

The Manufactures Alliance















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OUR MANUFACTURING FUTURE





4 Trends Shaping Advanced Manufacturing

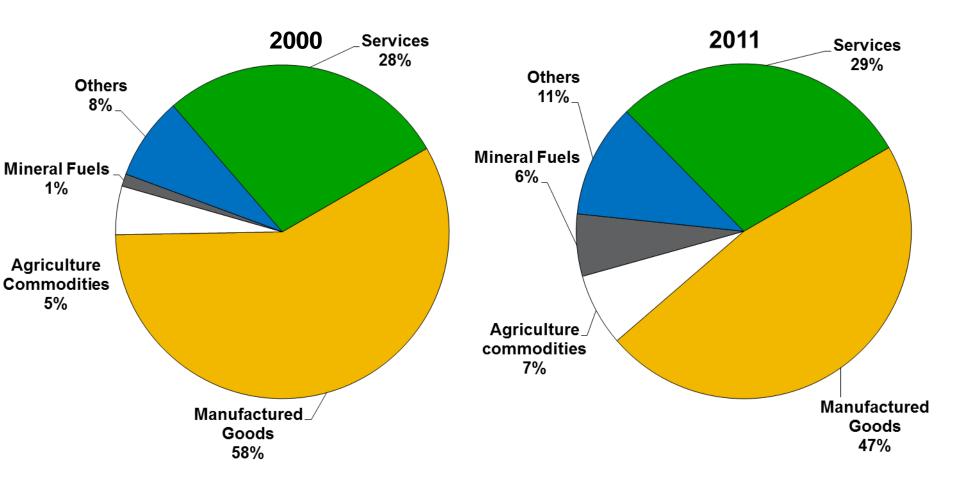




The World as the Market



Figure 32 – Manufacturing Still Dominates U.S. Exports, But Its Share Is Declining



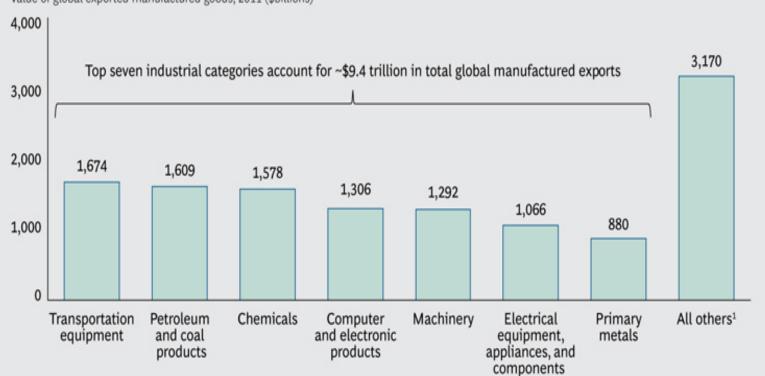


Industrial Sectors



EXHIBIT 5 | Three-Quarters of Global Manufactured Exports Are Concentrated in Seven Industrial Categories





Sources: OECD, BCG analysis.

Note: Nominal US\$. Excludes countries where industry-level export data are not available (e.g., South Korea, Hong Kong, Singapore, and Malaysia).

Includes food products, textile product mills, miscellaneous, plastic and rubber products, fabricated metal products, paper, nonmetallic mineral products, and wood products.

Figure 65 – A Few Core Industries Dominate Foreign Trade in Manufactures

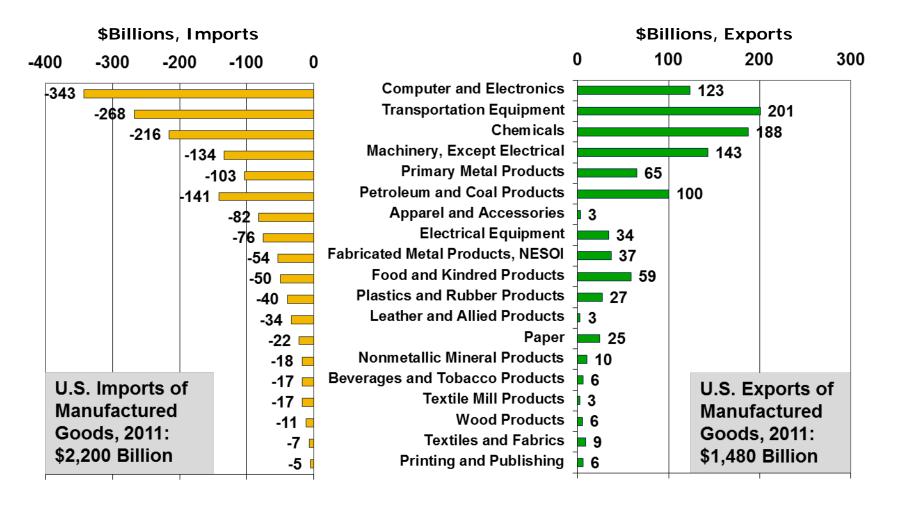
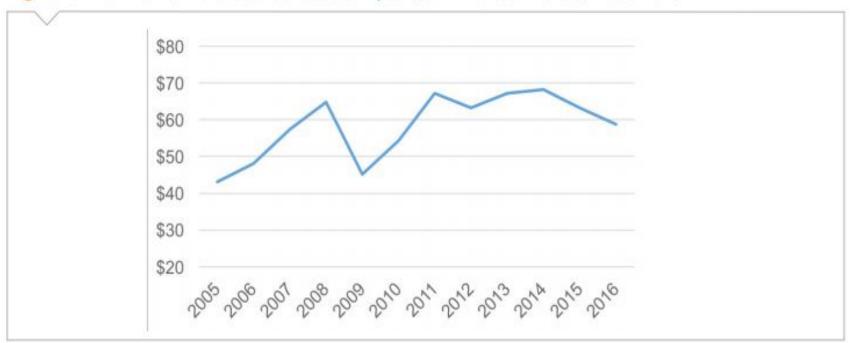






Figure 3: New York's Manufactured Goods Exports, in Billions of Dollars, 2000-2016



