



Reshoring Initiative

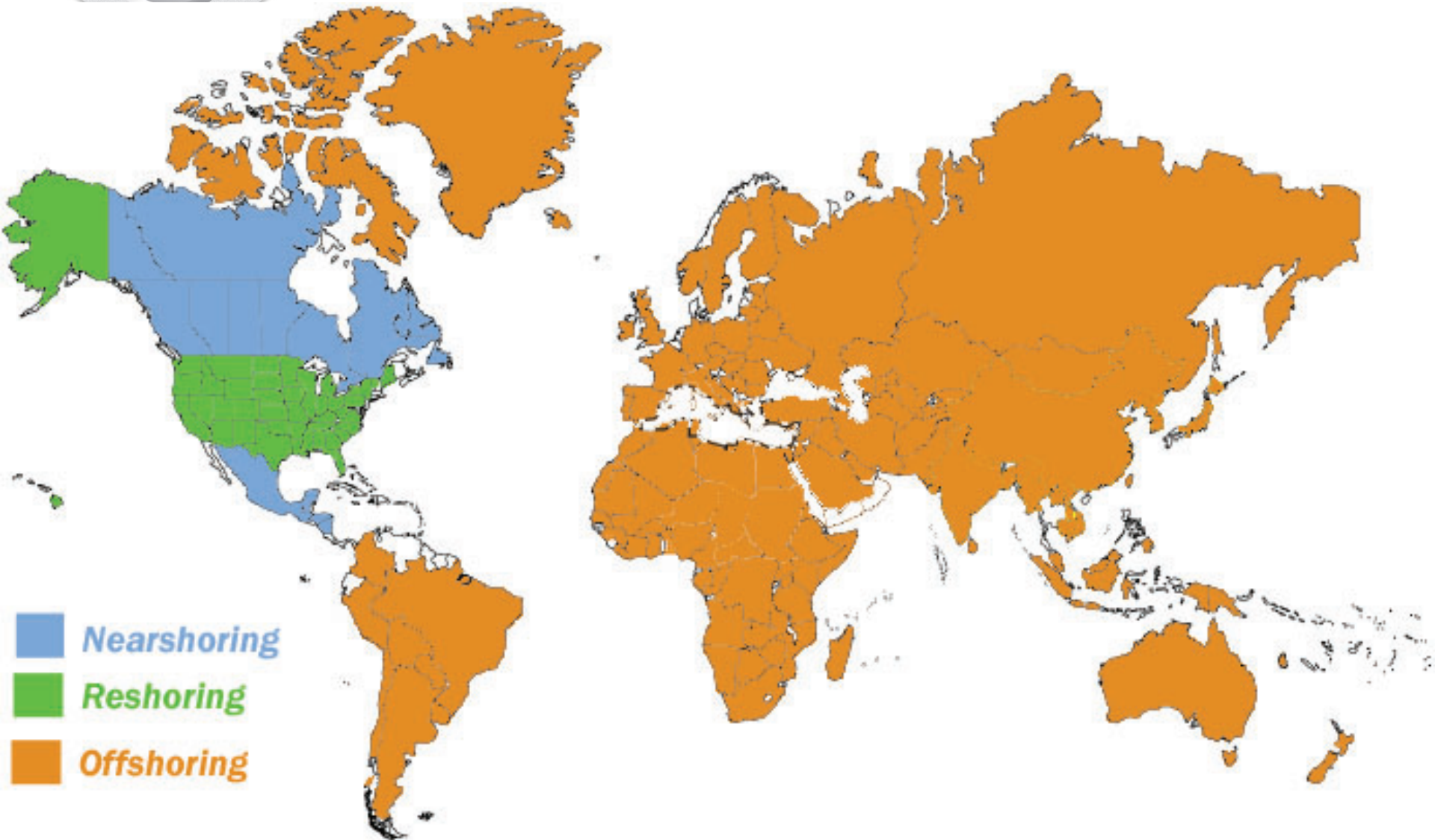
Bringing Manufacturing Back Home

To Reshore or Offshore: How to Objectively Decide

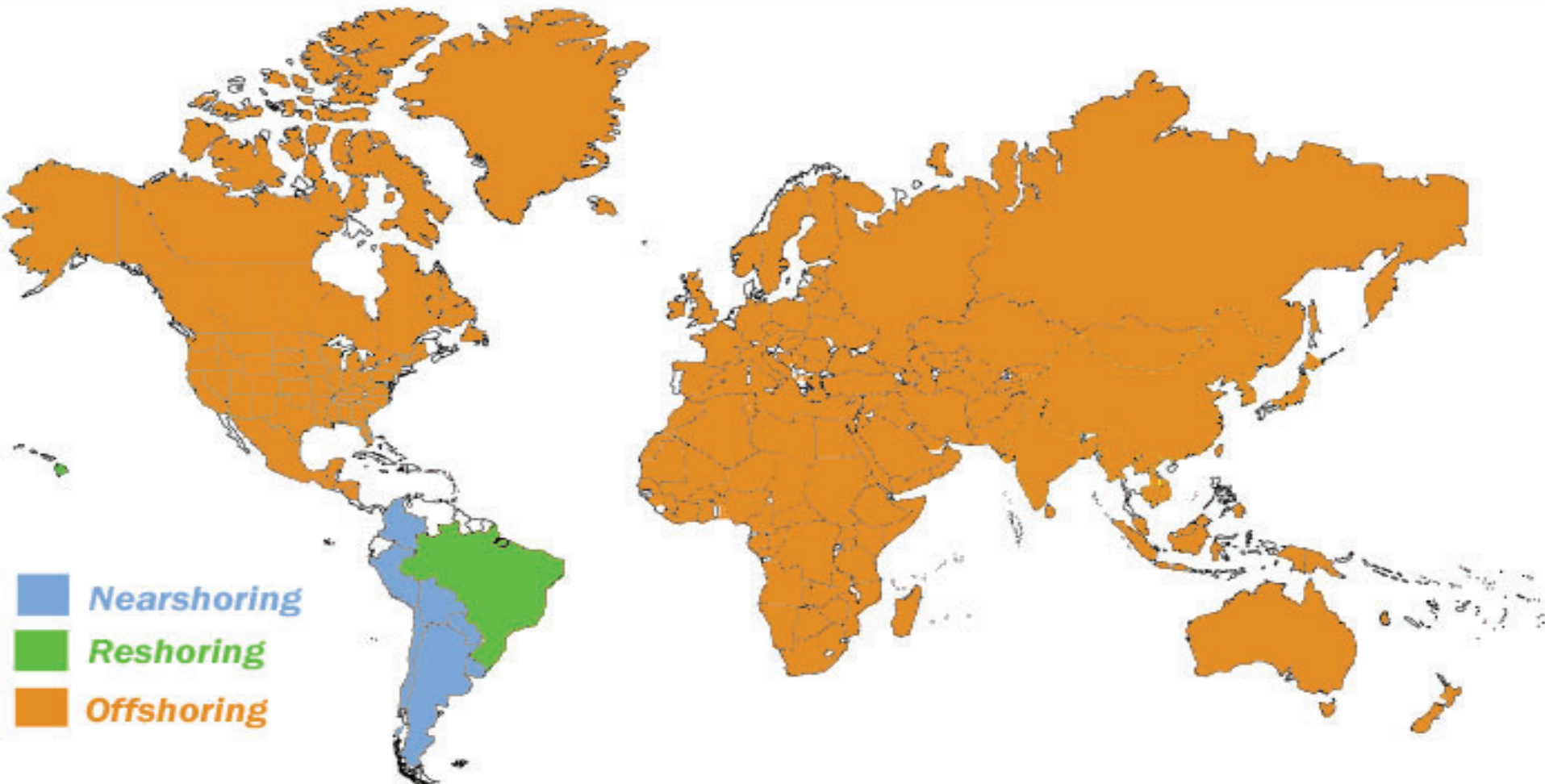
Harry Moser
President
Reshoring Initiative

- Reshoring/Backshoring/Onshoring/Insourcing: Bringing back manufacture of products that will be sold or assembled here.
- Transplants/FDI: Similar logic
- Producing near the consumer!
- Localization

