MC}$	(4) $\Delta_3 \ln\left(\frac{L_{it}^{NT}}{L_{it}^{T}}\right)$	(5) $\Delta_3 \ln\left(\frac{P_{it}^{NT}}{P_{it}^{T}}\right)$	(6) $\Delta_3 y_{i,t+4}$
$\Delta_3 d_{it}^{HH}$	0.058*	-0.15**	0.055*	0.36**	0.38**	
	(0.024)	(0.051)	(0.025)	(0.056)	(0.097)	
$\Delta_3 d_{it}^{F}$	0.038**	-0.00036	-0.012	0.0085	-0.065	
	(0.012)	(0.031)	(0.021)	(0.064)	(0.059)	
Country fixed effects	✓	✓	✓	✓	✓	
R^2	0.087	0.062	0.012	0.17	0.067	
Observations	816	832	858	639	670	

Standard errors in parentheses

30 countries, 1962-2012. Source: Mian, Sufi, and Verner (QJE, 2017).

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

International Evidence

	MSV2017 30 Countries					
	(1) $\Delta_3 \frac{C_{it}}{Y_{it}}$	(2) $\Delta_3 \frac{NX_{it}}{Y_{it}}$	(3) $\Delta_3 s_{it}^{MC}$	(4) $\Delta_3 \ln\left(\frac{L_{it}^{NT}}{L_{it}^{T}}\right)$	(5) $\Delta_3 \ln\left(\frac{P_{it}^{NT}}{P_{it}^{T}}\right)$	(6) $\Delta_3 y_{i,t+4}$
$\Delta_3 d_{it}^{HH}$	0.058*	-0.15**	0.055*	0.36**	0.38**	-0.34**
	(0.024)	(0.051)	(0.025)	(0.056)	(0.097)	(0.089)
$\Delta_3 d_{it}^{F}$	0.038**	-0.00036	-0.012	0.0085	-0.065	-0.032
	(0.012)	(0.031)	(0.021)	(0.064)	(0.059)	(0.038)
Country fixed effects	✓	✓	✓	✓	✓	✓
R^2	0.087	0.062	0.012	0.17	0.067	0.11
Observations	816	832	858	639	670	840

Standard errors in parentheses

30 countries, 1962-2012. Source: Mian, Sufi, and Verner (QJE, 2017).

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

International Evidence

	MSV2017 30 Countries						IMF2018 Additional 105 Countries
	(1) $\Delta_3 \frac{C_{it}}{Y_{it}}$	(2) $\Delta_3 \frac{NX_{it}}{Y_{it}}$	(3) $\Delta_3 s_{it}^{MC}$	(4) $\Delta_3 \ln\left(\frac{L_{it}^{NT}}{L_{it}^{T}}\right)$	(5) $\Delta_3 \ln\left(\frac{P_{it}^{NT}}{P_{it}^{T}}\right)$	(6) $\Delta_3 y_{i,t+4}$	(7) $\Delta_3 y_{i,t+4}$
$\Delta_3 d_{it}^{HH}$	0.058*	-0.15**	0.055*	0.36**	0.38**	-0.34**	-0.37*
	(0.024)	(0.051)	(0.025)	(0.056)	(0.097)	(0.089)	(0.17)
$\Delta_3 d_{it}^{F}$	0.038**	-0.00036	-0.012	0.0085	-0.065	-0.032	-0.019**
	(0.012)	(0.031)	(0.021)	(0.064)	(0.059)	(0.038)	(0.0072)
Country fixed effects	✓	✓	✓	✓	✓	✓	✓
R^2	0.087	0.062	0.012	0.17	0.067	0.11	0.056
Observations	816	832	858	639	670	840	964

Standard errors in parentheses

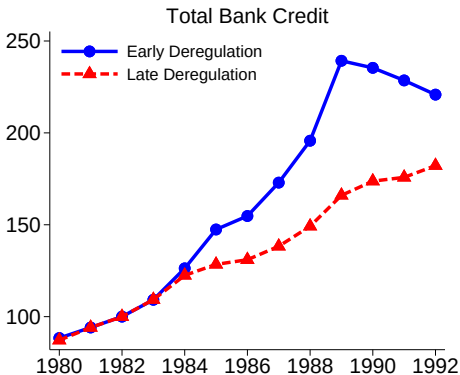
30 countries, 1962-2012. Source: Mian, Sufi, and Verner (QJE, 2017).

