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**The Contribution of the Textile and Apparel  
Cluster to the South Carolina Economy**

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## The Contribution of the Textile and Apparel Cluster To the South Carolina Economy

### I. Introduction

Amid the headlines of textile and apparel plant closings, there is an undercurrent of industry restructuring that suggests the emergence of a revitalized textile and apparel sector in South Carolina. In contrast to the textile and apparel industrial complex of the 1980s and 1990s, the textile and apparel cluster over the next decade is likely to have fewer low skilled laborers, and will pay higher wages and salaries in the industries that prosper. The purposes of the research report are to document the current contributions of the textile and apparel industrial cluster to the South Carolina economy, and to examine how the emerging textile and apparel cluster will impact the state economy over the next decade, if its component industries are able to compete effectively in domestic and World markets.

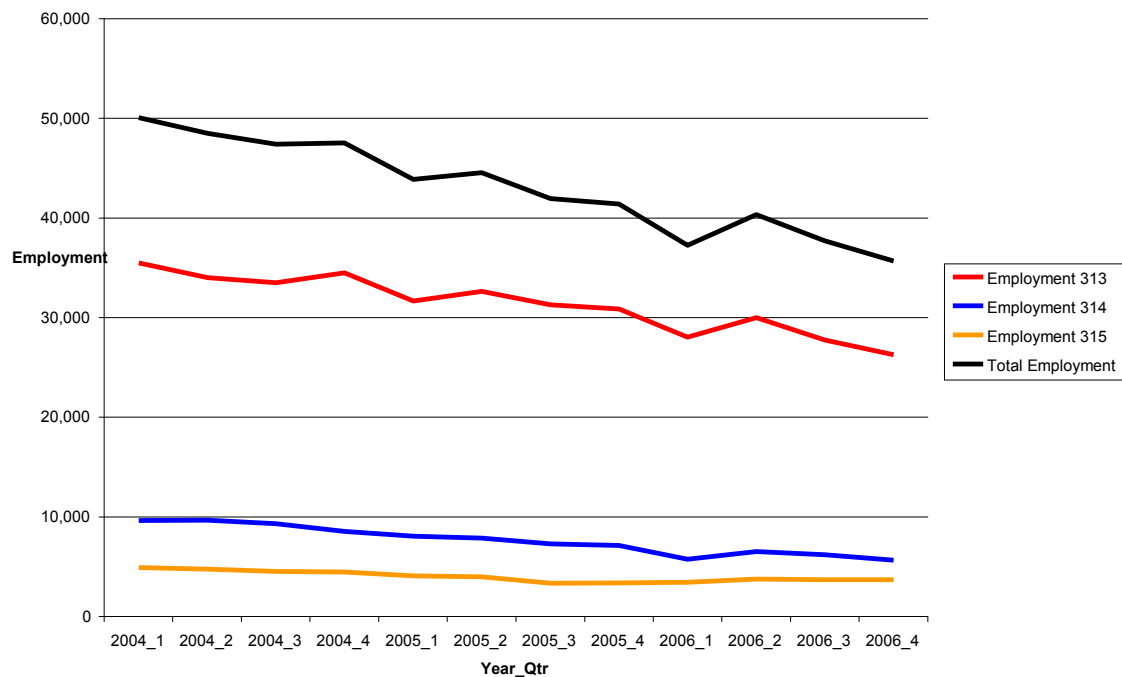
Methodology. The analysis in this report was undertaken in several steps.

1. Building on the 528 industry grouping of the latest U.S. interindustry model, the textile and apparel industries were sorted into traditional and emerging sectors. Trend analysis of growth and decline across these sectors for South Carolina was documented in the companion report to this document, "*South Carolina's Textile and Apparel Industries: An Analysis of Trends in Traditional and Emerging Sectors,*" by Eades, Barkley and Henry (2007).
2. Using the IMPLAN model for South Carolina (2006), the economic contributions that both traditional and emerging sectors have on the state economy were estimated -- both directly and through supply chain linkages.
3. The performance of South Carolina's textile and apparel industry is compared with industry trends in the North Carolina and Georgia to assess the competitiveness of South Carolina's industry in world and domestic markets. Given the competitive environment, a set of textile and apparel cluster growth targets are used to examine the contribution that the textile and apparel sectors can make to the South Carolina economy over the next decade.

### II. Industry Trends

Analysis in Eades, *et al* documents employment declines in South Carolina from 1990 to 2005 that are pervasive at the aggregate level for Textiles (NAICS 313), Textile Mill Products (NAICS 314) and Apparel (NAICS 315). The quarterly trends since 2004 that are displayed in Figure 1 reveal that these downward trends continued through the end of calendar year 2006.

**Figure 1. Employment in the SC Textiles and Apparel Industries, 2004 -2006.**



Source: Local Employment Dynamics, QWI, U.S. Dept. of Commerce

With the elimination of quotas in 2005 under the Multifiber Arrangement (MFA) and the Agreement on Textiles and Clothing (ATC, see Brambilla 2007), it was expected that U.S. Textile and Apparel output would decline at even faster rates than in the previous decade. In South Carolina, this appears to be the case for the time period 2004 through the final quarter of 2006 (most recent data available from BLS) for each of the aggregate sectors as illustrated in Figure 1. Total employment in all sectors fell from 50,084 in the 2004 to about 35,691 in the third quarter of 2006 (see the Appendix for definitions of sector employment). Note that the Apparel industry (NAICS 315) is a minor part of the overall industry with only about 3700 employees at the end of 2006 (see Table 1).

**Table 1. Recent Textile and Apparel Employment Dynamics in South Carolina****Table 1. Textile and Apparel Industry Employment Dynamics in South Carolina**

<b>Industry</b>		<b>2004_1</b>	<b>2005_1</b>	<b>2006_1</b>	<b>2006_2</b>	<b>2006_3</b>	<b>2006_4</b>
<b>313 Textile Mills</b>							
	Avg Monthly Earnings	\$2,502.00	\$2,878.00	\$2,743.00	\$2,783.00	\$2,786.00	N/A
	Job Creation	545	2,114	3,065	501	1,002	N/A
	Net Job Flows	-1,720	466	2,112	-1,494	-1,508	N/A
	<b>Total Employment</b>	<b>35,520</b>	<b>31,685</b>	<b>28,044</b>	<b>30,014</b>	<b>27,769</b>	<b>26,288</b>
<b>314 Textile Product Mills</b>							
	Avg Monthly Earnings	\$2,175.00	\$2,420.00	\$2,329.00	\$2,492.00	\$2,463.00	N/A
	Job Creation	298	637	1,343	194	165	N/A
	Net Job Flows	-6	134	1,034	-271	-660	N/A
	<b>Total Employment</b>	<b>9,646</b>	<b>8,094</b>	<b>5,786</b>	<b>6,541</b>	<b>6,213</b>	<b>5,677</b>
<b>315 Apparel Manufacturing</b>							
	Avg Monthly Earnings	\$1,818.00	\$1,869.00	\$2,087.00	\$2,156.00	\$2,025.00	N/A
	Job Creation	87	88	299	160	88	N/A
	Net Job Flows	-178	-158	207	0	-37	N/A
	<b>Total Employment</b>	<b>4,918</b>	<b>4,099</b>	<b>3,466</b>	<b>3,796</b>	<b>3,733</b>	<b>3,726</b>
<b>All Textiles and Apparel</b>							
	Avg Monthly Earnings	\$2,371.86	\$2,699.26	\$2,617.81	\$2,676.84	\$2,657.47	N/A
	Job Creation	930	2,839	4,707	855	1,255	N/A
	Net Job Flows	-1,904	442	3,353	-1,765	-2,205	N/A
	<b>Total Employment</b>	<b>50,084</b>	<b>43,878</b>	<b>37,296</b>	<b>40,351</b>	<b>37,715</b>	<b>35,691</b>

Source: Local Employment Dynamics, QWI, U.S. Dept. of Commerce.

As revealed in Table 1, there is substantial job churning (hiring and firing) within the traditional Textile and Apparel industries, and there has been a loss in net jobs over the past several years. *Total Employment* is the “total number of workers who were employed by the same employer in both the current and previous quarter.” *Job creation* is the “number of new jobs that are created by either new area businesses or the expansion of employment by existing firms.” Finally, *Net Job Flows* is “the difference between current and previous employment at each business.” For more information see: <http://lehd.dsd.census.gov/led/datatools/qwi-online.html> Each of these measures of local employment dynamics gives a feel for which industries are hiring and firing as well as monthly earnings trends. For our purposes, it is useful to note the following trends:

1. Stable employment by individuals in firms that comprise the traditional textile and apparel industries has declined over the past several years. *Total employment* has declined steadily from 50,084 in the first quarter 2004 to 37,296 in the first quarter of 2006.
2. Quarterly trends since quarter one of 2006 suggest negative *Net Job flows* in the past year.
3. However, comparing first quarter results for 2004, 2005, and 2006, there are signs of “life” in the industry. *Net Job Flows* changed from a loss of 1,904 in the first quarter 2004 to a gain of 3,353 in quarter one, 2006. First quarter results for 2007 should provide evidence on whether or not this is a “seasonal” bump or more encouraging trend in employment in the industry.

#### The South Carolina Textile and Apparel Cluster (TAC)

The importance of the individual industries that comprise the Textile and Apparel industrial complex has changed over the past decade. Some of these industries have done well while others have experienced severe contractions in sales and employment. By examining the supply chain linkages in this industrial complex, it is possible to depict a more complete picture of the nature and performance of the set of industries with textiles and apparel at its core. In this report, sixteen industries comprise the Textile and Apparel Cluster (TAC) in South Carolina. Industries in the TAC are:

##### *Traditional Textiles and Apparel industries:*

1. NAICS 313 Textile Mills
2. NAICS 314 Textile Mill Products
3. NAICS 315 Apparel

##### *Key raw material suppliers and equipment:*

4. NAICS 111920 Cotton Farms
5. NAICS 115111 Cotton Gins
6. NAICS 325222 Noncellulosic Organic Fiber Manufacturing
7. NAICS 325221 Cellulosic Organic Fiber Manufacturing
8. NAICS 325131 Inorganic Dye and Pigment Manufacturing
9. NAICS 325132 Synthetic Organic Dye and Pigment Manufacturing
10. NAICS 333292 Textile Machinery

##### *Wholesaling (margin activities only):*

11. NAICS 424310 Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers
12. NAICS 423220 Home Furnishings Merchant Wholesalers
13. NAICS 424320 Men’s and Boys’ Clothing and Furnishings Merchant Wholesalers
14. NAICS 424330 Women’s, Children’s, and Infants’ Clothing and Accessories Merchant Wholesalers and,

##### *Emerging producers of textile/fiber products:*

15. NAICS 339113 Surgical Appliances and Supplies Manufacturing
16. NAICS 336360 Motor Vehicle Seating and Interior Manufacturing

### **III. Contributions of the Textile and Apparel Cluster to the SC Economy, 2006**

To estimate the contributions to the SC economy made by the TAC, we proceed as follows. First, sales by each of the 16 TAC industries to all other industries in South Carolina (interindustry sales) and to final users (consumers, investment, government, and

exports) are obtained from the IMPLAN model and database for 2006 with some adjustments for the six digit NAICS industries using the Harris 2007 data for SC establishments. To avoid double counting, only sales to final users are counted as the “driving force” behind the total contributions that the TAC makes to the SC economy.

In Table 2, we document the current (2006) total sales and total sales to final demand (investment, government and exports) for each of the TAC industries. The final demand sales do not include sales to SC consumers<sup>1</sup> or to SC businesses that use TAC products. Instead, these impacts are captured during the supply chain rounds of spending (direct and indirect) and in household income induced rounds of spending.

TABLE 2. SOUTH CAROLINA SALES: TEXTILES APPAREL INDUSTRIAL CLUSTER (TAC)	TOTAL SALES IN 2006 millions of dollars	FINAL DEMAND SALES IN 2006 <sup>^</sup> millions of dollars
<b>Traditional Textiles and Apparel industries:</b>		
<b>1. NAICS 313 Textile Mills (EXC 313230, 313320)</b>	<b>\$5,448.260</b>	<b>\$4,996.372</b>
313230 Nonwoven fabric mills	\$557.865	\$520.824
313320 Fabric coating mills	\$154.192	\$144.732
<b>2. NAICS 314 Textile Mill Products (EXC 31491, 31499, 31499)</b>	<b>\$1,370.496</b>	<b>\$1,345.770</b>
31491 Textile bag and canvas mills	\$68.776	\$67.099
31499 Tire cord and tire fabric mills	\$23.520	\$22.863
31499 Other miscellaneous textile product mills	\$219.316	\$216.063
<b>3. NAICS 315 Apparel</b>	<b>\$522.109</b>	<b>\$271.648</b>
<b>Traditional Textiles and Apparel industries SUBTOTAL:</b>	<b>\$8,364.533</b>	<b>\$7,585.370</b>
<b>Key raw material suppliers and equipment:</b>		
<b>4. NAICS 111920 Cotton Farms</b>	<b>\$97.650</b>	<b>\$91.370</b>
<b>5. NAICS 115111 Cotton Gins</b>	<b>\$218.596</b>	<b>\$1.138</b>
<b>6. NAICS 325222 Noncellulosic Organic Fiber Manufacturing</b>	<b>\$3,575.349</b>	<b>\$3,300.080</b>
<b>7. NAICS 325221 Cellulosic Organic Fiber Manufacturing</b>	<b>\$251.977</b>	<b>\$251.322</b>
<b>8. NAICS 325131 Inorganic Dye and Pigment Manufacturing</b>	<b>\$993.925</b>	<b>\$754.083</b>
<b>9. NAICS 325132 Synthetic Organic Dye and Pigment Manufacturing</b>	<b>\$703.462</b>	<b>\$507.244</b>
<b>10. NAICS 333292 Textile Machinery</b>	<b>\$165.906</b>	<b>\$150.073</b>
<b>Key raw material suppliers and equipment SUBTOTAL:</b>	<b>\$6,006.866</b>	<b>\$5,055.311</b>
<b>Wholesaling (margin activities only):</b>		
<b>11. NAICS 424310 Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers</b>		
<b>12. NAICS 423220 Home Furnishings Merchant Wholesalers</b>		
<b>13. NAICS 424320 Men's and Boys' Clothing and Furnishings Merchant Wholesalers</b>		
<b>14. NAICS 424330 Women's, Children's, and Infants' Clothing and Accessories</b>		
<b>Merchant Wholesalers SUBTOTAL:</b>	<b>\$385.073</b>	<b>\$385.073</b>
<b>Selected emerging producers of textile/fiber products</b>		
<b>15. NAICS 339113 Surgical Appliances and Supplies Manufacturing</b>	<b>\$208.496</b>	<b>\$208.496</b>
<b>16. NAICS 336360 Motor Vehicle Seating and Interior Manufacturing</b>	<b>\$81.177</b>	<b>\$81.177</b>
<b>Selected emerging producers of textile/fiber products</b>	<b>\$289.673</b>	<b>\$289.673</b>
<b>TOTALS:</b>	<b>\$15,046.144</b>	<b>\$13,315.426</b>
<sup>^</sup> EXCLUDES SALES TO HOUSEHOLD CONSUMERS IN SC		
SOURCES: IMPLAN 2006, HARRIS 2007		

