THE SIZE & COMPOSITION OF U.S. MANUFACTURING OFFSHORING IN CHINA

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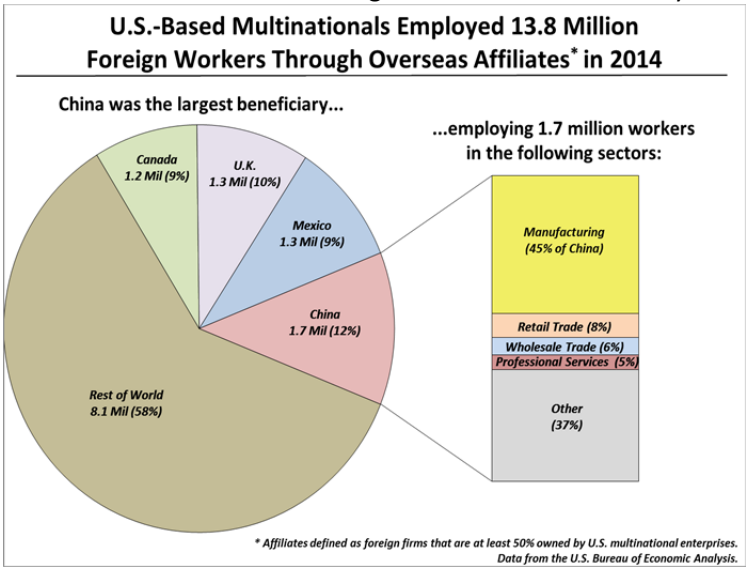
This briefing is part of a continuing EBOT series on U.S. manufacturing offshoring and examines what is known about the size and composition of U.S. offshoring activity to China.[1] An accompanying EBOT described incentives U.S. firms have had to offshore production to China, [2] the world's largest manufacturing economy. These incentives have included cost advantages, scalability options, policy mechanisms, and strategic interests (e.g., securing access to inputs and proximity to fastest-growing consumer base). This briefing builds upon those findings, by showing that U.S.-based multinationals have been heavily involved in China's manufacturing revolution. The latest data suggest that U.S. affiliates[3] employed more than 1.7 million workers in China in 2014, nearly half of which were in China's manufacturing sector (e.g., semiconductor firms). It also shows that U.S. firms have invested heavily in their Chinese affiliates' operations, and that as of 2014, U.S. parents' affiliates in China sold more to the local market than U.S. affiliates in Japan, Mexico, and India, combined.

CHINA IS THE BIGGEST OFFSHORE MAGNET FOR U.S. FIRMS. U.S.-based multinational firms have options when it comes to deciding whether to offshore any of their operations. Increasing global competition and profit-maximizing objectives have led many firms to offshore, and thereby lower operational costs (e.g., mostly wages), decrease tax burdens, reap greater economies of scale, secure cheaper intermediary inputs, and/or gain access to their consumer bases and growth markets.



China is the single biggest offshoring destination for U.S.-based firms. Of the nearly 14 million workers employed by U.S. multinationals' affiliates in 2014, more workers (1.7 million, or 12% of the total) were employed in China than any other country (Figure 1). Moreover, about half of those workers (753,000 or 45%) were employed within China's robust manufacturing sector.

CONTEXTUALIZING THE SIZE OF MANUFACTURING JOBS IN CHINA EMPLOYED BY U.S.-OWNED AFFILIATES. By 2014, U.S. affiliates hired more workers (753,000) in China's manufacturing sector than any other sector in any other country. The closest other country/sector grouping was Mexican manufacturing, where U.S. affiliates employed 706,200 workers, and India's "professional, scientific, and technical services" sector (mostly IT services), where U.S. affiliates employed 490,100 workers. While the number employed in China's manufacturing sector is large for U.S. affiliates, its size is moderated when placed in the context of the estimated 12.3 million (U.S.) and 79.6 million (Chinese) manufacturing jobs in 2014.[4]

Lower Chinese wages (paying 10-25% of comparable U.S. salaries) [5] have undoubtedly enticed some U.S. firms to offshore. However, it is unclear whether jobs created by U.S.-owned affiliates in China broadly came at the expense of U.S. workers or were associated with firms' plans to grow or be closer to supply networks and their fastest growing consumer base. Moreover, higher U.S. manufacturing productivity levels have offset, at least in part, advantages associated with cheaper Chinese wages in various sectors.[6]