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Rise in household leverage predicts GDP slowdown

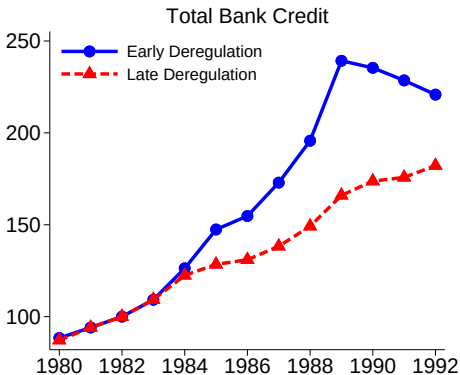
Source: Mian, Sufi, and Verner (QJE, 2017).

Deregulation experiment in the 1980s in U.S.

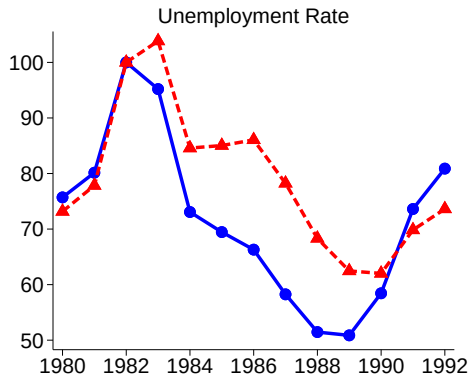


Source: Mian, Sufi, and Verner (WP, 2018).

Deregulation experiment in the 1980s in U.S.

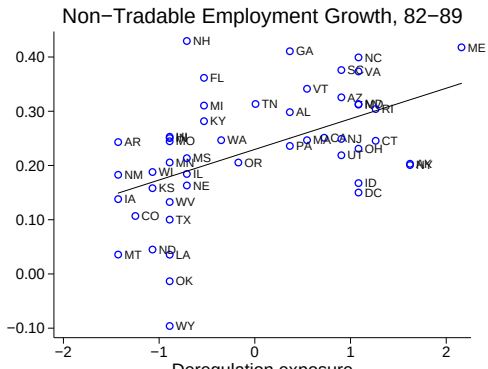


Source: Mian, Sufi, and Verner (WP, 2018).



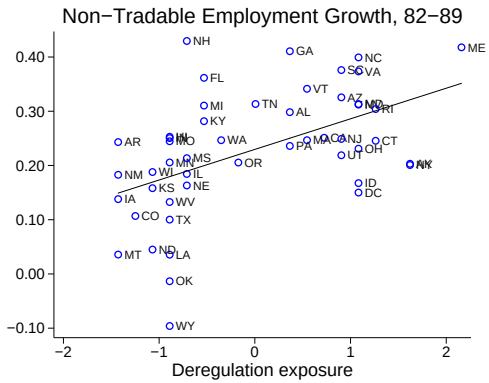
Source: Mian, Sufi, and Verner (WP, 2018).

Local demand and NT / T sector expands

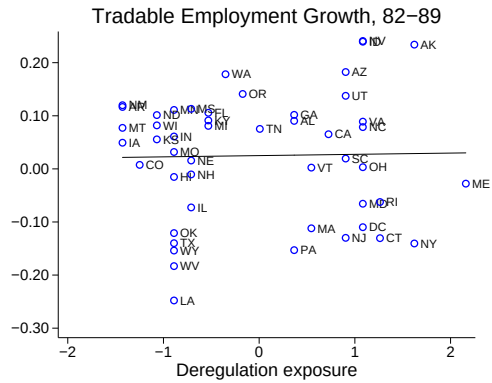


Source: Mian, Sufi, and Verner (WP, 2018).

Local demand and NT / T sector expands

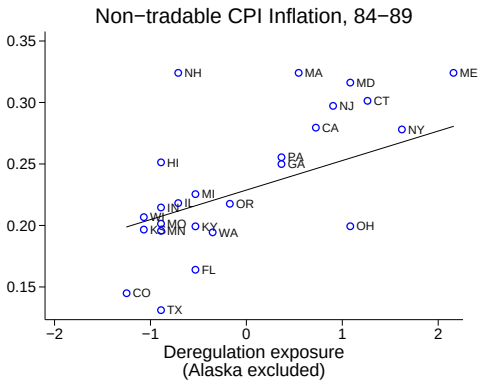


Source: Mian, Sufi, and Verner (WP, 2018).