In 2006, the TAC industries accounted for \$15.046 billion in total gross sales with \$13.315 billion in final demand sales to exports, government and investment. These final demand sales represent “basic” sales by this industry that generate the need for added production in the TAC supply chain that enables the TAC sectors to make their deliveries

<sup>1</sup> Consumption spending by households on textiles and apparel produced in South Carolina represents a small share of total final demand for TAC goods and services. Moreover, since the closed IO model is used to capture SC household spending on all goods and services “induced” by the other final demand sales (investment + government + exports), we exclude SC consumer purchases for TAC goods and services as a component on final demand in the impact analysis. By using final demand sales as the “driver” for the total contribution estimates, we avoid double counting. For example, the value of the cotton fabric embedded in cotton shirt export sales is counted only once – in the export final demand sale, not in the sale from cotton textile mills to an apparel manufacturer.

to final users of their goods and services. The final demand sales also begin a process that generates added income for SC households as they earn wages, salaries and profits from the final demand sales and from the supply chain sales. This added household income induces consumption of goods and services in other industries in SC.

As shown in Table 3, TAC final demand sales of \$13.315 billion in 2006 resulted in total sales in all SC industries of \$21.196 billion, total value added (approximately equivalent to income accruing to SC households) of \$7.824 billion and 113,258 jobs in SC establishments. Impacts on approximately 80 industries in South Carolina are listed in the Appendix.

**Table 3. Impacts of the Textile and Apparel Industrial Cluster (TAC) on the South Carolina Economy**

	2006					
	Final Demand	Supply Chain	Consumer Induced	TAC TOTAL	SOUTH CAROLINA TOTAL	TAC SHARES
<b>Number of Jobs</b>	47,495	30,956	34,807	113,258	2,312,131	4.9%
<b>Output (Sales) (\$billions)</b>	\$13.315	\$4.758	\$3.123	\$21.196	\$252.945	8.4%
<b>Value Added (\$billions)</b>	\$3.713	\$2.261	\$1.850	\$7.824	\$127.766	6.1%

Source: IMPLAN 2006 for SC totals; IMPLAN estimates by the authors for TAC totals

The TAC accounted for almost 5% of the total jobs in South Carolina in 2006. Gross sales were about 8.4% of the SC total and Value Added from TAC activities was about 6% of the SC total in 2006. These results are consistent with trends documented in Eades, *et al* that generally reveal a declining TAC employment base in South Carolina even as TAC earnings per worker increase over time. This combination of declining employment with higher levels of earnings (and output) per worker is likely to continue over the next decade as the next section in this report suggests.

The underlying shifts from lower skill jobs in Apparel to higher skill (and more output per employee) jobs in other components of the TAC are attributable to several economic and institutional factors. First, the low skill jobs are and have been better suited for low skill/low wage labor overseas. The phased elimination of quotas under the Agreement on Textiles and Clothing (ATC) in 2005, with exceptions for China until the end of 2008, has accelerated the declining share of U.S. products in the market for a variety of TAC goods (see Brambilla, *et al* 2007 for analysis of the impacts of the ATC on imports to the U.S.). The effects of quota elimination have been most dramatically revealed in the decline of Apparel jobs as illustrated below.

#### **IV. How Competitive Is the South Carolina Textile and Apparel Cluster?**

##### **World Exports by the Traditional Textile/Apparel Industry in SC.**

One indicator of the future vitality of the TAC, and its potential to expand on its 2006 contribution to the SC economy, is its ability to compete with other states for textile and apparel products in World export markets. Table 3 provides evidence that SC has competed effectively in NAICS 313 Textiles and Fabrics, maintaining its rank as the number 5 state in exports from 2001 to 2006 -- even increasing the nominal value of exports over that time period. However, SC has become less competitive in NAICS 314 and 315 -- both industries in SC saw declines in exports and in rank among the states.

**Table 3. South Carolina's Place in the Domestic Competition for World Export Markets**

Exports of 313 TEXTILES & FABRICS to World in thousands (\$ USD)								
		State	2001	2002	2003	2004	2005	2006
		U.S. Total	7,365,202	7,642,419	7,805,386	8,637,711	8,755,874	8,780,734
2001 Position	2006 Position	1 North Carolina	1,204,686	1,297,029	1,375,877	1,590,554	1,719,594	1,841,198
		2 Texas	1,364,129	1,402,166	1,412,689	1,353,280	1,323,932	1,250,258
		3 California	553,743	613,775	650,306	726,848	743,329	688,799
		4 Georgia	406,553	467,121	480,070	653,360	705,568	644,586
		5 South Carolina	507,761	458,917	482,813	570,652	590,025	537,530
		6 Florida	534,902	673,519	626,071	703,257	509,016	492,925
		7 Tennessee	152,578	141,497	215,629	266,165	316,894	365,564
		8 Virginia	157,584	201,777	244,612	266,209	342,288	349,499
		9 Alabama	260,672	204,855	197,445	262,625	261,921	259,930
		10 New York	382,011	328,425	309,557	292,557	234,407	241,572

Exports of 314 TEXTILE MILL PRODUCTS to World in thousands (\$ USD)								
		State	2001	2002	2003	2004	2005	2006
		U.S. Total	2,082,822	1,981,581	2,004,488	2,235,407	2,545,808	2,783,642
		1 Georgia	422,267	363,980	367,853	406,727	465,621	531,302
		2 Texas	196,417	179,407	170,897	215,199	290,281	307,760
		3 California	152,873	150,434	156,713	166,700	174,504	187,802
		4 North Carolina	152,338	146,591	129,555	126,035	121,521	140,884
		5 New York	106,245	89,305	89,162	111,900	115,843	120,231
		6 Michigan	43,625	45,178	36,025	71,377	108,774	112,438
		7 Florida	78,108	76,323	76,317	90,451	86,707	104,377
		8 Virginia	86,879	90,926	75,920	76,673	83,108	97,769
		9 Pennsylvania	90,430	92,732	75,047	77,457	86,655	80,502
		10 Ohio	55,188	46,735	48,033	55,902	64,540	71,549
		14 South Carolina	98,659	92,011	81,444	79,790	65,093	61,665

Exports of 315 APPAREL & ACCESSORIES to World in thousands (\$ USD)								
		State	2001	2002	2003	2004	2005	2006
		U.S. Total	6,956,292	5,994,072	5,469,699	4,962,129	4,899,135	4,776,411
		1 California	1,119,929	1,115,637	1,040,461	1,042,854	1,234,191	1,280,841
		2 North Carolina	1,241,958	1,153,768	1,118,984	1,005,365	808,166	757,165
		3 New York	423,069	347,691	309,590	333,512	412,760	452,233
		4 Texas	771,445	735,839	504,970	427,007	482,735	417,894
		5 Alabama	321,126	306,365	489,341	363,576	303,336	252,482
		6 Puerto Rico	153,231	199,528	204,361	245,084	259,485	221,488
		7 Florida	703,602	431,421	363,739	283,173	216,424	178,741
		8 New Jersey	107,918	87,595	80,747	96,242	113,421	141,990
		9 Massachusetts	30,676	21,608	20,613	19,673	24,491	84,987
		10 Pennsylvania	198,100	168,024	137,404	88,592	92,330	79,888
		14 South Carolina	272,761	149,518	120,968	89,754	93,440	53,897

Source: U.S. Office of Textiles and Apparel (OTEXA)

Trends in Table 3 for neighboring states, NC and Georgia, show that SC has lost world export share to its neighbors in each of the three traditional components of the TAC.<sup>2</sup> In the *Textile and Fabrics industry (313)*, NC now ranks first in the nation in value of export

<sup>2</sup> The only exception is that Georgia's exports of Apparel (NAICS 315) lagged SC exports in 2006.

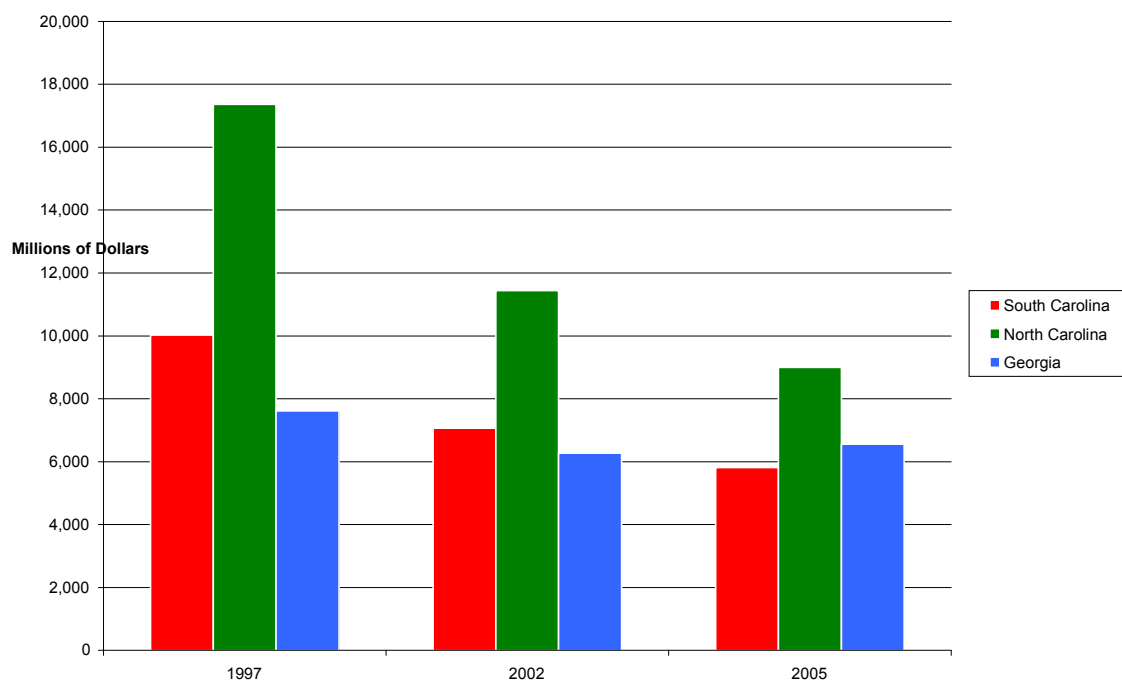
sales and has managed to increase the nominal value of its exports on the World market from \$1.2 billion in 2001 to \$1.8 billion in 2006. Georgia also increased its exports from \$406 million to \$645 million from 2001 to 2006, while SC exports remained flat increasing slightly in nominal values from \$507 million in 2001 to \$534 million in 2006.

In the Textile Mill Products industry (NAICS 314), SC fell from number 6 to number 14 in state ranking from 2001 to 2006. While Textile Mill Products account for a much smaller volume of exports than NAICS 313 (and NAICS 315), a striking finding from Table 3 is the ability of Georgia producers in NAICS 314 to expand exports from \$422 million in 2001 to \$531 million in 2006. Moreover, South Carolina's volume of exports fell from \$98 million in 2001 to \$61 million in 2006 while World Exports from North Carolina fell modestly from \$152 million in 2001 to \$141 million in 2006.

Similarly, SC fell from a number 7 ranking among states in 2001 to number 14 in 2006 for Apparel exports (NAICS 315). Exports of apparel and accessories (NAICS 315) from SC decreased from \$272 million in 2001 to \$54 million in 2006. While Georgia is not a top ten state in this industry, NC is the number 2 producer despite substantial reductions in exports from \$1.2 billion in 2001 to \$757 million in 2006.

Since NC, Georgia and SC are close competitors in terms of industry legacies, workforce characteristics and geographical setting, one might assume that establishments in Georgia, North Carolina and SC would be similar in their abilities to compete on World export markets. However, it appears that establishments in NC and Georgia have been a bit more successful than those in SC in protecting their export markets in NAICS 313 and 314 (Textiles and Apparel and Textile Mill Products). Even in NAICS 315 (Apparel) North Carolina has managed a slower pace of downsizing export sales than South Carolina. What mix of establishments and industry innovations has enabled NC and Georgia to out-compete SC in World export markets? These are open questions but answers to them could provide insights into options for improving the competitiveness of the TAC in South Carolina over the next decade.