Geographic Sourcing Alternatives



Reshoring: a Brazilian perspective



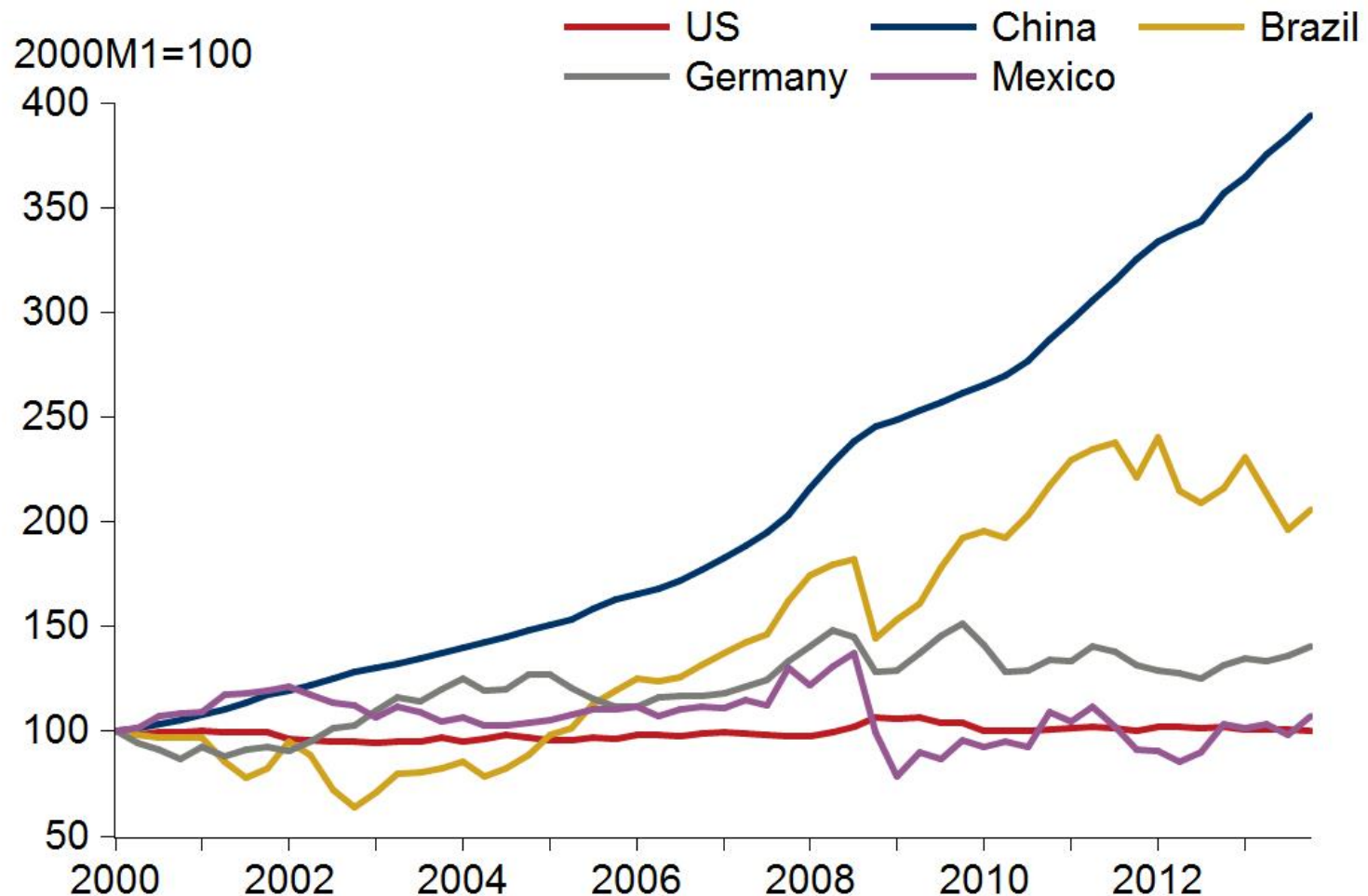
60% of manufacturers:

- Apply “rudimentary” total cost models
 - Wage Arbitrage
 - PPV (Purchase Price Variance)
 - Landed Cost
- Ignore 20% or more of the total cost of offshored products

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

Indexed Unit Labor Costs in the Manufacturing Sector of Selected Countries

US: Unit labor costs in manufacturing in US\$



Source: Oxford Economics/Haver Analytics



The Industry-Led Reshoring Initiative Provides

- Online Library of 3,500+ reshoring articles
- Statistics from TCO and Library databases
- Case Study template for posting cases.
- Solutions to major supply chain problems
- Motivation for skilled manufacturing careers
- Free Total Cost of Ownership (TCO) software for:
 - Companies for sourcing
 - Suppliers of parts and equipment for selling

TCO Example: a Part

Chinese unit price	\$70
U.S. unit price	\$100
# units/year	12,000
unit weight, lbs	2
Shipments/year	6
product life, yrs	5
Packaging*	1%
Payment on shipment	Yes
Quality*	2%