MRI Study Results



	Manufacturing Export Intensity by State (2008)				
1	Florida	39%			
2	Washington	38%			
3	New York	35%			
4	Vermont	33%			
5	Nevada	32%			
6	Arizona	30%			
7	Massachusetts	27%			
8	Texas	27%			
9	Idaho	24%			
10	California	24%			

Source: Annual Survey of Manufactures, U.S. Census Bureau, TradeStats Express, International Trade Administration

Upstate New York Metro Areas	2009 Exports (\$ billion)	
Rochester	\$4.9	
Buffalo/Niagara Falls	3.6	
Albany/Schenectady/Troy	3.2	
Poughkeepsie/Newburgh/Middletown	2.2	
Syracuse	1.3	
Utica/Rome	0.5	
Binghamton	0.3	
Ithaca	0.2	
Glen Falls	0.2	
Kingston	0.2	
Elmira	0.1	





MRI Study Results



2000 NYS Manufacturing			
Exports (billions)			
Canada	\$9.2		
Switzerland	3.2		
Japan	3.1		
United Kingdom	3.1		
Israel	1.8		
Mexico	1.7		
Germany	1.6		
Hong Kong	1.4		
Belgium	1.2		
France	1.2		
South Korea	0.8		

2010 NYS Manuf Exports (billions)	2000 Rank	Annual % Change	
Canada	\$8.7	1	-1%
Israel	4.1	5	9%
Hong Kong	4.1	8	12%
United Kingdom	3.2	4	0%
Switzerland	2.6	2	-2%
Germany	2.4	7	4%
China	2.2	13	13%
Belgium	2.1	9	6%
Mexico	2.1	6	2%
India	1.8	14	14%
Japan	1.8	3	-5%

Source: Foreign Trade Statistics, U.S. Census Bureau





Technology Explosion





EXHIBIT 1 Nine Technologies Are Transforming Industrial Production





TOP 8 EMERGING TECHNOLOGIES

- » Big Data
- » Internet of Things
- » Robotics and Artificial Intelligence
- » Virtual and Augmented Reality
- » Miniaturized Electro-mechanical Elements
- » Biotechnology
- » Nano Materials
- » 3D Printing

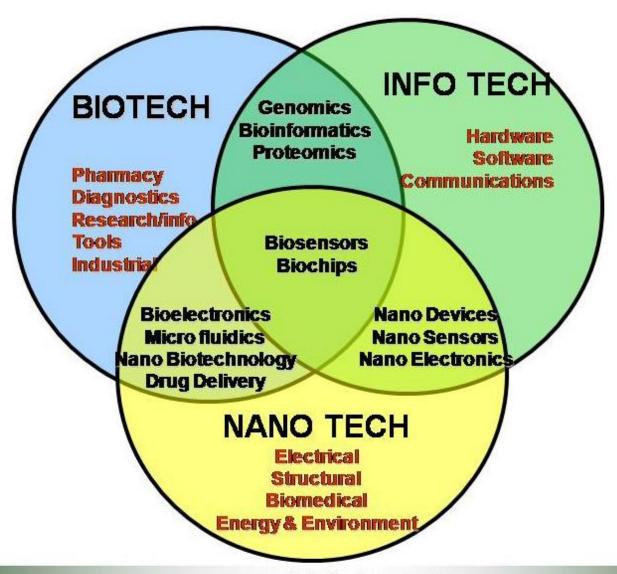






CONVERGENCE OF TECHNOLOGIES

BIO-INFO-NANO



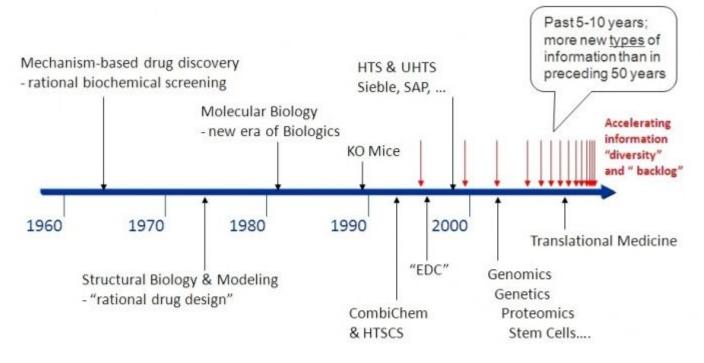
Technology Explosion



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Speed of Technology







Brains not Brawn

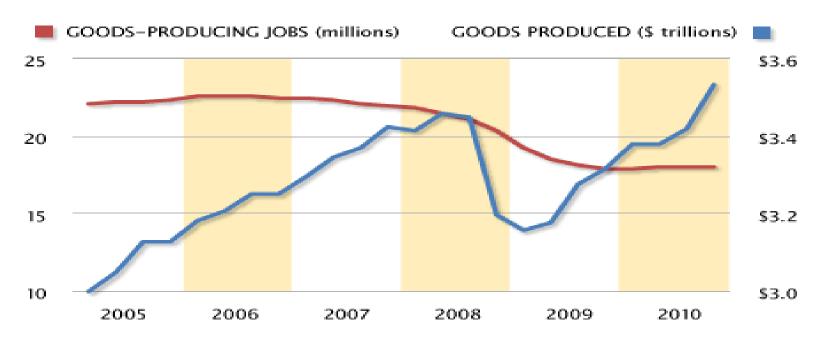


Brains not Brawn

Where have all the jobs gone?

Missing manufacturing jobs

Despite a strong rebound in manufacturing industries since the recession, hiring has not kept pace.



SOURCE: BEA, BLS msnbc.com

Workforce Skills Level Needed



What would you say is the **best thing about having manufacturing business operations** within the State of New York?



Indicate the degree of difficulty your business has in filling the following job categories.

