Place-Based Economic Development: The Case of Intel

Yao Wang
Assistant Professor, AEDE OSU
## Big Push from Intel

<table>
<thead>
<tr>
<th>3K</th>
<th>$20B</th>
<th>2</th>
</tr>
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<tbody>
<tr>
<td>new hi-tech Intel jobs</td>
<td>capital investment</td>
<td>new leading-technology semiconductor fabs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1st</th>
<th>7,000</th>
<th>10s</th>
</tr>
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<tbody>
<tr>
<td>leading-edge semiconductor chip manufacturing facility in Ohio</td>
<td>construction jobs over the course of the build.</td>
<td>of thousands of indirect and support jobs like contractors, suppliers, and consultants in addition to employee and construction jobs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>169</th>
<th>926</th>
</tr>
</thead>
<tbody>
<tr>
<td>existing Ohio businesses already supply Intel and will benefit. Many more will be required to enable and optimize production.</td>
<td>acre site in Licking County.</td>
</tr>
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</table>

Source: JobsOhio
The Ohio Department of Transportation has announced $90 M for infrastructure investments.

$66 M will fund projects on local roadways in Delaware, Franklin, and Licking Counties.
Attract Suppliers

Intel suppliers and supporting companies have started announcing plans to join Intel in New Albany and in the wider region.

The Ohio Department of Development has created the Silicon Heartland Supplier Consortium to help current and prospective Ohio suppliers compete for new federal grant funding for semiconductor materials and manufacturing equipment through the CHIPS Act.

Source: JobsOhio
Place-based Policies: Rational

- PBP: government efforts to enhance the economic performance of an area
- Create business opportunities and attract firms
- Create job opportunities
- **Agglomeration:** locations that are denser in jobs and people are more efficient and productive
  - Knowledge Spillover: learning shared among people
  - Better matches between workers and firms
  - More Tax Revenue and better infrastructure
- Distributional arguments
Place-based Policies: Caveat

❖ Create business opportunities and attract firms  ➢ Would firms follow?
❖ Create job opportunities  ➢ Who gets the job?
❖ Agglomeration: big push to the local economy  ➢ Congestion
  ➢ Technology innovation  ➢ Higher land price?
  ➢ Education and training  ➢ Higher housing price?
  ➢ More Tax Revenue and better infrastructure  ➢ More traffic?

➢ Also, firms and workers relocating to one area may reduce agglomeration economies in the areas from which they move.
Mixed Evidence on the Effectiveness of PBP

• Successful Examples
  
  • Million Dollar Plants
    • increase incumbent firm productivity by 12.5% over 5 years (Greenstone et al., 2010)
  
  • Empowerment Zone
    • substantially increased employment and real wages for local workers (Busso et al., 2013)
  
  • Tennessee Valley Authority
    • leads to large gains in manufacturing employment (sustainable) and agricultural employment (not sustainable) (Kline and Moretti, 2014)

• Less Effective Examples
  
  • California’s Enterprise Zone program
    • does not increase employment or shift employment toward lower-wage workers (Neumark and Kolko, 2010).
  
  • Opportunity Zones
    • generate no private investment response that has spread beyond multi-family housing (Feldman and Corinth, 2023)
Would Intel’s Entry be a Big Success?

- Would firms follow?
- Agglomeration forces?
- Who will benefit?
  - Local residents or migrants?
  - Homeowners or renters?
  - Skills and sectors?
How do firms choose location?

- Supplier
- Markets
- Infrastructure
- Land
- Labor
- Education
- Policies
## Why Ohio?

<table>
<thead>
<tr>
<th>Friendly business climate:</th>
<th>• Ohio has a 0% state tax on corporate income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled workforce:</td>
<td>• Many education institutes</td>
</tr>
<tr>
<td>Cheap Land with abundant water</td>
<td>• Over 1,000 acres, with the expansion capability to double</td>
</tr>
</tbody>
</table>
| Downstream industries: Automobiles, aviation and defense | • GM, Ford, and Honda located proximately to Columbus  
• The Wright-Patterson Air Force Base in nearby Dayton. |
| Low risks of natural disasters | • One of the lowest hazard risk areas in the U.S. with lower occurrences of natural hazards such as tornadoes, hurricanes, and earthquakes |

Source: [Capital Frontier](http://www.capitalfrontier.com)
Would the big push be sustainable?

• Potential for positive spillovers:
  • **Knowledge Spillover:** $50 million for Ohio semiconductor manufacturing education and research programs.
  • **Attract suppliers:** New Albany International Business Park

However,

• **Less market access or proximity to major tech hubs:** semiconductor chips require a complicated process of production, testing, packaging, and the like, and even for Intel, several of the steps will continue to occur in Asia. ([Capital Frontier](#))
Some positive spillovers can be very localized, especially for knowledge spillover
(Rosenthal and Strange, 2020)

Source: Dun & Bradstreet establishment data; US Census Tiger/Line Shapefiles.
Path dependence: is the push big enough?

- Historical portage sites in the US still remain their relative importance when they lost their relative natural advantages (Bleakly and Lin, 2010)

- **Lock-in effects**: certain choices become "locked in" due to momentum, network effects, or established norms.
  - can make it difficult to change course or adopt alternative paths, even if they seem more efficient or beneficial.
Would firm follow?

