US Manufacturing Renaissance & Trade Outlook

Presented by Bronson Hsieh@EVERGREEN GROUP

As a carrier, it is our concern to

watch development of global economy,
identify future trend of cargo movements
take actions to meet customers' demand.

Many reports about renaissance of US manufacturing

Shale gas offers low-cost energy & feedstock to petrochemical industry.
US government took many initiatives to boost manufacturing.
Due to rising costs in China, production shifted to the US.

If the trends continue as FORECAST

They will transform future developments of US economy and shipping market. Therefore, we collect related arguments and share information in this forum.

OUTLINE

I. Shale Oil & Shale Gas

- The development, techniques, and influences of shale gas and shale oil

II. Promotions of "Made in USA"

- The developments, Initiatives, and reshoring of US manufacturing

III. Changes of "Made in China"

- The developments, changes, and cost comparisons of China/US manufacturing

IV. Influences on Shipping Market

- The Influences on US export/import, carrier cost, and on port throughput

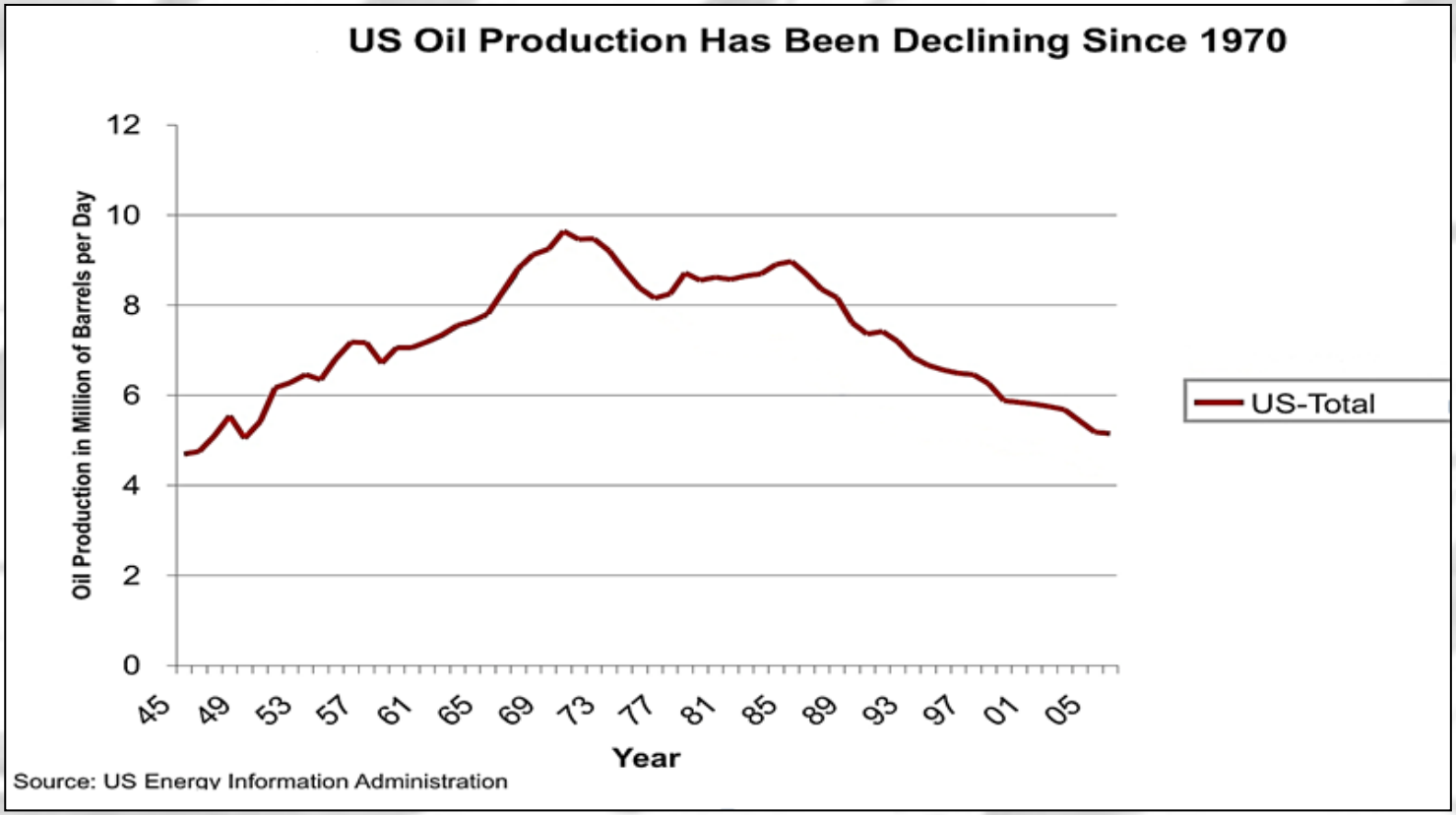
I. Shale Oil & Shale Gas

I-1. Production Development

Shale Oil

EIA: US domestic oil production declined from 9.6M bbls/day in 1970 to 5M bbls/day in 2008.

As a result, it was generally believed that the US would rely on imports to meet its future oil demand.

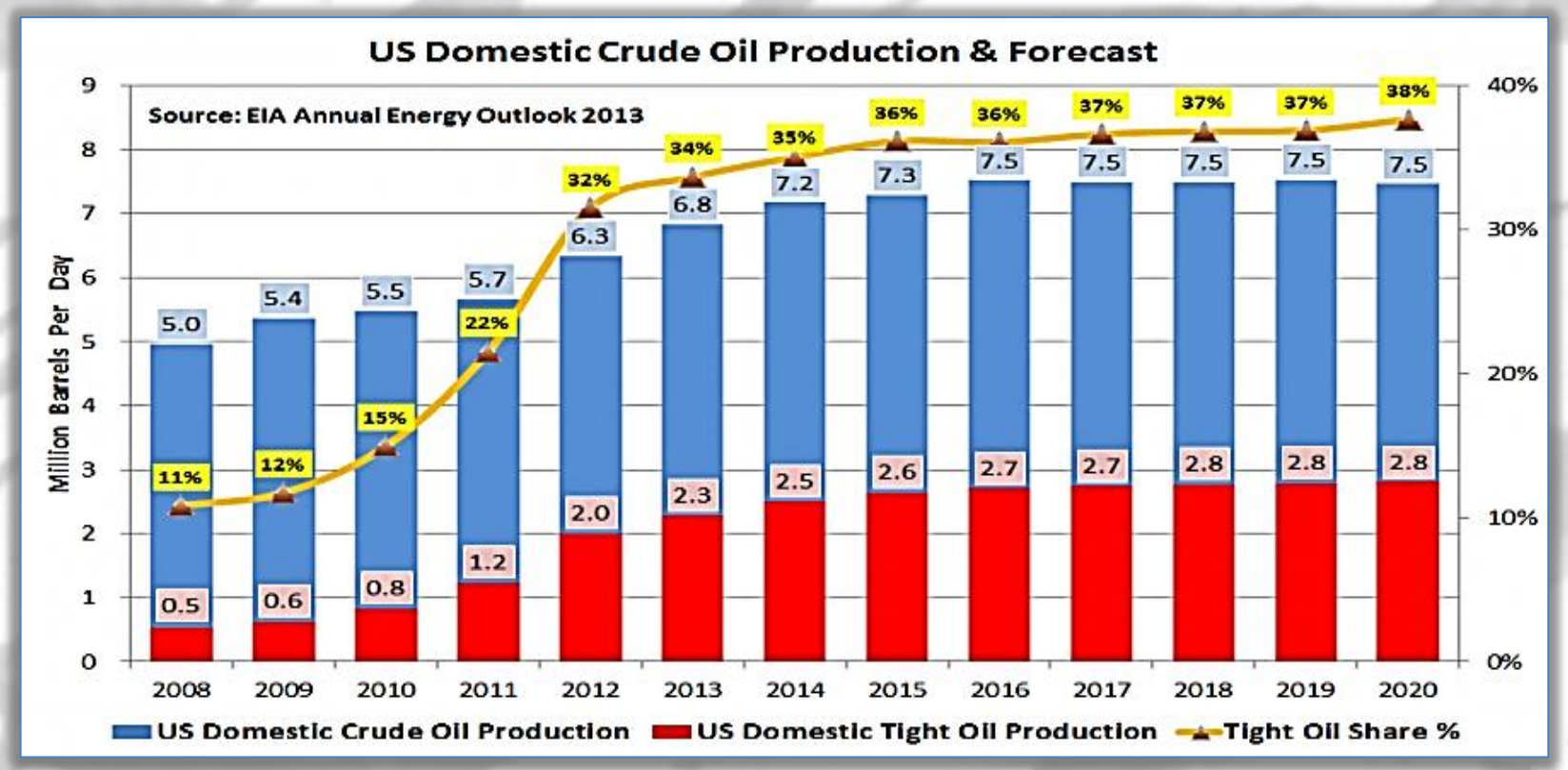


I-1. Production Development

Shale Oil

Tech innovation increased shale oil (tight oil) production from 0.5M bbls/day in 2008 to 2M bbls/day in 2012.

