

Navigating the Global Manufacturing Maze: Are We There Yet?

PERSPECTIVES IN L.C.C. IMPORTING

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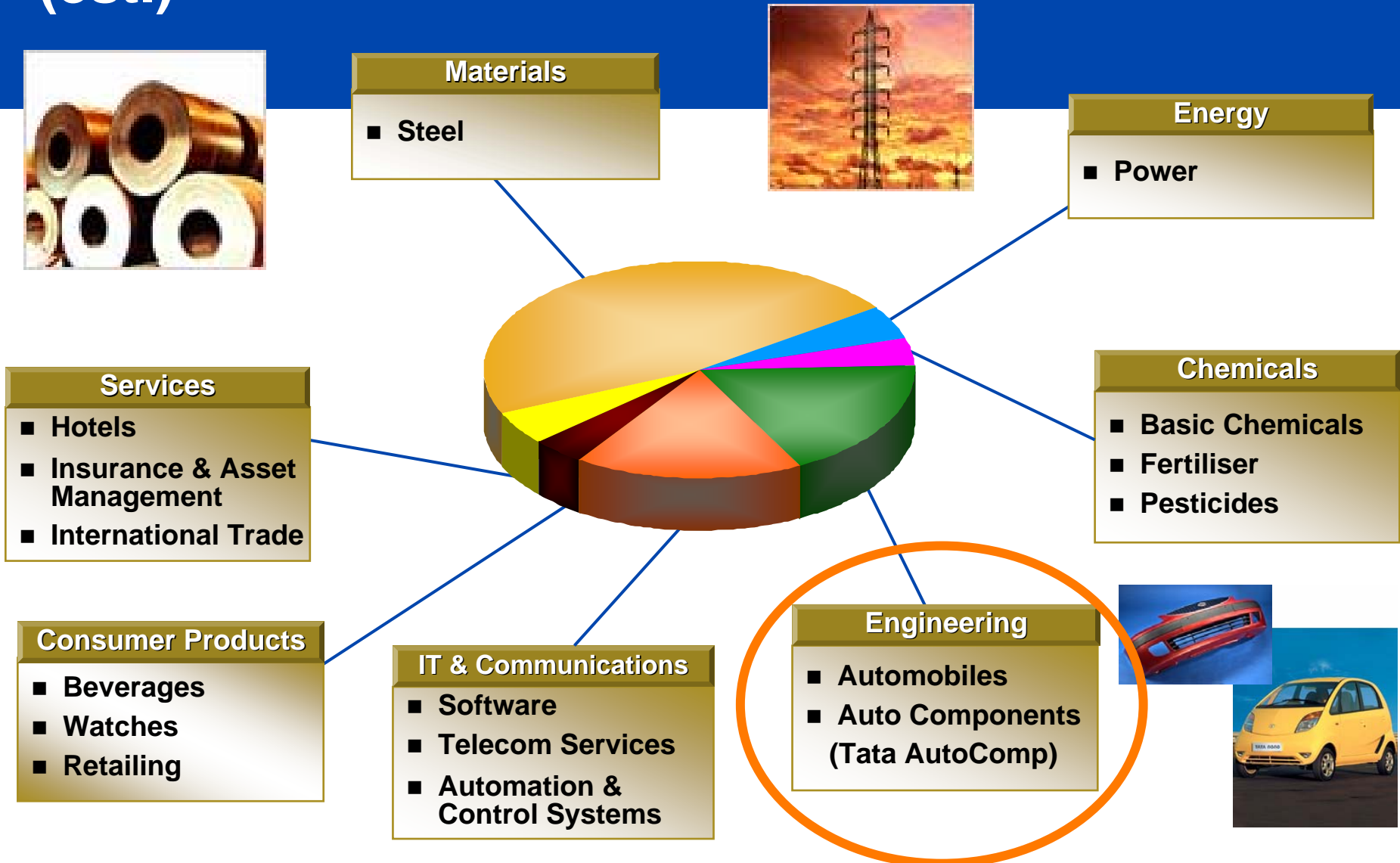
