HOUSEHOLD CREDIT AND EMPLOYMENT IN THE GREAT RECESSION

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How much did the contraction in the supply of credit to households contribute to the decline in employment during the Great Recession?
ACCOUNTING FOR THE GREAT RECESSION

- Collapse in house prices: destroyed net worth and collateral, which reduced demand

- Firm credit: financial crisis led to a contraction in credit to firms, which reduced investment and labor demand

- Household credit: financial crisis led to a contraction in credit to households, which reduced demand
  - Closely related to DiMaggio and Kermani (2014), who focus on the credit boom
Today

- Exploit collapse of Wachovia as exogenous shock to credit supply across counties
  -large, average retail lender, became distressed due to purchase of toxic lender Golden West Financial in 2006

- Exposure to Wachovia affected local outcomes
  -flow of credit, retail expenditures, house prices, and house sales fell
  -employment losses concentrated in residential construction and non-tradables

- Wachovia primarily reflects shock to household credit
  -elasticity of employment with respect to supply-driven changes in measure of household credit is large, about 0.3

- Construct a measure of the shock to household credit in a county and do a simple accounting exercise
  -identify lender-specific shocks and weight them in each county
  -direct effect of shocks to household credit imply large losses in employment: 30-60% of what was observed
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WACHO VIA AND THE “DEAL FROM HELL”


Nancy Pelosi: This is Herbert and Marion Sandler. Tell us your story.

Herbert Sandler: My wife and I had a company which aggressively marketed subprime mortgages and then bundled them into securities to sell to banks such as Wachovia. Today our portfolio is worth almost nothing, though, at one point it was worth close to $19 billion.

Pelosi: My god, I am so sorry! Were you able to sell it for anything?

H. Sandler: Yes! For $24 billion!

Pelosi: I see. So, in that sense . . . you’re not here to speak as actual victims?

H. Sandler: [he chuckles] No, no no! That would be Wachovia Bank!
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*Saturday Night Live Season 34: Episode 4. Aired October 4, 2008.*

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**DATA**

- Household credit: annual flows from the Home Mortgage Disclosure Act (HMDA)
  - *Does not measure equity extraction (e.g. HELOCs)*

- Firm Credit: annual flow of small business loans from the Community Reinvestment Act (CRA)

- Employment from County Business Patterns

- House prices and sales from Zillow, debt stocks from the New York Federal Reserve—Equifax Consumer Credit Panel (CCP), income from the IRS, and non-durable expenditures from the Nielsen retail scanner data.
Wachovia heavily concentrated in the East and South

-Average share in these areas around 2%
DID WACHOVIA REDUCE ACCESS TO CREDIT?

\[ \text{Prob(Originated)}_{it} = \alpha_{ct} + \beta_t \text{Wachovia}_i + X_i' \gamma_t + e_{it} \]
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\]
DISTANCE FROM WACHOVIA AND MARKET SHARE

\[(\text{Wachovia Market Share} - \text{Mean})_i = f(\text{Distance from branch}_i) + e_i\]

Wachovia’s market share declines strongly in distance
DISTANCE FROM WACHOVIA AND CREDIT GROWTH

\[(\text{Credit Growth} - \text{Mean})_i = f(\text{Distance from branch}_i) + e_i\]
DISTANCE FROM WACHOVIA AND CREDIT GROWTH

\[(\text{Credit Growth} - \text{Mean})_i = f(\text{Distance from Branch}_i) + e_i\]
**Home Purchase Credit**

\[
\frac{\text{Loans}_{i,t}}{\text{Loans}_{i,2007}} - 1 = \beta_t \text{Wachovia Exposure}_i + e_{it}
\]
Exposure to Wachovia

- Declines in household credit flows, house prices, house sales and retail expenditure growth

  - Increasing exposure to Wachovia by one standard deviation reduces home purchase credit growth from 2007-2010 by about 4%.

- Employment?
NON-TRADABLE EMPLOYMENT

\[
\frac{\text{Emp}}{\text{Emp}_{i,2007}} - 1 = \beta_t \text{Wachovia Exposure}_i + e_{it}
\]
Exposure to Wachovia

- Declines in household credit flows, house prices, house sales and retail expenditure growth

- Employment losses concentrated in non-tradables and residential construction

- Household or firm credit?
HOUSEHOLD AND FIRM CREDIT ORIGINATIONS

The graph shows the trend of household and firm credit originations from 2005 to 2009. The lines represent the following categories:

- **Wachovia Small Business** (solid red line)
- **Wachovia Home Mortgage** (dashed red line)
- **Market Small Business** (dotted blue line)
- **Market Home Mortgage** (solid blue line)