Product liability risk*	0.5%
IP risk*	1.9%
Innovation*	0.5%
Trips/yr	2
Carrying cost, rate	22%
Emergency air freight %*	5%
Wage inflation, annual*	8%
Currency appreciation, annual*	5%

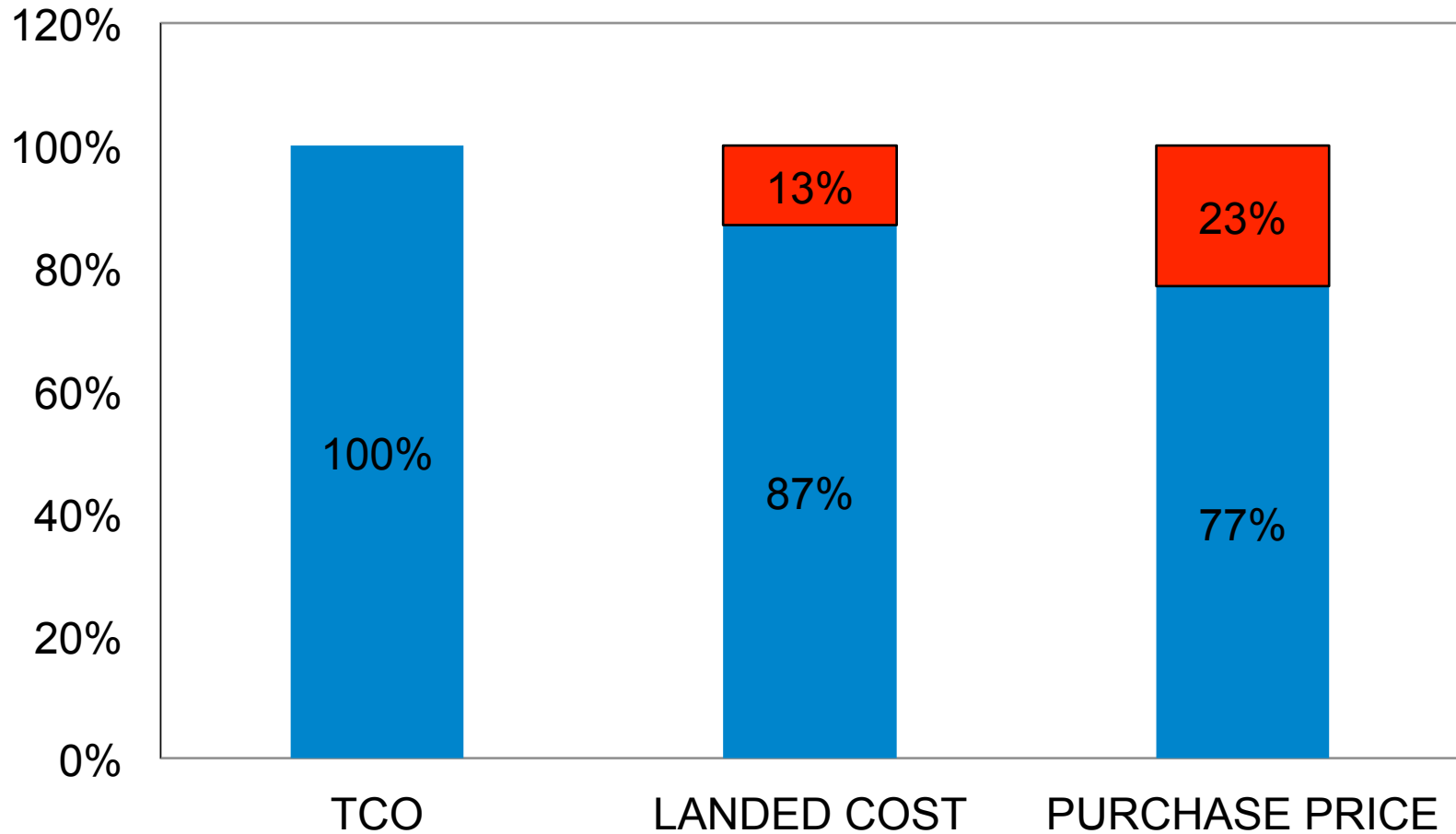
* Chinese⁸ differential vs. U.S.