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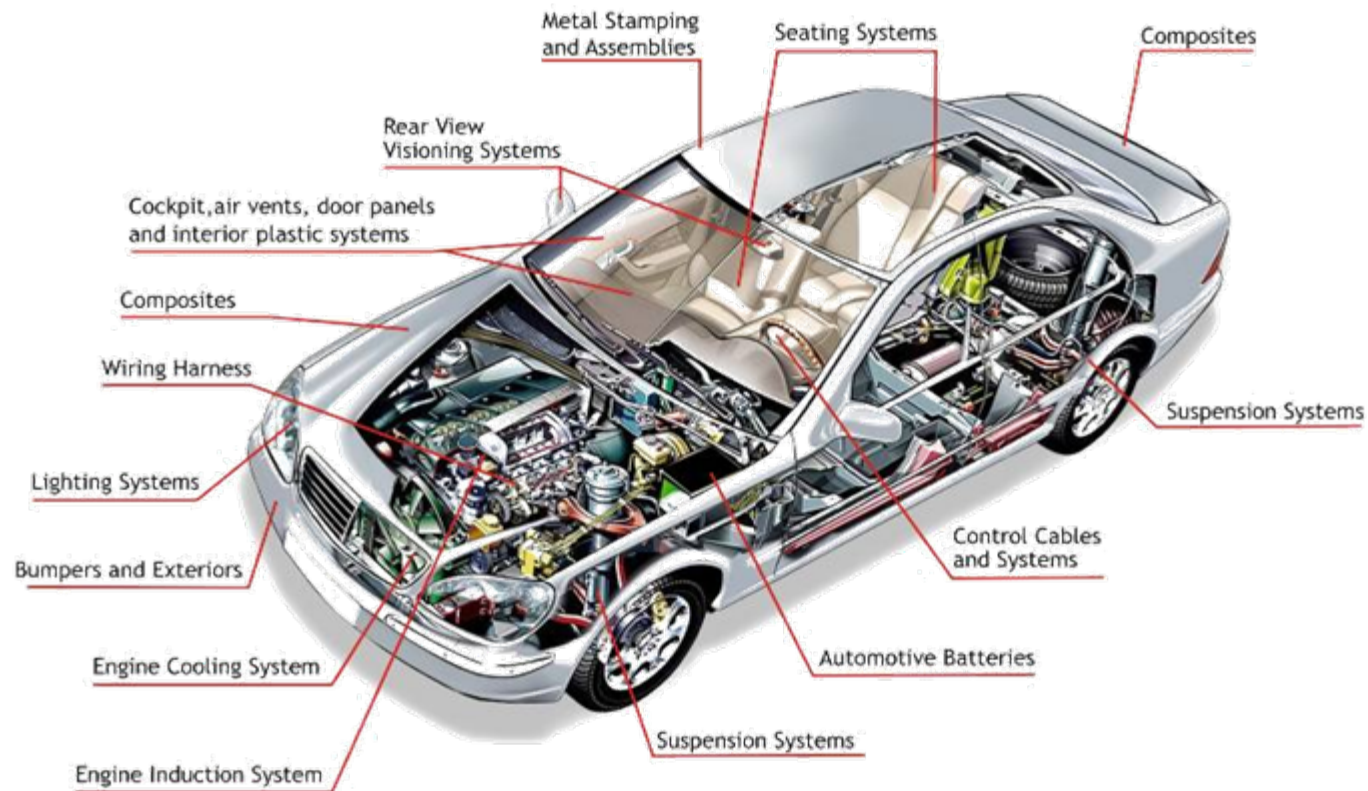
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Tata Group – 2008-2009 Revenue \$75-\$80 Billion (est.)