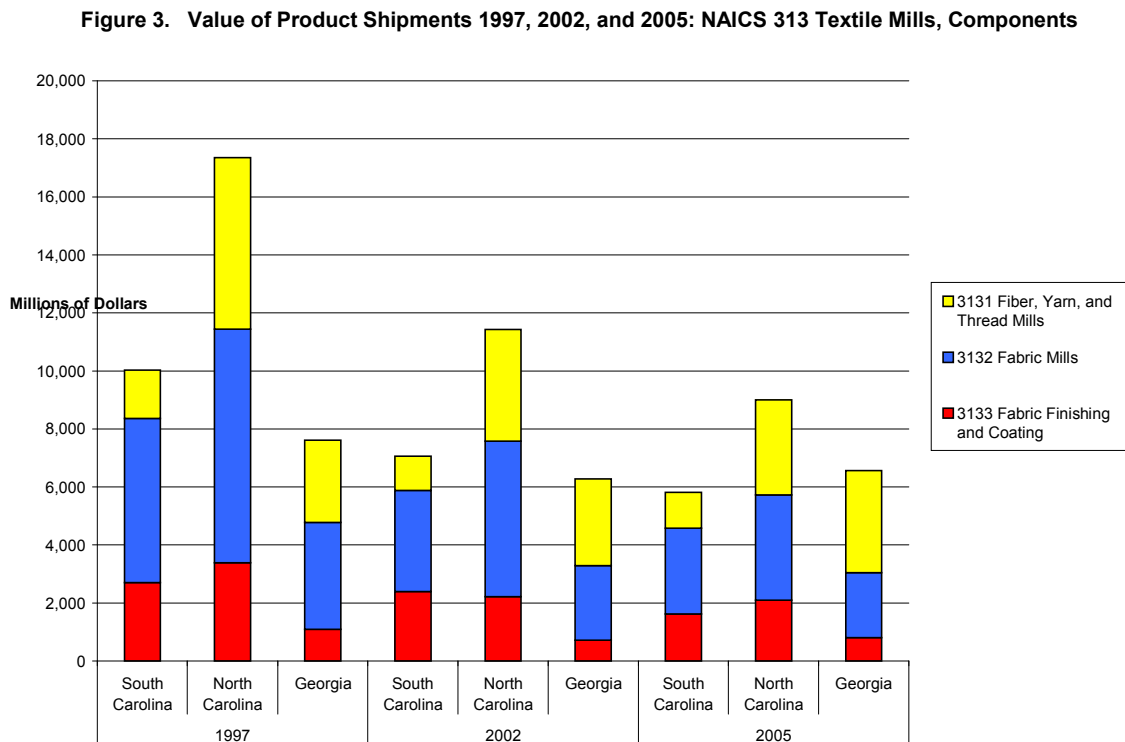
Figure 2. Value of Product Shipments 1997, 2002, and 2005: NAICS 313 Textile Mills



Source: *Census of Manufactures, 1997, 2002; Annual Survey of Manufactures, 2005*

**Domestic and World Markets.** The relatively lackluster World export performance of the SC TAC may reflect a SC industry focus on domestic markets. To evaluate this possibility, we examine trends for both domestic sales and export sales together.

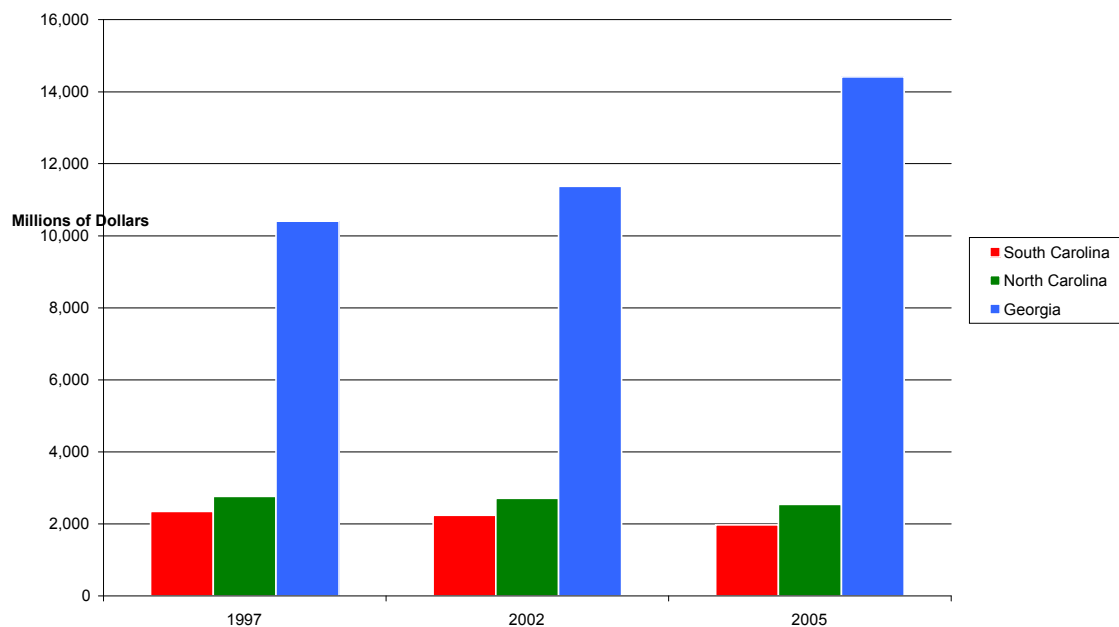
Textile Mills. All three states had a decline in nominal value of shipments in NAICS 313 from 1997 to 2005, as shown in Figure 2. Despite its expanding value of World exports, NC total shipments fell from about \$17 billion in 1997 to around \$9 billion in 2005 while SC shipments fell from \$10 billion in 1997 to just under \$6 billion in 2005. In contrast to NC and SC, Georgia managed a small increase in the value of shipments from 2002 to 2005.



Source: *Census of Manufactures, 1997, 2002; Annual Survey of Manufactures, 2005*

Within the 313 industry group are several sub sectors of interest that can help clarify the relative strengths and weaknesses of the SC Textile Mills industry. These subsector results are displayed in Figure 3. Sector 3131, Fiber, Yarn and Thread Mills is the source of expansion for Georgia. In contrast, SC shipments are dominated by Fabric Mills, NAICS 3132. NAICS 31321 (Broadwoven Fabric Mills), NAICS 31323 (Nonwoven Fabric Mills) and NAICS 31324 (Knit Fabric Mills) are the major subsectors in Fabric Mills with Nonwoven fabrics exhibiting the most potential for growth in SC (Eades, *et al*, 2007). Fabric finishing and coating (NAICS 3133) play the smallest role in value of shipments for the Textile Mills sector (NAICS 313) in each of state, with Georgia least reliant on this subsector. While SC had higher levels of Textile Mills output in 1997 and 2002 than Georgia, it has now fallen behind both Georgia and NC in NAICS 313 shipments.

Figure 4. Value of Product Shipments 1997, 2002, and 2005: NAICS 314 Textile Product Mills

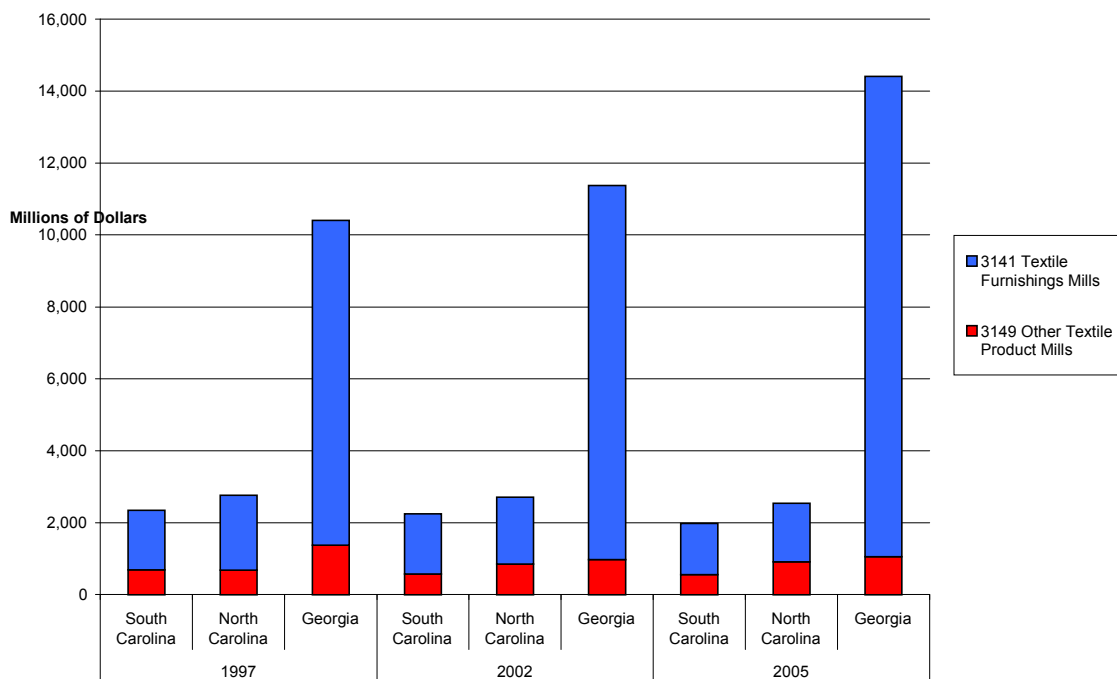


Source: *Census of Manufactures, 1997, 2002; Annual Survey of Manufactures, 2005*

Textile Mill Products. Turning next to NAICS 314, Figure 4 shows a stable level of shipments for SC and NC of about \$2 billion from 1997 to 2005. Complementing the results displayed for World exports of Textile Mill products in Table 3, Georgia dominates the region in NAICS 314 sales with expanding shipments from just over \$10 billion in 1997 to over \$14 billion in 2005.

The subsector results for NAICS 314 are displayed in Figure 5. With just over \$14 billion in NAICS 314 shipments in 2005, Georgia plants are far outpacing sales of textile mill products made by establishments in SC and NC with Textile Furnishing Mills (NAICS 3141) as the dominant subsector. This success in textile furnishing mills is a favorite early story of the power of clusters of economic activity – in this case the role of carpet manufacturing cluster in the Dalton area of north Georgia (Krugman, 1991). It is important to recognize the staying power of this cluster in Georgia despite the intensification of foreign competition since the 1990s. Other Textile Mill Products (NAICS 3149) play a small role in the sector across all three states with sales less than about \$1 billion in 2005.

**Figure 5. Value of Product Shipments 1997, 2002, and 2005:  
NAICS 314 Textile Product Mills, Components**

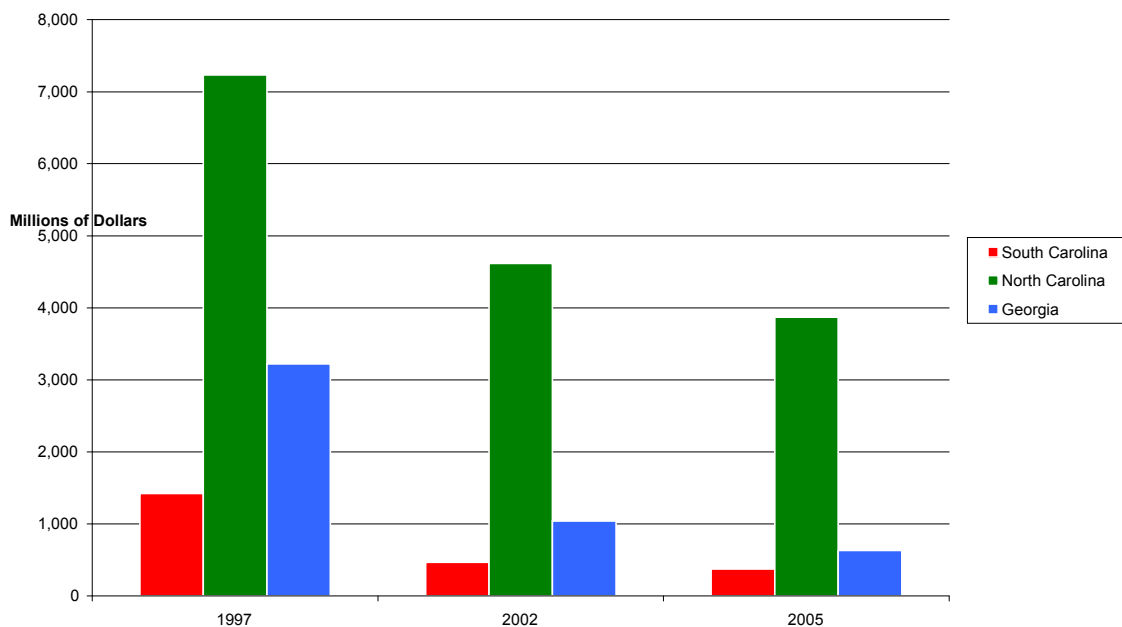


Source: *Census of Manufactures, 1997, 2002; Annual Survey of Manufactures, 2005*

For Industry 314, Eades, *et al* find that value added estimates at the national level indicate a more economically stable industry than for SC employment and earnings in Carpet and Rugs Mills (31411) and Textile Bag and Canvas Mills (31491) industries. The impressive growth in the nominal value of shipments of the Carpet and Rugs Mills (31411) in Georgia suggests that this component of the textile industry is alive and well. Although the impact of housing building cycles on the demand for carpets and rugs is a problem for this sector, SC leaders in the TAC should be examining strategies for expanding their role in the supply chain for this regional growth center in the textile industry.

