To Offshore or Reshore?  
How to Objectively Decide
**Agenda**

- Overview 55 min
- Website: TCO, Library, Case Studies 15
- Q&A 20
- Total 90 min

**Definitions**

- Reshoring/Backshoring/Onshoring/Insourcing: Bringing back manufacture of products that will be sold or assembled here (antonym of offshoring)
- Outsourcing: Work done by another company, wherever located
- In-house: work done in the company’s facilities, wherever located
Geographic sourcing alternatives

The concept also works in other countries

Reshoring: a Brazilian perspective
Offshoring: flawed company economic model

60% of manufacturers:
- Apply “rudimentary” total cost models
- Ignore 20% or more of the total cost of offshored products

Source: Archstone Consulting survey, American Machinist Mag., 7/16/09

“Manufacturing Is Expected to Return to America”
“Renaissance in Manufacturing”

- “We expect net labor costs for manufacturing in China and the U.S. to converge by around 2015”
- “take a hard look at the total costs”

Source: Boston Consulting Group press release 5/11 & 4/12

Chinese no longer “just thankful not to go hungry”

Source: Michelle D. Loyalka, 2/17/12 NYT
U.S. Manufacturing Competitiveness for Exports – Exhibit 4

1) The U.S. cost advantage represents the labor and logistics costs compared with those of Chinese manufacturers, for products consumed by people in China.


U.S. Manufacturing Competitiveness in Domestic Markets – Exhibit 5

1) The U.S. cost advantage represents the labor and logistics costs compared with those of Chinese manufacturers, for products consumed by people in the United States.

Survey says: reshoring is happening!

- 61% of larger companies surveyed “are considering bringing manufacturing back to the U.S.” (MIT forum for Supply Chain Innovation 1Q12)
- 40% of contract manufacturers have done reshoring work this year (MFG.com 4/12)
- % of U.S. consumers who view products Made in America very favorably: 78% (2012) up from 58% (2010) (3)

Reshoring is significant

- We calculate reshoring yielded:
  - About 50,000 manufacturing jobs*
  - ~ 100,000 total, including multiplier effect
  - ~ 10% of manufacturing job growth since the low of Jan. 2010

*Source: 14,870 at 35 companies mentioned in published articles in the Reshoring Library. Conservatively adjusted for 151 reshoring companies mentioned w/o hiring data and for outsourcing underreported.
The Industry-Led Initiative Provides

- Free Total Cost of Ownership (TCO) Software for companies and suppliers/unions
- Online Library of 290 reshoring articles
- Case Study template for posting cases
- Media coverage of the trend: WSJ, USATODAY, IW, CBS, CNBC, Fox Business, etc.
- ~100 presentations/yr nationwide
- Motivation for skilled manufacturing careers
- A solution to today’s supply chain problems

TCO Estimator benefits

- Provides a single TCO for each source
- Flexible: values are 100% user selected.
- Broad:
  - 29 cost factors.
  - Via pull down menus you automatically insert:
    - Freight rates for 17 countries
    - Duty rates for parts or tools, e.g. molds
    - Current value and 5 year forecast of TCO.
- Easy to use:
  - Explanations and references to help select values.
  - Instruction Manual.
- Free
### Example: some data for a part

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese unit price</td>
<td>$70</td>
</tr>
<tr>
<td>U.S. unit price</td>
<td>$100</td>
</tr>
<tr>
<td># units/year</td>
<td>12,000</td>
</tr>
<tr>
<td>unit weight, lbs</td>
<td>2</td>
</tr>
<tr>
<td>Shipments/year</td>
<td>6</td>
</tr>
<tr>
<td>product life, yrs</td>
<td>5</td>
</tr>
<tr>
<td>Packaging*</td>
<td>1%</td>
</tr>
<tr>
<td>Payment on shipment</td>
<td>Yes</td>
</tr>
<tr>
<td>Quality*</td>
<td>2%</td>
</tr>
<tr>
<td>Product liability risk*</td>
<td>0.5%</td>
</tr>
<tr>
<td>IP risk*</td>
<td>1.9%</td>
</tr>
<tr>
<td>Innovation*</td>
<td>0.5%</td>
</tr>
<tr>
<td>Trips/yr</td>
<td>2</td>
</tr>
<tr>
<td>Carrying cost, rate</td>
<td>22%</td>
</tr>
<tr>
<td>Emergency air freight %*</td>
<td>5%</td>
</tr>
<tr>
<td>Wage inflation, annual*</td>
<td>8%</td>
</tr>
<tr>
<td>Currency appreciation, annual*</td>
<td>5%</td>
</tr>
</tbody>
</table>