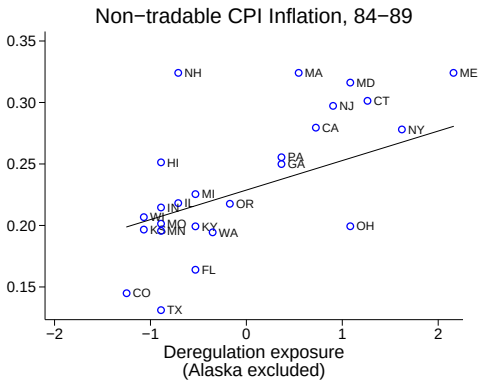
Source: Mian, Sufi, and Verner (WP, 2018).

Local demand and NT / T price rises

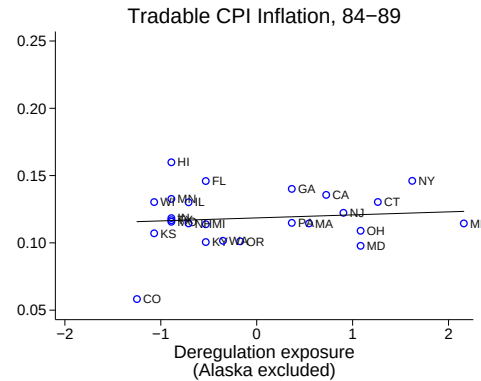


Source: Mian, Sufi, and Verner (WP, 2018).

Local demand and NT / T price rises

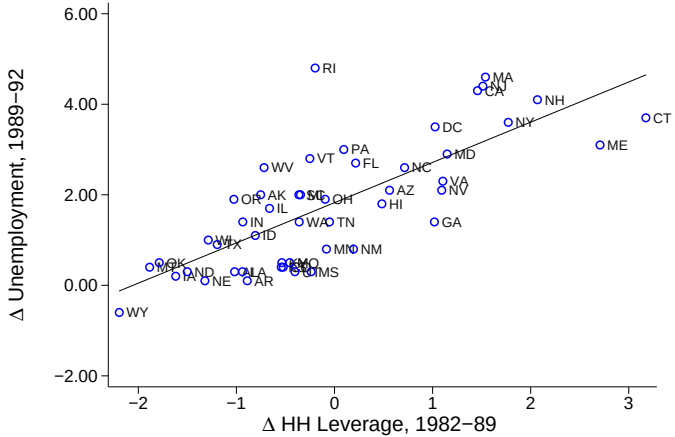


Source: Mian, Sufi, and Verner (WP, 2018).



Source: Mian, Sufi, and Verner (WP, 2018).

Rise in household leverage predicts depth of 1990/91 recession

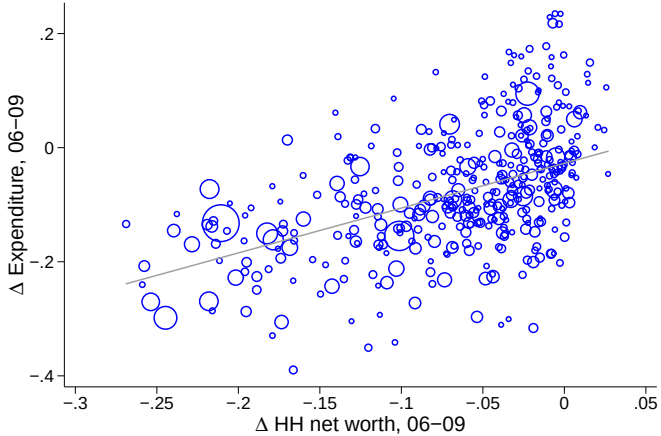


Source: Mian, Sufi, and Verner (WP, 2018).