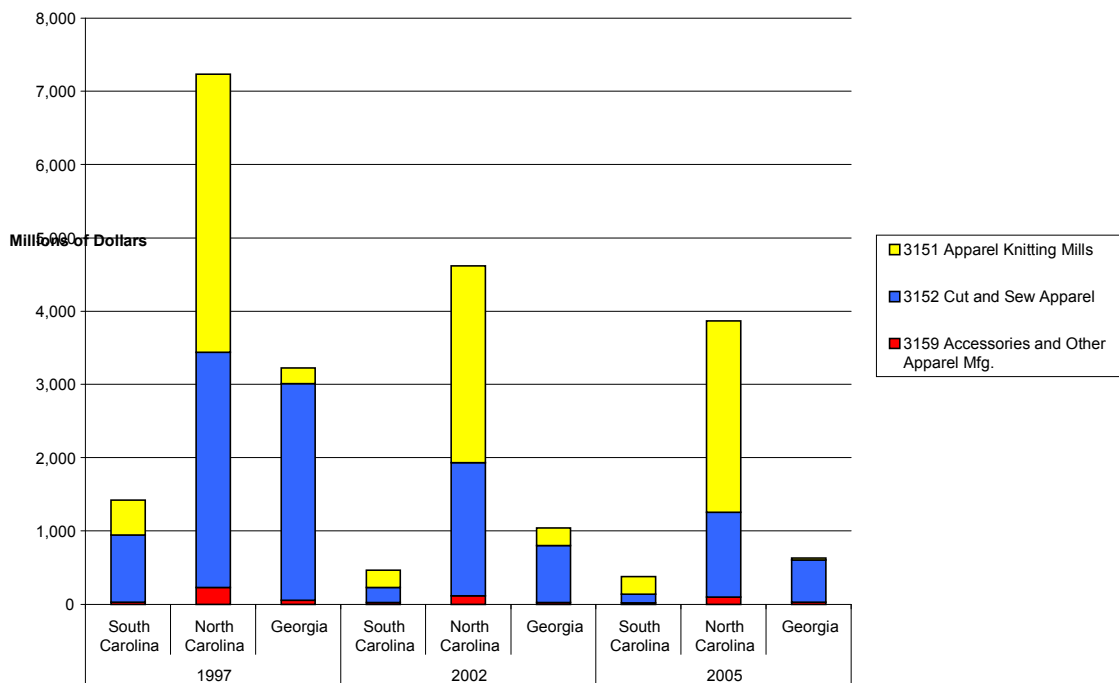
Apparel Manufacturing Finally, the value of shipments in NAICS 315 is shown in Figure 6 and decomposed into three subsectors in Figure 7. It is evident from Figures 6 and 7 that the apparel industry in SC has contracted substantially since 1997 with little activity in the cut and sew subsector, NAICS 3152. Georgia has experienced similar dramatic reductions in Apparel shipments. Only NC has maintained a sizeable industry in 2005 with almost \$4 billion in shipments, albeit about half its size in 1997. Even in this smaller industry in 2005, NC maintained its 2002 sales level in 2005 for the Apparel Knitting Mills subsector (NAICS 3151).

**Figure 6. Value of Product Shipments 1997, 2002, and 2005: NAICS 315 Apparel**



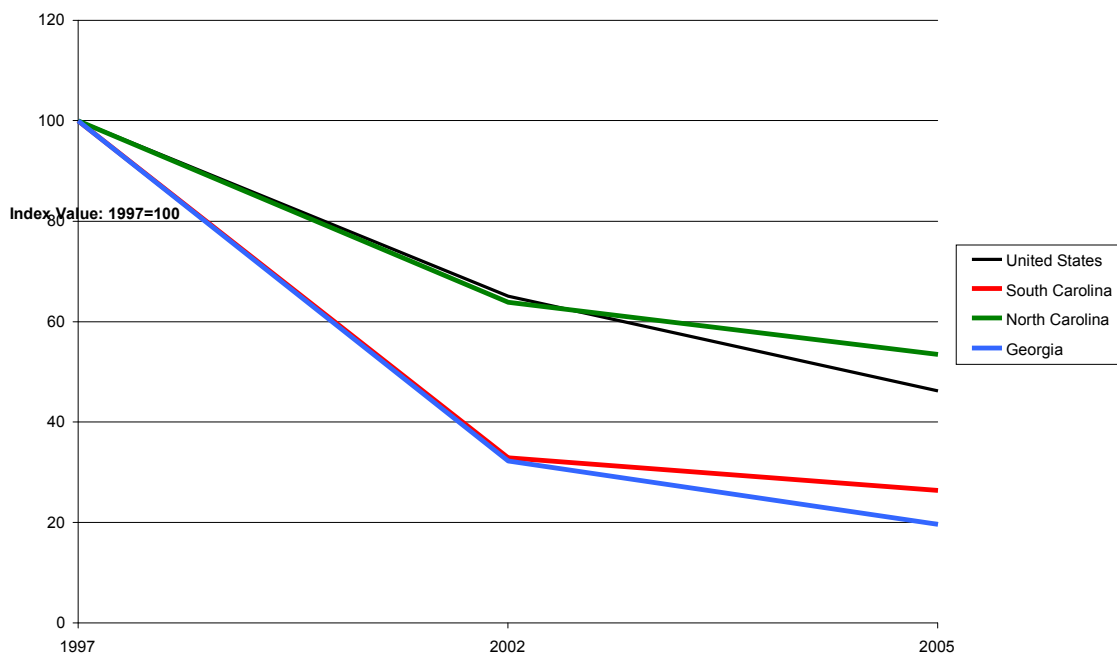
Source: *Census of Manufactures, 1997, 2002; Annual Survey of Manufactures, 2005*

**Figure 7. Value of Product Shipments 1997, 2002, and 2005: NAICS 315 Apparel Manufacturing, Components**



Source: *Census of Manufactures, 1997, 2002; Annual Survey of Manufactures, 2005*

Figure 8. Value of Product Shipments 1997, 2000, and 2005: NAICS 315 Apparel Manufacturing



Source: *Census of Manufactures, 1997, 2002; Annual Survey of Manufactures, 2005*

Finally, as revealed in Figure 8, SC and GA apparel shipments in 2005 were 20% to 25% of 1997 levels. In contrast, the apparel industry in NC has declined less rapidly than the U.S. maintaining about 55% of its 1997 levels of shipments of apparel products in 2002.

**Sector strengths and weaknesses in the Textiles and Apparel Cluster.** Eades, *et al* find several subsectors of the Textile and Apparel industries in South Carolina that showed strength from 2000 to 2005. Five of the state's seven sectors in the Textile Mill industry (NAICS 313) follow the industry-wide trends of significantly declining employment and earnings for the post 1990 period. *Nonwoven Fabric Mills (NAICS 31323)* and *Fabric Coating Mills (NAICS 31332)*, however, have been relatively prosperous in the state. Earnings, employment, and establishment numbers exhibited a positive trend for the Nonwoven Fabric Mills industry in South Carolina. At the national level, value added in Nonwoven Fabrics increased by more than 50% since 1997 providing further evidence of an expanding industry.

Fabric Coating Mills (NAICS 31332) in South Carolina reported increasing establishment numbers and relatively stable real earnings and employment for the last 10 years. At the national level, however, employment and value added in Fabric Coating Mills declined by approximately 20% since 1997. Thus, the state's Fabric Coating Mills industry has remained relatively stable in the face of a national industry decline. For Industry 314, Eades, *et al* find that value added estimates at the national level indicate a more economically stable industry than do state employment and earnings statistics in the Carpet and Rugs Mills (31411) and Textile Bag and Canvas Mills (31491) industries.

Finally, at the national level, all seven five-digit industries in the Apparel industry (NAICS 315) exhibited significant declines in employment, earnings, and value added from 1990 to 2005. In South Carolina, employment losses for the period generally exceeded 80%.

### **Selected Subsectors of the Textile and Apparel Cluster**

The Location Quotient (LQ) (state industry employment share/national industry employment share) and relative employment growth rate (RGR) (state industry growth/national industry growth) analysis in Eades, *et al* identify five textile and apparel industries and five support industries as relatively promising candidates for dynamic clusters based on the state's comparative employment shares and growth rates.

The selected industries are:

NAICS 31321	Broadwoven Fabric Mills
NAICS 31323	Nonwoven Fabric Mills
NAICS 31324	Knit Fabric Mills
NAICS 31332	Fabric Coating Mills
NAICS 31511	Hosiery and Sock Mills
NAICS 32513	Synthetic Dye and Pigment Manufacturing
NAICS 336360	Motor Vehicle Seating and Interior Manufacturing
NAICS 339113	Surgical Appliances and Supplies Manufacturing
NAICS 423220	Home Furnishing Merchant Wholesalers
NAICS 423330	Women's, Children's, and Infants' Clothing and Accessories Merchant Wholesalers

Industry Growth. The above 10 industries contain both growing and declining sectors in terms of recent production output and employment opportunities. Of principal interest to this study are the sectors with the greatest growth potential as indicated by 2000 to 2005 changes in state employment, national employment, or national value added. Three of the 10 industries exhibited positive growth in value added at the national level (31323, 32513, 339113), one of the ten reported 2000 to 2005 employment growth in the state and nationally (423220), and two of the ten experienced 2000 to 2005 employment growth in the state but not for the nation as a whole (336360, 424330). In sum, six state industries exhibited both a relative competitive advantage (high LQ and RGR) and the potential for future growth (positive trends in national value added, state employment, or national employment).

These six sectors are:

31323	Nonwoven Fabric Mills
32513	Synthetic Dye and Pigment Manufacturing
336360	Motor Vehicle Seating and Interior Manufacturing
339113	Surgical Appliances and Supplies Manufacturing
423220	Home Furnishing Merchant Wholesalers
424330	Women's, Children's, and Infants' Clothing and Accessories Merchant Wholesalers

The remaining four candidates for cluster promotion (Broadwoven Fabric Mills (31321), Knit Fabric Mills (31324), Hosiery and Sock Mills (31511) and Fabric Coating Mills (31324)) are well represented in the state, but recent employment and production trends are negative. At the national level, the 2000 to 2005 decline in total output (as indicated by value added) ranged from -19% to -41% and the decline in employment ranged from -27% to -52% for the four textile and apparel sectors.

The fortunes of three parts of the TAC are illustrated in Figures 9, 10 and 11. The traditional textile and apparel industries, NAICS 313, 314 and 315, have each shed employees steadily since 2004 (see Figure 9). Moreover, supply chain employment in textile related chemicals (NAICS 325222 Noncellulosic Organic Fiber Manufacturing, NAICS 325221 Cellulosic Organic Fiber Manufacturing, NAICS 325131 Inorganic Dye and Pigment Manufacturing and NAICS 325132 Synthetic Organic Dye and Pigment Manufacturing) has been relatively stable since 2004. However, employment has declined from about 15,000 in 2004 to about 12,000 employees at the end of 2006 (see Figure 10).

In contrast, SC employment in TAC related warehousing and wholesaling activities have shown a steady increase in employment since early 2004 as shown in Figure 11. This increase has been a result of the strong employment performance in NAICS 423220 (Home Furnishing Merchant Wholesalers). In the aggregate, employment in NAICS 424330 (Women's, Children's, and Infants' Clothing and Accessories Merchant Wholesalers), NAICS 424310 Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers, and NAICS 424320 Men's and Boys' Clothing and Furnishings Merchant Wholesalers trended downward from the first quarter in 2004 to the beginning of 2006.