The y-axis represents the credit originations, while the x-axis represents the time period from 2005 to 2009.
\[
\hat{E}_i = \beta_1 * Wachovia \text{ (House)} + \beta_2 * Wachovia \text{ (Firm)} + e_i
\]

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>+ High Exposure to Wachovia (Firm)</th>
<th>Both discrete</th>
<th>Both continuous</th>
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<tbody>
<tr>
<td>( \beta_1 )</td>
<td>\textbf{-0.662}</td>
<td>\textbf{-0.637}</td>
<td>\textbf{-0.027}</td>
<td>\textbf{-0.444}</td>
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<td>( p )</td>
<td>0.180</td>
<td>0.136</td>
<td>0.090</td>
<td>0.542</td>
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<td>(CI 95%)</td>
<td>(-1.608, -0.285)</td>
<td>(-1.732, 0.310)</td>
<td>(-0.060, 0.005)</td>
<td>(-1.818, 0.930)</td>
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<tr>
<td>( \beta_2 )</td>
<td>-0.002</td>
<td>0.003</td>
<td>0.020</td>
<td></td>
</tr>
<tr>
<td>( p )</td>
<td>0.362</td>
<td>0.450</td>
<td>0.352</td>
<td></td>
</tr>
<tr>
<td>(CI 95%)</td>
<td>(-0.027, 0.023)</td>
<td>(-0.031, 0.037)</td>
<td>(-0.019, 0.060)</td>
<td></td>
</tr>
<tr>
<td>( N )</td>
<td>478</td>
<td>478</td>
<td>478</td>
<td>478</td>
</tr>
<tr>
<td>Clusters</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.315</td>
<td>0.314</td>
<td>0.315</td>
<td>0.316</td>
</tr>
<tr>
<td>( F )</td>
<td>7.114</td>
<td>2.172</td>
<td>7.114</td>
<td>2.876</td>
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EXPOSURE TO WACHOVIA

- Declines in household credit flows, house prices, house sales and retail expenditure growth

- Employment losses concentrated in non-tradables and residential construction

- Declines driven by exposure to Wachovia in the household credit market, not firm credit market or deposits
  
  - Elasticity of employment with respect to declines in household credit caused by supply shocks is large: 0.2-0.3
ACCOUNTING FOR HOUSEHOLD CREDIT

Aggregate Direct Contribution \equiv \text{AVERAGE DIRECT EFFECT} \times \sum_i \omega_i \text{SHOCK}_i
ACCOUNTING FOR HOUSEHOLD CREDIT

\[ \text{Aggregate Direct Contribution} \equiv \text{Average direct effect} \times \sum_i \omega_i \text{Shock}_i \]

Intuition:

1) Measure supply shock from each lender using variation across areas and lenders

2) Weight lender shock for each county by market shares, sum to create a county-level shock

3) Can then estimate the effect of this shock and aggregate as above
AGGREGATION

Subtract average of high-shock counties from all shocks
**AGGREGATION**

*lower bound = AVERAGE DIRECT EFFECT \times \sum_{i} SHOCK_{i} − correction*

<table>
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<tr>
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<th>Total</th>
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<tbody>
<tr>
<td><strong>OLS</strong></td>
<td></td>
<td></td>
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<tr>
<td>No Adjustment – South and East</td>
<td>-6.8</td>
<td>-11.8 (112%)</td>
</tr>
<tr>
<td>75&lt;sup&gt;th&lt;/sup&gt; Percentile – South and East</td>
<td>-2.1</td>
<td>-3.6 (34%)</td>
</tr>
<tr>
<td>75&lt;sup&gt;th&lt;/sup&gt; Percentile – National</td>
<td>-2.6</td>
<td>-4.5 (37%)</td>
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| **2SLS**             |       |       |
| No Adjustment – South and East |        |       |
| 75<sup>th</sup> Percentile – South and East |        |       |
| 75<sup>th</sup> Percentile – National     |        |       |
CONCLUSION

• Shocks to household credit supply mattered, distinct from collapse in house prices

  - Frictions in household credit market: areas exposed to Wachovia experienced larger declines in housing and non-housing expenditures

  - Employment losses concentrated in residential construction and non-tradables

  - Elasticity of employment with respect to supply-driven declines in household credit large (about 0.3)

• Used relatively little structure to quantify size of shock

  - Direct effects of shocks imply declines equivalent to 30-60% of observed decline
GOING FORWARD

- How/why were households relying on credit?

- Direct liquidity effect vs. precautionary effect?

- What observables account for the variation across lenders?

- Why do there seem to be large frictions in the household credit market?

- Policy response to distressed institutions