Shale oil accounted for 11% of US oil production in 2008. The ratio increased to 32% in 2012.

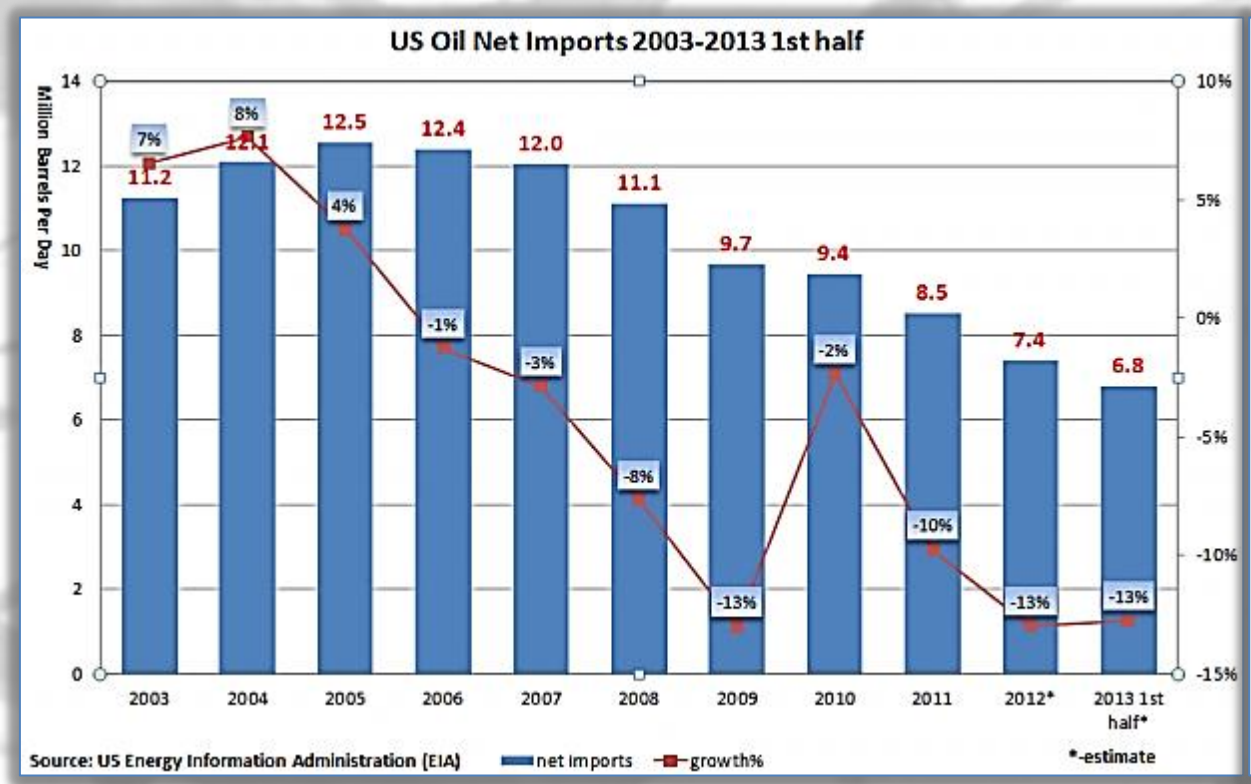


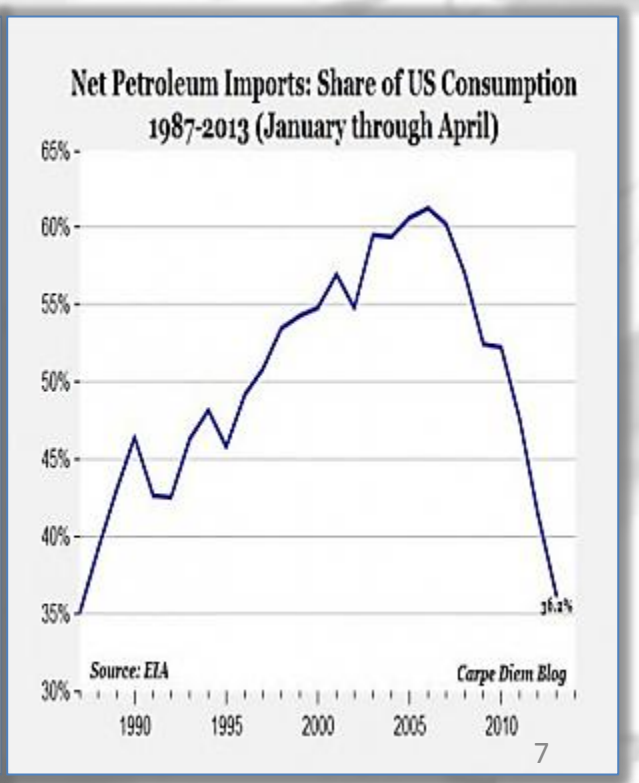
I-1. Production Development

Shale Oil

US reliance on net oil imports declined from 12.5M bbls/day in 2005 to 6.8M bbls/day in 1st half of 2013.

Import share of US oil consumption dropped from 60% in 2005 below 40% in the first four months of this year.



