Binational Industry Concentrations
Lower Río Grande Valley-Tamaulipas

Christopher Wilson and Alma Bezares
Cluster Based Economic Development:
A Pro-Competition and Data Driven Way to Focus Economic Development Resources

Note: relies heavily on concepts developed by Michael Porter and Christian Ketels
Competing Trends

- Globalization: stretching supply chains out across the world
- Agglomeration: Clustering industries in a small geographic area
- Regionalization/Reshoring/Nearshoring: Somewhere in between. Not quite clusters but a countercurrent to full blown globalization.
Why Do Businesses Cluster?

• Access to Inputs: Suppliers build specialized supply chains to feed inputs to the industry. Specialized workforce develops in the area.

• To take advantage of (and drive the construction of) shared resources--scientific, physical infrastructure, informational infrastructure, natural resources, regulatory environment, etc.

• To meet a large or specialized local or regional demand.

• To capitalize on existing complimentary industries (i.e. wine-tourism-food nexus)
Role of Innovation

• Innovation drives productivity, which drives competitiveness.
• Healthy clusters have significant innovation benefits.
• The move away from a closed, in-house lab, model to an open innovation model inherent in global value chains (OEM works with suppliers and outside experts to innovate) ironically strengthens importance of geographically clustered networks.
Where do Cluster-Based Strategies Fit into Overall Economic Development?

**Anti-Competition "Industrial" Policy**

Definitions and policies vary, but at its worst, can be:

- Firm Specific
- Weakens Competition and thus incentives to improve
- Politically driven
- Inconsistent across administrations

Examples: Subsidies, Tariff Barriers, Negotiated tax incentives

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**Cluster-Based Strategies**

- Data reveals existing industrial clusters with roots (not politically driven)
- Industry/Cluster specific
- Pro-competition (seeks diversity and numerous firms competing within sector)

Examples: Specialized Education Programs, Industry Worker Training Programs, Specialized Infrastructure (port, pre-inspection), Business-Regulator Dialogue, Joint Marketing

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**Macro and Overall Business Environment Improvements (Cross-Cluster Strategies)**

- Subregion, Region or Nation specific
- Pro-competition (robust business environment fosters competitive environment)

Examples: General Education, Responsible Fiscal and Monetary Policy, Trade Liberalization, Cutting Red-Tape, Simple Tax Code, General Infrastructure (overall highway network, broadband, etc.), Broad tax incentives
Supporting Cluster Development and Competitiveness

**Principles:**

- focus on improving productivity, not growing the size of the cluster
- Data-driven whenever possible
- Integrate cluster-based efforts with broader economic competitiveness enhancing efforts—complement and interact with, not replace other efforts
- Not creating clusters—facilitating their development
- Collaborative Government-Private Sector process. Also involving independent institutions, such as universities, is even better (Will be needed to support research and workforce development).
- In the border region, federal government may need to play a larger role given border management and other international issues. This is a good way to engage government as a partner.
Examples of Cluster-Enhancing Strategies

- Corporate Philanthropy to improve the business/social environment
- Trade Associations sharing costs (training facilities, some infrastructure investments, etc.)
- Courses for managers on regulatory affairs and best practices in the industry
- Create Industry-Based Groups/Trade Associations
- Create testing and standards infrastructure and organizations
- Government-Business dialogue on regulation of industry
- Businesses and trade groups work with local universities and technical schools to develop curricula
- Create university research centers and jointly fund research
- Support development of supplying industries and customer industries, strengthening the cluster-linkages across industries
- Joint marketing by trade associations
- Joint procurement
- Supporting focused scholarships to strengthen workforce and research/design/innovation capacity of the region
Industry-Based Groups facilitate the flow of information and the definition of cluster-based strategies

- Industry Associations (company groups)
- Professional Associations (groups of individuals)
- Incubators, Accelerators, entrepreneurial networks
Cluster vs. Industry

- Clusters: Groups of firms and entities that are *linked* and *geographically proximate*
- We are identifying key industries, but we advocate the construction of strategies to support the clusters they are embedded in--upstream and downstream industries, educational institutions, etc.
Willingness to Upgrade

• With our methodology, we aim to identify binational, concentrated and dynamic industries as candidates to prioritize in economic development efforts
• Additionally, cluster-based prioritizations should take into account willingness to upgrade (Ketels, 2003)
# Some Basic Numbers

