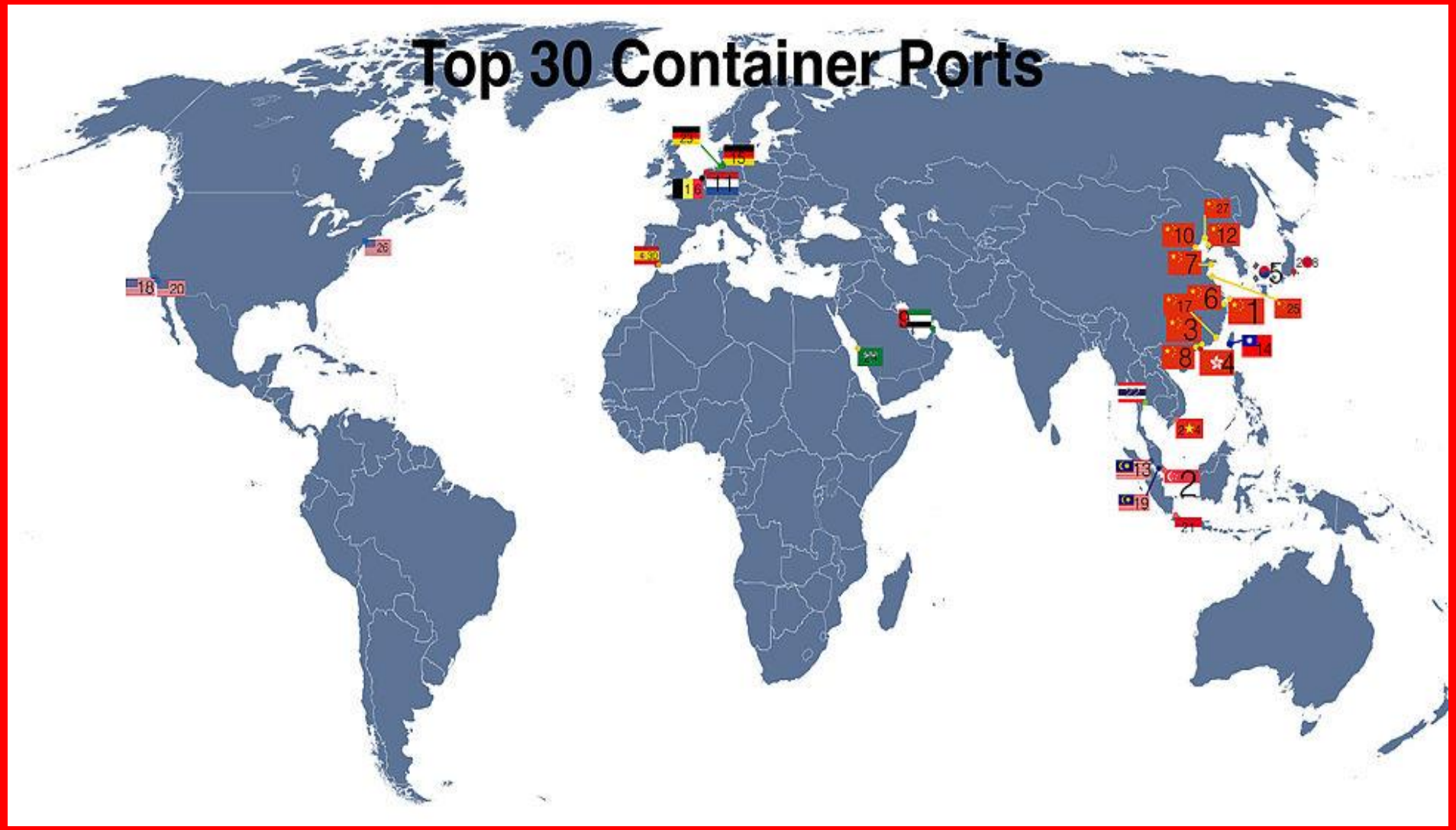
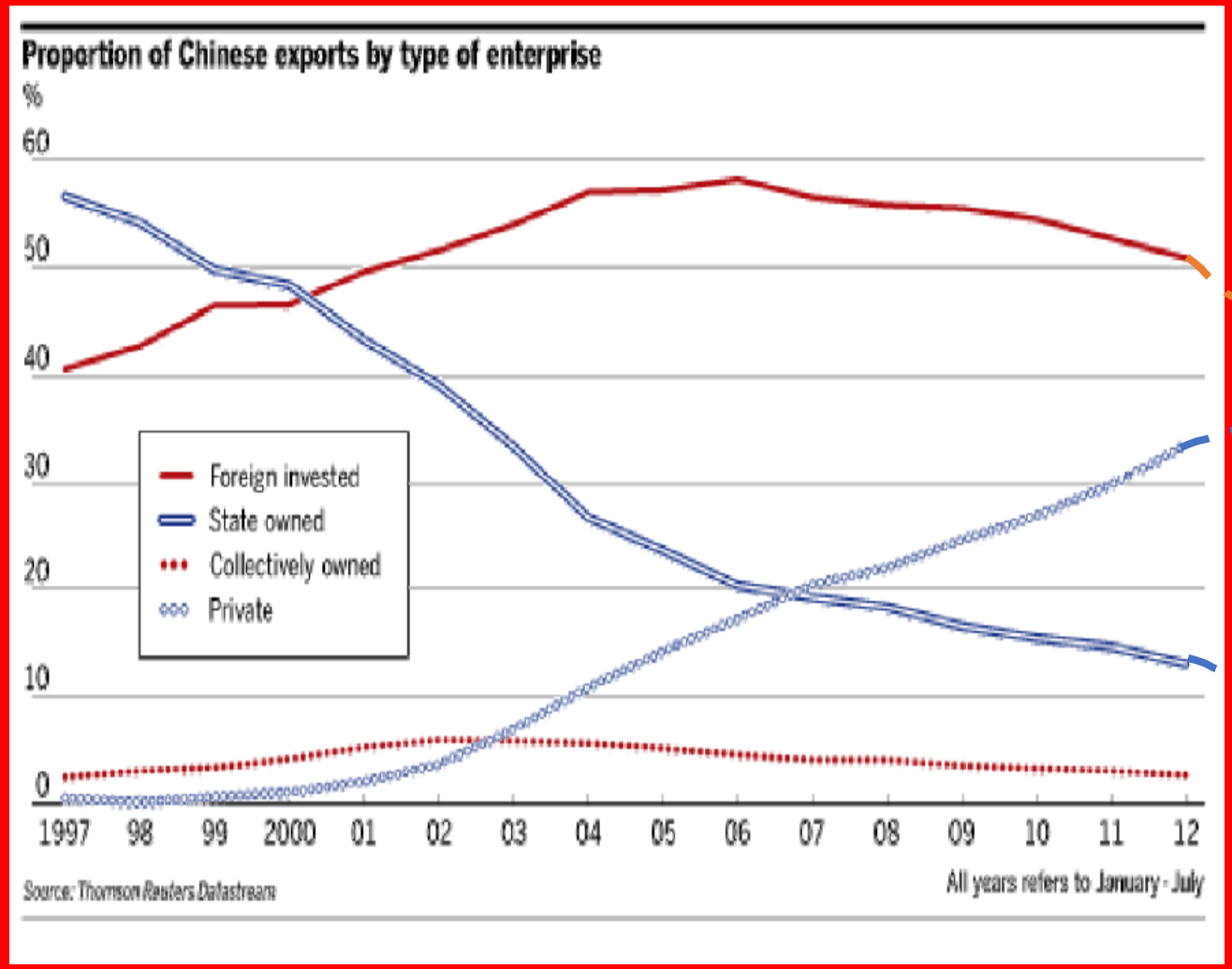
Supply chain

#	Port	Country	Region	Location	2017[1]	2004[13]		#	Port	Country	Region	Location	2017[1]	2004[13]
1	Shanghai	China	East Asia	Yangtze Delta	40,233	14,557		11	Rotterdam	Netherlands	Western Europe	North Sea	13,734	8,281
2	Singapore	Singapore	Southeast Asia	Malacca Strait	33,666	21,329		12	Port Klang	Malaysia	Southeast Asia	Malacca Strait	11,978	5,244
3	Shenzhen	China	East Asia	Pearl River Delta	25,208	13,615		13	Antwerp	Belgium	Western Europe	North Sea	10,451	6,064
4	Ningbo-Zhoushan	China	East Asia	Yangtze Delta	24,607	4,006		14	Xiamen	China	East Asia	Taiwan Strait	10,38	2,872
5	Hong Kong	China	East Asia	Pearl River Delta	20,77	21,984		15	Kaohsiung	Taiwan	East Asia	Taiwan Strait	10,271	9,714
6	Busan	South Korea	East Asia	Korean Strait	20,493	11,43		16	Dalian	China	East Asia	Yellow Sea	9,707	2,211
7	Guangzhou	China	East Asia	Pearl River Delta	20,37	3,308		17	Los Angeles	United States	North America	West Coast	9,343	7,321
8	Qingdao	China	East Asia	Yellow Sea	18,262	5,14		18	Hamburg	Germany	Western Europe	Elbe River	8,86	7,003
9	Dubai	United Arab Emirates	Western Asia	Arab Peninsula	15,368	6,429		19	Tanjung Pelepas	Malaysia	Southeast Asia	Malacca Strait	8,261	4,02
10	Tianjin	China	East Asia	Yellow Sea	15,04	3,814		20	Laem Chabang	Thailand	Southeast Asia	Gulf of Thailand	7,67	3,529


Top 30 Container Ports


Proportion of Chinese exports by type of enterprise
%
60
50
40
30
20
10
0
Foreign invested
State owned
Collectively owned
Private
1997
98
99
2000
01
02
03
04
05
06
07
08
09
10
11
12
Source: Thomson Reuters Datastream
All years refers to January - July

