THE FURNITURE VALUE CHAIN IN NORTH CAROLINA

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The Center on Globalization, Governance & Competitiveness (CGGC), an affiliate of the Social Science Research Institute at Duke University, is built around the use of the Global Value Chain (GVC) methodology, developed by the Center's Director, Gary Gereffi. The Center uses GVC analysis to study the effects of globalization on various topics of interest including: industrial upgrading, international competitiveness, the environment, global health, engineering and entrepreneurship, and innovation in the global knowledge economy. CGGC has a long history of working in applying the GVC framework to North Carolina. More information about CGGC is available at http://www.cggc.duke.edu/ and http://www.soc.duke.edu/NC_GlobalEconomy/index.shtml

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List of Abbreviations

BEA	Bureau of Economic Analysis
BLS	U.S. Bureau of Labor Statistics
CAD	computer-aided design
CAM	Computer-aided manufacturing programs
CE	concurrent engineering
CEW	Census of Employment and Wages
CLT	Charlotte Douglas International airport
CNC	computer numerical control
CGGC	Center on Globalization, Governance & Competitiveness, Duke University
ERP	enterprise resource planning
GSP	gross state product
HPMA	High Point Market Authority
HPU	High Point University
IMC	International Market Centers
IMPAN	IMpact Analysis for PLANners
MSA	Metropolitan Statistical Area
NAICS	North American Industry Classification System
RDU	Raleigh-Durham International airport
RFID	Radio-Frequency Identification

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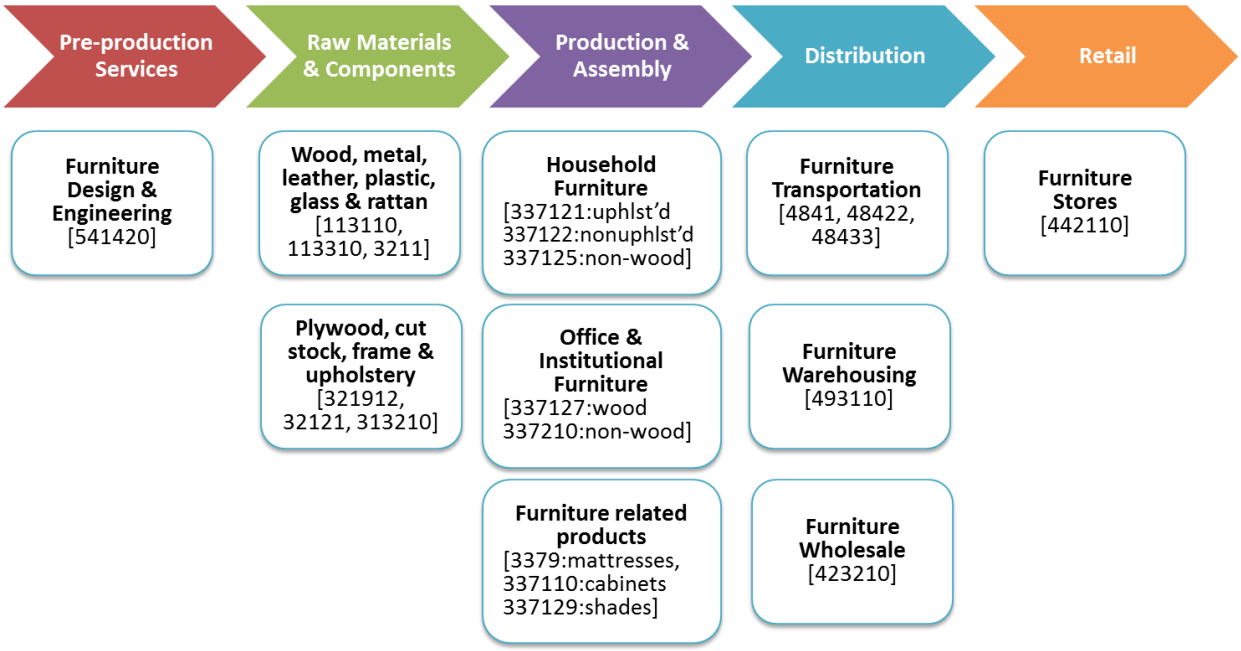
The Furniture Value Chain

1. Overview of the furniture value chain

A value chain describes the set of actors and full range of activities required to design, produce, and sell a product. A value chain examines the industry- and location-specific input-output structures and related technologies, standards, regulations, processes, and dynamics in relationships among chain actors, and thus provides a systemic analytical lens that allows a top-down and bottom-up assessment of industries (Gereffi & Fernandez-Stark, 2011). Figure 1 presents the furniture value chain and identifies the corresponding North American Industry Classification System (NAICS) codes for each segment and sub-segment of the value chain.

Figure 1: Furniture value chain (with NAICS)



Source: Duke CGGC

To construct the value chain, we used the *Input-Output Accounts of the United States* produced every five years by the Bureau of Economic Analysis (BEA) to determine what industries were most relevant for the upstream and downstream portions of NAICS 337 Furniture and related products. The detailed analysis is available as Appendix A for readers interested in the data and methods used to construct the value chain discussed throughout this section.

We provide below, for each value chain segment, the NAICS descriptions and the ten most important states in terms of employment, as calculated from the 2012 Census of Employment and Wages (CEW). As a preview to this section, we find that considerable variation among states exists across the value chain segments. Michigan and California are strong in industrial design. Tree abundant states in the Pacific Northwest and Southeast lead the raw materials and components segment of the furniture value

chain. Within furniture production, North Carolina leads in household furniture, Michigan in office and institutional furniture, and Texas in furniture related products (mattresses, cabinets, and shades). States with large populations, including California and Texas, lead in both the furniture distribution and retail sales segment of the value chain. The tables below are supplemented with section 3 (p. 31) summarizing trends in establishments, wages, and employment from 1992-2012, and Appendix B providing the list of top states for each NAICS code in the value chain.

1.1. Pre-production

The pre-production or *inputs* phase of the furniture value chain consists of the requirements for production. The production requirements for furniture are pre-production services (design & engineering), and raw materials and components.

1.1.1. Pre-production services:

Industrial Design Services (NAICS 541420): This industry comprises establishments primarily engaged in creating and developing designs and specifications that optimize the use, value, and appearance of their products. These services can include the determination of the materials, construction, mechanisms, shape, color, and surface finishes of the product, taking into consideration human characteristics and needs, safety, market appeal, and efficiency in production, distribution, use, and maintenance. Establishments providing automobile or furniture industrial design services or industrial design consulting services are included in this industry.

Table 1: Top 10 States in pre-production services (NAICS 541420)

State	2012 Employment	% of total US
MI	2,372	19%
CA	1,892	16%
OH	898	7%
NY	782	6%
TX	686	6%
IL	556	5%
FL	550	5%
NJ	402	3%
PA	394	3%
OR	354	3%
Top 10 States	8,886	73%
Total US	12,201	100%

Source: BLS/CEW 2012

1.1.2. Raw materials and components

The raw materials and components for furniture are metal, glass, rattan, wood products (including plywood, cut stock, and frames), padding, and coverings (upholstery leather, and man-made leather). The raw materials and components segment of the value chain is comprised of the following NAICS

codes. We divided raw materials and components into two subsegments: 1) raw materials, consisting of wood, metal, leather, plastic, glass & rattan, and 2) wood products and textile coverings.

Table 2: Top 10 States in Raw Materials & Components

State	2012 Employment	% of total US
OR	21,250	9%
GA	19,371	8%
NC	15,898	7%
AL	14,577	6%
SC	14,447	6%
WA	12,712	5%
TX	10,735	4%
VA	10,007	4%
MS	9,674	4%
CA	9,074	4%
Top 10 States	137,745	58%
Total US	239,139	100%

Source: BLS/CEW 2012

1.1.2.1. Wood, metal, leather, plastic, glass & rattan

Timber Track Operations (NAICS 113110): This industry comprises establishments primarily engaged in the operation of timber tracts for the purpose of selling standing timber.

Logging (NAICS 113310): This industry comprises establishments primarily engaged in one or more of the following: (1) cutting timber; (2) cutting and transporting timber; and (3) producing wood chips in the field

Sawmill & Wood Preservation (NAICS 3211): This industry group comprises establishments whose primary production process begins with logs or bolts that are transformed into boards, dimension lumber, beams, timbers, poles, ties, shingles, shakes, siding, and wood chips. Establishments that cut and treat round wood and/or treat wood products made in other establishments to prevent rotting by impregnation with creosote or other chemical compounds are also included in this industry group.

Leather hide tanning & finishing (NAICS 3161): This industry group comprises establishments primarily engaged in one or more of the following: (1) tanning, currying, and finishing hides and skins; (2) having others process hides and skins on a contract basis; and (3) dyeing or dressing furs.

1.1.2.2. Plywood, cutstock, and upholstery

Veneer, Plywood & Eng. Wood Product Manufacturing (NAICS 32121): This industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing veneer and/or plywood; (2) manufacturing engineered wood members; and (3) manufacturing reconstituted wood products. This industry includes manufacturing plywood from veneer made in the same establishment

or from veneer made in other establishments, and manufacturing plywood faced with nonwood materials, such as plastics or metal.

Cutstock (NAICS 321912): This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing dimension lumber from purchased lumber; (2) manufacturing dimension stock (i.e., shapes) or cut stock; (3) resawing the output of sawmills; and (4) planing purchased lumber. These establishments generally use woodworking machinery, such as jointers, planers, lathes, and routers to shape wood.

Broadwoven Fabric Mills (NAICS 313210): This industry comprises establishments primarily engaged in weaving broadwoven fabrics and felts (except tire fabrics and rugs). Establishments in this industry may weave only, weave and finish, or weave, finish, and further fabricate fabric products.