<table>
<thead>
<tr>
<th>Tamaulipas</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP: $400,892 Million pesos ~ $31,541 million USD (2012)</td>
<td>GDP: $1,414 billion USD</td>
</tr>
<tr>
<td>Average wage: $281.2 pesos/day ~$22.12 USD/day (2015)</td>
<td>Average wage:$988 USD/week</td>
</tr>
<tr>
<td>Unemployment rate: 4.8% (April 2015)</td>
<td>Unemployment rate: 2.2% (April 2015)</td>
</tr>
</tbody>
</table>
Lower Río Grande Valley-Tamaulipas Region

• Definition
  – Tamaulipas: Camargo, Gustavo Díaz Ordaz, Matamoros, Mier, Miguel Alemán, Reynosa, Río Bravo;
  – Texas: Cameron, Hidalgo, Starr

• Total population:
  • Mostly concentrated in Matamoros, Reynosa, Hidalgo and Cameron
### Border Crossing/Entry Query Results at Port Level (Yearly)

<table>
<thead>
<tr>
<th>Port Name</th>
<th>Year</th>
<th>Trucks</th>
<th>Buses</th>
<th>Bus Passengers</th>
<th>Personal Vehicles</th>
<th>Personal Vehicle Passengers</th>
<th>Pedestrians</th>
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<tbody>
<tr>
<td>TX: Brownsville</td>
<td>2009</td>
<td>189588</td>
<td>8421</td>
<td>47663</td>
<td>5512863</td>
<td>11156688</td>
<td>2546720</td>
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<td>2014</td>
<td>209989</td>
<td>7625</td>
<td>53493</td>
<td>4325554</td>
<td>8527359</td>
<td>2232400</td>
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<td>% change</td>
<td></td>
<td>10.76%</td>
<td>-9.45%</td>
<td>12.23%</td>
<td>-21.54%</td>
<td>-23.57%</td>
<td>-12.34%</td>
</tr>
<tr>
<td>TX: Hidalgo</td>
<td>2009</td>
<td>419426</td>
<td>28407</td>
<td>300778</td>
<td>6177838</td>
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<tr>
<td></td>
<td>2014</td>
<td>530093</td>
<td>26087</td>
<td>349417</td>
<td>4565037</td>
<td>9252030</td>
<td>2290469</td>
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<tr>
<td>% change</td>
<td></td>
<td>26.39%</td>
<td>-8.17%</td>
<td>16.17%</td>
<td>-26.11%</td>
<td>-23.37%</td>
<td>1.47%</td>
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<tr>
<td>TX: Progreso</td>
<td>2009</td>
<td>45980</td>
<td>65</td>
<td>2303</td>
<td>790921</td>
<td>1749007</td>
<td>1098611</td>
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<tr>
<td></td>
<td>2014</td>
<td>41416</td>
<td></td>
<td></td>
<td>1174447</td>
<td>2683861</td>
<td>760655</td>
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<td>% change</td>
<td></td>
<td>-9.93%</td>
<td></td>
<td></td>
<td>48.49%</td>
<td>53.45%</td>
<td>-30.76%</td>
</tr>
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<td>TX: Rio Grande City</td>
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<td>26597</td>
<td></td>
<td></td>
<td>562199</td>
<td>1781024</td>
<td>46603</td>
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<td></td>
<td>2014</td>
<td>32459</td>
<td></td>
<td></td>
<td>359642</td>
<td>748772</td>
<td>60193</td>
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<tr>
<td>% change</td>
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<td>22.04%</td>
<td></td>
<td></td>
<td>-36.03%</td>
<td>-57.96%</td>
<td>29.16%</td>
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<tr>
<td>TX: Roma</td>
<td>2009</td>
<td>6905</td>
<td>803</td>
<td>19479</td>
<td>974264</td>
<td>1789022</td>
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<tr>
<td></td>
<td>2014</td>
<td>7556</td>
<td>429</td>
<td>9647</td>
<td>703473</td>
<td>1367898</td>
<td>247768</td>
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<tr>
<td>% change</td>
<td></td>
<td>9.43%</td>
<td>-46.58%</td>
<td>-50.47%</td>
<td>-27.79%</td>
<td>-23.54%</td>
<td>-14.25%</td>
</tr>
</tbody>
</table>

*Source: Bureau of Transportation Statistics*
Industry Mapping

• **Objective:** The idea behind this study is that the industries along the U.S.-Mexico border cannot be delimited to the national arena as they interact with industries across the border and jointly develop.

