If You Don’t Build It....:
Mexican Mobility Following the U.S. Housing Bust

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Wisconsin IRP
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Outline

1 Motivation and Central Findings
2 The Housing Collapse and Descriptives
3 Main Results
4 Adjustment Channels
5 Discussion
Migration and the Housing Bust

- Housing bust led to a historic decline in the construction of new homes, a significant component of demand for construction labor.
- Bubble bursting functioned as a severe labor demand shock for lower-skilled workers, especially Mexican-born workers (≈30 percent work in construction).
- Large variation in the size of demand shocks across the country.
- Main questions:
  - How did the housing bust affect the geographic distribution of low-skilled workers, both native and Mexican-born?
  - Which reallocation mechanisms were most important?
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Results Overview

- Mexican-Born population shifts markedly toward states with less severe housing shocks and away from hardest-hit states.
- No mobility response among lower-skilled native-born.
- Reallocation happened primarily through interstate mobility and differential entry rates.
- No evidence of return migration to Mexico. Likely option value (Angelucci, 2010; Lessem, 2011).
- Aggregate Mexican inflow rates closely parallel overall decline in demand.
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Implications

- Mexican workers function as arbitrageurs, reducing geographic inequality and preventing more costly moves by low-mobility natives (Bound and Holzer 2000, Borjas 2001).

- Mexican mobility results in an effective transfer from native workers in less-affected areas to native workers in harder-hit areas.

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- **Housing Demand Measures**
  - Permits Survey
  - Survey of Construction
  - Combine information to construct “new housing units currently under construction.”

- **American Community Surveys 2005-2009**
  - Contain data on Employment, Industry, Nativity, and Migration History
  - Limit sample to native and Mexican-born men, 18-64, not in school, without a college degree.
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Housing Demand and Construction Employment

New Housing Units Under Construction and Construction Employment

Month

Housing Units Under Construction

Employment - 1000s

Constructed from Permits

Source: Authors' tabulation of Census and QWI data.
Geographic Variation in Housing Declines

Graphs by State

Month
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## Importance of Construction Sector

<table>
<thead>
<tr>
<th>Construction Employment by Nativity and Gender</th>
<th>Mexican-Born Sample</th>
<th>Native-Born Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Percent of Employed Working in Construction</td>
<td>30.8%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Share of Construction Employment</td>
<td>12.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Share of Population (18-64 not in school)</td>
<td>3.0%</td>
<td>2.3%</td>
</tr>
</tbody>
</table>
Decreases in Demand Explain Declines in Employment

Coef -.27; SE .035; R-squared .56
Variation in Demand Shocks and Employment

- Differential demand shocks likely related to importance of sub-prime lending in local housing demand (Mayer and Pence, 2009).
- Future Extension: verify using Mayer and Pence data.
- Bottom Line: Geographically disparate exogenous local demand shocks created strong incentives to relocate.
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Mobility Data Sources

- **ACS**: Annual cross-state mobility and newly arriving immigrants.
- **ENOE**: Quarterly Mexican data on emigration and return migration.
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Mexicans are More Mobile

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<th>Age Group</th>
<th>Not in Current State Last Year</th>
<th>Different State Last Year</th>
<th>Abroad Last Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>7.2%</td>
<td>2.1%</td>
<td>5.0%</td>
</tr>
<tr>
<td>25-34</td>
<td>4.6%</td>
<td>2.1%</td>
<td>2.6%</td>
</tr>
<tr>
<td>35-44</td>
<td>2.9%</td>
<td>1.4%</td>
<td>1.5%</td>
</tr>
<tr>
<td>45-54</td>
<td>2.2%</td>
<td>1.1%</td>
<td>1.1%</td>
</tr>
<tr>
<td>55-64</td>
<td>1.9%</td>
<td>1.0%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Total</td>
<td>3.9%</td>
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Fraction of Mexican Population living in state $s$ at time $t$ is

\[ \varphi_{st} \equiv \frac{mex_{st}}{\sum_{s'} mex_{s't}}. \]

with $mex_{st}$ the Mexican-born population in $s$ at time $t$.

Taking logs and differencing gives:

\[ \Delta \ln \varphi_s = \Delta \ln mex_{st} - \Delta \ln \left( \sum_{s'} mex_{s't} \right). \]

Changes in log(population) can be interpreted as percent changes in share living in state $s$.