1.2. Production and assembly

The production portion of the furniture value chain manufactures finished products ready to distribute and sell to wholesale and retail customers. The furniture industry is divided into 1) household furniture, 2) office furniture, 3) institutional furniture, and 4) furniture related products, such as mattresses, cabinets, and shades.

Table 3: Top 10 states in furniture production and assembly

State	2012 Employment	% of total
NC	33,064	10%
CA	31,146	9%
TX	21,994	7%
IN	20,964	6%
MI	19,563	6%
MS	16,456	5%
PA	15,308	5%
WI	14,438	4%
OH	13,181	4%
NY	12,912	4%
Top 10	199,026	60%
Total US	331,731	100%

Source: BLS/CEW 2012

1.2.1. Household Furniture

Household furniture is composed of the following:

Upholstered Household Furniture Manufacturing (NAICS 337121): This U.S. industry comprises establishments primarily engaged in manufacturing upholstered household-type furniture. The furniture may be made on a stock or custom basis. Specifically, this industry is composed of: assembled chair and couch springs manufacturing; upholstered household-type (except dining room, kitchen) chair

manufacturing; convertible sofas (except futons) manufacturing; assembled cot springs manufacturing; assembled couch springs manufacturing; upholstered couches manufacturing; assembled cushion springs manufacturing; upholstered household-type furniture on frames of any material manufacturing; upholstered household-type furniture manufacturing; upholstered juvenile furniture manufacturing; upholstered living room furniture manufacturing; upholstered household-type metal framed furniture manufacturing; upholstered ottomans manufacturing; upholstered recliners manufacturing; upholstered rockers manufacturing; upholstered sofa beds and chair beds manufacturing; convertible sofas (except futons) manufacturing; upholstered sofas manufacturing; custom household-type upholstered furniture manufacturing; upholstered wood framed household-type furniture manufacturing.

Nonupholstered Wood Household Furniture Manufacturing (NAICS 337122): This U.S. industry comprises establishments primarily engaged in manufacturing nonupholstered wood household-type furniture and freestanding cabinets (except television, radio, and sewing machine cabinets). The furniture may be made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown).

Metal Household Furniture Manufacturing (NAICS 337124): This U.S. industry comprises establishments primarily engaged in manufacturing metal household-type furniture and freestanding cabinets. The furniture may be made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown).

Household Furniture (except Wood and Metal) Manufacturing (NAICS 337125): This U.S. industry comprises establishments primarily engaged in manufacturing household-type furniture of materials other than wood or metal, such as plastics, reed, rattan, wicker, and fiberglass. The furniture may be made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown).

Table 4: Top 10 states in household furniture manufacturing

State	2012 Employment	% of total
NC	21,680	23%
MS	14,650	15%
CA	10,970	11%
IN	4,891	5%
WI	4,773	5%
TN	4,081	4%
VA	3,629	4%
OH	3,345	3%
NY	3,291	3%
TX	2,666	3%
Top 10	73,976	77%
Total US	96,024	100%

Source: BLS/CEW 2012

Additional information on the top 10 states in each of the NAICS codes comprising household furniture is provided in Appendix B.

1.2.2. Office & institutional furniture

Office and institutional furniture is comprised of the following:

Institutional Furniture Manufacturing (NAICS 337127): This U.S. industry comprises establishments primarily engaged in manufacturing institutional-type furniture (e.g., library, school, theater, and church furniture). Included in this industry are establishments primarily engaged in manufacturing general purpose hospital, laboratory, and dental furniture (e.g., tables, stools, and benches). The furniture may be made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown).

Wood Office Furniture Manufacturing (NAICS 337211): This U.S. industry comprises establishments primarily engaged in manufacturing wood office-type furniture. The furniture may be made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown).

Custom Architectural Woodwork and Millwork Manufacturing (NAICS 337212): This U.S. industry comprises establishments primarily engaged in manufacturing custom designed interiors consisting of architectural woodwork and fixtures utilizing wood, wood products, and plastics laminates. All of the industry output is made to individual order on a job shop basis and requires skilled craftsmen as a labor input. A job might include custom manufacturing of display fixtures, gondolas, wall shelving units, entrance and window architectural detail, sales and reception counters, wall paneling, and matching furniture.

Office Furniture (except Wood) Manufacturing (NAICS 337214): This U.S. industry comprises establishments primarily engaged in manufacturing nonwood office-type furniture. The furniture may be made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown).

Showcase, Partition, Shelving, and Locker Manufacturing (NAICS 337215): This U.S. industry comprises establishments primarily engaged in manufacturing wood and nonwood office and store fixtures, shelving, lockers, frames, partitions, and related fabricated products of wood and nonwood materials, including plastics laminated fixture tops. The products are made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown). Establishments exclusively making furniture parts (e.g., frames) are included in this industry.

Table 5: Top 10 states in office & institutional furniture manufacturing

State	2012 Employment	% of total
MI	16,578	15%
CA	8,894	8%
IN	6,800	6%
TX	6,773	6%
WI	6,068	6%
PA	5,835	5%
IL	5,680	5%
NY	5,582	5%
NC	5,403	5%
OH	5,104	5%
Top 10	72,717	66%
Total US	109,944	100%

Source: BLS/CEW 2012

Additional information on the top 10 states in each of the NAICS codes comprising office and institutional furniture is provided in Appendix B.

1.2.3. Furniture related products (mattresses, blinds/shades & cabinets)

Furniture related products are comprised of the following:

Mattress Manufacturing (NAICS 337910): This industry comprises establishments primarily engaged in manufacturing innerspring, box spring, and non-innerspring mattresses, including mattresses for waterbeds

Blind & shade Manufacturing (NAICS 337920): This industry comprises establishments primarily engaged in manufacturing one or more of the following: venetian blinds, other window blinds, shades; curtain and drapery rods, poles; and/or curtain and drapery fixtures. The blinds and shades may be made on a stock or custom basis and may be made of any material.

Wood Kitchen Cabinet and Countertop Manufacturing (NAICS 337110): This industry comprises establishments primarily engaged in manufacturing wood or plastics laminated on wood kitchen cabinets, bathroom vanities, and countertops (except freestanding). The cabinets and counters may be made on a stock or custom basis.

Wood TV, Radio & sewing machine housings (NAICS 337129): This U.S. industry comprises establishments primarily engaged in manufacturing wood cabinets used as housings by television, stereo, loudspeaker, and sewing machine manufacturers.

Table 6: Top 10 states in furniture related products manufacturing

State	2012 Employment	% of total
TX	12,555	10%
CA	11,282	9%
IN	9,273	7%
PA	7,097	6%
NC	5,981	5%
FL	5,676	5%
MN	4,747	4%
OH	4,732	4%
GA	4,272	3%
IL	4,154	3%
Top 10	69,769	55%
Total US	125,763	100%

Source: BLS/CEW 2012

1.3. Post production

The post-production phase of the furniture value chain includes the distribution segment conducted by furniture transportation, warehousing and furniture wholesale. The retail segment of the value chain includes furniture stores.

1.3.1. Furniture Distribution

Furniture distribution consists of furniture transportation, furniture warehousing, and furniture wholesale. The top 10 states in furniture distribution are provided below.

Table 7: Top 10 states in furniture distribution

State	2012 Employment	% of total
CA	154,791	10%
PA	128,299	8%
TX	113,969	8%
IL	87,081	6%
OH	80,597	5%
FL	60,032	4%
GA	55,304	4%
IN	52,809	3%
NJ	48,860	3%
NY	45,957	3%
Top 10	827,699	55%
Total US	1,514,439	100%

Source: BLS/CEW 2012

1.3.1.1. Furniture transportation (NAICS 4841, 48422, 48433):

General freight trucking (NAICS 4841): This industry group comprises establishments primarily engaged in providing general freight trucking. General freight establishments handle a wide variety of commodities, generally palletized, and transported in a container or van trailer. The establishments of this industry group provide a combination of the following network activities: local pickup, local sorting and terminal operations, line-haul, destination sorting and terminal operations, and local delivery.

Other specialized trucking, local (NAICS 48422): This industry comprises establishments primarily engaged in providing local, specialized trucking. Local trucking establishments provide trucking within a metropolitan area that may cross state lines. Generally the trips are same-day return.

Other specialized trucking, long distance (NAICS 48423): This industry comprises establishments primarily engaged in providing long-distance specialized trucking. These establishments provide trucking between metropolitan areas that may cross North American country borders.

1.3.1.2. Furniture warehousing

General warehousing & storage (NAICS 493110): This industry comprises establishments primarily engaged in operating merchandise warehousing and storage facilities. These establishments generally handle goods in containers, such as boxes, barrels, and/or drums, using equipment, such as forklifts, pallets, and racks. They are not specialized in handling bulk products of any particular type, size, or quantity of goods or products.

1.3.1.3. Furniture wholesale

Furniture Merchant Wholesalers (NAICS 423210): This industry comprises establishments primarily engaged in the merchant wholesale distribution of furniture (except hospital beds, medical furniture, and drafting tables).

1.3.2. Furniture retail

Furniture Stores (NAICS 442110): This industry comprises establishments primarily engaged in retailing new furniture, such as household furniture (e.g., baby furniture box springs and mattresses) and outdoor furniture; office furniture (except those sold in combination with office supplies and equipment); and/or furniture sold in combination with major appliances, home electronics, home furnishings, or floor coverings. This industry code includes: bed stores, retail; furniture and appliance stores (i.e., primarily retailing furniture); furniture stores (e.g., household, office, outdoor); mattress stores (including waterbeds); and office furniture stores.

Table 8: Top 10 states in furniture retail

State	2012 Employment	% of total
CA	21,659	10%
TX	19,452	9%
FL	16,457	8%
NY	10,752	5%
IL	8,124	4%

State	2012 Employment	% of total
PA	7,945	4%
NC	7,596	4%
OH	6,825	3%
VA	6,442	3%
GA	6,403	3%
Top 10	111,655	52%
Total US	213,535	100%

Source: BLS/CEW 2012

2. Dynamics and lead firms in value chain segments

2.1. Design & engineering

The pre-production or *inputs* phase of the furniture value chain consists of the requirements for production. The production requirements for furniture are pre-production services (design & engineering), raw materials and components.