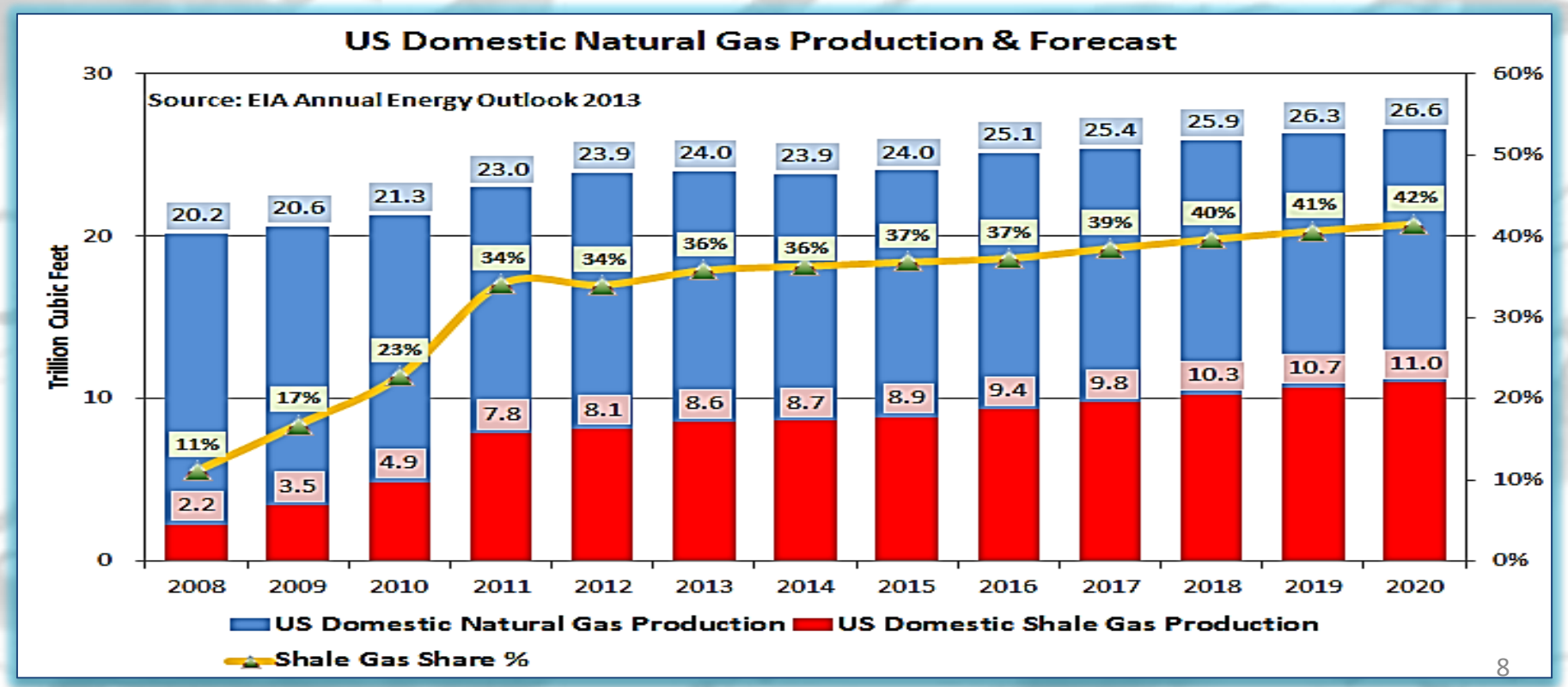


I-1. Production Development

Shale Gas

Stunning development in US shale gas production as it surged from 2.2TN cu.ft.in 2008 to 8.1TN cu.ft.in 2012.

Shale gas accounted for 11% of US natural gas production in 2008. The percentage surged to 34% in 2012.



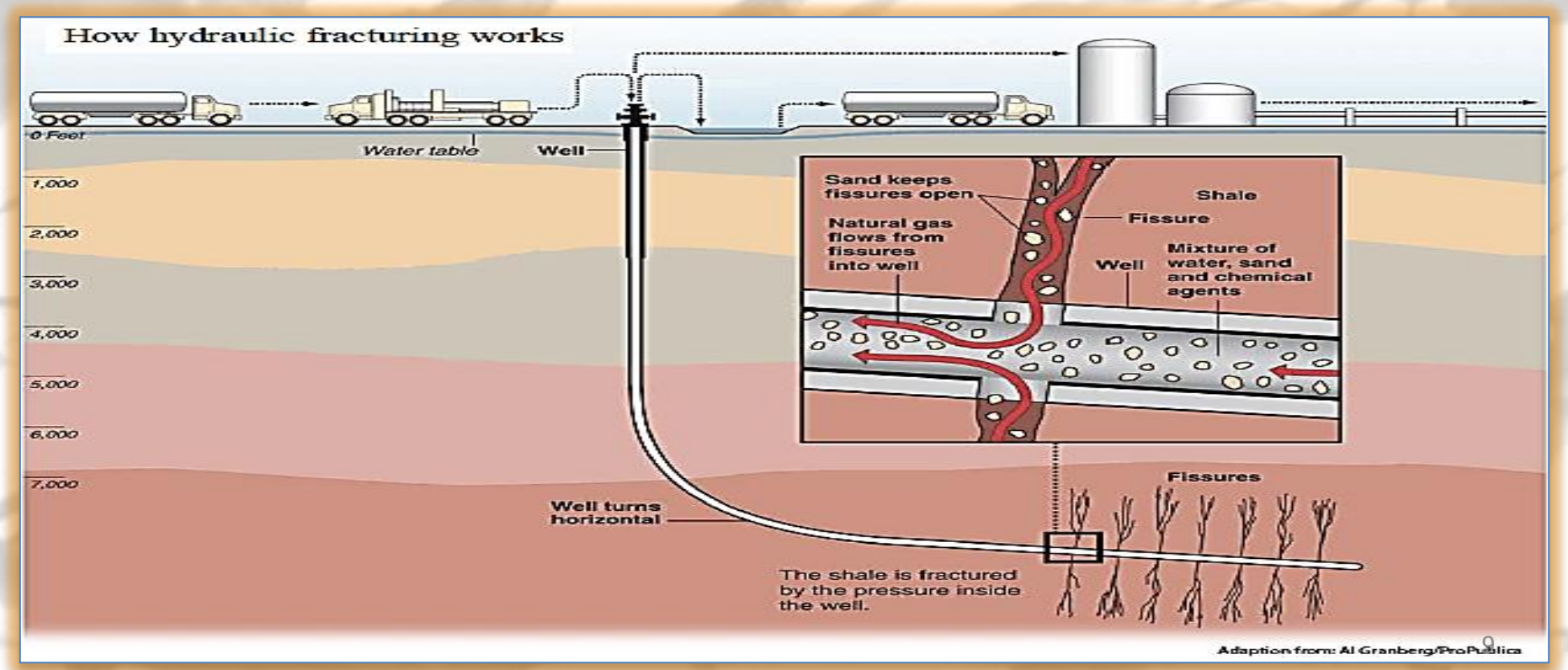
I-2. Production Techniques

Horizontal Drilling

- drilling a vertical well to the desired depth and then turns horizontally to access a larger portion of the reservoir.

Hydraulic Fracturing

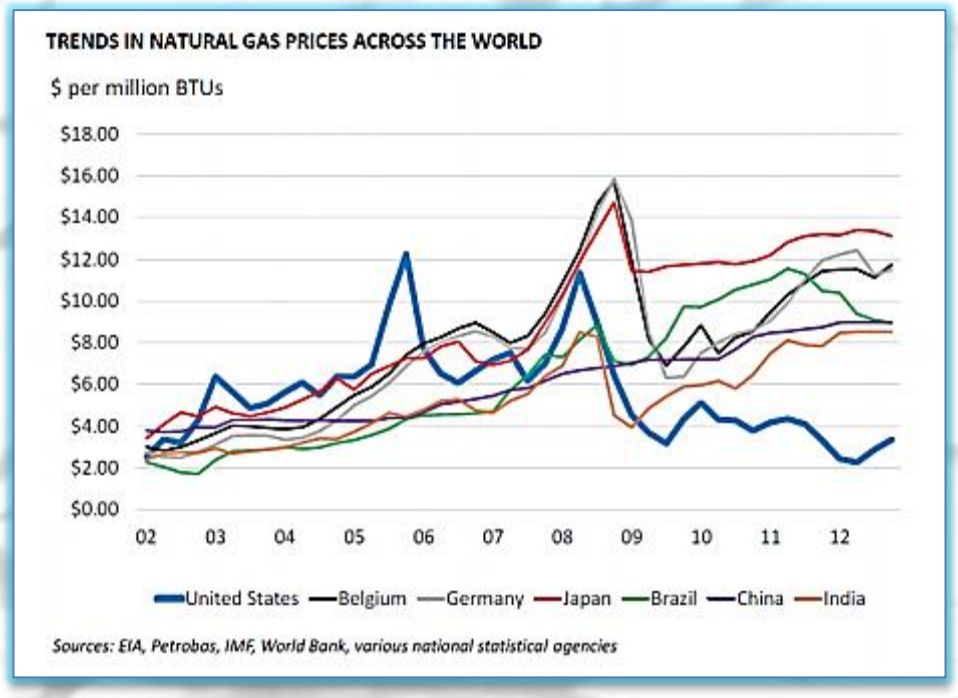
- fracturing rocks by pressurized water with sand and chemicals to create pathways for oil and natural gas to flow to the well.