* Chinese differential vs. U.S.

### TCO Comparison Example: a Moderate Labor Content Part

![Graph: Present and Forecast US and China Price and TCO (US$)](image)

- **US TCO**
- **China TCO**
- **US Price**
- **China Price**
Statistics from TCO database:
19 “real” 2012 cases, China vs. U.S.

<table>
<thead>
<tr>
<th>Comparison Basis</th>
<th>Sample</th>
<th>U.S. % of China price or TCO, average</th>
<th>% of all cases where U.S. has the advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>100%</td>
<td>189%</td>
<td>5%</td>
</tr>
<tr>
<td>TCO</td>
<td>100%</td>
<td>100.4%</td>
<td>53%*</td>
</tr>
<tr>
<td>Difference</td>
<td>100%</td>
<td>N/A</td>
<td>48%**</td>
</tr>
</tbody>
</table>

* For the 53%, the average U.S. TCO was 36% below China
**Conservatively 25% might return

Source: Reshoring Initiative TCO database
Industry distribution of published cases.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>elec. Equip, appliances &amp; components</td>
<td>37</td>
</tr>
<tr>
<td>miscellaneous</td>
<td>33</td>
</tr>
<tr>
<td>transportation equipment</td>
<td>27</td>
</tr>
<tr>
<td>machinery</td>
<td>18</td>
</tr>
<tr>
<td>furniture</td>
<td>11</td>
</tr>
<tr>
<td>computer and electronics</td>
<td>9</td>
</tr>
<tr>
<td>plastics and rubber</td>
<td>8</td>
</tr>
<tr>
<td>fabricated metal parts</td>
<td>6</td>
</tr>
<tr>
<td>clothing and textiles</td>
<td>3</td>
</tr>
<tr>
<td>food and beverage</td>
<td>3</td>
</tr>
<tr>
<td>Chemicals</td>
<td>1</td>
</tr>
<tr>
<td>primary metal</td>
<td>1</td>
</tr>
<tr>
<td>oil and gas</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Reshoring Library, July 2012

Some Reshorers

[Image of various company logos]
Water-heaters

Bringing Production back from China:
- Water-heater production
- Unionized facility in Louisville, KY
- 400 jobs, renovated facility

Reasons:
- Tax incentives
- High-tech new model
- Ease of design collaboration with workers: cut cost $20
- 2 tier contract
- Chinese cost: -30% becomes +6% considering inventory and delivery problems
- Will move a significant piece of appliance production back

Bailey Hydropower Hydraulic cylinders

- Had 100,000 ft² in Chennai, India
- Reshored to Westknoxville, TN
- 60,000 sq. ft.

Reasons:
- Fast delivery vs. 5 wks on the water
- Fewer supply chain problems
- If a quality problem, no more bad units en-route

Source: Knoxvillebiz.com Ed Marcum 8/7/10
Home furnishings

- From China and Vietnam
- Reasons:
  - Supports eco-consciousness and quality
  - “...the shift back to a 100% American manufacturing platform has enabled us to gain complete control over our products.”
  - There is no need to house inventory, translating into considerable overhead savings for retailers.

