

Textiles and Apparel: Made In USA . . . Again?

Kimberlie Freund, Mary Roop, Heidi Colby-Oizumi

Abstract

Is the U.S. textile and apparel industry on the road to recovery? This paper examines recent trends to determine whether data on trade, production, employment, and investment reflect the narrative surrounding revitalization of the industry. For the textiles sector, such data show mixed evidence of an industry in recovery. Nevertheless, numerous accounts indicate that U.S. or foreign-owned textile firms may be investing in the United States either to increase existing domestic capacity or to add new manufacturing operations. In the apparel sector, evidence suggests that in recent years reshoring has taken place, albeit on a modest scale. This information comes from accounts from U.S. apparel brands and retailers and, to some extent, from data on capital expenditures and shipments. The paper discusses the driving forces behind investment in the domestic industry, as well as strategies that industry players are prioritizing in order to stimulate the industry and remain competitive.

Textiles and Apparel: Made In USA . . . Again?

Kimberlie Freund, Mary Roop, Heidi Colby-Oizumi

Office of Industries

U.S. International Trade Commission (USITC)

September 2018

The authors are staff with the Office of Industries and Office of Economics of the U.S. International Trade Commission (USITC). Office of Industries working papers are the result of the ongoing professional research of USITC staff and solely represent the opinions and professional research of individual authors. These papers do not necessarily represent the views of the U.S. International Trade Commission or any of its individual Commissioners. Working papers are circulated to promote the active exchange of ideas between USITC staff and recognized experts outside the USITC, and to promote professional development of office staff by encouraging outside professional critique of staff research.

This paper represents solely the views of the authors and is not meant to represent the views of the U.S. International Trade Commission or any of its commissioners. Please direct all correspondence to Kimberlie Freund, Office of Industries, U.S. International Trade Commission, 500 E Street, SW, Washington, DC 20436, telephone: 202-708-5402, email: kimberlie.freund@usitc.gov.

Address Correspondence To:

Office of Industries
U.S. International Trade Commission
Washington, DC 20436 USA

**Textiles and Apparel: Made In USA . . .
Again?**

www.usitc.gov

Textiles and Apparel: Made In USA . . . Again?

September 2018
No. ID-18-055

This working paper was prepared by:

Kimberlie Freund, kimberlie.freund@usitc.gov

Mary Roop, mary.roop@usitc.gov

Heidi Colby-Oizumi, heidi.colby-oizumi@usitc.gov

Administrative Support

Trina Chambers, Gwenetta Duvall, and Monica Sanders

Editorial Review

Judy Edelhoff and Peg Hausman

The authors would like to thank Pamela Davis for her assistance on this paper.

Introduction

As manufacturing has become increasingly global, companies have numerous options for where to locate production. At one time, the United States boasted a large and robust textile and apparel industry. As with many U.S. manufacturing sectors, increased globalization and offshoring contributed to domestic production and employment declines. In particular, the phaseout of global textile and apparel quotas from 1995 to 2005 challenged U.S. apparel firms. The firms faced increased competition from lower-cost producers,¹ which contributed to the longer-term consolidation of the industry.² With sharply increased apparel imports, the U.S. textile sector's downstream domestic apparel markets virtually disappeared. The progressive shift away from domestic production in the textiles and apparel sectors resulted in U.S. factory closures, an exodus of manufacturing jobs, severe contraction in the industry among both producers and suppliers, and increased reliance on imports to fulfill growing U.S. demand.

Recently, however, anecdotal information suggests an increase in new or expanded domestic manufacturing operations. Apparel manufacturers are seeing orders return to the United States, and there is some evidence of new investment in the sector. For textiles, there has been investment by U.S. firms—in order to increase existing domestic capacity or to start new manufacturing operations—as well as by foreign-owned textile firms. This paper first examines trends in the U.S. textile and apparel sectors to determine whether data on trade, production, employment, and investment reflect the narrative surrounding each sector's revitalization. Second, it discusses the driving forces behind new investment and expansion of existing facilities, and provides highlights of some of the new investments. Finally, it points to certain strategies that firms and organizations are using to revitalize the textile and apparel sectors.

This discussion focuses first on the textile sector, followed by a discussion of the apparel sector.³ The textile sector, composed of fibers, yarns, and fabrics, is a key part of the apparel supply chain. Nonetheless, the domestic textile sector has increasingly focused on non-apparel markets, with end uses in construction, healthcare, logistics, manufacturing, automotive, and numerous other sectors. The apparel manufacturing sector (not to be confused with the broader apparel retail sector) manufactures garments through the cutting and sewing of pre-made fabric, as well as by knitting garment parts (or the entire garment) and assembling the parts into a finished garment.

¹ For example, workers earn as little as \$63 per month in Bangladesh and \$121–175 per month in Vietnam. Donaldson, "Sourcing Costs Climb," January 2, 2018.

² The Agreement on Textiles and Clothing obligated the United States, the European Union, and Canada to phase out import quotas on textiles and apparel from member countries of the World Trade Organization in four stages ending January 1, 2005.

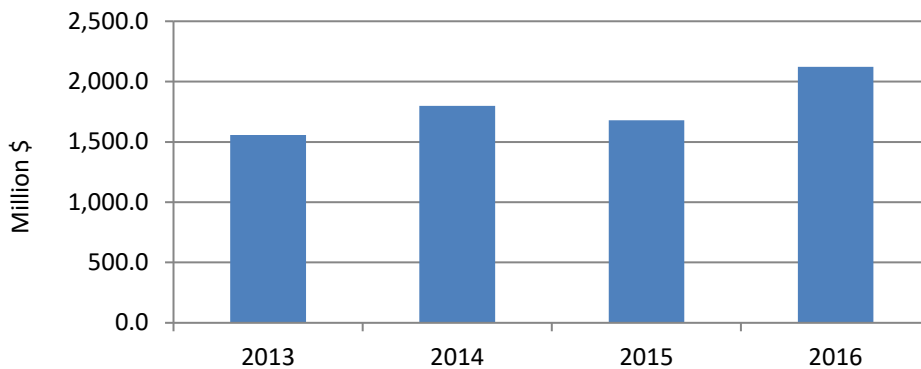
³ For the purposes of this paper, "textiles" includes North American Industry Classification System (NAICS) codes 313 (textile mills) and 32522 (artificial and synthetic fibers and filaments). The apparel sector is covered by NAICS 315 (apparel). This paper does not discuss the textile products sector (NAICS code 314), which covers finished non-apparel textile products such as towels, sheets, rugs, and backpacks.

Textiles

Overview

Stories of revitalization in the textile sector abound. However, data on investment, shipments, trade, and employment provide only mixed evidence of an industry in recovery. Total capital expenditures in plants and equipment for the textile and textile product sectors⁴ increased by 36 percent in the 2013–16 period, rising from \$1.6 billion in 2013 to \$2.1 billion in 2016, the latest year for which data are available (figure 1 and annex A, table A1). The 2016 level was also well above the pre-recessionary level in 2008 (\$1.4 billion), suggesting that these sectors are seeing a resurgence.⁵ Anecdotal evidence points to significant investment in the textiles sector. We reviewed reports of new or planned investments (those announced from January 2014 through December 2017), which showed 59 publicly announced new or planned investments in the U.S. textiles sector (a full list of the firms are shown in annex B).⁶ Much of the new investment is by foreign firms, including new investments by Chinese and Indian firms, as well as by firms from Mexico, Canada, Turkey, and Saudi Arabia, to name a few. The domestic industry has also announced investments to expand capacity, as well as to open new plants.

Figure 1. Total capital expenditures for structures and equipment for textile mills and textile product mills (NAICS 313 and 314), 2013–16



Source: U.S. Census, Annual Capital Expenditures Survey, "Capital Expenditures for Structures and Equipment with Employees by Industry, 2013–16."

⁴ Official data on capital expenditures show investment in buildings and production capacity for the textiles and textile products sectors combined. Data are not available separately for artificial and synthetic fibers and filaments (NAICS 32522).

⁵ U.S. Census, Annual Capital Expenditures Survey, "Capital Expenditures for Structures and Equipment for Companies with Employees by Industry," 2008–16.

⁶ The informal survey reflects only publicly announced investments and thus likely significantly understates the number and value of investments actually made by the industry. The investments listed here typically reflect new plants or expansions of existing facilities/capacity.

The U.S. market for textiles is supplied primarily by domestic shipments, accounting for 58–60 percent of the domestic market during the 2013–16 period. Despite evidence of new investment in the textiles sector, data on U.S. shipments show mixed results. After four years of moderate decline, U.S. textile shipments increased in 2017 to \$39.6 billion, but remained 3 percent below the 2013 level (figure 2 and annex A, table A2). At \$10.6 billion, U.S. textile exports in 2017 were also below the five-year high of \$12.1 billion in 2014. Rather than simply increasing capacity, some of the new investment is likely replacing existing equipment, as firms upgrade and modernize their manufacturing processes and/or focus their operations on different products.⁷ However, along with new investments, there have been closures and restructuring in some segments of the industry. For example, in late 2017, Cone Denim, an iconic domestic producer of denim, announced the closure of its U.S. denim plant.⁸

Figure 2. Textiles: U.S. imports for consumption, domestic exports, and domestic shipments, 2013–17



Source: USITC DataWeb/USDOC (accessed February 20, 2018); U.S. Census, Manufacturer's Shipments, Inventories, and Orders (accessed February 16, 2018); U.S. Census, Annual Survey of Manufacturers (ASM) (accessed February 16, 2018). Data for NAICS 32522 estimated by USITC for 2017.

Any growth in investment or shipments is not reflected in employment data. Employment in the textiles sector declined by 4 percent from 131,000 in 2013 to an estimated 126,000 in 2017.⁹ Although statements by industry experts suggest the industry has invested in technology to increase labor productivity, official data on labor productivity for yarns and fabrics—which accounts for most of the employment in the textiles sector—show steady declines during 2013–16.¹⁰

⁷ For example, one industry official stated that new investment in weaving equipment is primarily replacing older machines. NCTO, "NCTO Roundtable: Challenges and Opportunities," 2018.

⁸ Cone Mills also has denim plants in Mexico and China. Cone Denim website, <https://www.conedenim.com/mills/> (accessed January 17, 2018).

⁹ USDOL, BLS, "Employment, Hours, and Earnings," (accessed February 21, 2018).

¹⁰ The Bureau of Labor Statistics (BLS) labor productivity index for textile mills declined from 133.9 in 2013 to 107.9 in 2016, the latest data available as of February 21, 2017. The index is based on a base year of 1997 = 100. USDOL, BLS, "Annual Index of Labor Productivity."

Advantages of Producing Textiles in the United States

Although a resurgence in the domestic textile sector may not be manifest in the data, many domestic and foreign firms have commented on the attractiveness of producing domestically, and solid reasons companies might take a second look at the United States as a manufacturing base (see box 1 and annex B for additional information on specific examples). Advantages to producing in the United States include local and state incentives for investment, and the benefits afforded by free trade agreement (FTA) preferences that encourage the use of U.S.-produced inputs in downstream production in FTA partner countries. Other key factors are reportedly making a major difference with respect to textiles production, particularly in the yarn subsector; these include access to reliable and competitively priced energy in the United States compared to that of other major producing countries, and access to high-quality, competitively priced cotton.