TCO Comparison Example

Present and Forecast US and China Price and TCO (US\$)



PPV and Landed Cost Miss a lot of TCO



Comparison Basis	% of cases where U.S. has the advantage
Price	5%
TCO	53%
Difference	48%*

*Conservatively 25% might return if companies shifted to TCO

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

Source: “4th Key Principle for Management,” *Out of the Crisis*, W. Edwards Deming

Offshoring Multiplies Waste

<u>Toyota Wastes</u>	<u>Offshoring Contributes</u>
Overproduction	Large batch shipments, filling containers
Waiting	Uncertain delivery/Inconsistent quality, port, customs, shared “awake time” window for discussions
Transport	8,000 mi. inbound (return boat ½ full)
Overprocessing	More packing and unpacking, customs paperwork
Inventory	In transit, cycle, safety stock, uncertain delivery and quality, less ability to check and count
Motion	Increased cost over time – repetitive motion injuries or additional labor to compensate
Defects	Much higher than local sources, extra inspection of materials and tolerances, customers unhappy longer

- Based on lead time and variability in order rates
- Quantifies the cost of excess inventory, obsolescence and lost orders
- Developed by Prof. Suzanne de Treville, Univ. of Lausanne
- Can add 15% to 20% to the offshoring costs identified by the TCO Estimator

Local production dominates

Product Values

Price (p) ⓘ 100

Make-to-order cost (c_0) ⓘ 44

Residual value (rv) ⓘ 20

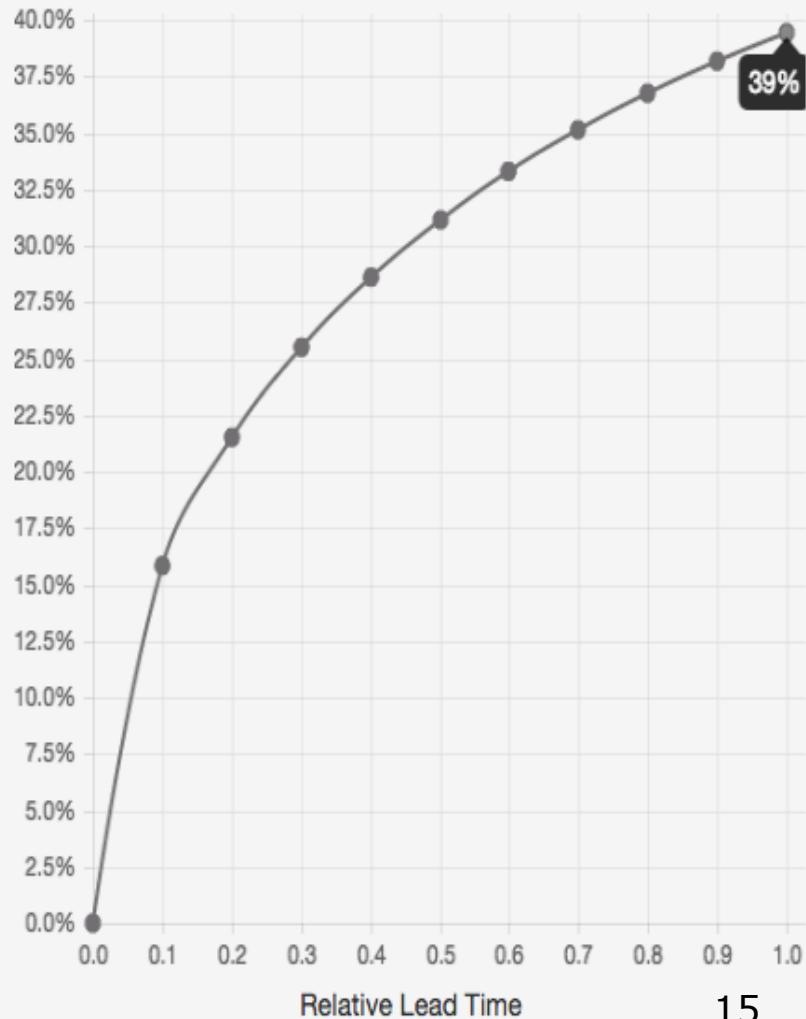
Critical fractile (cf_0) ⓘ 0.70

Minimum service level
(msl) ⓘ 0.7

Fill rate (fr) ⓘ 0.89

Volatility parameter (v) ⓘ 0.86
(Calculator)

Add Curve



Some Reshorners





Bringing Production back from China:

- Water-heaters, fridges, and washing machines
- Unionized facility in Louisville, KY
- 1300 jobs, renovated facility, \$800 million invested
- Reasons:
 - Tax incentives
 - High-tech new model
 - Ease of design collaboration with workers: retail price -20%
 - 2 tier contract
 - Chinese cost: -30% becomes +6% considering inventory and delivery problems
- “Jobs at U.S. suppliers”: 20,000



