Supply Chain Lessons from COVID-19

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Founder & President
Reshoring Initiative
The Crane House: 1670
Stephen Crane

THE RED BADGE
OF COURAGE

STEPHEN CRANE
Grandpa Crane
Ray Moser
Manufacturing Output Plateauing

https://fred.stlouisfed.org/series/INDPRO/
Mfg. Share of GDP Down 50%
Personal Consumption of Goods

https://fred.stlouisfed.org/series/DGDSRX1
Trade Deficits since 1979

Goods Trade Balance as a % of U.S. GDP
1970-2019

Balanced Trade

Manufacturing Jobs as a % of U.S. Employment

- Trade Deficit
- Trade Balance
- Mfg. Employment

Goods Trade Balance as a % of U.S. GDP

- 1%
- 0%
- -1%
- -2%
- -3%
- -4%
- -5%
- -6%
- -7%
USD  +300% in 40 years
Weak Apprenticeship System
Starting to Restore Balance

- **Reshoring/Onshoring:** U.S. companies bringing back manufacture of products that will be sold or assembled here.
- **FDI (Foreign Direct Investment):** Similar logic. Different owner.
- **Localization:** Producing near the consumer.
- **Nearshoring:** Mexico or Canada.
Some Trends Driving Reshoring

- **eCommerce**: Requires immediate replenishment
- **Advanced technologies**: Minimizes impact of higher wages. Lessens production time
- **Heavy retail discounting**: Requires lower inventory, smaller MOQ
- **Rising offshore wages**: Reduces the price gap
- **Preference for Made in USA**: Helps with volume/margin
- **Tariffs & trade barriers**: Some form will stay. Supported by both parties.
- **Lean**: Commitment to eliminating waste/bringing value

Sources: Mostafiz Uddin, Dhaka Tribune; Bill D’Arienzo, Apparel Magazine; Janice Wang, Sourcing Journal
Reshoring + FDI
Cumulative Mfg. Job Announcements

![Graph showing cumulative manufacturing job announcements from 2010 to 2019. The number of jobs increases significantly over the years.]
Consumer economy feeding on cheap imports

Tariffs in 2019:
- Intellectual appreciation of the trade deficit
- Imports from China declined

Covid-19 in 2020:
- Emotion and fear
- Visceral: Lack of critical health products
- Economy ravaged
- Businesses failing
- Massive unemployment
- Commitment to reverse our dependencies
U.S. Global Supply Chains Have Failed

- 70 to 95% import dependent, primarily on China
- 70 of 195 countries have restricted exports
- Impossible to scale up here fast enough
Senators:
- Rubio (R-FL)
- Warren (D-MA)
- Cotton (R-AR) & Cruz (R-TX)
- Hawley (R-MO)
- Stevens (R-AK)
- Blackburn (R-TN) & Menendez, D-N.J.

Representatives:
- Slotkin (MI)
- Hartzler (R-MO) & Garamendi (D-CA)

Some Other Key Dependencies
U.S. Trade Balance by HS Good

2018 US TRADE BALANCE BY GOOD (HTS 4-DIGIT)
TOP 40 BY TOTAL IMPORT + EXPORT VALUE, EXCLUDING SPECIAL CLASSES
ACCOUNTING FOR 50.7% OF TOTAL IMPORT + EXPORT VALUE

Source U.S. International Trade Commission via Jack Kirr
Societal Benefits of Balance

- Increase manufacturing: 40% (5M jobs)
- Cut U.S. budget deficit. Provide materiel for defense
- Restore the middle-class and SME manufacturers
- Strengthen skilled workforce recruitment
- Provide careers for ex-retail employees
- Reduce global pollution / minimize wasteful transportation
- Increase capital investment by ≈ 20% for 20 years
- Allow growth in productivity and mfg employment
60% of Companies Ignore about 20% Of Total Cost

- TCO: 100%
- LANDED COST: 87%
- PURCHASE PRICE: 77%
TCO Comparison Example

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

Year 1  Year 2  Year 3  Year 4  Year 5
US TCO  China TCO  US Price  China Price
Chinese Price and TCO, % of U.S.