Source: Young America moves all production to United Jenny Heinzen York -- Kids Today, 9/13/2009

Lincolnton Furniture re-start-up

- Lincolnton, NC
- Bruce Cochrain, CEO
- Bedroom and dining room furniture
- 310,000 factory previously closed when work went to China
- Reasons can compete with China: transport cost, Chinese labor cost and availability
Other furniture reshored

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stanley, Young American</td>
<td>Robinsville, NC</td>
<td>Cribs</td>
</tr>
<tr>
<td>Sauder Woodworking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carol Gregg</td>
<td>NC</td>
<td></td>
</tr>
</tbody>
</table>

Wright Engineered
Plastics injection molding

- China to Santa Rosa, CA
- Medical and Telecom customers
- 4+ customers reshored, including JDS Uniphase and ECO Funnel™
- Reasons:
  - Transport costs up
  - Wages up
  - Quality issues common and difficult to handle

Source: Design2Part mag, Yes, You Can Go Home Again, Say Some Manufacturers by Mark Shortt
OH and MI

- Hybrid transmission component from Japan
- Battery pack assembly from Mexico
- Steel forging from India
- **Reason:** be sure quality standards are followed

Source: Deseret News 8/4/10 Ford says UAW deals bring work back to its plants

Buttons

- China to Clarkesville, GA
- **Reasons:**
  - Salaries up
  - Expectations up
  - Rising Yuan
  - 20-25% of employees did not return from annual holiday
Circuit boards

- Woodridge, IL
- Supplies many AEM members
- Had quality issue with a Chinese component
- Found local IL source
- Result:
  - Quality problem fixed
  - Inventory cut by 94%

- 50% of Frisbees
- China back to CA and MI
Deming on Total Cost

- “End the practice of awarding business on the basis of price tag. Instead, minimize total cost.”


Offshoring multiplies Waste

<table>
<thead>
<tr>
<th>Toyota Wastes</th>
<th>Offshoring Contributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overproduction</td>
<td>Large batch shipments, filling containers</td>
</tr>
<tr>
<td>Waiting</td>
<td>Uncertain delivery/Inconsistent quality, port, customs, shared “awake time” window for discussions</td>
</tr>
<tr>
<td>Transport</td>
<td>12,000 mi. inbound, 6,000 return (boat ½ full)</td>
</tr>
<tr>
<td>Overprocessing</td>
<td>More packing and unpacking, customs paperwork,</td>
</tr>
<tr>
<td>Inventory</td>
<td>In transit, cycle, safety stock, uncertain delivery and quality, less ability to see and count</td>
</tr>
<tr>
<td>Motion</td>
<td>Increased cost over time – repetitive motion injuries or additional labor to compensate</td>
</tr>
<tr>
<td>Defects</td>
<td>Much higher than local sources, extra inspection of materials and tolerances, customers unhappy longer</td>
</tr>
</tbody>
</table>
The fastest and most efficient way to strengthen the U.S. economy

- **Reshoring breaks out of:**
  - The economic zero-sum-game of tax/borrow and spend.
  - The increases in consumer prices of relying solely on currency changes.
  - The waiting-for-policy-decisions problem.

- Assures that the pie grows, to the advantage of all Americans.
- Grows the pie by taking back what we earlier lost.
- Focuses on the manufacturing sector which has suffered so many job losses for decades.
- More efficient than exporting, stimulus programs or even tax reductions.

Potential for reshored jobs is huge!

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Manufacturing Jobs*</th>
<th>Total Jobs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today: If all companies used TCO (Reshoring Initiative)</td>
<td>~500,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>By 2015: If Chinese wage trends continue (~BCG)</td>
<td>1,000,000</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Better U.S. training, process improvement, automation, tax rates (~AMP)</td>
<td>2,000,000</td>
<td>4,000,000</td>
</tr>
<tr>
<td>End of offshore currency manipulation</td>
<td>3,000,000</td>
<td>6,000,000</td>
</tr>
</tbody>
</table>

* # of jobs is cumulative. “Total jobs” assumes a low 1.0 multiplier effect.
Gaining support in DC