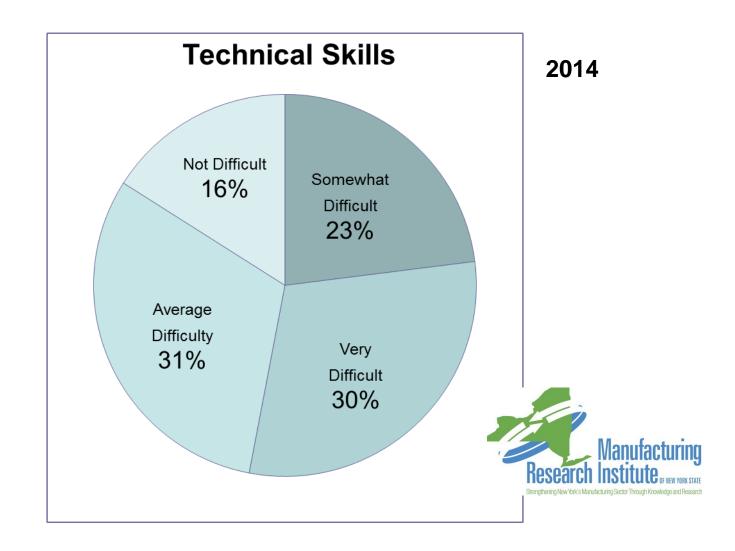
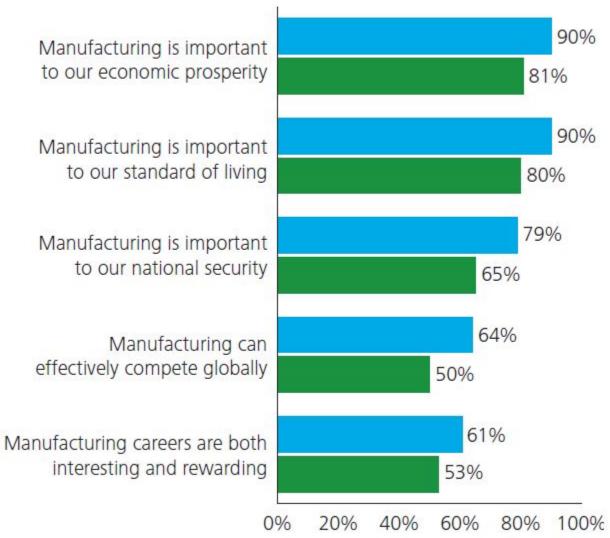


Chart 13. Comparison of total respondents to 18-24 year olds who strongly agree or agree with each statement









Clusters Matter



What are Clusters?



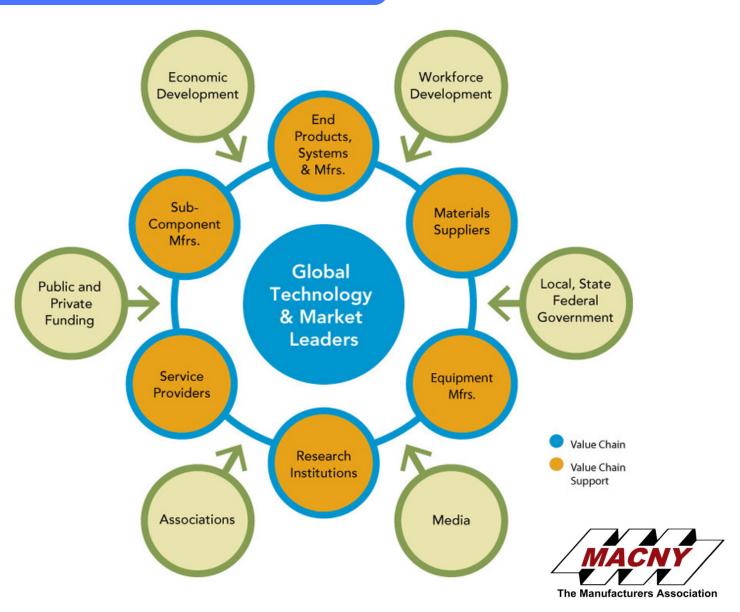
Clusters are geographic concentrations of interconnected businesses, suppliers, service providers, and associated institutions in a particular sector.

As defined by The Brookings Institution,



What is a Cluster?









Rural Jobs Accelerator Collaboration Clusters (13)

EDA, USDA, DRA, ARC



MACNY The Manufacturers Association

SBA's Pilot Contract-Based Clusters

- 1 CA Agriculture Innovation Cluster / Project 17 Ag Tech Agriculture Innovation
- 2 SC Carolinas' Nuclear Cluster Nuclear energy technology and components
- 3 CT Northeast Electrochemical Energy Storage Fuel cell and hydrogen fueling systems
- 4 MS Enterprise for Innovative Geospatial Solutions Geospatial technology
- 5 IL Illinois Smart Grid Regional Innovation Cluster Smart grid / efficient energy
- 6 OH NorTech Flexmatters Flexible electronics
- 7 MI Upper Michigan Green Aviation Coalition *Green* aviation
- 8 MN Defense Alliance of Minnesota Advanced power and energy (DoD Focused)
- 9 CA San Diego Advanced Defense Cluster Autonomous systems and cyber security (DoD Focused)
- 10 AL Huntsville Advanced Defense Technology Initiative Aero-space technology (DoD Focused)

Jobs Accelerator Advanced Manufacturing

Economic Development Agency, Employment and Training Agency, Small Business Administration, National Institute of Standards and Technology, Department of Energy

- 11 NY Rochester Regional Optics, Photonics & Imaging Accelerator
- 12 NY Advanced Manufacturing of Thermal and Environmental Control Systems
- 13 PA Agile Electro-Mechanical Product Accelerator
- 14 PA Greater Philadelphia Advanced Manufacturing Innovation and Skills Accelerator
- 15 TN Advanced Manufacturing and Prototyping Center of East Tennessee
- 16 MI Advanced Contract Manufacturing of Southeast Michigan Cluster
- 17 OK Manufacturing Improvement Program for the Oil and Gas Industry Supply Chain
- 18 AZ Southern Arizona Aerospace and Defense Cluster
- 19 CA Advanced Manufacturing Medical/Biosciences Pipeline for Economic Development (AM2PED)
- 20 OR Innovations in Advanced Materials and Metals Cluster (IAM2)

