AlixPartners 2009 Manufacturing-Outsourcing Cost Index™ – Overview & Highlights

May 2009
Agenda

- Introduction and Approach
- Key Findings
If You Outsourced Significant Manufacturing to China in the Last Few Years, Have You Made a Big Mistake?

“Rising transportation costs are encouraging companies to buy and produce more goods closer to home.”
Economist, August 7, 2008

“The rising cost of labor and shipping abroad are driving manufacturing back to the U.S. So are the logistics of dealing with far-flung suppliers.”
Fortune, September 11, 2008

“...if oil and shipping prices stay high, many Western companies that now outsource their manufacturing to China might decide that it makes more sense to shift production closer to their customers at home.”
Economist, August 7, 2008
Finding the Right Answer for a Given Product Isn’t Simple

- Meaningful data is hard to find:
  - Many factors – local wage rates, local raw material costs, relative productivity rates, cost of capital issues, shipping rates, etc.
  - Lots of sources – international agencies, local government statistics, trade organizations, etc.

- Data available from centralized sources are often incomplete or not current:
  - e.g., U.S. Bureau of Labor Statistics data:
    » Doesn’t specifically address many LCCs (e.g., China, India)
    » Often lags 1-2 years or more
    » No longer includes an ocean freight index (discontinued in 2008)

- Relevant data still needs to be built into a model, to tell the complete story for a particular product and point of manufacture
Objectives of Our Study and Index

- Establish an index that accurately reflects the expected cost/benefit of outsourcing manufacturing from the U.S. to key LCCs
  - Using a market basket of real-world parts
  - Addressing the major cost-drivers of LCC sourcing
  - Using the most current data available
- Calculate the index over time to understand trends in detail
  - Using 2005 as the baseline
  - Calculating for each subsequent through 2008
- Going forward, analyze potential scenarios based on current trends in the global economy
- Update and publish the index annually to provide more accurate and timely data to manufacturing decision-makers
Study Approach: Cost of Manufacturing in the U.S. vs. Cost of Outsourcing to a Selection of Key LCCs

Baseline: Typical expected cost to manufacture in the United States

Initial LCCs for the study were selected based on the following criteria:
- Major recipients of recent manufacturing outsourcing from the U.S.
- Representative geographic cross section
- Competent outsourcing supply base for the items being evaluated
**Analyzed: A Selection of Components and Simple Assemblies, With a Range of Cost Structures...**

Initial Market Basket Cost as % of Total Cost

<table>
<thead>
<tr>
<th>Part Type</th>
<th>Labor1</th>
<th>Overhead1</th>
<th>Freight1</th>
<th>Import Duties2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex machined aluminum die casting</td>
<td>High, fabrication only</td>
<td>Moderate capital</td>
<td>Moderate value per weigh - weigh out container</td>
<td>Moderate (2% - 4%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small precision blanked and fabricated steel part</td>
<td>Moderate, fabrication only</td>
<td>Moderate capital equipment, tooling</td>
<td>Low value for weight – weigh out container</td>
<td>Moderate (2% - 4%)</td>
</tr>
<tr>
<td>A simple “deep-draw” stamped steel part</td>
<td>Low, fabrication only</td>
<td>High capital equipment, tooling</td>
<td>Low density shipping – cube out container</td>
<td>Moderate (2% - 4%)</td>
</tr>
<tr>
<td>Small injection molded plastic part</td>
<td>Low, fabrication only</td>
<td>High capital equipment, tooling</td>
<td>Low value per weigh – cube out container</td>
<td>High (&gt;4%)</td>
</tr>
<tr>
<td>Electronic Module (position sensor)</td>
<td>Moderate, fabrication and assembly</td>
<td>Low capital equipment, tooling</td>
<td>High value for cube and weight</td>
<td>Low (&lt;2%)</td>
</tr>
<tr>
<td>Small DC motor assembly with brake</td>
<td>High, fabrication and assembly</td>
<td>Low capital equipment, tooling</td>
<td>High value for cube and weight</td>
<td>Low (&lt;2%)</td>
</tr>
</tbody>
</table>

- Sample parts included piece parts and simple assemblies, making the analysis more of a “pure play” for the LCC in question
- Items selected to have significantly different cost structures, in order to understand the relative impact of changes in raw-material, labor content and shipping costs

**Notes:**
1) Cost as a percentage of total product cost
2) Non-NAFTA countries only
...And Seven Key Cost Drivers, Modeled for Each Type of Part and Country (Adjusted Annually)

- **Raw Materials** – Assumed material was sourced locally at global commodity prices
- **Labor** (hourly and salaried) – Differences in average wages, benefits and productivity
- **Overhead** – Relative cost of energy, plant and equipment, taxes, other services like insurance, and a typical profit margin for the supplier
- **Exchange Rate** – Changes in exchange rate applied to total production cost (capped at 10% on material)
- **Freight** – Typical cost from each country to the U.S. port, including an estimate of inland freight at the country of origin
- **Duties** – U.S. import duties for the type of part where applicable
- **Inventory** – Assumed 45-day incremental in-transit inventory for intercontinental (inland transpiration, ocean freight, customs, etc.) and seven days for Mexico
The Result: A Market-Basket Index & Part-Specific Cost Indices For Each Country
Agenda

- Introduction and Approach
- Key Findings
Cost Ranking of Benchmark Countries Shifted Markedly From 2005 to 2008, with Mexico Overtaking China and India