→ designed in California

→ Components from different countries

→ **Assembled in China**

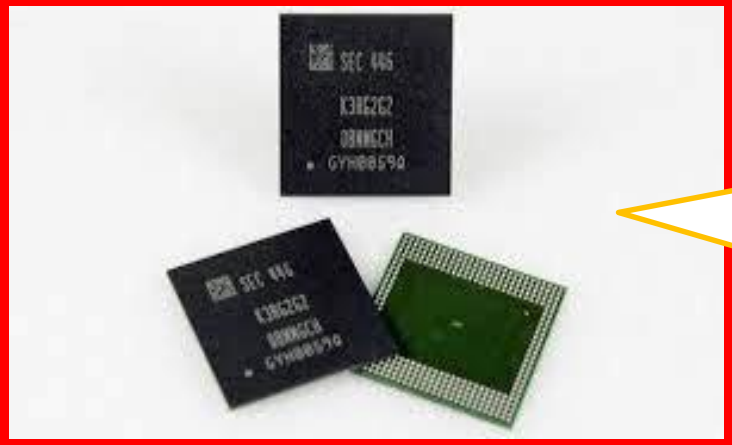
→ Made by a Taiwanese company

→ Sold all over the world

Samsung in South Korea and TSMC in Taiwan

Japan Display and Sharp in Japan. LG Display in South Koreaa

Samsung in South Korea. Huizhou Desay Battery in China

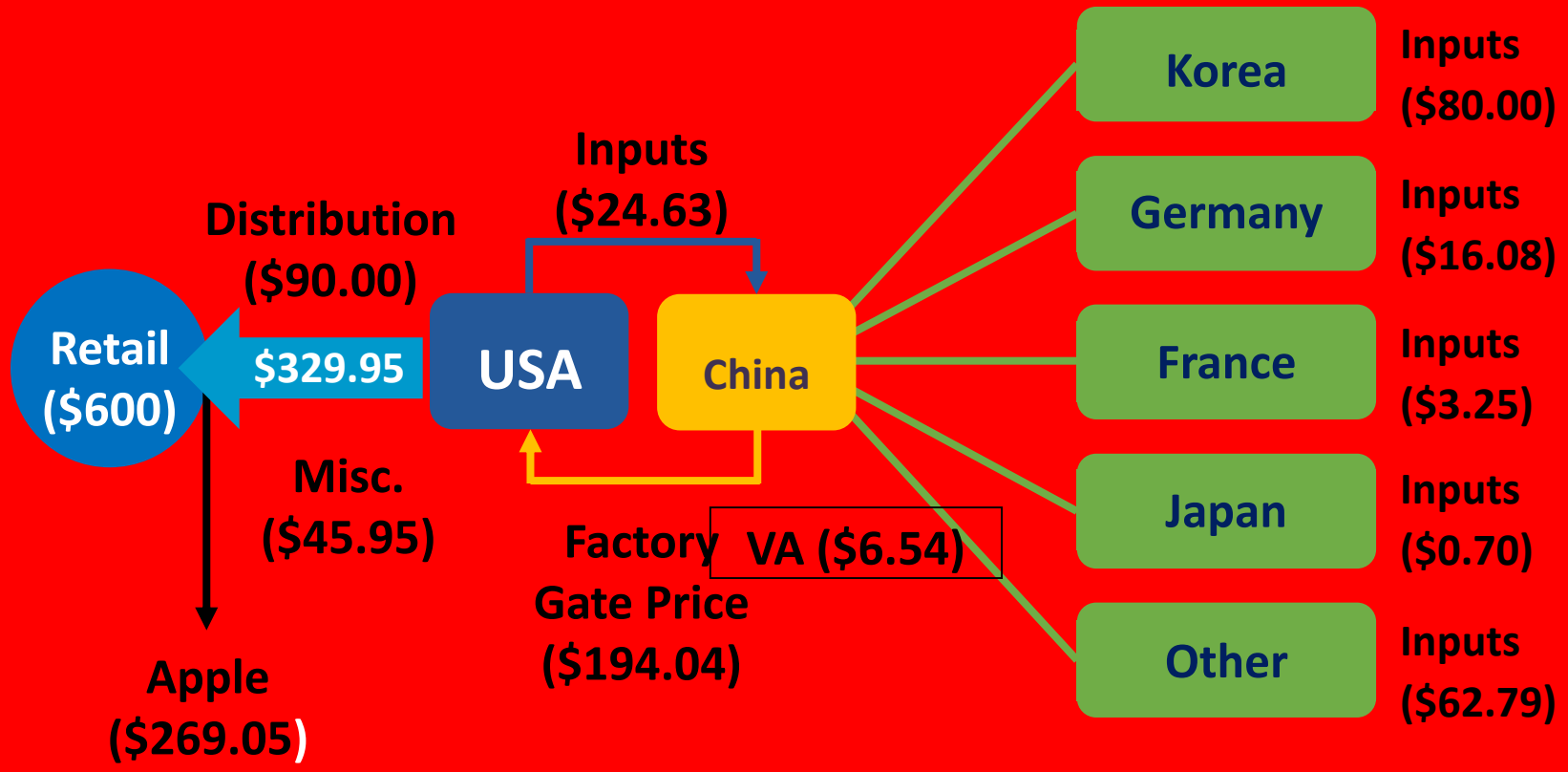


TSMC in Taiwan.
SK Hynix in
South Korea

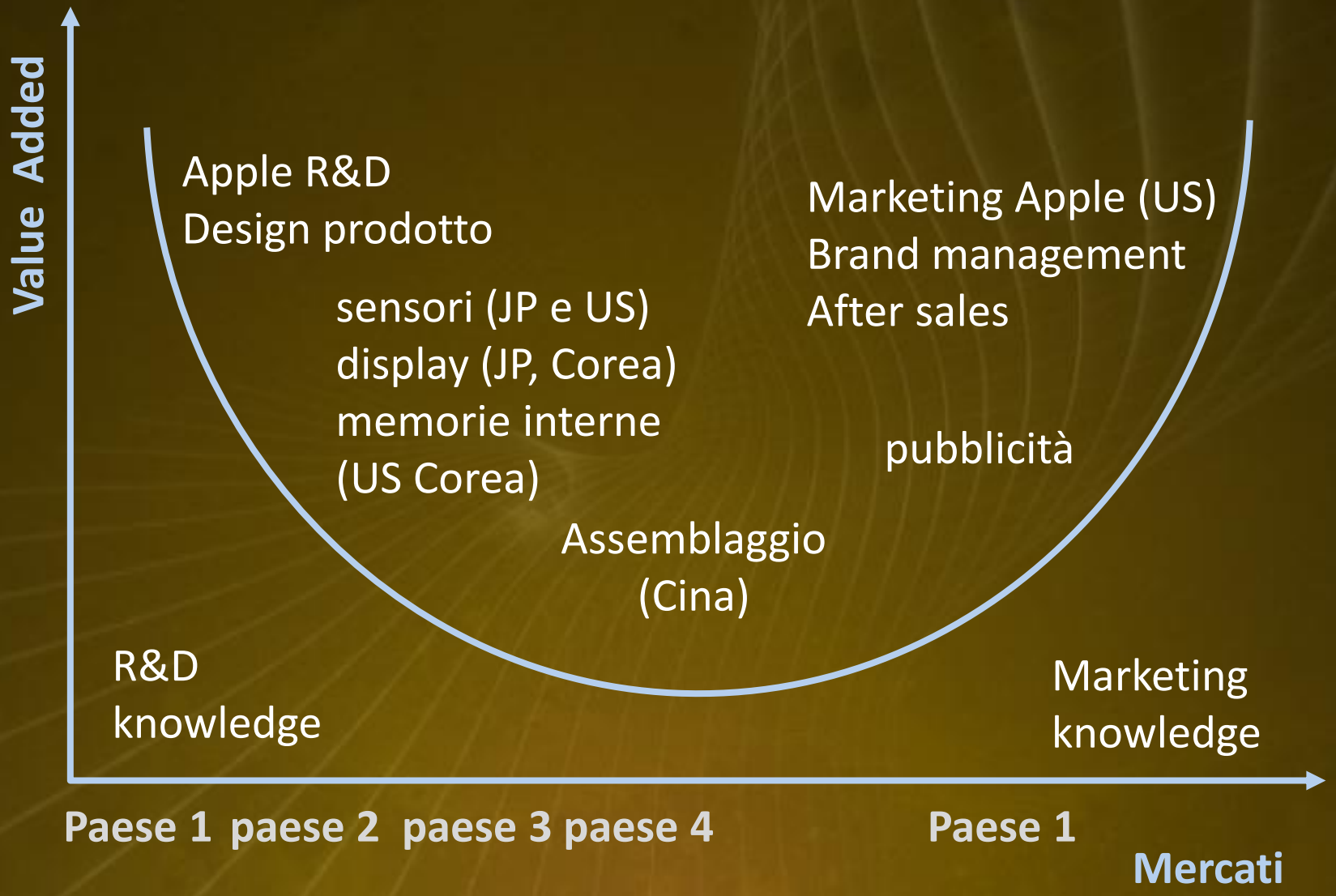
STMicro
electronics in
France and
Italy.

Fonte: http://econlife.com/2014/09/globalization-of-the-iphone-6-supply-chain/

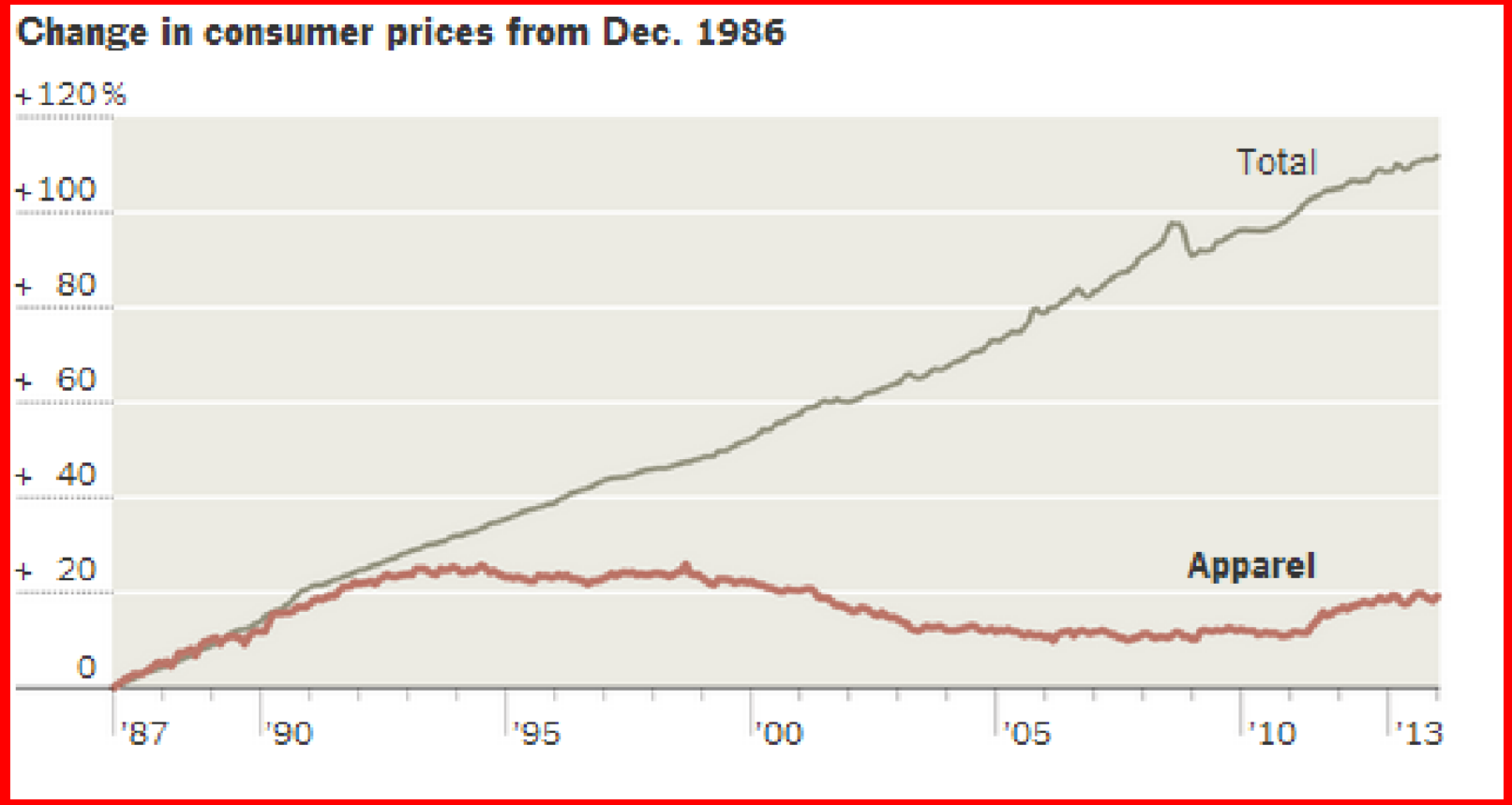
Iphone added value



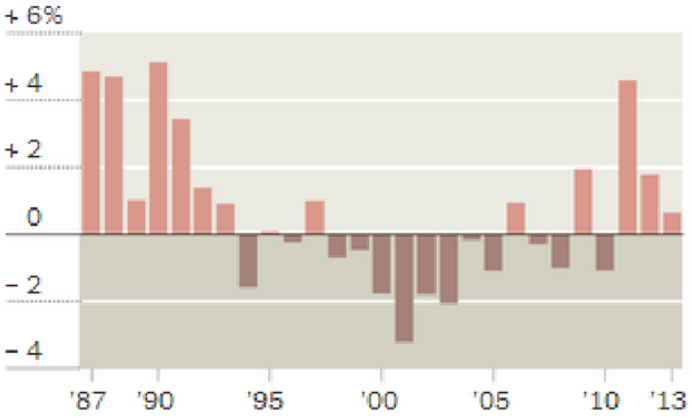
Source: adapted from OECD (2011) "Global Value Chains: Preliminary Evidence and Policy Issues


Value Added
Apple R&D
Design prodotto
sensori (JP e US)
display (JP, Corea)
memorie interne
(US Corea)
Assemblaggio
(Cina)
Marketing Apple (US)
Brand management
After sales
pubblicità
R&D
knowledge
Marketing
knowledge
Paese 1 paese 2 paese 3 paese 4
Paese 1
Mercati

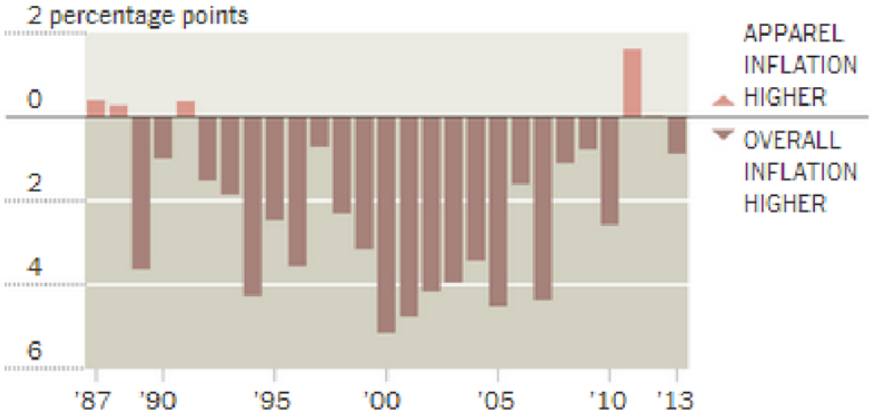
Consumer price in the US



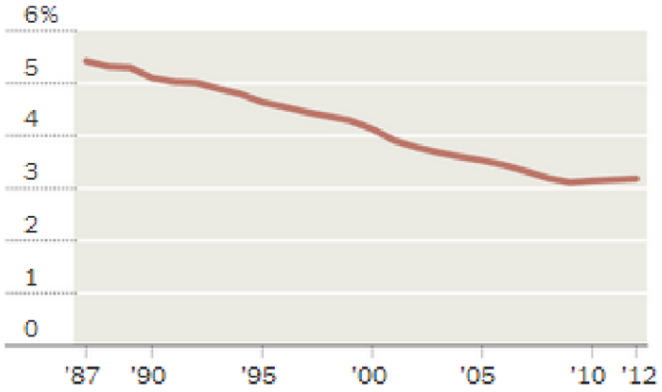
Annual change in consumer prices of apparel