I-3. Influences on US Economy

Shale Gas offers Low-Cost Energy

- **US natural gas price became cheaper than many countries from 2008, reducing manufacturing costs.**
- **American Chemistry Council: natural gas can increase outputs of 8 gas-intensive industries in US by $121BN or 7.3% during 2015 to 2020.**



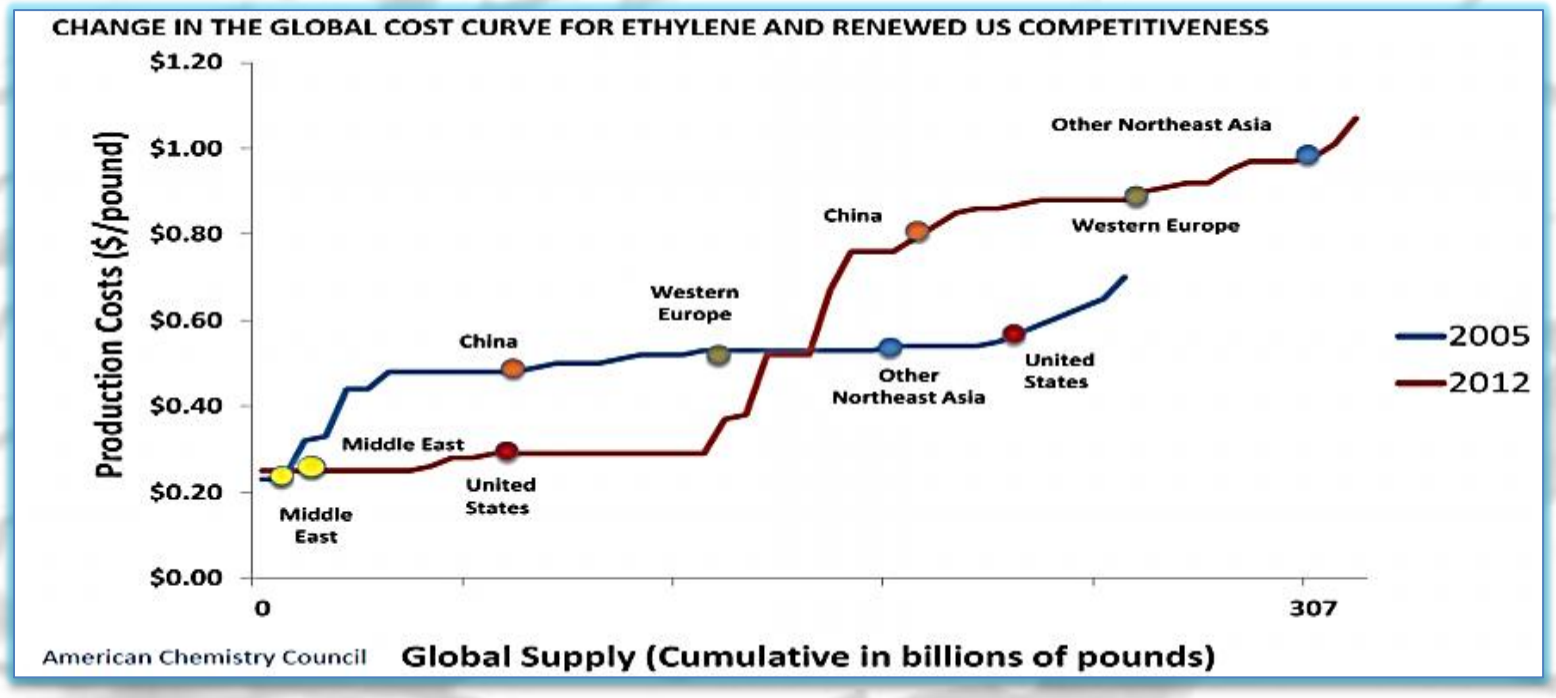
Gas Intensive Industry	Additional Output $ Billion	Natural Gas % of Energy
Paper	3.7	20%
Chemicals (excl Pharmaceuticals)	70.22	33%
Plastics & Rubber Products	33.28	38%
Glass	0.66	53%
Iron & Steel	5.03	35%
Aluminum	1.69	49%
Foundries	0.62	44%
Fabricated Metal Products	5.81	61%
Total	121	

Source: American Chemistry Council

I-3. Influences on US Economy

Shale Gas provides Low-Cost Feedstock

- **Natural gas reduces ethylene production cost, enhances competitiveness of petrochemical industries.**
- **American Chemistry Council: Ethylene costs were similar among US, China, W. Europe and N.E. Asia in 2005, but US cost became much cheaper in 2012.**



I-3. Influences on US Economy

Shale Gas provides Low-Cost Feedstock

- **Ernst & Young: lower cost attracts investments, 14 out of top 20 investment projects are petro-chemical or related industries, including Sasol, Sempra, Chevron Philips, Shell Oil, Dow Chemical and Formosa, etc.**
- **Houston Business Journal stats reflected same trend of investments.**

Top 20 projects ranked by capital investment, 2012

Company Name	State	Product/facility use	Investment (in US$ millions)	Jobs
Sasol Ltd.	LA	Gas-to-liquids; petrochemicals	$ 8,500	835
Sempra Energy/Cameron LNG	LA	Liquid natural gas	6,000	130
Chevron Phillips Chemical Co.	TX	Petrochemicals	5,000	400
Samsung	TX	Semiconductors	4,000	500
Intel Corp.	OR	Semiconductors	3,000	Undisclosed
GlobalFoundries	NY	Semiconductors	2,300	250
Shell Oil Company	PA	Petrochemicals	2,000	450
Formosa Plastics Group	TX	Plastics	1,700	225
The Dow Chemical Co.	TX	Petrochemicals	1,700	150
Port Neal Corporation (CF Industries)	IA	Nitrogen fertilizer	1,700	100
Williams Partners LP	WV	Natural gas	1,340	100
Iowa Fertilizer Co./Orascom Construction Industries	IA	Nitrogen fertilizer	1,300	165
Cenex Harvest States	ND	Nitrogen fertilizer	1,200	150
Celanese Corp.	TX	Petrochemicals	1,000	Undisclosed
Ineos USA LLC	TX	Petrochemicals	1,000	Undisclosed
Baxter International, Inc.	GA	Biological products	1,000	1,500
The Dow Chemical Co.	TX	Petrochemicals	1,000	70
Apple, Inc.	NV	Data center	1,000	35
Ohio Valley Resources LLC	IN	Nitrogen fertilizer	950	80
Benteler Steel & Tube	LA	Steel tubes	900	675

Source: EY analysis of Conway data and additional research.

New Petrochemical Investment Project in Texas

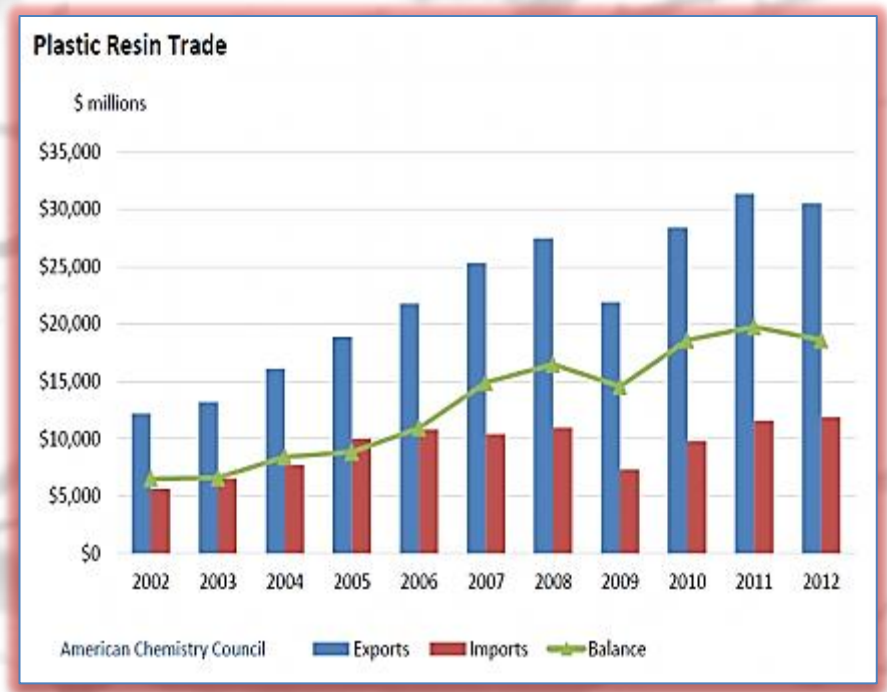
Company	Project Location	Investment	Estimated Completion
Chevron Philips	Baytown	$5 billion	2017
Chevron Philips	Old Ocean	$5 billion	2017
Dow Chemical	Freeport	$4 billion	2017
LyondellBasell	Channelview	$500 million	2013
LyondellBasell	La Porte	$500 million	2014
INEOS USA	Chocolate Bayou	undisclosed	2013
Celanese Corp.	Clear Lake	$500 million	2015
Exxon Mobil	Baytown	undisclosed	2016

