The Credit-Driven Household Demand Channel

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Princeton University

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Household debt biggest risk to Swedish economy, central bank says

STOCKHOLM (Reuters) - High levels of
United States

\[ \Delta \text{Unemployment, 2007−10} \]

\[ \Delta \text{HH debt to GDP, 2002−07} \]

Source: Mian and Sufi (IMF, 2010).

The credit-driven household demand channel

\[ \uparrow \text{credit supply} \Rightarrow \uparrow \text{household aggregate demand} \Rightarrow \downarrow \text{future GDP growth}. \]

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

Unemployment, 2007−10

Δ HH debt to GDP, 2002−07

Source: Mian and Sufi (IMF, 2010).

The credit-driven household demand channel

World

Unemployment, 2007−10

Δ HH debt to GDP, 2002−07

Source: Mian, Sufi, and Verner (QJE, 2017).
The credit-driven household demand channel

\[ \uparrow \text{credit supply} \Rightarrow \uparrow \text{household aggregate demand} \Rightarrow \downarrow \text{future GDP growth}. \]
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?
  - ↑ in quantity and ↓ 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

GDP Response to HH Debt Shock

GDP Response to NF Debt Shock

Source: Mian, Sufi, and Verner (QJE, 2017)
## International Evidence

### MSV2017 30 Countries

<table>
<thead>
<tr>
<th></th>
<th>(1) $\Delta_3 \frac{C_{it}}{Y_{it}}$</th>
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**Country fixed effects**: ✓ ✓ ✓

**$R^2$**: 0.087 0.062 0.012

**Observations**: 816 832 858

Standard errors in parentheses


+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$
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| Country fixed effects | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| $R^2$ | 0.087 | 0.062 | 0.012 | 0.17 | 0.067 | 0.11 |
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Rise in household leverage predicts GDP slowdown

Source: Mian, Sufi, and Verner (QJE, 2017).
Deregulation experiment in the 1980s in U.S.

Total Bank Credit

- Early Deregulation
- Late Deregulation

Source: Mian, Sufi, and Verner (WP, 2018).
Deregulation experiment in the 1980s in U.S.

**Total Bank Credit**
- **Early Deregulation**
- **Late Deregulation**

**Unemployment Rate**

Source: Mian, Sufi, and Verner (WP, 2018).
Local demand and NT / T sector expands

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Local demand and NT / T sector expands

Non-Tradable Employment Growth, 82–89

Tradable Employment Growth, 82–89

Source: Mian, Sufi, and Verner (WP, 2018).
Local demand and NT / T price rises

Non-tradable CPI Inflation, 84–89

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

Tradable CPI Inflation, 84–89

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Local demand and NT / T price rises

Non-tradable CPI Inflation, 84–89

Tradable CPI Inflation, 84–89

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

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])
- Systematic forecasting errors suggest 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


Notes


5. Mian et al. (2017b), Baron and Xiong (2016)


References III


and, House of debt: How they (and you) caused the Great Recession, and how we can prevent it from happening again, University of Chicago Press, 2015.


and, “Inequality, Surplus Savings and Credit Creation,” 2018.