Tata AutoComp Systems - Portfolio



Available for Commercial Vehicles:

- Braking Systems
- Suspension Systems

Service Offered

- Engineering
- Tooling
- Supply Chain

Telematics and Electronics

- Telematics and Vehicle Tracking Systems
- Electronic Driver Assistance and Infotainment

Tata AutoComp Systems: Strategic Business Groups

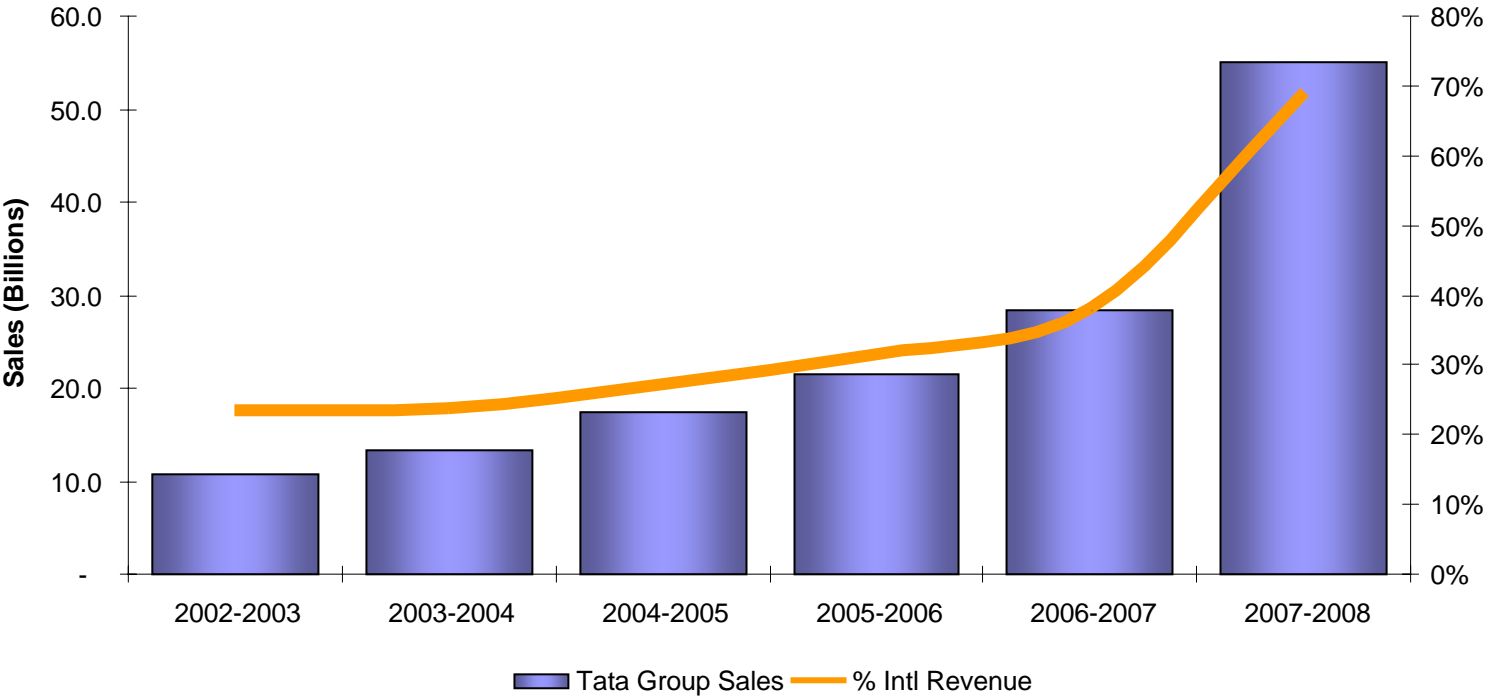
<i>Manufacturing Business Group</i>	
Business Units	Partners
Tata Johnson Controls	Johnson Controls, USA
TACO - Interiors and Plastic Division	TACO owned, Faurecia (TA) - Program specific
Tata Toyo Radiators	T.RAD, Japan
TC Springs	TACO owned
Automotive Stampings and Assemblies Limited	Gestamp Automoción, Spain
Automotive Composite Systems International	Owens Corning, USA Menzolit-Fibron, Germany
Knorr-Bremse System for Commercial Vehicles	Knorr Bremse, Germany
TACO MobiApps Telematics	MobiApps, Singapore
TACO Hendrickson	Hendrickson, USA
TACO Sasken Automotive Electronics	Sasken Communication Technologies
Tata Visteon	Visteon, USA
Tata AutoComp GY Batteries	GS Yuasa, Japan
Technical Stampings Automotive Ltd.	Sungwoo, Korea
Tata Ficosa Automotive	Ficosa, Spain Murakami Corporation - Mirrors (TA) Atsumitec Corp- Gear Shifter (TA)
Tata Yazaki Autocomp	Yazaki Corp, Japan