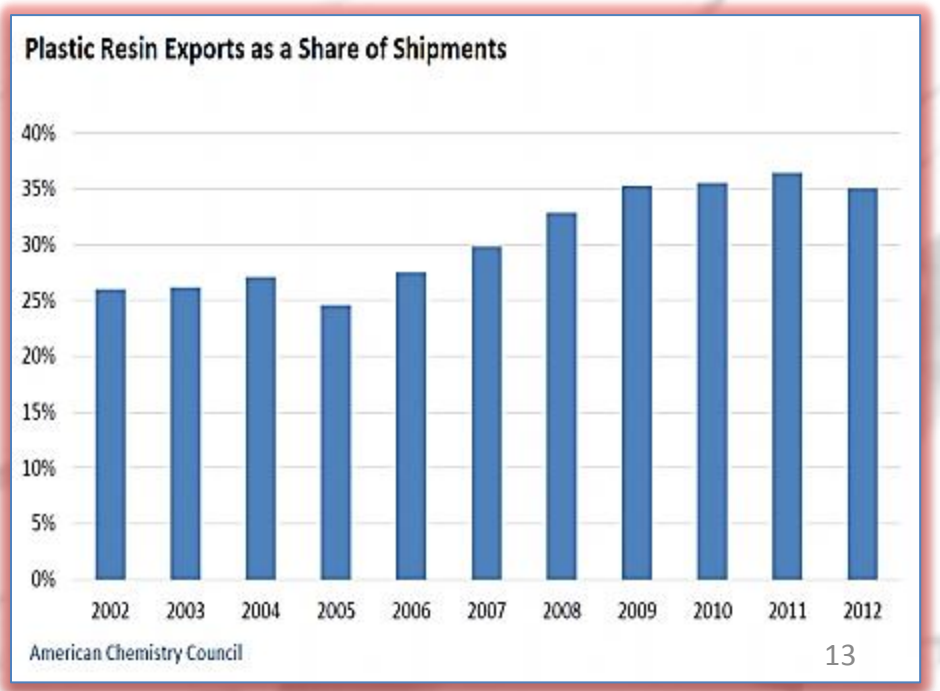
Source: Houston Business Journal

I-3. Influences on US Economy

Growth of **Petro-Chemical** Products

- American Chemistry Council: US plastic resin export surpassed $30BN in 2011 from $13BN in 2002. Trade surplus of this item increased from $10BN to $20BN during 2006-2011.
- Exports jumped from 25% of plastic resin production before 2005 to 35% from 2009

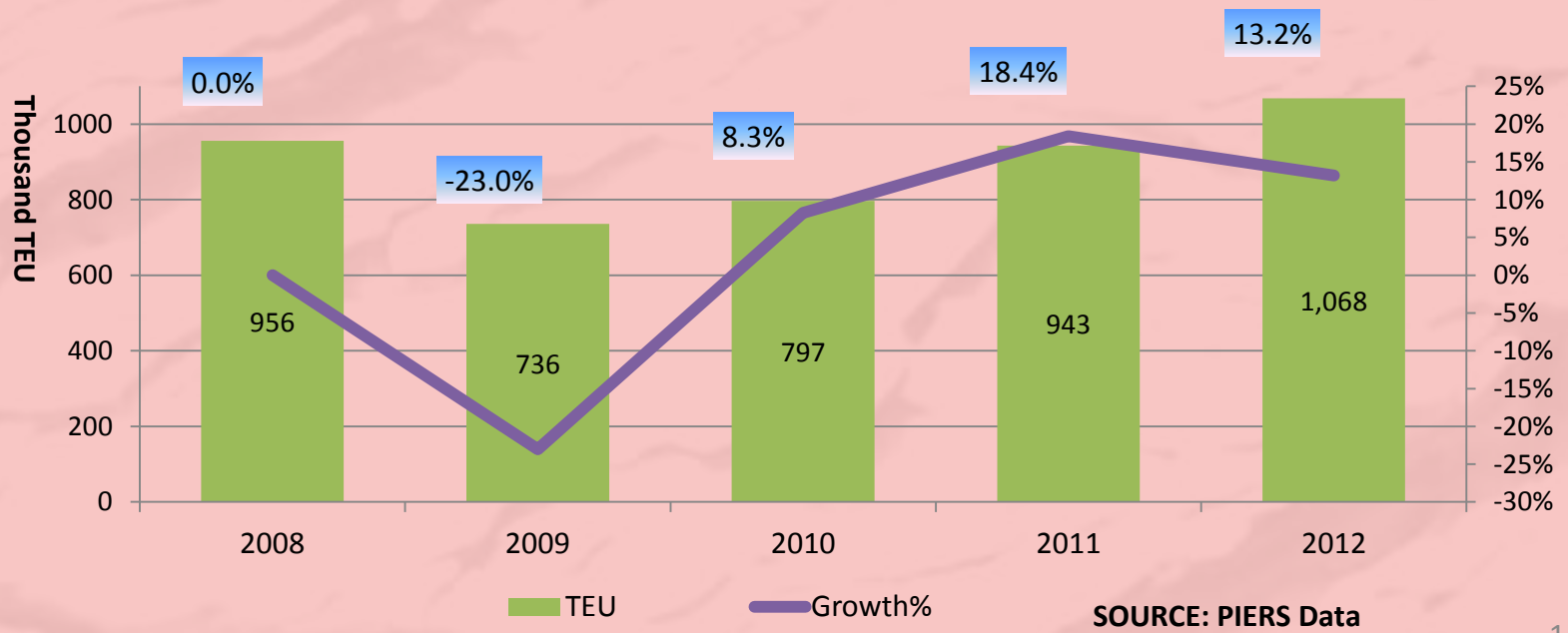




I-3. Influences on US Economy

Growth of **Petro-Chemical** Products

- PIERS: US containerized exports of chemical and plastic products maintained stable growth from 2009.



I-3. Influences on US Economy

Growth of **Petro-Chemical** Products

- **Port of Houston Authority: top 2 export commodities in 2012 are "Resin & Plastics" and "Chemical & Minerals", accounting for 50%+ of total container export volumes.**
- **JOC: US Container Port Forecast of June 2013 shows strong growth momentum from Houston to Northeast Asia.**

Top Containerized Commodities

Port of Houston Authority Container Volume (TEUs)

PHA Market Development. Report generated March 4 2013.

Export

Commodity Category	2008	2009	2010	2011	2012	2012 Rank	2012%
Total	819,998	790,791	842,075	873,855	879,554	-	100.0%
Resins & Plastics	251,720	296,027	303,709	308,979	309,483	1	35.2%
Chemicals & Minerals	117,328	93,532	122,300	123,534	134,980	2	15.3%
Machinery, Appliances & Electronics	93,938	76,799	79,957	88,456	91,608	3	10.4%
Food & Drink	80,087	70,049	75,759	85,656	81,054	4	9.2%
Automotive	64,989	51,642	54,157	55,230	58,674	5	6.7%
Steel & Metals	30,496	28,740	28,261	25,740	34,302	6	3.9%
Retail Consumer Goods	25,184	26,598	24,616	24,102	23,844	7	2.7%
Apparel & Accessories	15,369	17,047	20,222	26,483	23,831	8	2.7%
Hardware & Construction Materials	21,198	14,628	24,278	21,113	19,552	9	2.2%
Fabrics Incl. Raw Cotton	35,704	35,021	32,365	40,950	18,117	10	2.1%
Furniture	3,807	3,381	3,351	4,201	4,486	11	0.5%
Other	*80,178*	*77,326*	*73,099*	*69,413*	*79,624*	-	*9.1%*

HOUSTON

	YEAR	TOTAL	NORTHEAST ASIA	SOUTHEAST ASIA	NORTHERN EUROPE	MEDITER-RANEAN	SOUTH AMERICA
EXPORTS	2011	591,070	29,595	24,616	209,112	113,976	213,770
	2012	586,791	56,898	17,587	203,882	97,193	211,230
	2013f	616,364	69,323	18,523	208,418	107,776	212,323
	2014f	638,267	71,450	19,477	209,861	112,950	224,530
	2015f	656,534	74,302	20,531	210,442	117,454	233,805

