EXPLORE THE EXPORT PERFORMANCE OF TEXTILES AND APPAREL "MADE IN THE USA": A FIRM LEVEL ANALYSIS

by

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ABSTRACT

As the marketplace for textiles and apparel (T&A) becomes ever more global, U.S. T&A firms are increasingly engaged in export. Statistics show that the value of U.S. T&A exports totaled $23.5 billion in 2018, up nearly 20% from ten years ago. This study explores the export behaviors of U.S. T&A manufacturers and related affecting factors at a micro firm-level. Based on a logistic regression analysis of 122 U.S. T&A manufacturers collected from the Office of Textiles and Apparel (OTEXA) "Made in the USA" database, the study finds that the product category and the size of the firm were both statistically significant factors that affected a U.S. T&A manufacturer's likelihood of engaging in exports. The result of contingency analysis also shows that Western Hemisphere was a preferred export destination for U.S. T&A manufacturers than other regions in the world. The findings of the study significantly enhanced our understanding of the export behaviors of U.S. T&A manufacturers and the state of the U.S. T&A industry in today's global economy.

Keywords: Made in the USA; textile and apparel; export behaviors; Western Hemisphere

Chapter 1

INTRODUCTION

1.1 Background

In recent years, there has been growing attention to textile and apparel (T&A)[1] made in the United States (refers to as "Made in the USA" T&A in this paper), both nationally and internationally (Freund, Roop, & Colby-Oizumi, 2018). Especially with the changing trade environment, including the higher cost of importing, both the United States (U.S.) and international producers alike have found more incentives for making T&A directly in the U.S. (Levinson, 2018). U.S. T&A manufacturers also benefit from customers' increasing demand for speed to market, thanks to its advanced infrastructure and availability of capital investment (Tate, Ellram, Schoenherr & Petersen, 2014). For example, as shown in Table 1.1., the value of U.S. textile manufacturing totaled $18.9 billion in 2018, a record high since 2016 (Bureau of Economic Analysis (BEA), 2019).

[1] In this study, textiles and apparel are defined as the sectors covered by the North American Industry Classification System (NAICS) Code 313, 314 and 315.

Table 1.1 Value of U.S. Textile and Apparel Output

Unit: $billion

Year/ Value of output	2005	2010	2015	2016	2017	2018
Textiles	$20.1	$15.5	$17.9	$18.4	$18.3	$18.9
Apparel	$13.8	$10.4	$9.7	$9.6	$9.3	$9.2

Data source: BEA (2019); Note: "Textiles" include the North American Industry Classification System (NAICS) code 313 and 314; "Apparel" includes the NAICS code 315.

On the demand side, as the T&A market is turning ever more global and the branding of "Made in the USA" is becoming more appealing to consumers around the world, U.S. T&A manufacturers are increasingly engaged in exporting (Freund et al., 2018; Markowitz, 2012; United States International Trade Commission (USITC), 2019). Statistics in Table 1.2 show that the value of U.S. T&A exports totaled $23.5 billion in 2018, a new high since 2016, and up nearly 20% from ten years ago (OTEXA, 2019a). The U.S. T&A exports also indicate unique patterns. Notably, as much as 70% of U.S. exports currently go to the Western Hemisphere, which includes several important U.S. trading partners, such as members of the North American Free Trade Agreement (NAFTA) and the Dominican Republic-Central America Free Trade Agreement (CAFTA-DR) (Jackson, 2016).

Table 1.2 Value of U.S. Textile and Apparel Exports

Unit: $billion

Year	2005	2010	2015	2016	2017	2018
World	$19.3	$19.6	$23.6	$22.1	$22.7	$23.5
Western Hemisphere	$14.2	$12.9	$16.2	$15.1	$15.7	$16.2
Rest of World	$5.1	$6.7	$7.4	$7.0	$7.0	$7.3

Data source: OTEXA (2019a)

There has been an abundance of studies examining the state and competitiveness of T&A "Made in the USA", such as Freund et al. (2018), Harris (2018), and Saki, Moore, Kandilov, Rothenberg, and Godfrey (2018). However, most of these studies treat the T&A industry as a whole without taking a detailed look at the business activities and economic behaviors of T&A manufacturers. On the other hand, some other studies looked at the business strategies and financial performance of U.S. T&A firms but mostly focused on fashion brands and apparel retailers' importing or sourcing behaviors, such as Hodges and Link (2018) and Lu (2018). Instead, the academic literature addressing the export of T&A "Made in the USA", especially at that micro firm-level, remains limited.

1.2 Research Question and Significance

This study intends to specifically explore the export behavior of U.S. textile and apparel manufacturers. This is an important study because:

First, the findings of the study will fulfill a critical research gap and help enhance our understanding of the export behaviors of U.S. T&A manufacturers. Second, the findings of the study will help us gain more insights into the current state of the U.S. T&A manufacturing that operates in today's world economy. Third, the results of this study will also provide valuable inputs for U.S. T&A manufacturers interested in exploring the international market (Dicken, 2015). Additionally, U.S. trade policymakers may also find the findings of the study relevant to their policymaking in support of the promotion of U.S. T&A products in the world marketplace.

The rest of the paper is composed of four parts. The second part provides an overview of related theories and literature that explain the export behaviors of U.S. T&A manufacturers. The third part is a detailed description of the research methods and data source of this study. The fourth section presents and discusses the empirical results. The last part includes key findings and the discussion of future research agendas.

1.3 Key Terms

The following are some important terms used in this study:

- Textile Industry and Textile Firm/Manufacturer: The textile industry refers to the North American Industry Classification System (NAICS) codes 313 and 314. Related, textile firms/manufacturers refer to those companies that

make fibers, yarns, fabrics, and finished textile products (NAICS, 2017; U.S. Census Bureau, 2017).

- Apparel Industry/Apparel Firm/Manufacturer: The apparel industry refers to NAICS code 315. Related, apparel firms/Manufacturers refer to those companies involved in the business of cutting and sewing of a garment and apparel accessories. (NAICS, 2017; U.S. Census Bureau, 2017)
- Free Trade Agreements (FTAs): Free trade agreements refer to negotiated international treaties between nations to promote freer movements of goods and capital across borders of their members (International Trade Administration, 2019)
- Made in the USA: This term refers to products that are produced in the United States. These products are typically labeled as “Made in the USA” or alike.