<i>Engineering Business Group</i>	
Business Units	Partners
TACO Engineering Center	TACO owned
TACO IPD Technical Center	TACO owned
Tata Johnson Controls (Engineering Division)	Johnson Controls, USA
TACO Faurecia Design Center	Faurecia, France
TACO Visteon Engg Center	Visteon, USA

Supply Chain Management Business Group

Global Growth – Tata Group

Memo: Tata AutoComp 2007-2008
• Global revenue: \$840M
• Int'l Revenue: 18%



Strategy Deployment – Tata AutoComp Systems

Global Strategy

- Organization established November 1995
- Utilize joint ventures to quickly create and grow India market presence
- Leverage low labor costs, growing Indian domestic market, strong financial position

North America

- Engineering sales (1999), manufactured product sales (2005)
- Learn about market / customers through select offshoring and import opportunities
- Establish strong North American / European reputation and customer relationships
- Manage organic growth while evaluating alternatives for acquisitions, joint ventures, licensing, etc.
 - Interiors, Exteriors, Powertrain, Electronics
 - Build on / develop new core competencies

Case Study – Hypothetical Example - Imported Plastic Injection Molded Parts from India to the U.S.

Customer Need:

- Low cost replacement for a simple interior air vent – S. U. V.

Solution:

- Retool for production in India at Tata AutoComp

	Original Plan	
Price	\$	1.00
Material	\$	(0.29)
Labor	\$	(0.07)
Other Var Mfg.	\$	(0.09)
Packaging	\$	(0.06)
Freight & Warehousing	\$	(0.12)
Total Variable Cost	\$	(0.63)
Indirect Labor	\$	(0.12)
SG&A (local)	\$	-
Fixed Overhead	\$	(0.19)
Total Fixed Cost	\$	(0.31)
Profit	\$	0.06

Case Study – Imported Plastic Molded Parts – Things Change

- **Oil Prices**
 - Increased freight costs
 - Increased over-water inventory (slower shipment timing)
- **Volume and Mix Changes**
 - Drop in truck sales
 - Customer volumes / fixed cost coverage on facilities
 - Investment return on capital equipment
- **Exchange Rate / Resin Prices**
 - Dollar weakening from 45 INR/USD to a low in the range of 40
 - India-supplied resin versus US-validated resin
- **Underestimated Product Development Support**
 - Program Management & Engineering – India AND America
 - Appearance, Validation, Launch Requirements
 - Communication, Issue Resolution & Customer Management
 - Time: Response & Reaction

Case Study – The Cost of Change

	<u>Original Plan</u>	<u>Current</u>	<u>Variance</u>	<u>Comments</u>
Price	\$ 1.00	\$ 1.00	\$ 0.00	From U.S. perspective (FX in costs, below)
Material	\$ (0.29)	\$ (0.35)	\$ (0.06)	Resin price
Labor	\$ (0.07)	\$ (0.05)	\$ 0.02	
Other Var Mfg.	\$ (0.09)	\$ (0.10)	\$ (0.01)	
Packaging	\$ (0.06)	\$ (0.04)	\$ 0.02	
Freight & Warehousing	\$ (0.12)	\$ (0.20)	\$ (0.08)	Fuel costs, inspection costs
Total Variable Cost	\$ (0.63)	\$ (0.74)	\$ (0.11)	
Indirect Labor	\$ (0.12)	\$ (0.12)	\$ 0.00	
SG&A (local)	\$ -	\$ (0.05)	\$ (0.05)	North American support (not in original budget)
Fixed Overhead	\$ (0.19)	\$ (0.26)	\$ (0.07)	FX, other
Total Fixed Cost	\$ (0.31)	\$ (0.43)	\$ (0.12)	
Profit (Loss)	\$ 0.06	\$ (0.17)	\$ (0.23)	

