Binational Industry Concentrations
Paso del Norte Region

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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

**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

**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

### Chihuahua
- Largest state in Mexico - land area = 247,455 sq. Km.
- Population: 3,687,366 inhabitants (2014)
- GDP: $437,000 Million pesos ~$34,382 million USD (2014)
- Average wage: $253.4 pesos/day
- Unemployment rate: 3.9% (April 2015)

### New Mexico
- Land area: 315,194 sq. Km.
- Population: 2,085,572 inhabitants (2014)
- GDP: $93 billion USD
- Average wage: $814 USD/week
- Unemployment rate: 6.2% (April 2015)

### Texas
- Population: 26.96 million inhabitants (2014)
- GDP: $1,414 billion USD
- Average wage: $988 USD/week
- Unemployment rate: 2.2% (April 2015)
Paso del Norte Region

• Definition
  – Chihuahua: Janos, Ascensión, Juárez, Guadalupe, Práxedis G. Guerrero, Ojinaga, Manuel Benavides
  – New Mexico: Hidalgo, Luna, Doña Ana
  – Texas: El Paso, Hudspeth, Jeff Davis, Presidio, Brewster

• Total population:
  • Mostly concentrated in Juárez, El Paso and Doña Ana.
### At the Border

#### Chihuahua-New Mexico

<table>
<thead>
<tr>
<th>Port Name</th>
<th>Year</th>
<th>Trucks</th>
<th>Buses</th>
<th>Bus Passengers</th>
<th>Personal Vehicles</th>
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<th>Pedestrians</th>
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<td>-1.45%</td>
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### Chihuahua-Texas

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<td>53.45%</td>
<td>-30.76%</td>
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</table>
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 intents 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 Paso del Norte?

Location Quotient

\[ L.Q = \left( \frac{E_{ij}}{E_i} \right) / \left( \frac{E_{nat}}{E_{nat}} \right) \]

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.
CHIHUAHUA

Janos, Ascensión, Juárez, Guadalupe, Práxedis G. Guerrero, Ojinaga, Manuel Benavides
Main Results

• 100 industries with LQ greater than 3
• 69 industries with LQ between 1.5 and 3
• 59 industries with LQ between 1 and 1.5
• These 228 industries concentrate more than 273 thousand jobs.
  – The municipio of Ciudad Juárez has 52 industries with LQ greater than 1 that employ more than 266 thousand people.
  – Meanwhile, Ojinaga has 53 industries with high industrial concentration which employ 33 hundred people.
Juárez - Most Concentrated Industries

Municipio Ciudad Juárez

- Data Processing, Hosting, and Related Services
- Computer and Peripheral Equipment Manufacturing
- Communications Equipment Manufacturing
- Electric Lighting Equipment Manufacturing
- Engine, Turbine, and Power Transmission Equipment Manufacturing
- Alumina and Aluminum Production and Processing
- Medical Equipment and Supplies Manufacturing
- Electrical Equipment Manufacturing
- Motor Vehicle Parts Manufacturing
- Hardware Manufacturing
Juárez- Employment in Most Concentrated Industries

Municipio de Ciudad Juárez

Data Processing, Hosting, and Related
Computer and Peripheral Equipment
Alumina and Aluminum Production and
Engine, Turbine, and Power Transmission
Electric Lighting Equipment Manufacturing
Communications Equipment Manufacturing
Medical Equipment and Supplies
Electrical Equipment Manufacturing
Motor Vehicle Parts Manufacturing
Hardware Manufacturing
Other Results

• The manufacturing sector appear as the leader in terms of industrial concentration, with high levels of LQ in industries such as: Machinery manufacturing, Semiconductor and Other Electronic Component Manufacturing, Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing, Computer and Peripheral Equipment Manufacturing and Other Miscellaneous Manufacturing.
NEW MEXICO

Hidalgo, Luna, Doña Ana
Main Results

• 50 industries with a higher level of concentration than 3
• 62 industries with LQ between 1.5 and 3
• 63 industries with a level of concentration between 1 and 1.5
• These 175 industries employ almost 41 thousand people
Doña Ana County- Most Concentrated Industries

Doña Ana County

- Water, Sewage and Other Systems
- Support Activities for Crop Production
- Other Motor Vehicle Dealers
- Facilities Support Services
- General Rental Centers
- Business Support Services
- Other Leather and Allied Product Manufacturing
- School and Employee Bus Transportation
- Vocational Rehabilitation Services
- Spectator Sports
Doña Ana County - Employment in Most Concentrated Industries
Other Results