Chapter 2

REVIEW OF LITERATURE

This chapter will review pertinent international trade theories, the current studies exploring the state of the U.S. T&A industry and its exports, and factors that affect the export behaviors of U.S. T&A manufacturers from a theoretical perspective.

2.1 Related Theories

Regarding the state of U.S. T&A manufacturing and T&A manufacturers' export behaviors, several classic trade and firm theories provide valuable insights from a theoretical perspective.

2.1.1 Comparative Advantage Trade Theory

The comparative advantage theory, proposed by David Ricardo in 1816, considers the ability that an economy possesses to produce goods and services at either a relatively lower cost or relatively higher productivity than its trading partners (Kenton, 2018). This theory contends that if countries specialize in making and exporting products based on their respective comparative advantage shaped by the abundance of corresponding production factors (such as labor, capital, and land), and allow free trade to occur, all countries will be better off than the alternative (Ruffin, 2002).

The comparative advantage theory suggests that the export intention and performance of U.S. manufacturers should be different across sectors depending on

their relative capital and technology intensity. Notably, as one of the most advanced economies in the world, the United States should enjoy a comparative advantage above most countries in making and exporting capital-intensive products but has a disadvantage in producing labor-intensive products (Howell, 2005; Kruger, 2000).

More specifically, within the T&A sector, textile manufacturing is capital-intensive, which requires using highly sophisticated machines and automated technologies today (Dickerson, 1999). Understandably, as a developed economy abundant with these production endowments, the United States enjoys a comparative advantage in manufacturing and exporting textile products, such as yarns, fabrics, and technical textiles. In comparison, apparel manufacturing, particularly the sewing and cutting process, remains highly labor-intensive (Dickerson, 1999). Not surprisingly, developing countries, where cheap labor is relatively abundant, enjoys a comparative advantage in making and exporting apparel products rather than the United States (World Trade Organization (WTO), 2019).

Echoing the conclusions of the comparative advantage theory, as shown in Table 1.1, the United States produced almost twice as many textiles as apparel in 2018 (BEA, 2019). Likewise, a 2018 study conducted by the U.S. International Trade Commission (USITC) shows that textile manufacturing in the United States was revitalizing and recovering through a reshoring movement between 2008 and 2016. In comparison, apparel "Made in the USA" showed a limited return over the same period. For example, the total employment in U.S. apparel manufacturing declined steadily from 145,000 workers in 2013 to 120,000 workers in 2017, corresponding to

the shrinking volume of output over that period (Freund et al., 2018). Lu (2018) also found that the removal of trade barriers among the United States, Mexico and Canada after the implementation of the North American Free Trade Agreement (NAFTA) in 1994 had resulted in substantial growth of U.S. textile exports to Mexico and U.S. apparel imports from Mexico in the past decades. These trade patterns confirm that relatively textile is an export-oriented sector, whereas apparel is an import-competing sector in the United States, given the particular development stage of the U.S. economy.

2.1.2 Resources-based View Theory

The resource-based view theory (RBV) aims to answer why some firms outperform others financially or are more likely to be successful in certain business activities (Barney & Arikan, 2001). Resources that are rare, valuable, and difficult to imitate, allow firms to adopt business strength in the market competition (Sirmon & Hitt, 2003).

According to the RBV theory, larger companies theoretically have a greater ability to explore international markets and engagement in exports (Lu, 2018b). Notably, compared with small and medium-sized firms that typically face financial and staff restraints, firms larger in size, in general, are more likely to leverage its unique resources successfully and navigate the complicated legal, economic and business environments of foreign markets (Baldauf, Cravens & Wagner, 2000). Aaby and Slater (1989) also contended that the size of the firm is a crucial determinant in its

export performance due to the impact of size on that firm's competencies, such as financial performance. Some recent survey studies further suggest that U.S. T&A firms larger in size are more likely to have regional headquarters outside the United States and sell products in these international markets (Lu, 2018a).

2.1.3 Porter's Five Forces Model

Michael Porter's "five forces model" provides additional valuable insights into the competitiveness and export behavior of U.S. T&A manufacturers. Specifically, the "five forces model" theory argues that the competitiveness of a specific industry in a particular country is shaped by five major factors, namely the threat of substitute products or services, bargaining power of suppliers, threat of new entrants, bargaining power of buyers and how the buyers impact rivalry among existing competitors (Porter, 1998).

Table 2.1 World Top Textile and Apparel Exporters in 2018 (by value)

Unit: $billion

	Textiles		Apparel	
Rank	Exporters	Value of exports	Exporters	Value of exports
1	China	$118.5	China	$157.8
2	EU (28)	$74.0	EU (28)	$143.5
3	India	$18.1	Bangladesh	$32.5

4	**United States**	**$13.8**	Vietnam	$31.5
5	Turkey	$11.9	India	$16.6
6	South Korea	$9.8	Turkey	$15.7
7	Taiwan	$9.2	Hong Kong	$13.9
8	Vietnam	$8.3	Indonesia	$8.9
9	Pakistan	$8.0	Cambodia	$8.2
10			**United**	
	Hong Kong	$7.4	**States**	**$6.0**

Data source: WTO (2019)

According to Porter's "five forces model," the United States is at better position manufacturing and exporting textile products than apparel. On the one hand, because of the demanding technology, capital and knowledge requirements for making most textile products, U.S. textile manufacturers, in general, are protected by relatively high entry barriers to the industry with few concerns about potential competitors and substitution of their products, in both the U.S. and international markets (National Council of Textile Organizations (NCTO), 2018). As shown in Table 2.1, the United States remained the world's fourth-largest textile exporter in 2018, a position it has kept for decades (WTO, 2019). The competitiveness of U.S. production and exports in higher-tech and capital intensive categories, such as technical textiles, demonstrated an even more stable competitive advantage on the world stage (Chi, Kilduff & Dyer, 2005). In comparison, since apparel manufacturing

requires minimum technology and capital inputs, the low entry-barriers imply a constant threat of new entrants, limited bargaining power of apparel manufacturers over buyers (i.e., importers, brands, and retailers) and intensive competition in the global marketplace (Dickerson, 1999; Krueger, 1996). Although the United States used to be a leading apparel producer and exporter, developing countries such as China, Vietnam, and Bangladesh had quickly caught up and played a dominant role in the world apparel export market as of 2018 (WTO, 2019).