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Principal
Grant Thornton LLP

"Traditional Math" Behind Moving Production Overseas

I. Labor cost savings > transportation & logistics costs

- Warehousing cost
- Inventory cost
- Shipping/transportation costs

II. Logical product and process characteristics

- Shelf life
- Shipping efficiencies
- Local country capabilities and technology

Sometimes "Traditional Math" is Incomplete

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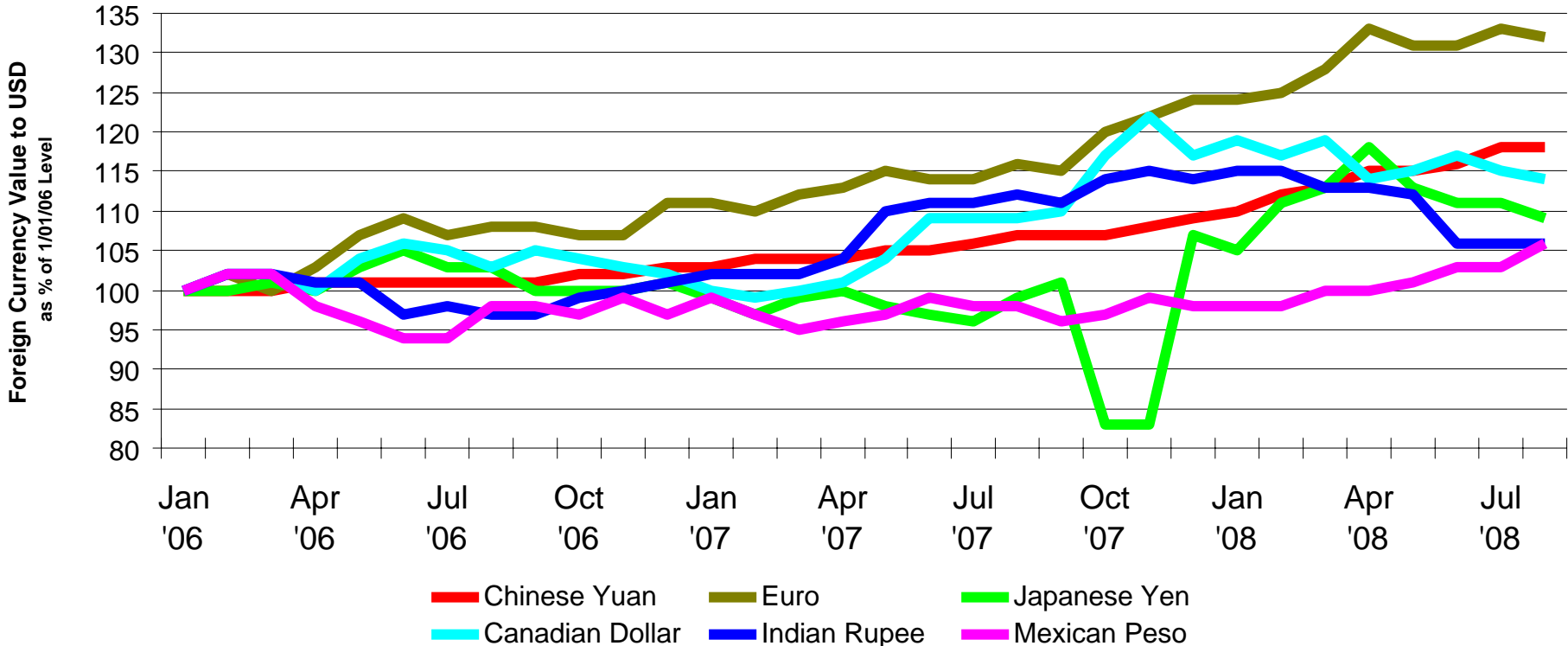
"Traditional Math" May Be Incomplete Due to Potentially "Hidden" Costs and Risk Factors