Box 1. Notable Investments and Expansions in the U.S. Textile Sector

An informal staff survey of reports of new or planned investments in the U.S. textile sector, announced from January 2014 through December 2017, reveals 59 publicly announced new or planned investments in the textiles and textiles products sectors totaling over \$2.3 billion (see annex B, table B1).^a Much of the new investment is by foreign firms, including Chinese and Indian firms, as well as firms from Mexico, Canada, Turkey, and Saudi Arabia, to name a few. The domestic industry has also announced investments to expand capacity, as well as to open new plants. More than two-thirds of the announced investments are in North Carolina and South Carolina, which are traditional textile-manufacturing states. Although new investments cover a wide variety of products, a few products—cotton yarn and nonwoven fabrics (nonwovens)—are notable for the large number of investments made by foreign firms in particular. Not all announced investments have come to fruition: at least two planned investments, one by an Indian firm and the other a Mexican firm, appear to have fallen through.^b

The cotton yarn subsector includes several instances of new or planned investment in the U.S. textile industry. Foreign investment includes two Chinese firms. The first, China's Keer Group, in 2013 founded Keer America Corporation and announced plans for a \$218 million investment for two cotton yarn production facilities in Indian Land, South Carolina. When fully completed, they are expected to generate a total of 500 new jobs in the production of industrial cotton yarns.^c The first facility opened in February 2015; the second is expected to be in 2018. Keer stated that it chose South Carolina as a manufacturing location for its proximity to raw materials suppliers, as well as consumers; the trainability of its workforce; the state's stable business environment; the low costs of land, electricity, and raw goods; and access to the Port of Charleston.^d

The second, Shandong Ruyi Technology Group of China, in May 2017 announced plans to convert a former Sanyo television plant into a cotton yarn manufacturing facility.^e The company reported it will invest \$410 million and create up to 800 new jobs in that state.^f Other foreign firms announcing investments include Gildan Activewear, a Canadian apparel company, which has made a substantial investment in new and upgraded cotton yarn-spinning facilities in North Carolina.^g Domestic investment by U.S. firms includes that by Parkdale Mill, the largest U.S. producer of spun yarn, which recently invested \$145 million to add ring spinning capacity at its yarn plant in Mountain City, Tennessee.^h

Nonwoven textiles (nonwovens) is another sector that has seen a number of investments in new plants and expanded capacity by both domestic and foreign firms. Nonwovens are used in a large variety of end-use markets, including personal hygiene, healthcare, automotive, industrial, and landscaping. Mogul Co. Ltd., a Turkish nonwovens company, recently opened its first U.S. facility in South Carolina, with a \$17.6 million investment to make nonwovens for wipes.ⁱ The company stated that the new facility will focus on increasing sales of wipes in the U.S. market and will "act as a support platform for penetration into the Central and South American, China and Asia-Pacific markets."^j In October 2017, Sandler AG, a German manufacturer of nonwovens with various hygienic uses, opened a plant in Georgia, the result of a \$30 million investment.^k The plant, its first outside of Europe, is intended to serve the North American market and the "growing demand outside of Europe."^l Two other foreign firms—from China and Denmark—chose North Carolina for production of nonwovens. In 2016, Uniquetex, a joint venture of multiple Chinese companies, announced its intent to invest \$31.6 million and hire 150 employees to establish new production of nonwovens for the healthcare and industrial markets.^m Fibertex Personal Care, a Danish firm, also recently announced that it is investing in its first U.S. nonwovens manufacturing plant.ⁿ

There have been numerous other investments by both domestic and foreign firms in a variety of other textile subsectors, including polyester staple fibers; carpet fibers, yarns, and carpet backing; and knit and woven fabrics. Annex B shows a table of investments by U.S. and foreign firms compiled from public sources.

Textiles and Apparel: Made In USA . . . Again?

^a The informal survey reflects only publicly announced investments and thus likely understates the number and value of investments actually made by the industry. The investments listed here typically reflect new plants or expansions of existing facilities/capacity.

^b In October 2013, Shrivallabh Pittie Groups, an Indian-based textile manufacturer, announced plans to invest \$70 million to set up a yarn spinning facility in Georgia. Gulf Coast Spinning, owned by Zagis, a Mexican firm, appears to have abandoned plans to invest in a new yarn mill in Louisiana. These investments are not included in the table of investments presented in appendix B. State of Georgia, Georgia Department of Economic Development, “Shrivallabh Pittie Group to Create,” October 15, 2013; Gunn, “Weary of Constantly Being Left at Economic Development Altar,” June 19, 2016.

^c State of South Carolina government official, telephone interview by USITC staff, March 9, 2015; Keer America Corporation website, <http://www.keeramerica.com/> (accessed August 30, 2017); Keer America, “Keer Starts Hiring Process for Plant,” August 2, 2015.

^d Industry Week, “Chinese Textile Co. to Build Its First,” December 18, 2013; Yoon, “‘Made in China’ Could Be Made in the US,” May 30, 2017.

^e Fibre2Fashion, “Ruyi to Invest \$410 Million in Former Sanyo Facility,” May 11, 2017.

^f Fibre2Fashion, “Ruyi to Invest \$410 Million in Former Sanyo Facility,” May 11, 2017.

^g Gildan Activewear website, <http://www.gildancorp.com/yarn-spinning>; Gildan Activewear, “Gildan Announces Planned Major Investment,” September 23, 2017; *Textile World*, “Gildan Set To Begin Construction On Mocksville Spinning Plant,” May 27, 2014.

^h Steele, “Parkdale Celebrates Innovation,” October 11, 2017.

ⁱ Wong, “Mogul Holds Grand Opening for Spunlace Facility in S.C.,” March 29, 2017.

^j Mogul Co., Ltd. website, <http://mogulsb.com/en/company/locations> (accessed November 7, 2017).

^k Financial Times, *fDi Markets* (2016), U.S. Inbound FDI in Textile Manufacturing, 2011–2016 (accessed August 25, 2016 and October 2, 2017).

^l Sandler AG, “Sandler Nonwoven Corporation Formally Inaugurated,” October 11, 2017, and “Sandler to Commence Production in the US,” September 24, 2015.

^m Uniquetex website, <https://www.uniquetex.com/about> (accessed November 21, 2017); *Textile World*, “Uniquetex to Bring 150 Jobs to Cleveland County,” March 10, 2016.

ⁿ State of North Carolina, Governor Roy Cooper website, “Governor Cooper Announces 145 New Jobs,” August 14, 2017.

Energy Costs

Energy costs are an important consideration in deciding where to locate energy-intensive textile production. Low U.S. energy costs are considered a competitive advantage for the domestic industry, particularly in the Southeast, where industrial rates in some states are lower than the national average.¹¹ According to the International Textile Machinery Federation (ITMF), on average, the cost of electric power to manufacture one kilogram of rotor yarn in the United States in 2016 was \$0.08, compared with \$0.17, \$0.14, and \$0.13 in China, South Korea, and India, respectively.¹² As a result, despite significantly higher labor costs in the United States (see “Automation for Greater Efficiency” below), the total cost to spin one kilogram of cotton yarn in the United States was lower than that for China, India, and South Korea.¹³ Keer America Corp., a Chinese textile producer that has invested in cotton yarn production in the United States, stated that electricity prices are as much as 40 percent

¹¹ The industrial electricity service costs in South Carolina, Arkansas, and Georgia were 90.1 percent, 89.9 percent, and 86.4 percent of the national average, respectively, in 2016. USEIA, “Average Price of Electricity,” *Electric Power Annual*, 2016. Multiple U.S. industry representatives also cited the relatively low wages in the Southeastern states as an attractive characteristic of the region for investment. U.S. industry representatives, interview by USITC staff, October 4, 2017, October 5, 2017, and March 9, 2015.

¹² One study showed that the average cost of electricity in China was 34–49 percent higher than in the United States, and sometimes as much as 70 percent higher, depending on the region. Comerford et al., “A Comparison of U.S. and China,” 2016, 17; ITMF, *International Production Cost Comparison 2016*, January 2017, 26.

¹³ The cost was \$1.82 in the United States, \$2.40 in China, \$1.83 in India, and \$2.00 in South Korea. The costs were calculated for rotor (open-end) spun yarn. ITMF, *International Production Cost Comparison 2016*, January 2017, 26.

lower in Lancaster County, South Carolina, than in Hangzhou, China, and thus were a contributing factor in its decision to invest in the United States.¹⁴

Availability and Reliability of High-Quality Cotton

The availability and reliability of high-quality cotton is also a factor influencing investment in the cotton yarn sector in the United States. For example, the Chinese firm Shandong Ruyi is investing in a new cotton yarn production facility in Arkansas that is expected to use 200,000 tons of locally grown cotton annually.¹⁵ In 2017, the United States was the third-largest producer of cotton after China and India.¹⁶ Cotton grown in the United States is known for its consistent quality and reliability thanks in large measure to the USDA's cotton grading system.¹⁷ Moreover, U.S. farmers and distributors have established reputations for honoring their cotton contracts, which reportedly has been a challenge in the past with countries such as China.¹⁸

State and Local Incentives

State and other local government incentives are another important factor in attracting new investment in textiles, especially by foreign firms. South Carolina, North Carolina, Georgia, and Arkansas, in particular, have provided substantial financial incentives including tax credits, training assistance, and help with infrastructure development, among other incentives.¹⁹ For example, the state of Georgia's Department of Economic Development offers tax credits to encourage positive economic business practices such as the creation of high-paying jobs and the increase of trade through Georgia's ports.²⁰ The state also offers tax exemptions, small business incentives, and financial assistance to new

¹⁴ Trentmann, "For More Chinese Firms, It Pays to Make It," February 26, 2017.

¹⁵ Shandong Ruyi is expected to begin operations at its Forrest City, Arkansas-operations in mid-2018. Monsen, "Cotton Woos Chinese Textile Giant to Arkansas," November 9, 2017.

¹⁶ In 2016 the India, China, and the United States produced 27,000, 22,750, and 17,170 bales of cotton, respectively. USDA, FAS, PSD Online database (accessed February 9, 2018).

¹⁷ In 2017 Cotton Council International focused the promotion of U.S. cotton on its sustainability, quality, transparency, premium value, and innovation. The regulatory system surrounding the industry prescribes strict environment and workplace protections enforced by federal and state agencies. *Textile World*, "The Cotton the World Trusts," November 28, 2017; Cotton USA, "U.S. Cotton: Classification Systems Insures Consistent Quality"; U.S. industry representative, interview by USITC staff, October 4, 2017.

¹⁸ U.S. industry representative, interview by USITC staff, October 4, 2017; NCC, "US Cotton Seeks Action on Contract Defaults," September 26, 2012; Fashion Network, "Cotton Association of India, China Sign MoU," June 29, 2017.

¹⁹ For more information, see Arkansas Economic Development Commission, "Incentives," <http://www.arkansasedc.com/incentives> (accessed February 13, 2018); South Carolina Department of Commerce, "State Discretionary Incentives," <https://www.sccommerce.com/incentives/south-carolina-discretionary-incentives> (accessed February 13, 2018); Economic Development Partnership of North Carolina, "Incentives," <https://edpnc.com/relocate-or-expand/incentives/> (accessed February 13, 2018); Georgia Department of Economic Development, "Competitive Advantages: Tax Credits," <http://www.georgia.org/competitive-advantages/tax-credits/> (accessed September 19, 2017).

²⁰ Georgia Department of Economic Development, "Competitive Advantages: Tax Credits," <http://www.georgia.org/competitive-advantages/tax-credits/> (accessed September 19, 2017).

Textiles and Apparel: Made In USA . . . Again?

investors,²¹ as well as workforce initiatives, such as Quick Start, offered through the Technical College System of Georgia.²²

North Carolina, too, offers numerous incentives. One example is the \$3 million Job Development Investment Grant (JDIG) awarded to Everest Textile, a Taiwanese textile company, as part of its investment in the construction of a new textiles factory that will weave, dye, and finish nonwoven fabrics for high-performance sportswear.²³ The grant is contingent upon the company's ability to meet job creation and investment goals over a 12-year period.²⁴ Similarly, Shri Govindaraja Textiles, an Indian textile manufacturer with a facility in Eden, North Carolina, reported touring nine different U.S. states before choosing North Carolina. That state awarded the company a \$750,000 Community Development Block Grant to assist with initial building maintenance costs.²⁵

The state governments of Arkansas and South Carolina offer similar incentives. For example, Shandong Ruyi Technology Group, a textile manufacturer with the potential to create 800 new jobs, received up to \$4 million in grants (contingent upon job creation), cash rebates equal to 5 percent of the total payroll associated with new jobs for 10 years, and sales tax refunds on building materials associated with the investment.²⁶ In South Carolina, to encourage China-based Suzhou Glacier Import & Export Company's \$24 million investment in a manufacturing facility in the state, the state Coordinating Council for Economic Development approved job development credits that allowed the company to obtain a refund to use for approved business expenditures.²⁷

Free Trade Agreements

Another factor influencing production decisions and reshoring that is important to the textiles sector is free trade agreements (FTAs), specifically the rules of origin of such agreements. The United States currently has bilateral or multilateral FTAs in place with Australia, Bahrain, Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Israel, Jordan, South Korea, Mexico,

²¹ Georgia Department of Economic Development, "Competitive Advantages: Tax Exemption," <http://www.georgia.org/competitive-advantages/tax-exemptions/>; Georgia Department of Economic Development, "Competitive Advantages: Small Business Incentives," <http://www.georgia.org/competitive-advantages/small-business-incentives/>; Georgia Department of Economic Development, "Competitive Advantages: Financial Assistance," <http://www.georgia.org/competitive-advantages/financial-assistance/> (all accessed March 6, 2018).