Jobs Accelerator Collaboration Clusters

Economic Development Agency Employment and Training Agency Small Business Administration

- 21 ME GreenME Renewable Energy Industry Cluster
- 22 NY Finger Lakes Food Processing Cluster Initiative Food Processing
- 23 NY New York Renewable Energy Cluster Renewable Fnergy
- 24 PA Southwestern Pennsylvania Revitalization Energy/ Health Care
- 25 OH Northeast Ohio Speed-To-Market Accelerator Energy / Flexible Electronics
- 26 MI Southeast Michigan Advanced Energy Storage Systems Initiative Advanced Energy Storage Systems
- 27 TN Advanced Composites Employment Accelerator Advanced Composites with Focus on Low-Cost Carbon Fiber Technology
- 28 GA Atlanta Health Information Technology Cluster Health Information Technology
- 29 FL Space Coast Clean Energy Jobs Accelerator Clean Energy
- 30 WI Milwaukee Regional Water Accelerator Project Water
- 31 IL Rockford Area Aerospace Cluster Jobs and Innovation Accelerator Aerospace
- 32 MO St. Louis Bioscience Jobs and Innovation Accelerator Project Bioscience
- 33 MN Minnesota's Mining Cluster Energy
- 34 MO Kansas City Regional Jobs Accelerator Advanced Manufacturing & Information Technology
- 35 AR Launching the ARK: Acceleration, Resources, Knowledge Information Technology
- 36 KS Center for Innovation and Enterprise Engagement Advanced materials
- 37 ND Upper Missouri Tribal Environmental Risk Mitigation Project Environmental Risk Mitigation
- 38 WA Washington Interactive Media Accelerator Interactive Media
- 39 OR Portland Regional Clean Tech Advance Initiative Clean Tech
- 40 CA San Diego-Imperial Valley Renewable Energy Generation *Training and Demonstration Center Renewable* Energy

56 Federally Funded Cluster Initiatives

Initial Clusters

- A PA Greater Philadelphia Energy-Efficient Buildings Hub (SBA, EDA, NIST, DOE)
- B FL Space Coast Space Shuttle Shutdown Transition (SBA, EDA, NASA, DOL)
- C OH- Southwest Ohio Water Cluster Water Research (EPA)

Rural Jobs Accelerator

Economic Development Agency U.S. Department of Agriculture Delta Regional Authority Appalachian Regional Commission

- 41 MS Community and Economic Development in Rural Mississippi Automotive, Furniture, Agribusiness
- 42 NC WNC AgriVentures -- Cultivating Jobs and Innovation Project Agribusiness
- 43 NC North Carolina Eastern Region Aerospace and Automotive Cluster Project *Aerospace, Automotive*
- 44 SC South Carolina Alliance Rural Jobs and Innovation Accelerator Challenge Nuclear Energy
- 45 LA-I-20 Corridor Regional Accelerator Bioscience
- 46 IL Henry-Rural Rock Island-Mercer County Economic Development Consortium Agribusiness/Food processing
- 47 KS Project 17: Together We Succeed Advanced Manufacturing
- 48 CT New England Food Hub Cluster Initiative Food Processing
- 49 NH Northern Tier Farm and Forest Jobs Accelerator Agribusiness
- 50 VA Appalachian Spring Using Asset-Based and Creative Economy Methods to Catalyze Rural Job Acceleration Music/Craft/Local Tourism
- 51 WV Southern West Virginia Rural Jobs Accelerator Partnership Music/Craft/Local Tourism
- 52 WV Value Chain Initiative Food Processing
- 53 AK Bristol Bay Jobs Accelerator Project Fisheries, Seafood Processing



RETURNING U.S. MANUFACTURING

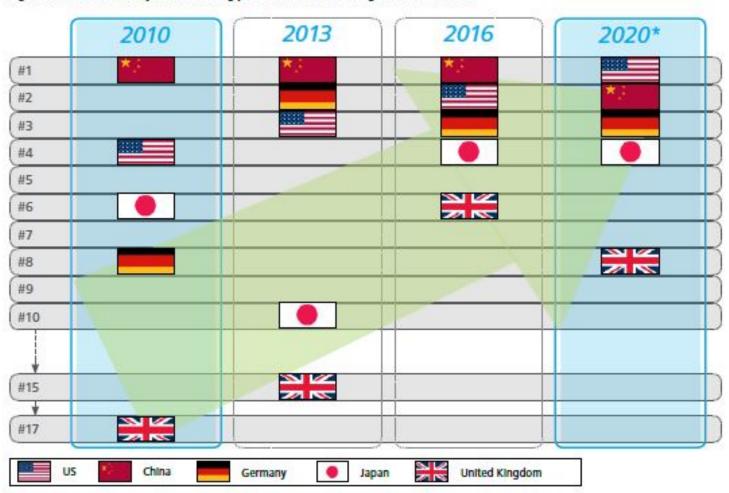
Companies cite numerous reasons for locating manufacturing in the US to include:

- » Talent Availability & High Productivity
- » Quality Control of Complex Products
- » Shorter Supply Lines
- » Protecting IP
- » Energy Cost Competitiveness & Availability





Figure 1: Global CEO survey: Manufacturing powerhouse rank trending and future forecast

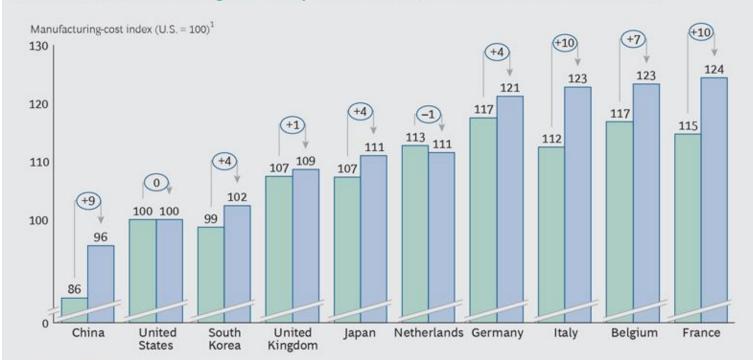


Source: Deloitte and US Council on Competitiveness, 2016 Global Manufacturing Competitiveness Index
* represents projected 2020 ranks





How Global Manufacturing Cost Competitiveness Has Shifted Over the Past Decade



2004 2014

Source: BCG analysis; Economist Intelligence Unit; Euromonitor International; International Labour Organization; U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statisics; and U.S. Economic Census.