Figure 9. SC Traditional Textile/Apparel Employment

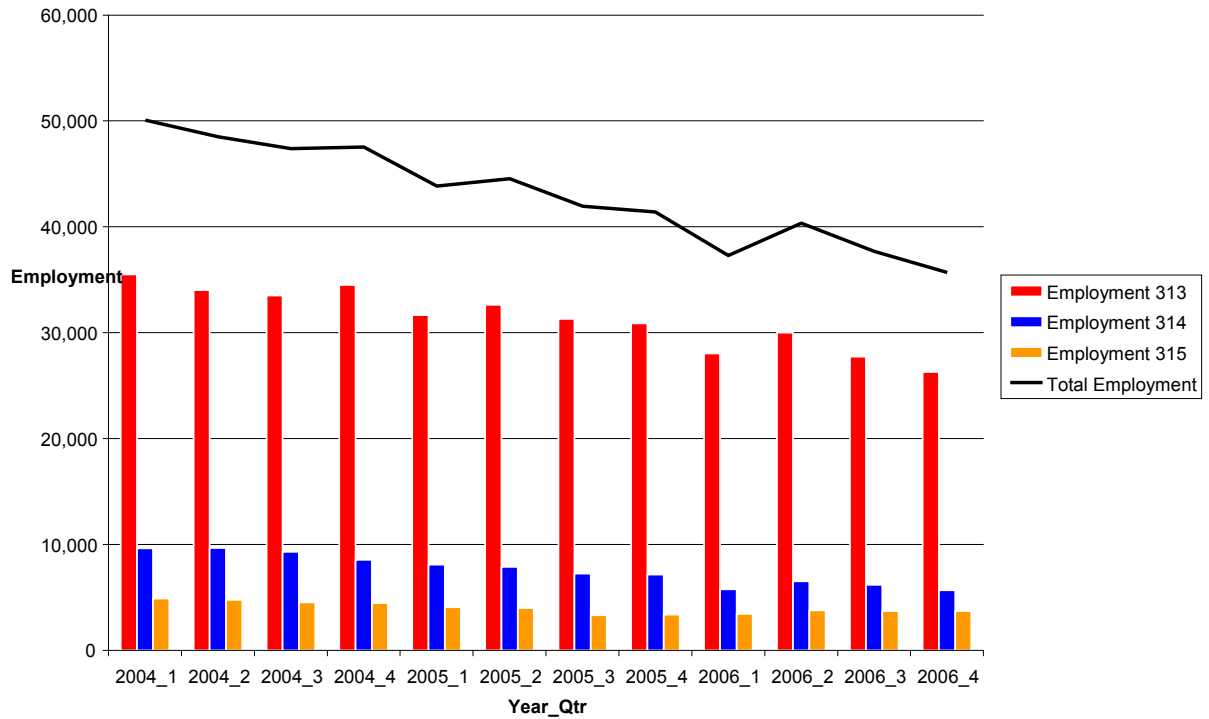


Figure 10. Selected TAC Suppliers Industries' Employment

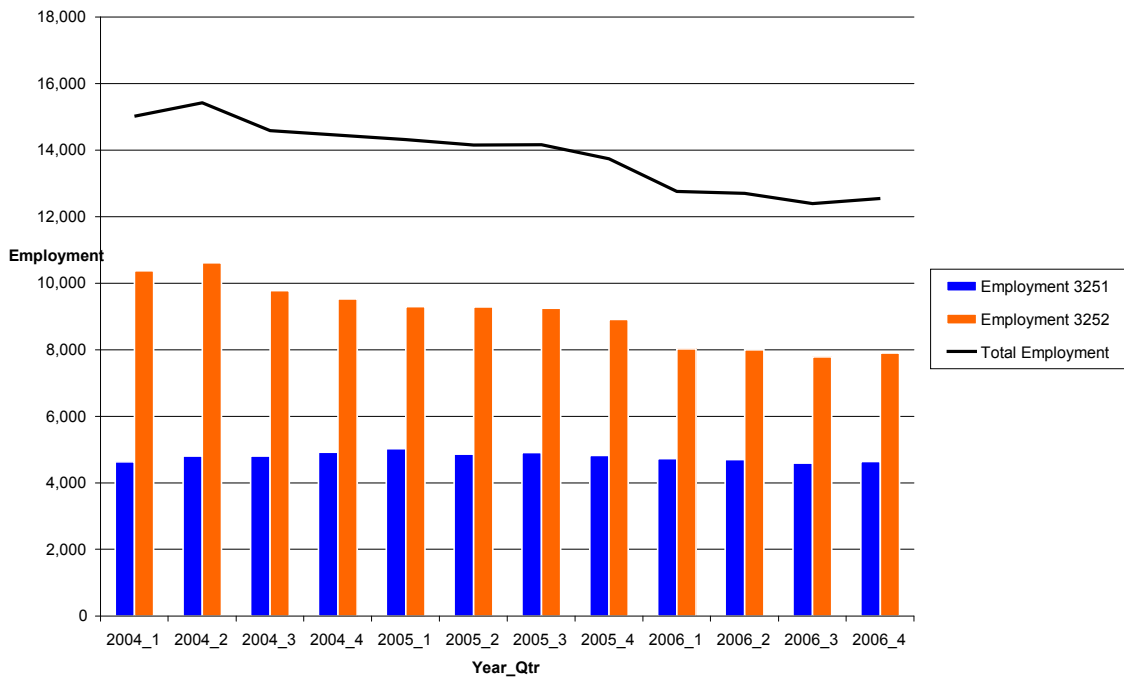
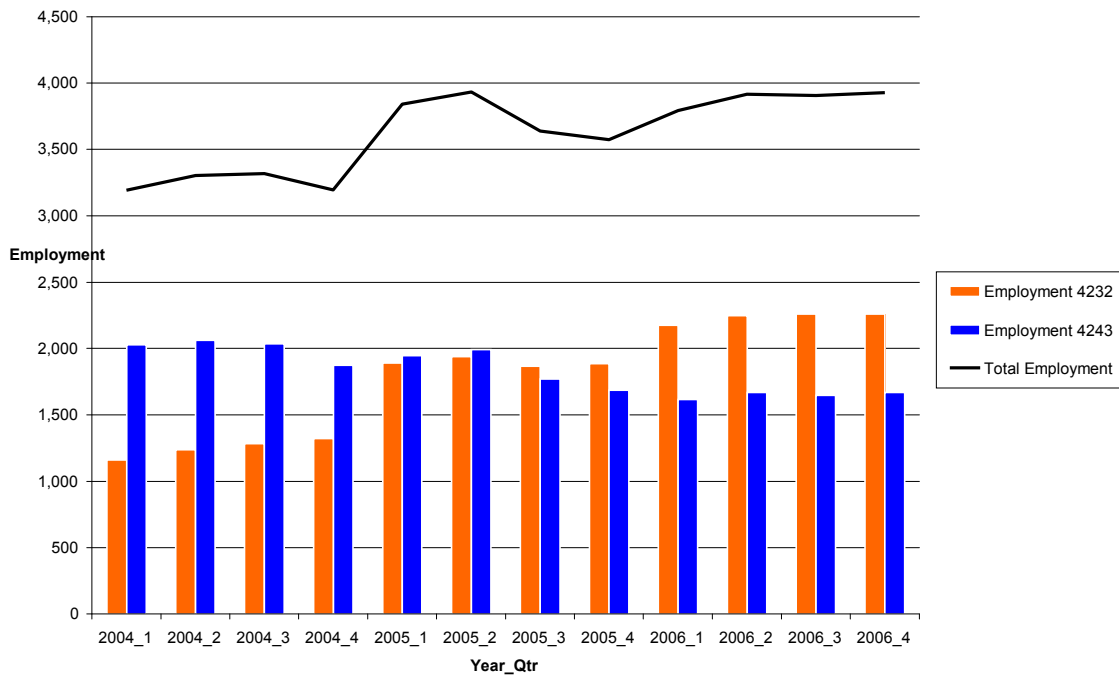


Figure 11. SC Textile/Apparel Related Product Wholesalers Employment



## V. Impacts of Growth Targets for the Textile and Apparel Cluster

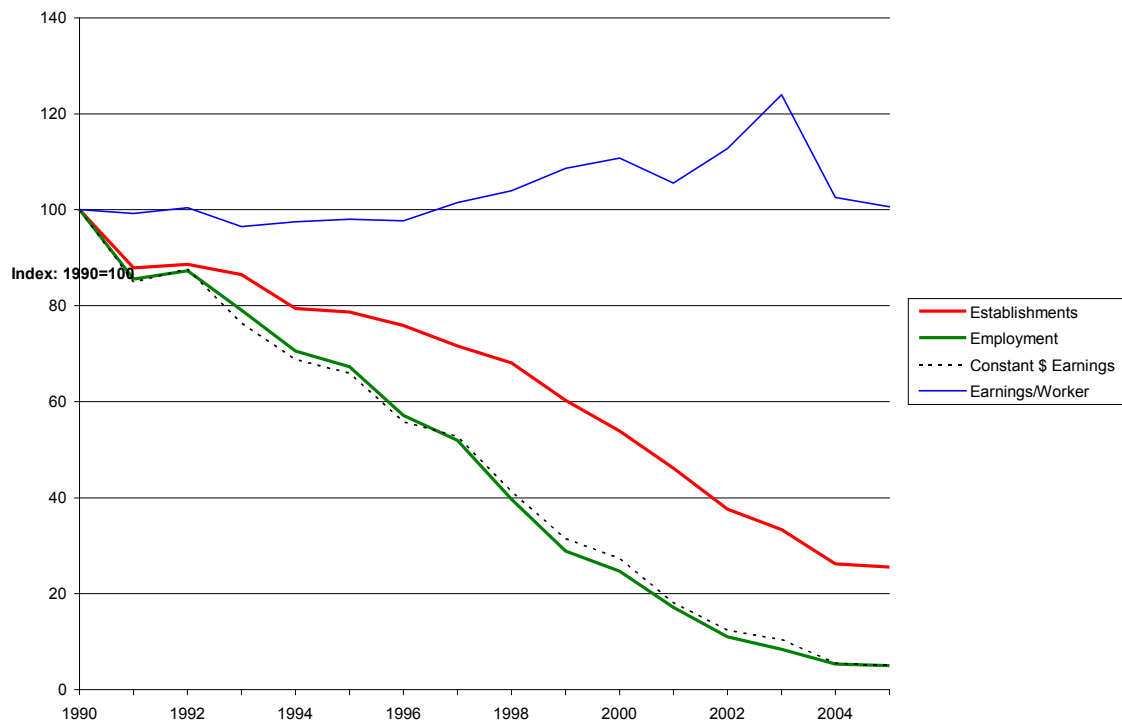
Over the next decade, the TAC industries will continue to be faced with an array of challenges from both foreign imports and other states with important textile and apparel industries. We have demonstrated in earlier sections and in Eades, *et al* that South Carolina has a mixed bag of growing and declining components in the Textile and Apparel Cluster. It is beyond the scope of this report to provide econometric estimates of future levels of shipments by the industries that comprise the TAC in South Carolina. As a pragmatic alternative, we define a set of growth targets for industry shipments to final users for each of the major components of the Textile and Apparel cluster over the next decade. Using the nomenclature in Cassill, *et al* 2007, there are subsectors and their constituent establishments that are: “Flourishing” “Coping” or “Potentially Vulnerable”.<sup>3</sup>

<sup>3</sup> “Preliminary results using the Global Textile Competitiveness Framework have indicated that the three segmentation groups (“Flourishing,” “Coping,” “Potentially Vulnerable”) have strategic positioning in the global textile complex. While *further analyses are needed*, it appears that: 1. “Flourishing” companies are implementing three (3) or more of the segmentation criteria (Table 25). These companies have a physical presence in a South Carolina cluster, and are “linked” with other organizations via business relationships, web presence, association membership, and/or company organization (headquarters in South Carolina). Flourishing companies are more likely to be involved in advanced activities, including innovations in technology, products, markets, and are marketing diverse products. 2. “Coping” companies have implemented two (2) of the segmentation criteria (Table 25) and are searching for opportunities and pursuing “linked connections” in the State --- both with customers and suppliers as well as with clusters. These companies, historically rooted in traditional textile and apparel manufacturing, have limited global “knowledge” but may be interested in pursuing a global presence. 3. “Potentially Vulnerable” companies have implemented only one (1) or no segmentation criteria as part of their business model. In general these

Apparel companies in South Carolina appear to be the *most vulnerable* to further decline. The survivors in this sector may be those that can emulate the quick responsiveness to changing consumer tastes that ‘lean retailing’ requires, like companies in the fashion centers of New York and Los Angeles. As suggested in the trends in Figure 12, standard products from low cost “cut and sew” establishments will be hard pressed to compete with imports, especially after the lifting of temporary quotas on Chinese goods at the end of 2008. Accordingly, we assume that real value of apparel shipments trends will continue over the next decade so that NAICS 315 industries in SC will fall by 50% by 2016 from 2006 levels.

**Figure 12. SC Establishment, Employment, and Earnings Trends 1990-2005:  
NAICS 31521 Cut and Sew Apparel Contractors**

Source: Census of Employment and Wages (ES202), 1990-2005. MIG, Inc. 2005



Does this mean that there is an “Apparel Apocalypse” brewing in South Carolina? For the cut and sew operations, further decline seems likely. However, even after ATC quotas are lifted from China at the end of 2008, analysts expect that expanding World trade in Apparel will benefit textile companies in the U.S. For example, Abernathy and Weil (2004) note that “Much of the textiles used in garments made in Mexico and the Caribbean – and potentially from Central America – come from the United States.” These “coping” textile firms in South Carolina can expand the textile supply chain, and

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companies are focusing efforts on tactical approaches to competition as represented on the left side of the fishbone diagram (e.g., traditional textile and apparel manufacturing efficiencies; basic/commodity product focus; limited product and market knowledge with limited product line(s)). Cassill, *et al* 2007 p. 76.

these gains may dominate the declining apparel sector effects in South Carolina. That is, fewer jobs in SC apparel establishments may be offset by added jobs in SC textile mill establishments that are providing supplies needed by apparel producers in Latin America and elsewhere to meet growth in demand for their exports.

Moreover, as noted above, Eades, *et al* identified growth opportunities across the NAICS 313 and 314 industry groups and in the supply chain. The “flourishing” firms in the industry are subsectors that have performed relatively well during the 2000-2005 period of aggregate industry decline. Specifically, South Carolina appears to have a competitive advantage relative to the U.S. in five subsectors of textile and apparel manufacturing and five supporting sectors to the industry.

#### Textiles and Apparel

- Broadwoven Fabric Mills
- Nonwoven Fabric Mills
  
- Knit Fabric mills
- Fabric Coating Mills
- Hosiery and Sock Mills

#### Supporting Industries

- Synthetic Dye and Pigment Manufacturing
- Motor Vehicle Seating and Interior Manufacturing
- Surgical Appliances and Supplies Manufacturing
- Home Furnishing Wholesalers
- Women's Children's Infants' Clothing Wholesalers

To estimate the potential impacts of the TAC in 2016, we use *targets for the real growth rates* of shipments from 2006 to 2016 for each of the TAC industries shown in column 3 of Table 4.

Traditional Textile and Apparel Industries. “Coping” firms in NAICS 313 and 314 are targeted to expand, on average, by 25% over the decade, except for “Flourishing” firms in NAICS 31323 (Nonwoven Fabric Mills) and NAICS 31332 (Fabric Coating Mills) that target a 50% expansion of shipments to final users (primarily exports) over the ten year period. “Potentially Vulnerable” firms in NAICS 315, Apparel, are expected to see shipments decline by 50% over the decade.

Raw Material Suppliers and Equipment. No real growth in Cotton farming and ginning is assumed while “Coping” textile chemicals and fibers are targeted to grow at 25% over the period. “Potentially vulnerable” Textile machinery declines by 25% over the decade.

Wholesaling. On average the four “Coping” textile and apparel wholesaling sectors are targeted to expand by 25% from 2006 to 2016.

Emerging textile sectors. Both “Flourishing” textile related surgical devices and auto products have growth targets of 50% in real terms over the ten year period.