III. "Hidden" Costs and Risk Factors

- Quality (different expectations in different markets)
- Engineering support
- Program management support
- Launch costs
- Issue resolution (travel, local offices, and local personnel)
- Raw material cost economics
- Foreign exchange rates
- Country risk factors

Global Economic Factors Impacting U.S. Manufacturing

Currency Fluctuation - Impact to Costs



Source: Yahoo Finance

Select Country Risk Factors

	GDP	Manufacturing Environment				Geopolitical Climate		
		GDP Growth	Hourly Labor Cost	Literacy	Technology Rank	Trade Freedom	Corruption	Market Type
Brazil	1,314.0	●	●	○	○	○	○	●
Canada	1,432.0	○	○	●	○	●	●	●
China	3,251.0	●	●	○	○	○	○	○
Germany	3,322.0	○	○	●	○	●	●	●
Hungary	138.4	○	●	●	○	○	○	●
India	735.6	●	●	○	○	○	○	○
Indonesia	432.9	●	●	○	○	○	○	●
Japan	4,955.0	○	○	●	●	●	●	●
Mexico	893.4	○	●	○	○	●	○	●
Russia	1,286.0	●	●	●	●	●	●	○
S. Korea	957.1	○	○	○	●	○	○	●
Turkey	663.4	○	●	○	●	●	●	○
United Kingdom	2,773.0	○	○	●	○	●	●	○
United States	1,384.0	○	○	●	●	●	○	●
Vietnam	70.0	●	●	○	●	●	●	○

Source: CIA, Energy Information Administration, International Labor Organization, and International Trade Administration.

● Strength ○ Neutral ○ Weakness

Grant Thornton's Cost/Risk-Adjusted Decision Model

Simplified Example

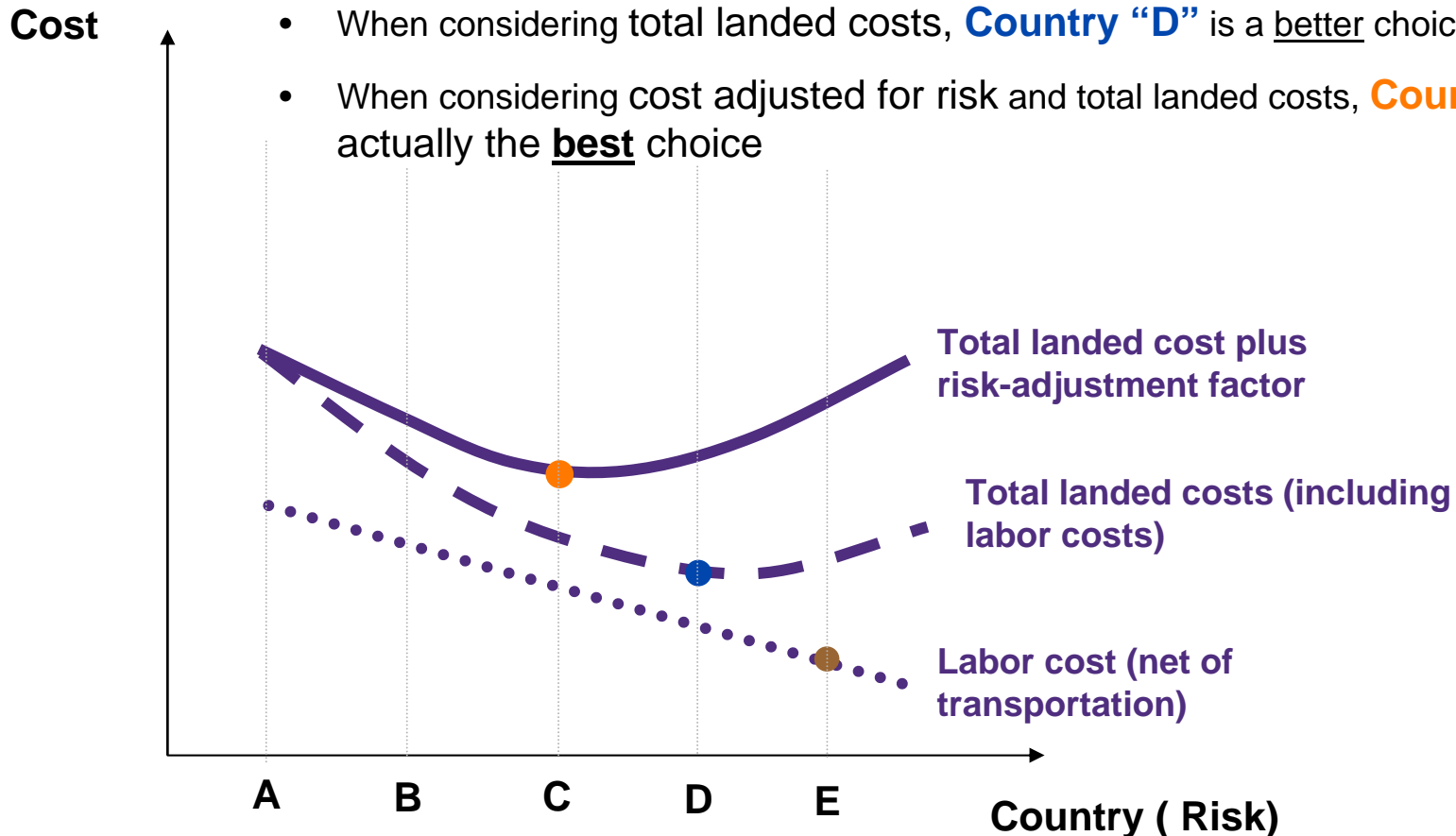
Country	Description	Labor savings (net of freight)	Incremental "Hidden" Cost "Savings"	Total Landed Cost Savings	Cost Risk Adjustment	Risk-Adjusted Savings
A	Mature Highly-developed Politically-stable	-	-	-	-	-
B		2.0%	2.0%	4.0%	1.0%	3.0%
C	Emerging market Moderate wages Moderate pol. risk	4.0%	4.0%	8.0%	3.0%	5.0%
D		6.0%	3.0%	9.0%	6.0%	3.0%
E	Under-developed Politically-unstable	8.0%	-	8.0%	9.0%	(1.0%)

