Recent Immigration and Economic Outcomes in Rural America

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Motivation: Why are we here?

1. Foreign born share is steadily rising:
   - Peaked in 1890: 14.8%
   - Dropped to 4.7% in 1970
   - Changes in immigration laws in the mid 1960s facilitated non-W. European immigration
   - Rose to 7.9% in 1990—despite tightening regulations in the mid 1980s.
   - Rose to 12.5% in 2006

   - 2007 failed immigration bill, almost derailed McCain.
Motivation--continued

3. Immigration to rural U.S. has been lower.
   - Most likely due to urban chained migration and beachhead effects.
   - Rural immigration is growing, but often ignored
     - In 1990, 9.3% of metro pop. was foreign born
     - In 1990, 1.8% share in nonmetropolitan areas
     - In 2006, these respectively rose to 15.4% & 4.9%.
       - In relative terms, metro share grew by 66% and nonmetro share grew by 172%.
       - Rural growth is perhaps spurred in agri-food industry and new beachhead effects.
Motivation--continued

4. Examine the impact of foreign immigration on rural labor markets (domestic net migration)
   • We focus on recent immigrants—not long-time immigrants
   • Allow for heterogeneous effects by county type.
     • In the rural county-types we consider, 2000-05 immigration rates are greatest in farm and manufacturing dependent counties and slowest in core-rural and remote-rural counties.
Motivation--continued

- We examine whether immigrants create an additional rural agglomeration effect
- Partridge et al. (2008) *Land Economics*
- Immigrants may be more complementary in rural agri-foods and manufacturing.
- In Great Plains this is viewed as an econ dev. policy—though we caution that attracting immigrants may prove as hard as domestic migrants.
How Does Immigration Affect Local Labor Markets?

- National effects may differ from local effects: 10% increase in immigration reduces low-skilled wages 3-4% Borjas (2003, 2005)

- Local studies find very little impact
  - Card (1990) Mariel Boatlift on Miami
  - Hunt (1992) and Algerian migration to France
  - Borjas et al. (1996) find greater effects when considering larger geographical regions
    - Immigrant effect declines when going from census regions, to states, to metropolitan areas
How Does Immigration Affect Local Labor Markets? (cont)

- Local effects are more defused.
  - Immigrants may be attracted to expanding local economies, causing positive bias
  - Immigrants may increase local demand.
  - Immigrants may alter local industry composition:
    - E.g., more food processors
  - Immigrants may not generally be a substitute for domestic labor. As complements, they may increase domestic labor demand (Peri, 2007)
How Does Immigration Affect Local Labor Markets?

- Key factor is offsetting domestic migration (Borjas, 2003, 2005)
  - If immigrants and domestic labor are perfect substitutes and there is perfect mobility:
    - an increase in supply of international immigrants reduces local wages
    - domestic labor supply out-migrates until wages are restored to regional equilibrium
    - We consider past immigrants ‘domestic’ after 5 years
      - Population not a good measure due to faster natural population growth among immigrants (they are younger and have more children) (El Nasser, 2008)

Rural=nonmetropolitan in this discussion.

Labor supply increases from S0 to S1 due to immigration. To the extent that S2 shifts in from domestic out-migration, there are small ex post wage and employment effects.
Model—Follows Borjas

• Labor Demand:
  - \( w_{it} = X_{it}L_{it}^{\eta} \), \( L_{it} = M_{it} + N_{it}, \eta < 0 \),
  - \( w \) is the average wage in location \( i \)
  - \( L \) is total labor composed of domestic \( N \) and immigrant \( M \)
  - \( X \) is demand shifter & \( \eta \) is elasticity of labor demand

• Net domestic migration at location \( i \)
  - \( \Delta N_{it}/N_{it-1} = \nu_{it} = \sigma(w_{it-1} - w^*_{t-1}) \)
  - national equilibrium wage = \( w^*_{t-1} \)
  - \( \sigma \) is the labor supply elasticity
  - Migration responds with a lag
Model—cont.