On the other hand, as implied by Porter's "five forces model," building an efficient and complete supply chain system is crucial to the sustainable success of the U.S. T&A industry. While U.S. textile manufacturers can receive constant support from other supporting industries locally such as chemistry, agriculture, energy, and machinery, U.S. apparel manufacturers are struggling with the lack of a supporting industry network, from the supply of fabrics, accessories to research and development (May-Plumlee & Little, 1998).

2.2 Factors Support Textile and Apparel "Made in the USA" and Their Exports

A review of existing literature shows several factors support the production and export of "Made in the USA" T&A products in today's world economy.

2.2.1 Consumer Preferences

Textiles and apparel is a buyer-driven industry, as consumers drive fashion trends and manufacturing through their purchasing power (Gereffi, 1999). Notably,

consumers both in the United States and in many other parts of the world are demonstrating growing enthusiasm about T&A products labeled as “Made in the USA”, which are regarded as being of high quality, technology-driven, sophisticated and involving less environmental or social responsibility concerns (Freund et al., 2018; Levinson, 2018). Some empirical studies further show that consumers both in the United States and internationally are willing to pay a premium price for “Made in the USA” T&A products. For example, Hamzaoui Essoussi and Linton (2010); Shen, Wang, Lo, and Shum (2012); and Hustvedt and Bernard (2008) show that consumers are willing to pay around 10% more for U.S.- made clothing produced from recycled plastics, along with various foods and environmentally friendly materials (Anstine, 2000; Lim, Hu, Maynard, & Goddard, 2013; Vlosky, Ozanne, & Fontenot, 1999). Additionally, Swanson and Horridge (2002) found tourism positively impacts the growth of “Made in the USA” T&A products due to the industry’s natural support of local economies. Asian tourists, for example, were found willing to pay up to 30% extra for fashion products and brands labeled “Made in the USA” or alike while on vacation in the United States (Jin, Moscardo, & Murphy, 2020).

2.2.2 Advantages in Speed to Market

Speed to market typically refers to the amount of time it takes for a product to go from being a concept to being on the retailer’s selling floor (Sorescu & Spanjol, 2008). With consumers’ increasing demand for faster availability of fashion apparel products, speed to market is growing in importance to T&A manufacturers’ business

success (Oh & Kim, 2007). Innovation in technology, nearshoring, and supply chain integration and acceleration enhance the ability for speed to market with "Made in the USA" T&A (Oh & Kim, 2007). Studies show that countries in the Western Hemisphere, such as Canada, particularly prefer "Made in the USA" T&A because of the shorter delivery time and quicker response to changing market trends than imports from Asia (Leamer & Levinsohn, 1995). For example, whereas it takes approximately 25-30 days on average to ship T&A made in Asia to Canada and Mexico by sea, the shipping time between the United States and these two countries takes no more than two days (Andersson, Berg, Hedrich, & Magnus, 2018).

The benefits of faster speed to market are reflected in T&A companies' financial performance as well. For example, Yu and Kim (2018) further observe that Made in the USA products, specifically jeans, are more efficient from a financial perspective. When accounting for factors such as profitability, inventory and costs, lost sales, and many hidden costs Made in the USA apparel possess a unique benefit of speed to market in its ability to better react to changes in these factors, especially for fashion and seasonal apparel.

2.2.3 Lower Compliance Risk

Since the Rana Plaza tragedy, which killed more than 1,000 garment workers in a Bangladeshi garment factory in 2013, fashion brands and retailers around the world started to pay more attention to the compliance risk involved in T&A production and trade (Curran, 2016). While sourcing T&A from low-wage developing countries often

can offer a more competitive price, these countries also involve relatively higher compliance risks, ranging from factory safety to various labor practices (Barua & Mahbub, 2018; Lu, 2018b). For example, Nike, one of the largest U.S. apparel firms, moved its production offshore in the 1970s but since had consistently found social responsibility problems in its overseas factories, such as using child labor and mistreatment of workers (Stabile, 2000). Other well-known western fashion brands, including Walmart, Moncler, Zara, and H&M, face similar pressures to fix the constantly -reported social responsibility problems in their offshore production facilities, despite the tremendous efforts that have been made (Turker & Altuntas, 2014).

In comparison, thanks to the country of origin image effect, stricter regulations, and more effective law enforcement, U.S. T&A manufacturers are regarded as more " environmentally and socially responsible" (Boyd, Spekman, Kamauff, & Werhane, 2007). For example, based on a survey of nearly 30 executives from leading U.S. fashion companies in 2018, Lu (2018b) found that respondents saw apparel "Made in the USA" involve minimal risks in complying with social and environmental regulations enacted both in the U.S. and internationally. Many U.S. T&A manufacturers today also emphasize sustainability as a core value for the promotion of their brand image (Desai, Nassar, & Chertow, 2012). For example, many companies such as the VF conglomerate provide consumers with a sustainability and social responsibility report and have made it a core principle of their business (VF Corporation, n.d.). VF has found that not only do sustainability initiatives such as

implementing a circular business model create more business efficiency and help the environment, it also increases consumer preference of VF's products.

Additionally, the fact that labor-intensive T&A manufacturing processes have been substantially moved overseas or automated makes it a less daunting task for U.S. T&A manufacturers to address the same type of social responsibility problems facing their counterparts in the developing world (Dicken, 2015)

2.2.4 Trade Policy Support

Trade policies also have played a unique and important role in supporting the making and exporting of U.S. T&A products. Notably, most free trade agreements (FTAs) enacted in the United States adopted the so-called "yarn-forward" rules of origin for apparel products, which strictly require that garments qualified for the preferential duty treatment provided by the agreement have to use yarns and fabrics produced in the respective FTA region (Elliott, 2016). Some studies find that the "yarn-forward" rule in NAFTA and CAFTA-DR, in particular, have created a de facto captured export market for "Made in the USA" textiles in Mexico and countries in South and Central America as these developing countries have limited capacity in making capital-intensive yarns and fabrics (Lim, Suh, & Gaskill, 2009; Lu, 2018b; Oh & Kim, 2007). According to a 2016 study by the U.S. International Trade Commission, the U.S. saw a 3.6% increase in T&A exports attributed to the economic effects of "yarn-forward" rules in bilateral and regional FTAs in 2012 (USITC, 2016).