Analysis examines changes from 2005-2009.
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Eliminate States with Trivial Mexican Population

- State must have at least 30 Mexican-born male ACS observations in 2005 and 2009.
- Criterion eliminates VT, ND, WV, DC, ME, MT, AK, SD, HI, NH, RI, WY, and MA.
Number of Mexican-Born ACS Observations (2009)
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Housing Demand and Employment (Smaller Sample)

Construction Employment and Housing Demand

Coef -0.293; SE 0.037; R-squared 0.63
Mexican Population Shifts Toward Smaller Shocks

Mexican Population Growth and Housing Demand

Coef -.238; SE .04; R-squared .25.
Decrease in Construction Activity

Decrease in Log(Houses Under Construction 2005-2009)
Change in Mexican Population

Change in Log(Mexican Population 2005-2009)

- Insufficient Mexican Obs
No Similar Reallocation for Natives

- **Mexican-born**
  - Change in Log(Males)
  - Decrease in Log(Houses Under Construction)
  - Coef: -0.238; SE: 0.04; R-squared: 0.25

- **Native-born**
  - Change in Log(Males)
  - Decrease in Log(Houses Under Construction)
  - Coef: 0.023; SE: 0.021; R-squared: 0.04

- **Mexican-born Women**
  - Change in Log(Women)
  - Change in Log(Houses Under Construction)
  - Coef: -0.236; SE: 0.087; R-squared: 0.13

- **Native-born Women**
  - Change in Log(Women)
  - Change in Log(Houses Under Construction)
  - Coef: 0.032; SE: 0.02; R-squared: 0.09
To interpret this reallocation as the causal effect of differential labor demand shocks, need to rule out alternative explanations including:

1. A decline in the value/popularity of enclaves
2. Simultaneous anti-immigrant local legislation
3. Continuation of ongoing trends based on other unobservables
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# Results Robust to Observable Controls

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<th>(2)</th>
<th>(3)</th>
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<tbody>
<tr>
<td>Decrease in Log(Houses Under Construction) 2005-2009</td>
<td>-0.238***</td>
<td>-0.230***</td>
<td>-0.232***</td>
</tr>
<tr>
<td></td>
<td>(0.0403)</td>
<td>(0.0433)</td>
<td>(0.0441)</td>
</tr>
<tr>
<td>Mexican-Born Share of State Population (2005)</td>
<td>-0.502</td>
<td>-0.558</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.588)</td>
<td>(0.645)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.298***</td>
<td>0.303***</td>
<td>0.306***</td>
</tr>
<tr>
<td></td>
<td>(0.0455)</td>
<td>(0.0473)</td>
<td>(0.0491)</td>
</tr>
<tr>
<td>Includes Arizona</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Observations</td>
<td>38</td>
<td>38</td>
<td>37</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.252</td>
<td>0.261</td>
<td>0.249</td>
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Reallocation Not a Continuation of Previous Trends

Motivation and Central Findings
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Adjustment Channels
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Mexican-born

Native-born

Mexican-born Women

Native-born Women

Change in Log(Mexican Males)

Change in Log(Mexican Women)

Change in Log(Native Males)

Change in Log(Native Women)

Decrease in Log(Houses Under Construction 2005-2009)

Coef .083; SE .086; R-squared .016

Coef .023; SE .019; R-squared .031

Coef .041; SE .067; R-squared .004

Coef .005; SE .022; R-squared .001

Decrease in Log(Houses Under Construction 2005-2009)
Motivation and Central Findings

The Housing Collapse and Descriptives

Main Results

Adjustment Channels

Discussion
Potential Channels of Adjustment

- Five potential channels of adjustment
  - C1: Inter-state movement of Mexicans who were already residing in the country.
  - C2: Mexicans arriving from abroad
  - C3: Previously resident Mexicans leaving the country
  - C4: Resident Mexicans who age into or out of the sample
  - C5: Resident Mexicans who enter or leave the sample due to a change in schooling status
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With a slight adjustment to the dependent variable, a set of regressions can determine the importance of each channel.

\[ \Delta \ln \text{mex}_s \approx \frac{\Delta \text{mex}_s}{\text{mex}_{s0}}. \]

Because the channels are mutually exclusive and exhaustive,

\[ \frac{\Delta \text{mex}_s}{\text{mex}_{s0}} = \frac{C_1_s}{\text{mex}_{s0}} + \frac{C_2_s}{\text{mex}_{s0}} + \frac{C_3_s}{\text{mex}_{s0}} + \frac{C_4_s}{\text{mex}_{s0}} + \frac{C_5_s}{\text{mex}_{s0}}. \]
Decomposition