Difference between overall inflation and that of apparel

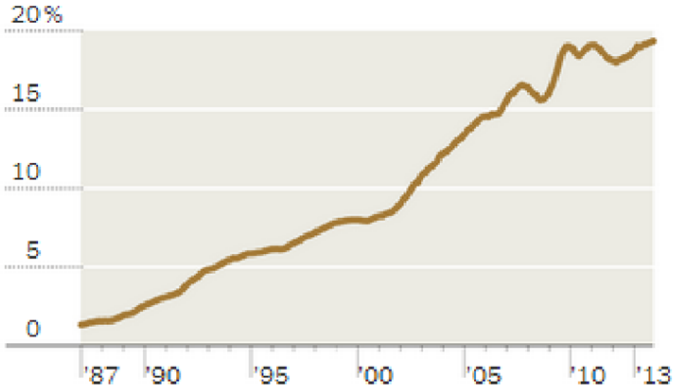


Apparel share of total personal consumption expenditures



Chinese share of total U.S. goods imports

12-month total through date shown

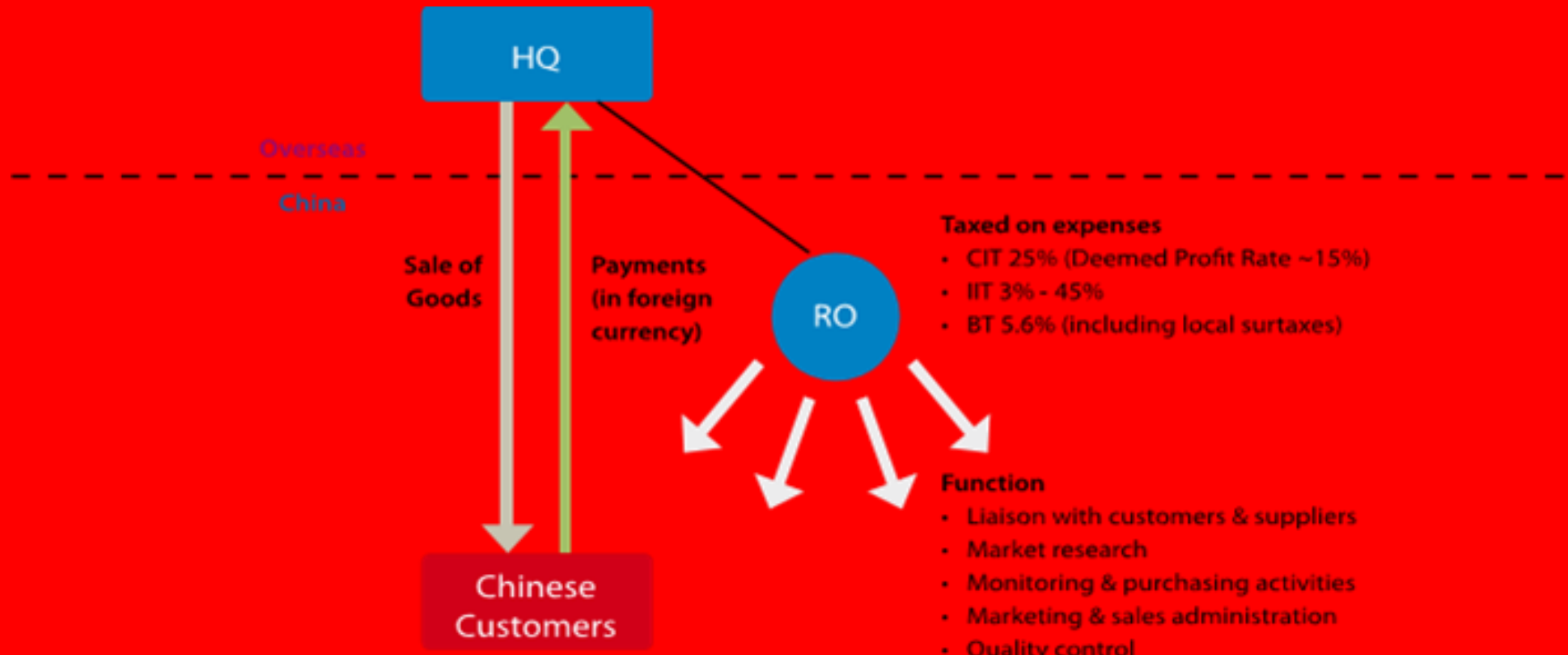


Sources: Bureau of Labor Statistics, Census Bureau and Bureau of Economic Analysis, all via Haver Analytics

Note: Annual changes in consumer prices are before seasonal adjustments; long-term charts are based on seasonally adjusted figures.

Supply chain models

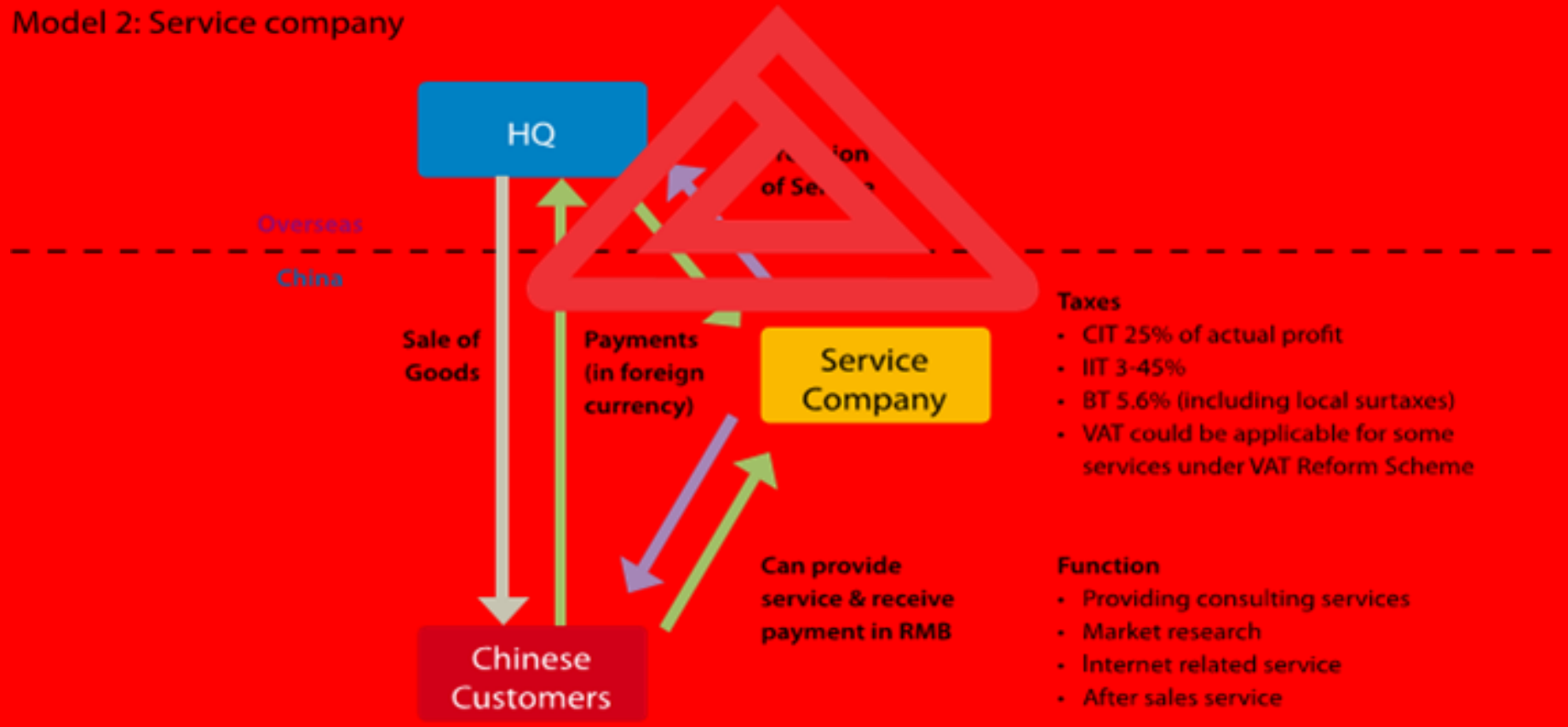
Representative offices



Dazen Shira

Limited liability company

Model 2: Service company



Taxes

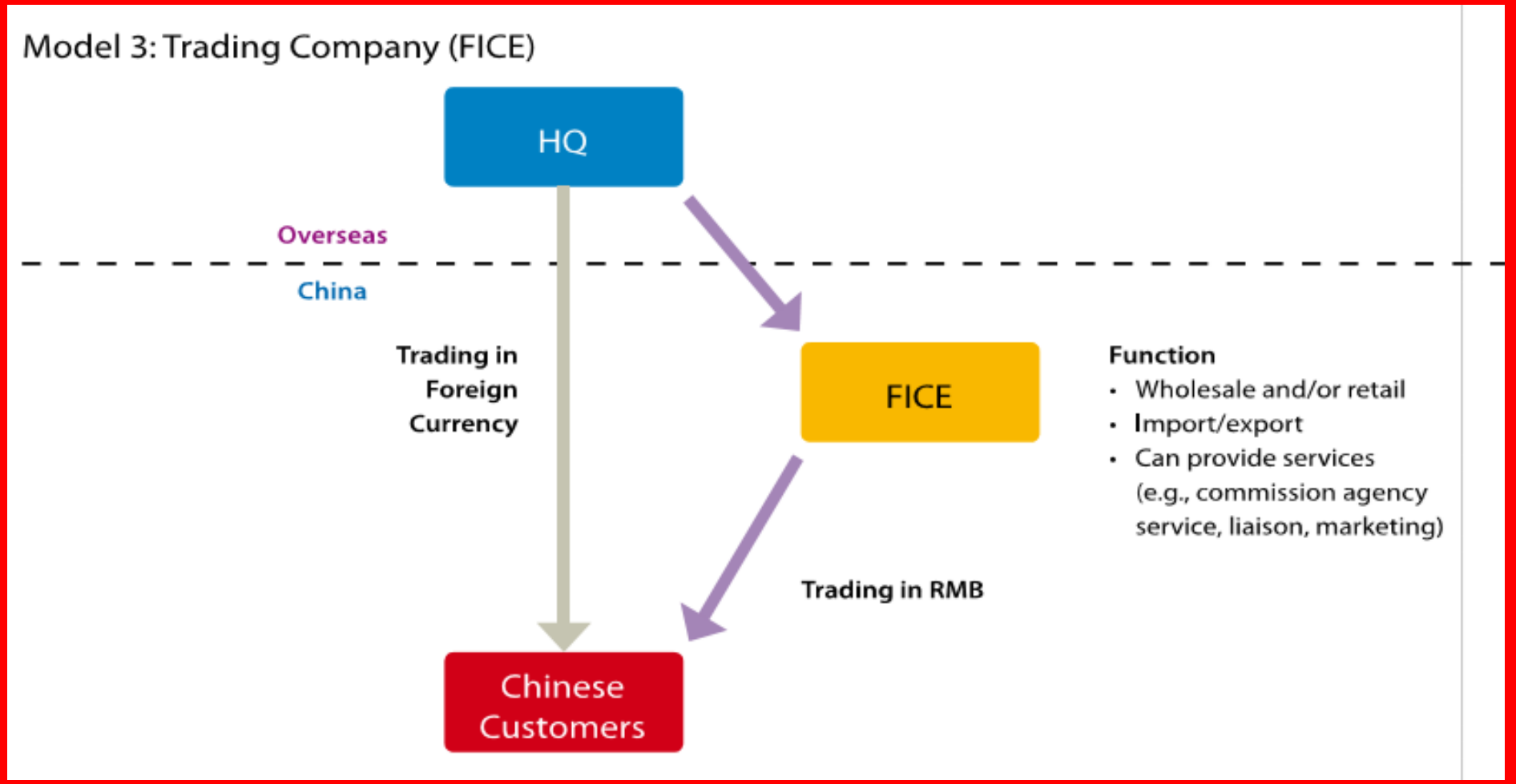
- CIT 25% of actual profit
- IIT 3-45%
- BT 5.6% (including local surtaxes)
- VAT could be applicable for some services under VAT Reform Scheme

Function

- Providing consulting services
- Market research
- Internet related service
- After sales service

Dazen Shira

Limited liability company



Dazen Shira

Negotiating in China

Old but still good

CULTURAL THREADS

Agrarianism

Two-thirds of Chinese live in rural areas. This agrarian culture emphasizes cooperation, harmony, and obedience to familial hierarchy. Chinese traditionally revere the "root" (agriculture) and slight the "branch" (commerce).

Morality

Adherence to hierarchical relationships yields social harmony. Taoism—seeking "the way" between yin (passive) and yang (active) forces—encourages compromise in business and allows both sides to maintain valid positions. The best compromises result from the ritual back-and-forth of haggling.

A pictographic language

Because Chinese words are pictures rather than sequences of letters, Chinese thinking tends toward more holistic processing of information and emphasizes the big picture over details.

Wariness of foreigners

Millennia of external and internal strife have yielded a mistrust of strangers and cynicism about rules.