Change in Manufacturing Cost Ranking for LCCs Analyzed

<table>
<thead>
<tr>
<th>2005 Cost Ranking¹</th>
<th>End of 2008 Ranking¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. China</td>
<td>1. Mexico</td>
</tr>
<tr>
<td>2. India</td>
<td>2. India</td>
</tr>
<tr>
<td>3. Mexico</td>
<td>3. China</td>
</tr>
<tr>
<td>5. U.S.</td>
<td>5. Brazil</td>
</tr>
</tbody>
</table>

* Lower total landed cost countries are ranked higher
The Drivers: Different for Each Country Analyzed

- **China**: Its 20%+ cost advantage has eroded to about 5% driven by a wide range of cost increases.
- **Mexico**: Saw biggest improvement, driven by favorable exchange rate, relatively low transportation costs and free-trade status.
- **India**: Maintaining competitive position, with weak rupee offsetting increases in internal costs and freight.
- **Brazil**: Improvement in 2008 due to a drop in the real, but still not as attractive as the other LCCs.
China’s Total Landed Cost Has Increased to an Average 94% of Current U.S. Cost*…

The most significant drivers of change in cost advantage:
- 20+% appreciation of the Chinese Yuan
- Freight cost increases
- Labor cost inflation

* For market basket of parts in Index
... While Mexico’s Position Has Improved Dramatically

The most significant drivers:

- The almost 20% drop in the peso, most of which happened in the last half of 2008 more than offset the local wage inflation over the last three years
- Mexico was not impacted as significantly by the change in freight rates as other LCCs
- Duty-free status avoided the increase in the import duty driven by the escalating material cost and exchange rate in other LCCs
…However, the Advantages/Disadvantages Vary by Part Type

- **Fine Blanked Part**
  - Low value add
  - More influenced by shipping cost and material cost impact on inventory, duties, etc.
  - Went from 10% savings to 5% cost increase

- **Motor Assembly**
  - Relatively high value add and highest value density for shipping
  - More influenced by local wage growth and FX
  - Still significant savings, but decreased from 45% to 25%

- China’s cost now comparable to U.S. cost for items like low-value-added stampings and highly automated parts

**Variables are too complex to use simple “rules for thumb” across part types**

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The Best-Cost Country (BCC) Per Part Type Has Generally Changed

- Mexico retained its cost advantage on very low value-added and high-shipping-cost metal stampings, and the expected the savings increased.
- Mexico’s cost advantage surpassed China for the moderate labor and shipping cost parts – the expected cost is slightly lower than China’s 2005 cost.
- The high-labor-cost motor assembly had small decrease in the outsourcing savings opportunity, and should have a slight total landed cost advantage over Mexico.

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</tr>
</thead>
<tbody>
<tr>
<td>Al Machined Part</td>
<td>China</td>
<td>71%</td>
<td>Mexico</td>
<td>69%</td>
</tr>
<tr>
<td>Fine Blanked Part</td>
<td>Mexico</td>
<td>90%</td>
<td>Mexico</td>
<td>82%</td>
</tr>
<tr>
<td>Plastic Molded Part</td>
<td>China</td>
<td>79%</td>
<td>Mexico</td>
<td>75%</td>
</tr>
<tr>
<td>Deep Draw Stamping</td>
<td>Mexico</td>
<td>82%</td>
<td>Mexico</td>
<td>75%</td>
</tr>
<tr>
<td>Electronic Position Sensor</td>
<td>China</td>
<td>88%</td>
<td>Mexico</td>
<td>82%</td>
</tr>
<tr>
<td>Electric DC Motor</td>
<td>China</td>
<td>55%</td>
<td>India</td>
<td>66%</td>
</tr>
</tbody>
</table>
What’s Likely to Happen in the Future?

- **Exchange rates**: Most economists are predicting a strengthening rupee, and a continuing weak peso relative to the U.S. dollar. The yuan seems to be holding its ground.

- **Transportation costs**: Likely to drop back to 2007 levels or less, as oil prices stabilize at below $60/barrel and the world economy remains soft.

- **Raw material costs**: Should not be a big differentiator since prices for global commodities are dropping everywhere, including in the U.S.

- **Local wage inflation**: Will likely be slowed by a weakening global economy; however, this would have a very small impact on overall landed costs.

- **Taxes/duties**: Import duties from China, India and Brazil will likely fall as falling material costs and weaker currencies reduce the base product cost. More of the effect of China’s elimination of VAT rebates will flow through to U.S. customers as fixed-price contracts expire.
If These Trends Continue, China’s Cost Position Will Improve – But Not Enough to Overtake Mexico and India

- **China**: A small improvement in cost competitiveness, as the yuan strengthens and transportation costs drop
- **Mexico**: Still the lowest delivered cost to the U.S., but loses some of its exchange-rate-driven advantage of 2008
- **India**: Continues to be strong as favorable exchange rates are expected to continue, and transportation costs and effective duties drop
- **Brazil**: If exchange rates swing back to 2007 levels as expected, Brazil’s manufacturing cost will again exceed that of manufacturing in the U.S.
Smart Companies Will Do Their Homework On the Options/Risks Before Making a Next Move

- **Step 1** – Understand your **true** cost structure
  - Analyze parts based on key drivers of the cost structure
  - Do sensitivity analysis to understand how much key factors need to change in order to change the sourcing location answer

- **Step 2** – Develop a **3-5 year** plan for product sourcing
  - Balance switching costs with short term gains to generate the best overall return
  - Build in an “operational hedge” so that you can shift volume without starting over to take advantage of ebbs and flows in the outsourcing tides
  - Watch which bridges you burn with suppliers – you may need to use them again

- **Step 3** – Aggressively **execute** the plan
  - Plan well, but move fast – In this fast changing environment, you can’t take three years to respond to major shifts in economic forces
  - Watch for significant changes and have contingency plans in place – it looks like it is going to be a bumpy ride for the next several years
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