2.3 Challenges Facing Textile and Apparel "Made in the USA" And Their Exports

Despite the positive factors, U.S. T&A manufacturers still face several major challenges in exporting, ranging from cost disadvantage, regional trade patterns, and high trade barriers in foreign markets.

2.3.1 Cost Disadvantage

As the United States is a high-wage level developed economy, T&A "Made in the USA" are not typically regarded as price competitive (Yu & Kim, 2018). Labor costs in the United States are considerably higher than most countries in the world, causing a disadvantage in labor-intensive apparel manufacturing, in particular (Freund et al., 2018). Harris (2018) further observed that U.S. manufacturers, including those in the apparel sector, have substantially moved production offshore over the past decades due to the cost considerations, even if relocation sometimes means a sacrifice of product quality.

Even for the relatively more capital and technology-intensive textile manufacturing, "Made in the USA" also faces disadvantages in the competition with T&A made elsewhere in the world, such as Asia. Several studies found that stricter environmental regulations are among the various factors that result in a cost disadvantage of U.S. textile manufacturing in the world marketplace (Freund et al. 2018; NCTO, 2019; WTO, 2019). For example, many key inputs such as specific dyes, textile machinery, and chemicals must be imported due to environmental

regulation (NCTO, 2019). As a result, although the value of U.S. textile exports to the world increased by 10.6% from 2008 to 2018, its market share nevertheless dropped from 5.0% to only 4.4% during the period (WTO, 2019). The lost U.S. market shares went to more price-competitive exporters in Asia, such as China, India, and Vietnam.

2.3.2 Regional Trade Patterns

Regional trade pattern refers to a popular phenomenon that a country intends to import textile and apparel products from its neighboring countries rather than those that are geographically far away (Islam, Bloch, & Salim, 2014). Both economic factors, such as the tiered economic development stage among countries in the same region, and policy factors, such as free trade agreements, contribute to the formation of regional trade patterns (Lu, 2015). In general, three primary textile and apparel regional supply chains are operating in the world today.

The first one is the Asia regional T&A supply chain. As shown in Table 2.2 and Table 2.3, in 2017, close to 80% of Asian countries' textile imports came from other Asian countries, up from around 70% in the 2000s (UNComtrade, 2019). Specifically, within this regional supply chain, more economically advanced Asian countries (such as Japan, South Korea, and China) supply textile raw material to the less economically developed countries in the region (such as Bangladesh, Cambodia, and Vietnam). Based on relatively lower wages, the less developed countries typically undertake the most labor-intensive processes of apparel manufacturing and then export finished apparel to major consumer markets around the world. Other than the

economic factors, various free trade agreements implemented in the region, such as the ASEAN-China Free Trade Agreement and the ASEAN-Japan Comprehensive Economic Partnership Agreement, had also strongly facilitated the formation of the regional supply chain through the significant elimination of tariff and non-tariff barriers (Goto, 2017; Lu, 2019).

The second is the EU regional T&A supply chain. As shown in Table 2.2 and Table 2.3, in 2017, 55% of EU countries' textile imports and 47% of EU countries' apparel imports came from within the EU region. Over the same period, 68% of EU countries' textile exports and 75% of their apparel exports also went to other EU countries. Specifically, within this regional supply chain, developed countries in Southern and Western Europe, such as Italy, France, and Germany, serve as the primary textile suppliers. Regarding apparel manufacturing in the EU, products for the mass markets are typically produced by developing countries in Southern and Eastern Europe such as Poland and Romania, whereas high-end luxury products are mostly produced by Southern and Western European countries such as Italy and France. Furthermore, a high portion of finished apparel is shipped to developed EU members such as the UK, Germany, France, and Italy for consumption (Lu, 2018d; Textile Outlook International, 2018). In addition, thanks to the EU single market, T&A trade between EU members is subject to a zero-tariff rate and minimal non-tariff barriers (Baldwin & Wyplosz, 2006).

The third one is the Western Hemisphere T&A regional supply chain. As shown in Table 2.2 and Table 2.3, in 2017, respectively as much as 80% of textiles

and 89% of apparel exports from countries in the Western Hemisphere went to the same region. Specifically, within this regional supply chain, the United States serves as the leading textile supplier, whereas developing countries in North, Central and South America (such as Mexico and countries in the Caribbean region) assemble imported textiles from the United States or elsewhere into apparel (Lu, 2018c). The majority of clothing produced in the area is eventually exported to the United States or Canada for consumption. Like the case in Asia and EU, NAFTA and CAFTA-DR, the two primary free trade agreements in the area, had played a critical role in shaping and supporting the operation of the Western-Hemisphere T&A supply chain.

Table 2.2 Regional Trade Flows for Textiles (by value)

Unit: $billion

Trade flows	**2000**	**2005**	**2010**	**2014**	**2015**	**2016**	**2017**
Asia imports from Asia	69.6	73.2	77.3	78.9	80.7	78.2	79.1
Asia exports to Asia	61.9	55.1	50.7	53.8	52.5	55.0	55.3
EU imports from EU	68.3	66.4	57.5	56.2	54.8	54.5	55.0
EU exports to EU	71.5	70.2	68.5	67.9	68.0	68.2	68.5
WH imports from WH	46.6	38.6	30.2	27.5	26.2	26.0	24.8
WH exports to WH	79.6	82.2	79.6	80.1	80.5	79.9	79.8
EU imports from Asia	16.1	19.1	27.3	28.2	29.3	29.7	29.5
WH imports from Asia	31.2	42.6	54.5	57.9	59.4	59.4	60.4

Data source: UNComtrade (2019). “WH” refers to Western Hemisphere, which includes North, South, and Central America.