²² Georgia Quick Start is a free program that customizes workforce trainings for a variety of industries. For more information, see Quick Start: Technical College System of Georgia, "Who We Are," <https://www.georgiaquickstart.org/who-we-are> (accessed February 13, 2018).

²³ Elkins, "Taiwanese Textile Company to Bring 610 Jobs," December 6, 2016; Economic Development Partnership of North Carolina, "Taiwan-based Sports," December 6, 2016.

²⁴ State of North Carolina. Economic Development Partnership of North Carolina, "Taiwan-based Sports," December 6, 2016.

²⁵ Ramakrishnan, "The West-side Story," October 28, 2014; Arcieri, "India Textile Company to Create 84 Jobs," May 1, 2014.

²⁶ Brantley, "Chinese Textile Maker to Invest," May 10, 2017.

²⁷ Area Development, "China-Based Suzhou Glacier Import & Export Co. Invests," September 23, 2015; South Carolina Department of Commerce, "State Discretionary Incentives: Job Development Credit," <https://www.sccommerce.com/incentives/south-carolina-discretionary-incentives> (accessed March 23, 2018).

Morocco, Nicaragua, Oman, Panama, Peru, and Singapore. Duty-free access for apparel items under these agreements is spelled out in the rules of origin of the agreement.²⁸

In most cases duty-free access to the U.S. market for apparel items is tied to the origin of the yarns and fabrics used in production. Most U.S. FTAs include a “yarn forward” rule of origin, which dictates that all yarn and fabric used to produce apparel in an FTA partner country must come from either the United States or the partner country. Such conditions are designed to encourage production of yarns and fabrics in the United States or the partner country; therefore, they are an inducement in the maintenance and/or expansion of U.S. textile manufacturing. The impact of the “yarn forward” rule of origin is especially apparent in U.S. exports to Western Hemisphere FTA partners, which accounted for 74 percent of the total value of U.S. textile exports in 2017.

Industry Efforts to Improve Competitiveness

Aside from the external factors discussed above, U.S. textile producers are making internal changes to maintain and build their competitiveness, enhancing the attractiveness of the United States as a manufacturing location. The industry is investing in new technology to improve efficiencies in order to supply the latest innovations that will maintain and grow domestic and global market share. As stated by one U.S. specialty yarn producer, “We must innovate to survive”; and according to this producer, the domestic industry’s knowledge and expertise is its “biggest advantage over textile companies from other parts of the world.”²⁹

Innovation and Diversification

Innovation is an important part of the textile sector’s competitiveness strategy: the sector must both develop new products to stay ahead of the competition and diversify in order to enter new markets.³⁰ Research and development occurs in all stages of the supply chain, from the manufacturing of fibers and yarns to woven and knit fabrics, nonwovens, and finished goods. Innovation in the industry feeds into every downstream market, including the traditional apparel, military, medical, infrastructure, landscaping, transportation, and industrial markets. Patents and trademarks are important for this industry, and innovation, coupled with branding, is one of the ways the industry tries to differentiate itself from overseas competitors. For example, Milliken & Company states it has one of the largest textile research facilities in the world and boasts over 2,200 U.S. patents.³¹ The importance of branding can be seen with the Sunbrella line of fabrics made by Glen Raven and the Polartec line of fabrics made by Polartec, both of which are now household names.

Many specific examples illustrate the pursuit of innovation in the domestic textile sector. American & Efird, a global industrial and consumer thread company is collaborating with Applied DNA Sciences to

²⁸ Rules of origin are the criteria used to determine the country in which a product was made (i.e., country of origin).

²⁹ NCTO, “What If? The Inspiration of U.S. Textile Innovation,” 2018.

³⁰ NCTO, “The Last Stitch,” 2017.

³¹ Milliken & Company, “Research at Milliken,” <http://www.milliken.com/en-us/Innovation/researchanddevelopment/Pages/milliken-research.aspx> and “About Us,” <http://www.milliken.com/en-us/ourcompany/about-us/Pages/about-us.aspx> (accessed March 13, 2018).

Textiles and Apparel: Made In USA . . . Again?

develop a new anti-counterfeiting sewing thread.³² Other examples of textiles that go beyond the traditional markets include Milliken’s ResQTM fabric for the military and fire and rescue services sectors, which self-extinguishes when removed from a flame, and Glen Raven’s GlenFlow, a water-filtration fabric that removes salt from seawater.³³ These and other U.S. firms use their research and manufacturing capabilities to work closely with end users to develop new products. For example, Highland Industries has worked with the military and the National Air and Space Administration (NASA) to design heat shields for rockets, as well as with the global food industry to develop lightweight, readily sterilized, and flexible “bladders” to transport liquids.³⁴

Targeted innovation in the textile sector occurs across disciplines and organizations. The Advanced Functional Fabrics of America (AFFOA) initiative is a notable example of a collaborative effort between government, industry, academia, and nonprofit organizations.³⁵ AFFOA’s purpose is to integrate technologies—from fibers and yarns to integrated circuits, solar cells, light-emitting diodes (LEDs), and other capabilities—in order to create textiles that can “see, hear, sense, communicate, store energy, regulate temperature, monitor health, change color, and more.”³⁶ For example, one team formed under the auspices of AFFOA created “sensing fabrics” that can monitor strain or detect cracks in the integrity of infrastructure when applied to buildings, roadways, bridges, dams, and pipelines.³⁷

Diversification is another strategy that textile producers are using to remain competitive. Many firms have diversified production into different products and/or markets in order to expand their market opportunities or transition into new businesses. The president of Champion Thread, a domestic producer of industrial sewing thread, stated that several capital investment projects in 2018 will “further enhance our ability . . . to diversify our product mix into new markets.”³⁸ Similarly, National Spinning Company, a domestic yarn producer since 1921, has diversified into nonwoven fabrics production for the automotive, home appliance, construction, bedding, and other markets.³⁹ In 2016, it opened a new nonwoven fabric plant in South Carolina.⁴⁰ Polartec (formerly Malden Mills) invented the first synthetic fleece that was used by an outdoor apparel company, Patagonia, in 1981. Since then, Polartec has expanded its product line to include insulating, protective, and flame-resistant textiles for the active, work, military, and athleisure markets.⁴¹

³² Blackburn, “A&E Collaborates with Applied DNA Sciences,” March 2, 2018.

³³ Milliken Military, “ResQ,” <http://millikenmilitary.milliken.com/en-us/products/flame-resistant-materials/Pages/resq.aspx>; Glen Raven, “Filtration,” https://www.glenraven.com/en_us/solutions/filtration.

³⁴ Highland Industries, “What Do We Live For? A Challenge,” <https://www.highlandindustries.com/innovation/what-do-we-live-challenge/> (accessed May 14, 2018).

³⁵ Established with a \$75 million grant from the U.S. Department of Defense and led by the Massachusetts Institute of Technology, the Advanced Functional Fabrics of America (AFFOA) initiative is a consortium with over 100 members from industry, academia, and nonprofit organizations. USDOD, “DoD Announces Award of New Revolutionary Fibers and Textiles Manufacturing,” April 1, 2016; U.S. industry representative, email to USITC staff, April 5, 2018.

³⁶ USDOD, “DoD Announces Award of New Revolutionary Fibers and Textiles,” April 1, 2016.

³⁷ Drexel Now, “Drexel to Host Pennsylvania’s Center,” November 14, 2017.

³⁸ Steele, “Many Industry Leaders Optimistic about Prospects,” January 17, 2018.

³⁹ NCTO, “Annual Capital Investments by U.S. Textile Mills Surge,” 2017.

⁴⁰ NCTO, “Annual Capital Investments by U.S. Textile Mills Surge,” 2017.

⁴¹ Polartec, About Us, https://www.polartec.com/about_us (accessed March 16, 2018).

Some firms in the industry have also diversified by manufacturing downstream products to provide a full service product to their customers. Kentwool Manufacturing, for example, a domestic producer of wool yarn, has expanded its product offerings to include wool golf socks and men’s briefs and loungewear.⁴² The company partners with other domestic firms, such as Wigwam, to have socks made under the “Kentwool” name.⁴³

Automation for Greater Efficiency

Automation plays a critical role in the competitiveness of the textile industry. The industry’s continued efforts to maintain a competitive advantage using automation are particularly evident in its investment in new machinery for open-end spinning.⁴⁴ According to the International Textile Manufacturers Federation (ITMF), nearly one-half of all open-end rotors installed in the United States in 2015 were less than nine years old, compared with 27 percent in 2013.⁴⁵ In comparison, while this figure was only 28 percent for India in 2015, in China it was 79 percent.⁴⁶ The large share of open-end rotors installed in China in the last nine years shows why other factors, in addition to investment in new machinery, such as innovation, service and quality, are so important to the competitiveness of the U.S. textile industry.

In addition to investing in machinery that operates more efficiently, the U.S. textile industry has worked to minimize labor costs. Wages are significantly higher in the United States than in many textile-producing countries, although automation in the industry has helped level the playing field. In 2016, the average hourly wages for skilled and unskilled personnel in U.S. cotton yarn spinning were \$18.10 and \$12.05, respectively; in China, they were \$2.45 and \$1.83, respectively.⁴⁷ Although these labor cost differences are considerable, U.S. firms have been able to reduce costs by incorporating automation into traditionally labor-intensive tasks such as quality control, especially in fabric inspection, and other non-value-added areas, including basic packaging, material handling, and inventory tracking.⁴⁸ In addition, integrating digital connectivity at the manufacturing level allows for greater transparency and control of the production process. For example, digital technologies applied to textile machinery can detect flaws in textile production and notify an operator to correct the defect before its incorporation into the final product.⁴⁹

⁴² McCurry, “Kentwool’s New Performance Apparel Division Expands,” August 13, 2015; KENTWOOL, “Manufacturing,” <https://www.kentwool.com/pages/manufacturing> (accessed January 23, 2018).

⁴³ McCurry “Kentwool’s New Performance Apparel Division Expands,” August 13, 2015; KENTWOOL Manufacturing website, <https://www.kentwool.com/pages/manufacturing> (accessed January 23, 2018).

⁴⁴ Open-end spinning, also known as rotor spinning, is a type of spinning used to make spun yarn. It omits a step used in traditional ring spinning and therefore is faster than ring spinning.

⁴⁵ The most recent data available for textile machinery shipments are from 2015. ITMF, *International Textile Machinery Shipment Statistics*, 2016; ITMF, *International Textile Machinery Shipment Statistics*, 2014.

⁴⁶ ITMF, *International Textile Machinery Shipment Statistics*, 2016; ITMF, *International Textile Machinery Shipment Statistics*, 2014.

⁴⁷ Wage costs were calculated on the basis of the wages paid to operatives and to skilled and unskilled labor for maintenance work. All social and shift-work premiums were included. ITMF, *International Production Cost Comparison*, 2016, 9.

⁴⁸ U.S. industry representatives, interview by USITC staff, October 4, 2017 and October 5, 2017; Borneman, “U.S. Textiles: Have No Fear,” December 20, 2017.

⁴⁹ U.S. industry representatives, interview by USITC staff, October 4, 2017 and October 5, 2017.