Source: TCO user database
Impact of TCO

Source: TCO user database
Some Total Costs other than Price

Hard

Risks & Strategic

SOLD OUT
## How Large are the Hidden Costs?

<table>
<thead>
<tr>
<th>RESEARCHER/BASE</th>
<th>SIZE OF HIDDEN COSTS</th>
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</thead>
<tbody>
<tr>
<td>Six U.K. manufacturers</td>
<td>25-50%</td>
</tr>
<tr>
<td>European auto industry</td>
<td>15%+</td>
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<td>re ICB (Boards)</td>
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<tr>
<td>Parker/Dewhurst</td>
<td>24%</td>
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<tr>
<td>Booze &amp; Co.</td>
<td>17.5%</td>
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<tr>
<td>Prof. John Gray, Ohio State U.</td>
<td>More than price difference in cases studied</td>
</tr>
<tr>
<td>Reshoring Initiative</td>
<td>15-25%</td>
</tr>
</tbody>
</table>
“End the practice of awarding business on the basis of price tag. Instead, minimize total cost.”

Move Your Operations to China?

Do some lean math first.*

- Describes many companies’ math: price plus freight
- “Calculate the true cost”
- Lists 12 costs to consider.
- All are in the TCO Estimator

*Lean Enterprise Institute 2009
I believe most U.S. companies focus their lean efforts on domestic operations.

A lean effort by an offshore supplier or factory will focus on internal issues, not question exporting to the U.S.

By accepting the imports as a given and not using TC, lean practitioners are ignoring most of the gemba.

And...by not thinking how much cheaper US production would be if done in the best lean way, they are ignoring gemba!
- 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%
  - $60M order
Ag Gear Boxes

- Reshored production from China to PA and IL
- Brought contract work to Buck Co. (PA foundry) and Circle Gear (IL machine shop)
- Reasons:
  - Quality: 25% of gear boxes from China failed due to substandard metals used
  - Equivalent price: Cost about $900 to produce gear boxes in US, and between $800-$900 to produce in China
  - Total cost

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
Appliances

- China to unionized facility in Louisville, KY
- 1300 jobs
- $800 million invested to renovate facilities in Appliance Park

Reasons:
- Tax incentives
- High-tech new model: IP risk
- Ease of design collaboration with workers: retail price -20%
- Chinese cost: -30% becomes +6% considering inventory and delivery problems

ATMs

- Returned from China, India and Brazil to Columbus, GA
- 350,000 sq. ft. factory
- 900 employees
- Reasons:
  - Slow response from contract suppliers, esp. lower tiers
  - Chinese wages up
  - Eliminate silos by having mfg. near engineering and customers

Source: 1/27/10 Strategy-Business.com Manufacturing: Backshoring on the rise
Frisbees

- 50% of Frisbee production moved from China to CA
- Production of other plastic toys by Wham-O moved from China to MI
- 24 jobs added

Sell Smarter Against Imports

- Import Substitution Program – Substitute domestic production for imports
- We can provide data on importers of the products you produce or could produce domestically:
  - Consignee company
  - Address
  - Product
  - Tons/year
  - ≈ $/year
  - Offshore supplier
- Train your team to sell using TC

BEFORE

SE ASIA

AFTER

US
Rebuilding the Domestic Supply Chain
- Award will be at IMTS 2020
- Ways you can “win”:
  - You reshore mfg.
  - Your supplier reshores
- New FDI also included, e.g. Toyota, Siemens.
- Deadline 5/31/20
Supply Chain Lessons from COVID-19 A Series in Depth

- April 29 — Overview  Gardner Media/Reshoring Initiative Webinar
- May 6 — For OEMs Gardner Media/Reshoring Initiative Webinar
- May 13 — For Job Shops Gardner Media/Reshoring Initiative Webinar
- May 20 — Getting Started with TCO Gardner Media/Reshoring Initiative Webinar
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