Note: The index covers four direct costs only: wages, productivity growth, energy coasts, and currency exchange rates.

No difference are assumed in other costs (for example, raw-material inputs, machine and tool depreciation);

the cost structure is calculated as a weighted average across all industries.

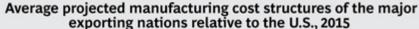
¹Productivity-adjusted.

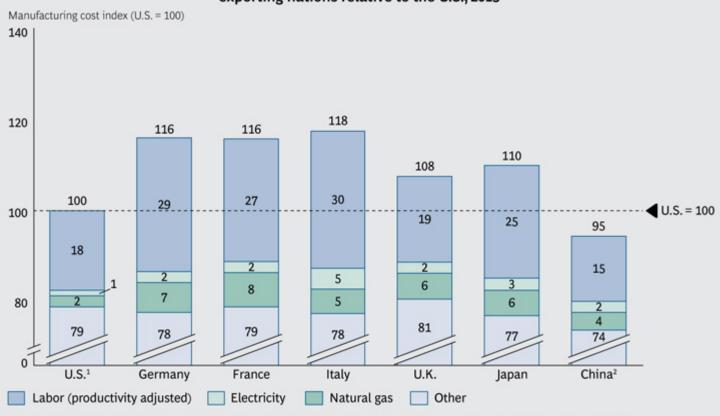
US as Low Cost?



The Manufacturers Association

EXHIBIT 1 | Labor and Energy Cost Advantages Will Make the U.S. One of the Developed World's Lowest-Cost Countries





Sources: U.S. Economic Census; U.S. Bureau of Labor Statistics; U.S. Bureau of Economic Analysis; International Labour Organization.

Note: Cost structures were calculated as a weighted average across all industries. No difference was assumed in "other" costs (e.g., raw materials inputs and machine and tool depreciation). Differences in values are a function of the industry mix of each exporting country.

1.U.S. figures represent costs in a set of select lower-cost states specified in previous publications.

²Chinese figures represent the Yangtze River Delta region.

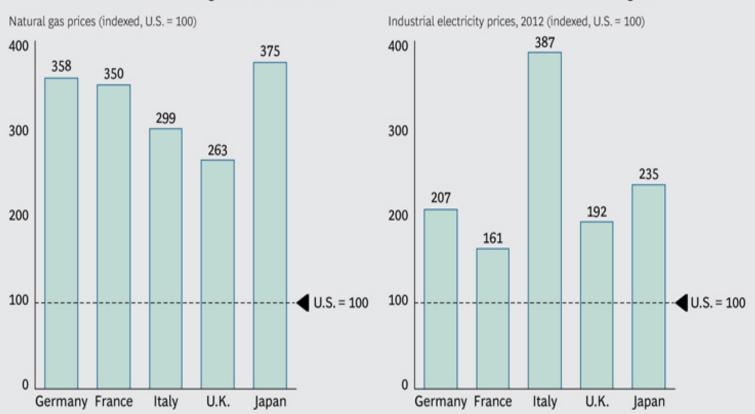
Abundant Natural Gas



EXHIBIT 3 | Abundant Natural Gas Has Led to a Large Energy-Cost Advantage for Domestic Manufacturers in the U.S.

Natural gas prices in other major manufacturing economies are around 2.6 to 3.8 times higher than in the U.S....

...and industrial electricity prices are around 1.6 to 3.9 times higher



Sources: International Energy Agency quarterly energy price and tax statistics; BCG analysis. **Note:** Energy prices based on 2012 averages.





Linking drivers of competitiveness and country performance

Table 6: Global CEO survey: Focus country performance by key competitiveness drivers

	d country manufacturing litiveness drivers		100			*:	•
	TALENT	United States	Germany	Japan 00.7	South Korea	China	India
_	TALENT	89.5	97.4	88.7	64.9	55.5	51.5
•	INNOVATION POLICY AND INFRASTRUCTURE	98.7	93.9	87.8	65.4	47.1	32.8
	COST COMPETITIVENESS	39.3	37.2	38.1	59.5	96.3	83.5
†	ENERGY POLICY	68.9	66.0	62.3	50.1	40.3	25.7
	PHYSICAL INFRASTRUCTURE	90.8	100.0	89.9	69.2	55.7	10.0
1	LEGAL AND REGULATORY ENVIRONMENT	88.3	89.3	78.9	57.2	24.7	18.8

Most competitive Least competitive

Source: Deloitte Touche Tohmatsu Limited and US Council on Competitiveness, 2016 Global Manufacturing Competitiveness Index





Why It's Time to Bring Manufacturing Back Home to the U.S.

Consumers have numerous reasons for buying products manufacturing in the US to include:

- Quick turnarounds, prototypes, and innovation
- Customers have come to expect short delivery windows
- "Greener" products
- Societal demand for local, sustainable, and responsible manufacturing is rising





CHALLENGES FACING NYS MANUFACTURERS

- » Global Competition
- » Use of Unfair Trade Practices
- » Increases in Costs Burden on Manufacturing (ie. Taxes and Regulations)
- » Speed of Technological Change
- » Shifting of growth markets to Developing World
- » Growing Skills Gap and Difficulty in Finding Talent