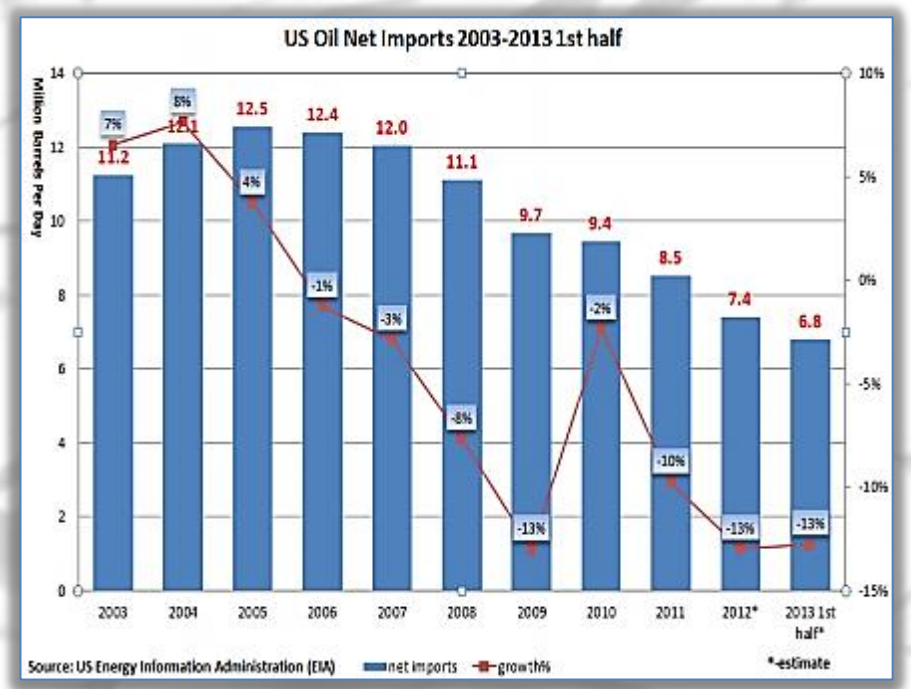
Source: PIERS data, JOC Forecast

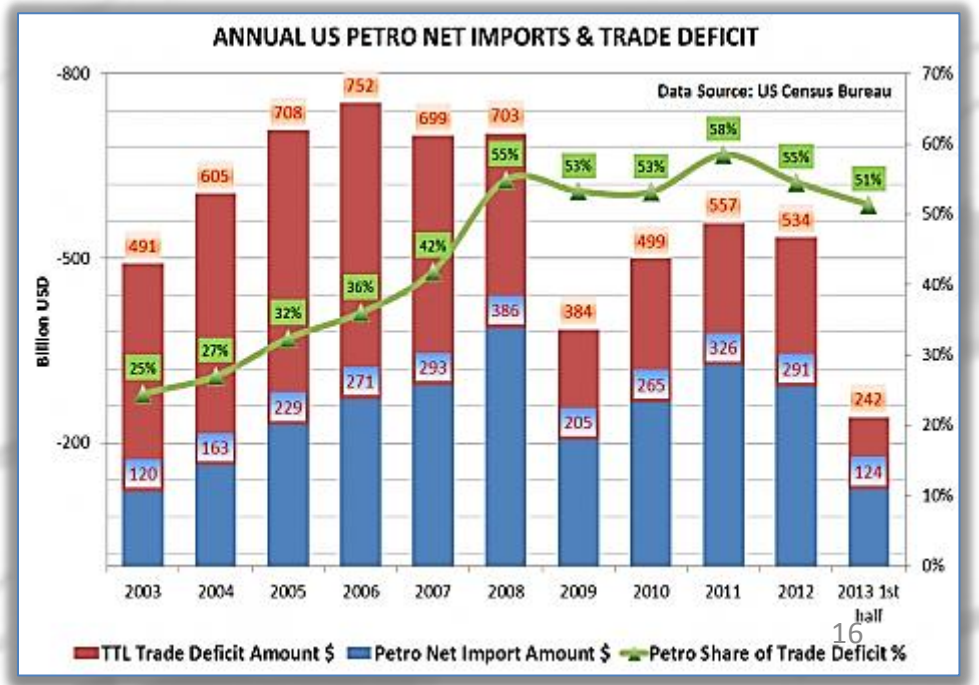
All numbers are expressed in TEUs

I-3. Influences on US Economy

Shale Oil Reduces US Trade Deficit

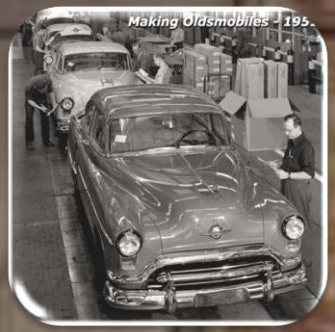
- Energy Information Administration (EIA): US net oil imports dropped from 12.5M bbls/day in 2005 to 6.8M bbls/day in 1st half of 2013.
- US Census Bureau: oil import share in US trade deficit dropped from 58% in 2011 to 55% in 2012 and 51% in 1st half of 2013, boosting Dollar value for more import purchasing power.





II. Promotions of “Made in USA”

II-1. Developments of “Made in USA”



Early 1950s: US dominated 40% of global manufactured goods, but started losing market shares to the reconstructed Europe , Japan, the emerging Asia and then China later on.

Late 1990s: US manufacturers enhanced competitiveness and dominated global high-valued industries, such as microprocessors, aerospace, networking equipment and pharmaceuticals.

II-2. Federal Initiatives to Boost “Made in USA”

National Export Initiative (NEI): to double export by 2014 and to create 200M jobs. By mid-2012, US manufacturing sector had added 0.5M jobs, the fastest pace of job growth since 1995.

Advanced Manufacturing Partnership (AMP): to enhance US manufacturing productivity by enabling innovation in industries, securing talent pipeline in schools, and improving business.

Port Modernization Projects: to speed up investment in major US ports.

Port	NY/NJ	Charleston	Savannah	Jacksonville	Houston
Project	Raising Bayonne Bridge from 151ft to 251ft	Deepening from 45ft to 50ft	Deepening from 42ft to47ft	Deepening From 40ft to 50ft	Deepening from 40ft to 45ft
Deadline	Dec-15	Dec-17	Dec-16	Oct-14	Dec-14

II-2. Federal Initiatives to Boost “Made in USA”

Trans-Pacific Partnership (TPP): US is negotiating with Australia, Brunei, Chile, Canada, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam, covering 40% of world GDP and 1/3 of world trade.

Trans-Atlantic Trade & Investment Partnership (TTIP): US and EU are negotiating together to set up the biggest free trade zone, covering 1/2 of world GDP and nearly 1/3 of world trade.

II-3. State Initiatives to Boost "Made in USA"

South Carolina: charges only 5% corporate income tax; ranked lowest unionization rate (1.3%) for private sector and 3rd lowest (1.9%) for manufacturing in US; provides well-trained employees via "ReadySC" program.

Alabama: offers tax incentives and industrial site selection service; supports "AIDT" project, one of the top 5 training agencies in the US to provide skilled workforce.

Major South Carolina Investment Project				
Year	Company	Investment	Product	Jobs
2011	Bridgestone	$1.2 billion	tire	850
2012	Michelin	$750 million	tire	500
2012	BMW	$900 million	car	300

Major Alabama Investment Project				
Year	Company	Investment	Product	Jobs
2011	Mercedes	$2 billion	car	1,000
2012	Airbus	$600 million	aircraft	1,000

II-4. Reshoring of "Made in USA"

Whirlpool: announced investment of $1BN in Ohio by 2014 and brought back the production of hand mixer from China in 2010.

Caterpillar: invested $200M on excavator production in Texas in 2012, adding 800 jobs, and another $200M on tractor factory in Georgia, adding 1,400 jobs.

GE: kicked off investment of $1BN in Kentucky in 2012, adding 1,000 jobs.