Table 2.3 Regional Trade Flows for Apparel (by value)

Unit: $billion

Trade flows	**2000**	**2005**	**2010**	**2014**	**2015**	**2016**	**2017**
Asia imports from Asia	90.7	90.9	89.4	85.7	86.4	85.1	85.6
Asia exports to Asia	32.3	26.8	22.6	27.0	24.3	26.0	25.9
EU imports from EU	49.9	47.6	43.4	44.9	44.1	46.2	47.2
EU exports to EU	76.3	77.0	76.5	73.6	73.8	75.1	75.1
WH imports from WH	35.8	25.8	16.7	15.8	15.3	15.8	15.7
WH exports to WH	93.6	92.3	87.3	86.2	87.2	85.6	88.5
EU imports from Asia	36.2	41.4	52.3	51.9	53.4	53.0	52.6
WH imports from Asia	54.4	66.8	84.1	86.5	85.9	85.0	84.3

Data source: UNComtrade (2019). "WH" refers to Western Hemisphere, which includes North, South and Central America.

While U.S. T&A exporters have benefited from the Western Hemisphere supply chain, the regional trade patterns in Asia and the EU, however, constitute significant trade barriers hurting U.S. T&A exports to these regions. For example, despite the fast-growing import demand for yarns and fabrics from apparel exporting countries in Asia, the value of U.S. textile exports to the Asia region suffered a -2.2% average compound annual growth (CAGR) between 2010 and 2018 (UNComtrade, 2019). Likewise, over the same period, the value of U.S. textile exports to the EU

grew only 1% annually, compared with a 3.3% annual growth rate of textile exports to Mexico (UNComtrade, 2019).

2.3.3 High Trade Barriers and Lack of FTAs

Table 2.4 The World's Top 10 Textile and Apparel Importers in 2018: Average Applied Tariff Rate Unit: %

Rank	Textiles		Apparel	
	Importers	Tariff rate	Importers	Tariff rate
1	European Union	6.54	European Union	11.48
2	United States	7.95	United States	11.65
3	China	9.60	Japan	9.02
4	Vietnam	9.56	Hong Kong	0.00
5	Bangladesh	19.52	South Korea*	12.50
6	Japan	5.35	Canada*	16.51
7	Hong Kong	0.00	China	16.01
8	Indonesia	11.46	Russia	7.80
9	Mexico*	9.78	Switzerland	3.97
10	Turkey	6.54	Australia	4.60

Data source: WTO (2019); Note:* refers to a free trade agreement partner of the United States as of January 2020.

Trade barriers, such as tariffs and various non-tariff barriers, increase a manufacturer's production costs and limit its ability to export (Imbruno, 2016). While

U.S. trade barriers overall are among the world's lowest, the trade restrictions facing U.S. exports, including T&A products, often are much higher (Jackson, 2018). For example, as shown in Table 2.4, over half of the world's top ten textile importers set an import tariff rate higher than the United States in 2018, which significantly hindered the export potential of U.S. textile products to these markets (WTO, 2019). Similarly, whereas the United States plays a relatively minor role in apparel exports because of cost disadvantages, the high tariff barriers make "Made in the USA" garments even less price competitive compared with locally made products (WTO, 2019).

On the other side, trade agreements could serve as effective ways to help lower trade barriers and enhance market access for U.S. products (Congressional Research Service, 2019a). Unfortunately, except for NAFTA and CAFTA-DR, there have been few U.S. free trade agreements reached with major T&A trading partners in Asia and Europe. The escalating U.S.-China, U.S.-EU, and U.S.-Mexico trade relations due to the Trump administration's tariff actions make it even more challenging for U.S. T&A products to compete in these foreign markets on a level playing field (Congressional Research Service, 2019b).

2.4 Research Gaps

In summary, reviewing the existing studies suggests three research gaps:

First, while most existing studies analyzed the state of the U.S. T&A industry by using data at the macro industry level, few studies have provided sufficient insights

into the business activities of T&A manufacturers at the micro firm-level (Freund et al., 2018; Hodges & Link, 2018; Moran, 2019).

Second, existing studies examining the U.S. T&A industry focus on the import side primarily, whereas few empirical studies explore the export performance of U.S. T&A manufacturers (Ha-Brookshire & Dyer, 2009; Lu & Dickerson, 2012). In particular, it remains largely unknown what factors affect U.S. T&A manufacturers' export motivations and behaviors decisively.

Additionally, most existing studies exploring the state of the U.S. T&A industry were conducted before 2008 when the quota system and U.S. trade restrictions on T&A imports remained hot topics (Dickerson, 1999; Oh & Kim, 2007). However, given the fast-changing nature of the U.S. and the world economy, new studies using more updated data are urgently needed.

2.5 Hypothesis

Based on examining the existing literature, this study proposes three hypotheses regarding the export behaviors of U.S. T&A manufacturers and related affecting factors:

Hypothesis 1: U.S. textile manufacturers are more likely to engage in exports than U.S. apparel manufacturers. Based on the comparative advantage trade theory, Porter's "five forces model," and the specific nature of the U.S. economy, the United States possesses a competitive advantage in textile production and exports but suffers

a competitive disadvantage in apparel production and exports (Lu & Dickerson, 2012). U.S. textile manufacturers also can more directly benefit from the regional trade patterns in the Western Hemisphere and the special trade policy arrangements in NAFTA and CAFTA-DR (Lu, 2015). Additionally, U.S. textile manufacturers are more likely to offset the cost disadvantage through automation than apparel manufacturers (Dickersn, 1999).

Hypothesis 2: U.S. textile and apparel manufacturers larger in size are more likely to export than smaller ones. As explained by the resource-based view theory, larger U.S. T&A manufacturers are more likely to obtain resources, from financial, legal, and human talents, to explore the overseas market, control the compliance risk and overcome the high trade barriers facing U.S. T&A products in the international market. Such required resources, however, are often beyond the affordability of companies smaller in size (Baldauf et al., 2000; Aaby & Slater, 1989).

Hypothesis 3: U.S. textile and apparel manufacturers are more likely to export to the Western Hemisphere than other regions in the world. Based on the regional T&A trade patterns and the specific U.S. trade policy arrangements, U.S. T&A manufacturers seem to have more incentives and competitive advantages in exporting to the Western Hemisphere, including those members of NAFTA and CAFTA-DR. For other regions of the world, U.S. T&A products are either facing higher trade barriers or difficult to compete with locally made products (Jackson, 2018; WTO, 2019; Lu 2018c).