• Ohio offers numerous advantages beyond Intel's interests.
• Intel’s entry can potentially create significant agglomeration effects, attracting more businesses.
• However, these agglomeration benefits vary based on spatial scale.
• Does Intel's entry provide sufficient momentum for sustained long-term development?
How do people make location choices?

- WAGE
- PRICE
- HOUSING
- SCHOOL
- PARKS

+ Migration Costs
• Ohio's population grew by 1.3% (compared to US: 6.3%)
  • 203,832 more births than deaths in Ohio
  • Negative net migration of 46,936

Source: Brown, 2022
POPULATION PYRAMID

• A "constrictive" pyramid

Source: 2013–2017 American Community Survey (ACS) Five-Year Estimates, Table B01001
Migrants: where are they coming from?

Table 2 *Ohio Domestic Migration Exchanges, 2019*

<table>
<thead>
<tr>
<th>Top 5 “Sending to” States</th>
<th># Sent</th>
<th>Top 5 “Receiving from” States</th>
<th># Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Florida</td>
<td>30,355</td>
<td>1. Kentucky</td>
<td>17,884</td>
</tr>
<tr>
<td>2. Kentucky</td>
<td>13,309</td>
<td>2. Pennsylvania</td>
<td>16,792</td>
</tr>
<tr>
<td>5. Indiana</td>
<td>12,038</td>
<td>5. Texas</td>
<td>13,564</td>
</tr>
</tbody>
</table>


• Immigrants: 16,467 permanent residents from other countries.
  • 44% Asian; 30% African; 16% North/South American; 9% from Europe
  • The most common sending countries were India (1,302 immigrants) and the Philippines (1,298 immigrants).

Source: Brown, 2022
Brain Drain? Are we losing college-educated young adults?

The vast majority (85%, or approximately 62,000 in 2020) of Ohio high school seniors who attend college remain in the state.

• The number of college in-migrants has nearly doubled between 2004 and 2020
  • Since 2010, the number of college in-migrants has been greater than the number of college out-migrants.

Table 3 Educational Attainment of Individuals Aged 25-34

<table>
<thead>
<tr>
<th>Educational Attainment</th>
<th>Ohio Out-Migrants</th>
<th>Ohio Residents (Excludes Ohio In-Migrants)</th>
<th>Ohio In-Migrants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>High School or less</td>
<td>8,302</td>
<td>17.7</td>
<td>526,810</td>
</tr>
<tr>
<td>Some College</td>
<td>11,910</td>
<td>25.5</td>
<td>458,482</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>17,249</td>
<td>36.9</td>
<td>348,595</td>
</tr>
<tr>
<td>Graduate Degree</td>
<td>9,331</td>
<td>19.9</td>
<td>145,886</td>
</tr>
<tr>
<td>Total</td>
<td>46,792</td>
<td>100.0</td>
<td>1,479,773</td>
</tr>
</tbody>
</table>

Source: American Community Survey 1-year estimates, 2019

Figure 4. Migration of College Freshman, 2004-2020

Source: Integrated Postsecondary Education Data System (IPEDS) National Center for Education Statistics
Migration, 2010-2019

Most counties (68 out of 88) experienced negative net migration during this period.

- Cuyahoga (-54,207), Lucas (-24,131), and Hamilton (-12,456) experienced the greatest losses.
- Franklin (65,394), Delaware (24,800), and Warren (15,075) experienced the greatest gains.

Source: Brown, 2022
Amenities in Central Ohio

Source: MORPC
Proposed Development by 2019

Source: MORPC
Chandler, Arizona

Chandler today has close to 300,000 residents, a tenfold increase since 1980.
The median home price ($125,767) has risen since 2011, and by the end of 2018, it was more than twice the median household income ($54,077), making homeownership unaffordable to many prospective homebuyers. 

Source: Real Estate Analytics Suite, CoreLogic
Since 2010, Ohio added only 89,897 housing units, a net increase of 1.8%.

Ohio's housing stock is relatively old.
- Half of Ohio's housing units were built before 1965.
- Nearly one in four housing units in Ohio were built before 1940, including 30% of the state's vacant housing.

Source: Population and Housing Unit Estimates. U.S. Census Bureau
Both homeowner and rental vacancy rates—1.7% and 5.8%, respectively—are at or near their lowest levels on record, indicating a very tight housing market.

Source: Housing Vacancy Survey, U.S. Census Bureau
Who will benefit?

• Benefits are expected to be shared by both Ohio's residents and newcomers.

• However, these opportunities may not be equally available to all.
  • Qian and Tan (2021) estimate the distributional effects of high-skilled firm entry in the US.
    • High-skilled workers > Low-skilled workers.
    • Homeowners > Renters

• The surge in demand, without sufficient housing supply, could negatively impact renters and vulnerable households.

• There's a need for a more efficient allocation of resources across sectors.
  • What are the impacts on other sectors (e.g., agriculture)?
    • Increasing demand and expanding market (higher income and more migrants)
    • Sharing infrastructure and knowledge spillover
    • Competition on limited resources: land, water, and labor
Some Other Caveats

• The time dimension
• Natural disaster risks and national security
• Environmental implications: water and energy
  • CURA OSU (Center of Urban and Regional Analysis) has done a fantastic panel discussion
• Public spending
  • These resources can be potentially spent on other areas
  • Is it worth it? Cost-benefit analysis
THANK YOU!

EMAIL: wang.16488@osu.edu