Discussion: Household Balance Sheets and Financial Stability Session

Paul Willen

Federal Reserve Bank of Boston and NBER

Cleveland Fed OFR Financial Stability Conference
Cleveland, November 22, 2018

These notes reflect the views of the author and don’t necessarily reflect the official positions of the Federal Reserve Bank of Boston or the Federal Reserve System.
Disclaimer
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• I am speaking today as a researcher and as a concerned citizen
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- When I say “we”, I don’t mean Jay and me.
3 Papers about consumer debt

• Smoothing consumption with debt
  1. Intertemporal smoothing: Permanent income hypothesis
  2. Default and completing markets
Del Valle, Scharlemann and Shore (2019)

- Households hit by a transitory shock
  - Smooth consumption by borrowing
Del Valle, Scharlemann and Shore (2019)

- Households hit by a transitory shock
  - Smooth consumption by borrowing
- Paper shows that it is entirely through the extensive margin
  - No balance increase on existing cards
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Take out new credit cards
- Teaser Rates

Least Flooding
Del Valle, Scharlemann and Shore (2019)

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Least Flooding

Most Flooding
Del Valle, Scharlemann and Shore (2019)

- Households hit by a transitory shock
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- Paper shows that it is entirely through the extensive margin
  - No balance increase on existing cards
- Take out new credit cards
  - Teaser Rates
- Competition in credit cards is through teaser rates

**Least Flooding**

**Most Flooding**
Theory 1 of Consumer Credit: No Self-Control

- Given the chance, households will go on a “debt fueled consumption binge.”
Theory 1 of Consumer Credit: No Self-Control

- Given the chance, households will go on a “debt fueled consumption binge.”
  - New Clothes,
Theory 1 of Consumer Credit: No Self-Control

- Given the chance, households will go on a “debt fueled consumption binge.”
  - New Clothes, Dinners out
  - Luxury Sport Utility Vehicles
Theory 1 of Consumer Credit: No Self-Control

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Theory 2: Consumption Smoothing

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Theory 2: Consumption Smoothing

- Irving Fisher (1930) invented indifference curves
- Different combinations of present and future consumption
- Consumption frontier
- Borrowing moves you down and to the right
Figure 5: The Effect of Seizable Equity on Bankruptcy Filings

- Why is this picture surprising?
Indarte (2019)

Why is this picture surprising?

- All else equal
  - Bankruptcy wipes out wealth
  - More equity $\Rightarrow$ More Wealth
  - Less Bankruptcy
Indarte (2019)

Why is this picture surprising?

- All else equal
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  - More equity $\Rightarrow$ More Wealth
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- Below exemption
  - Bankruptcy does not wipe out equity
Incomplete Markets and Default

- Dubey, Geanakoplos and Shubik (1988, 2009)
  - Equilibrium model with default penalties
  - Argued that default could complete markets
Incomplete Markets and Default

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- Borrowers design their own securities in which negative payoffs occur in states where it is efficient for them to default
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Incomplete Markets and Default

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  - Equilibrium model with default penalties
  - Argued that default could complete markets
- Borrowers design their own securities in which negative payoffs occur in states where it is efficient for them to default
  - penalty is part of the contract
- Zame (1993) argues that adding new markets cannot do the same thing – if risks are idiosyncratic.

"default improves the efficiency of markets and does so in a way that simply opening new markets cannot... [Default allows] traders to enter into contracts that they will be able to execute with high probability but not with certainty."
Bankruptcy and Risksharing

- Bankruptcy risk sharing
  - Lender absorbs losses

Paul Willen (Boston Fed)  Discussion of Household Balance Sheets  November 22, 2019  9 / 14
• Bankruptcy risk sharing
  • Lender absorbs losses

Bankruptcy and Risksharing

<table>
<thead>
<tr>
<th>Time</th>
<th>Assets</th>
<th>Liabilities</th>
<th>Financial Wealth</th>
<th>Risk-bearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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1. Bad Shock, No Bankruptcy

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<tbody>
<tr>
<td>1</td>
<td>$300k</td>
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<tr>
<td>Δ</td>
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<td>100%</td>
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### Bankruptcy and Risksharing

- **Bankruptcy risk sharing**
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1. **Bad Shock, No Bankruptcy**

2. **Bad Shock, Bankruptcy, no exemption**

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Discussion of Household Balance Sheets  
November 22, 2019
### Bankruptcy and Risksharing

- **Bankruptcy risk sharing**
  - Lender absorbs losses
- **Bigger exemption leads to more risk sharing.**

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1. **Bad Shock, No Bankruptcy**
   - 1: $300k  
     - Liabilities: -$400k
     - Financial Wealth: -$100k
   - \(\Delta\): -$200k
     - Liabilities: $0k
     - Financial Wealth: -$200k
   - 100%

2. **Bad Shock, Bankruptcy, no exemption**
   - 1: $300k
     - Liabilities: -$400k
     - Financial Wealth: $0k
   - \(\Delta\): -$200k
     - Liabilities: $0k
     - Financial Wealth: -$100k
   - 50%

3. **Bad Shock, Bankruptcy, 100k exemption**
   - 1: $300k
     - Liabilities: -$400k
     - Financial Wealth: $100k
   - \(\Delta\): -$200k
     - Liabilities: $0k
     - Financial Wealth: $0k
   - 0%

---

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Bankruptcy and Risksharing

- Bankruptcy risk sharing
  - Lender absorbs losses

- Bigger exemption leads to more risk sharing.