Apparel

Overview

There is some evidence to suggest that reshoring has taken place in recent years in the apparel sector, although on a modest scale. This impression is supported not only by accounts from U.S. apparel brands and retailers, but also to some extent by data on capital expenditures and shipments. For the 2013–16 period, capital expenditures were up 5 percent to \$301 million (figure 3, annex A, table A1). Recent reports on new investment also suggest capital investment in the apparel sector may be increasing, as the industry begins to adopt more labor-saving technologies. Although domestic shipments of apparel reached a record low of \$11.5 billion in 2014 and remained at that low level in 2015, they showed modest increases the following two years, reaching \$12.0 billion in 2016 and \$12.5 billion in 2017 (figure 4, annex A, table A3)—the first positive trend since 1998.⁵⁰ The American Apparel & Footwear Association (AAFA) estimates that the domestic industry produced 603.8 million garments in 2016, representing 2.8 percent of total apparel consumed in the United States in 2016. This total was up from an all-time low of 2.0 percent in 2010.⁵¹

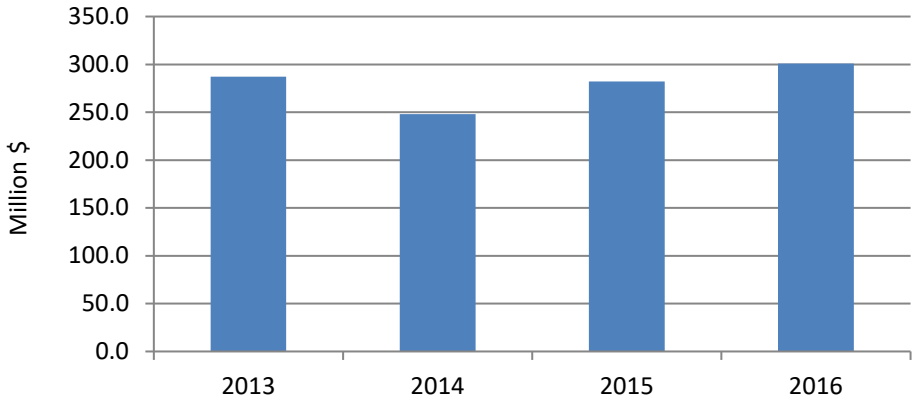
Any evidence of an uptick in the apparel sector, however, is not reflected in employment data. Employment in the apparel sector steadily declined during 2013–17, down 21 percent from 145,000 workers in 2013 to 120,000 workers in 2017. Official data on labor productivity also showed steady declines during 2013–16.⁵²

⁵⁰ Domestic shipments of apparel reached a peak in 1997, valued at \$68.0 billion. U.S. Census, “Manufacturers’ Shipments, Inventories, and Orders” (accessed August 9 and December 5, 2017).

⁵¹ It is difficult to compare domestic shipments of apparel with imports because the vast majority of imports are generally much lower value than U.S.-produced items. To eliminate this discrepancy, the American Apparel and Footwear Association (AAFA) estimates import market share in terms of quantity. AAFA, “ApparelStats 2017,” June 2017, 6.

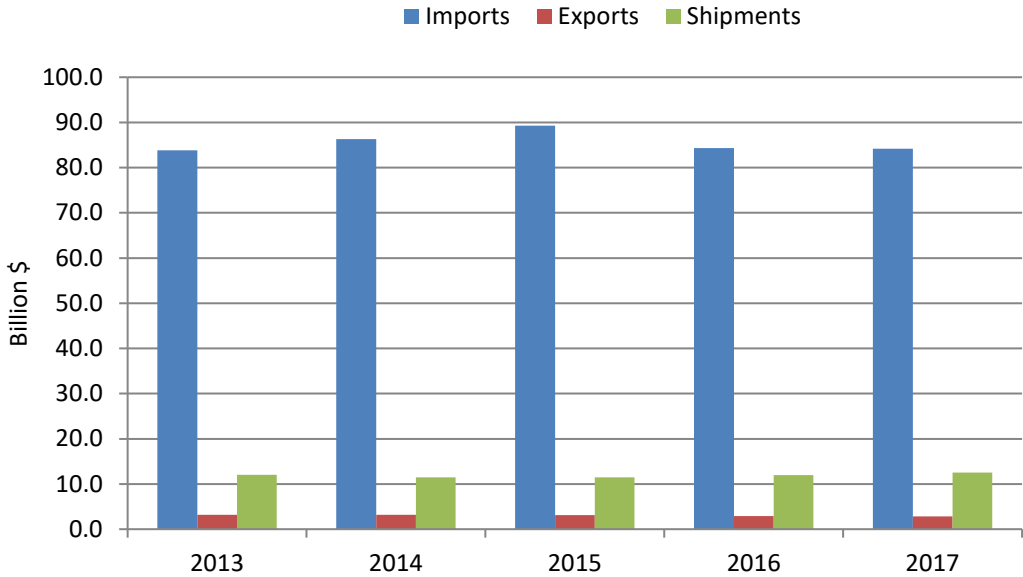
⁵² The BLS labor productivity index for apparel declined from 144.7 in 2013 to 119.8 in 2016, the latest data available as of February 21, 2017. The index is based on a base year of 1997 = 100. USDOL, BLS, “Annual Index of Labor Productivity.”

Figure 3. Total capital expenditures for structures and equipment for apparel manufacturing, 2013–16



Source: U.S. Census, Annual Capital Expenditures Survey, “Capital Expenditures for Structures and Equipment with Employees by Industry, 2013-16.”

Figure 4. Apparel: U.S. imports for consumption, domestic exports, and domestic shipments, 2013–17



Source: USITC DataWeb/USDOC (accessed February 20, 2018); U.S. Census Bureau, Manufacturer’s Shipments, Inventories, and Orders, <http://www.census.gov/econ/currentdata> (accessed February 16, 2018).

Industry survey data suggest that U.S. fashion companies⁵³ will continue to source apparel from the United States, although increases in new domestic sourcing may be slowing and the amount sourced domestically on average is relatively small. A 2017 United States Fashion Industry Association (USFIA) benchmarking study revealed that 61 percent of survey respondents indicated that they sourced at least some goods from the United States, with most sourcing 10 percent or less of their total volume/value in the United States.⁵⁴ The benchmarking study also indicated that 21 percent of respondents would increase sourcing from the United States in the next two years, compared with 10 percent of respondents who indicated they might reduce sourcing in the United States.⁵⁵

However, the 2017 survey results were less promising for U.S. industry than the results in 2014, when 82 percent of retailers and 55 percent of U.S. importers/wholesalers indicated they would increase sourcing from the United States in the next two years.⁵⁶ This drop suggests that any major increases in domestic sourcing may have already taken place and further increases may be smaller. A 2017 survey conducted by McKinsey and Company indicated a slightly more optimistic view on reshoring in the apparel sector: more than one-third of chief purchasing officers in the apparel industry predicted a greater use of reshoring by their companies.⁵⁷

Most reshoring by the apparel sector does not appear to reflect a large-scale movement of production from one country back to the United States. Instead, reshoring has been part of a strategic realignment of many firms' overall supply chains.⁵⁸ Domestic production can be part of a firm's strategy to reduce supply chain risk.⁵⁹ According to a 2014 USFIA benchmarking study, companies that source from a diverse group of countries were "more likely to commit to sourcing in the United States as part of their overall strategy to diversify sourcing," rather than cutting back on imports.⁶⁰

China is still the largest source of all apparel sold in the U.S. market, accounting for 41.9 percent of the quantity of U.S. apparel imports in 2017.⁶¹ Nevertheless, rising costs in China have led many firms to reassess their global sourcing strategies.⁶² While the cost of U.S. production is still significantly higher than that of China, when combined with other factors, sourcing domestically may be competitive for some products. This applies particularly to products that require customization, have shorter lead times, are luxury items, and/or are capable of being produced using high levels of automation. New and developing technology that allows for more automation of the apparel production process will also make production in the United States more cost-competitive with offshore production. For example, the "Sewbot" technology developed by Softwear Automation Inc. allows machines to replace much of the labor-intensive sewing process (see "Role of Technology" below).

⁵³ Fashion companies include retailers, brands, wholesalers/importers, and manufacturers/suppliers. Lu, "2017 U.S. Fashion Industry Benchmarking Study," July 2017, 29.

⁵⁴ Lu, "2017 U.S. Fashion Industry Benchmarking Study," July 2017, 9.

⁵⁵ Lu, "2017 U.S. Fashion Industry Benchmarking Study," July 2017, 4.

⁵⁶ Lu, "2014 U.S. Fashion Industry Benchmarking Study," June 2014, 14.

⁵⁷ Berg et al., "Digitization: The Next Stop for the Apparel-sourcing Caravan," September 2017, 3.

⁵⁸ Lu, "2015 U.S. Fashion Industry Benchmarking Study," June 2015, 14.

⁵⁹ *Apparel Magazine*, "Seven Must-Follow Trends in the Fashion Supply Chain," November 30, 2016.

⁶⁰ Lu, "2014 U.S. Fashion Industry Benchmarking Study," June 2014, 3, 16.

⁶¹ USDOC, OTEXA, *Major Shippers Report*, February 6, 2018.

⁶² Lu, "2016 Fashion Industry Benchmarking Study," June 2016, 2.

Advantages of Sourcing Domestically

Numerous reports indicate that brands are increasing their U.S. sourcing and that manufacturing firms are reshoring or starting new production in the United States (box 2). Among the reasons given for producing in the United States are improved lead times, better quality control, and more flexible production. For products with frequent, short selling seasons, it makes sense to produce closer to market, including within the United States.⁶³ The number of retail apparel sales seasons has increased from a traditional 2 main seasons, to 6–12 seasons (or up to 26 seasons for some fast-fashion brands). Such frequent change—and within shortened time periods—means that quick service and turnaround times are important for brands and manufacturers.⁶⁴ In addition, the role of e-commerce and a more demanding consumer is pushing fashion into both increased customization and faster turnaround times.⁶⁵ As stated by the president of the *Sourcing Journal*, “As the need for speed continues to become more important, nearshoring and onshoring is going to become more relevant.”⁶⁶

Shorter lead times are also important because retailers and apparel brands prefer to finalize purchase orders later in the development process to improve forecasting and reduce errors that lead to markdowns or shortages. An official from Under Armour said the gap between projected and actual demand is often too wide to safely place orders six months in advance.⁶⁷ Boathouse Sports, a designer and manufacturer of performance apparel, reshored production from China largely to shorten lead times; orders from China required at least six months lead time, whereas U.S. factory orders required less than one month from order to ship date.⁶⁸

Along with more frequent orders, as discussed above, order sizes are often smaller as well and U.S. production can fill a gap by handling orders that are too small for overseas production.⁶⁹ Small orders may be used to test the market, with the option to reorder or adjust the product as needed. Start-ups and firms that have more customized business may also have smaller orders. Boathouse Sports, for example, stated that it has an average order of just 17 garments.⁷⁰ Ziel, Inc., which caters to firms that custom-order activewear apparel in the United States, requires no minimum order size at all.⁷¹

Many domestically made products use “Made in USA” branding to capitalize on the buy-American trend and the appeal of “Made in USA.” Some reasons for purchasing domestically produced apparel include perception of quality, contribution to job creation and the overall U.S. economy, supply-chain transparency, environmental stewardship, and workplace conditions.⁷² The variety of clothing brands

⁶³ MAM, “Made In USA and Apparel Reshoring,” March 16, 2016, 6, 9.

⁶⁴ Gribbin, “How Technology & Process Modernization Are Lowering Costs,” May 13, 2014.

⁶⁵ Moser and Montalbano, “Why Made-In-USA Fashion Is Turning Heads,” January 18, 2018; Crawford, “Consumers Are Telling You” October 19, 2017.

⁶⁶ Donaldson, “Publisher’s Predictions,” February 8, 2018.

⁶⁷ Hoover, Under Armour, presentation at Texprocess Americas Symposium, Atlanta, GA. May 4, 2016.

⁶⁸ Rothfeder, “Why Donald Trump Is Wrong about Manufacturing,” March 14, 2016.

⁶⁹ MAM, “Made in USA and Apparel Reshoring,” March 16, 2016, 6, 9; Moser and Montalbano, “Why Made-In-USA Fashion Is Turning Heads,” January 18, 2018; Donaldson, “How Big Will On-Demand Manufacturing Actually Be?” November 6, 2017.

⁷⁰ Wang, “Small Runs, Big Gains: Reshoring,” January 13, 2015.

⁷¹ Ziel website, <http://www.zielwear.com> (accessed February 13, 2018).

⁷² Livingston, “Products Made in the USA,” undated.

Textiles and Apparel: Made In USA . . . Again?

that use “Made in USA” labeling as part of their brand identity range from producers of work clothes and uniforms to denim and contemporary fashion. Online vendors and independent organizations make it easier for consumers to find clothing made in the United States through websites such as “Still Made in the USA” and “American Made Clothing Directory.”⁷³

⁷³ See, for example, Still Made in USA website, <http://www.stillmadeinusa.com> (accessed February 13, 2018); American Made Clothing Directory, <http://www.americansworking.com/clothing.html> (accessed February 13, 2018); The Good Trade, “15 American-Made Clothing Brands You Can Wear with Pride,” May 14, 2018.