• Because of changes in housing prices, wages should be interpreted as real prices.
  – Saiz (2007) finds that a 1% increase in the share of the population that are immigrants increases metropolitan housing prices 1%. 
Empirical Implementation

• Change in labor market outcome in $i$ over the 2000-05 period (net domestic migration):
  \[ Y_{i,00-05} = \alpha + \gamma X_i + \beta \text{Immigrant}_{i,00-05} + \delta_s + \varepsilon_i. \]

• $X$ is control variables described below,

• Immigrant$_{i,00-05}$ is the % of 2000 population that are new immigrants over the 2000-05 pd.

• $\delta_s$ is state fixed effect

• Other dependent variables include:
  1. $\Delta$Emp.Rate ‘00-’05; 2. $\%\Delta$Wages, ‘00-’05; 3. $\%\Delta$Housing Rent ‘00-‘05
Empirical Implementation

• Samples:
  1. nonmetropolitan,
  2. core rural,
  3. remote rural > 100km from MA (lower labor supply elasticity, Partridge & Rickman, 2000)
  4. Farm dependent—immigrants may be complementary
  5. Manufacturing dependent—immigrants may be complementary
  6. Persistent Poverty—lower elasticity but immigrants may increase agglomeration.
Shows the diversity of international immigration across rural America.
Empirical Implementation

• When applicable, variables measured in 1990 to be predetermined.

• The control variables include:
  – 4 distance variables for various sized MSAs
  – 1990 employ. shares in agric., manu., and mining
  – 1990 educational attainment shares
  – To control for potential labor mkt disequilibrium, the 1990 population level or 1990 total employment or 1990 per capita income or 1990 fair market rent.
## Empirical Implementation

- 2000-05 immigrant rate could be endogenous

- We tried many instruments including distances to the Mexican border, Miami, San Francisco, Chicago, New York. But they were unsatisfactory (weak).

- Settled on the following ‘predetermined’ instruments:
  - 1980 population shares which were foreign born & 1970 population share that was foreign born + parentage that was foreign born.
    - Long history of using lags of immigrants shares because of chained migration and beachhead effects (Card, 2000; Saiz 2007)
  - 1970 median housing costs
    - Instruments ‘strong’ in the first-stage Wald test
    - They almost always pass a Sargan over-id test
<table>
<thead>
<tr>
<th>Sub-samples and regression diagnostics</th>
<th>Net Internal Mig./Pop</th>
<th>$\Delta$Emp. Rate '00-'05</th>
<th>%ΔWages '00-'05</th>
<th>%ΔHousing Rent '00-'05</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nonmetro, (N=1972)</strong></td>
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</tr>
<tr>
<td>Immigration-OLS</td>
<td>$\beta=-0.76 (6.74)$</td>
<td>$\beta=-0.01 (6.21)$</td>
<td>$\beta=-0.24 (1.35)$</td>
<td>$\beta=0.58 (2.28)$</td>
</tr>
<tr>
<td>Immigration-IV</td>
<td>$\beta=2.29 (6.03)$</td>
<td>$\beta=0.001 (0.50)$</td>
<td>$\beta=0.59 (1.01)$</td>
<td>$\beta=2.09 (2.55)$</td>
</tr>
<tr>
<td>Distance F-stat-IV</td>
<td>132.3***</td>
<td>3.54</td>
<td>3.52</td>
<td>70.24***</td>
</tr>
<tr>
<td>Weak Inst. Wald F</td>
<td>66.10a</td>
<td>63.67a</td>
<td>63.78a</td>
<td>68.81a</td>
</tr>
<tr>
<td>Sargan Over</td>
<td>0.01</td>
<td>7.81**</td>
<td>3.38</td>
<td>1.70</td>
</tr>
<tr>
<td>R²</td>
<td>0.37</td>
<td>0.29</td>
<td>0.22</td>
<td>0.32</td>
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<tr>
<td><strong>Core Rural (N=1290)</strong></td>
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</tr>
<tr>
<td>Immigration-OLS</td>
<td>$\beta=-0.54 (3.38)$</td>
<td>$\beta=-0.004 (3.13)$</td>
<td>$\beta=0.26 (0.91)$</td>
<td>$\beta=0.51 (1.35)$</td>
</tr>
<tr>
<td>Immigration-IV</td>
<td>$\beta=2.68 (5.91)$</td>
<td>$\beta=0.004 (1.06)$</td>
<td>$\beta=0.98 (1.25)$</td>
<td>$\beta=1.88 (1.91)$</td>
</tr>
<tr>
<td>Distance F-stat-IV</td>
<td>93.49***</td>
<td>0.99</td>
<td>7.85a</td>
<td>55.74**</td>
</tr>
<tr>
<td>Weak Inst. Wald F</td>
<td>65.67a</td>
<td>62.81a</td>
<td>61.02a</td>
<td>67.65a</td>
</tr>
<tr>
<td>Sargan Over</td>
<td>0.71</td>
<td>4.39</td>
<td>2.97</td>
<td>1.42</td>
</tr>
<tr>
<td>R²</td>
<td>0.40</td>
<td>0.29</td>
<td>0.21</td>
<td>0.38</td>
</tr>
</tbody>
</table>