Shehui dengji (social status)

Casualness about social status doesn't play among people who value obedience and deference to superiors. Sending a low-level representative to a high-level negotiation can kill a deal.

Renji hexie (interpersonal harmony)

Relationships of equals are cemented through friendships and positive feelings, generated during months of home visits and long dinners. Any attempt to do business without first establishing harmony is rude.

Zhengti guannian (holistic thinking)

Chinese discuss all issues simultaneously in apparently haphazard order—emphasizing the whole package over details. Nothing is settled until everything is. This holistic thinking contrasts with Westerners' linear approach—and spawns the greatest tension between negotiating teams.

Jiejian (thrift)

Chinese bargain intensely over price, padding offers with room to maneuver and using silence and patience as tactics. They expect both sides to make concessions—often after weeks of haggling.

NEGOTIATION ELEMENTS

Guanxi (personal connections)

Chinese businesspeople prize relationships among friends, relatives, and close associates. Favors are always remembered and returned, though not necessarily right away. Ignoring reciprocity is considered immoral.

Zhongjian ren (the intermediary)

An intermediary is essential during meetings with strangers. This trusted business associate connects you with his trusted associate, creating a personal link to your target organization or executive. Intermediaries interpret negotiators' moods, body language, and facial expressions. They—not the negotiators—first raise business issues for discussion, and often settle differences.

Mianzi ("face" or social capital)

A broken promise or display of anger or aggression causes mutual loss of face—disastrous to any deal.

Chiku nailao (endurance, relentlessness)

Chinese prize relentless hard work. They prepare diligently for negotiations and expect long bargaining sessions. Demonstrate your endurance by asking many questions, doing your research, and showing patience.

American	Chinese

Their basic cultural values and ways of thinking

individualist	collectivist
egalitarian	hierarchical
information oriented	relationship oriented
reductionist	holistic
sequential	circular
seeks the truth	seeks the way
the argument culture	the haggling culture

How they approach the negotiation process

nontask sounding

quick meetings	long courting process
informal	formal
make cold calls	draw on intermediaries

information exchange

full authority	limited authority
direct	indirect
proposals first	explanations first

means of persuasion

aggressive	questioning
impatient	enduring

terms of agreement

forging a "good deal"	forging a long-term relationship

To Buy in China: suppliers

- (Buy in China? – buy directly in China)
- Large Soe and private firms
- Small private firms
- MNC local sales and production networks
- Different level of qualities (and minimum quantities)
- (Buy for Chinese operation of for the entire group?)

supplier

- You may not be an interesting client: your order can be too small, you can ask quality they cannot deliver at the cost you want.
- Don’t think you can have the same relations even if you work with subsidiaries of the same multinational company you work in your domestic market.
- Suppliers change very fast

What to do

- Adapt supplier selection to your operation in the country coordinated with the rest of the group.
- Keep back up. (probably you need to buy from more than one supplier even when one would be enough and more cost effective)
- Quality control is important also to check supplier development.
- Quality control are an extra cost but cost less than in Europe. Can be very useful

The most famous case: China, the world's factory

China: some advantages

- ➢ Quantitative dimension of the supply
- ➢ Labor cost (less and less)
- ➢ Qualified workers / technicians / managers
- ➢ Accessibility of the supplying sources and good infrastructures
- ➢ Favorable business environment (special industrial park)

The most famous case: China, the world's factory

China: some critical activities

- ➢ Quality check controls
- ➢ Lead time monitoring
- ➢ Suppliers qualification
- ➢ Fiscal and Custom rules
- ➢ New suppliers scouting
- ➢ Communication and Cultural Diversities

Factories

CHINA: KNITTING DEPARTMENT

CHINA: TECNOLOGICAL ADVANCED FACTORY

Sourcing Strategies

Sourcing Process:

- ➢ Focalize on some specific item
- ➢ Visit at local Trade show: focalized meeting
- ➢ Visit and qualification of supplier: vendor list
- ➢ Prices offer comparison
- ➢ Sampling order and standard quality levels
- ➢ Supplying contracts
- ➢ Quality check controls
- ➢ Deliveries

Don’t forget to heavily involve your domestic organization in the process

SUPPLIER EVALUATION MATRIX

Supplier Evaluation (Pugh) Matrix

gss
global strategic sourcing

The criteria are predetermined in the standard template – however, commodity-specific criteria can be added if there are additional factors to consider. Weight each criterion from 1 to 10 (or 0 if N/A).

Supplier Performance Criteria	Considerations	Notes
Quality	Audit Score (Technical/Process)	Qualitative "Technical Assessment" score
	Audit Score (Quality)	Leverage previous site visits
	PPM	Included on scorecard
	Corrective Action Response rate	Included on scorecard
	PPAP (FPA)	Included on scorecard (as "Launch" metric)
Delivery	Delivery Lead Time (Historic Performance)	Included on scorecard
	Manufacturing Location/Risk	Covers proximity/risk/warehousing capabilities
Cost Management	Overall Delivered Part Cost	TCO
	% Cost to Target (Cost close to design target)	Included on scorecard (as "Launch" metric)
	Material Cost Productivity	Included on scorecard
	DPO (Pay Terms)	Included on scorecard
Supplier Alignment with Corporate Strategy	Technology Roadmap	Qualitative alignment score
	Commodity Management Strategy	Qualitative alignment score
	Existing Whirlpool Supplier	Proxy for general understanding of WHR business
Capital and Tooling Cost	Tooling TCO	Quantitative score
	Tool Technical Lifecycle	Life of tool
Design / Technology	Technology is new, innovative and/or superior, providing competitive advantage to WHR.	Qualitative "innovation" score
Support/Representation	Regional Representation (Engineering, Quality & Material Availability Resources)	Qualitative "management" score
Financial Stability	Distressed Supplier Score (Altman Z Score, Balance Sheet, Growth Rate, D&B/Current Accounts)	Included on scorecard
Manufacturing	Manufacturing reliability (preventive maintenance schedule, mass production experience)	Qualitative "manufacturing" score
Commodity - Other	[Specific to Commodity]	Included for flexibility by commodity

swot / china supply chain

Strenghts:

1) Number of suppliers
2) Competitive advantage;
slogan: -40% china vs europe/usa
3) logistic structures for supporting the local purchasing policies

Weaknesses:

1) Quality level of the purchases
2) Level of service (deliveries on time)
3) total cost ownership: slogan: even if the purchases prices are lower then in Europe, what is the final supply chain costs?

Opportunities:

1) operate on the supplying market could be a fast way to learn about the final market structure and demand
2) The reduction costs advantage can support a more high potential of final sells and/or high profit margins
3) The right supply chain worldwide network can be a good way to save the industrial structures also in the origin western country. (for ex. Buy components in China and assembly them in Europe)

Threats:

1) know how protection
2) time to market vs worldwide supply chain: if the the time to market is fast (on the basis of final demand requests) the management of worldwide supply chain is too hard to get (higl level of stock)
3) low knoledge of country system and the local laws.

Sourcing vs Manufacturing

- **Choose sourcing**

when you..

- Are unable to match local cost structure and quality
- Find that suppliers allow greater responsiveness to market changes than
  in-house manufacture
- Seek fast access to market and suppliers are readily available
- Need to dedicate scarce production resources elsewhere and reduce management complexity

- **Choose manufacturing**

de-localization when you…

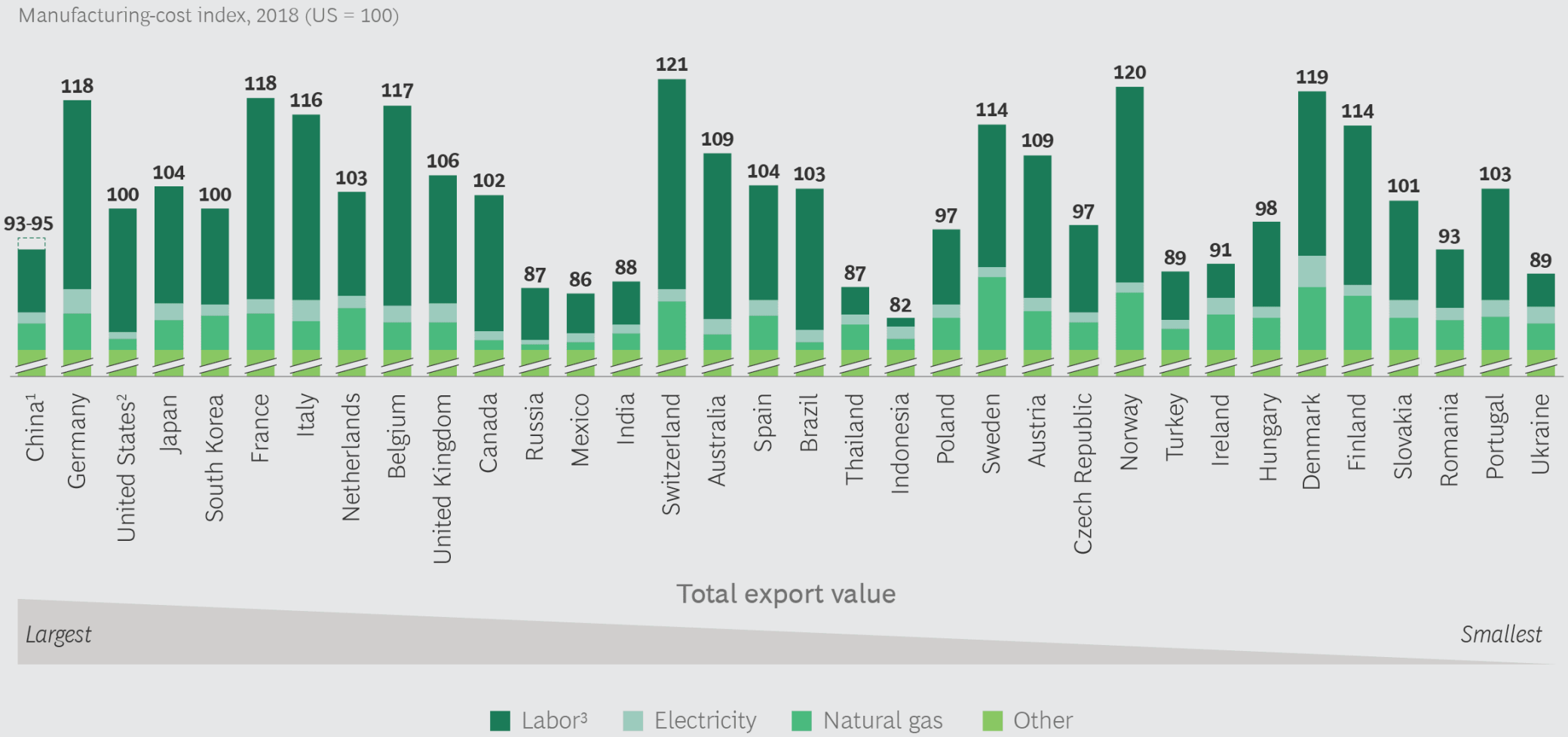
- Need to protect proprietary technology
- Can achieve superior cost structure, and command premium for the difference in quality
- Feel it is critical to control the distribution of end products
- Believe outsourcing will not create a formidable competitor longer term

Fonte: Mckinsey

Things change fast also for supply chains

- Changes in volumes affect your SC
- Changes in costs affects your SC
- Change in your final markets may change your SC
- Where you produce affects your SC

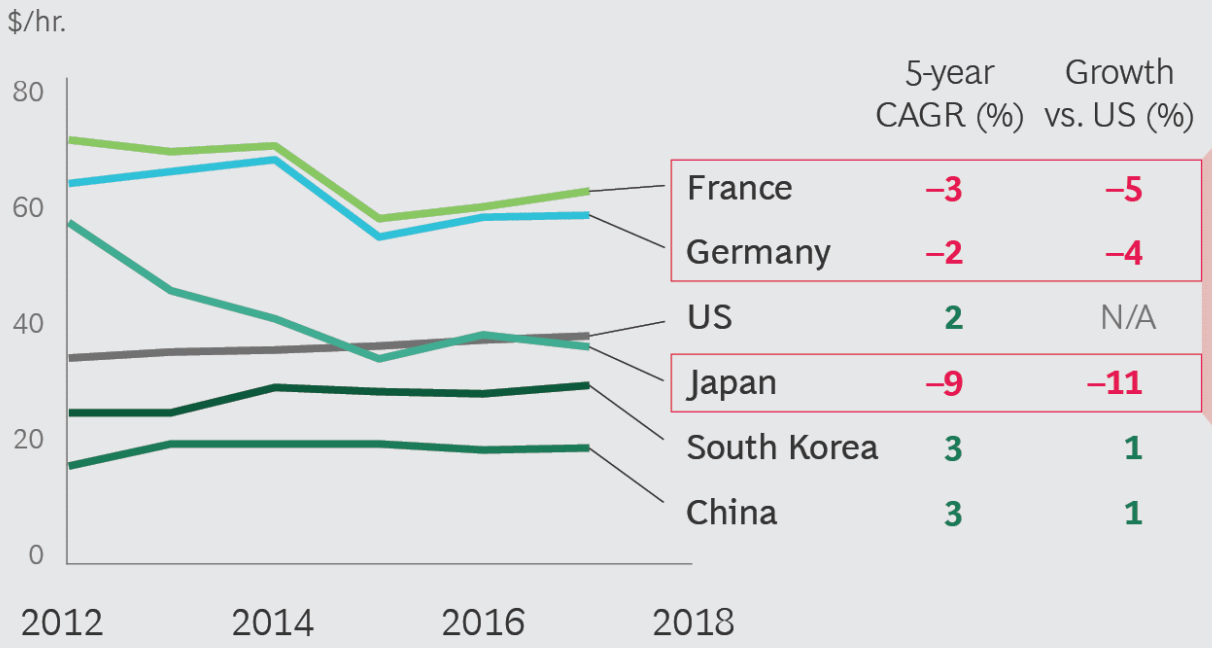
EXHIBIT 1 | The 2018 BCG Global Manufacturing Cost-Competitiveness Index



Sources: US Economic Census; Bureau of Labor Statistics; Bureau of Economic Analysis; International Labour Organization; Euromonitor; Economist Intelligence Unit; Oxford Economics; NDRC Price Monitoring Center; Enerdata; Eurostat; BCG analysis.
Note: Index covers four direct costs only. No difference assumed in "other" costs, such as raw-material inputs and machine and tool depreciation; cost structure calculated as weighted average across all industries.
[1]Range shows average of all China (93) and the Yangzte River Delta region (95).
[2]Data from southern US states.
[3]Adjusted for productivity.