U.S. experience during the 2000's

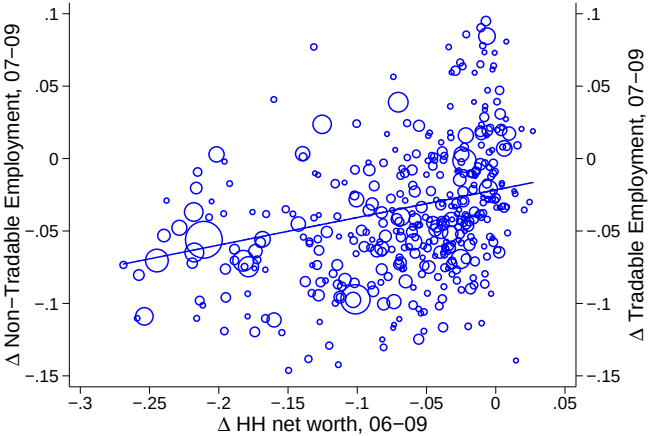
- A large expansion in credit supply, Mian and Sufi (2009), (also see [1])
- Credit expansion led to an increase in local demand and the non-tradable sector expanded, Di Maggio and Kermani (2017)
- When the music stops, Fisher's "debt deflation" dynamics take hold (see [2])
  - large fall in demand, Mian et al. (2013)
  - fall in employment due to demand shortgage, Mian and Sufi (2014)
  - foreclosure fire-sale externalities amplify the negative cycle, Mian et al. (2015)

The fall in demand



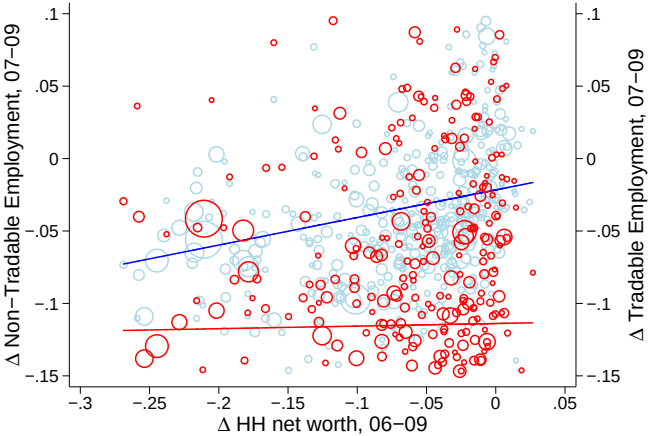
Source: Mian, Rao, and Sufi (QJE, 2013).

Fall in employment in response to demand



Source: Mian and Sufi (ECMA, 2014).

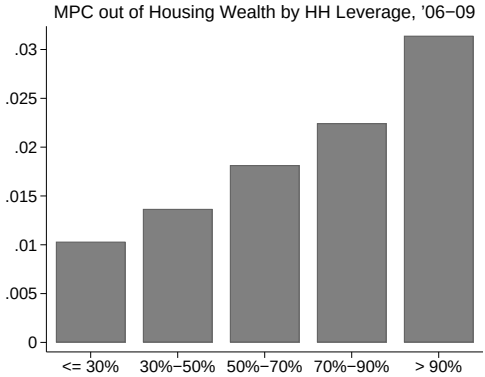
Fall in employment in response to demand



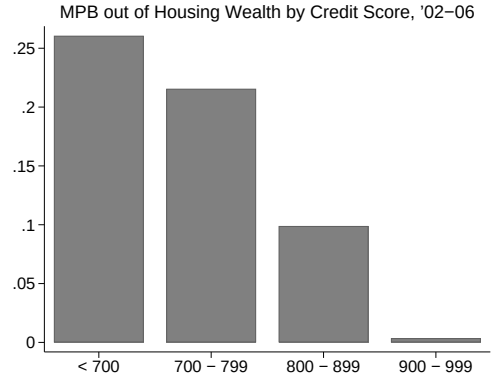
Source: Mian and Sufi (ECMA, 2014).

Theoretical implications of credit-driven household demand channel

- Heterogeneity across borrowers and creditors matters as it interacts with frictions like ZLB & wage rigidity. e.g. Eggertsson and Krugman (2012), Farhi and Werning (2015), Guerrieri and Lorenzoni (2017), Schmitt-Grohé and Uribe (2016) ([3])
- Ex-ante "over-borrowing" due to AD and pecuniary externalities (see [4])

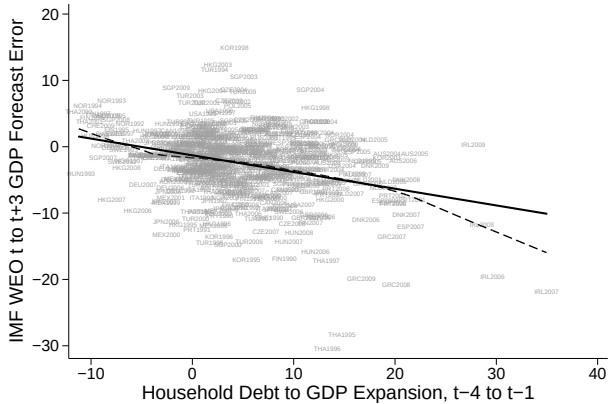


Source: Mian, Rao, and Sufi (QJE, 2013).