Furniture design: Furniture design can be separated into three major segments: design for mass production, limited production furniture, and studio furniture. Furniture design for large scale, mass production furniture is performed by industrial designers. Industrial designers can either be housed in independent industrial design firms under contract to the furniture manufacturer or housed within the furniture manufacturer itself. Major furniture manufacturers like Bassett and Ikea have in-house furniture designers, while smaller companies tend to contract with individual design firms or designers.

Limited production furniture has a closer relationship with the designer than mass production furniture. The design-build relationship in limited production furniture typically includes the designer throughout the production and sale of the furniture. Thomas Moser (Maine), George Nakashima (PA), Drift Studio (WI), and Berkeley Mills (CA) are only a few of the prominent examples of design-led limited production furniture active today in the United States. Historically, the Arts and Crafts movement (Frank Lloyd Wright, Gustav Stickley, Greene & Greene Bros.) and mid-Century Modern (Charles and Ray Eames and Norman Cherner) are examples of the long history of design-led limited production furniture in the United States.

Studio furniture (one-of-a-kind) is designed and produced by design-makers and conceived as much as art as functional furniture. Wharton Esherick, George Nakashima, and Sam Maloof are examples of American designers who found commercial success in the mid-20th century. Furniture studio art continues to be taught at prominent design schools throughout the United States, particularly the Rochester Institute of Technology (RIT), the Rhode Island School of Design (RISD), and the Savannah College of Art and Design (SCAD). Studio furniture artists exist throughout the United States, notably in Seattle (Roy McMakin), Philadelphia (John Dunnigan), Madison, WI (Drift), San Francisco (Jared Rusten),

and traditional craft furniture centers in Pennsylvania, Tennessee, North Carolina, and Virginia. Please see Appendix C "Innovating Through Design."

Design affects not only the look of the furniture but the materials used to make the furniture. Furniture design has focused largely on the aesthetic quality of the furniture and used materials (glass, metal, wood) to achieve the design goals of the piece. However, the introduction of composite materials and recaptured/repurposed materials has allowed designers to meet aesthetic goals while expanding into new product markets. For example, the use of sawdust for particle board has long been used in the furniture industry for shelving and as a substrate for wood veneers. Recently, however, the introduction of more sophisticated engineered wood products has allowed furniture designers to achieve innovative designs while simultaneously achieving "green furniture" standards demanded in household, office and institutional furniture. One prominent example is the LEED certifications in corporate and manufacturing facilities, some of which (Gold, Platinum) require that the interiors of the buildings meet certification standards for energy efficiency and green construction. Design is becoming a crucial element for entering into new product markets.

Furniture engineering is a separate function of the design-build process. Typically, a designer is responsible for the look of a piece of furniture, while the engineer is responsible for its structural integrity. Furniture engineering is important in both the mock-up phase of new products and during line production. During the mock-up phase, preproduction engineering creates the production documents to send to the production team. Once feedback from the production team is sent back to the engineering team, engineers develop the mass production documents, but several iterations of the process are common. During the line production phase, engineering is important to ensure that material selection, field dimension, color, and hardware are ordered in time and available to the production team.

Trends in furniture engineering include the use of computer-aided design (CAD) software linking the production documents with computer numerical control (CNC) machinery. CNC machinery in use in the furniture industry include lathes, milling machines, wood routers, wire bending machines, drills, embroidery machines, and hot-wire foam cutters. Computer-aided manufacturing programs (CAM) produce a series of commands interpretable by the CNC machinery and highly automate components that closely match the original CAD design.

A second trend in furniture engineering is the use of concurrent engineering (CE) to improve the quality and reduce the lead-time in furniture production (Chao, 2011). In CE, the mock-up process is parallel to the engineering process for mass production, with the result that mass production engineering documents are ready in the same time that preproduction documents would be prepared in traditional (sequential) engineering. CE has been used successfully in high technology sectors, like aerospace, where different teams work in parallel and the development process could be rapidly verified. Applied to the furniture industry, CE promises a reduction in product development lead time, a focus on total quality (process, organization, and product quality), increased productivity, and decreased costs of rework, scrap and delays.

2.2. Raw materials & components

Raw materials and components: The raw materials and components for furniture are metal, glass, rattan, wood products (including plywood, cut stock, and frames), padding, and coverings (leather, man-made leather, and upholstery). The materials and components used in furniture have their own value chain, each with their own dynamics.

While oftentimes overlooked, most of the high technology content in the furniture value chain is a function of trends in the composition and manufacture of raw materials and components.[1] Four particularly prominent examples are 1) engineered wood products using special glues and finishes; 2) composite resins, plastics, and metals to achieve a desired look or feel, 3) the use of nonwoven textiles for batting and fire-proofing foam, and 4) the use of coatings on furniture covering to achieve an aesthetic or functional quality such as stain-proofing or durability.

Figure 2: Major trends in the furniture value chain

- Design & Engineering: innovation through design; concurrent engineering
- Components: new functionality and aesthetics (surprisingly, the most technical portion of the value chain)
- Production & Assembly: CNC, Six Sigma, labor substitution, ERP, offshore/near-shore/re-shore; higher value added in office furniture
- Wholesale & Distribution: e-commerce; buyer groups
- Retail sales: e-commerce; discount retailers; separation of retail from production

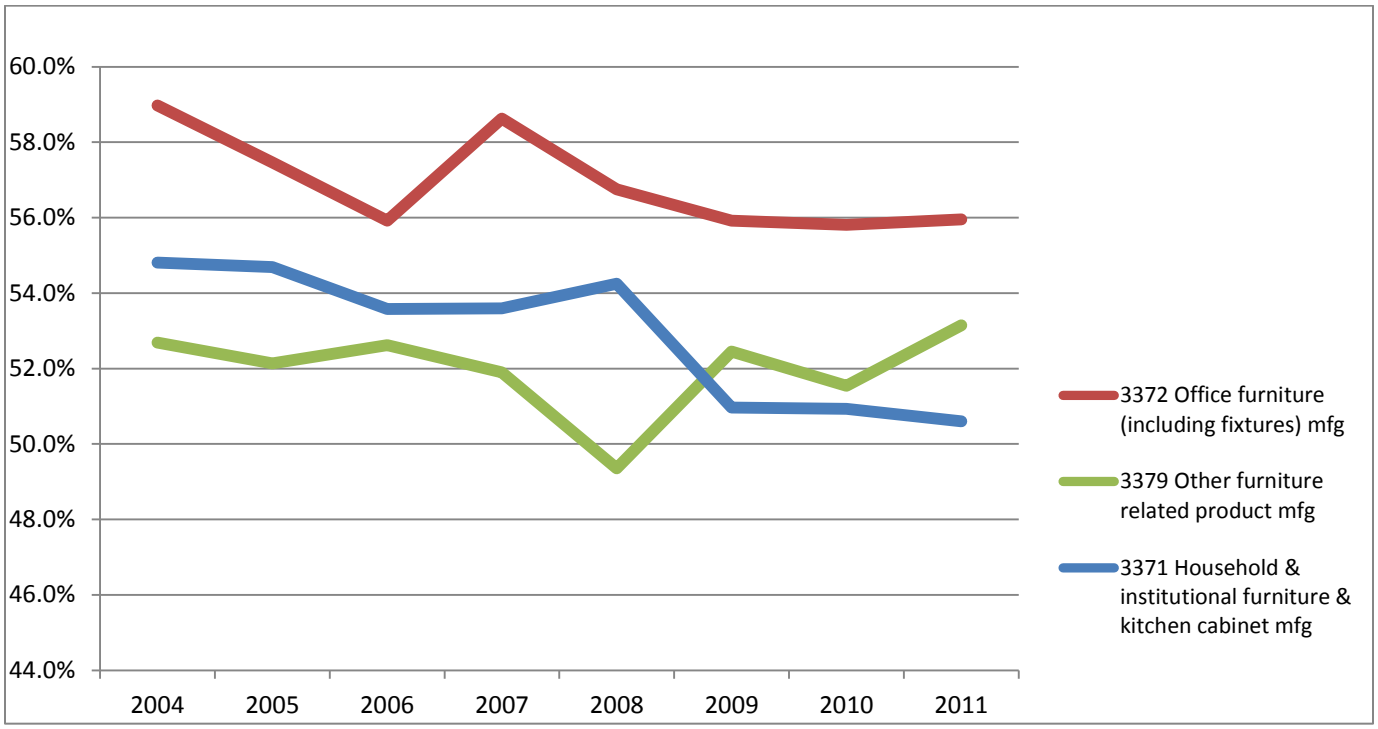
2.3. Production & assembly

The production portion of the furniture value chain manufactures finished products ready to distribute and sell to wholesale and retail customers. The North American Industry Classification System (NAICS) divides furniture production [NAICS 337] into companies that manufacture household, office, and furniture related products [NAICS 3371, 3372, and 3379, respectively]. Household furniture is the largest market segment, accounting for 60% of overall furniture production—35% of which comes from wood kitchen cabinets, 20% from upholstered goods and 20% from non-upholstered goods. Office furniture and institutional account for respectively 30% and 10% of US production (Hoover's, 2013).

[1] Of note is the upholstery value chain, which is part of the broadwoven fabric value chain investigated in depth by Sheek 2009 and Frederick 2010.