OPPORTUNITIES IN MANUFACTURING

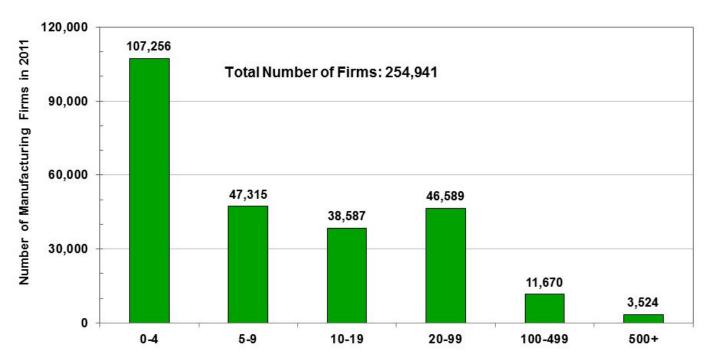
- » Global Growth Opportunities
- » Direct Foreign Investment in the US
- » Increasing cost competitiveness of US Manufacturing
- » Use of Technology
- » Conversation concerning use of Fair Trade Practices





Manufacturing Firms by Number of Employees

(Updated April 2014)



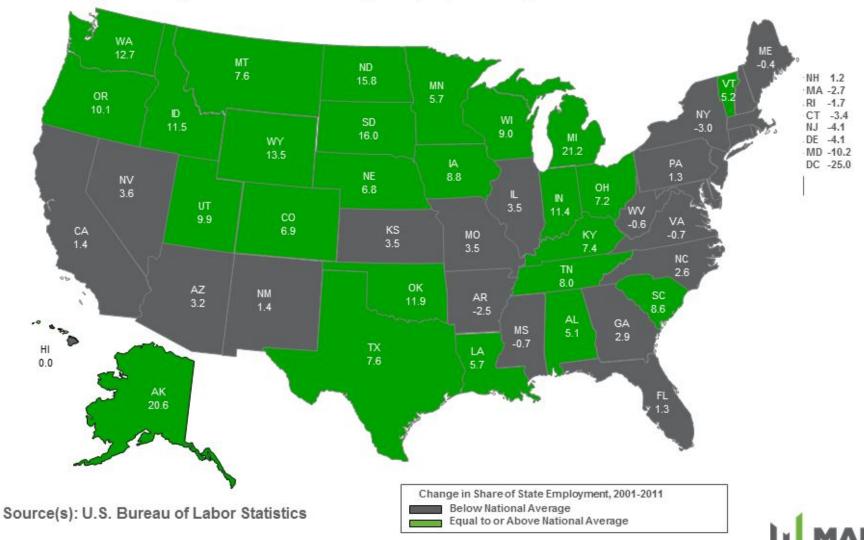
Number of Employees per Firm

Source(s): U.S. Census Bureau and MAPI



Manufacturing Job Gains Are Largest in the Midwest and Northwest (Updated March 2014)

Percentage Change in Manufacturing Employment by State, Dec 2009 - Oct 2013



NAM MANUFACTURERS' OUTLOOK SURVEY THIRD QUARTER 2017

September 29, 2017

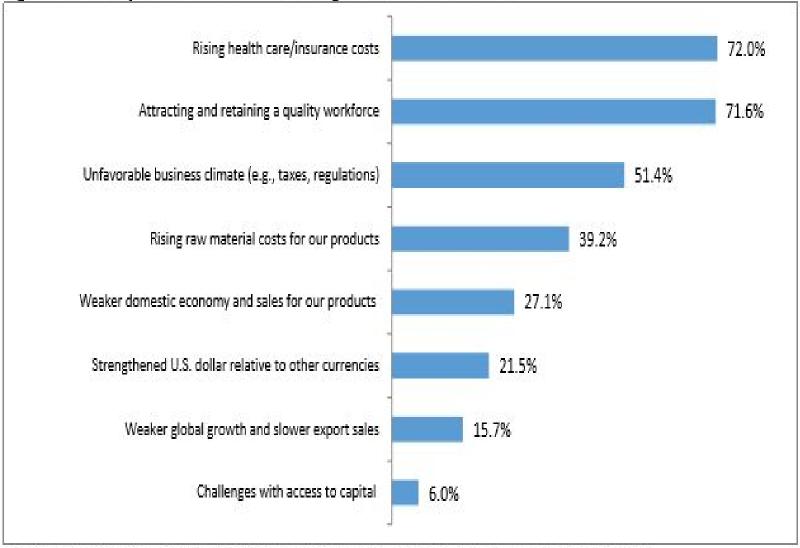
Percentage of Respondents Positive in Their Own Company's Outlook 89.8% (June: 89.5%) Small Manufacturers: 85.1% (June: 84.8%) Medium-Sized Manufacturers: 89.8% (June: 90.6%) Large Manufacturers: 94.9% (June: 92.8%)	NAM Manufacturing Outlook Index 61.0 (June: 60.8 - revised) Expected Growth Rate for SALES Over the Next 12 Months 1.5% (June: ↑ 4.8%)
Expected Growth Rate for <u>PRODUCTION</u> Over the Next 12 Months ↑ 4.5% (June: ↑ 4.8%)	Expected Growth Rate for <u>EXPORTS</u> Over the Next 12 Months 1.3% (June: ↑ 1.1%)
Expected Growth Rate for <u>CAPITAL INVESTMENTS</u> Over the Next 12 Months † 2.7% (June: † 3.2%)	Expected Growth Rate for <u>PRICES</u> Over the Next 12 Months ↑ 1.8% (June: ↑ 1.7%)
Expected Growth Rate for <u>FULL-TIME EMPLOYMENT</u> Over the Next 12 Months ↑ 2.2% (June: ↑ 2.7%)	Expected Growth Rate for <u>INVENTORIES</u> Over the Next 12 Months ↑ 1.0% (June: ↑ 1.3%)
Expected Growth Rate for <u>EMPLOYEE WAGES</u> Over the Next 12 Months ↑ 2.2% (June: ↑ 2.1%)	Expected Growth Rate for <u>HEALTH INSURANCE COSTS</u> Over the Next 12 Months ↑ 8.3% (June: ↑ 8.4%)

"Do you think the United States is headed in the right direction, or is our country on the wrong track?"