TABLE 4. SOUTH CAROLINA SALES: APPAREL, TEXTILES AND FIBER TARGETED CHANGES IN FINAL DEMAND SALES	FINAL DEMAND	FINAL DEMAND	GROWTH LEVELS
	SALES IN 2006^	SALES IN 2016^	
	millions of	millions of	
	dollars	dollars	
<b>Traditional Textiles and Apparel industries:</b>			
<b>1. NAICS 313 Textile Mills (EXC 313230,313320)</b>	<b>\$4,996.372</b>	<b>25%</b>	<b>\$6,245.465</b>
313230 Nonwoven fabric mills	\$520.824	50%	\$781.236
313320 Fabric coating mills	\$144.732	50%	\$217.098
<b>2. NAICS 314 Textile Mill Products (EXC 31491,31499,31499)</b>	<b>\$1,345.770</b>	<b>25%</b>	<b>\$1,682.213</b>
31491 Textile bag and canvas mills	\$67.099	25%	\$83.873
31499 Tire cord and tire fabric mills	\$22.863	25%	\$28.578
31499 Other miscellaneous textile product mills	\$216.063	25%	\$270.079
<b>3. NAICS 315 Apparel</b>	<b>\$271.648</b>	<b>-50%</b>	<b>\$135.824</b>
<b>Traditional Textiles and Apparel industries SUBTOTAL:</b>	<b>\$7,585.370</b>		<b>\$9,444.366</b>
<b>Key raw material suppliers and equipment:</b>			
<b>4. NAICS 111920 Cotton Farms</b>	<b>\$91.370</b>	<b>0%</b>	<b>\$91.370</b>
<b>5. NAICS 115111 Cotton Gins</b>	<b>\$1.138</b>	<b>0%</b>	<b>\$1.138</b>
<b>6. NAICS 325222 Noncellulosic Organic Fiber Manufacturing</b>	<b>\$3,300.080</b>	<b>25%</b>	<b>\$4,125.100</b>
<b>7. NAICS 325221 Cellulosic Organic Fiber Manufacturing</b>	<b>\$251.322</b>	<b>25%</b>	<b>\$314.152</b>
<b>8. NAICS 325131 Inorganic Dye and Pigment Manufacturing</b>	<b>\$754.083</b>	<b>25%</b>	<b>\$942.604</b>
<b>9. NAICS 325132 Synthetic Organic Dye and Pigment Manufacturing</b>	<b>\$507.244</b>	<b>25%</b>	<b>\$634.056</b>
<b>10. NAICS 333292 Textile Machinery</b>	<b>\$150.073</b>	<b>-25%</b>	<b>\$112.555</b>
<b>Key raw material suppliers and equipment SUBTOTAL:</b>	<b>\$5,055.311</b>		<b>\$6,220.975</b>
<b>Wholesaling (margin activities only):</b>			
<b>11. NAICS 424310 Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers</b>		<b>25%</b>	
<b>12. NAICS 423220 Home Furnishings Merchant Wholesalers</b>		<b>25%</b>	<b>\$0.000</b>
<b>13. NAICS 424320 Men's and Boys' Clothing and Furnishings Merchant Wholesalers</b>		<b>25%</b>	<b>\$0.000</b>
<b>14. NAICS 424330 Women's, Children's, and Infants' Clothing and Accessories</b>		<b>25%</b>	<b>\$0.000</b>
<b>Merchant Wholesalers SUBTOTAL:</b>	<b>\$385.073</b>	<b>25%</b>	<b>\$481.341</b>
<b>Selected emerging producers of textile/fiber products</b>			
<b>15. NAICS 339113 Surgical Appliances and Supplies Manufacturing</b>	<b>\$208.496</b>	<b>50%</b>	<b>\$312.744</b>
<b>16. NAICS 336360 Motor Vehicle Seating and Interior Manufacturing</b>	<b>\$81.177</b>	<b>50%</b>	<b>\$121.765</b>
<b>Selected emerging producers of textile/fiber products</b>	<b>\$289.673</b>		<b>\$434.509</b>
	<b>\$13,315.426</b>		<b>\$16,581.191</b>

Source: Estimates by the authors using IMPLAN 2006

The growth targets by industry in TAC from Table 4 suggest an optimistic view of the TAC growth potential, given trends over the last ten years in the traditional sectors of this industry cluster. With this scenario, the total impacts of the TAC on the SC economy in 2016 are displayed in Table 5.

Table 5. TARGET Impacts of the Textile and Apparel Industrial Cluster (TAC) on the South Carolina Economy

	2016					
	Final Demand	Supply Chain	Consumer Induced	TAC TOTAL	SOUTH CAROLINA TOTAL	TAC SHARES
<b>Number of Jobs</b>	58,093	38,395	43,138	139,626	3,107,311	4.5%
<b>Output (Sales) (\$bil 2006 dol)</b>	\$16.581	\$5.928	\$3.870	\$26.379	\$339.937	7.8%
<b>Value Added (\$bil 2006 dol)</b>	\$4.607	\$2.812	\$2.293	\$9.713	\$171.707	5.7%

SOURCE: IMPLAN 2006 COMPUTATIONS BY THE AUTHORS

Final demand sales (primarily exports to other states and on international markets) rise from about \$13.1 billion in 2006 to \$16.5 billion in 2016. These final demand sales

result in 139,626 jobs, \$9.7 billion in value added and about \$26.5 billion in total sales in South Carolina. If the South Carolina economy grows at a real rate of 3% per year, the TAC contributions to the overall economy under our optimistic scenario, while larger than in 2006 in absolute terms, fall from 4.9% of employment in 2006 to 4.5% of employment in 2016, about 8.4% of gross output in 2006 to 7.8% in 2016 and from 6.1% of valued added in 2006 to 5.7% in 2016.

## **VI. Summary**

An interindustry model of the South Carolina economy for 2006 (IMPLAN) is used to estimate the contributions of the textile and apparel industrial complex, or cluster TAC, to the state's economy. This model generates a view of the 2006 linkages between sectors of the state's economy and provides estimates of the value of shipments (sales) by each state industry to domestic and foreign markets. The virtue of this approach is that a complete accounting is made of all state economic activity and thus it is possible to isolate the contributions made by a set of industries like textiles and apparel to total state levels of economic activity.

The Textile and Apparel Cluster (TAC) is defined by a group of industries that include: the traditional textile and apparel sectors (NAICS, 313, 314 and 315), direct supporting supply chain industries that provide key raw material suppliers and equipment ( NAICS 111920 Cotton Farms, NAICS 115111 Cotton Gins, NAICS 325222 Noncellulosic Organic Fiber Manufacturing , NAICS 325221 Cellulosic Organic Fiber Manufacturing, NAICS 325131 Inorganic Dye and Pigment Manufacturing, NAICS 325132, Synthetic Organic Dye and Pigment Manufacturing, and NAICS 333292 Textile Machinery), related wholesaling margin activities ( NAICS 424310 Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers, NAICS 423220 Home Furnishings Merchant Wholesalers, NAICS 424320 Men's and Boys' Clothing and Furnishings Merchant Wholesalers, and NAICS 424330 Women's, Children's, and Infants' Clothing and Accessories Merchant Wholesalers), and two emerging producers of textile/fiber products (NAICS 339113 Surgical Appliances and Supplies Manufacturing and NAICS 336360 Motor Vehicle Seating and Interior Manufacturing).

TAC impacts now and in the future. A snapshot of the TAC contributions to the SC economy in (2006) is provided in Table 6 along with impacts in 2016 using growth targets for each component of the TAC over the next decade. The growth targets allow 25% real growth over the decade in "Coping industries," 50% growth in "Flourishing" industries and no growth or 50% declines in "Potentially Vulnerable" industries (see Table 4 for target growth rates for each industry in the TAC). This target scenario suggests overall growth in the TAC from 2006 to 2016. Employment is projected to grow from 113, 258 TAC related jobs in 2006 to 139,626 in 2016. Still, this suggests a fall in the TAC employment share in all SC industries from 4.9% in 2006 to 4.5% in 2016.

While employment and earnings trends over the past 15 years in the TAC industries generally show decline, several sectors of the TAC have done well – especially in neighboring states. Over the past two decades, industry shipments in the "coping" and

“flourishing” sectors in South Carolina have not been able to offset the declines in “potentially vulnerable” sectors of the TAC in South Carolina so that overall TAC employment and earnings have declined since 1990. Accordingly, the scenario depicted in the growth targets for 2016 is in sharp contrast to most TAC industry trends since 1990.

To achieve the levels of economic activity in the 2016 targets will require a substantial effort by TAC industry leaders to exploit new and expanding markets for textile products and fibers in the supply chain for apparel production outside of South Carolina and the U.S. It may also require substantial growth in nonwovens and nontraditional textile products. Abernathy, et al (2005, p.1) contend that two major forces – lean retailing that provides incentives for close proximity to final customers, and trade and tariff policies that affect linkages between countries – can offset labor costs in establishing best locations for a variety of textile and apparel products. In their view, domestic firms that supply products where “responsiveness and flexibility” are important will continue to compete effectively with imports.

In this environment, some of the components of the South Carolina Textile and Apparel cluster are likely to maintain existing market shares and to find opportunities to grow in new product markets. As Eades, *et al* conclude, six state industries exhibited both a relative competitive advantage and good potential for future growth (positive trends in national Value Added, state employment, or national employment). These six sectors are: NAICS 31323, Nonwoven Fabric Mills, NAICS 32513 Synthetic Dye and Pigment Manufacturing, NAICS 336360 Motor Vehicle Seating and Interior Manufacturing, NAICS 339113 Surgical Appliances and Supplies Manufacturing, NAICS 423220 Home Furnishing Merchant Wholesalers and NAICS 424330 Women's, Children's, and Infants' Clothing and Accessories Merchant Wholesalers. These industries appear to have a good chance to become the leading sectors of the Textile and Apparel Cluster over the next decade in South Carolina.

**Table 6. Contributions of the Textile and Apparel Industrial Cluster (TAC) to the South Carolina Economy, Estimated 2006 and Targets 2016**

	TAC RELATED TOTAL 2006	2006 SOUTH CAROLINA TOTAL 2016	TAC RELATED SHARES 2006	TAC TARGETS TOTAL 2016	2016 SOUTH CAROLINA TOTAL 2016	TAC TARGETS SHARES 2016
<b>Number of Jobs</b>	113,258	2,312,131	4.9%	139,626	3,107,311	4.5%
<b>Output (Sales) (\$billions)</b>	\$21.196	\$252.945	8.4%	\$26.379	\$339.937	7.8%
<b>Value Added (\$billions)</b>	\$7.824	\$127.766	6.1%	\$9.713	\$171.707	5.7%

Source: Estimates by the authors using IMPLAN 2006

## REFERENCES

- Abernathy, Fred and David Weil. 2004. "Apparel Apocalypse? The Americas' Textile Industries Won't Die When Quotas Do." *Washington Post*, November 18.
- Abernathy, Fred, Anthony Volpe, and David Weil. 2005. *The Future of the Apparel and Textile Industries: Prospects and Choices for Public and Private Actors*. Harvard Center for Textile and Apparel Research, Cambridge, MA. Version: December 22, 2005.
- Brambilla, Irene, Amit Khandelwal and Peter Schott. 2007. *China's Experience under the Multifiber Arrangement (MFA) and the Agreement on Textiles and Clothing (ATC)*. National Bureau of Economic Research. Working Paper 13346.
- Cassill, Nancy, A. Blanton Godfrey, Trevor Little, Stacey Frederick, and Laura Sampson. 2007. *Improving Global Market Competitiveness of the Textile Industry Cluster in South Carolina*. College of Textiles. North Carolina State University. October 15.
- Eades, Dan, David Barkley and Mark Henry. 2007. *South Carolina's Textiles and Apparel Industries: An Analysis of Trends in Traditional and Emerging Sectors*. UCED University Center Research Report 12-2007-01, Clemson University, Clemson, SC.
- Harris, Infosource. Selectory Business Database 2007.
- Krugman, Paul. 1991. *Geography and Trade*. MIT Press.
- Micro IMPLAN Group. 2006.
- U.S. Department of Commerce, International Trade Administration, Office of Textiles and Apparel (OTEXA) <http://otexa.ita.doc.gov/>.