Value added in the furniture industry is highest in office furniture [NAICS 3372], followed by - until 2009 - household furniture [NAICS 3371], when it was overtaken by furniture related products [NAICS 3379]. Please see Figure 3. Wages across industries generally track these rankings and changes in value added.[2]

Figure 3: Value added in the furniture industry, 2004-2011



Source: US Census, Annual Survey of Manufacturers, 2004-2011. *Note*: the figure presents value added as a percent of total shipments. Value added is defined as the total value of shipments minus the total cost of materials. Manufacturer's shipments measure the dollar value of products sold by manufacturing establishing and based on net selling values, f.o.b (free on board) plant, after discounts and allowances are excluded.

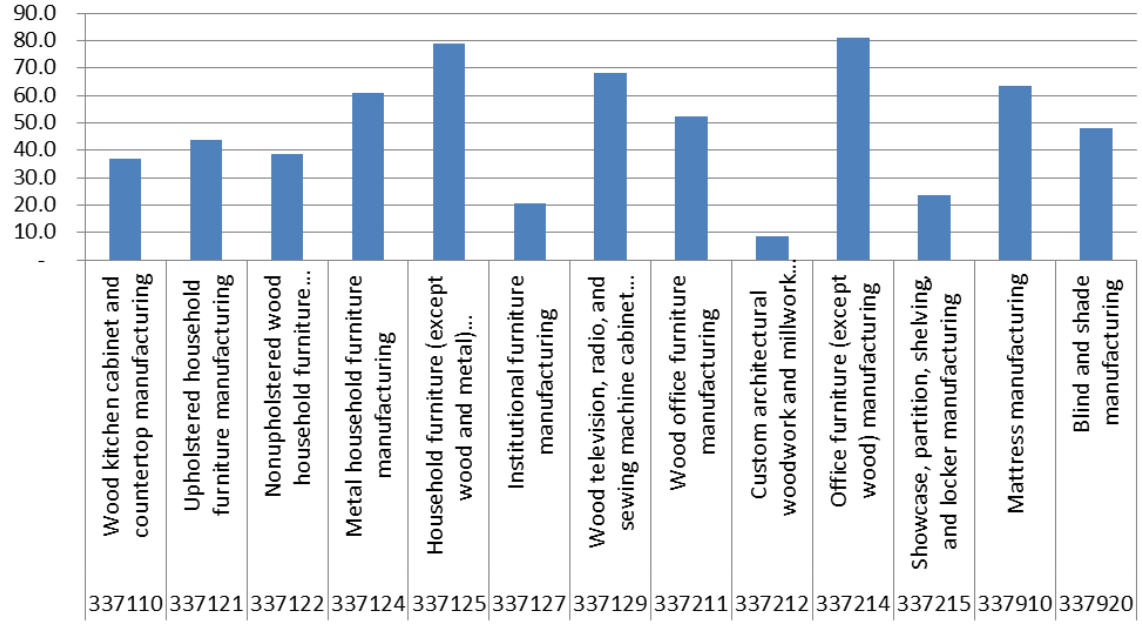
The US furniture manufacturing industry encompasses about 20,000 companies with an estimated yearly turnover of $60 billion (Hoover's, 2013). Major companies include Herman Miller, Steelcase, Furniture Brand International, La-Z Boy, Ethan Allen, Ashley Furniture (all US-based), and international Natuzzi (Italy) and Samson Holding (Taiwan).

Unlike the retail segment, the US furniture manufacturing industry is fairly fragmented, with the largest fifty companies generating 40% of total turnover (Hoover's, 2013). Figure 4 provides the eight-firm industry concentration ratios for the furniture industry. Overall, the furniture industry is unconcentrated, with eight firms making up only 19% of shipments in 2007, the latest year for which data are available. However, significant variation exists within industry segments. Office furniture (except wood) [NAICS 337214] is highly concentrated, with 8 firms making up more than 80% of total

[2] The source for these statements is the US Census, Annual Survey of Manufacturers, 2004-2011 which calculates the value added for each industry (value added= total value of shipments – total cost of materials). The correlation between wages and value added is generally recognized in economic theory, and for the furniture industry exceeded 97% in 2010.

shipments. Household furniture (except wood or metal) [NAICS 337125] is also highly concentrated at 79%. The two least concentrated segments are custom woodworking and millwork [NAICS 337212] and institutional furniture manufacturing [NAICS 337127].

Figure 4: Industry concentration ratios for furniture manufacturing (8 firm % of shipments)



Source: Economic Census, US Census Bureau

Yet market fragmentation is not an exclusive characteristic of the US market, but it marks other major Western manufacturing countries like Italy and Germany. Market fragmentation and the rise of global competition have significantly increased the level of competition in the US market. In particular, over the past two decades domestic producers have been confronted by massive imports of low-end furniture items from the low-cost countries, like China, Vietnam, Taiwan, Indonesia, and Philippines. This phenomenon, often driven by domestic companies seeking to cut overhead, has remarkably changed the US furniture manufacturing industries. In fact, the growth in imports of commodity goods have been coupled with increased offshoring strategies, through which domestic producers have relocated production to low-wage foreign countries.

2.3.1.1. Major business trends

Lead-time and inventory control are major themes in the production and assembly portion of the furniture value chain. Many of the major technology and process innovations being adopted in furniture manufacturing – computerized numeric controls (CNC), enterprise resource planning (ERP), and "Six Sigma" process innovations– are the means to manage lead-time and inventories. Production location decisions are also affecting, and being affected by, lead-time and inventory considerations. We discuss each of these issues below.

Production location decisions: Globalization of production is arguably the most important phenomenon that took place in the U.S. furniture industry over the past two decades. Offshore outsourcing has

involved numerous established manufacturers in as diverse furniture segment as case goods, upholstery, cabinets, and office furniture. Globalization of production has mainly occurred through the relocation of manufacturing activates to independent original equipment manufacturers (OEMs) located in low-cost countries, like China, Vietnam, Taiwan, Indonesia, and Philippines.

Offshore outsourcing has been widely implemented by firms that produce standard products and pursue cost leadership. This has been the case for numerous US firms engaged in the production of case goods featuring a low level of customization. The low level of customization is an essential condition for the relocation of production overseas, as this characteristic allows large foreign manufacturers to produce large volume of standardized products at lower costs. To the contrary, because product customization requires producers to follow a make-to-order logic, it prevents large Asian large manufacturers to implement mass production and accomplish economies of scales. The level of product customization is generally higher in the upholstery than in the case good production, and this explain why the domestic production of upholstered goods has been less affected by offshoring. Another important factor preventing the massive offshoring of the upholstery production is the higher shipping costs per unit. Yet customization seems to be the most important factor, since the production of leather upholstery—typically marked by low customization—has been extensively relocated overseas in spite of high costs of transportation.

Yet producing case goods in the US is still a remunerative business for numerous companies. These are in general smaller firms that specialize in the production of upscale, customized case goods. Examples of North Carolina-based companies competing in this segment are EF-LM, Baker Furniture, Century Furniture, and Bernhardt Design—a business unit of Bernhardt.

In spite of major recent trends, offshore outsourcing might soon be replaced by re-shoring and near-shoring strategies. As international shipping costs are rising, the value of the Yuan—the Chinese currency—is appreciating against the dollar, and the cost of US energy is decreasing, several firms are re-evaluating their global sourcing strategies. Consistent with this trend, in 2014 Ashley Furniture is expected to open a production plant in North Carolina, eventually employing 1,100 workers. In addition to greenfield investments, there is growing evidence of established firms that are re-shoring part of the production they used to import from overseas. An example of this kind is Klaussner Home Furnishing, long-established firm in North Carolina that has recently increased the internal, domestic production of leather upholstered goods.

Re-shoring might be accompanied by near-shoring strategies. In this case, production once moved to the Far East could be relocated to neighboring countries, especially Mexico. For Mexico, the benefits from NAFTA and consolidated industrial relationships may lay the foundation for the next round of b2b relationships in the furniture industry.

Technology innovations: Furniture manufacturers have adopted a number of technology innovations to remain competitive in the domestic and international marketplace. Among the most prominent are computer numerical control in which component production is automated and often integrated with

computer aided design and computer aided manufacturing programs. CNC machines used for production may combine multiple tools into a single unit, reducing operator interface.

ERP has revolutionized the way manufacturers receive new orders and reduce total inventory. Data from the US Census suggest that 43% of manufacturing shipments were originally placed through electronic means in 2011, the most recently available data. The adoption of ERP increased rapidly, from about 10% of manufacturing shipments in 1998, the first year the Census collected data.

Process innovations: Manufacturers typically do not like to maintain inventory of finished goods, and instead prefer to manufacture on demand or develop relationships with wholesalers to maintain inventory. The capability to manufacture on demand, particularly when customization is required, is one of the most important benefits of concurrent engineering (discussed under design). Some domestic manufacturers are moving to the manufacturing on demand model, most notably HermanMiller and Klaussner. Six sigma manufacturing, in which continual process improvements are made throughout the manufacturing supply chain, are being adopted by some leading manufacturers. In addition, one novel process innovation we have seen during the conduct of this study is for the furniture assembler to have suppliers near the production location in order to be able to manufacture on demand. Consequentially, input and component suppliers hold materials and supplies inventory rather than the furniture manufacturer and assembler.

Product innovations: The control over manufacturing activities is not only fundamental in the customization of high-end products, but it is also important in fostering product innovation. Particularly in industries where product innovation is embedded in production processes, the marginalization of operations may severely affect firms' innovation capabilities. This is likely the case in the furniture industry, where product innovation often arises from close relationships between industrial designers, skilled workers, and specialized suppliers. For example, this paradigm is fairly evident in the Italian furniture industry, where the most innovative firms—i.e. Alessi, Magis, Cappellini, to mention a few—still maintain a high level of control over core manufacturing activities.

2.4. Wholesale & distribution

Furniture wholesaling is a business to business (B2B) function in which a wholesaler purchases goods from manufacturers, hold inventory, and resells them to retail outlets. Furniture wholesalers often provide additional services for retailers, including inventory management and financing. According to Dun and Bradstreet, large furniture wholesalers include United Stationers, American Office Equipment, UniSource Solutions, and Moi for office furniture and the Steve Silver Company and Liberty Furniture for home furniture.