- But bankruptcy is an option
  - No sharing of gains

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Default and risk sharing

- For mortgages but intuition is identical
Default and risk sharing

- For mortgages but intuition is identical
- No risk sharing
Default and risk sharing

- For mortgages but intuition is identical
- No risk sharing
- Full risk sharing

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Risk sharing in the data

*Ex post outcomes*

- If borrower pays off loan, took on all gains and losses
- If borrower defaults, only loss to borrower is down payment plus principal repayment

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Risk sharing in the data

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  - If borrower pays off loan, took on all gains and losses
  - If borrower defaults, only loss to borrower is down payment plus principal repayment
- A lot of risk sharing for big losses
Risk sharing in the data

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  - If borrower pays off loan, took on all gains and losses
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- Looks familiar – a call option

![Risk sharing in the data graph](image_url)
Risk sharing in the data

- **Ex post outcomes**
  - If borrower pays off loan, took on all gains and losses
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- A lot of risk sharing for big losses
- Looks familiar – a call option
  - High leverage = high risk sharing
  - Low leverage = low risk sharing
- Exemption plays exactly the same role as down payment

---

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Discussion of Household Balance Sheets

November 22, 2019 11 / 14
Chava, Ganduri, Paradkar and Zeng (2019)

- Focus on the period of the crisis

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<tbody>
<tr>
<td>Δ CC limit</td>
<td>0.744***</td>
<td>0.854***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(46.40)</td>
<td>(25.05)</td>
<td></td>
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<td>Exposure</td>
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<td>(-1.02)</td>
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<td>Δ CC limit (instrumented)</td>
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Individual FE:
- Bank characteristics: ✓ ✓ ✓ ✓ ✓ ✓
- Bank performance: ✓ ✓ ✓ ✓ ✓ ✓
- Lending quality: ✓ ✓ ✓ ✓ ✓ ✓
- Credit card controls: ✓ ✓ ✓ ✓ ✓ ✓

N = 158,432,533
Chava, Ganduri, Paradkar and Zeng (2019)

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- To lend
  - Intermediaries need to borrow

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<tr>
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| Exposure            |     |     | -3.080 | -9.805*** |     |
|                     |     |     | (-1.02) | (-4.57) |     |

| Δ CC limit (instrumented) |     |     |     |     | 2.064*** |
|                           |     |     |     |     | (4.52)   |

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| Bank characteristics   |     |     |     |     |     |
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| Lending quality        |     |     |     |     |     |
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| N                    | 158,432,533 | 158,432,533 | 158,432,533 | 158,432,533 | 158,432,533 |
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Credit limits and balances went down (relatively) on credit cards issued by more exposed banks?

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- Individual FE
- Bank characteristics
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Chava, Ganduri, Paradkar and Zeng (2019)

- Focus on the period of the crisis
- To lend
  - Intermediaries need to borrow
- In crisis, wholesale lending markets seized up
- Credit limits and balances went down (relatively) on credit cards issued by more exposed banks?
  - Exposed banks ⇔ riskier borrower?
    - Full set of individual fixed effects.

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N: 158,432,533
What about the extensive margin?

- What did we learn from del Valle, Scharlemann and Shore?
  - Extensive margin is what matters!

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<th>Δ Agg. CC Balance (4)</th>
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<tbody>
<tr>
<td>Weighted exposure</td>
<td>-3.827*** (-9.56)</td>
<td>-1.216** (-2.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ Agg. CC limit</td>
<td></td>
<td></td>
<td>0.859*** (43.56)</td>
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</tr>
<tr>
<td>Δ Agg. CC limit (instrumented)</td>
<td></td>
<td></td>
<td></td>
<td>0.318*** (2.87)</td>
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<tr>
<td>Zip-code FE</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Consumer quality</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>N</td>
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  - Extensive margin is what matters!
- Does it matter that credit limit did not go up at Lender A?

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<td>Weighted exposure</td>
<td>-3.827*** (-9.56)</td>
<td>-1.216** (-2.55)</td>
</tr>
<tr>
<td>Δ Agg. CC limit</td>
<td></td>
<td>0.859*** (43.56)</td>
</tr>
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<td>Δ Agg. CC limit (instrumented)</td>
<td></td>
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</tr>
</tbody>
</table>

Zip-code FE: ✓ ✓ ✓ ✓ ✓
Consumer quality: ✓ ✓ ✓ ✓ ✓

N = 133,501,009
What about the extensive margin?

- What did we learn from del Valle, Scharlemann and Shore?
  - Extensive margin is what matters!
- Does it matter that credit limit did not go up at Lender A?
- Look at all credit cards for individual borrower
  - Still find effect

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- Paul Willen (Boston Fed)

Discussion of Household Balance Sheets
November 22, 2019 13 / 14
What about the extensive margin?

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  - Extensive margin is what matters!
- Does it matter that credit limit did not go up at Lender A?
- Look at all credit cards for individual borrower
  - Still find effect
- But no individual fixed effects any more
  - Are borrowers at bank A unobservably different?

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The slide you’ve all been waiting for...
The slide you’ve all been waiting for...

- The end.