Year	Company	Investment	State	Remark
2011	Whirlpool	$1 billion	Ohio	bring production of mixer back from China
2012	Caterpillar	$200 million	Texas	expand excavator production
		$200 million	Georgia	build tractor factory
2012	GE	$1 billion	Kentucky	produce appliances

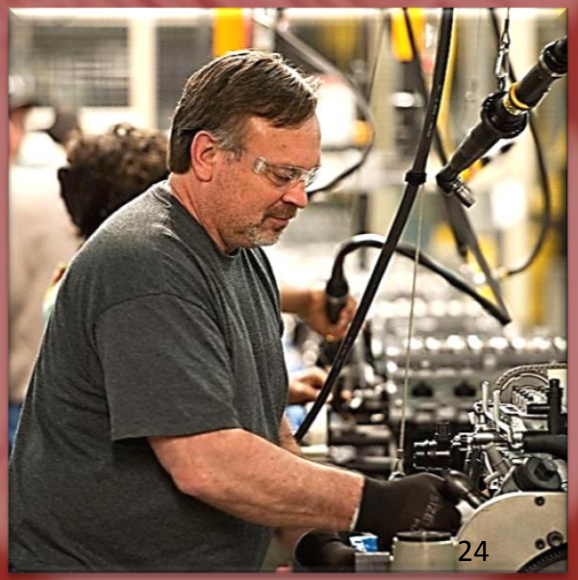
III. Changes of “Made in China”

III-1. Manufacturing Development in China

- After joining WTO in 2001, China became the world factory by low-cost labor, inexpensive land, modern infrastructure and government incentives.
- In contrast, the outsourcing trend cost the US manufacturing sector 6 million jobs.

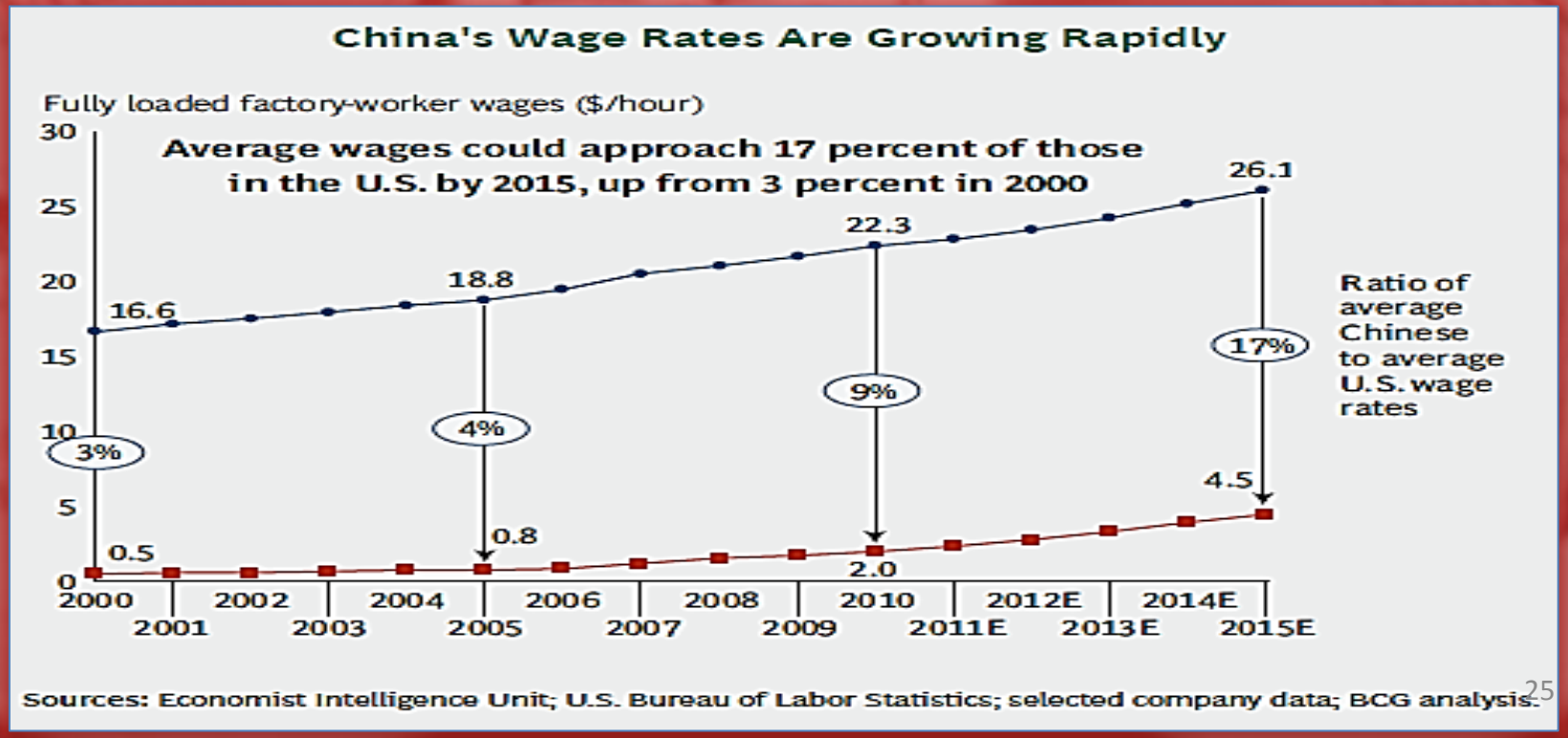
III-2. Change of China's Cost Equation

- In recent years, rising wages, land prices and RMB value are eroding the cost advantages of China.
- For many products sold in North America, some US states will become attractive manufacturing options.



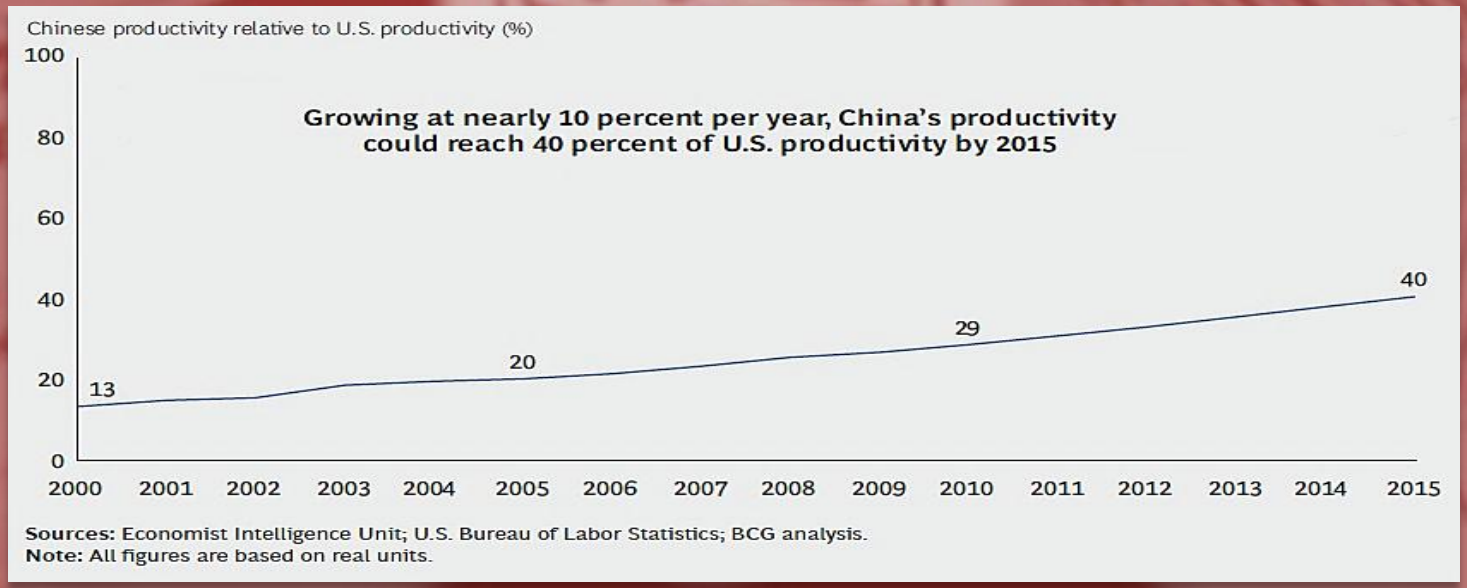
III-3. Wage Comparison between US and China

- **Boston Consulting Group (BCG): China avg. wages in 2000 were 3% of US level but is forecast to be 17% by 2015.**
- **If comparing China's Yangtze River Delta and southern states in US, the ratio is expected to reach 25% by 2015.**



III-4. Productivity Comparison between US and China

- BCG forecast China's productivity will reach 40% of US by 2015.
- BCG: Adjusted by productivity, production costs in coastal China will only be 10-15% lower than southern US states by 2015, not enough to cover other costs, such as shipping, inventory and import duties.