• 5 subregions:
  • Cali-Baja
  • Arizona-Sonora
  • Paso del Norte
  • Coahuila-NL-Tamaulipas-Texas
  • Lower Rio Grande Valley

• The study intends to identify the **concentration** of the industries in the regions, analyze how **dynamic** are these industries across the time and verify if they are indeed **binational**.
Measuring Industrial Concentration

• What are the most important industries, in terms of employment, for the subregion of the Lower Rio Grande Valley?

**Location Quotient**

\[ L_Q = \left( \frac{E_{ij}}{E_j} \right) \left( \frac{E_{i\text{nat}}}{E_{\text{nat}}} \right) \]

A ratio equal to one means that the industry in that region has the same share of employment relative to the binational share. A ratio greater than one indicates that the local economy has a greater share of that industry than the reference economy.

– Important to promote regional competitiveness in industries that generate high levels of employment.
Methodology

• Analysis of industries by using the North American Industry Classification System (NAICS) → 4-digit codes identifying industry groups.

• Binational study at the county/municipio level: Sources: US Census Bureau and INEGI (2009)

• Assumption: similar industries in both sides of the border have the same needs in terms of human resources.
TAMAULIPAS
Camargo, Gustavo Díaz Ordaz, Matamoros, Mier, Miguel Alemán, Reynosa, Río Bravo
Main Results

- 100 industries with LQ greater than 3
- 116 industries with LQ between 1.5 and 3
- 117 industries with LQ between 1 and 1.5
- These 333 industries concentrate almost 221 thousand jobs.
  - The municipio of Matamoros has 55 industries with LQ greater than 1 that employ more than 72 thousand people.
  - Meanwhile, has 53 industries with high industrial concentration which generate more than 127,000 jobs.
Matamoros- Most Concentrated Industries

- Glass and Glass Product Manufacturing
- Retail trade of used goods
- Motor Vehicle Parts Manufacturing
- Agriculture, Construction, and Mining Machinery Manufacturing
- Navigational, Measuring, Electromedical, and Control Instruments Manufacturing
- Electric Lighting Equipment Manufacturing
- Communications Equipment Manufacturing
- Rubber Product Manufacturing
- Audio and Video Equipment Manufacturing
- Other Electrical Equipment and Component Manufacturing
Matamoros- Employment in Most Concentrated Industries

Matamoros
Reynosa- Most Concentrated Industries

- RV Parks and Recreational Camps
- Other Fabricated Metal Product Manufacturing
- Commercial and Service Industry Machinery Manufacturing
- Electrical Equipment Manufacturing
- Other General Purpose Machinery Manufacturing
- Other Furniture Related Product Manufacturing
- Audio and Video Equipment Manufacturing
- Computer and Peripheral Equipment Manufacturing
- Communications Equipment Manufacturing
- Ship and Boat Building
Reynosa- Employment in Most Concentrated Industries
Other Results

• **Motor Vehicle Parts Manufacturing** is the largest employer industry in the region, as it generates more than 31,800 jobs.

• **Retail Trade of Groceries and Food** and **Automotive Repair and Maintenance** are also large employers in the municipios of Tamaulipas that are included in the region.
Main Results

- 33 industries with a higher level of concentration than 3
- 76 industries with LQ between 1.5 and 3
- 93 industries with a level of concentration between 1 and 1.5
- These 202 industries employ more than 202 thousand people
  - Cameron encompasses 79 industries with LQ higher than 1 that employ more than 69 thousand people
  - Hidalgo has 81 industries that generate more than 125,000 jobs
Cameron County- Most Concentrated Industries

<table>
<thead>
<tr>
<th>Industry</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seafood Product Preparation and Packaging</td>
<td>20</td>
</tr>
<tr>
<td>Interurban and Rural Bus Transportation</td>
<td>15</td>
</tr>
<tr>
<td>Individual and Family Services</td>
<td>7</td>
</tr>
<tr>
<td>Sugar and Confectionery Product Manufacturing</td>
<td>6</td>
</tr>
<tr>
<td>Home Health Care Services</td>
<td>5</td>
</tr>
<tr>
<td>Electrical Equipment Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>Business Support Services</td>
<td>4</td>
</tr>
<tr>
<td>Support Activities for Water Transportation</td>
<td>3</td>
</tr>
<tr>
<td>Miscellaneous Durable Goods Merchant Wholesalers</td>
<td>3</td>
</tr>
</tbody>
</table>
Cameron County- Employment in Most Concentrated Industries

Cameron County

Seafood Product Preparation and Packaging
Interurban and Rural Bus Transportation
Home Health Care Services
Sugar and Confectionery Product Manufacturing
Individual and Family Services
Electrical Equipment Manufacturing
Scenic and Sightseeing Transportation, Water
Business Support Services
Support Activities for Water Transportation
Miscellaneous Durable Goods Merchant Wholesalers
Hidalgo County- Most Concentrated Industries

- Home Health Care Services
- Footwear Manufacturing
- Individual and Family Services
- Support Activities for Crop Production
- Interurban and Rural Bus Transportation
- Gasoline Stations
- Freight Transportation Arrangement
- Shoe Stores
- Business Support Services
- Urban Transit Systems
Hidalgo County- Employment in Most Concentrated Industries
Other Results

• The **General Medical and Surgical Hospitals** industry is one of the most important employers in the Texas counties that compose this region.