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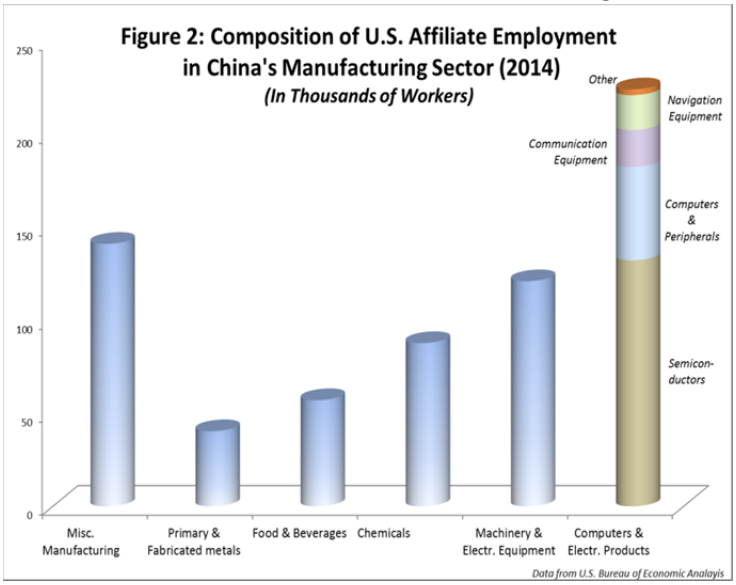
[1] For the purposes of this briefing, offshoring will refer to a firms' movement of production or services to a different country with the intension of selling that manufactured good or rendered service to the local, U.S., and/or international market.
[2] See Hammer, "Why Have U.S. Firms Offshored to China?," Forthcoming.
[3] Affiliates are defined as foreign firms that are at least 50% owned by U.S. multinational enterprises.
[4] Lardy, "Manufacturing Employment in China", Peterson Institute for International Economics, December 21, 2015.
[5] Deloitte, "Global Manufacturing Competitiveness Index Report" (2016) and The Economist, "A Tightening Grip", Mar 12, 2015.
[6] International Labor Organization ILO-Stat Database (2017). Accessed May 29, 2017 (click HERE for reference).

COMPOSITION OF U.S. AFFILIATE EMPLOYMENT WITHIN CHINA'S MANUFACTURING SECTOR

U.S.-owned affiliates in China's manufacturing sector employed local labor in a variety of areas. As shown in Figure 2, the computer and electronic products sector employed the most workers by U.S. affiliates in 2014, followed by the machinery/ electrical equipment and chemical sub-sectors.



In 2014, U.S. affiliates employed about 132,300 people in China's semiconductor manufacturing sector. Most of these workers have been making lower quality semiconductors in China (as opposed to enhancing preexisting products made elsewhere), as companies, such as Intel, have become more dependent on comprehensive fabrication work by their affiliates in China. Growth in semiconductor manufacturing in China has been driven by pressure by the Chinese government to produce more in China, as well as by a desire by multinational firms to keep up with surging demand of consumer electronics.[7] These phenomena are reflected in China's "computers and periphery" sector, where U.S. affiliates in China are increasingly assembling imported or locally manufactured semiconductors into consumer electronics for domestic and international sales.[8]

U.S.-OWNED AFFILIATES IN CHINA ARE NOT ONLY EMPLOYING WORKERS. The large scale of the U.S. offshoring in China's manufacturing sector has extended beyond employment. Specifically, this sector has served as a major destination for U.S. investment, research and development, and sales. With the exception of well-established trading partners in Canada, Germany, and the U.K., Table 1 shows that by 2014, U.S.-owned affiliates owned more assets in China's manufacturing sector than any other country/sector combination except Canada, Germany, and the U.K.. Similarly, the value of the property, plant, and equipment was higher in China than any other country except Canada by 2014. While R&D expenditures by U.S. parent companies directed to their affiliates in China was not the highest ($1.5 billion in 2014), their fast growth in recent years has supported China's rise as the world's fastest growing source of R&D.[9] The value of surging sales by U.S. affiliates to the local Chinese market, which reached $204.3 billion in 2014, was more than the combined U.S. affiliate sales to local markets in Mexico, Japan, and India.

Activities of Foreign Affiliates* of U.S. Multinational Enterprises in Foreign Manufacturing Sectors, 2010 and 2014 (In Millions of $US)

Country	Year	Total Assets	Net Property, Plant, and Equipment	Research & Development	Sales
China	2010	95,709	25,007	n.a.	107,088
	2014	171,794	37,659	1,494	204,328
Canada	2010	234,523	44,429	1,605	240,888
	2014	273,191	40,210	2,046	271,612
Germany	2010	195,008	34,291	5,538	202,358
	2014	222,264	32,224	6,926	215,908
India	2010	19,288	5,996	445	20,340
	2014	31,295	9,540	909	30,577
Japan	2010	69,588	14,508	1,423	83,370
	2014	63,677	8,800	1,740	80,229
Mexico	2010	68,629	19,095	303	98,901
	2014	95,082	24,197	332	135,965
UK	2010	196,422	27,998	3,593	206,369
	2014	220,559	27,319	3,193	217,577

** Affiliates defined as foreign firms that are at least 50% owned by U.S. multinational enterprises.*
Data from the U.S. Bureau of Economic Analysis.

ADDITIONAL SOURCES: Feenstra and Hanson, "Foreign Investment, Outsourcing, and Relative Wages," NBER, WP 5121, May 1995; Fontagne and Harrison, "The Factory-Free Economy: Outsourcing, Servitization, and the Future of Industry", Working Paper 2306, January 2017; Olsen, Karsten Bjerrin. "Productivity Impacts Of Offshoring And Outsourcing: A Review" OECD, March 2006.

[7] Congressional Research Service, "U.S. Semiconductor Manufacturing: Industry Trends, Global Competition, Federal Policy", June 2016; and PWC, "China's Impact on the Semiconductor Industry: 2015 Update," March 2016.
[8] Oxford Economics and U.S.-China Business Council, "Understanding the U.S.-China Trade Relationship," January 2017.
[9] National Science Foundation, *Science and Engineering Indicators, 2014-16*. Chap 4, "R&D: National Trends and International Comparisons."