Notes: absolute value of t-statistics are in parentheses; ***, **, *, denote significant at the .01, .05 and .10 levels; a indicates exceeds Stock and Yogo (2005) critical values for bias reduction to no more than 5% of the OLS estimates and exceeds the critical value for 10% maximal IV size distortion, while, b indicates the same for bias reduction but only exceeding the critical value for 15% maximal IV size distortion.
### Empirical Results of Labor Market Outcomes Due to Immigration—cont.

<table>
<thead>
<tr>
<th>Sub-samples and regression diagnostics</th>
<th>Net Internal Mig./Pop</th>
<th>ΔEmp.Rate ’00–’05</th>
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<th>%ΔHousing Rent ’00–’05</th>
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<tr>
<td><strong>Rural &gt; 100km (N=499)</strong></td>
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</tr>
<tr>
<td>Immigration-OLS</td>
<td>$\beta = 0.92$ (3.73)</td>
<td>$\beta = 0.01$ (2.53)</td>
<td>$\beta = 0.03$ (2.53)</td>
<td>$\beta = 0.52$ (0.95)</td>
</tr>
<tr>
<td>Immigration-IV</td>
<td>$\beta = -3.68$ (5.50)</td>
<td>$\beta = 0.002$ (0.46)</td>
<td>$\beta = -0.08$ (0.46)</td>
<td>$\beta = -1.63$ (1.27)</td>
</tr>
<tr>
<td>Distance F-stat-IV</td>
<td>15.73***</td>
<td>7.00</td>
<td>7.92*</td>
<td>6.29</td>
</tr>
<tr>
<td>Weak Inst. Wald F</td>
<td>27.84a</td>
<td>26.83a</td>
<td>24.81a</td>
<td>29.01a</td>
</tr>
<tr>
<td>Sargan Over</td>
<td>0.07</td>
<td>2.17</td>
<td>1.52</td>
<td>1.53</td>
</tr>
<tr>
<td>R²</td>
<td>0.32</td>
<td>0.39</td>
<td>0.23</td>
<td>0.48</td>
</tr>
<tr>
<td><strong>Farm (N=415)</strong></td>
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</tr>
<tr>
<td>Immigration-OLS</td>
<td>$\beta = 0.75$ (3.64)</td>
<td>$\beta = 0.01$ (3.40)</td>
<td>$\beta = 0.19$ (0.56)</td>
<td>$\beta = 0.03$ (0.08)</td>
</tr>
<tr>
<td>Immigration-IV</td>
<td>$\beta = -2.11$ (3.79)</td>
<td>$\beta = 0.005$ (1.16)</td>
<td>$\beta = -0.79$ (0.83)</td>
<td>$\beta = -1.55$ (1.49)</td>
</tr>
<tr>
<td>Distance F-stat-IV</td>
<td>23.38***</td>
<td>0.83</td>
<td>1.80</td>
<td>15.91***</td>
</tr>
<tr>
<td>Weak Inst. Wald F</td>
<td>19.58b</td>
<td>19.19b</td>
<td>16.79b</td>
<td>20.35b</td>
</tr>
<tr>
<td>Sargan Over</td>
<td>1.35</td>
<td>3.66</td>
<td>3.54</td>
<td>0.05</td>
</tr>
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<td>R²</td>
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Remote rural has a larger net out migration—consistent with fewer commuting opportunities—consistent with a bigger decline in home prices