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\[ \frac{\Delta \text{mex}_{s}}{\text{mex}_{s0}} = \frac{C_{1s}}{\text{mex}_{s0}} + \frac{C_{2s}}{\text{mex}_{s0}} + \frac{C_{3s}}{\text{mex}_{s0}} + \frac{C_{4s}}{\text{mex}_{s0}} + \frac{C_{5s}}{\text{mex}_{s0}}. \]
Assume each adjustment channel is related linearly to the housing demand shock:

\[
\frac{C_{1s}}{mexs_0} = \beta_0^1 + \beta_1^1 \Delta \ln h_s + u_s^1 \tag{1}
\]

\[
\frac{C_{2s}}{mexs_0} = \beta_0^2 + \beta_1^2 \Delta \ln h_s + u_s^2 \tag{2}
\]

\[
\frac{C_{3s}}{mexs_0} = \beta_0^3 + \beta_1^3 \Delta \ln h_s + u_s^3 \tag{3}
\]

\[
\frac{C_{4s}}{mexs_0} = \beta_0^4 + \beta_1^4 \Delta \ln h_s + u_s^4 \tag{4}
\]

\[
\frac{C_{5s}}{mexs_0} = \beta_0^5 + \beta_1^5 \Delta \ln h_s + u_s^5 \tag{5}
\]
Then, the total effect is the sum of each of the component effects.

$$\frac{\Delta \text{mex}_s}{\text{mex}_{s0}} = \sum_j \beta_j^0 + \left( \sum_j \beta_j^1 \right) \Delta \ln h_s + \sum_j u_j$$

$$\frac{\Delta \text{mex}_s}{\text{mex}_{s0}} = \beta_0 + \beta_1 \Delta \ln h_s + u_s,$$

Estimates of each $\beta_j^1$ can be used to determine the housing shock-related reallocation occurring through channel $j$, i.e. $\frac{\beta_j^1}{\beta_1}$.
Then, the total effect is the sum of each of the component effects.

\[
\frac{\Delta mex_s}{mex_{s0}} = \sum_j \beta^j_0 + \left( \sum_j \beta^j_1 \right) \Delta \ln h_s + \sum_j u^j_0
\]

\[
\frac{\Delta mex_s}{mex_{s0}} = \beta_0 + \beta_1 \Delta \ln h_s + u_s,
\]

Estimates of each \( \beta^j_1 \) can be used to determine the housing shock-related reallocation occurring through channel \( j \), i.e. \( \frac{\beta^j_1}{\beta_1} \).
Quantifying Each Channel

- Interstate Mobility (C1), Differential Entry (C2), and Aging in/out of sample (C4) can be estimated using ACS.
- Return migration not directly observable, but evidence suggests it is relatively unimportant.
- Construct a residual for portion not explained by (C1), (C2), and (C4).
Quantifying Each Channel

- Interstate Mobility (C1), Differential Entry (C2), and Aging in/out of sample (C4) can be estimated using ACS.
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- Construct a residual for portion not explained by (C1), (C2), and (C4).
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## Decomposition Results

### Decomposition of State-Level Mexican-Born Population Growth Rates 2005-2009

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chg Log</strong></td>
<td>Proportional</td>
<td>Net Internal</td>
<td>New</td>
<td></td>
<td></td>
<td></td>
<td>Return Migration</td>
</tr>
<tr>
<td><strong>(Mexicans)</strong></td>
<td>Chg Mexicans</td>
<td>Inflows</td>
<td>Immigrants</td>
<td>Net Aging In</td>
<td>Unexplained</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Decrease in Log(Houses Under Construction)</strong></td>
<td>-0.238***</td>
<td>-0.255***</td>
<td>-0.112**</td>
<td>-0.0769**</td>
<td>0.00562</td>
<td>-0.0721</td>
<td>-0.109</td>
</tr>
<tr>
<td></td>
<td>(0.0403)</td>
<td>(0.0458)</td>
<td>(0.0452)</td>
<td>(0.0338)</td>
<td>(0.00641)</td>
<td>(0.0683)</td>
<td>(0.125)</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>0.298***</td>
<td>0.330***</td>
<td>0.129***</td>
<td>0.219***</td>
<td>-0.0183***</td>
<td>0</td>
<td>0.364**</td>
</tr>
<tr>
<td></td>
<td>(0.0455)</td>
<td>(0.0533)</td>
<td>(0.0465)</td>
<td>(0.0358)</td>
<td>(0.00651)</td>
<td>(0.0703)</td>
<td>(0.152)</td>
</tr>
<tr>
<td><strong>Observations (States)</strong></td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td><strong>R-squared</strong></td>
<td>0.252</td>
<td>0.233</td>
<td>0.211</td>
<td>0.075</td>
<td>0.016</td>
<td>0.028</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
Outline

1 Motivation and Central Findings
2 The Housing Collapse and Descriptives
3 Main Results
4 Adjustment Channels
5 Discussion
Conclusions and Policy Implications

Conclusions

- Evidence that Mexican-Born population responded to geographic variation in severe local labor demand shocks.
- Native mobility was unrelated to changes in demand.
- Adjustment occurred primarily through internal mobility and differential immigration rates; no evidence for return migration.

Implications

1. Mobility among immigrants helps ameliorate/diffuse negative labor market consequences of recession.
2. Lack of return migration suggests current "secure border first" immigration policy reduces incentives to leave during economic downturn.
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