Box 2. Examples of Production in the United States and Reshoring

Numerous anecdotal reports indicate that apparel companies are starting production or increasing production in the United States, or that brands are contracting out production to domestic firms. The Reshoring Initiative—a nonprofit organization that offers free tools to advance its mission to bring jobs back to the United States—lists a number of firms that have reshored or increased production of apparel in the United States. Examples include Brooks Brothers (men’s tailored clothing), American Giant (activewear), Karen Kane (women’s apparel), and Kenai Sports (uniforms and sportswear).^a Four reasons given for producing in the United States (versus offshore) are rising costs overseas, a need for better quality control, more nimble production, and reduced lead times.^b Brooks Brothers, for instance, reshored trouser production from Mexico and Malaysia, and is producing up to 50 percent of its tailored clothing in the United States.^c

Retailers’ commitment to increase purchases in the United States^d reportedly has also spurred some new investment by foreign firms in U.S. production. For example, in 2015, the Canadian firm Peds Legwear (later acquired by Gildan Corporation) made a \$16 million investment in a facility in North Carolina to produce socks for retail by Walmart.^e Another notable new investment announced recently is that of Chinese firm Tianyuan Garments Company to make T-shirts for Adidas in Arkansas using robots (see “Role of Technology”).^f To encourage the investment, the state of Arkansas is providing financial assistance with infrastructure and training, as well property tax incentives.^g

Among the products being produced successfully in the United States for commercial sale are those that require customized and often smaller orders, test market products or reorders, and fast-fashion items. The uniform and workwear market is an important sector for domestic apparel manufacturers. They serve many sectors, including health care; police and firefighters; private security; corporate image wear (e.g., rental car agencies); foreign military; and utility workers. A few examples of U.S. firms producing work clothes and uniforms in the United States are Carhartt, Suuchi, and Uniform Express.^h

Other trends that are helping fuel U.S. production include niche “farm to user” scenarios, in which clothing is made entirely in the United States. Duckworth Company, for example, sources wool from Montana that is then spun into yarn, knit into fabric, and assembled into finished garments in North Carolina.ⁱ Similarly, Nester Hosiery has a brand called “Farm to Feet,” which makes wool socks entirely sourced in the United States from the raw fiber through the finished product.^j

^a Reshoring Initiative, Case Studies slides, February 18, 2015, http://www.reshorennow.org/content/companies_reshoring/Cases_only_2-20.pdf.

^b Reshoring Initiative, Case Studies slides, February 18, 2015, http://www.reshorennow.org/content/companies_reshoring/Cases_only_2-20.pdf.

^c Martyneec, “Re-Shoring. Is It For Real or Still Just Talk?” May 4, 2016.

^d Walmart Corporation has committed to source an additional \$250 billion in products “made, assembled, or grown” in the United States by 2023. Marsiglio, “Walmart’s Investment in U.S. Manufacturing, Explained,” June 16, 2016.

^e In 2016, Gildan Corporation acquired Peds. Matsumoto, “PEDS Legwear: Ribbon Cut for New Facility,” March 11, 2015; Gildan Corporation, “Gildan Announces Completion of Acquisition of Peds Legwear,” August 22, 2016; Talk, Business, and Politics, “The Supply Side: Peds New \$16 Million Plant,” March 12, 2015.

^f Hamlin, “China Snaps Up America’s Cheap Robot Labor,” August 30, 2017; Guizzo, “Your Next T-Shirt Will Be Made by a Robot,” January 5, 2018.

^g Hamlin, “China Snaps Up America’s Cheap Robot Labor,” August 30, 2017.

^h Industry representative, interview by USITC staff, May 23, 2018; Carhartt website, <http://www.carhartt.com/content/carhartt-history?icid=LINK-about-history> (accessed August 15, 2016); Riverside Manufacturing Company website, http://www.riversideuniforms.com/RSPProd/CorporateWeb_Home.nsf/Web_Pages?openagent&pageKey=History (accessed August 15, 2016); Uniforms Express website, <http://www.uesports.com/faq.php> (accessed August 15, 2016).

ⁱ Duckworth website, <http://www.duckworthco.com/duckworth-textiles/> (accessed February 5, 2018).

^j Farm to Feet website, <https://www.farmtofeet.com/pages/about-us> (accessed March 14, 2018).

Industry Actions to Improve Industry Competitiveness

Role of Technology

Despite the modest uptick in U.S. production, there are still obstacles to manufacturing apparel in the United States. Labor costs and availability are major concerns for those looking to manufacture in or source from the United States.⁷⁴ As a result, automation is important throughout all stages of manufacturing—including designing, cutting, sewing, and moving the product during production process—to help improve production efficiency, minimize labor requirements, and reduce costs.⁷⁵ Automation can take the place of many individual processes required in the completion of a garment, such as an “autonomous pocket setter” in which a pocket is sewn onto a piece of a garment without being touched by human hands.⁷⁶ The technology not only helps reduce the cost, but it also helps reduce the need for skilled sewing operators, for which there is a shortage in the United States.⁷⁷

Automation can also play a much larger role in the manufacturing process. As highlighted earlier, one notable example is Tianyuan Garments Company, which plans to open a \$20 million garment factory in Little Rock, Arkansas, by the end of 2018.⁷⁸ Its factory will use 330 machines from Georgia-based Softwear Automation, which combine fabric visualization technology and robotics (“Sewbots”) to control fabric during the sewing process.⁷⁹ The factory will be capable of making 23 million T-shirts per year at a cost of about 33 cents per shirt.⁸⁰

Automated sewing has not been widely adopted, however, because fabric is difficult to control during the sewing process. Seattle-based Sewbo is addressing that challenge by adding a water-soluble stiffener to the fabric, improving the ability to control fabric as it is moved through the stages of the automated sewing process. A garment that is stiffened in this way can be sewn by standard machines and handled like “sheet metal.” The stiffener can be rinsed from the hardened fabric, rendering the garment soft and ready-to-wear, while the stiffener itself can be reused.⁸¹ Although there are challenges to translating the technology to more complex apparel, Softwear Automation reportedly would like to apply the technology to make jeans, uniforms, and dress shirts.⁸²

Technology is also helping domestic firms meet the need for on-demand and customized orders. Nimbly and On Point Manufacturing (OPM) are two domestic apparel firms that use technology to allow them to produce customized orders in the United States on a quick-turnaround basis. Nimbly uses a 3-D

⁷⁴ Henderson and Kitz, “Automation, Smart Machines and Robotics in Sewn Products Manufacturing,” panel discussion, Texprocess Americas Symposium, May 22, 2018.

⁷⁵ Henderson and Kitz, “Automation, Smart Machines and Robotics in Sewn Products Manufacturing,” panel discussion, Texprocess Americas Symposium, May 22, 2018.

⁷⁶ Henderson, “Automation, Smart Machines and Robotics in Sewn Products Manufacturing,” presentation at Texprocess Americas, May 22, 2018.

⁷⁷ Frank, “What’s Being Done” November 30, 2017.

⁷⁸ Hamlin, “China Snaps Up America’s Cheap Robot Labor,” August 30, 2017.

⁷⁹ Hamlin, “China Snaps Up America’s Cheap Robot Labor,” August 30, 2017.

⁸⁰ Guizzo, “Your Next T-Shirt Will Be Made by a Robot,” January 5, 2018.

⁸¹ Sewbo website, “How It Works,” <http://www.sewbo.com/> (accessed February 14, 2018).

⁸² Guizzo, “Your Next T-Shirt Will Be Made by a Robot,” January 5, 2018.

whole-garment knitting process to produce custom-knit garments in 30 minutes or less. According to OPM, it “automates and integrates almost every piece of the process from order entry to delivery yet keeps the fine skills of the seamstresses.”⁸³ It states it can produce any number of garments and any size, with a goal to ship directly to the customer in 72 hours.⁸⁴ Taylor Leigh Apparel, an online women’s apparel brand that has contracted with OPM to make its clothing, highlights its custom-made apparel that is produced to order.⁸⁵ A key aspect of OPM is its software system, developed by partner firm, “Purchase Activated Apparel Technologies (PAAT), which is developing a “global technology network” to “connect apparel software development programs, manufacturing systems, and related value-added applications.”⁸⁶ Separately, Amazon has recently received a patent for an on-demand apparel manufacturing system, which, if implemented, automates most of the production process.⁸⁷ A customer order is automatically translated to a cutting pattern on fabric or other material, which is then cut and transferred to a sewing station, inspected, and packaged for delivery.⁸⁸ The sewing is either automated or done by an attendant.⁸⁹

The industry is also adopting technology to accelerate the process of product development and to improve the fit of the final product.⁹⁰ Li & Fung, for example, is using 3-D virtual sampling and fitting to speed up the product development process from four to six weeks to four to six days.⁹¹ The use of 3-D virtual prototyping helps to speed up the product development process by eliminating the need to produce as many samples and to improve the fit of the garment.⁹² As online sales grow, the importance of correct fit becomes increasingly important because consumers do not have the opportunity to try garments on before buying them.

Increased demand for customization and shorter lead times has made digitization and connectivity a critical tool to help speed the design, planning, production, and delivery of products. Digitization and connectivity can improve the efficiencies within and between each stage of the product design and manufacturing process. For example, one U.S. company developed a software that documents broken needles in cut-and-sew apparel machinery. Over time, this program identifies machines that have systematic problems allowing operators to preemptively resolve malfunctions.⁹³ Industry representatives state that efficiencies created by improved communication technologies are essential to the future of the industry’s competitiveness. Nevertheless, even with the shortage of skilled labor, the domestic apparel industry is lagging behind other sewn product industries in manufacturing automation,

⁸³ On Point Manufacturing website, <http://www.onpointmanufacturing.com/apparel-mfg.html> (February 14, 2018).

⁸⁴ Industry representative, interview by USITC staff, May 23, 2018; On Point Manufacturing website, <http://www.onpointmanufacturing.com/apparel-mfg.html> (February 14, 2018).

⁸⁵ Taylor Leigh website, <https://taylorleighapparel.com/> (accessed February 14, 2018).

⁸⁶ Purchase Activated Apparel Technologies website, <http://paatintl.com/about-us.html> (accessed May 29, 2018).

⁸⁷ Wingfield, “Amid Brick-and-Mortar Travails,” April 30, 2017.

⁸⁸ Wingfield, “Amid Brick-and-Mortar Travails,” April 30, 2017.

⁸⁹ Wingfield, “Amid Brick-and-Mortar Travails,” April 30, 2017.

⁹⁰ Lim, “Fit, Sizing, and Virtual Try-On Technologies,” panel discussion at Texprocess Americas Symposium, May 22, 2018.

⁹¹ Friedman, “Li & Fung on Why Speed is the New Currency,” October 24, 2017.

⁹² Lim, “Fit, Sizing, and Virtual Try-On Technologies,” panel discussion at Texprocess Americas Symposium, May 22, 2018.

⁹³ Russell, “Tomorrow’s Advanced Technology Available Today,” presentation at Texprocess Americas Symposium, May 23, 2018.

in large part because it is not always cost effective due to intense competition from imported products.⁹⁴

Industry Groups that Promote U.S. Production

In addition to actions taken by firms to improve their competitiveness, a number of local groups are helping to promote fashion design and clothing production in United States. Industry groups can help smaller businesses to connect with the necessary resources for all parts of the production process; in addition, they help them attract clients, improve business processes, and develop talent to prepare local workforces with the skills required by the industry. They can also serve as a venue for sharing best practices and developing innovative ideas.

There are a number of examples of local initiatives to support apparel manufacturing in the United States. In New York, the Brooklyn Fashion + Design Accelerator (BF + DA), established in 2013, gives designers access to mentoring, small-run apparel production, knitting services, digital fabrication services, showroom space, and retail sites.⁹⁵ In another example, the Manufacturing Solutions Center is a not-for-profit center that is part of the North Carolina University System and helps businesses in a large variety of ways, including start up help for entrepreneurs, helping with product development, prototyping, testing, training, and consulting to help improve factory efficiencies.⁹⁶ Its goal is to promote jobs in the United States.⁹⁷ It is also a member of the Carolina Textile District, which is a network of companies with designers, patternmakers, printers, fabric suppliers and manufacturers, tag and label providers, and cut-and-sew facilities.⁹⁸ The Carolina Textile District offers a number of services to help startup companies, existing companies getting ready to launch a new product, and firms looking to manufacture domestically.⁹⁹ Other examples include local initiatives in Saint Louis and Detroit. Saint Louis Fashion Fund was established to grow the fashion industry through the creation of new companies in downtown St. Louis.¹⁰⁰ Among other things, the fund supports a fashion incubator and internships.¹⁰¹ Detroit, too, offers some initiatives to assist and develop the garment industry (box 3).