Chapter 3

METHOD

3.1 Data Source

Data for the study was obtained from the "Made in the USA" database developed and managed by the Office of Textiles and Apparel (OTEXA) under the U.S. Department of Commerce. This "Made in the USA" database is the most comprehensive and the only government-run dataset that exclusively focuses on T&A manufacturers (OTEXA, 2019b). Specifically, the database covers detailed production, import and export behavior, and other essential business information of T&A manufacturers based in the United States. Information in the "Made in the USA" database was self-reported by companies and then verified by OTEXA (OTEXA, 2019b).

This study used the information of all the 122 U.S. T&A manufacturers included in the "Made in the USA" database as of August 31, 2019. For the purpose of this study, the following variables were collected from the database and then coded accordingly:

- *Textiles:* if a manufacturer reports making textile products (NAICS 313 or 314)=1; if a manufacturer reports making apparel =0;[2]
- *Size:* if a manufacturer reports having 150 employees or more=1; otherwise =0;

[2] When a manufacturer makes both textiles and apparel products, it was coded as "1" in this study.

- *Export:* if a manufacturer reports engaged in export=1; otherwise =0;
- *WH:* if a manufacturer reports exporting to the Western Hemisphere =1; otherwise =0

3.2 Data Analysis

To examine the proposed hypotheses empirically, the data analysis for the study includes two parts:

First, a logistic regression analysis was conducted to evaluate the impact of product category and firm size on U.S. T&A manufacturers' export behaviors (i.e., hypotheses 1 and 2). Because of the categorical nature of the data used in this study, logistic regression is a preferred method to evaluate the quantitative relationship between variables (Leech, Barrett, & Morgan, 2014). Using ordinary multiple linear regression for categorical dependent variables, instead, may result in biased estimations (Wooldridge, 2016). Studies that evaluate the quantitative relationship between categorical variables also widely adopt logistic regression (such as Javalgi, White, & Lee, 2000 and Evangelista, Low, & Nguyen, 2019).

$$\text{Log}\,(Export) = \beta_1 \cdot Textiles + \beta_2 \cdot Size + c \qquad (1)$$

Specifically, as illustrated in Equation 1, for the logistic regression, the variable *Export* was used as the dependent variable, which measures whether a T&A manufacturer exports its products. The model included two independent variables:

The first independent variable was *Textiles*, which measures whether a U.S. T&A manufacturer was making textile or apparel products. Based on Hypothesis 1,

we expect the coefficient β_1 to be a positive number, meaning textile manufacturers should be more likely to engage in exports than those making apparel products.

The second independent variable was *Size*, which measures the size of a U.S. T&A manufacturer. Based on Hypothesis 2, we expect the coefficient β_2 to be a positive number, meaning T&A manufacturers larger in size should be more likely to engage in exports than smaller ones.

Additionally, in Equation 1, c refers to the constant.

Second, a contingency analysis of variables *Export* and *WH* was conducted to evaluate whether Western Hemisphere is a preferred export market for U.S. T&A manufacturers that engaged in exports (i.e., hypothesis 3). Also known as the Chi-Square test of independence, contingency analysis is commonly adopted to evaluate the relationship between categorical variables, which is the case in this study (Moore, Rothenberg, & Moser, 2018; Wuensch, 2014).

Chapter 4

RESULTS

4.1 Descriptive Analysis

Table 4.1 Summary of U.S. T&A Manufacturers Collected from the Database

Production	Only textiles	Only apparel	Both textiles and apparel
Percentage	59.0%	22.1%	18.9%
	(N=72)	(N=27)	(N=23)

Data source: compiled based on OTEXA (2019b)

Table 4.1 provides a summary of the 122 U.S. T&A manufacturers collected from the OTEXA "Made in the USA" database. Of these manufacturers, 59.0% (N=72) reported making textiles only, 22.1% (N=27) reported making apparel only, and 18.9% (N=23) reported making both products. The result that textile producers accounting for a larger share among these firms was consistent with the macro statistics in Table 1.1, which also showed that textile production was larger in scale than apparel production in the United States today (BEA, 2019). The result in Table 4.1 also suggested that vertical integration, i.e., a single company owning production facilities of successive stages of T&A production, currently was not a popular business model among U.S. manufacturers, as the techniques and resources used to make textiles and apparel products were substantially different (Dickerson, 1999; Lu & Dickerson, 2012).

Table 4.2 Type of U.S. T&A Manufacturers and Export Behaviors

Export/Type	**Textile Manufacturers (*Textiles*=1)***	**Apparel Manufacturers (*Textiles*=0)**
% of export	80.0% (N=76)	37.0% (N=10)
% of not export	20.0% (N=19)	63.0% (N=17)

Data source: compiled based on OTEXA (2019b)

*Note: % of Export = Number of manufacturers that export ÷ Total number of manufacturers; "Textile manufacturers (*Textiles* =1)" in the table include those companies that make both textile and apparel products.

As shown in Table 4.2, of all the 122 U.S. T&A manufacturers collected from the OTEXA "Made in the USA" database, as many as 70.5% (N=86) reported engaged in export. Together with the rising value of U.S. textile and apparel exports in recent years (Table 1.2), this result indicated that export had become an important economic activity of U.S. T&A manufacturers today. Regarding the particular export behaviors of U.S. T&A manufacturers collected from the database, several patterns were worth noting:

First, U.S. manufacturers that engaged in making textile products seem to engage in exports more actively than those that make apparel products only. As shown

in Table 4.2, as many as 80% (N= 76) of U.S. textile manufacturers collected from the OTEXA "Made in the USA" database reported selling products overseas compared with merely 37.0% (N=10) of U.S. apparel manufacturers that did so. As previous studies suggested, U.S. textile manufacturers theoretically are more likely to engage in exports than apparel producers because of a mix of factors ranging from the particular nature of the U.S. economy, notably the U.S. trade policy arrangement to the regional T&A trade patterns (Freund et al., 2018; Lu, 2018c).

Table 4.3 Size of U.S. T&A Manufacturers and Export Behaviors

Export/Firm Size	**With <150 Employees (*Size* =0)**	**With 150 + Employees (*Size* =1)**	**Unknown***
% of export	69.7% (N=46)	90.0% (N=27)	50.0% (N=13)
% of not export	30.3% (N=20)	10.0% (N=3)	50.0% (N=13)

Data source: compiled based on OTEXA (2019b)

*Note: % of Export = Number of manufacturers that export ÷ Total number of manufacturers; "Unknown" refers to those manufacturers that did not report their number of employees.