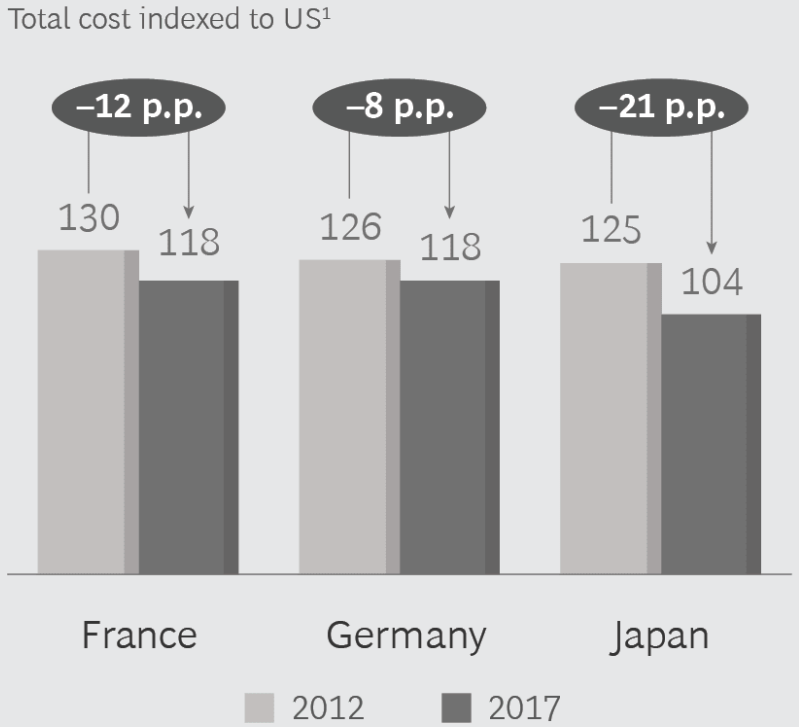
EXHIBIT 2 | Rising Labor Costs and a Strong Dollar Have Eroded US Manufacturing Cost Competitiveness Since 2012

Changes in productivity-adjusted labor costs for six export manufacturing countries…



	5-year CAGR (%)	Growth vs. US (%)
France	–3	–5
Germany	–2	–4
US	2	N/A
Japan	–9	–11
South Korea	3	1
China	3	1

…have shifted manufacturing cost competitiveness



Sources: US Economic Census; Bureau of Labor Statistics; Bureau of Economic Analysis; International Labour Organization; Euromonitor; Economist Intelligence Unit; Oxford Economics; NDRC Price Monitoring Center; Enerdata; Eurostat; BCG analysis.
[1]Data from southern US states.

2

The great convergence

Manufacturing-cost index*, United States=100

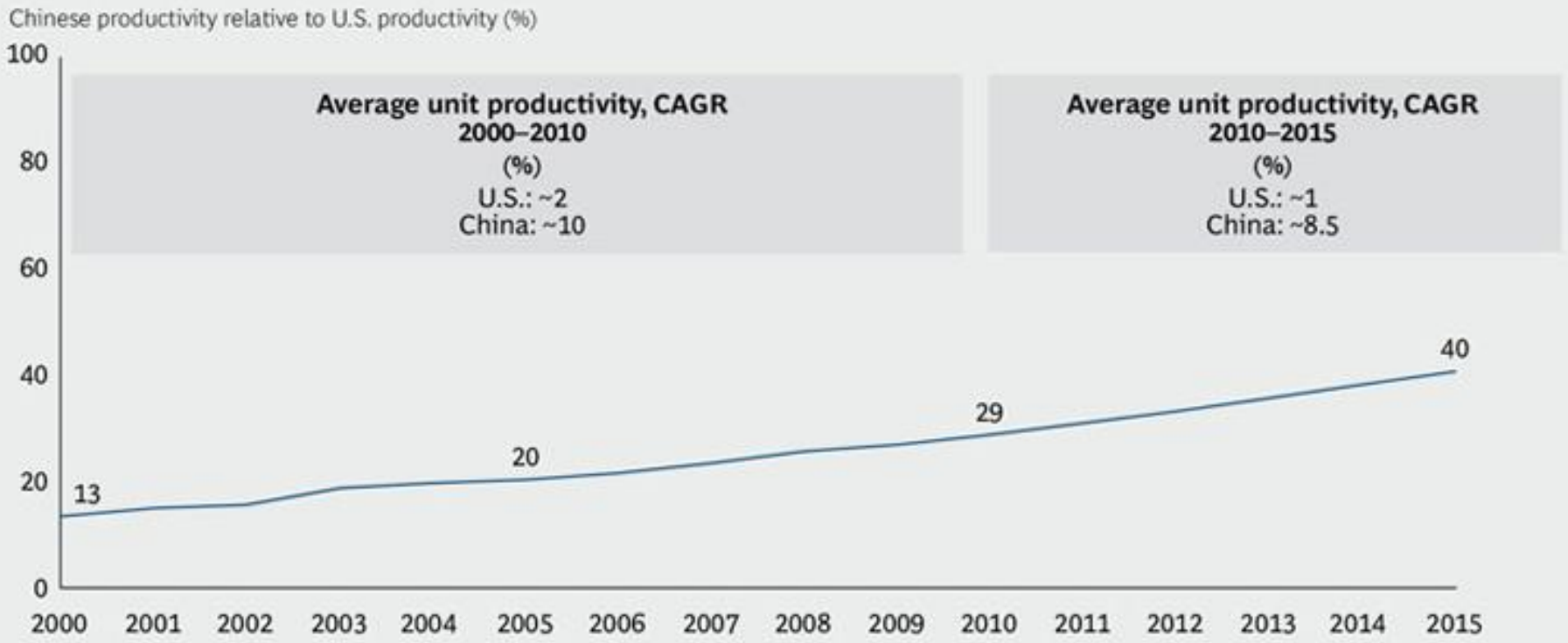
Source: Boston Consulting Group

*Incorporates wages, productivity, energy costs and exchange rates

The Economist

EXHIBIT 2 | China's Productivity Gains Will Lag Behind Wage Increases

Growing at nearly 10 percent per year, China's productivity could reach 40 percent of U.S. productivity by 2015



Sources: Economist Intelligence Unit; U.S. Bureau of Labor Statistics; BCG analysis.
Note: All figures are based on real units.

EXHIBIT 1 | China's Wage Rates Are Growing Rapidly

Average wages could approach 17 percent of those in the U.S. by 2015, up from 3 percent in 2000

	CAGR 2000–2005 (%)	CAGR 2005–2010 (%)	CAGR 2010–2015 (%)
U.S.	2	4	3
China	10	19	17

Ratio of average Chinese to average U.S. wage rates

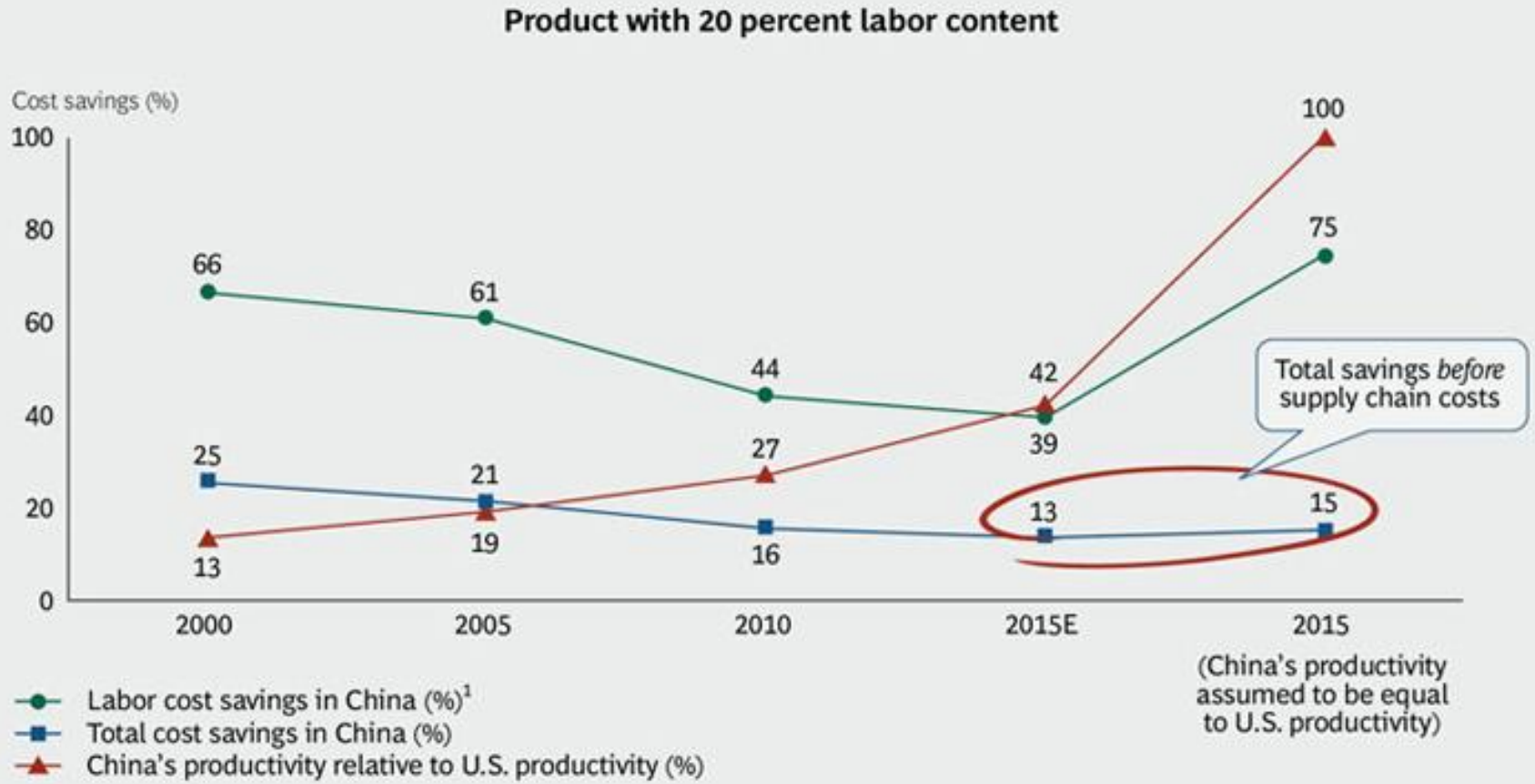
Sources: Economist Intelligence Unit; U.S. Bureau of Labor Statistics; selected company data; BCG analysis.

EXHIBIT 3 | Economics Will Drive Reinvestment in the U.S.