⁹⁴ Kitz, "Robotics and Automotive Joining Solutions," presentation at Texprocess Americas, May 22, 2018

⁹⁵ The Brooklyn Fashion + Design Accelerator (BF + DA) website, <http://bkaccelerator.com/about/> (accessed August 16, 2016).

⁹⁶ Industry representative, interview by USITC staff, May 23, 2018; Manufacturing Solutions Center website, <http://www.manufacturingsolutionscenter.org/#> (accessed May 25, 2018).

⁹⁷ Industry representative, interview by USITC staff, May 23, 2018; Manufacturing Solutions Center website, <http://www.manufacturingsolutionscenter.org/#> (accessed May 25, 2018).

⁹⁸ Carolina Textile District website, <https://www.carolinatextiledistrict.com/about/> (accessed February 5, 2018).

⁹⁹ Carolina Textile District website, <https://www.carolinatextiledistrict.com/faq/> (accessed February 5, 2018).

¹⁰⁰ Saint Louis Fashion Fund website, <https://www.saintlouisfashionfund.org/> (accessed March 21, 2018).

¹⁰¹ Saint Louis Fashion Fund website, <https://www.saintlouisfashionfund.org/> (accessed March 21, 2018).

Box 3. Initiatives to Promote Garment Production in Detroit

Two initiatives in Detroit are helping to develop a fashion industry in that city. The Detroit Garment Group, a nonprofit group founded in 2012, has three programs to help promote the Detroit fashion sector. It holds an annual education and networking conference for local fashion companies; it is participating in a program to create a “Garment District” by co-locating fashion companies; and it has partnered with colleges in the state to create a “Michigan Industrial Sewing Consortium.”^a The sewing consortium trains future workers in entry-level jobs in the industrial sewing industry; the sectors include clothing, as well as automotive, boats, awnings, and upholstery.^b The second initiative is spearheaded by the mayor of Detroit, who brought in Jeffrey Aronsson, former CEO at Donna Karan Company in New York, to develop a plan for Detroit to become a design and production hub.^c The hub would help grow existing companies, such as VS Everybody (Detroit Vs Everybody) and Detroit Denim, and attract new companies to Detroit.^d In his vision for the future, Aronsson envisions a hub that will encompass flexible production (the ability to produce a small or large number of garments) and customization.^e

^a Detroit Garment Group website, <http://www.detroitgarmentgroup.org/about> (accessed February 5, 2018); Raj, “Coming Soon to Detroit,” December 12, 2017; *DBusiness*, “Detroit Garment Group Expands,” September 3, 2015.

^b *DBusiness*, “Detroit Garment Group Expands,” September 3, 2015.

^c Livengood, “Ex-Donna Karan CEO Aronsson to Move Business,” September 14, 2017.

^d Ferretti, “Fashion CEO Planning Hub for Detroit,” September 14, 2017; Deadline Detroit, “NY Consultant Plans to Create Clothing,” September 15, 2017.

^e Jeffrey Aronsson, telephone interview by USITC staff, December 11, 2017.

Conclusion

“Made in America is back, and it’s likely to stay” according to a 2016 article by the National Council of Textile Organizations.¹⁰² The industry is still optimistic in 2018, stating “Thanks to productivity, flexibility, and innovation, the U.S. textile industry has cemented its position in the global market.”¹⁰³ There are reasons for optimism in the apparel industry, too. According to the Reshoring Initiative, apparel ranks sixth among industries that have reshored jobs since 2010.¹⁰⁴ After years of decline, the domestic apparel sector has seen recent growth in both new investment and shipments.

It is true that the vast majority of the U.S. apparel market is still supplied by imports, a trend that is likely to continue in the foreseeable future. In the textile sector, official data on shipments and investment show mixed results—shipments were up in 2017, but remained below 2013 levels. Nevertheless, investment levels in the United States were up, and numerous accounts speak of new investment in the sector by both U.S. and foreign firms. Both the textiles and apparel sectors point to innovation as a key part of their strategies for success. Innovation is vital for the development of new products, as well as for upgrading existing products, reducing costs, and improving flexibility in manufacturing operations.

Based on this research, there are a number of areas that might warrant further exploration. As much of the new investment in the industry is not yet operational, the authors believe it would be useful to revisit data on trade and production in the next three years, to see if the trends show further growth in the industry. It might also be useful to look at other downstream sectors, such as home furnishings and

¹⁰² NCTO, “By the Numbers,” 2016.

¹⁰³ McCrary, “2018 State of the US Textile Industry Address,” NCTO Annual Meeting, March 22, 2018.

¹⁰⁴ Moser and Montalbano, “Why Made-In-USA Fashion Is Turning Heads,” January 18, 2018.

Textiles and Apparel: Made In USA . . . Again?

footwear, to see if they show similar trends. Finally, opportunities for future research may include a more in-depth analysis of the role e-commerce plays in the textile-apparel value chain, particularly how it affects production in the United States, as well as “near-shoring” production of finished goods in the Western Hemisphere for the U.S. market.

Bibliography

- American Apparel & Footwear Association (AAFA). "ApparelStats 2017," June 2017.
- American Textile Co. "American Textile Opens New Pillow Plant, Doubles Size of Operation," November 17, 2016. <https://www.americantextile.com/american-textile-opens-new-pillow-plant-doubles-size-operation/>.
- Apparel Magazine*. "Seven Must-Follow Trends in the Fashion Supply Chain for 2017," November 30, 2016. <https://apparelmag.com/seven-must-follow-trends-fashion-supply-chain-2017>.
- Arcieri, Katie. "India Textile Company to Create 84 Jobs, Invest \$40M in Eden Operation." *Triad Business Journal* (blog), May 1, 2014. <https://www.bizjournals.com/triad/blog/2014/05/india-based-textile-company-to-add-84-jobs-invest.html>.
- Area Development*. "China-Based Suzhou Glacier Import & Export Co. Invests \$24 Million in Travelers Rest, South Carolina, Manufacturing Complex," September 23, 2015. <http://www.areadevelopment.com/newsitems/9-23-2015/suzhou-glacier-import--export-travelers-rest-south-carolina874356.shtml>.
- Area Development*. "King Charles Industries Opens Manufacturing Plant in Anson County, North Carolina," October 26, 2016. <http://www.areadevelopment.com/newsitems/10-26-2016/king-charles-industries-manufacturing-anson-county-north-carolina.shtml>.
- Area Development*. "Taiwan-Based Everest Textile USA Plans Manufacturing Facility in Forest City, North Carolina," December 7, 2017. <http://www.areadevelopment.com/newsitems/12-7-2016/everest-textile-rutherford-county-north-carolina.shtml>.
- Berg, Achim, Saskia Hedrich, Tim Lange, and Karl-Hendrik Magnus. *Digitization: The Next Stop for the Apparel-Sourcing Caravan*. McKinsey & Company, September 2017. <https://www.mckinsey.com/industries/retail/our-insights/digitization-the-next-stop-for-the-apparel-sourcing-caravan>.
- Blackburn, Jacob. "A&E Collaborates with Applied DNA Sciences to Develop Anti-Counterfeiting Sewing Threads." *American & Efird (A&E)* (blog), March 2, 2018. <http://www.amefird.com/blog/2018/03/ae-collaborates-with-applied-dna-sciences-to-develop-anti-counterfeiting-sewing-threads/>.
- Borneman, James. "U.S. Textiles: Have No Fear, Automation Is Here." *Textile World Asia*, December 20, 2017. <http://textileworldasia.com/textile-world-asia/2017/12/u-s-textiles-have-no-fear-automation-is-here/>.
- Brantley, Max. "Chinese Textile Maker to Invest in Forrest City; 800 Jobs Promised." *Arkansas Blog*. *Arkansas Times*, May 10, 2017. <https://www.arktimes.com/ArkansasBlog/archives/2017/05/10/chinese-textile-maker-to-invest-in-forrest-city-800-jobs-promised>.

Textiles and Apparel: Made In USA . . . Again?

Comerford, Tim, Dennis Meseroll, Tracey Hyatt Bosman, and Gao Yong. "A Comparison of U.S. and China Electricity Costs." Biggins Lacy Shapiro & Company and Tractus Asia Limited news article, 2016. blsstrategies.com/docs/news/News_181.pdf.

Cotton Council. Cotton USA Sourcing Program. "U.S. Cotton Fiber Economics: U.S. Cotton; Classification Systems Insures Consistent Quality." http://www.cottonsourcingusa.com/cotton_fiber_economics.php?pag=24 (accessed March 5, 2018).

Crawford, Caletha. "Consumers Are Telling You What They Want to Buy—Are You Listening?" *Sourcing Journal*, October 19, 2017. <https://sourcingjournalonline.com/xcel-brands-robert-dloren-speed-to-market/>.

Custom Synthetics Fibers. "Plastics Recycler to Open New Plant in Alabama," June 3, 2016. <http://csfibers.com/news/custom-synthetic-fibers-to-begin-operation-in-2016-td/>.

DBusiness. "Detroit Garment Group Expands Industrial Sewing Certificate Program," September 3, 2015. <http://www.dbusiness.com/September-October-2015/Detroit-Garment-Group-Expands-Industrial-Sewing-Certificate-Program/#.WnmuDfn4-6J>.

Deadline Detroit. "NY Consultant Plans to Create Clothing Design and Production Hub in the Motor City," September 15, 2017. http://www.deadlinedetroit.com/articles/18352/ny_consultant_plans_to_create_clothing_design_and_production_hub_in_the_motor_city#.WnspiPmnFYg.

Donaldson, Tara. "How Big Will On-Demand Manufacturing Actually Be for Apparel Sourcing?" *Sourcing Journal*, November 6, 2017. <https://sourcingjournalonline.com/on-demand-manufacturing-apparel-sourcing/>.

Donaldson, Tara. "Publisher's Predictions." *Sourcing Journal*, February 8, 2018. <https://sourcingjournalonline.com/apparel-sourcing-supply-chain-outlook-2018/>.

Donaldson, Tara. "Sourcing Costs Climb: Wage Increases Set to Affect 2018." *Sourcing Journal*, January 2, 2018. <https://sourcingjournalonline.com/apparel-sourcing-costs-wage-increases-2017/>.

Drexel University. "Drexel to Host Pennsylvania's Center for Advanced Fabric Manufacturing Innovation." Drexel Now news article, November 14, 2017. <http://drexel.edu/now/archive/2017/November/Fabric-Discovery-Center-at-Drexel/>.

Elkins, Ken. "Taiwanese Textile Company to Bring 610 Jobs to Fabrics Plant in Forest City." *Charlotte Business Journal*, December 6, 2017. <https://www.bizjournals.com/charlotte/news/2016/12/06/taiwanese-textile-company-to-bring-610-jobs-to.html>.

Fashion Network. "Cotton Association of India, China Sign MoU to Promote Cotton Trading," June 29, 2017. <http://in.fashionnetwork.com/news/Cotton-Association-of-India-China-sign-MoU-to-promote-cotton-trading,844762.html#.WqFQ7f6Wzct>.