Walmart's U.S. Manufacturing program

- Walmart's increase in U.S. manufactured purchases:
 - \$250 Billion over 10 years
 - In the 10th year:
 - Approx. 300,000 manufacturing jobs*
 - Approx. 1 million total jobs**
- <http://engage.walmart-jump.com/>

*Reshoring Initiative **Boston Consulting Group

Resources for Retail Suppliers

- Purpose: Help suppliers supply more Made in USA products
- Developed for Walmart. Will invite all retailers
- Page on [Walmart USA Mfg. site](#), w/links to
- [Nine Resources](#) on Initiative site:
 - [Timing](#)
 - [Product Selection](#)
 - [Revaluation](#)
 - [Competitiveness](#) (including USCTI)
 - [Suppliers](#)
 - [Retailers](#)
 - [Compliance](#)
 - [Transition](#)
 - [Financing](#)
- Personal contacts at 35 associations/companies/Commerce

- China, Europe to Avon, MA
- Workforce has doubled in last decade
- \$5 million in recent investments
- Reasons:
 - Delivery
 - Freight cost
 - IP risk
 - Rising wages
 - Labor concessions
 - U.S. energy prices
- Customers reshoring





- Will triple domestic production to supply N. America
- Shift from IL and Japan to Victoria, TX
- New plant
 - 600,000 sq. ft.
 - 500 employees
- Akashi, Japan still supplies Asia



Exotic Firearms (Foreign Direct Investment)



- Italy to Dayton, OH
- 16 jobs
- Reason:
 - Proximity to market



- Customer (Pequea) reshored from China to Cicero, IL and contracted with Circle Gear & Machine Co.
- Reasons:
 - Quality
 - Lean manufacturing
 - Inventory
 - Lead time
 - Cost is nearly equivalent to make in US vs. China



- Hybrid transmission components and transmission gear machining reshored from Japan
- Battery pack assembly from Mexico
- Steel forging from India
- Jobs reshored to OH, IL and MI
- Ford plans to add 12,000 U.S. jobs by 2015
- Reason:
 - To be sure quality standards are followed



- Expanding in Parsippany, NJ plant over plants in Pennsylvania and Hungary
- Reasons to manufacture in New Jersey:
 - Highly skilled workers
 - Access to universities
- Metem's CEO on the company's growth: "One of the great things about gas turbines is that the U.S. really has a leadership position in that technology. We are seeing our customers bring turbine manufacturing back to the U.S. from other parts of the world."

Source: Beth Fitzgerald, NJBiz. "Manufacturer's expansion in Parsippany expected to create jobs, CEO says." January 30, 2013.
<http://www.njbiz.com/article/20130130/NJBIZ01/130139989/Manufacturer's-expansion-in-Parsippany-expected-to-create-jobs-CEO-says>

Aerospace Engine Parts (Foreign Direct Investment)



- Opened plant in Crosspointe, Prince George County, Virginia, in 2011
- \$170 million initial investment
- 140 jobs
- Future growth projections include another 500+ jobs and total \$500 million in investment
- Reasons:
 - Lower labor costs
 - Higher Productivity
 - Do business in dollars to minimize currency risk

Transmissions and Gears (Foreign Direct Investment)



- Germany to Gray Court, SC and Detroit, MI
- 1650 jobs in SC, TBD in MI
- Supplier for Chrysler
- Began building gearboxes for wind turbines in Gainesville, GA (\$98 million investment, 250 jobs)
- Reasons:
 - Time to market
 - Proximity to market

Sources:

Chad Moutray, Member Focus; National Association of Manufacturers. "Increasing investment in manufacturing in the United States." September 2013. <http://memberfocus.nam.org/publication/?i=175819&p=4>.

PricewaterhouseCoopers. "A homecoming for US manufacturing? Why a resurgence in US manufacturing may be the next big bet." September 2013. http://www.pwc.com/en_US/us/industrial-products/publications/assets/pwc-us-manufacturing-resurgence.pdf.

- Adapted TCO
- Making decisions on a component by component basis.
- Have seen components that would have been sourced overseas now sourced domestically.
- Components that have had **a unit price difference of 50% or less** have been good candidates for keeping domestic.
- Size/Weight of component and tooling costs make a big difference.



- 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

- Woodridge, IL
- Supplies heavy equipment companies
- Had quality issue with a Chinese component
- Found local IL source
- Result:
 - Quality problem fixed
 - Inventory cut by 94%
- \$25M order



U.S. Reshoring is Happening!