**APPENDIX**

**SC EMPLOYMENT ASSOCIATED WITH THE TEXTILE AND APPAREL  
INDUSTRY COMPLEX (TAC), 2006**

	Number of jobs:			
	FINAL DEMAND	SUPPLY CHAIN	CONSUMER INDUCED	TOTAL
<b>IMPLAN SECTOR/NAICS</b>				
1 111 Crop Farming	0.0	65.1	187.4	252.5
8 Cotton farming	1,009.5	44.7	0.5	1,054.7
12 112 Livestock	0.0	329.9	271.9	601.8
14 113 Forestry & Logging	0.0	20.3	5.1	25.3
16 114 Fishing- Hunting & Trapping	0.0	1.8	17.9	19.7
18 115 Ag & Forestry Svcs	39.5	286.2	37.0	362.7
19 211 Oil & gas extraction	0.0	85.9	12.7	98.6
20 212 Mining	0.0	9.7	0.4	10.1
27 213 Mining services	0.0	0.8	0.1	1.0
30 221 Utilities	0.0	655.0	207.0	862.0
33 230 Construction	0.0	573.3	151.8	725.1
46 311 Food products	0.0	61.4	433.3	494.7
85 312 Beverage & Tobacco	0.0	0.5	11.1	11.6
92 313 Textile Mills	23,658.0	1,837.2	5.6	25,500.8
95 Nonwoven fabric mills	1,554.8	26.9	0.8	1,582.5
98 Fabric coating mills	466.8	4.3	0.2	471.3
99 314 Textile Products	4,215.6	6.8	2.2	4,224.6
101 Textile bag and canvas mills	476.3	0.5	0.3	477.0
102 Tire cord and tire fabric mills	67.5	0.2	0.0	67.7
103 Other miscellaneous textile product m	1,414.7	3.5	0.4	1,418.6
104 315 Apparel Mfg	1,867.3	49.7	56.8	1,973.8
109 316 Leather & Allied	0.0	1.2	0.6	1.9
112 321 Wood Products	0.0	80.8	20.7	101.4
124 322 Paper Manufacturing	0.0	7.8	1.9	9.7
136 323 Printing & Related	0.0	132.3	25.7	158.0
142 324 Petroleum & coal prod	0.0	11.6	3.7	15.3
147 325 Chemical Manufacturing	0.0	786.3	74.7	861.0
149 Synthetic dye and pigment manufactu	848.6	185.0	1.1	1,034.8
150 Other basic inorganic chemical manu	1,354.9	115.8	2.3	1,473.1
154 Cellulosic organic fiber manufacturin	315.9	0.8	0.0	316.6
155 Noncellulosic organic fiber manufact	5,625.2	67.5	5.6	5,698.3
172 326 Plastics & rubber prod	0.0	250.5	73.6	324.1
183 327 Nonmetal mineral prod	0.0	17.9	3.7	21.6
203 331 Primary metal mfg	0.0	5.2	0.7	5.9
224 332 Fabricated metal prod	0.0	46.9	7.9	54.7
257 333 Machinery Mfg	0.0	65.9	20.6	86.6
265 Textile machinery manufacturing	852.4	85.8	0.0	938.3
302 334 Computer & oth electron	0.0	181.0	67.4	248.4
325 335 Electirical eqpt & appliances	0.0	39.4	21.6	61.0
344 336 Transportation eqpmt	0.0	1.7	25.1	26.7
350 Motor vehicle parts manufacturing	227.8	13.4	9.4	250.5
362 337 Furniture & related prod	0.0	13.6	63.3	76.9
374 339 Miscellaneous mfg	0.0	56.1	88.9	145.0
376 Surgical appliance and supplies manu	1,004.3	40.6	20.7	1,065.7
390 42 Wholesale Trade	2,495.5	2,897.9	812.7	6,206.1
391 481 Air transportation	0.0	18.5	12.4	30.9
392 482 Rail Transportation	0.0	155.7	15.5	171.2
393 483 Water transportation	0.0	9.0	4.3	13.3
394 484 Truck transportation	0.0	2,569.1	323.2	2,892.3
395 485 Transit & ground passengers	0.0	25.6	46.6	72.3
396 486 Pipeline transportation	0.0	0.1	0.0	0.2
397 487 Sightseeing transportation	0.0	554.1	77.6	631.7
398 491 Postal service	0.0	189.7	139.6	329.3
399 492 Couriers & messengers	0.0	311.0	85.2	396.2
400 493 Warehousing & storage	0.0	1,330.8	98.6	1,429.3
401 441 Motor veh & parts dealers	0.0	88.3	819.7	907.9
402 442 Furniture & home furnishings	0.0	34.8	265.8	300.6
403 443 Electronics & appliances stores	0.0	27.7	184.6	212.3
404 444 Bldg materials & garden dealers	0.0	64.5	503.0	567.5
405 445 food & beverage stores	0.0	115.8	1,065.9	1,181.7
406 446 Health & personal care stores	0.0	56.7	429.2	485.9

**SC EMPLOYMENT ASSOCIATED WITH THE TEXTILE AND APPAREL  
INDUSTRY COMPLEX (TAC), 2006**

	<b>Number of jobs:</b>			
	<b>FINAL DEMAND</b>	<b>SUPPLY CHAIN</b>	<b>CONSUMER INDUCED</b>	<b>TOTAL</b>
<b>IMPLAN SECTOR/NAICS</b>				
407 447 Gasoline stations	0.0	44.7	354.1	398.8
408 448 Clothing & accessories stores	0.0	70.7	701.5	772.2
409 451 Sports- hobby- book & music sto	0.0	33.0	286.0	319.0
410 452 General merch stores	0.0	121.0	1,115.8	1,236.8
411 453 Misc retailers	0.0	68.2	628.6	696.8
412 454 Non-store retailers	0.0	64.7	513.0	577.7
413 511 Publishing industries	0.0	104.6	74.3	178.9
418 512 Motion picture & sound recordin	0.0	25.6	47.4	73.0
420 515 Broadcasting	0.0	256.0	263.0	519.1
423 518 Internet & data process svcs	0.0	82.8	16.8	99.6
425 522 Credit inmediation & related	0.0	434.8	167.4	602.2
426 523 Securities & other financial	0.0	212.7	262.3	475.0
427 524 Insurance carriers & related	0.0	178.2	456.1	634.3
429 525 Funds- trusts & other finan	0.0	0.4	54.7	55.1
430 521 Monetary authorities	0.0	326.3	322.3	648.6
431 531 Real estate	0.0	892.4	1,169.5	2,061.9
432 532 Rental & leasing svcs	0.0	210.7	130.0	340.7
436 533 Lessor of nonfinance intang asset	0.0	8.0	0.9	8.9
437 541 Professional- scientific & tech sv	0.0	4,674.6	978.5	5,653.1
451 551 Management of companies	0.0	1,464.5	112.5	1,577.0
452 561 Admin support svcs	0.0	1,331.5	679.2	2,010.7
460 562 Waste mgmt & remediation svcs	0.0	58.5	17.9	76.4
461 611 Educational svcs	0.0	64.5	1,084.1	1,148.7
464 621 Ambulatory health care	0.0	2.5	2,428.6	2,431.1
467 622 Hospitals	0.0	0.0	1,103.3	1,103.3
468 623 Nursing & residential care	0.0	0.0	1,026.2	1,026.2
469 624 Social assistance	0.0	0.1	1,085.8	1,085.8
471 711 Performing arts & spectator sport	0.0	292.5	306.4	598.9
475 712 Museums & similar	0.0	0.0	30.0	30.0
476 713 Amusement- gambling & recreat	0.0	80.5	547.6	628.1
479 721 Accomodations	0.0	710.6	478.6	1,189.3
481 722 Food svcs & drinking places	0.0	976.4	3,505.1	4,481.5
482 811 Repair & maintenance	0.0	1,031.2	404.6	1,435.7
487 812 Personal & laundry svcs	0.0	301.9	875.4	1,177.3
491 813 Religious- grantmaking- & simila	0.0	0.0	411.3	411.3
493 Civic- social- professional and simila	0.0	378.6	362.5	741.1
494 814 Private households	0.0	0.0	979.7	979.7
495 92 Government & non NAICs	0.0	1,733.2	5,001.3	6,734.5
<b>TOTALS</b>	47,494.8	30,956.0	34,807.5	113,258.3

**Source: IMPLAN 2006 computations by the authors**

**SC GROSS OUTPUT (SALES) BY THE TEXTILE AND APPAREL INDUSTRY  
COMPLEX (TAC), 2006**

	\$	\$	\$	\$
	FINAL	SUPPLY	CONSUMER	TOTAL
	DEMAND	CHAIN	INDUCED	
<b>IMPLAN SECTOR/NAICS</b>				
1 111 Crop Farming	0	3,159,283	9,097,601	12,256,884
8 Cotton farming	91,370,000	4,048,160	44,987	95,463,144
12 112 Livestock	0	30,539,590	25,171,594	55,711,184
14 113 Forestry & Logging	0	5,315,830	1,333,602	6,649,431
16 114 Fishing- Hunting & Trapping	0	181,364	1,819,804	2,001,169
18 115 Ag & Forestry Svcs	1,138,000	8,243,334	1,066,034	10,447,368
19 211 Oil & gas extraction	0	29,245,738	4,311,931	33,557,668
20 212 Mining	0	1,739,845	70,404	1,810,249
27 213 Mining services	0	336,577	49,111	385,688
30 221 Utilities	0	288,492,448	91,157,336	379,649,792
33 230 Construction	0	65,421,964	17,324,274	82,746,240
46 311 Food products	0	19,469,870	137,369,904	156,839,776
85 312 Beverage & Tobacco	0	301,725	7,203,476	7,505,201
92 313 Textile Mills	4,996,371,968	388,009,984	1,175,538	5,385,557,504
95 Nonwoven fabric mills	520,823,968	9,009,760	255,727	530,089,440
98 Fabric coating mills	144,732,000	1,342,624	48,772	146,123,392
99 314 Textile Products	1,345,769,984	2,168,192	687,656	1,348,625,792
101 Textile bag and canvas mills	67,099,000	64,792	43,944	67,207,736
102 Tire cord and tire fabric mills	22,863,000	64,968	2,296	22,930,264
103 Other miscellaneous textile product m	216,063,008	532,576	55,280	216,650,864
104 315 Apparel Mfg	271,648,000	7,232,928	8,267,686	287,148,608
109 316 Leather & Allied	0	135,186	67,796	202,981
112 321 Wood Products	0	18,016,120	4,611,742	22,627,862
124 322 Paper Manufacturing	0	3,556,526	856,089	4,412,615
136 323 Printing & Related	0	11,868,550	2,304,610	14,173,160
142 324 Petroleum & coal prod	0	12,748,737	4,035,479	16,784,216
147 325 Chemical Manufacturing	0	683,984,000	64,998,196	748,982,208
149 Synthetic dye and pigment manufactu	507,244,000	110,599,712	685,778	618,529,472
150 Other basic inorganic chemical manu	754,083,008	64,459,648	1,305,752	819,848,384
154 Cellulosic organic fiber manufacturin	251,322,000	606,832	405	251,929,232
155 Noncellulosic organic fiber manufact	3,300,080,128	39,590,912	3,275,615	3,342,946,560
172 326 Plastics & rubber prod	0	68,966,904	20,272,268	89,239,168
183 327 Nonmetal mineral prod	0	4,896,523	1,005,630	5,902,152
203 331 Primary metal mfg	0	2,872,483	381,318	3,253,800
224 332 Fabricated metal prod	0	10,396,257	1,752,097	12,148,354
257 333 Machinery Mfg	0	23,493,348	7,346,445	30,839,792
265 Textile machinery manufacturing	150,072,992	15,110,432	6,068	165,189,488
302 334 Computer & oth electron	0	87,762,304	32,655,662	120,417,968
325 335 Electircal eqpt & appliances	0	12,247,541	6,713,325	18,960,866
344 336 Transportation eqpmt	0	1,081,180	16,245,938	17,327,118
350 Motor vehicle parts manufacturing	81,177,000	4,763,400	3,340,663	89,281,064
362 337 Furniture & related prod	0	1,940,885	9,026,446	10,967,331
374 339 Miscellaneous mfg	0	8,767,979	13,890,246	22,658,224
376 Surgical appliance and supplies manu	208,496,000	8,437,488	4,306,084	221,239,568
390 42 Wholesale Trade	385,072,992	447,157,472	125,399,936	957,630,400
391 481 Air transportation	0	3,521,467	2,347,204	5,868,671
392 482 Rail Transportation	0	40,358,152	4,004,606	44,362,756
393 483 Water transportation	0	4,038,542	1,932,309	5,970,851
394 484 Truck transportation	0	317,656,768	39,963,972	357,620,736
395 485 Transit & ground passengers	0	1,112,636	2,022,353	3,134,988
396 486 Pipeline transportation	0	143,739	47,775	191,514
397 487 Sightseeing transportation	0	40,803,256	5,711,878	46,515,136
398 491 Postal service	0	12,546,931	9,233,501	21,780,432
399 492 Couriers & messengers	0	20,820,786	5,701,061	26,521,846
400 493 Warehousing & storage	0	77,788,528	5,761,750	83,550,280
401 441 Motor veh & parts dealers	0	8,676,211	80,555,024	89,231,232
402 442 Furniture & home furnishings	0	2,839,106	21,695,606	24,534,712
403 443 Electronics & appliances stores	0	1,653,560	11,019,100	12,672,660
404 444 Bldg materials & garden dealers	0	5,602,408	43,704,520	49,306,928

**SC GROSS OUTPUT (SALES) BY THE TEXTILE AND APPAREL INDUSTRY  
COMPLEX (TAC), 2006**

	\$	\$	\$	\$
	FINAL	SUPPLY	CONSUMER	TOTAL
	DEMAND	CHAIN	INDUCED	
<b>IMPLAN SECTOR/NAICS</b>				
405 445 food & beverage stores	0	6,652,191	61,254,300	67,906,488
406 446 Health & personal care stores	0	3,665,536	27,752,340	31,417,876
407 447 Gasoline stations	0	3,315,202	26,273,030	29,588,232
408 448 Clothing & accessories stores	0	3,974,226	39,433,096	43,407,320
409 451 Sports- hobby- book & music sto	0	1,350,425	11,704,833	13,055,258
410 452 General merch stores	0	6,503,016	59,942,140	66,445,156
411 453 Misc retailers	0	2,085,407	19,229,202	21,314,608
412 454 Non-store retailers	0	3,547,998	28,128,666	31,676,664
413 511 Publishing industries	0	16,882,218	11,994,653	28,876,872
418 512 Motion picture & sound recordin	0	3,629,649	6,714,168	10,343,817
420 515 Broadcasting	0	74,101,344	76,117,112	150,218,464
423 518 Internet & data process svcs	0	18,334,864	3,714,016	22,048,880
425 522 Credit intermediation & related	0	56,973,144	21,930,782	78,903,928
426 523 Securities & other financial	0	24,920,932	30,739,142	55,660,072
427 524 Insurance carriers & related	0	32,535,348	83,300,856	115,836,208
429 525 Funds- trusts & other finan	0	106,533	14,014,396	14,120,929
430 521 Monetary authorities	0	69,132,864	68,269,960	137,402,816
431 531 Real estate	0	126,413,728	165,669,472	292,083,200
432 532 Rental & leasing svcs	0	24,592,560	15,167,912	39,760,472
436 533 Lessor of nonfinance intang asset	0	33,872,636	3,716,433	37,589,068
437 541 Professional- scientific & tech sv	0	504,269,024	105,552,416	609,821,440
451 551 Management of companies	0	229,992,368	17,666,290	247,658,656
452 561 Admin support svcs	0	58,439,912	29,812,164	88,252,080
460 562 Waste mgmt & remediation svcs	0	12,997,020	3,970,336	16,967,356
461 611 Educational svcs	0	3,032,354	50,939,416	53,971,768
464 621 Ambulatory health care	0	266,468	256,320,288	256,586,752
467 622 Hospitals	0	0	116,661,416	116,661,416
468 623 Nursing & residential care	0	0	45,250,916	45,250,916
469 624 Social assistance	0	2,220	36,214,056	36,216,276
471 711 Performing arts & spectator sport	0	7,832,358	8,204,475	16,036,832
475 712 Museums & similar	0	0	2,257,097	2,257,097
476 713 Amusement- gambling & recreat	0	4,398,467	29,930,498	34,328,964
479 721 Accomodations	0	51,561,908	34,727,276	86,289,184
481 722 Food svcs & drinking places	0	47,021,388	168,793,680	215,815,072
482 811 Repair & maintenance	0	91,991,384	36,089,996	128,081,376
487 812 Personal & laundry svcs	0	17,791,262	51,584,616	69,375,880
491 813 Religious- grantmaking- & simila	0	0	18,562,950	18,562,950
493 Civic- social- professional and simila	0	13,725,765	13,143,631	26,869,396
494 814 Private households	0	0	6,587,128	6,587,128
495 92 Government & non NAICs	0	156,223,808	450,784,480	607,008,256
<b>Total</b>	13,315,427,048	4,758,079,585	3,122,860,829	21,196,367,241