• **Support activities for crop production** is a concentrated industry in the New Mexico side of the Paso del Norte region;

• **Fruit and Vegetable Preserving and Specialty Food Manufacturing** is a highly concentrated industry in the counties of Luna and Hidalgo.
TEXAS

El Paso, Hudspeth, Jeff Davis, Presidio, Brewster
Main Results

- 93 industries with LQ higher than 3
- 85 industries with LQ between 1.5 and 3
- 79 industries with LQ between 1 and 1.5
- These 257 industries generate more than 136 thousand jobs.
  - El Paso has 91 industries highly concentrated that generate 131 jobs.
El Paso- Most Concentrated Industries

- Footwear Manufacturing
- Interurban and Rural Bus Transportation
- Clay Product and Refractory Manufacturing
- Business Support Services
- Nonferrous Metal (except Aluminum) Production and Processing
- Cut and Sew Apparel Manufacturing
- Freight Transportation Arrangement
- Home Health Care Services
- General Freight Trucking
- Other Pipeline Transportation

El Paso

Wilson Center MEXICO INSTITUTE
El Paso- Employment in Most Concentrated Industries

El Paso

Footwear Manufacturing  Interurban and Rural Bus Transportation  Clay Product and Refractory Manufacturing  Business Support Services  Nonferrous Metal (except Aluminum) Production and Processing  Cut and Sew Apparel Manufacturing  Freight Transportation Arrangement  Home Health Care Services  General Freight Trucking  Other Pipeline Transportation
Other Results

• **Oil and Gas Extraction** is a concentrated industry in Hudspeth, Jeff Davis and Presidio counties.

• **Electric Power Generation, Transmission and Distribution** is a highly concentrated sector for some of the counties in the Texas part of the Paso del Norte region.

• **Water, Sewage and Other Systems** is also a concentrated industry, particularly in Hudspeth county.
PASO DEL NORTE REGION
Main Results

• 24 industries with LQ higher than 3
• 36 industries with industrial concentration between 1.5 and 3
• 30 industries with LQ between 1 and 1.5
• In total, these industries generate almost 391,500 jobs.
  – This represents 58% of total employment in the Paso del Norte region.
Ari-Son Region- Most Concentrated Industries

Paso del Norte

- Hardware Manufacturing
- Medical Equipment and Supplies Manufacturing
- Semiconductor and Other Electronic Component Manufacturing
- Retail trade of household furniture and other household goods
- Electric Lighting Equipment Manufacturing
- Household Appliance Manufacturing
- Electrical Equipment Manufacturing
- Communications Equipment Manufacturing
- Motor Vehicle Parts Manufacturing
- Audio and Video Equipment Manufacturing
- Computer and Peripheral Equipment Manufacturing
Ari-Son Region - Employment in Most Concentrated Industries

Paso del Norte

- Computer and Peripheral Equipment Manufacturing
- Audio and Video Equipment Manufacturing
- Motor Vehicle Parts Manufacturing
- Communications Equipment Manufacturing
- Electrical Equipment Manufacturing
- Household Appliance Manufacturing
- Electric Lighting Equipment Manufacturing
- Retail trade of household furniture and other
- Semiconductor and Other Electronic
- Medical Equipment and Supplies
- Hardware Manufacturing
## Industries at the Binational Level

<table>
<thead>
<tr>
<th>NAICS</th>
<th>Total Employment</th>
<th>LQ</th>
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</thead>
<tbody>
<tr>
<td>Computer and Peripheral Equipment Manufacturing</td>
<td>15390</td>
<td>21.46326886</td>
</tr>
<tr>
<td>Audio and Video Equipment Manufacturing</td>
<td>6086</td>
<td>18.6212954</td>
</tr>
<tr>
<td>Motor Vehicle Parts Manufacturing</td>
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<tr>
<td>Communications Equipment Manufacturing</td>
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<td>Electrical Equipment Manufacturing</td>
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<td>Household Appliance Manufacturing</td>
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<td>4664</td>
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<tr>
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Relevant sectors

- 3341- Computer and Peripheral Equipment Manufacturing (greatest LQ): the sector comprises the manufacturing and assembly of electronic devices. As a strong sector in both sides of the border, this industry is relevant for the development of the region.

- 3363-Motor Vehicle Parts Manufacturing (largest employer): Another important manufacturing industry that occupies 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.)