- BCG: MNI actively reshoring: 7% / 16% ('12/'14)
- Medical Devices: Of the 49% that outsourced offshore, 45% are returning
- Plastics News: 70% of plastics industry manufacturers have or will soon reshore
- Alix Partners: U.S. favored over Mexico: 55% / 31%
- AGMA/ABMA: Members or their customer reshored: 54% (5/1/15)

The Bleeding has Stopped

Manufacturing Jobs/Year			
	2000-2003 Annual Average	2015	% Change
New Offshoring	~240,000	~60,000	-75%
New Reshoring & FDI	12,000	67,000	+ 400%
Net Jobs Gained	~-220,000	~0	N/A



BCG's Tipping Point Industries

- Computers and electronics
- Appliances/electrical equipment
- Machinery
- Furniture
- Plastics and rubber
- Fabricated metals
- Transportation goods

Reshored Industries: Top 10

Industry	Jobs	Cases
Transportation Equipment	13823	33
Electrical Equipment, Appliances, Components	9240	58
Computer/Electronic Products	3483	25
Machinery	2860	20
Apparel/Textiles	2154	46
Fabricated Metal Products	1721	39
Food	1628	9
Wood Products	1028	18
Medical Equipment	738	17
Hobbies	723	29

Sources:
Reshoring
Initiative Library.

Cases 2007
through 12/31/14.

Negative Issues Offshore: Top 10

Negative Reasons not to Offshore	Companies
Quality/rework/warranty	116
Freight cost; Lead time/time to market	90 each
Rising wages	63
Total cost, TCO	62
Delivery	45
Inventory	42
Communications	26
Intellectual property risk	23
Loss of control	22
Supply chain interruption risk, Travel cost	21 each



Positive Reasons to Reshore: Top 10

Positive Reasons to Reshore	Cases
Image/brand	58
Automation/technology	53
Re-design of the part	40
Government Incentives; Walmart	35 each
Skilled workforce availability/training	34
Higher productivity; Lean or other business process improvements; Manufacturing/Engineering joint innovation	27 each
U.S. price of natural gas, chemicals, electricity	18
Contracted/Customers Reshoring	16

Top Countries From Which Reshored

Global Region	Cases
Asia	241
North America	37
Western Europe	12
Eastern Europe	5

Country	Cases
China	194
Mexico	27
Canada	10
Taiwan	9
Japan	8
India	7
Italy	6
Korea, Malaysia, Hungary	3 each



Countries Reshoring Include

- Canada
- France
- Italy
- Japan
- Korea
- Netherlands
- Switzerland
- UK*

* Our TCO Estimator adapted online at Cranfield U.

Nearshoring in Mexico and Canada

Country	Jobs	Cases	Jobs/Case
Mexico	5900	11	536
Canada	1530	7	219

Source: Reshoring Library Mexico is surely understated.



Reshoring More Effective than Exporting: Much More Competitive at Home!

		Where Sold	
		U.S.	China
Where Made	U.S.	\$100	\$115
	China	\$100	\$85
Difference		0	30%

Based on TCO being 15% higher for exports



Related Manufacturing Trends

- Positives:
 - Workforce 100,000s above 10-20 year trend lines
 - Shale Gas
- Negatives:
 - Trade deficit not declining
 - USD high
 - Productivity growth low



Objective of Reshoring

- Balance the \$500 billion trade deficit:
 - 4 million manufacturing jobs
 - Cut U.S. budget deficit by about 50%
 - Reduce unemployment about 4 percentage points
 - Strengthen the middle-class
 - 30% increase in manufacturing
 - If spread over 20 years: 25% extra annual capital equipment investment
 - Allow productivity and growth in mfg. employment



Gaining support in Washington, DC

- Commerce Dept:
 - 2012 budget specifies TCO.
 - Links:
 - <http://nist.gov/mep/reshoring.cfm>
 - <http://business.usa.gov/program/reshoring-initiative>
 - Major new site: <http://acetool.commerce.gov/>
 - Testified at Congressional hearing on 3/28/12
 - Working actively with SelectUSA
- Calls from:
 - US-China Economic and Security Review Commission
 - White House National Economic Council



Reshoring based on TCO and CDF:
A partial alternative to protectionism!