Major factors ultimately affecting the furniture wholesale industry are economic variables which drive retail demand for furniture, which include housing starts, the unemployment rate, and per capita disposable income. While undeniably important, these variables are cyclical in nature and are enduring characteristics of the furniture wholesale segment. In the following section we focus on new or emerging trends in the furniture wholesale segment that affect the way it conducts business. Three trends appear particularly important to us: wholesale bypass as a result of direct purchasing by large

retailers and manufacturer-branded retail stores, e-commerce, and the rise of buying groups. We address each in turn.

Wholesale bypass: Two forms of wholesale bypass are becoming prevalent in the furniture industry. The first form of bypassing wholesalers is direct purchasing from manufacturers by large retailers. Traditionally, wholesalers maintained inventory, extended credit, and delivered product for retailers. However, due to changes in both technology and the capability of manufacturers and large buyers, retailers can purchase directly from manufacturers, conduct the distribution function themselves and save the cost of the markup charged by wholesalers. Direct purchasing is most relevant for large retail buyers in office (e.g., Office Max, Staples) and residential furniture (Costco, Wal-Mart, Target, Rooms to Go) who have the capability to conduct the purchasing, distribution, and inventory control themselves. These large retailers gain a competitive advantage, because of reduced costs, over traditional furniture stores who source product through traditional wholesale channels. For manufacturers, direct purchasing is attractive because these large buyers purchase in large volumes, have direct electronic communication (ERP) with retailers to maintain inventory (which reduces transactions costs), and manufacturers often can capture at least some of the wholesale margin in the process.

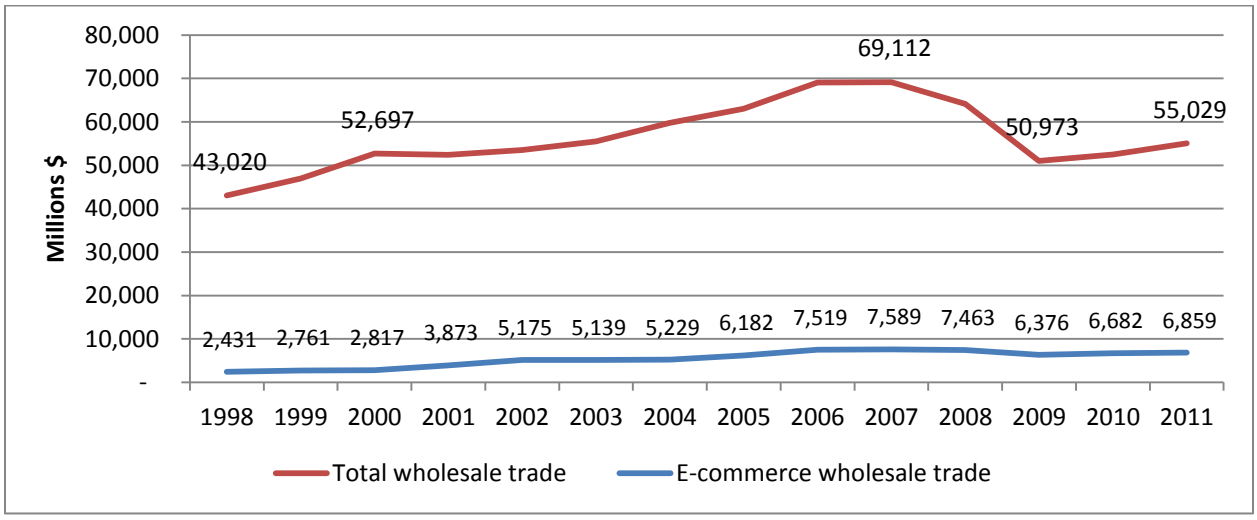
A second form of wholesale bypass occurs as a result of manufacturers in home furniture adding retail segments to their businesses. Ashley Furniture, La-Z-Boy, and Ethan Allen, among others, have added retail stores to their traditional manufacturing activities as a way to maintain or enhance brand name recognition in the marketplace and increase margins. While the success of this strategy has been mixed (Ashley Furniture being the notable exception), adding branded retail stores to manufacturing has affected the traditional wholesale and distribution segment of the furniture value chain by allowing direct to consumer purchases.

E-Commerce[3]**:** e-commerce is one of the technology changes affecting wholesalers (RFID – discussed below - being the other one of note). E-commerce affects the traditional function of wholesalers as intermediaries between manufacturers and retailers. Wholesalers traditionally provided inventory control, warehousing, and distribution services to consumer facing businesses. E-commerce potentially changes this model by allowing manufacturers to extend their reach to sell directly to retailers, and retail customers to reach back to manufacturers through general and specialized merchandise virtual storefronts, including Amazon and FurnitureDirect.com for household furniture, or Staples or Office Max for office furniture, to purchase furniture.

The US Census Bureau tracks the amount of e-commerce in manufacturer's shipments, wholesale trade, and retail trade. Figure 5 provides the wholesale trade figures from 1998-2011, the years for which data are available. The proportion of wholesale trade [NAICS 4232] conducted through e-commerce quickly reached 9.7% in 2002 from 5.7% in 1998, and reached 12.6% in 2011. E-commerce in wholesale trade has been relatively flat since 2006.

[3] E-commerce is defined by the US Census Bureau as the value of goods and services sold online, where online includes electronically linked devices communicating interactively over open and closed networks. The Census Bureau collects e-commerce data from the seller in the Economic Census and the Annual Survey of Manufacturers.

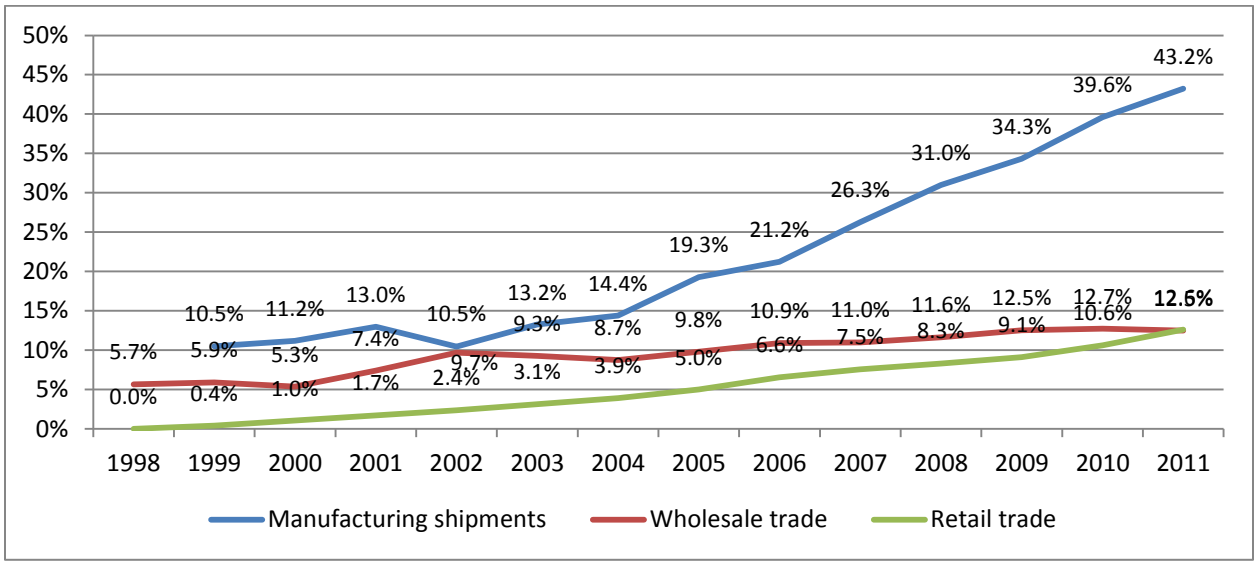
Figure 5: Wholesale trade in furniture, e-commerce v. total sales, 1998-2011



Source: US Census, Annual Survey of Manufactures and the Economic Census

However, Figure 5 does not capture the full effect of e-commerce on the wholesale level, since manufacturer' shipments sold through e-commerce and retailer e-commerce would be supplementary indicators of the effect of e-commerce on wholesalers. Rapid increases in e-commerce manufacturing shipments indicate the increasing ability of retailers to bypass wholesalers by placing orders directly with manufacturers. Increases in e-commerce retail sales indicate that wholesale bypass is occurring on the retail side of the value chain by the increasing ability of consumers to purchase directly from electronic storefronts. Figure 6 is suggestive in both these regards, as manufacturer's shipments have rapidly increased from 11% in 1999 to 43% in 2011, and retail e-commerce has increased from effectively 0% in 1998 to just under 13% in 2011.

Figure 6: E-commerce as % of sales, by major category, 1998 - 2011



Source: US Census, Annual Survey of Manufactures and the Economic Census

Radio-Frequency IDentification (RFID): Since lead-time and inventory control are major competitive issues in the furniture industry, RFID systems have improved efficiency and accuracy inventory management and delivery for wholesalers. RFID streamlines the inventory and ordering process and reduces counting and packing errors by eliminating manual bar code scans. RFID systems allow wholesalers to gather price data, track inventory and deliveries, obtain product information and market products. The increasing prevalence of RFID reduces the need for labor it may help offset losses incurred as a result of wholesale bypass and e-commerce (IBIS, 2013).