- Ferretti, Christine. "Fashion CEO Planning Hub for Detroit." *Detroit News*, September 14, 2017. <http://www.detroitnews.com/story/business/2017/09/14/jeffry-aronsson-fashion-hub-detroit/105597516/>.
- Fiber2Fashion. "Ruyi to Invest \$410 Million in Former Sanyo Facility," May 11, 2017. <http://www.fibre2fashion.com/news/announcement/ruyi-to-invest-410-million-in-former-sanyo-facility-205744-newsdetails.htm>.
- Financial Times. fDi Markets database. U.S. Inbound FDI in Textile Manufacturing Database, 2011–2016 (accessed June 2016 and October 2017) (fee required).
- Frank, Erin. "What's Being Done to Save the Domestic Industrial Sewing Work Force? IFAI's Vision to Rebuild." *Inside Fashion Design*, November 30, 2017. <http://insidefashiondesign.net/the-looming-crisis-in-industrial-sewing/>.
- Friedman, Arthur. "Denim Made in America Takes a Big Hit, but It's Not Dead Yet." *Sourcing Journal*, December 18, 2017. <http://www.sourcingjournalonline.com/denim-made-america-takes-big-hit-not-dead-yet/>.
- Friedman, Arthur. "Li & Fung on Why Speed is the New Currency." *Sourcing Journal*, October 24, 2017. <https://sourcingjournalonline.com/li-fungs-robert-sinclair-speed-new-currency/>.
- Gribbin, Ed. "How Technology & Process Modernization Are Lowering Costs and Shortening Lead Times." Presentation at the Texprocess Americas Symposium, Atlanta, GA, May 13, 2014.
- Gildan Activewear. "Gildan Announces Planned Major Investment in Further New U.S. Vertical Yarn-Spinning Facilities." News release, September 23, 2017. <http://www1.gildan.com/corporate/downloads/Release%20-%20New%20yarn-spinning%20facility%20-%20September%2023%202013%20FINAL.pdf>.
- Glen Raven. "Filtration." https://www.glenraven.com/en_us/solutions/filtration (accessed May 14, 2018).
- Gunn, Billy. "Weary of Constantly Being Left at Economic Development Altar, Bunkie Is Hoping for Better Times Ahead." *Acadiana Advocate*, June 19, 2016. http://www.theadvocate.com/acadiana/news/article_a0e37c27-ee3c-510b-b0b5-98efd74a00af.html.
- Guizzo, Erico. "Your Next T-Shirt Will Be Made by a Robot." *IEEE Spectrum*, January 5, 2018. <https://spectrum.ieee.org/robotics/industrial-robots/your-next-tshirt-will-be-made-by-a-robot>.
- Hamlin, Keith. "China Snaps Up America's Cheap Robot Labor." *Bloomberg Businessweek*, August 30, 2017. <https://www.bloomberg.com/news/articles/2017-08-30/china-snaps-up-america-s-cheap-robot-labor>.
- Harris, Jon. "Home Run: Majestic's Sale to Fanatics Will Keep MLB Uniform, Fanware Production in Palmer." *The Morning Call*, April 4, 2017. <http://www.mcall.com/business/manufacturing/mc-majestic-mlb-uniform-provider-bought-20170404-story.html>.

Textiles and Apparel: Made In USA . . . Again?

Henderson, Frank. "Automation, Smart Machines and Robotics in Sewn Products Manufacturing." Panel discussion at TexProcess Americas Symposium. May 22, 2018.

Hoover, Keith. "Re-shoring. Is It For Real or Still Just Talk." Presentation at Texprocess Americas Symposium, Atlanta, GA, May 4, 2016.

Industry Week. "Chinese Textile Co. to Build its First US Manufacturing Facility," December 18, 2013. <http://www.industryweek.com/expansion-management/chinese-textile-co-build-its-first-us-manufacturing-facility>.

Innovation in Textiles. "Sensing Fabrics to Prevent Failures in Vital Infrastructure," February 20, 2018. <https://www.innovationintextiles.com/sensing-fabrics-to-prevent-failures-in-vital-infrastructure/>.

International Textile Manufacturers Federation (ITMF). *International Production Cost Comparison 2016*, January 2017.

International Textile Manufacturers Federation (ITMF). *International Textile Machinery Shipment Statistics*, Volume 39/2016, May 2017.

International Textile Manufacturers Federation (ITMF). *International Textile Machinery Shipment Statistics*, Volume 37/2014, May 2015.

Keer America. "Keer Starts Hiring Process for Plant." News release, August 2, 2015. <http://www.keeramerica.com/keer-america-starts-hiring-process-for-plant/>.

Kitz, Karl. "Automation, Smart Machines and Robotics in Sewn Products Manufacturing." Panel discussion at TexProcess Americas Symposium. May 22, 2018.

Lim, Lena. "Fit, Sizing, and Virtual Try-On Technologies." Panel discussion at Texprocess Americas Symposium, May 22, 2018.

Livengood, Chad. "Ex-Donna Karan CEO Aronsson to Move Business to Detroit, Work on Fashion Hub." *Crain's Detroit Business*, September 14, 2017. <http://www.craisdetroit.com/article/20170914/news/639131/ex-donna-karan-ceo-aronsson-to-move-business-to-detroit-work-on-fashion>.

Livingston, Amy. "Products Made in the USA—Reasons to Buy American-Made Goods." *Money Crashers*, "Shopping." <http://www.moneycrashers.com/products-made-usa-american-made/> (accessed February 15, 2018).

Lu, Sheng. "2014 U.S. Fashion Industry Benchmarking Study." United States Fashion Industry Association, June 2014. <https://www.usfashionindustry.com/resources/industry-benchmarking-study>.

Lu, Sheng. "2015 U.S. Fashion Industry Benchmarking Study." United States Fashion Industry Association, June 2015. <https://www.usfashionindustry.com/resources/industry-benchmarking-study>.

Lu, Sheng. "2017 Fashion Industry Benchmarking Study." United States Fashion Industry Association, July 2017. <https://www.usfashionindustry.com/resources/industry-benchmarking-study>.

- Made in America Movement (MAM). "Made in USA and Apparel Reshoring: Expert Round Up." *MAM Blog*, March 16, 2016. <http://www.themadeinamericamovement.com/reshoring/made-usa-apparel-reshoring-expert-round/> (accessed August 15, 2016).
- Marsiglio, Cindi. "Walmart's Investment in U.S. Manufacturing, Explained." *Walmart Today* (blog), June 16, 2016. <https://blog.walmart.com/us-manufacturing/20160616/walmarts-investment-in-us-manufacturing-explained>.
- Martyneec, John. "Re-shoring. Is It For Real or Still Just Talk." Presentation at Texprocess Americas Symposium, Atlanta, GA, May 4, 2016.
- Matsumoto, Evan. "PEDS Legwear: Ribbon Cut for New Facility." *News Herald* (Morganton, NC), March 11, 2015. http://www.morganton.com/news/peds-legwear-hede-ribbon-cut-for-new-facility/article_ad3f7adc-c835-11e4-8448-db16a9755c34.html.
- McCurry, John. "Kentwool's New Performance Apparel Division Expands Its U.S.-Made Product Mix beyond Golf and Socks." *California Apparel News*, August 13, 2015. <https://www.apparelnews.net/news/2015/aug/13/kentwools-new-performance-apparel-division-expands/>.
- McGee, David. "Ex-Ball Plant 'Needle in Haystack' for New Owner American Merchant." *Bristol Herald Courier* (Virginia), December 12, 2017. http://www.heraldcourier.com/news/ex-ball-plant-needle-in-haystack-for-new-owner-american/article_fe48708f-e11b-565a-b39b-9c053cf3a740.html.
- McCrary, Bill. "2018 State of the US Textile Industry Address," NCTO Annual Meeting, March 22, 2018, <http://www.ncto.org/2018-state-of-the-u-s-textile-industry-address/>.
- Milliken Military. "ResQ." <http://millikenmilitary.milliken.com/en-us/products/flame-resistant-materials/Pages/resq.aspx> (accessed May 14, 2018).
- Monsen, Laura. "Cotton Woos Chinese Textile Giant to Arkansas." U.S. Department of State. Bureau of International Information Programs. *Share America*, November 9, 2017. <https://share.america.gov/cotton-woos-chinese-textile-plant-arkansas/>.
- Moser, Harry, and Sandy Montalbano. "Why Made-In-USA Fashion Is Turning Heads." *Industry Week*, January 18, 2018. <http://www.industryweek.com/economy/why-made-usa-fashion-turning-heads>.
- National Cotton Council of America (NCC). "US Cotton Seeks Action on Contract Defaults." News release, September 26, 2012. <http://www.cotton.org/news/releases/2012/contract.cfm>.
- National Council of Textile Organizations (NCTO). "Annual Capital Investment by U.S. Textile Mills Surge." *Textures*, 2017. <http://www.ncto.org/news-events/press-releases/textures-magazine/>.
- National Council of Textile Organizations (NCTO). "By the Numbers: Examining the Resurgence of the Textile Industry." *Textures*, 2016. <http://www.ncto.org/news-events/press-releases/textures-magazine/>.

Textiles and Apparel: Made In USA . . . Again?

National Council of Textile Organizations (NCTO). “NCTO Roundtable: Challenges and Opportunities for the U.S. Textile Industry.” *Textures*, 2018. <http://www.ncto.org/news-events/press-releases/textures-magazine/>.

National Council of Textile Organizations (NCTO). “The Last Stitch.” *Textures*, 2017. http://www.ncto.org/wp-content/uploads/2017/05/TexturesMagazine2017-The_Last_Stitch.pdf.

National Council of Textile Organizations (NCTO). “What If? The Inspiration of U.S. Textile Innovation.” *Textures*, 2018. <http://www.ncto.org/news-events/press-releases/textures-magazine/>.

Raj, Roop. “Coming Soon to Detroit—A Fashion Design Hub: The Garment District.” Fox 2 Detroit, December 12, 2017. <http://www.fox2detroit.com/news/local-news/coming-soon-to-detroit-a-fashion-design-hub-the-garment-district>.

Ramakrishnan, N. “The West-side Story for Cheap Manufacturing.” *Hindu Business Line* (India), October 28, 2014. <https://www.thehindubusinessline.com/companies/The-West-side-story-for-cheap-manufacturing/article20897663.ece>.

Rothfeder, Jeffrey. “Why Donald Trump Is Wrong About Manufacturing Jobs and China.” *New Yorker*, March 14, 2016. <http://www.newyorker.com/business/currency/why-donald-trump-is-wrong-about-manufacturing-jobs-and-china>.

Russell, Ron. “Tomorrow’s Advanced Technology Available Today.” Presentation at Texprocess Americas Symposium, May 23, 2018.

Sandler AG. “Sandler Nonwoven Corporation Formally Inaugurated.” News release, October 11, 2017. <https://www.sandler.de/en/news/newsdetailseite/article/sandler-nonwoven-corporation-feierlich-eingeweiht/>.

Sandler AG. “Sandler to Commence Production in the US.” News release, September 24, 2015. <https://www.sandler.de/en/news/archiv/article/noch-naeher-am-kunden-sandler-ag-nimmt-produktion-in-den-usa-auf/>.

State of Georgia. Georgia Department of Economic Development. “Shrivallabh Pittie Group to Create 250 Jobs in Screven County.” Office of Governor Deal press release, October 15, 2013. <http://www.georgia.org/newsroom/press-releases/shrivallabh-pittie-group-create-250-jobs-screven-county/>.

State of North Carolina. Economic Partnership Development of North Carolina. “Global Joint Venture to Build New Textile Plant in Anson County,” October 25, 2016. <https://edpnc.com/global-joint-venture-build-new-textile-plant-anson-county/>.

State of North Carolina. Economic Partnership Development of North Carolina. “Taiwan-based Sports Apparel Maker Building Plant, Creating 610 Jobs in Rutherford County,” December 6, 2016. <https://edpnc.com/taiwan-based-sports-apparel-maker-building-plant-creating-610-jobs-rutherford-county/>.

- State of North Carolina. Governor Roy Cooper. "Governor Cooper Announces 145 New Jobs in Randolph County with Fibertex Personal Care's First U.S. Manufacturing Facility," August 14, 2017. <https://governor.nc.gov/news/governor-cooper-announces-145-new-jobs-randolph-county-fibertex-personal-care-first-us>.
- State of South Carolina. Department of Commerce. "State Discretionary Incentives: Job Development Credit." <https://www.sccommerce.com/incentives/south-carolina-discretionary-incentives> (accessed March 23, 2018).
- Steele, Devin. "Many Industry Leaders Optimistic about Prospects as 2018 Kicks Off." eTextile Communications, January 17, 2018. <http://www.etextilecommunications.com/011718forecast-2018>.
- Steele, Devin. "Parkdale Celebrates Innovation, \$145 Million Investment in Tenn." eTextile Communications, October 11, 2017. <http://www.etextilecommunications.com/101117parkdalemtn-city-celebration>.
- Talk Business and Politics (Arkansas). "The Supply Side: Peds New \$16 Million Plant Part of Wal-Mart Onshoring Effort," March 12, 2015. <https://talkbusiness.net/2015/03/the-supply-side-peds-new-16-million-plant-part-of-wal-mart-onshoring-effort/>.
- Textile World*. "DNA Textile Group Announces the Closing of Its Denim Business Unit," November 28, 2017. <http://www.textileworld.com/textile-world/knitting-apparel/2017/11/dna-textile-group-announces-the-closing-of-their-denim-business-unit/>.
- Textile World*. "Gildan Set to Begin Construction on Mocksville Spinning Plant," May 27, 2014. <http://www.textileworld.com/textile-world/knitting-apparel/2014/05/gildan-set-to-begin-construction-on-mocksville-spinning-plant/>.
- Textile World*. "The Cotton the World Trusts," November 28, 2017. <http://www.textileworld.com/textile-world/features/2017/11/the-cotton-the-world-trusts/>.
- Textile World*. "Uniquetex to Bring 150 Jobs to Cleveland County," March 10, 2016. <http://www.textileworld.com/textile-world/2016/03/uniquetex-to-bring-150-jobs-to-cleveland-county-non-woven-textile-manufacturer-selects-nc-for-new-u-s-operations/>.
- Good Trade, The. "15 American-Made Clothing Brands You Can Wear With Pride." <http://www.thegoodtrade.com/features/american-made-clothing-brands> (accessed March 14, 2018).
- Trentmann, Nina. "For More Chinese Firms, It Pays to Make It in the U.S.A." *Wall Street Journal*, February 26, 2017. <https://www.wsj.com/articles/for-more-chinese-firms-it-pays-to-make-it-in-the-u-s-a-1488127931>.
- U.S. Department of Agriculture (USDA). Foreign Agriculture Service (FAS). Production, Supply and Distribution (PSD) Online database. <http://apps.fas.usda.gov/psdonline/> (accessed various dates).

