The Role of MNCs within the Global Aerospace Industry in Mexico

Redi Gomis
Jorge Carrillo

CRIMT 2015 Conference
Institutional Change and Experimentation
Shaping the Future of Work and Employment

CRIMT (Interuniversity Research Centre on Globalization and Work)
School of Industrial Relations, Université de Montréal
Montreal, Canada, May 26 and 27, 2015
Goals

- Main objective: to understand the structure and dynamics of Baja California aerospace cluster through the analysis of productive capabilities derived from its particular way of insertion into the global value chain in that industry.

- Research question: Is Baja California prepared for made a Mexican airplane?
Aerospace firms tend to agglomerate in regional clusters (Niosi and Zhegu, 2008).

Aerospace regions are specialized (Niosi and Zhegu, 2008, Morissette, et al., 2013).

In Mexico, the arrangement of the aerospace clusters is closer to the Markusen satellite type, a congregation of branch facilities of externally based multiplant firms, in which there is an absence of any connections or networks within the region, and links to the parent corporation and other branch plants elsewhere predominate (Markusen, 1996, cited by Martínez, 2001).

Mexico does not have an indigenous assembler (Martínez, 2001) neither produces “Tier 1” structures.
“Capacity Matrix" of Baja California aerospace companies prepared by ProMexico and published in Mexico's Aerospace Industry Road Map

The information presented in the matrix relates to three dimensions:

- Firm activities
  - Products
  - Services
  - Processes
  - Materials
- Functions
- Certifications

Data from other sources were added:

- The city where the firm is located (Internet)
- GVC Level (Judges criteria)
### Activity examples

#### Products
- Power Plant (Parts & components)
- Avionics
- Landing Gear
- Wings
- Electrical Cable Accessories / Harnesses

#### Processes
- CNC and Precision Engineering: Rough Turning
- Grit Blasting (Surface Prep)
- Treatment Processes
- Surface Treatments - Prime & Paint
- Tooling

#### Materials
- 300M or Equivalent
- Aluminium
- Titanium
- Delran
- Composites

#### Services
- Maintenance Repair & Overhaul
- Testing and Certifications Services
- Ground Support & Air Field Equipment
- Consultancy/Finance/Logistics
- Flight Training

Source: ProMexico, 2014
Aerospace Global Value Chain

Lead Firms

Design

Airframe

Tier 3 & 4 Suppliers

Parts & Components

Subsistemas y su-ensambles

Lead Firms

Systems Integration

Marketing & Sales

Post-Sales

Software

Fuselage

Final products

Buyers

Post-Sales

Electronic ones

Wings

Large comerc.

Commerc/Cargo

Maintenance, Repair & Overhaul (MRO)

Mechanical

Engine

Regional jets

Businesses

Composite

Landing gear

General Aviation

Individuals

Wiring

Hydraulics

Space vehicles

Government

Aluminum

Avionic devices

Military Aircraft

Defense

Machining/ Tooling/ Finishing

Electrical power

Electrical power

Maintenance, Repair & Overhaul (MRO)

Interior

Interior

Flight simulators

Proveedores de insumos básicos

Machining/ Tooling/ Finishing

Final products

Market segments

Passenger

Businesses

Commerc/Cargo

Cargo

Cargo

Defence

Defence

Defence

Space

Space

Space

Source: Bamber y Gereffi, 2013:8
The history of Mexico’s manufacturing aerospace sector is relatively recent and very dynamic.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2004</th>
<th>2013</th>
<th>% Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of firms</td>
<td>65</td>
<td>290</td>
<td>346%</td>
</tr>
<tr>
<td>Total employment</td>
<td>13,000</td>
<td>35,000</td>
<td>169%</td>
</tr>
<tr>
<td>FDI (US millions)</td>
<td>$250</td>
<td>$1,400</td>
<td>460%</td>
</tr>
<tr>
<td>Exports (US millones)</td>
<td>$1,306</td>
<td>$6,100</td>
<td>367%</td>
</tr>
</tbody>
</table>

Source: Own elaboration based on Ornelas, 2013
The busiest border in the world

Main pool of aerospace companies in Mexico

According the outcome of a recent census form Aerospace Cluster of BC:

- 87 firms (almost all of foreign origin, mostly from the United States)
- 30,458 jobs

Source: Sibaja, 2015
Activities (N=82), by activity segment (%)

Source: Own elaboration based on ProMexico, 2014
Distribution of firms by activity

Source: Own elaboration based on ProMexico, 2014
Functions (% of firms)

- Manufacture: 89.30%
- Engineering and design: 82.70%
- MRO: 89.30%

Fuente: Own elaboration
GVC levels (% of firms)

- Tier1 y Tier2: 4,1%
- Tier3 y Tier4: 1%
- MRO: 5%
- Services: 4%
- Materials: 85.1%

Source: Own elaboration
### Distribution of activities (n=82), by Baja California cities

<table>
<thead>
<tr>
<th>Activity area</th>
<th>City</th>
<th></th>
<th></th>
<th></th>
<th>Total of activities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ensenada</td>
<td>Mexicali</td>
<td>Tecate</td>
<td>Tijuana</td>
<td></td>
</tr>
<tr>
<td>Products</td>
<td>9%</td>
<td>55%</td>
<td>6%</td>
<td>79%</td>
<td>33</td>
</tr>
<tr>
<td>Processes</td>
<td>31%</td>
<td>72%</td>
<td>16%</td>
<td>84%</td>
<td>32</td>
</tr>
<tr>
<td>Materials</td>
<td>0%</td>
<td>71%</td>
<td>0%</td>
<td>100%</td>
<td>7</td>
</tr>
<tr>
<td>Services</td>
<td>10%</td>
<td>70%</td>
<td>10%</td>
<td>50%</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17%</strong></td>
<td><strong>65%</strong></td>
<td><strong>10%</strong></td>
<td><strong>79%</strong></td>
<td><strong>82</strong></td>
</tr>
</tbody>
</table>

Source: Own elaboration based on ProMexico, 2014
## Unique activities (n=82), by Baja California cities

<table>
<thead>
<tr>
<th>Activity area</th>
<th>City</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ensenada</td>
<td>Mexicali</td>
<td>Tecate</td>
<td>Tijuana</td>
</tr>
<tr>
<td>Products</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Processes</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Materials</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Services</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

Source: Own elaboration based on ProMexico, 2014
The firm’s activities are more or less evenly scattered throughout a wide range.

There appears to be a genuine specialization in Baja California related to the aerospace industry.

The bulk of the activity seems to be at low levels (Tier 3 and Tier 4), performing mostly as supplier in support of manufacturing activities. It means activities transferred to Mexico by MNEs are not yet of high value added.
Bibliography


ProMexico (2014), National flight plan. Mexico’s Aerospace Industry Roadmap 2014, ProMexico, México, D.F.

Sibaja, Tomás (2015), Censo aeroespacial estatal Baja, 31 de marzo 2015, Clúster Aeroespacial de Baja California, [Comunicado ofrecido en correo electrónico el 13 de abril de 2015].