Buying groups: Buying groups are an emerging phenomenon in the furniture industry that deserves special attention because they are affecting how furniture is marketed, bought and sold. The three largest buying groups are BrandSource (Anaheim, CA), MegaGroup USA (Germantown, TN), and Nationwide Marketing Group (Winston-Salem, NC). Buying groups originated as aggregators of locally-owned retail consumer electronics stores who would negotiate exclusive or preferred purchasing agreements with manufacturers for their non-competing members. Over time, buying groups added mattresses, carpet, and furniture to their member offerings, which reflected the trends in mega-store electronic retail outlets like HH Gregg and Conn's. Buying groups today not only offer group purchasing, but additional services, including advertising, store displays, sales and financing support. Nationwide has its own market twice a year in Dallas and Las Vegas, in which members can visit with manufacturers and see their new product offerings. Some buying groups have developed their own brands to offer to their members (Epperson, 2012).

The development of buying groups is important for three major reasons. First, buying groups allow independent retailers to exercise collectively the purchasing power of much larger furniture retailers, including discount furniture retailers. As a result, they are able to remain at least price competitive with larger retailers, although sales volumes to reach break-even points remain an issue for small retailers. Second, for wholesalers traditionally selling to independent retailers, the rise of buying groups significantly alters their business model. Wholesalers must ensure that they remain price competitive while offering a similar portfolio of services provided by buying groups, which may be difficult over the longer term as buying groups have the advantage of scale economies. While traditional wholesalers have the advantage of established relationships in a region, at some point, even the most loyal customers will seek the price and service advantages offered by national buying groups if they do not offer similar advantages. Third, buying groups are important to the traditional furniture market venues, both in household and office furniture, in that they have the purchasing power to host their own furniture markets. These new markets offer not only the advantage of cross-industry purchasing (furniture, mattresses, carpets, and consumer electronics), but the advantage of place. In short, the rise of buying groups has the ability to fundamentally restructure the way that furniture is bought, sold and marketed in the U.S.

2.5. Retail

The US retail industry comprises companies that sell household furniture, kitchenware, bath ware, and mattresses to final users. These items are generally sold through dedicated store chains, outlet stores, big-box retailers and e-commerce platforms. The retail segment of the value chain includes furniture

stores for different market segments (low, medium, and high) and e-commerce retail sales. Major trends in retail sales are the increase in e-commerce, the rise of discount retailers, and the separation of retail from production as a competitiveness strategy.

As of 2012, the retail segments industry includes about 17,000 companies with combined annual revenue of about $50 billion. Major companies are Ashley Furniture Industries, Bassett Furniture, Haverty's Furniture, La-Z-Boy, and Rooms To Go (all based in the U.S.) as well as Home Retail Group (UK), and IKEA (Sweden) (Hoover's, 2013). Retail gross margins for the furniture industry [NAICS 337] are higher than average, ranging from 42-48% from 1993-2011, and currently are 46.3% according to the BLS Consumer Expenditure Survey (CEX). This compares favorably with the average retail gross margin for all retail segments, which according to the BLS has ranged from 27-29% from 1993-2011, and currently is at 27.2%.

Household furniture sales are closely related to home sales, consumer income, and residential and commercial construction. Nominal per capita annual expenditures on furniture have hovered in the $270-$470 range since 1984, with a low in 1984, a high in 2004 and currently standing at $358, according to the BLS CEX. Annual consumer expenditures on furniture are still recovering from the 2008-2009 financial crises. In the first semester of 2013, the value of US residential construction spending increased 24.4 percent compared to the same period in 2012. Over the same six-month period, domestic retail sales for furniture and home furnishings rose 3.2 percent. In general, American incomes and expenditures rose from 1984-2011, but the percent spent on furniture declined from 1.2% in 1984 to 0.6% in 2011 (BLS CEX, 1984-2011).

The next section will provide an overview of business trends in the domestic furniture retail industry. This section will address some of the major phenomena currently characterizing the US retail market, such as: increasing market concentration; the rise of contemporary, modern furniture; the growing competition from big low-end retailers; and the impact of e-commerce.

2.5.1.1. Business trends

Market concentration: Over the past two decades, the retail segment in the US furniture industry has been characterized by a growing market concentration. This phenomenon was particularly acute in the past ten years, when large furniture retailers—i.e. Ashley Furniture, Rooms to Go, Ikea, William and Sonoma—significantly increased their market share. Changes in market concentration are reported in

Table 9: Value of store sales and Top 100 share of sales

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Store sales total value ($ billion)	48.2	50.4	52.6	52.2	56.7	58.9	61.9	63.7	54.1	48.3	47.2	48
Top 100 stores share of market	46.5%	47.5%	50%	54%	53%	56%	55%	56%	57%	58%	58.7%	59.1%

Source: Furniture Today

Since the overall value of US furniture stores remained stable—$48.2 billion in 2000; $48 billion in 2011—increased market concentration and the consolidation of the retail industry was accompanied by a decrease in the number of smaller, independent retailers. According to Table 9, the aggregated market share of the top 100 furniture stores moved from 47.5% to 59.1% in only a decade, which equals to an increase in sales of $4 billion. Among the most important factors that triggered this sharp increase, there is certainly the growth of some domestic big players, like Ashley Furniture and Rooms to Go, and William and Sonoma, as well as the expansion of a non-US retailer like Ikea (Furniture Today). To put it in real numbers, in 2011, Ashley Furniture generated $2,686 million in the domestic market, almost twenty times the total turnover it generated in 2001 - $140 million. During the same period Ikea grew from $669 million to $2,280 million. Combined the two companies have increased their total sales of approximately $4,1 billion between 2001 and 2011, exceeding the $4 billion value resulting of the increased retail consolidation (Furniture Today). In other words, most of the market concentration that occurred over the past decade stems from the growth of Ashley Furniture and Ikea. As of 2011, these two companies were the two biggest furniture retailers in the US market

The rise of contemporary, modern style: Together with increased market concentration, the US retail industry has been recently characterized by the growth of contemporary furniture. Although US retailers have long competed on price, in recent years emphasis on style and the quest for product differentiation have grown in importance. The spread of contemporary, modern furniture has largely relied on the rapid diffusion of high-end, style-driven furniture chains, like Crate & Barrel, Restoration Hardware, and Pottery Barn -- to mention but a few. Most of the growth in these "lifestyle store" chains has occurred over the past decade, when the rise of a new generation of sophisticated, internationally-minded consumers started looking for different products.

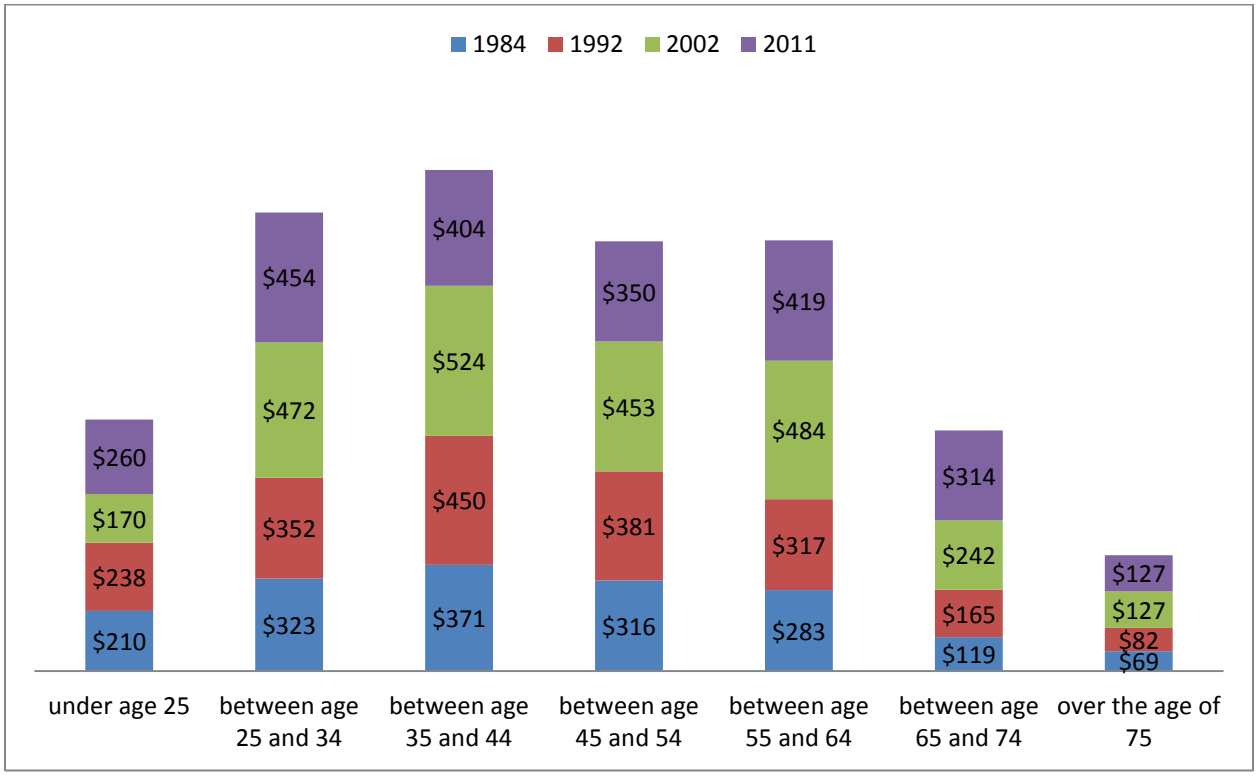
The rise of style has not been confined to higher-end furniture; rather it spans several market segments, including the low-end and medium market segments. At the low-end, Ikea entered the US market as a pioneer of low-cost, contemporary design, therefore proposing a new concept of household furniture. Largely established in the European market, Ikea has firstly introduced in the US market a wide array of design-friendly, relatively cheap items that are particularly appreciated by young consumers. In addition, by offering a broad product portfolio, which includes a variety of complementary products and accessories, Ikea was able to overcome a major issue in the retail market: low product turnover and the achievement of break-even points.