**Source: IMPLAN 2006 computations by the authors**

**SC VALUE ADDED BY THE TEXTILE AND APPAREL INUSTRY COMPLEX  
(TAC), 2006**

	\$	\$	\$	\$
	<b>FINAL</b>	<b>SUPPLY</b>	<b>CONSUMER</b>	<b>TOTAL</b>
	<b>DEMAND</b>	<b>CHAIN</b>	<b>INDUCED</b>	
<b>IMPLAN SECTOR/NAICS</b>				
1 111 Crop Farming	0	2,195,749	6,322,968	8,518,716
8 Cotton farming	35,140,888	1,556,922	17,302	36,715,112
12 112 Livestock	0	8,497,877	7,004,191	15,502,068
14 113 Forestry & Logging	0	1,278,249	320,679	1,598,928
16 114 Fishing- Hunting & Trapping	0	37,823	379,516	417,339
18 115 Ag & Forestry Svcs	802,335	5,811,879	751,596	7,365,811
19 211 Oil & gas extraction	0	6,033,929	889,630	6,923,559
20 212 Mining	0	965,595	39,073	1,004,668
27 213 Mining services	0	42,586	6,214	48,800
30 221 Utilities	0	226,675,824	71,624,632	298,300,448
33 230 Construction	0	26,735,468	7,079,772	33,815,240
46 311 Food products	0	3,269,889	23,070,744	26,340,634
85 312 Beverage & Tobacco	0	51,115	1,220,333	1,271,447
92 313 Textile Mills	1,226,387,328	95,239,208	288,542	1,321,915,008
95 Nonwoven fabric mills	141,146,208	2,441,696	69,303	143,657,200
98 Fabric coating mills	45,412,472	421,274	15,303	45,849,052
99 314 Textile Products	399,769,920	644,076	204,273	400,618,272
101 Textile bag and canvas mills	22,393,214	21,623	14,666	22,429,504
102 Tire cord and tire fabric mills	7,462,781	21,206	749	7,484,737
103 Other miscellaneous textile product m	69,380,760	171,017	17,751	69,569,528
104 315 Apparel Mfg	92,587,808	2,465,253	2,817,937	97,871,000
109 316 Leather & Allied	0	35,840	17,974	53,814
112 321 Wood Products	0	6,352,565	1,626,121	7,978,686
124 322 Paper Manufacturing	0	1,165,683	280,591	1,446,274
136 323 Printing & Related	0	8,189,425	1,590,205	9,779,630
142 324 Petroleum & coal prod	0	1,238,233	391,950	1,630,182
147 325 Chemical Manufacturing	0	150,904,448	14,340,272	165,244,720
149 Synthetic dye and pigment manufactu	122,264,272	26,658,558	165,298	149,088,128
150 Other basic inorganic chemical manu	247,253,312	21,135,420	428,138	268,816,864
154 Cellulosic organic fiber manufacturin	77,763,176	187,764	125	77,951,064
155 Noncellulosic organic fiber manufact	805,655,424	9,665,411	799,683	816,120,512
172 326 Plastics & rubber prod	0	24,464,216	7,191,060	31,655,276
183 327 Nonmetal mineral prod	0	2,181,400	448,008	2,629,408
203 331 Primary metal mfg	0	679,937	90,261	770,197
224 332 Fabricated metal prod	0	3,854,637	649,628	4,504,265
257 333 Machinery Mfg	0	6,129,604	1,916,747	8,046,351
265 Textile machinery manufacturing	56,653,052	5,704,238	2,291	62,359,580
302 334 Computer & oth electron	0	11,547,775	4,296,836	15,844,611
325 335 Electircal eqpt & appliances	0	4,661,027	2,554,879	7,215,906
344 336 Transportation eqpmt	0	2,486,447	2,486,025	2,651,472
350 Motor vehicle parts manufacturing	18,064,378	1,060,003	743,400	19,867,780
362 337 Furniture & related prod	0	894,937	4,162,069	5,057,006
374 339 Miscellaneous mfg	0	3,974,908	6,297,055	10,271,962
376 Surgical appliance and supplies manu	85,636,384	3,465,563	1,768,655	90,870,600
390 42 Wholesale Trade	259,490,256	301,327,296	84,503,616	645,321,152
391 481 Air transportation	0	792,817	528,446	1,321,263
392 482 Rail Transportation	0	23,891,016	2,370,627	26,261,642
393 483 Water transportation	0	711,067	340,222	1,051,289
394 484 Truck transportation	0	142,309,520	17,903,770	160,213,296
395 485 Transit & ground passengers	0	605,881	1,101,263	1,707,144
396 486 Pipeline transportation	0	64,690	21,501	86,192
397 487 Sightseeing transportation	0	32,411,264	4,537,118	36,948,384
398 491 Postal service	0	9,976,620	7,341,966	17,318,586
399 492 Couriers & messengers	0	13,304,474	3,642,975	16,947,450
400 493 Warehousing & storage	0	56,680,580	4,198,297	60,878,876
401 441 Motor veh & parts dealers	0	5,649,228	52,450,744	58,099,972
402 442 Furniture & home furnishings	0	1,785,880	13,647,164	15,433,044
403 443 Electronics & appliances stores	0	1,356,720	9,040,998	10,397,718
404 444 Bldg materials & garden dealers	0	3,457,810	26,974,460	30,432,270
405 445 food & beverage stores	0	4,133,900	38,065,524	42,199,424
406 446 Health & personal care stores	0	2,323,031	17,588,022	19,911,052
407 447 Gasoline stations	0	2,268,528	17,978,120	20,246,648

**SC VALUE ADDED BY THE TEXTILE AND APPAREL INUSTRY COMPLEX  
(TAC), 2006**

	\$ FINAL DEMAND	\$ SUPPLY CHAIN	\$ CONSUMER INDUCED	\$ TOTAL
<b>IMPLAN SECTOR/NAICS</b>				
408 448 Clothing & accessories stores	0	2,614,231	25,938,938	28,553,168
409 451 Sports- hobby- book & music sto	0	816,757	7,079,258	7,896,016
410 452 General merch stores	0	3,835,447	35,353,580	39,189,028
411 453 Misc retailers	0	1,565,648	14,436,588	16,002,236
412 454 Non-store retailers	0	2,634,960	20,890,066	23,525,026
413 511 Publishing industries	0	8,446,279	6,001,000	14,447,279
418 512 Motion picture & sound recordin	0	574,748	1,063,175	1,637,923
420 515 Broadcasting	0	32,460,654	33,343,678	65,804,332
423 518 Internet & data process svcs	0	8,166,315	1,654,216	9,820,530
425 522 Credit imediation & related	0	34,431,096	13,253,628	47,684,724
426 523 Securities & other financial	0	8,739,853	10,780,319	19,520,172
427 524 Insurance carriers & related	0	16,176,879	41,417,964	57,594,844
429 525 Funds- trusts & other finan	0	12,267	1,613,680	1,625,946
430 521 Monetary authorities	0	49,430,504	48,813,520	98,244,024
431 531 Real estate	0	88,715,688	116,264,920	204,980,608
432 532 Rental & leasing svcs	0	10,448,812	6,444,497	16,893,308
436 533 Lessor of nonfinance intang asset	0	15,212,896	1,669,127	16,882,022
437 541 Professional- scientific & tech sv	0	267,596,864	56,012,752	323,609,600
451 551 Management of companies	0	119,949,328	9,213,608	129,162,936
452 561 Admin support svcs	0	35,611,696	18,166,724	53,778,420
460 562 Waste mgmt & remediation svcs	0	7,462,711	2,279,713	9,742,424
461 611 Educational svcs	0	1,606,988	26,995,208	28,602,196
464 621 Ambulatory health care	0	177,304	170,551,648	170,728,960
467 622 Hospitals	0	0	58,656,272	58,656,272
468 623 Nursing & residential care	0	0	28,013,830	28,013,830
469 624 Social assistance	0	1,282	20,918,784	20,920,066
471 711 Performing arts & spectator sport	0	4,308,659	4,513,364	8,822,022
475 712 Museums & similar	0	0	1,241,210	1,241,210
476 713 Amusement- gambling & recreat	0	2,506,295	17,054,730	19,561,024
479 721 Accomodations	0	31,698,142	21,348,902	53,047,044
481 722 Food svcs & drinking places	0	21,613,410	77,586,120	99,199,528
482 811 Repair & maintenance	0	42,861,008	16,815,202	59,676,208
487 812 Personal & laundry svcs	0	8,805,669	25,531,470	34,337,140
491 813 Religious- grantmaking- & simila	0	0	6,883,817	6,883,817
493 Civic- social- professional and simila	0	7,308,113	6,998,163	14,306,276
494 814 Private households	0	0	6,587,127	6,587,127
495 92 Government & non NAICs	0	142,884,384	412,293,504	555,177,856
<b>Total</b>	3,713,263,968	2,260,620,502	1,850,317,574	7,824,201,903

**Source: IMPLAN 2006 computations by the authors**

### Definitions for Table 1. The Meaning of the Measures

Measure	Information
Total Employment	<p>Total number of workers who were employed by the same employer in both the current and previous quarter</p> <p>Answers the questions:</p> <ul style="list-style-type: none"> <li>• Who is filling what jobs?</li> <li>• What industries are biggest employers?</li> <li>• What industries employ the largest numbers of particular types of worker?</li> </ul>
Job Change	<p>Net Employment Change: The difference between current and previous employment at each business.</p> <p>Answers the questions:</p> <ul style="list-style-type: none"> <li>• Which industries are expanding employment?</li> <li>• Which industries are contracting employment?</li> </ul>
Job Creation	<p>The number of new jobs that are created by either new area businesses or the expansion of employment by existing firms. Answers the question:</p> <ul style="list-style-type: none"> <li>• What industries are creating the most jobs?</li> </ul>
Average Monthly Earnings	<p>Total quarterly earnings of all full-quarter employees divided by the number of full-quarter employees, divided by 3. Answers the question:</p> <ul style="list-style-type: none"> <li>• What are the average earnings of core employees?</li> </ul>

(Check <http://lehd.dsd.census.gov/led/datatools/qwi-online.html> for more information).  
 Accessed 11/13/07

### DEFINITIONS

“The Quarterly Workforce Indicators (QWI) are derived from state administrative records and basic demographic information from the Census Bureau. Employment totals from the QWI are not exactly comparable with those from other sources. Generally, coverage and definitions differ between the QWI and data about establishments from administrative records (e.g., the Quarterly Census of Employment and Wages or QCEW), and about workers from surveys (e.g., the decennial census, the American Community Survey, and the Current Population Survey or CPS.) Detailed information is available in a paper by David Stevens “Employment that is not covered by state unemployment insurance laws”, [LEHD technical paper TP-2002-16](#)

**Jobs.** Just like the QCEW, the QWI count jobs, rather than employed workers (like the CPS). And, like the QCEW, the QWI do not include self employed workers and independent contractor employment – unlike the CPS. For a full description, see <http://www.bls.gov/cew/cewover.htm>. But unlike the QCEW, the QWI count all jobs within a quarter (rather than just the 12<sup>th</sup> of the month), and so the job counts from the QCEW and the QWI will differ.

More specifically, the QWI capture the complexity of workforce dynamics. Because the LED data from which the QWI are derived include all the jobs a worker holds in each quarter, multiple definitions of “employment” are possible (just as there are multiple definitions of “unemployment”). The definitions include:

- 1) 1) All jobs held in a quarter, regardless of length of time the job is held;
- 2) 2) **Jobs held at the beginning of a quarter -- the measure that is closest to that is the Quarterly Census of Employment and Wages. This measure also shows trends similar to those in surveys based on workers (such as the CPS) although the levels differ;**
- 3) 3) Jobs held at the end of a quarter; and
- 4) 4) Jobs held for a full quarter (the most “stable” measure of employment).

**Earnings.** The measurement of earnings differs among datasets. The earnings measures described here:

- • Include gross wages and salaries, bonuses, stock options, tips, and other gratuities, and the value of meals and lodging, where supplied.
- • Do not include Old Age Survivor and Disability Insurance, health insurance, workers’ compensation, unemployment insurance, private pensions, and welfare funds.

Because the QWI measures do not include the number of hours or weeks an employee worked, what appears as low average earnings for a time period and for an industry such as retail trade where much of the work is part time, may be the result of relatively low hourly wages, not working many hours in the time period, or both. This affects the interpretation of the measure of average earnings. Similarly, high fourth quarter monthly earnings in some industries may reflect end-of-year bonuses and apparently high earnings for older workers may reflect one-time disbursements as they retire.”

Accessed 11/13/07 from <http://lehd.dsd.census.gov/led/datatools/qwi-online.html>