Yet, farm dependent has a smaller net migration response, consistent with a more complementarities between immigrant and domestic labor in farm counties
### Empirical Results of Labor Market Outcomes Due to Immigration—cont.

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<td><strong>Manufacturing (N=892)</strong></td>
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<tr>
<td>Immigration-OLS</td>
<td>β=0.52 (2.77)</td>
<td>β=0.001 (0.80)</td>
<td>β=0.24 (0.90)</td>
<td>β=0.97 (2.36)</td>
</tr>
<tr>
<td>Immigration-IV</td>
<td>β=1.09 (1.68)</td>
<td>β=0.01 (2.17)</td>
<td>β=0.01 (0.02)</td>
<td>β=0.63 (0.48)</td>
</tr>
<tr>
<td>Distance F-stat-IV</td>
<td>89.99***</td>
<td>16.83***</td>
<td>5.17</td>
<td>44.55***</td>
</tr>
<tr>
<td>Weak Inst. Wald F</td>
<td>23.89*</td>
<td>21.44b</td>
<td>26.30b</td>
<td>27.62a</td>
</tr>
<tr>
<td>Sargan Over</td>
<td>4.73*</td>
<td>5.16*</td>
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<td>5.80*</td>
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<tr>
<td>R²</td>
<td>0.37</td>
<td>0.31</td>
<td>0.19</td>
<td>0.27</td>
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<td><strong>Persistent Poverty (N=373)</strong></td>
<td></td>
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<tr>
<td>Immigration-OLS</td>
<td>β=0.36 (1.48)</td>
<td>β=0.000 (0.01)</td>
<td>β=0.21 (0.48)</td>
<td>β=0.54 (0.82)</td>
</tr>
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<td>Immigration-IV</td>
<td>β=0.93 (1.90)</td>
<td>β=0.002 (0.60)</td>
<td>β=1.23 (1.47)</td>
<td>β=3.02 (2.35)</td>
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<td>Distance F-stat-IV</td>
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<td>8.19***</td>
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Manufacturing dependent has an even smaller net migration response, consistent with a more complementarities between immigrant and domestic labor in farm counties. Yet, the decline in the employment rate suggests that there is labor queuing, whereas home prices are barely affected (less out-migration).

Immigration seems to help persistent poverty with less out migration, little change in emp/rate/wages and real housing costs fall. Though this is surprising, it suggests that immigrants may complement the poor in these areas. Also, immigrants may be more entrepreneurial in these regions.
Conclusions

- We incorporate IV to estimate immigration’s effect on rural America.
  - OLS appears to be biased.
- Immigration has heterogeneous effects.
- The general story is that there is offsetting migration of domestic residents, which blunts any impacts on wages and employment rates.
  - Population seems to increase due to demographic composition changes.
- Housing costs do seem to fall, but this is apparently a composition effect.
Conclusions—continued

| • Remote rural has the largest domestic resident out-migration response. |
| • Immigrants appear to complement the rural labor force in farm and manufacturing dependent counties. |
|   – Employment rate appears to be negatively associated with immigration in many counties. |
| • Immigration appears to attract domestic migration in persistent poverty counties. |
Conclusions—continued

• We see why immigration has such diverse public support given these findings.

• Farm and manufacturing dependent counties may draw upon immigration for rural ‘rejuvenation’. Of course, this is a subset of rural counties and immigrants do not naturally flow to many of these regions.
Thank you

Paper is posted at The Ohio State University, AED Economics, Swank Program website:
http://aede.osu.edu/programs/Swank/

(under presentations)