The spread of the contemporary, modern furniture in the US retail market is supported by facts. Ikea, whose increased performance has been discussed earlier, includes 38 stores in the US, making the American market the second largest market by the number of stores -- Germany ranks first with 46. Similar numbers characterize the performance of Restoration Hardware and Crate & Barrel, generating in 2011 respectively $1.2 and 1.3 billion. As of 2012, Restoration Hardware operated in the US and Canadian markets through 87 stores, including 13 outlets, while Create & Barrel had 108 stores.

Demographic trends in purchasing furniture may help explain some of these shifts. Figure 7 illustrates annual expenditures on furniture by age in four time periods, 1984, 1992, 2002, and 2011. Aggregate furniture purchases were the greatest for the 35-44 age group and the least for the over 75 age group.

This makes sense: people need furniture the most as they are establishing households and least when they are downsizing.

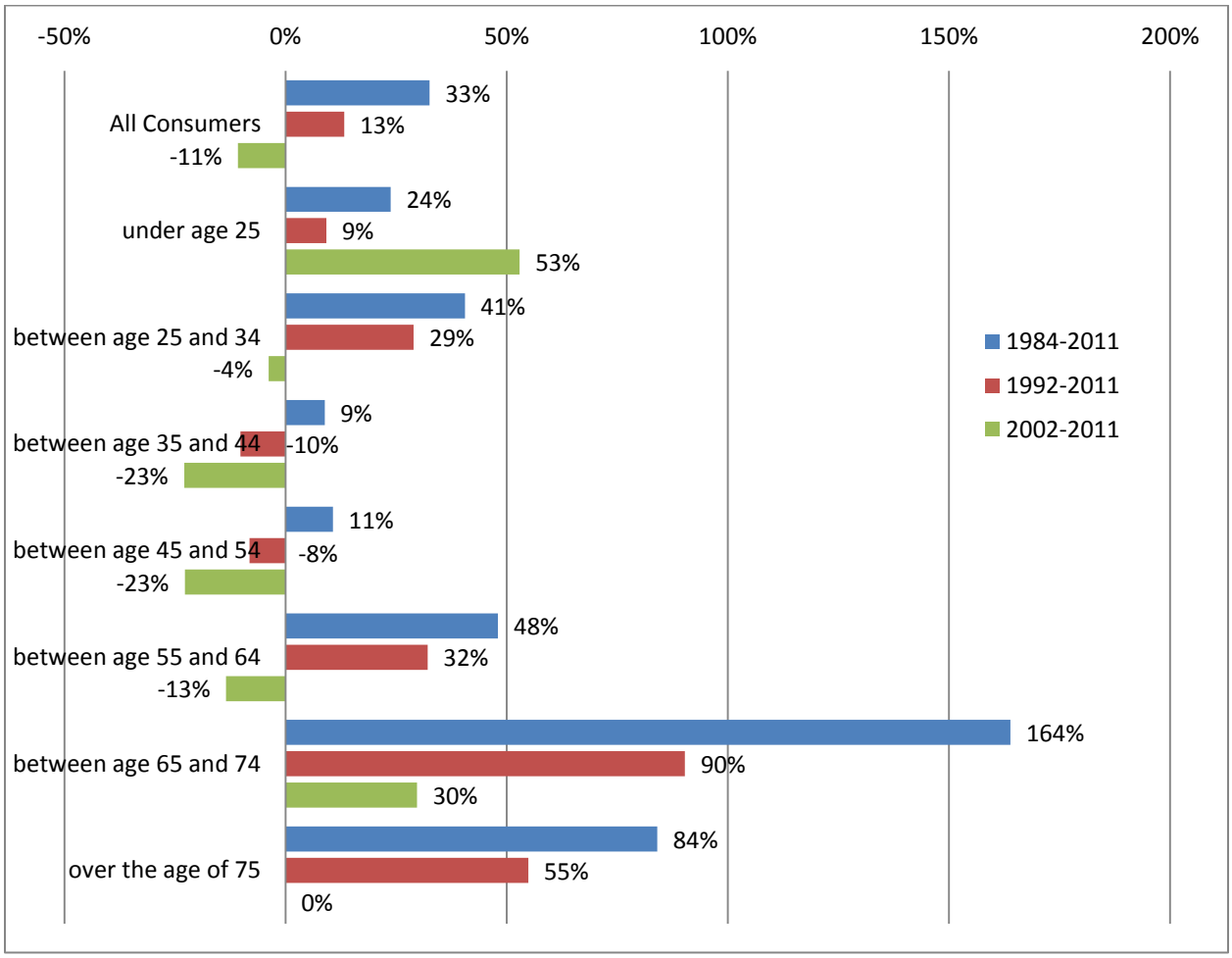
Figure 7: Annual expenditures on furniture, by age group



Source: calculated from Bureau of Labor Statistics, Consumer Expenditure Survey, 1984, 1992, 2002, 2011

Changes in furniture expenditures from 1984-2011 are illustrated in Figure 8. For all consumers, expenditures on furniture from 2002-2011 declined by 11%, particularly for the 35-44 and 45-54 age groups who saw 23% declines. In fact, consumer expenditures on furniture declined from 2002-2011 for all age groups except the under age 25 and 65-74 segments. So who is buying furniture? College students/young professionals and aging baby boomers. Everyone else is decreasing furniture consumption. A conclusion consistent with this trend is that Ikea, Ashley Furniture, and Rooms to Go are supplying the younger demographic with cheap, contemporary products that are relatively well-designed in Ikea's case, while supplying their parents with products from lifestyle store brands. Most other consumers go to discount to mid-priced retailers with select pieces from higher-end retail.

Figure 8: change in consumer expenditures on furniture, by age group



Source: calculated from Bureau of Labor Statistics, Consumer Expenditure Survey, 1984, 1992, 2002, 2011

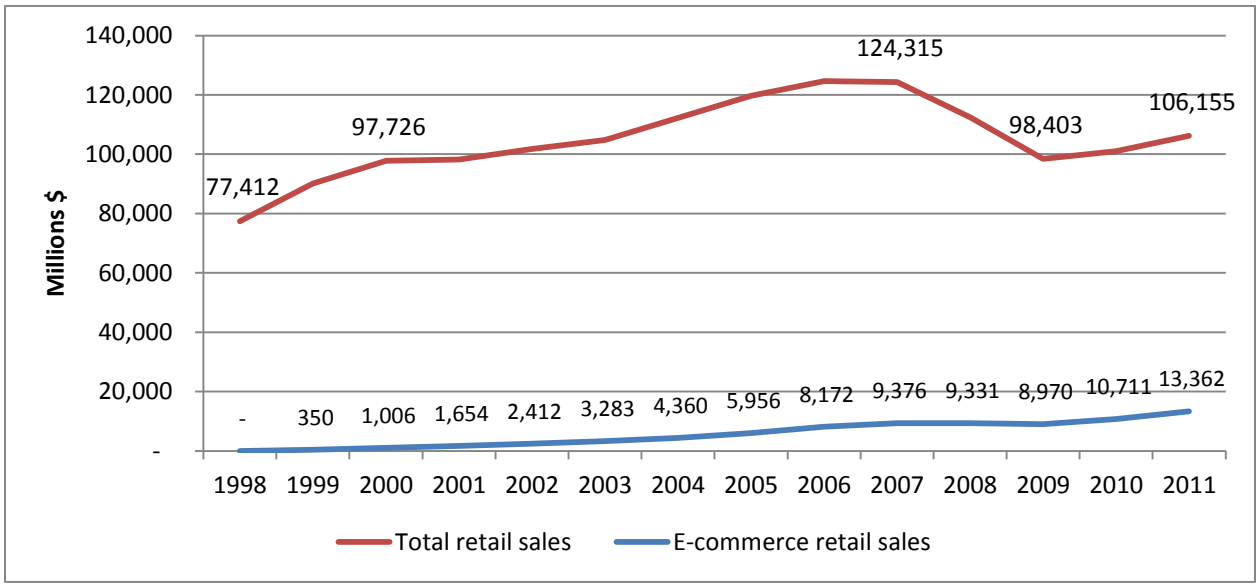
Competition from big-box retailers and furniture manufacturers: The term big-box retailer identifies a type of reseller that is characterized by a large retail establishment, typically comprising a vast array of durable and non-durable consumer goods organized into distinct product categories. Retailers competing in this segment include Wal-Mart, Target, Costco, and Sears, who recently expanded their furniture offers, thus becoming direct competitors to traditional furniture retailers. Big-box retailers typically compete in the low-end market and build their competitive advantage on their capability to buy large volume of products at a relatively lower cost.

Threats facing established retailers are not limited to big-box retailers, but they also stem from the dynamism of furniture manufacturers in the retail segment. In the past several years, companies like Thomasville, Ethan Allen and Bassett Furniture Industries, have in fact increased their presence in the retail segment through one-brand, dedicated stores. This strategy allows furniture manufacturers to bypass retailers and directly sell to customers through their branded stores. As a result, firms increase their presence in the final market, enhance brand reputation and capture a substantial share of the value added generated along the whole value chain. Yet the establishment of independently owned

stores also entails some issues, like increased coordination costs and stores' high overhead and low product turnover. As pointed out before, an effective strategy to offset these drawbacks and accomplish break even might be integrating furniture offers with complementary products, as exemplified by Ikea and Crate & Barrel.

E-commerce: Online sales have been steadily growing in the furniture retail market over in recent years. It is estimated that between 2008 and 2013 online revenue has grown at an average annual rate of 9.6% to $9 billion. Over the same period of time, the number of operators has grown at annual rate of 3%, today counting some 1,300 companies (IBISWorld 2013). Companies competing in the online retail typically compete on cost leadership, since they can offer prices discounted by 30-40 percent. Lower costs stem from the absence of physical retail stores and warehouses and sale staff. In addition, online retailers generally source directly from furniture manufacturers, thus capturing the margin otherwise retained by wholesalers.