Imagine a company...	...with the following choices of location			2000	2015E
• U.S.-based auto parts supplier • Most customers are U.S. OEMs that manufacture in the U.S.	**U.S., selected southern states**	• Flexible unions/ workforce • Minimal wage growth • High worker productivity	Wage rate ($/hour)	15.81	24.81
			Productivity (%)	100	100
			Labor cost/part ($)	2.11	3.31
• Parts require eight minutes of labor, on average, in the U.S. • Labor represents one-quarter of the total cost of the part	**China, Yangtze River Delta**	• Scarce labor • Rapidly rising wages • Low productivity relative to the U.S.	Wage rate ($/hour)	0.72	6.31
			Productivity (%)[1]	13	42
			Labor cost/part ($)	0.74	2.00
			Labor cost savings (%)	**65**	**39**
			Total cost savings before transportation, duties, and other costs (%)	**16**	**10**

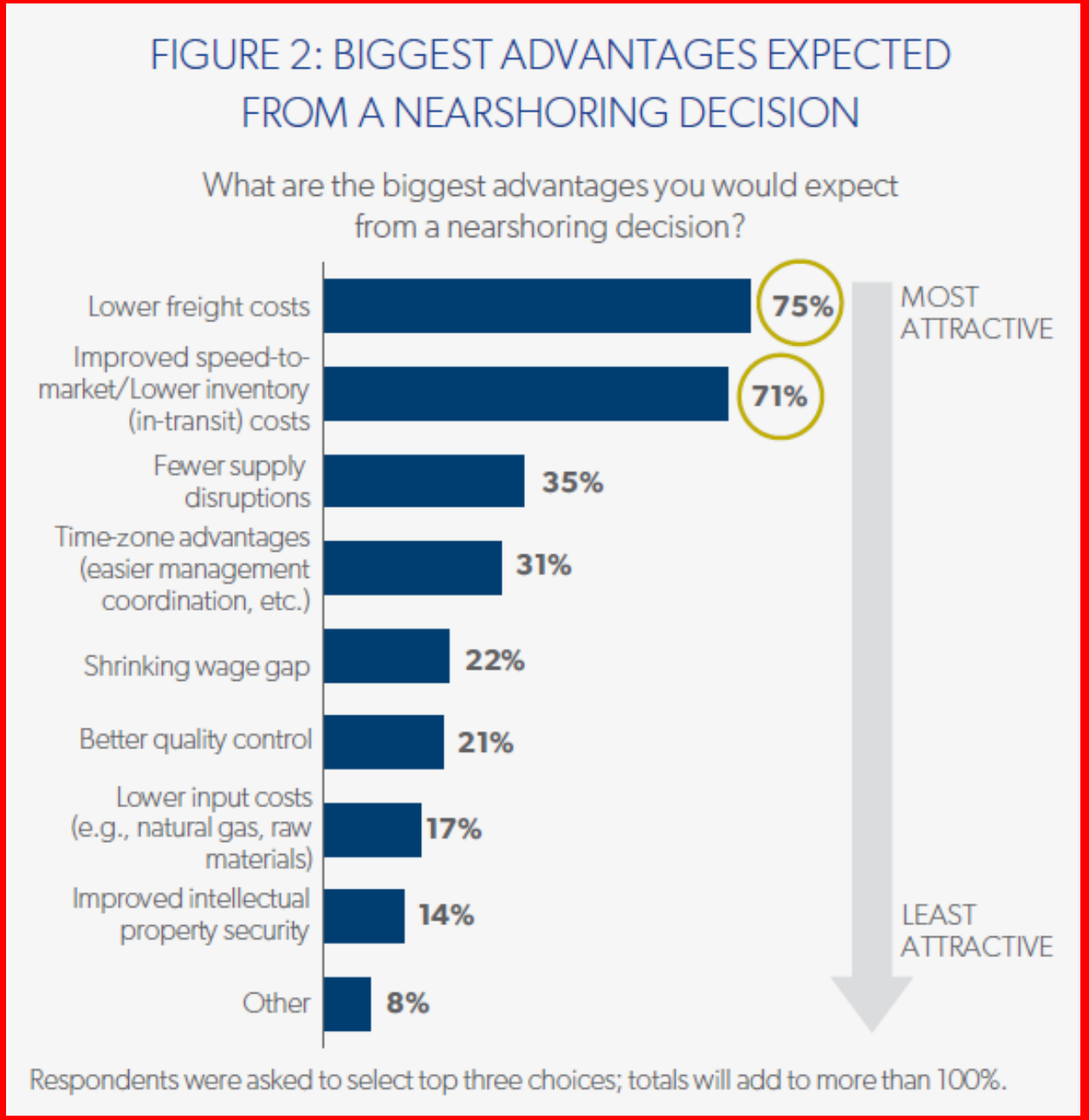
Sources: Economist Intelligence Unit; U.S. Bureau of Labor Statistics; BCG analysis.
[1]Average productivity difference between the U.S. and China's Yangtze River Delta. Productivity in the Yangtze River Delta region is assumed to grow at a CAGR of ~7 percent over a 2009 baseline, slightly slower than overall Chinese manufacturing productivity (~8.5%) as other regions adopt more advanced manufacturing practices.

EXHIBIT 4 | Increased Automation in China Is Unlikely to Change the Cost Equation



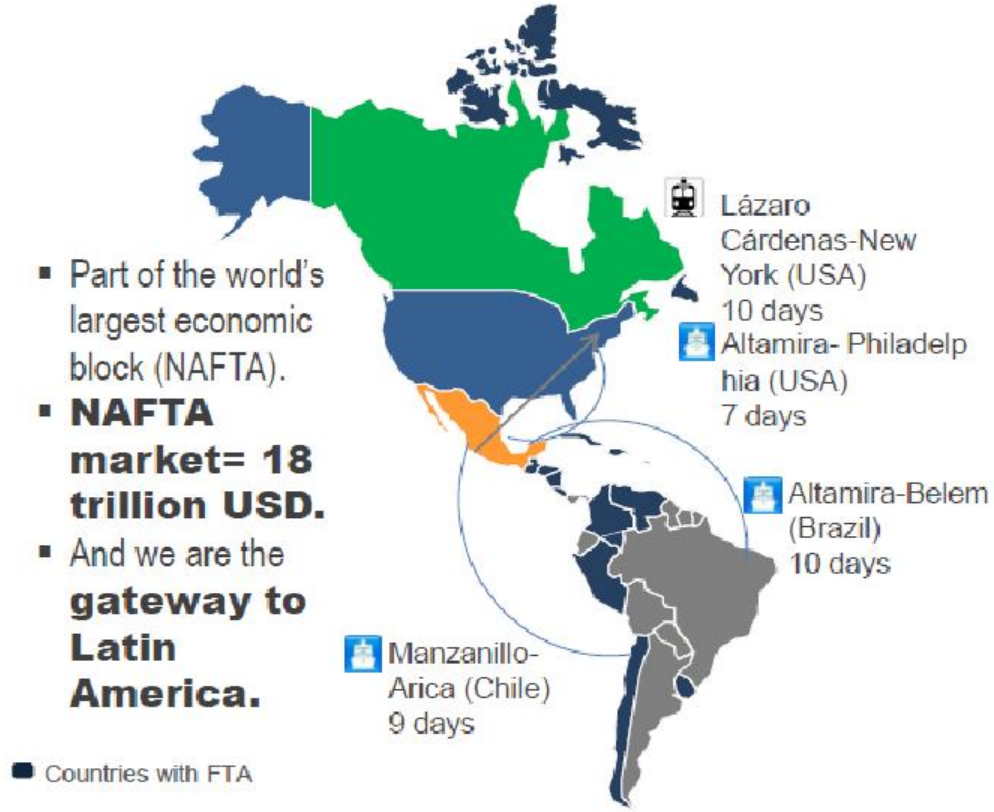
Source: BCG analysis.
[1]Total labor cost in China divided by total labor cost in the U.S.

Nearshoring in the US



Mexico's Free Trade Agreements

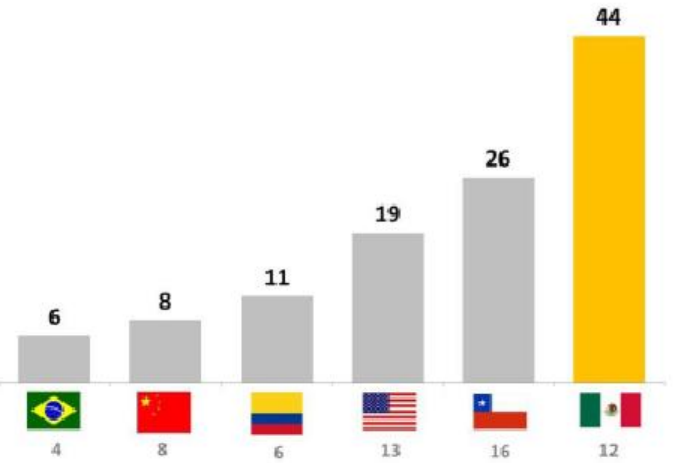
Mexico's FTAs reach 2/3 of the world's GDP.



- Part of the world's largest economic block (NAFTA).
- **NAFTA market= 18 trillion USD.**
- And we are the **gateway to Latin America.**

With 12 trade agreements,
Mexico has privileged access to 44 countries (1.2 billion people).

Number of FTA's and countries



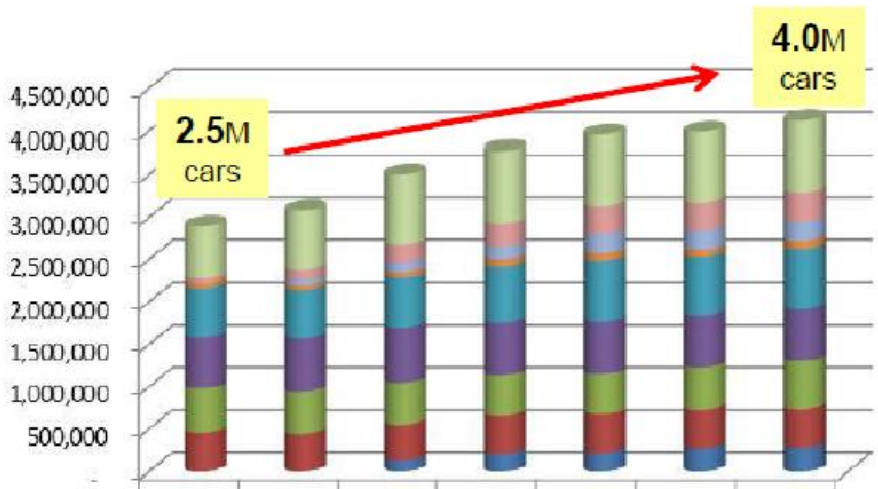
SOURCE: IMF, OMC, Sea Rates.

INOAC CORPORATION

Mexico OEM Automotive Industry

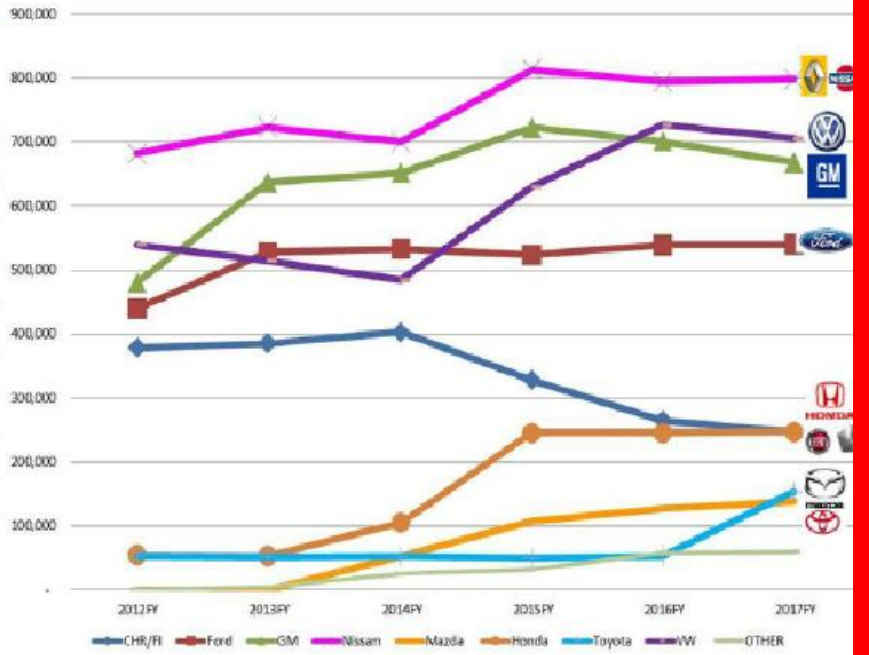
- 17 Light vehicle plants
- 12 Heavy vehicle plants
- 2011 Production volume over 2.2M light vehicles
- 2011 Mexico became #1 Light Vehicle supplier to the U.S.
- Potential that light vehicle production will increase by 38% from last year.