Second, U.S. T&A manufacturers larger in size overall had a higher percentage engaged in exports than those manufacturers smaller in size. As shown in Table 4.3, as

much as 90.0% (N=27) of U.S. T&A manufacturers with over 150 employees (i.e., *Size*=1) reported engaging in exports, much higher than only 69.7% (N=46) of those manufacturers with less than 150 employees (i.e., *Size*=0). This result was consistent with Hypothesis 2, which also suggests that larger firms, in general, are more likely to explore the international markets than smaller ones because of the extra financial, legal and human resources required to do so (Aaby & Slater, 1989; Baldauf et al., 2000).

On the other hand, it is interesting to note that of the total 122 U.S. T&A manufacturers collected from the OTEXA "Made in the USA" database, only a small proportion (around 24.6%, N=30) were relatively large firms with 150 or more employees. This result, nevertheless, was consistent with the macro statistics, which also shows that only 11.5% of U.S. textile mills (NAICS 313), 2.7% of U.S. textile product mills (NAICS 314), and 1.1% of U.S. apparel mills (NAICS 315) had 500 or more employees as of 2016 (U.S. Census Bureau, 2020).

Table 4.4 Export market of U.S. Textile and Apparel Manufacturers

Firm/Export Market	**Western Hemisphere (*WH*=1)**	**Other regions only (*WH*=0)**
Textile manufacturers*	71.1% (N=54)	28.9% (N=22)

Apparel	40.0%	60.0%
manufacturers	(N=4)	(N=6)
Total	67.4%	32.6%
	(N=58)	(N=28)

Data source: compiled based on OTEXA (2019b)

*Note: Figures in this table only include firms that reported engaged in exports. "Textile manufacturers (*Textiles* =1)" in the table include those companies that make both textile and apparel products.

Third, Western Hemisphere was a particularly popular export market for U.S. T&A manufacturers. As indicated in Table 4.4, of those U.S. T&A manufacturers that reported exporting their products, close to 70% (N=58) targeted the Western Hemisphere (i.e., *WH=1*). In contrast, less than one-third of U.S. T&A manufacturers chose to export to regions other than the Western Hemisphere only (i.e., *WH*=0). The phenomenon that Western Hemisphere being THE most popular export market was even more obvious among U.S. textile manufacturers (i.e., *Textiles=1)*, of which over 71% reported doing so. These results well match the macro-level trade data in Table 1.2, which also reveals that the Western Hemisphere currently was the single largest export market for U.S. T&A manufacturers (OTEXA, 2019a).

Table 4.5 Utilization of NAFTA and CAFTA for Exports

Firm/FTA	Use CAFTA-DR	Use NAFTA	Use neither
Textile manufacturers (N=54)*	38.9%	59.3%	37.0%

	(N=21)	(N=32)	(N=20)
Apparel manufacturers (N=4)	25.0%	25.0%	50.0%
	(N=1)	(N=1)	(N=2)
Total (N=58)	37.9%	56.9%	37.9%
	(N=22)	(N=33)	(N=22)

Data source: compiled based on OTEXA (2019b)

*Note: Figures in this table only include firms that reported exporting to the Western Hemisphere (i.e., *Export =1* and *WH=1*). "Textile manufacturers (*Textiles* =1)" in the table include those companies that make both textile and apparel products.

Furthermore, as illustrated in Table 4.5, a high percentage of U.S. T&A manufacturers collected from the OTEXA "Made in the USA" database said they took advantage of free trade agreements enacted between the United States and countries in the region when exporting to the Western Hemisphere, including NAFTA (56.9%, N=33) and CAFTA-DR (37.9%, N=22). Only less than 40% of U.S. T&A manufacturers that exported to the Western Hemisphere claimed using neither of the two agreements. These results confirmed at the micro-firm level that NAFTA and CAFTA-DR overall had played a positive role in supporting the exports of U.S. T&A products, as argued by previous studies (Elliott, 2016; Lu, 2018a).

4.2 Statistical Analysis

The statistical analysis was conducted to explore further what factors may affect U.S. T&A manufacturers' export behaviors and the statistical significance of their impacts.

4.2.1 Results of Logistic Regression

Table 4.6 Results of Logistic Regression

Variables	Coefficient	S.E.	Wald	Df	Sig.	Exp(B)
Textiles	1.044	.520	4.032	1	.045*	2.840
Size	1.413	.674	4.403	1	.036*	4.109
Constant	.110	.416	.069	1	.792	1.116

* denotes $p<0.05$, **denotes $p<0.01$

The study first conducted a logistic regression analysis, using *Export* as the binary dependent variable and *Textiles* and *Size* as the independent variables. The purpose of the test was to evaluate whether and how product category and firm size might affect U.S. T&A manufacturers' export behaviors.

The regression model was statistically significant at the 99% confidence level (X^2=10.87*, p=0.00*). The model explained 16.0% (Nagelkerke R^2) of the variance in U.S. T&A manufacturers' export behaviors and correctly classified 76.0% of cases. As summarized in Table 4.6, more specifically:

First, U.S. manufacturers that produced textile products (i.e., *Textiles* =1) statistically were suggested to be 2.84 times more likely to export than those manufacturers that make apparel products only (i.e., *Textiles* =0) when other factors were held constant (Wald X^2=4.03, p=0.045<0.05). This result supported Hypothesis 1 and suggested that the product category was a significant factor that affected a U.S. T&A manufacturer's likelihood of engagement in export.

Second, U.S. T&A manufacturers with more than 150 employees (i.e., *Size* =1) statistically were 4.11 times more likely to engage in export than those with fewer than 150 employees (i.e., *Size*=0) when other factors were held constant (Wald X^2=4.40, p=0.036<0.05). The results also supported Hypothesis 2 and confirmed that the size of the firm was another significant factor that had an impact on a U.S. T&A manufacturer's likelihood of engaging in export.