• Sectors linked with the commercial sector, such as **automobile dealers, tire stores** and **furniture stores** are highly concentrated in these counties and are relevant employers in the region.
LOWER RIO GRANDE VALLEY-TAMAULIPAS REGION
Main Results

• 27 industries with LQ higher than 3
• 42 industries with industrial concentration between 1.5 and 3
• 42 industries with LQ between 1 and 1.5
• In total, these industries generate more than 402 thousand jobs.
  – This represents 65.23% of total employment in the Lower Rio Grande Valley region.
Lower Río Grande Valley Region- Most Concentrated Industries

- Oil and Gas Extraction
- Semiconductor and Other Electronic Component Manufacturing
- Other Furniture Related Product Manufacturing
- Motor Vehicle Parts Manufacturing
- Household Appliance Manufacturing
- Other Electrical Equipment and Component Manufacturing
- Electrical Equipment Manufacturing
- Computer and Peripheral Equipment Manufacturing
- Communications Equipment Manufacturing
- Retail trade of used goods
- Audio and Video Equipment Manufacturing
Region- Employment in Most Concentrated Industries

Lower Rio Grande Valley

- Audio and Video Equipment Manufacturing
- Retail trade of used goods
- Communications Equipment Manufacturing
- Computer and Peripheral Equipment
- Electrical Equipment Manufacturing
- Other Electrical Equipment and Component
- Household Appliance Manufacturing
- Motor Vehicle Parts Manufacturing
- Other Furniture Related Product
- Semiconductor and Other Electronic
- Oil and Gas Extraction
## Industries at the Binational Level

<table>
<thead>
<tr>
<th>NAICS</th>
<th>Employees</th>
<th>LQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio and Video Equipment Manufacturing</td>
<td>12007</td>
<td>39.91184867</td>
</tr>
<tr>
<td>Retail trade of used goods</td>
<td>4120</td>
<td>20.78525072</td>
</tr>
<tr>
<td>Communications Equipment Manufacturing</td>
<td>17339</td>
<td>18.66270405</td>
</tr>
<tr>
<td>Computer and Peripheral Equipment Manufacturing</td>
<td>12179</td>
<td>18.45262979</td>
</tr>
<tr>
<td>Electrical Equipment Manufacturing</td>
<td>8440</td>
<td>9.578043522</td>
</tr>
<tr>
<td>Other Electrical Equipment and Component Manufacturing</td>
<td>7605</td>
<td>8.428646182</td>
</tr>
<tr>
<td>Household Appliance Manufacturing</td>
<td>3742</td>
<td>8.107154501</td>
</tr>
<tr>
<td>Motor Vehicle Parts Manufacturing</td>
<td>32382</td>
<td>8.091467824</td>
</tr>
<tr>
<td>Other Furniture Related Product Manufacturing</td>
<td>1570</td>
<td>7.179194648</td>
</tr>
<tr>
<td>Semiconductor and Other Electronic Component Manufacturing</td>
<td>12754</td>
<td>6.492566048</td>
</tr>
<tr>
<td>Oil and Gas Extraction</td>
<td>4108</td>
<td>5.68320328</td>
</tr>
</tbody>
</table>
Relevant sectors

- **3343- Audio and Video Equipment Manufacturing (highest LQ):** The industry comprises establishments primarily engaged in manufacturing electronic audio and video equipment for home entertainment, motor vehicles, and public address and musical instrument amplification.

- **3363-Motor Vehicle Parts Manufacturing (most important employer):** Another important manufacturing industry that employs a large share of the population, especially in the Mexican side of the border.
What’s next

• To identify how dynamic are those industries (changes in employment between 2009 and 2014)
• Analyze the binational interactions among the industries using trade data.

Limitations of the study

• Use of proxies for the total value of employment by industry for the United States
• Data not fully comparable (difference in codes 42,43, 44,45, and 46→ wholesale and retail trade; no government employees in the case of the U.S.)