OEM's Trend in Mexico



	CY 2013	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019
Nissan	622,494	701,845	828,743	855,380	828,417	818,093	830,966
Honda	57,584	122,232	213,293	262,241	330,747	332,312	347,191
Mazda	-	61,281	114,845	158,330	228,600	225,407	227,427
Toyota	50,336	51,968	65,290	88,678	86,360	85,130	89,296
VW	583,534	571,922	585,109	661,833	720,875	689,020	715,722
GM	602,957	632,376	649,732	620,801	619,614	615,076	607,149
Ford	523,054	499,230	498,164	477,606	475,698	498,358	570,962
Fiat	457,391	442,629	425,400	444,174	449,138	459,170	457,645
Others	-	-	127,180	212,458	223,011	272,247	280,346

Mexico OEM Trend



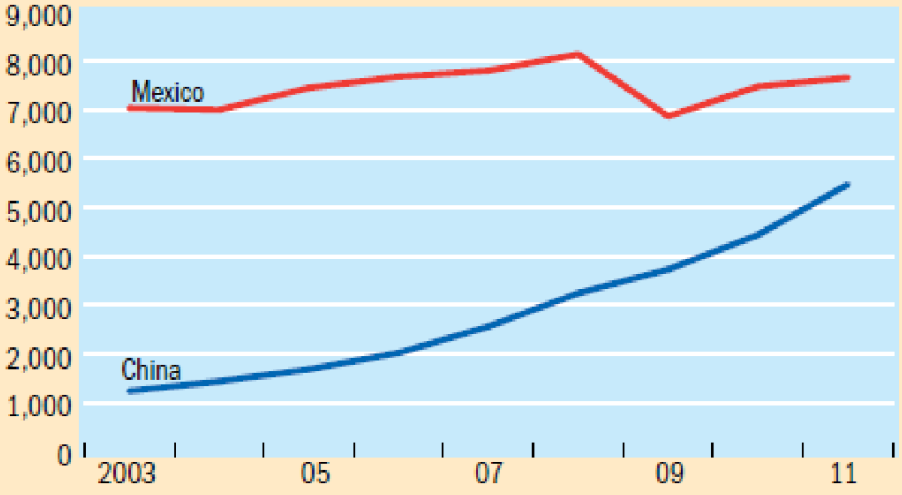
- NISSAN #3 plant +200K cars
- HONDA #2 plant +200K cars
- Mazda(Toyota) plant +180K cars
- VW Audi plant +200K cars

Chart 3

Coming closer

After adjusting for inflation and exchange rates, in Mexico annual real wages in U.S. dollars were six times higher than Chinese wages in 2003 but only 40 percent higher in 2011.

(real annual wages in dollars)



Sources: Barclays; and CEIC China database.

Chart 4

Efficient enterprises

Output per worker (productivity) is rising and labor costs per unit of output are falling in Mexico's manufacturing sector.

(index, 2008 = 100)

Source: INEGI (Mexico's National Institute of Statistics and Geography).

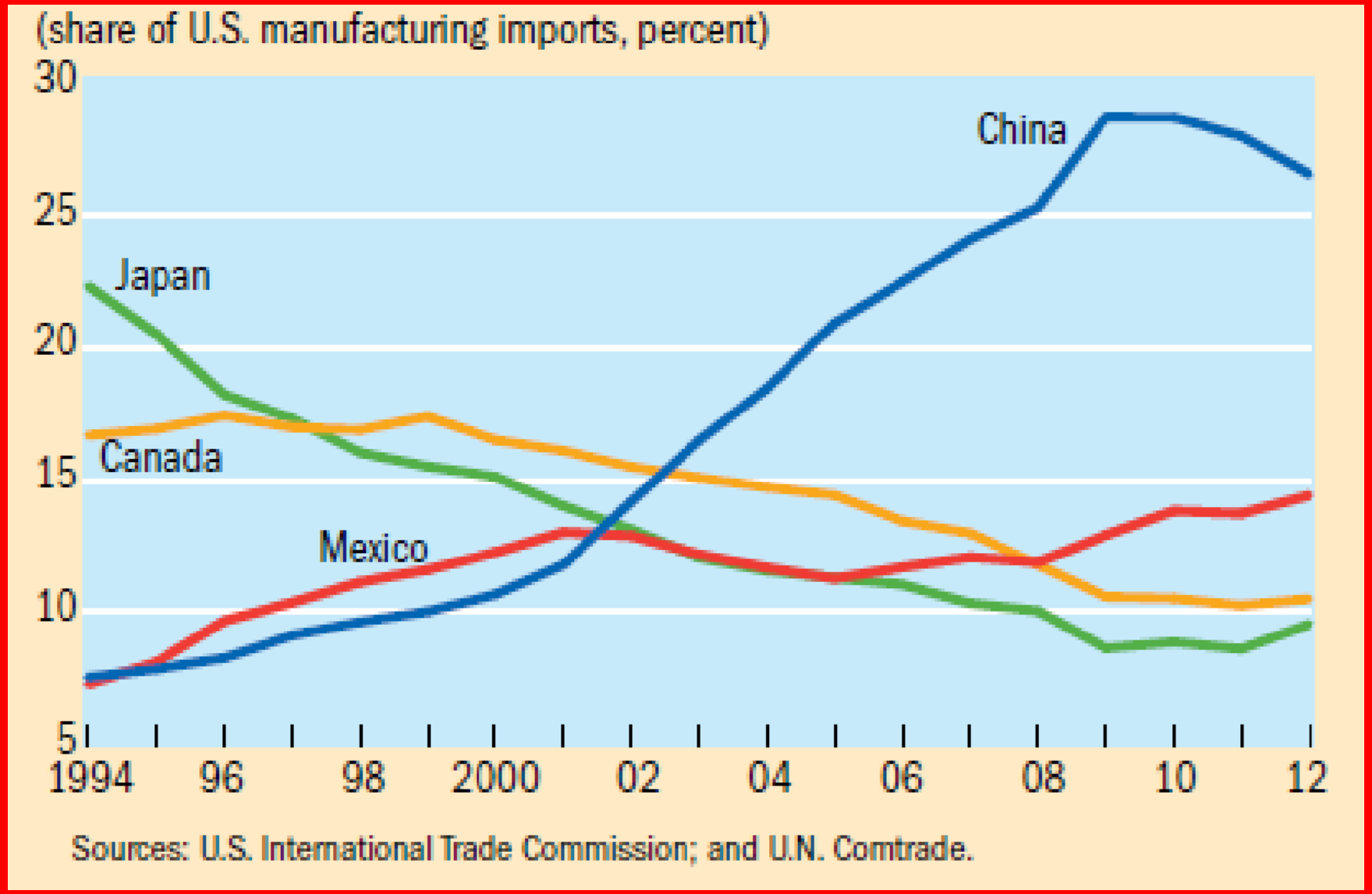
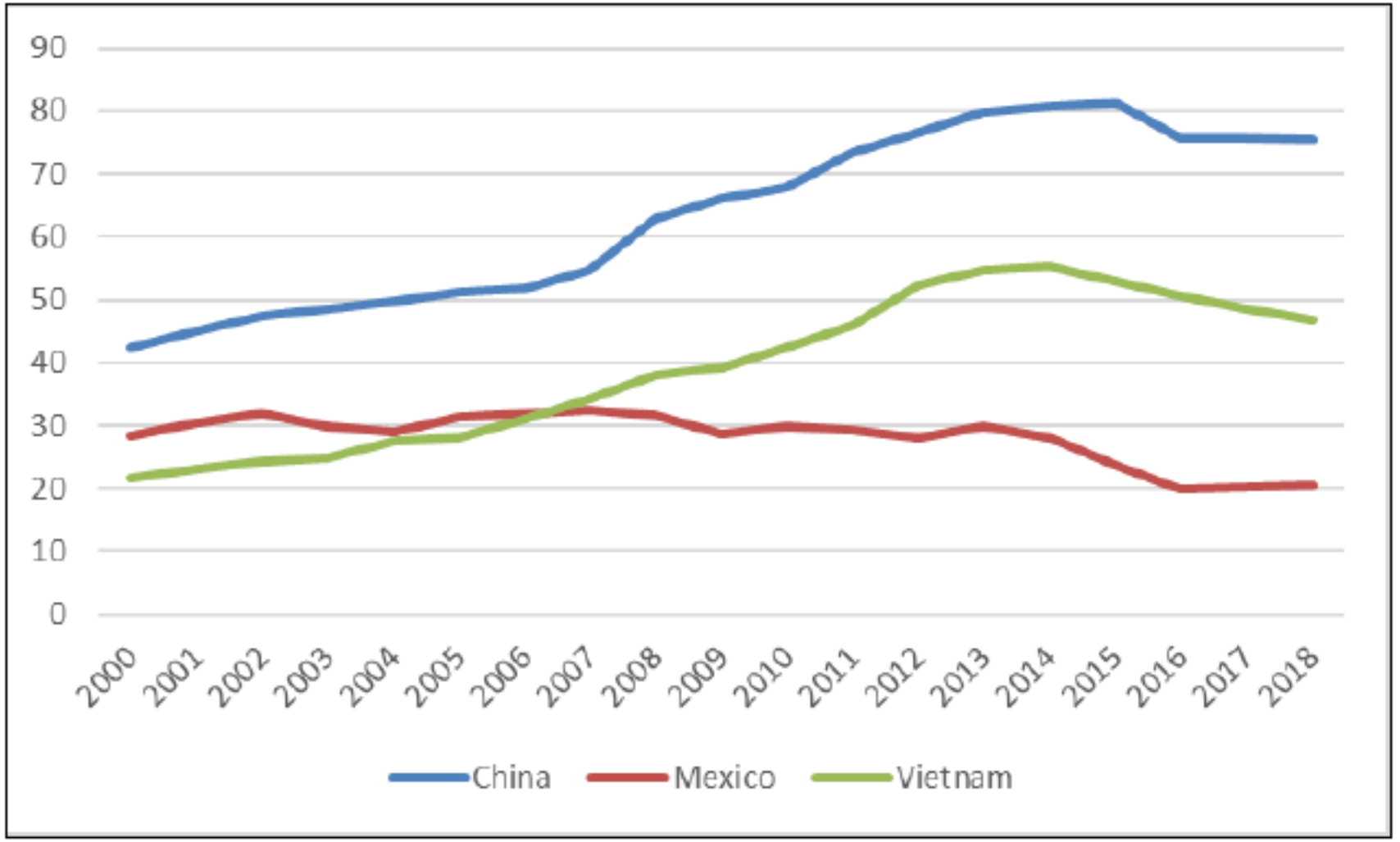

(share of U.S. manufacturing imports, percent)
30
25
20
15
10
5
China
Japan
Canada
Mexico
1994
96
98
2000
02
04
06
08
10
12
Sources: U.S. International Trade Commission; and U.N. Comtrade.

Figure 10. Labor Cost Index for China, Mexico, and Vietnam Relative to those in the United States: 2000-2018

(U.S. level =100)

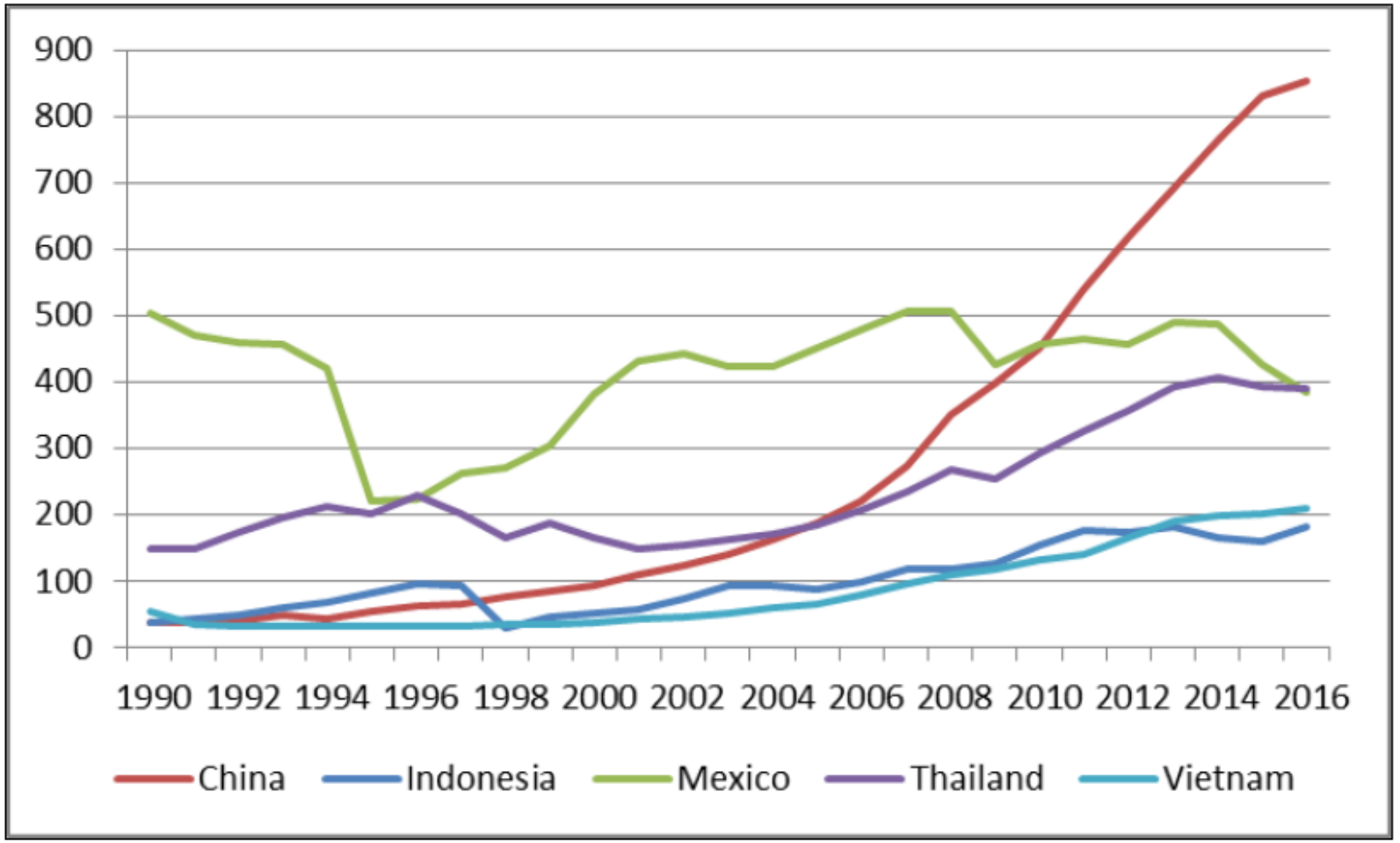


Source: Economist Intelligence Unit.