Grant Thornton Cost/Risk Optimization Model

Simplified Example:

Not to Scale

- Under "traditional math," **Country "E"** may have been considered the best choice
- When considering total landed costs, **Country "D"** is a better choice
- When considering cost adjusted for risk and total landed costs, **Country "C"** is actually the best choice



Potential Solutions to Case Study

Solutions (to "hidden" costs):

- Index resin pricing (PO/Contract)
- Include inspection and local support costs up-front
- Consider other options

	<u>Price</u>	<u>Profit (Loss)</u>	<u>Variance</u>
Before "Solution"	\$ 1.00	\$ (0.17)	\$ (0.23)
Solution			
Index Resin Pricing (PO/Contract)	\$ 0.06		
<u>Factor costs up-front (into price)</u>			
- Inspection costs	\$ 0.03		
- Local support	\$ 0.05		
Subtotal, changes	\$ 0.14	\$ 0.14	\$ 0.14
After "Solution"	\$ 1.14	\$ (0.03)	\$ (0.09)

Potential Solutions to Case Study (continued)

Other considerations - risks:

- OEM Resale programs (e.g. steel)
- FX hedging (generally not a long-term solution)
- Commodity hedging
- Weak US Dollar may make resourcing [back] to U.S. competitive
- Labor costs have moved in some L.C.C.

Other considerations – strategic factors:

- Would customer accept higher (e.g. \$1.14) price?
- Increasing business / scale might improve fixed cost allocations
- Costs to establish new business, market, customer (learning-curve)
- Costs to establish credibility
- Global customer support; how critical?
- Short term vs. longer-term

Recap: The "New Math"

Effective LCC sourcing/pricing decision must consider:

- **Traditional considerations**
 - Labor savings / transportation / inventory costs / logistics
- **Potentially “hidden” costs – total landed costs**
 - Support / launch / local offices / supply chain
- **Risks**
 - Material & fuel economics / FX / communication / political / other
- **Strategic factors**
 - Global customers / balancing short-term vs. long-term

Thank You

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