III-5. Land Price Comparison between US and China

- According to BCG's report in 2011, land prices in China's coastal areas are higher than those of industrial land in South Carolina, North Carolina, Alabama and Tennessee.

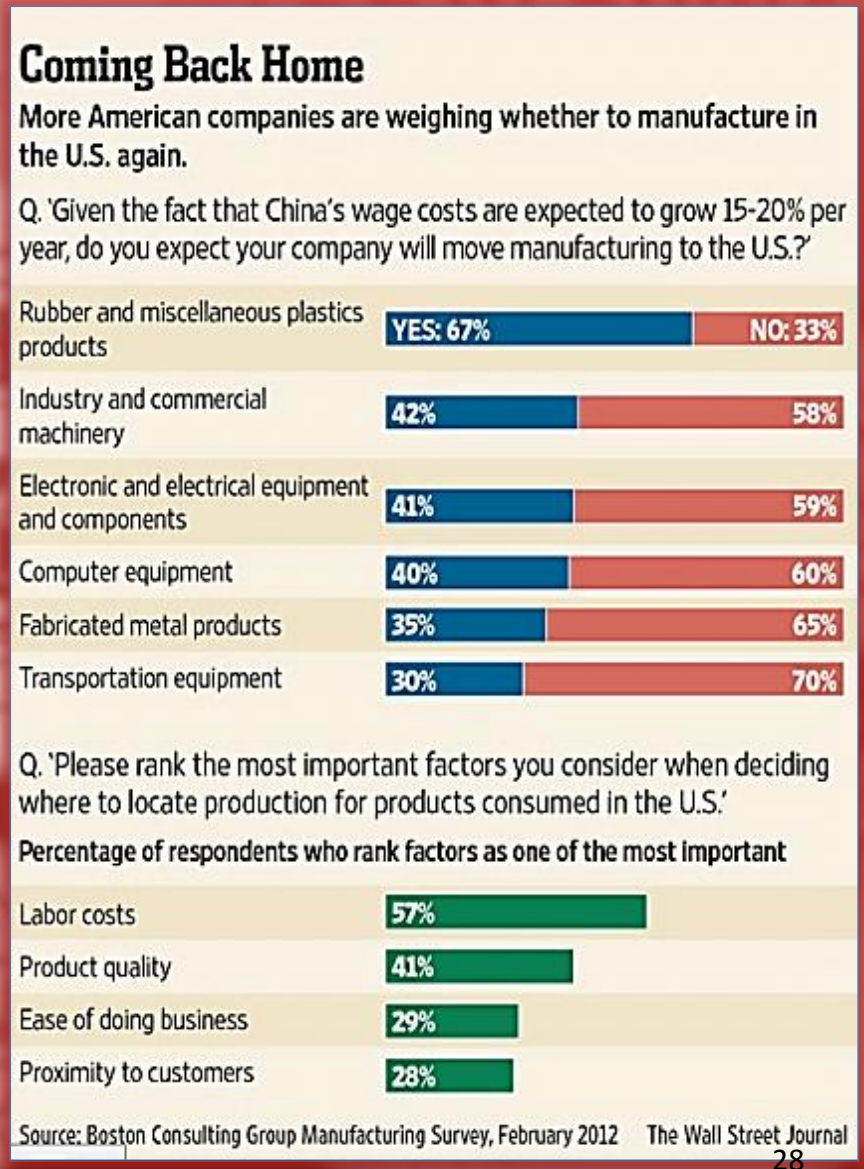
Industrial Land Cost per square foot

Area	Shenzhen	Shanghai	Nanjing	Ningbo
Cost	$21	$17.29	$14.49	$11.15
Area	Alabama	Tennessee	North Carolina	
Cost	$1.86-7.43	$1.3-4.65	$1.3-4.65	

III-6. Survey on US Manufacturers' Reshoring

Boston Consulting Group (BCG): 106 companies with annual sales above $1BN surveyed and found 37% planned to shift some production from China to US, or "actively considering" it.

- Among companies with sales above $10BN, 48% were considering reshoring.
- 57% respondents chose "labor cost" as main reason for selecting production location and 41% considered "product quality" as the most important factor.



III-7. Seven Industry Groups near Tipping Point

BCG: production costs of seven industry groups will reach tipping points in China, and 10% -30% of goods now imported from China will shift back to US by 2020, adding 2M-3M jobs and $20BN-$55BN yearly output.

- BCG: companies will reshore some productions in satisfying domestic demands in US and China separately.
- BCG: 41% of the surveyed companies will reshore for "product quality", as China and other emerging markets will also demand for quality US exports.

Tipping-Point Industries

Industry Category	Value of Goods Consumed	Imports from China
Transportation Goods	~$582 billion	~$6 billion
Computers & Electronics	~$467 billion	~$122 billion
Fabricated Metals	~$262 billion	~$10 billion
Machinery	~$251 billion	~$16 billion
Plastics & Rubber	~$170 billion	~$9 billion
Appliances and Electrical Equipment	~$134 billion	~$25 billion
Furniture	~$75 billion	~$13 billion

Sources: U.S. National Census Bureau; U.S. Bureau of Economic Analysis; BCG analysis.

III-8. Examples of US Manufacturers Reshoring

- According to Ernst & Young's US Investment Monitor, in 2011 and 2012 many investment projects in the US are in the tipping point industries.

Industry	Company	State	Investment US$ million	Year
Transportation	Mercedes Benz	AL	2,000	2011
	Ford	MO	1,100	2011
	Ford	IL	200	2011
	General Motors	MO	380	2011
	General Motors	TN	244	2011
	General Motors	MI	300	2012
	Chrysler	OH	500	2011
	Navistar	AL	87	2011
	Diamler Trucks	NC	disclosed	2012
	Nissan	MS	20	2012
	Boeing	OK	disclosed	2012
	Airbus	AL	600	2012
Computer & Electronics	Intel	AZ	5,000	2011
	Intel	OR	3,000	2012
	IBM	NY	4,400	2011
	IM Flash	UT	1,500	2011
	Apple	TX	304	2012
	Ericsson	TX	54	2012
	Samsung	TX	4,000	2012
	GlobalFoundries	NY	2,300	2012
Fabricated Metals	US Steel Corp.	PA	1,000	2011
	MBA Building Supplies	PA	775	2011
	NTN-Bower Corp.	IL	750	2011
	Benteler Steel & Tube	LA	900	2012
Machinery	Caterpillar	GA	200	2012
Rubber (Tire)	Bridgestone	SC	1,200	2011
	Continental	SC	500	2011
Plastics	M&G Group	TX	900	2011
	Formosa Plastics	TX	1700	2012
Appliances	Panasonic Corp.	NJ	190	2012

IV. Influences on Shipping Market

IV-1. The Influences on US Export

Shale gas enhances competitiveness of US manufacturing by providing low-cost feedstock to petrochemical industry and cheap energy for other gas-intensive industries.

Changes of “Made in USA” & “Made in China”:

- Due to increasing costs in China, the advantages of US manufacturing start to emerge. Incentives from US government will attract domestic and foreign investments to boost US exports.

Rising incomes in emerging markets:

- are expected to increase demands for high-quality American products, adding more momentum to US export growth.

IV-2. The Influence on US Import

Short term	Long term
Reshoring industries will increase supply for domestic consumption and slow down the growth of US imports.	Export growth and declining oil imports will reduce US trade deficit, increase value of US dollar and encourage consuming imports.

IV-3. Free Trade Agreement

The US government is active in the negotiation of TPP and TTIP.

The free trade agreements will accelerate the development of trade growth and cargo flows.

IV-4. The Influence on Carriers' Costs

- Currently the volumes of US imports far exceed its exports. Many empty containers have to be repositioned back to Asia.
- The US manufacturing renaissance will increase container demand for exports and reduce carriers' empty reposition costs.

IV-5. The Influence on Port Throughput

- Shale gas development and reshoring trend attract many investment projects to the US Gulf Coast and southeastern states.
- With the expansion of production capacity, exports are expected to increase and add more growth momentum to the port throughputs in these areas.

THANK YOU!!