Textiles and Apparel: Made In USA . . . Again?

U.S. Census Bureau. "Capital Expenditures for Structures and Equipment for Companies with Employees by Industry." *Annual Capital Expenditures Survey, 2008–2016*.

<http://www.census.gov/programs-surveys/aces/data/tables.html> (accessed May 25, 2017).

U.S. Census Bureau. "Manufacturer's Shipments, Inventories, and Orders."

<https://www.census.gov/econ/currentdata/dbsearch?program=M3&startYear=1992&endYear=2018&categories=MTM&dataType=VS&geoLevel=US&adjusted=1¬Adjusted=0&errorData=0> (accessed various dates).

U.S. Department of Commerce (USDOC). Office of Textiles and Apparel (OTEXA). "Major Shippers Report: U.S. General Imports by Country," February 6, 2018.

<http://otexa.trade.gov/msrcty/a5700.htm> (accessed February 14, 2017).

U.S. Department of Defense (USDOD). "DoD Announces Award of New Revolutionary Fibers and Textiles Manufacturing Innovation Hub Lead in Cambridge, Massachusetts." News release NR-115-16, April 1, 2016. <https://www.defense.gov/News/News-Releases/News-Release-View/Article/710462/dod-announces-award-of-new-revolutionary-fibers-and-textiles-manufacturing-inno/>.

U.S. Department of Labor (USDOL). Bureau of Labor Statistics (BLS). "Employment, Hours, and Earnings."

<https://www.bls.gov/data/#employment> (accessed February 21, 2018).

U.S. Department of Labor (USDOL). Bureau of Labor Statistics (BLS). "Annual Index of Labor Productivity." <http://www.bls.gov/data/#productivity> (accessed February 21, 2018).

U.S. Energy Information Administration (USEIA). "Table 2.10: Average Price of Electricity to Ultimate Customers by End-use Sector, by State, 2016 and 2015." *Electric Power Annual, 2016*.

https://www.eia.gov/electricity/annual/html/epa_02_10.html.

U.S. International Trade Commission (USITC) Interactive Tariff and Trade DataWeb (DataWeb)/U.S. Department of Commerce (USDOC). <https://dataweb.usitc.gov/> (accessed various dates).

Wang, Janice. "Small Runs, Big Gains: Reshoring U.S. Apparel Manufacturing." *Apparel*, January 13, 2015.

<http://apparel.edgl.com/news/Small-Runs,-Big-Gains---Reshoring-U-S--Apparel-Manufacturing97649>.

Wingfield, Nick. "Amid Brick-and-Mortar Travails, a Tipping Point for Amazon in Apparel." *New York Times*, April 30, 2017. <https://www.nytimes.com/2017/04/30/technology/tipping-point-for-amazon-in-apparel.html>.

Wolfson, Sarah. "Year of Ours: Athleisure as the New American Sportswear." *Apparel News*, October 13, 2016. <https://www.apparelnews.net/news/2016/oct/13/year-ours-athleisure-new-american-sportswear/>.

Wong, Steve. "Mogul Holds Grand Opening for Spunlace Facility in S.C." eTextile Communications, March 29, 2017. <http://www.etextilecommunications.com/032917mogul-grand-opening>.

Yoon, Eunice. "'Made in China' Could Soon Be Made in the US." CNBC, May 30, 2017.

<https://www.cnn.com/2017/05/30/made-in-china-could-soon-be-made-in-the-us.html>.

Annex A. Industry Data

Table A1. Total capital expenditures for structures and equipment, 2013–16 (millions of dollars)

	2013	2014	2015	2016
Textile Mills and Textile Product Mills	1,558.0	1,798.0	1,678.0	2,123.0
Apparel Manufacturing	287.0	248.0	282.0	301.0

Source: U.S. Census Bureau, Annual Capital Expenditures Survey, "Capital Expenditures for Structures and Equipment for Companies with Employees by Industry," 2013–16.

Note: Includes data for NAICS 313 and 314 (Textile Mills and Textile Product Mills) and NAICS 314 (Apparel).

Table A2. Textiles: U.S. imports for consumption, domestic exports, and domestic shipments, 2012–16 (billions of dollars)

	2013	2014	2015	2016	2017
Imports	10.5	10.9	11.0	10.4	10.4
Exports	11.8	12.1	11.4	10.5	10.6
Shipments	41.0	40.7	39.0	37.9	39.6

Source: USITC DataWeb/USDOC (accessed February 20, 2018); U.S. Census Bureau, Manufacturers' Shipments, Inventories, and Orders, (accessed February 16, 2018); USDOC, U.S. Census Bureau, Annual Survey of Manufacturers (ASM). Data for NAICS 32522 estimated by USITC for 2017.

Note: Includes data for NAICS 313 (Textile Mills) and NAICS 32522 (Artificial and Synthetic Fibers and Filaments).

Table A3. Apparel: U.S. imports for consumption, domestic exports, and domestic shipments, 2012–16 (billions of dollars)

	2013	2014	2015	2016	2017
Imports	83.8	86.3	89.3	84.3	84.2
Exports	3.2	3.2	3.1	2.9	2.8
Shipments	12.1	11.5	11.5	12.0	12.5

USITC DataWeb/USDOC (accessed February 20, 2018); U.S. Census Bureau, Manufacturers' Shipments, Inventories and Orders (accessed February 16, 2018).

Note: Includes data for NAICS 314 (Apparel).

Annex B. Examples of Investment in the Production of Textiles and Textile Articles in the United States

Table B1. Examples of Investment in the Production of Textiles and Textile Articles in the United States, 2014–17

Firm	Product	Investment (millions \$)	New Jobs	State	Country
2017					
Hamrick Mills, Inc.	Woven fabrics	6	*	SC	United States
Parkdale Inc.	Cotton yarn	145	*	TN	United States
WTP Corp.	Nonwovens	6	40	KY	United States
Thrace-LINQ (Thrace Group)	Nonwovens	9	*	SC	Greece
Fiber Industries LLC	Polyester stable fiber	30	135	SC	United States
Fibertex Personal Care A/S	Nonwovens	60	145	NC	Denmark
HPFabrics, Inc.	Upholstery fabric	1	260	NC	Turkey
Bouckaert Industrial Textiles	Nonwovens	3	15	RI	United States
USFibers	Recycled polyester fiber	*	20	SC	United States
Oxco, Inc.	Nonwovens	13	130	SC	United States
Parkdale Inc.	Cotton yarn	145	80	TN	United States
Keer America (Keer Group)	Cotton yarn		300	SC	China
Mogul Co., Ltd.	Nonwovens	18	40	SC	Turkey
Frontier Spinning Mills, Inc.	Cotton and cotton-blend yarns	6	18	AL	United States
INVISTA	Nylon fiber	65	*	SC	United States
Trelleborg AB	Coated fabrics	11	76	NC	Sweden
Shandong Ruyi Technology Group, Ltd.	Cotton yarn	410	400 (initial) 800 (potential)	AR	China
Shaw Industries Group, Inc.	Carpet yarn	42	75	TN	United States
2016					
Norafin Industries GmbH	Fire- and heat- retardant fabrics	18	46	NC	Germany
Lenzing AG	Artificial fiber (Lyocell)	293	163	AL	Austria
King Charles industries, Ltd.	Knit fabrics	13	100	NC	JV (United States/Taiwan)
Labon Technical Fiber	Technical fibers	3	23	SC	China
Fitesa Simpsonville, Inc.	Nonwovens	52	38	SC	Brazil
Tenowo Nonwovens (part of Hoftex Group)	Multiknit technology (for car seating)	13	*	NC	Germany
Carolina Nonwovens, LLC (subsidiary of National Spinning Co.)	Nonwovens	*	35	NC	United States
Carver Non-Woven Technologies LLC (subsidiary of R3 Composites Inc.)	Nonwovens	13	*	IN	United States

Firm	Product	Investment (millions \$)	New Jobs	State	Country
Custom Synthetic Fibers LLC	Recycled polyester staple fibers	6	50	AL	United States
Meridian Specialty Yarn Group Inc. (a division of Meridian Industries, Inc.)	Yarn dyeing	8	25	NC	United States
Uniquetex LLC	Nonwovens	32	150	NC	China
Everest Textile Co. Ltd. (Everest Textile USA)	Performance outerwear woven fabrics	19	610	NC	Taiwan
2015					
Suzhou Glacier Import & Export Co. Ltd.	Fabric for automobile interiors	24	109	SC	China
Huesker Inc. (subsidiary of HUESKER Synthetic GmbH)	Geosynthetics	9	20	NC	Germany
Auriga Polymers, Inc. (subsidiary of Indorama Ventures)	Polyester staple fiber	35	*	SC	Thailand
Aurora Specialty Textiles Group, Inc. (a division of Meridian Industries, Inc.)	Finishing, coating, and dyeing	*	5	IL	United States
Avgol Ltd.	Nonwovens	40	50	NC	Israel
Aquafil USA (Gruppo Bonazzi)	Carpet fibers	*		GA	Italy
Shaw Industries Group, Inc.	Carpet fibers	45	50	SC	United States
Suominen Corporation	Nonwovens	55	25	SC	Finland
DAK Americas (subsidiary of Alpek S.A. de C.V)	Polyester staple fiber	*	86	MS	Mexico
Shalag Nonwovens	Nonwovens	16	40	NC	Israel
National Spinning Co., Inc.	Yarn, nonwovens, consumer craft items	2	50	NC	United States
Sandler Nonwoven Corp. (Sandler AG)	Nonwovens	30	140	GA	Germany
AR Textiles (Sunflag)	Cotton yarn	12	38	NC	India
International Textile Group, Inc. (ITG)	Textile	2	10	NC	United States
2014					
DAK Americas (subsidiary of Alpek S.A. de C.V)	Polyester staple fiber	24	58	SC	Mexico
PolyTech Fibers, LLC	Recycled polyester staple fibers	12	114	GA	United States
Keer Group	Cotton yarn	218	500	SC	China
Shri Govindaraja Textiles Pvt Ltd. (SGT)	Cotton yarn	40	84	NC	India
Gildan Activewear, Inc.	Cotton yarn	200	500	NC	Canada
Glen Raven, Inc.	Awning, marine, and upholstery fabrics	14	10	SC	United States
Highland Industries, Inc.	Tubular and flat braids, woven tapes and fabric of carbon, glass, aramid, polyester and other polymeric yarns	8	29	NC	United States

Textiles and Apparel: Made In USA . . . Again?

Firm	Product	Investment (millions \$)	New Jobs	State	Country
Mattex Group	Carpet backing	60	200	GA	Saudi Arabia
Monterey Mills (Glenoit)	Sliver knit fabric (for paint rolls)	0	*	NC	United States
Martex Fiber Southern Corp.	Reclaimed fibers	*	*	SC	United States
Unifi, Inc.	Recycled polyester fiber	5	10	NC	United States
Polymer Group, Inc. (PGI)	Nonwovens	8	20	VA	United States
CT Nassau	Mattress tape and mattress ticking fabric	4	*	NC	United States
Culp, Inc.	Mattress fabric	10	*		United States
Auburn Manufacturing, Inc.	Textile products for extreme temperature industrial applications	*	1.4	ME	United States

Sources: Compiled by Commission staff from public sources, including company websites, news releases, and public press articles.

Note: Information in this table is based on publicly available information that may not reflect actual circumstances. The table is not inclusive of all investments made in the textiles and apparel sector, particularly those investments that were not publicly announced.

* Not available.