4.2.2 Results of Contingency Analysis

A contingency analysis was conducted to evaluate the mutual dependency of the attributes of the variables *Export* (i.e., whether a U.S. T&A manufacturer engaged in export) and *WH* (i.e., whether a U.S. T&A manufacturer exported to the Western Hemisphere). The result can illustrate whether statistically, the Western Hemisphere was a particularly focused export market for U.S. T&A manufacturers.

Table 4.7 Results of Chi-Square Test

Indicators	**Value**	**Df**	**Significance**
Pearson Chi-Square	46.282**	1	.000

* denotes $p<0.05$, **denotes $p<0.01$

As shown in Table 4.7, the result of the contingency Chi-Square test suggested that there was a statistically significant association between the variables *Export* and *WH* (Pearson $X^2=46.28$, $p=0.00$) and such a correlation was very strong (Phi and Cramer's V==0.616, $p=0.003<0.01$). Overall, the results supported Hypothesis 3 and suggested that the Western Hemisphere was a preferred export destination for U.S. T&A manufacturers than other regions in the world (Freund et. al, 2018; Lu, 2018b; Oh & Kim, 2007).

Chapter 5

IMPLICATIONS & FUTURE RESEARCH AGENDAS

5.1 Findings

This study explored the export behaviors of U.S. T&A manufacturers and related affecting factors. Based on a statistical analysis of 122 U.S. T&A manufacturers collected from the OTEXA "Made in the USA" database, the study finds that:

First, the product category was a statistically significant factor that affected a U.S. T&A manufacturer's likelihood of engagement in exports. Specifically, U.S. textile manufacturers were more likely to engage in exports than those manufacturers that produce apparel products only.

Second, the size of the firm was also a statistically significant factor that affected a U.S. T&A manufacturer's likelihood of engaging in exports. Specifically, U.S. T&A manufacturers with 150 or more employees were more likely to explore the international markets than those with less than 150 employees.

Third, statistically, the Western Hemisphere was a preferred export destination for U.S. T&A manufacturers than other regions in the world.

5.2 Implications

The findings of the study significantly enhance our understanding of the export behaviors of U.S. T&A manufacturers and the state of the U.S. T&A industry in today's global economy. The findings also have three important implications:

First, the findings of the study suggest that export has become a critical growth engine supporting the development and expansion of T&A "Made in the USA" globally. It is important to recognize that for decades, textile and apparel had been regarded as an "import-sensitive" sector, with U.S. T&A trade policy primarily focusing on restricting imports to "protect" domestic manufacturers (Lu & Dickerson, 2012; Minchin, 2012). However, the findings of this study suggest that supporting and encouraging exports could be a more effective way than import restriction to boost U.S. T&A manufacturing in the 21st century, as the demand for "Made in the USA" goes far beyond the U.S. border.

Second, echoing the arguments of previous studies, the findings of the study remind us about the unique significance of the Western Hemisphere to the economic prosperity of U.S. T&A manufacturers and their export performance (Lu, 2018a). As the results of the contingency analysis revealed, the special supply-chain relationships between the U.S. T&A industry and their partners in the Western Hemisphere underpinned by NAFTA and CAFTA-DR provided an indispensable and irreplaceable export market for T&A "Made in the USA." However, beyond the Western Hemisphere, U.S. T&A manufacturers had demonstrated little interest and limited export capability.

Notably, the Trump administration had threatened numerous times to withdraw the United States from the 25-year old NAFTA due to concerns for its negative impacts on certain industries and their workers in the United States (Platzer, 2017). Even though the United States, Mexico, and Canada recently reached an updated NAFTA (i.e., U.S.-Mexico-Canada Free Trade Agreement, or USMCA), the prospect of its ratification and final implementation remains highly uncertain, affected by a mix of economic, social and political factors (Office of U.S. Trade Representatives (USTR), 2020). Nevertheless, the findings of this study suggest that supporting USMCA and at least do no harm to the existing NAFTA serve the best interests of U.S. T&A manufacturers, especially from the export perspective.

Additionally, the findings of the study call for more help in support of U.S. T&A manufacturers' export efforts. For example, U.S. trade policymakers could consider reaching more free trade agreements, especially with Asian and European countries, to level the playing field and help open new export markets for U.S. T&A manufacturers. This is critical as countries in the EU and Asia spare no effort in reaching new regional trade agreements and enhancing regional economic integration, which could put U.S. T&A products at a further disadvantage in competing with locally made products in these markets (Lu, 2019).

On the other hand, U.S. policymakers could consider more efforts to encourage more small and medium-sized (SME) U.S. T&A manufacturers to export their products. As suggested by the findings of the study, U.S. T&A manufacturers larger in size were more likely to engage in exports. However, statistics show that as many as

49.8% and 53.5% of U.S. textile mills (NAICS 313 and 314) and U.S. apparel mills had fewer than five employees as of 2016 (U.S. Census Bureau, 2020). There is great potential to expand U.S. T&A exports further, should these SMEs were provided with more resources to explore and get access to the international market.

5.3 Future Research

Despite the interesting results, this study also has several limitations that future research might overcome.

First, due to data availability, this study was only able to distinguish between "textiles" and "apparel" when exploring the export behaviors of U.S. T&A manufacturers. However, the unique export behaviors of a particular type of "textiles" and "apparel" manufacturers, such as yarn producers, fabric producers, and technical textile producers, could be overlooked. Future studies can continue to explore the export behavior of U.S. T&A manufacturers in these sub-sectors when such data is available. Additionally, there may be additional factors added that can help explain export behaviors in future research studies.

Second, while this study illustrated the significance of NAFTA and CAFTA-DR in supporting the export of U.S. T&A products, the impact of other U.S. free trade agreements on T&A "Made in the USA" remains largely unknown. Notably, as of December 2019, there had been fourteen FTAs enacted in the United States, and nearly all of them included provisions specifically applied to the T&A sector, from rules of origin to tariff elimination schedules (OTEXA, 2019a). Understanding how

effectively these trade agreements and their special T&A provisions had supported the export of U.S. T&A products could improve future policymaking.

Additionally, it could also be interesting to compare the export behaviors between U.S. T&A manufacturers and their counterparts in other developed economies, such as Japan and Western Europe. As Japan and Western EU countries are at a similar stage of economic development with the United States but involved in respective regional T&A supply chains, both similar and different export behaviors of T&A manufacturers across these countries and related affecting factors could be revealed.

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