- Commerce Dept:
  - 2012 budget specifies TCO.
  - Links now:
    - www.manufacturing.gov
    - http://nist.gov/mep/reshoring.cfm
  - Major link on SelectUSA this fall
  - 3 rounds of MEP webinars
  - Testified at CJS Congressional hearing on 3/28/12

- SBA
  - Calls from:
    - United States-China Economic and Security Review Commission
    - White House National Economic Council

1/11/12 Insourcing Forum
Selling using TCO

- Focus on profit impact, risk management, strategic benefits
- Overcome mandates
- Many Supply Chain Managers believe
- Work with natural allies:
  - Lean, Green, compliance, quality, line management
- Match “Chinese” price or TCO?
What can companies do?

- **Use the tools.** Free at [www.reshorenow.org](http://www.reshorenow.org)
- **Use our archived webinars to inform staff and customers**
- **Work with groups that are being trained on TCO:**
  - Economic development agencies/Select USA
  - MEPs
- **Post a link like** [http://www.pres-flex.com/american-made/](http://www.pres-flex.com/american-made/)
- **Call on me to speak at:** open houses, webinars, sales and supply chain training sessions
- **Submit cases of reshoring for publication and posting using our template. IMTS will post cases.**
- **Sponsor**

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Glass Wall Curtain Manufacturer

- **$50MM Company to move to Mexico from the Bay area, 75 employees**
- **Manex employed TCO to show the total impact to the business.**
  - Direct labor is significant but,
  - Indirect and secondary costs (Warranty, travel, logistics, transportation, 3rd party subcontracting fees, worker safety etc.)
- **Company relocating to a newer and larger facility in the East Bay and through lean manufacturing will reduce costs.**
  - Attractive real-estate pricing made the move a cost saver
  - Can now add second shift operations
  - Morale is up with the new location

Source: Bill Browne, Manex
Series of MEP reshoring webinars

<table>
<thead>
<tr>
<th>Audience</th>
<th>Purpose</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEP center staff</td>
<td>Explain. Ask to invite SMEs.</td>
<td>7/19 and 8/2</td>
</tr>
<tr>
<td>SMEs</td>
<td>Explain. Ask to invite OEMs.</td>
<td>9/6</td>
</tr>
<tr>
<td>OEMs</td>
<td>Explain. Ask to use TCO.</td>
<td>?</td>
</tr>
</tbody>
</table>

Website and TCO

[www.reshorenow.org](http://www.reshorenow.org)
- Library
- Case Studies
- TCO Estimator
Special Relevance to Equipment and Process Investment and Econ Devel.

- By understanding the small TCO gap instead of the large price gap:
  - You can justify domestic process improvement, automation, training, etc.
  - You do not have to sacrifice quality, delivery, time-to-market to seek offshore price.

What can MS Mfg. Assoc., MS Econ. Dev. and Franklin Institute do?

- Have staff view archived webinars
- Have own webinars for members and their customers
- Promote the success of your companies/industry via Reshoring Cases
- Hold a purchasing fair to bring MS OEMs and suppliers together
- Be the U.S. leader in reshoring!
A non-profit with 41 sponsors, including

Platinum
- AMT
- Sescon

Gold
- GF
- AsieCharmilles
- SPI
- MADA
- Morris Group, Inc.

Silver
- United Grinding
- NTMA
- PMA
- IMTS
- AME

Bronze
- Big Kaiser
- tci
- Royal Products
- Stiles

Steel
- Doosan
- Mazak
- Milltronics
- Swiss Machine Tool Society
- HTI
- New Century Careers

Iron
- PMPA
- Tools You Can Use
- PFA
- BA Brooks Associates
- SECO
- IIF
- Commerce Lexington
- NADCA
- TechSolve
Obtain information, improve profitability and help slow the offshoring flood now!

Contact:
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Initiative Founder
847-726-2975
harry.moser@reshorenow.org
www.reshorenow.org

Recruiting trainees for the skilled manufacturing workforce:
http://tinyurl.com/33vpz9k