Employment Projections

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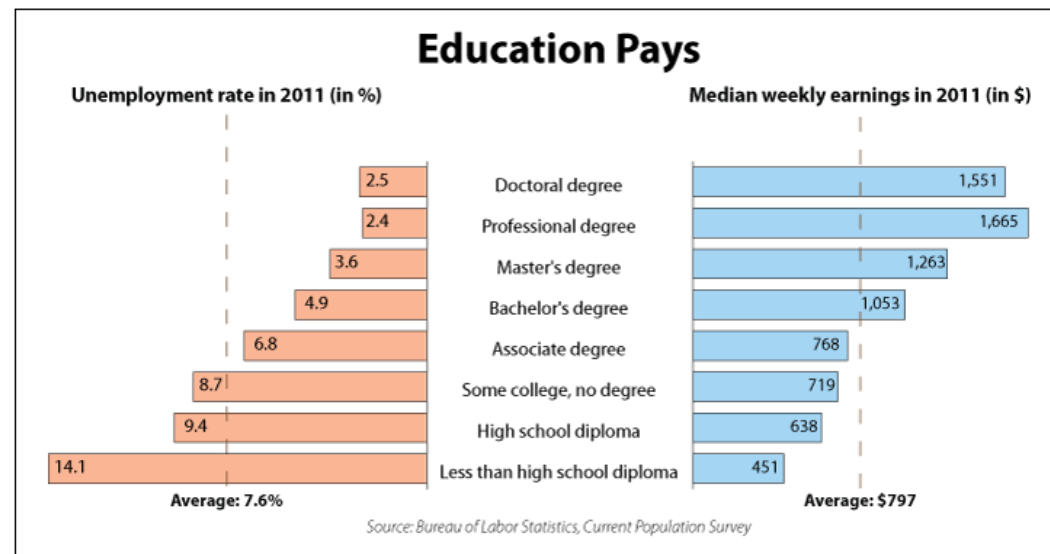
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RESOURCES ▸

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DOCUMENTATION ▸

Education pays...

Education pays in higher earnings and lower unemployment rates



[Chart data \[TXT\]](#)

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.

Source: Bureau of Labor Statistics, Current Population Survey.

BLS has some data on the [employment status](#) of the civilian noninstitutional population 25 years and over by educational attainment, sex, race, and Hispanic origin online.

The Census Bureau also has some data on [educational attainment](#) online.

**WE NEED
YOUR
HELP!**

Issue	Solution
“Trades” and “vocations” image	Call them “Professions”
“Middle skills”	“Technical Skills”
Manufacturing career image due to offshoring	Industry collect and media report the local reshoring case of the month. Use our Case Studies feature.



Economic Development Program Starting in PA, MS, Central NY

Action	Source/Responsibility
Identify local imports by U.S. or foreign companies	Datamyne
Suggest to companies they source locally	EDO/MEP/ etc.
Train companies on TCO to overcome issue of higher local price	Reshoring Initiative
Needed further cost reductions	MEP/ Comm. College/ Technology Suppliers/EDO

- For companies:
 - Standard tool to include externalities in sourcing decisions.
 - Identification of the products with the best shareholder and sustainability returns.
 - Help justifying the marginal opportunities
 - Recognition for success,
- For advocates:
 - Tool to advance an economically and environmentally sustainable economy.

- ACETool
 - Cost Differential Frontier
- TCO Estimator
- Using the TCO Estimator: A How-To Guide
- Library
- Submit a Case Study
- Economic Development Program



How You Can Use the Free Tools

- Decide what to produce in-market
- Sell against imports
- Identify prospects that are reshoring and FDI
- Help customers decide to produce more domestically
- Offer to local governments to encourage domestic manufacturing
- Identify applications where your technology could enable domestic mfg.

How to Get Started

- Ask about pain and opportunities:
 - Delivery/air freight (**W. Coast dock delays**)
 - Orders lost due to delivery or slow response
 - Quality
 - Excess inventory
 - Travel
 - Late night calls
 - IP loss or risk
 - Regulatory issues
 - Purchase price rising
 - Corruption
 - Violence
 - Natural disasters or political instability



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
- Maximize the advantages of proximity
- Match “Chinese” price or?

Investing using TCO

- By understanding:
 - the advantage of producing near the consumer, and
 - the small TCO gap instead of the large price gap
- U.S. companies can:
 - justify domestic investment, process improvement, automation, training, etc.
- And do not have to sacrifice quality, delivery, time-to-market, or employees to be competitive and profitable.



A non-profit with 28 sponsors

Platinum



Gold



Silver



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Bronze



Steel



Iron





Help Reverse the Offshoring Flood Now!

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