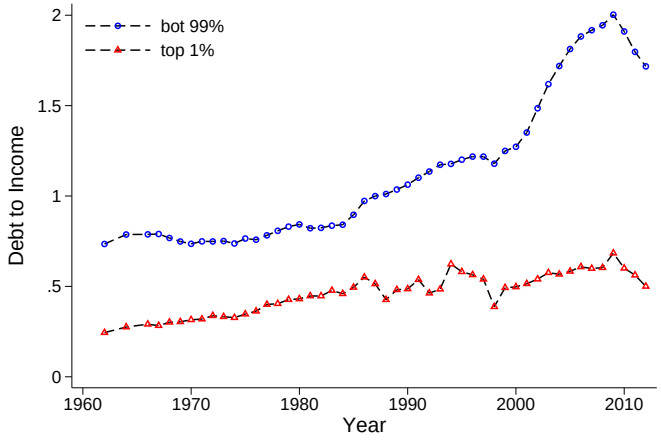
Source: Mian and Sufi (AER, 2011).

- Systematic forecasting errors suggests departure from rational expectations with common beliefs (See [5])
- Important to model heterogeneous beliefs and behavioral biases, e.g. Geanakoplos (2010), Gennaioli et al. (2012), López-Salido et al. (2017) ([6])



Source: Mian, Sufi, and Verner (QJE, 2017)

- Is there a link between secular rise in household credit, Jordà et al. (2016), falling interest rate and rising inequality and savings glut? (see [7])



Source: Mian and Sufi (WP, 2018).

Public policy implications of credit-driven household demand channel

- Post-2007 policy should have focused on reducing household debt service payments and preventing foreclosures (see [8]).
- Mortgage design matters, more equity-like contracts that promote risk-sharing have benefits at the macro level
- Monetary policy pass-through depends on the credit-driven household demand channel, e.g. Di Maggio et al. (2017)
- UK and many other countries have since adopted macro-prudential regulations that impose constraints based on loan to value or debt service to income

Notes

1. Adelino et al. (2014), Demyanyk and Van Hemert (2011), Favara and Imbs (2015), Justiniano et al. (2015, 2017), Keys et al. (2010), Levitin and Wachter (2012), Mian and Sufi (2009, 2017)
2. Andersen et al. (2014), Bahadir and Gumus (2016), Bunn and Rostom (2015), Drehmann et al. (2017), Giroud and Mueller (2017), Glick and Lansing (2010), IMF (2012, 2017), Di Maggio and Kermani (2017), Martin and Philippon (2014), Mian and Sufi (2010, 2011, 2014), Mian et al. (2013, 2017a,b), Verner and Gyongyosi (2017)
3. Eggertsson and Krugman (2012), Farhi and Werning (2015), Guerrieri and Lorenzoni (2017), Huo and Ríos-Rull (2016), Korinek and Simsek (2016), Lorenzoni (2008), Schmitt-Grohé and Uribe (2016)

Notes

4. Agarwal et al. (2017, 2018), Aladangady (2014), Baker (2018), Cloyne et al. (2017), Di Maggio et al. (2017), Ganong and Noel (2017a,b), Jordà et al. (2014), Liu et al. (2018), Mian and Sufi (2018b, Forthcoming)
5. Mian et al. (2017b), Baron and Xiong (2016)
6. Baron and Xiong (2016), Bordalo et al. (2017), Burnside et al. (2017), Geanakoplos (2010), Gennaioli et al. (2012), Kindleberger (1978), Kindelberger and Aliber (2005), Krishnamurthy and Muir (2016), López-Salido et al. (2017), Mian and Sufi (2018a), Minsky (2008), Nathanson and Zwick (2017)
7. Favilukis et al. (2012), Jordà et al. (2016), Kumhof et al. (2015)
8. Agarwal et al. (2018), Aladangady (2014), Cloyne et al. (2017), Di Maggio et al. (2017), Jordà et al. (2014, 2013), Ganong and Noel (2017b), Mian and Sufi (2015)

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