Calculating Location Quotients

September 14, 2012
Agenda

- Basic Concepts
- What are location quotients?
- How do I calculate location quotients?
- How do I interpret location quotients
- Examples
- Using the BLS LQ Calculator
- Questions
Basic Economic Model

Export or ‘base’ activity (new $s)

Examples:
- Manufacturing
- Tourism
- Some hospitals
- Regional shopping malls
- Social Security income

Non-basic activity (recycled $s)

Examples:
- Auto repair services
- Small convenience retail
- Outpatient medical
- Personal services like barber shops
- Print and copy shops
### North American Industry Classification System (NAICS)

<table>
<thead>
<tr>
<th>NAICS level</th>
<th>Example #1</th>
<th>Example #2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>NAICS code</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>Sector</td>
<td>31-33</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>Subsector</td>
<td>311</td>
<td>Food Manufacturing</td>
</tr>
<tr>
<td>Industry group</td>
<td>3115</td>
<td>Dairy Product Manufacturing</td>
</tr>
<tr>
<td>Industry</td>
<td>31151</td>
<td>Dairy Product (except Frozen) Manufacturing</td>
</tr>
<tr>
<td>U.S. Industry</td>
<td>311513</td>
<td>Cheese Manufacturing</td>
</tr>
</tbody>
</table>

Unique to country; standardization ends at 5-digit code.
Location Quotients (LQs) are a regularly used method for regional analysis

- LQs measure the *relative concentration* of a given industry in a given place.
  - Often relative to the nation, but can also calculate state LQs

- LQs are used to identify potential sources of competitive advantage, or areas of regional specialization

- Calculated by dividing the proportion of the *region’s economic activity* in an industry, by the proportion of the *nation’s economic activity* in that same industry.

- Industry employment is the most commonly used variable, but could also generate LQs from other variables.
  - E.g., occupational employment, industrial output, revenue, etc.
Location Quotients

Formula

Region

Industry / Total

Nation

Industry / Total

Example

Region

100,000 MFG Jobs / 100 Total Jobs

Nation

1,000,000 Total Jobs

\[
\frac{100,000}{1,000,000} = 0.1
\]

LQ
Interpreting LQs

- Can use location quotient to get a sense of the specialization of regional industries
  - General rules of thumb
    - LQs of 1.2 or higher indicates some degree of specialization
    - LQs of 0.8 to 1.2 indicate normal distribution of industry within the region
    - LQs of less than 0.8 may indicate that the region may be deficient
  - Depends on size of region, nature of industry
    - Smaller regions may have larger LQs
    - Not industries are appropriate for all places

- If all location quotients near or at a 1.0, will see the region resembling the national economy
  - Region may be sufficiently diversified
Thinking about LQs

- Sensitive to the size of the region and base
- Sensitive to the level of industry

<table>
<thead>
<tr>
<th>Industry</th>
<th>Alabama</th>
<th>Montgomery County</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAICS 31-33 Manufacturing</td>
<td>1.51</td>
<td>1.26</td>
</tr>
<tr>
<td>NAICS 336 Transportation Eqpt. MFG</td>
<td>2.55</td>
<td>3.51</td>
</tr>
<tr>
<td>NAICS 3363 Motor Vehicle Parts MFG</td>
<td>2.47</td>
<td>1.21</td>
</tr>
<tr>
<td>NAICS 54 Professional and technical services</td>
<td>0.91</td>
<td>1.00</td>
</tr>
<tr>
<td>NAICS 5412 Accounting and bookkeeping services</td>
<td>0.78</td>
<td>1.17</td>
</tr>
<tr>
<td>NAICS 541213 Tax preparation services</td>
<td>0.86</td>
<td>0.50</td>
</tr>
</tbody>
</table>
## Interpreting Location Quotients

### Interpretation

<table>
<thead>
<tr>
<th>Location Quotient</th>
<th>Employment Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Important industries that may require attention</td>
</tr>
<tr>
<td>Low</td>
<td>Industries of little promise to local economy</td>
</tr>
</tbody>
</table>

- High is not always good, low is not always bad
- It's best not to interpret LQs in a vacuum
- Change in LQ is another important consideration

*Source: J. Paytas*
### Change in LQ

<table>
<thead>
<tr>
<th>Industry in Madison County, AL (Huntsville)</th>
<th>2008</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAICS 31-33 Manufacturing</td>
<td>1.59</td>
<td>1.34</td>
</tr>
<tr>
<td>NAICS 336 Transportation Equipment MFG</td>
<td>4.06</td>
<td>3.45</td>
</tr>
<tr>
<td>NAICS 3364 Aerospace Product and Parts MFG</td>
<td>7.30</td>
<td>6.77</td>
</tr>
</tbody>
</table>

- During this time period:
  - Manufacturing employment lost about 7,500 jobs
  - Transportation Eqpt MFG lost about 2,300 jobs
  - Aerospace MFG lost about 500 jobs
Examples:

- Example #1: Alabama sectors
- Example #2: Alabama occupations
### BLS Location Quotient Calculator

(https://www.bls.gov/cew/cewlq.htm)

#### Quarterly Census of Employment and Wages

**Location Quotient Calculator**

**STEP 1 - YEAR SELECTION AND OTHER DATA CHARACTERISTICS**

- **Year:** 2011
- **Data Period:** Annual Average
- **Data Type:** All Employees
- **Ownership:** Private
- **Establishment Sizes:** All establishment sizes

**STEP 2 - AREA SELECTION** (possible choices: U.S. total, States, counties, and metropolitan areas)

Select the **Base Area:**

- U.S. TOTAL

Select up to 3 **Analysis Areas:**

- Select an Analysis Area (must select at least one area)
- Select an Analysis Area (optional)
- Select an Analysis Area (optional)

**STEP 3 - INDUSTRY SELECTION**
Questions?