Notes: The labor cost of producing one unit of output, indexed to U.S. levels.

Figure 8. Average Monthly Wages for China and other Selected Countries: 1990-2016

(nominal U.S. dollars)



Source: Economist Intelligence Unit.

Calculating TCO (Total cost of Ownership) in an Offshoring Scenario

Risk Factors

- Inflation
  - Labor
  - Energy/Fuel
- Business Continuity
  - Health/Pandemic
  - Infrastructure
- Quality (losing the recipe)
- Customer Perception/Acceptance
- Currency
- IP Transfer
- People
  - Cultural Differences - Guanxi
  - Language Barriers
  - Skill/Experience
- Financial & Legal Environment
- Service Level - Flexibility
- Trust – Corruption & Business Practices

What Has Changed?

- **Rising wages in formerly low cost regions**
- }China labor rates climbed 5X from 2000 a 500% increase
- }Wages are expected to grow 10% each year
- **Flat or decreasing wages in the US** (now increasing)
- **Increasing fuel costs** *(till 2014 now decreasing but with ambiguous effects)*
- }Oil prices have tripled since 2000 **BUT NOW VERY LOW**
- }Cheaper Natural Gas in the US - 4X higher in China
- **Productivity boom in the US**
- }Plant enhancements with increasingly automated technology
- }More efficient manufacturing practices
- }Union concessions on wages
- **Changing consumer behaviors**
- }Customers don't want to wait for customized products

Quality and Service Implications - Mattel

- **65% of toys made in China**
- Recalled 19 million toys from China
  - 436,000 toy cars with lead paint
  - 18.2 million other toys with powerful magnets harmful to children if swallowed
    - 63 different products
    - Due to a design flaw by Mattel

Quality and Service Implications - Pet care

- Dog treats with trace amounts of illegal antibiotic
  - Caused kidney failure, illness, and death

- Due to differences in regulatory frameworks/quality standards

Nestlé PURINA

MILK-BONE
BRAND

Reshoring Addresses Waste

Toyota Wastes	Offshoring Contributes
Overproduction	Large batch shipments, filling containers
Waiting	Unreliable deliveries and quality, time in port and customs, time zones
Transport	12,000 mi. inbound, 6,000 return (boat ½ full)
Over processing	Packing, unpacking, repacking - customs paperwork
Inventory	In transit, cycle, safety stock, uncertain delivery and quality, can't see it all
Motion	Repetitive motion injuries or additional labor to compensate
Defects	Higher than local sources, extra inspections of materials and tolerances
Under utilization of resources	Better use of people, their time and talents

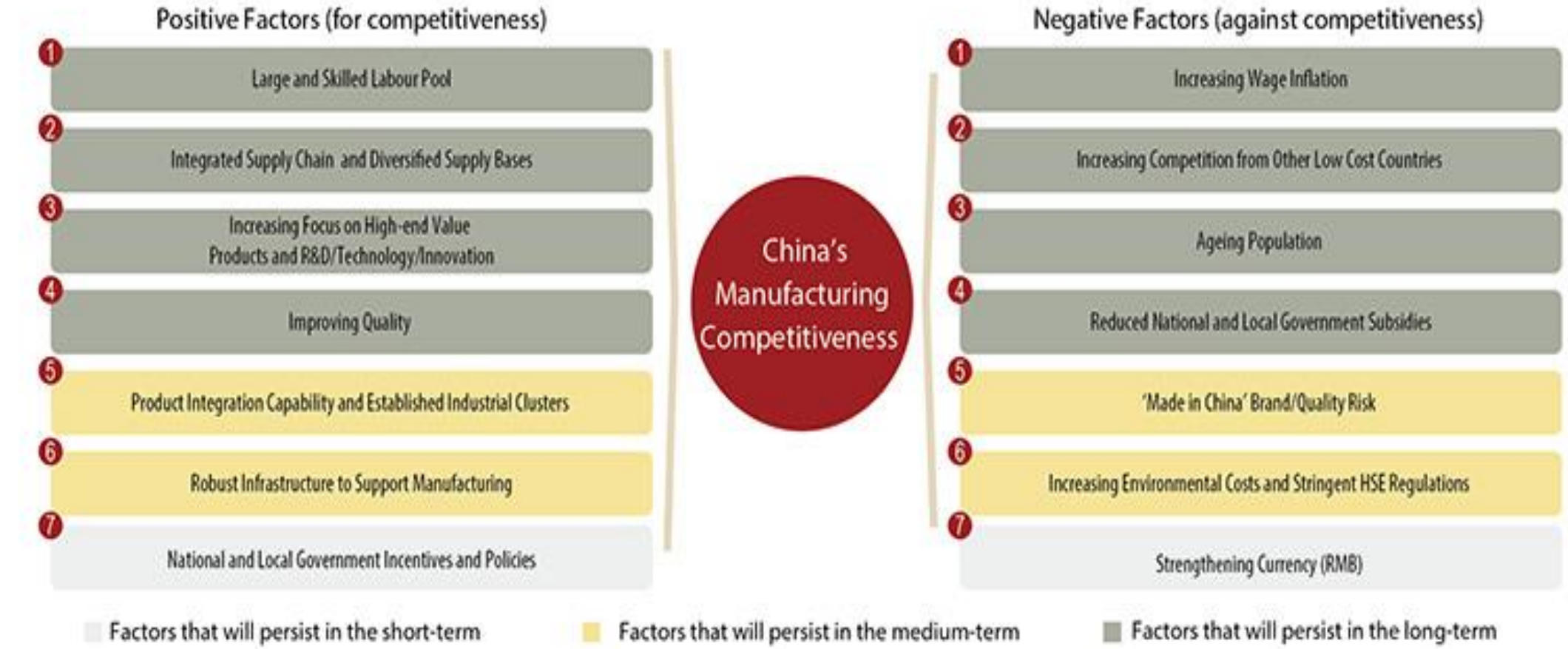
remember

Supply Chain is often crucial for profitability (for many firms it is more than 60% of total costs – transport and logistic cost goes from 3% to 5% of total revenues, cost of inventories can be around 10% of total revenues)

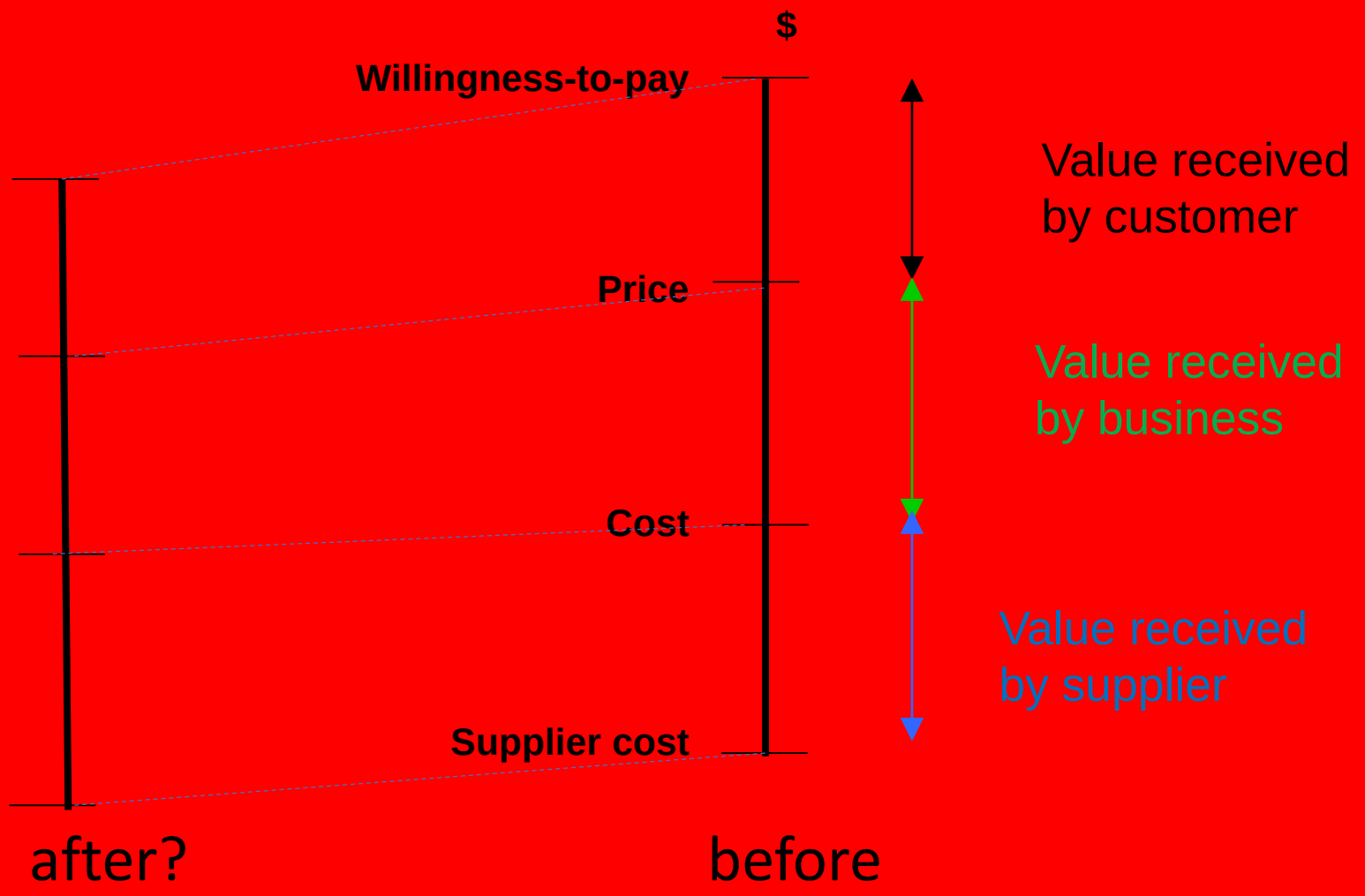
In an economic downturn SC management is even more important:

- How financially stable are your suppliers?
- Who holds the balance of power?
- Could their exposure to you cause their own distress?
- Could their credit insurance be pulled leaving them no choice but to curtail or even cease supply
- How lower volumes affects your and SC costs?

Factors Expected to Affect China's Competitiveness in the Short, Medium and Long Term



Source: The Beijing Axis Analysis


$
Willingness-to-pay
Price
Cost
Supplier cost
Value received by customer
Value received by business
Value received by supplier
after?
before

Are we sure?

Focus on production costs

- I pay less products and components (less and less true)
- We have to ship them back to Italy
- I will have higher transport costs
- I need a higher level of Stocks
- Bullwip / planning
- Quality and quality control

Are we sure?

How does producing in China change my product?

- Can I maintain the same quality?
- How is perceived my product if it is made in China?

China VS India Vs Vietnam

A comparative cost analysis:
Salary, Welfare and Factory Rental

Dongguan 300 workers – Monthly overheads

Average wages: RMB3,549 per month×3=RMB1,064,700 (US$156,573)
Mandatory welfare costs: Between RMB887 and RMB1,448 multiplied by 300 workers=between RMB266,100 and RMB434,400 with a mean average of RMB 350,286(US$51,512)
Factory rental, 5,000 square meters: RMB50,000(US$7,352)

Mean monthly overheads, Dongguan
Salary and welfare: US$208,085
Salary, welfare and rent: US$215,437
Annualized: US$2,585,244

Ho Chi Minh, 300 Workers – monthly overheads

Average wages: US$116×300=US$34,800
Mandatory welfare costs: US$23×300=US$6,900
Factory rental, 5,000 square meters: US$12,500

Mean monthly overheads, Ho Chi Minh City
Salary and welfare: US$41,700
Salary, welfare and rental: US$54,200
Annualized: US$650,400

Chennay 300 Workers Monthly Overheads

Average wages Rs 3600 per month * 300= Rs 1,080,000 (US$ 23,400)

Mandatory Welfare costs Rs 864 (24% of wages) *300 = Rs 259,200 (US$ 5,640)

Factory Rental 5000 SQM Rs 250,000 (US$ 5,416)

Mean Monthly Overheads

Salary and Welfare US$ 29,040

Salary Welfare and rent US$ 34,456

Annualized US$ 413,472

300 workers Factory yearly expenses for salary, welfare and factory rental

Dongguan	US$ 2,585,244
Ho Chi Minh	US$ 650,400
Chennai	US$ 413,472

Manage EU China firm connections

- Make sure the Chinese entity knows the group business strategy
- If you work in china you have to spend time in explaining China and your needs.
- Top managers needs to go at least on a yearly base to China to understand a bit more the country to increase Guangxi and to show the company is very focused on China.
- When you have bilateral meetings remember the two delegations have to at the same level.
- If China is strategic also the EU and US operations needs to change.
- you have to build trust