RIGHT TRACK: 46.4% WRONG TRACK: 21.4% UNSURE: 32.2%

(June: Right Track: 56.9%, Wrong Track: 14.3%, Unsure: 28.9%)

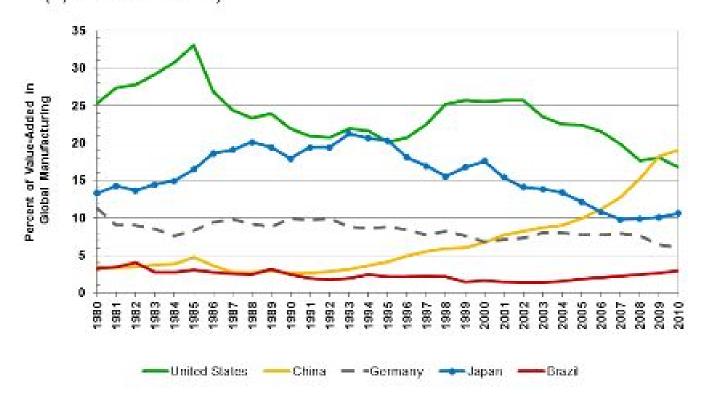
Figure 4: Primary Current Business Challenges, Third Quarter 2017



Note: Respondents were able to check more than one response; therefore, responses exceed 100 percent.



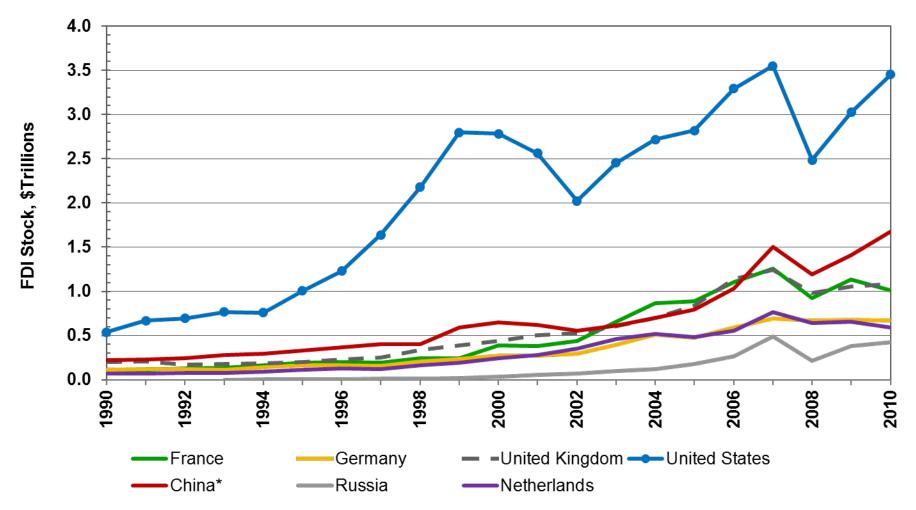
According to the World Bank, U.S. and China are Comparable (Updated March 2014)



Source(s): World Bank, WDI and GDF databases and MAPI



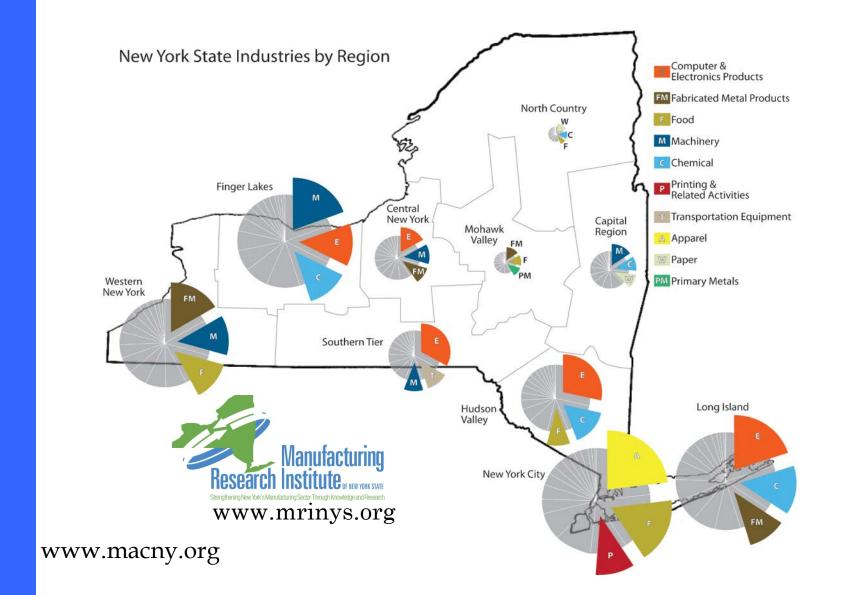
Figure 35 – The U.S. Is the #1 Destination for Foreign Direct Investment



^{*} Includes Hong Kong Source(s): UNCTAD World Investment Report

New York Manufacturing







General Business Conditions





Diffusion index, seasonally adjusted

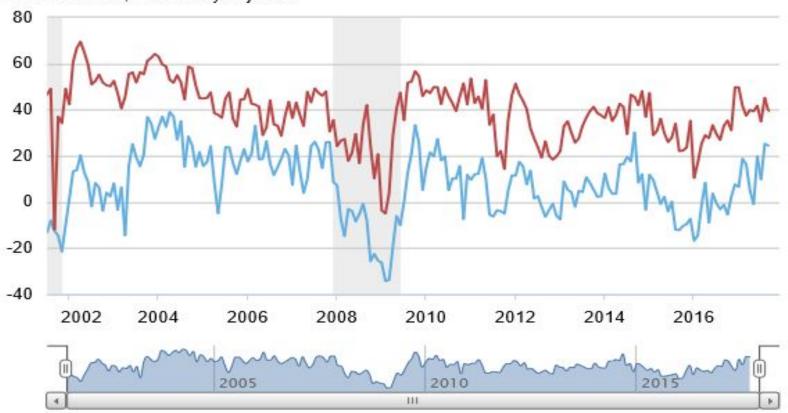






Figure 1: New York Manufacturing Output, in Billions of Dollars, 2005–2015

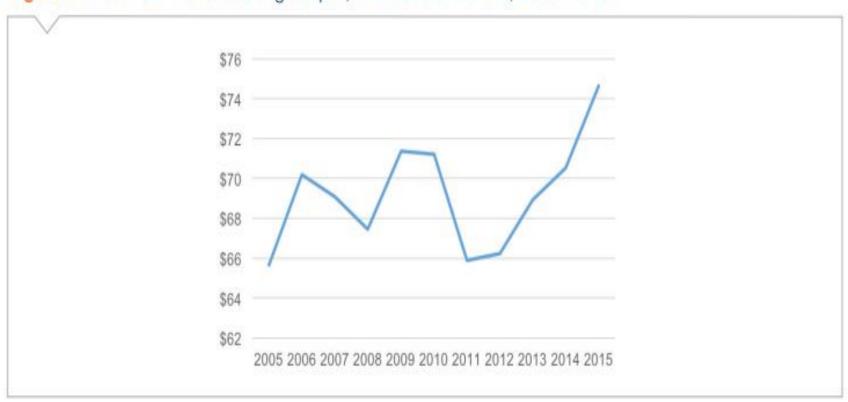
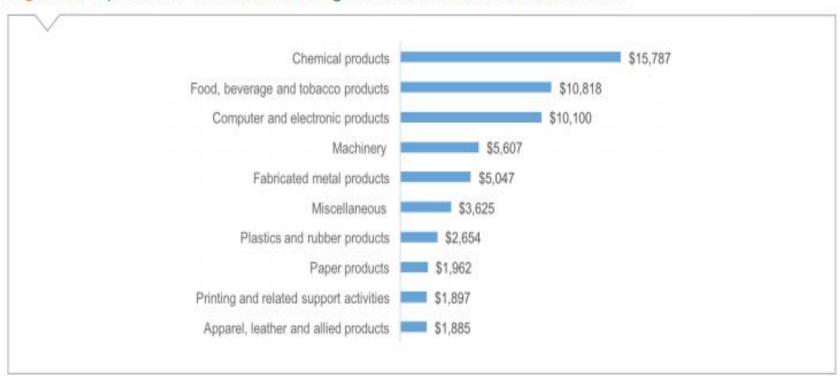






Figure 2: Top 10 New York Manufacturing Sectors, in Millions of Dollars, 2014





Manufacturing Employment New York State Regions and Metro Areas, 2000 and 2010*



	Emplo	yment [*]	Change:	
Metro Area	2000	2010	Net	Percent
New York State	752,300	457,800	-294,500	-39.1%
United States	17,253,700	11,546,500	-5,707,200	-33.1%
Downstate Region (10 county area)	320,200	178,100	-142,100	-44.4%
New York City	178,300	79,700	-98,600	-55.3%
Putnam-Rockland-Westchester	36,600	26,400	-10,200	-27.9%
Nassau-Suffolk	105,300	72,000	-33,300	-31.6%
Upstate Region (52 county area)	447,200	277,000	-170,200	-38.1%
Albany-Schenectady-Troy Metro Area	28,600	20,100	-8,500	-29.7%
Binghamton Metro Area	23,000	14,400	-8,600	-37.4%
Buffalo-Niagara Falls Metro Area	83,000	47,400	-35,600	-42.9%
Glens Falls Metro Area	7,600	6,100	-1,500	-19.7%
Ithaca Metro Area	4,300	3,000	-1,300	-30.2%
Kingston Metro Area	6,400	3,500	-2,900	-45.3%
Poughkeepsie-Newburgh-Middletown Metro Area	30,500	17,900	-12,600	-41.3%
Rochester Metro Area	103,000	59,300	-43,700	-42.4%
Syracuse Metro Area	44,700	27,800	-16,900	-37.8%
Utica-Rome Metro Area	18,900	11,100	-7,800	-41.3%
Non-Metro Counties	97,200	66,400	-30,800	-31.7%

^{*}Average of January-June employment.





Significant Industries, Southern Tier Region, 2015

NAICS Industry Code	Industry Name Total, all industries (all ownerships)	Job Count		Net Change	% Change in	Average	Projected % Change in
		2009*	2014*	in Jobs, 2009-2014 -5,800	Jobs, 2009-2014 -2.2%	Annual Wage, 2014 \$43,700	Jobs, 2012-2022 5.5%
311	Food manufacturing	2,500	3,400	900	36.0%	\$47,600	12.5%
333	Machinery manufacturing	3,900	4,300	400	10.3%	\$60,500	-3.3%
334	Computer and electronic product manufacturing	12,300	8,400	-3,900	-31.7%	\$86,000	-4.7%
493	Warehousing and storage	400	1,000	600	150.0%	\$38,100	15.1%
541	Professional and technical services	9,700	9,800	100	1.0%	\$71,700	11.7%
551	Management of companies and enterprises	1,900	2,500	600	31.6%	\$117,700	15.8%
611	Educational services	46,700	42,100	-4,600	-9.9%	\$48,700	6.0%
621	Ambulatory health care services	8,600	8,600	0	0.0%	\$59,300	17.5%
622	Hospitals	12,900	13,400	500	3.9%	\$49,200	4.2%
623	Nursing and residential care facilities	12,100	11,600	-500	-4.1%	\$32,500	21.2%

NA - Not Applicable



^{*}Represents both private and public sector jobs



HOW GLOBAL MANUFACTURERS CAN SUCCEED

- » Make Talent "The" Top Priority
- » Embrace Advanced Technologies to Drive Competitive Advantage
- » Leverage Strengths of Partnerships Beyond Traditional Boundaries
- » Develop a Balance Approach Across the Global Enterprise
- » Cultivate Smart, Strategic Public-Private Partnerships





WHAT IS MACNY DOING?

» Success Networks

» Workforce Initiatives

» Member Services

» Advocacy & Issues Coalitions





NEW INITIATIVES

- » Individual Members Success Networks
- » Senior and Emerging Leaders Services
- » PTECH and CTE Initiatives
- » Regional Apprenticeships Approach
- » Statewide Advocacy Efforts & Networks





WHAT CAN YOU DO?

- » Invest and Pursue Excellence
- » Lead and Adapt
- » Make Great Products
- » Engage with MACNY and our members





THANK YOU