Figure 9: Retail sales in furniture, e-commerce v. total sales, 1998-2011



Source: calculated from U.S. Census Bureau, Annual Survey of Manufacturers and the Economic Census

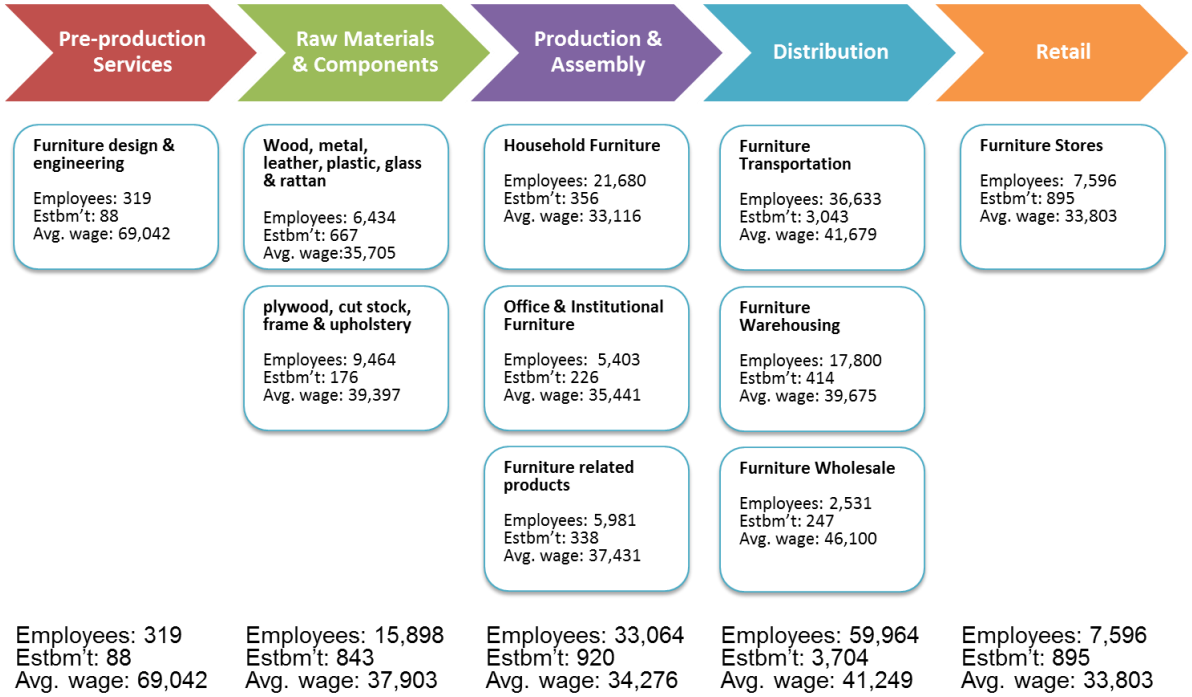
Online marketplaces have been also implemented by retailers and manufacturing firms (i.e. Bassett Furniture, Ethan Allen, Rooms to Go). Besides taking advantage of growing online sales, this strategy is also meant to provide consumers with the possibility to gather information about product prices and features and get involved in the customization of furniture items. In this case, websites serve as virtual showrooms.

In spite of the recent development, Internet sales remain a small fraction of total furniture sales and future growth remains uncertain. In 2011, e-commerce retail sales in furniture equaled 12.6% of total retail furniture sales, according to the US Census Bureau. Among the biggest issues facing online sales, are high costs for shipping and returns (Hoover's, 2013).

3. Trends in employment, establishments and wages, 1992-2012

The purpose of this section is to summarize trends for the furniture value chain using BLS data in 1) employment (section 3.1), 2) establishments (section 3.2), and 3) wages (section 3.3). Figure 10 summarizes the employment, establishments, and wages for the NC value chain in 2012.

Figure 10: North Carolina furniture value chain, 2012

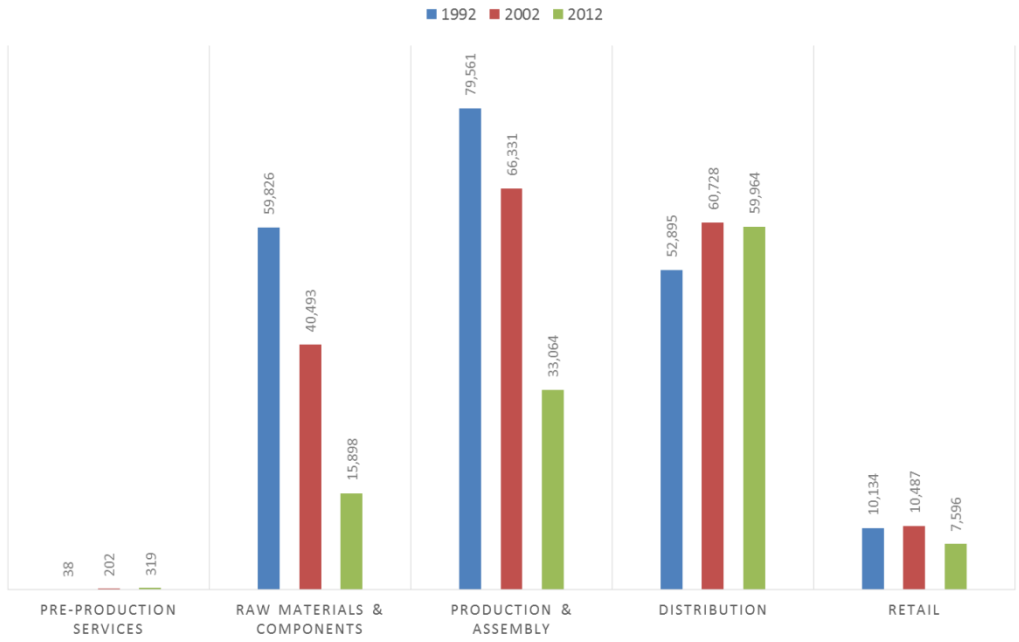


Source: Duke CGGC, calculated from U.S. Bureau of Labor Statistics (BLS), Census of Employment and Wages (CEW)

3.1. Employment trends in the NC furniture value chain

Figure 11 summarizes the employment for each major segment of the value chain in 1992, 2002, and 2012. Pre-production services, though on the rise, are effectively non-existent in North Carolina accounting for 319 jobs. The raw materials and components segment of the value chain had large reductions over the years measured, changing from almost 60,000 jobs in 1992 to 16,000 jobs in 2012. Similarly, production and assembly reduced from approximately 79,500 jobs in 1992 to just over 33,000 in 2012. Employment in the distribution segment rose from just under 53,000 in 1992 to approximately 60,000 in 2012. The retail segment of the value chain reduced from approximately 10,000 employees in 1992 to about 7,500 in 2012.

Figure 11: North Carolina employment in the furniture value chain, 1992, 2002, 2012



Source: calculated from BLS/CEW 1992, 2002, 2012

Table 10 lists the employment change in the furniture value chain from 1992-2012 at the individual NAICS level. This level of disaggregation is helpful to illustrate more precisely where the increases and decreases in employment occurred in the North Carolina furniture industry. The largest decline occurred in Broadwoven fabric mills, a portion of which – about 12% – is related to the furniture industry. Within the furniture production and assembly segment of the value chain, employment in nonupholstered furniture manufacturing ("casegoods") decreased by 27,845 jobs while upholstered furniture manufacturing decreased by 9,580. Employment in manufacturing decreased across the value chain, with the exception of mattress manufacturing and custom woodworking. Job increases in the value chain were primarily in warehousing and storage (NAICS 493110), local trucking (NAICS 48422), and furniture wholesale (NAICS 423210). Generally speaking, the trends in employment indicate a rapid decline in upstream segments of the value chain and flat or moderately declining employment in downstream segments.

Table 10: NC Employment change, 1992-2012*

NAICS Code	NAICS Label	Employment change 1992-2012	NC Employment, 2012
313210	**Broadwoven Fabric Mills**	**-35,418**	**5,169**
337122	**Nonupholstered Wood Household Furniture Mfg.**	**-27,845**	**3,646**
337121	**Upholstered Household Furniture Mfg.**	**-9,580**	**16,744**
4841	General freight trucking	-7,944	30,059
337215	**Showcase, Partition, Shelving, and Locker Mfg.**	**-4,741**	**3,069**
32121	**Veneer, Plywood & Eng. Wood Product Mfg.**	**-3,400**	**3,862**
337211	**Wood Office Furniture Mfg.**	**-3,271**	**1,298**
3211	Sawmill & Wood Preservation	-2,703	3,785
442110	Furniture Stores	-2,538	7,596
113310	Logging	-1,233	2,554
321912	Cutstock	-1,122	433
337127	**Institutional Furniture Mfg.**	**-1,040**	**414**
337124	**Metal Household Furniture Mfg.**	**-814**	**631**
337214	**Office Furniture (except Wood) Mfg.**	**-291**	**106**
337920	**Blind & shade mfg**	**-273**	**350**
337125	**Household Furniture (except Wood and Metal) Mfg.**	**-119**	**659**
113110	Timber Track Operations	-52	95
337110	**Wood Kitchen Cabinet and Countertop Mfg.**	**215**	**3,137**
48423	Other specialized trucking, long distance	216	1,870
541420	Industrial design services	281	319
337212	**Custom Architectural Woodwork and Millwork Mfg.**	**285**	**516**
337910	**Mattress mfg**	**1,092**	**2,494**
423210	Furniture Merchant Wholesalers	1,688	2,531
48422	Other specialized trucking, local	1,761	4,704
493110	General warehousing & storage	8,348	17,800

Source: Calculated from BLS/CEW, 1992, 2012. Note: bold indicates the manufacturing segments of the value chain

Finally, we compared the increase and decrease of employment in the NC furniture value chain with the US over the same period to determine whether North Carolina fared better or worse than the industry at the national level. Table 11 summarizes the employment differentials between the US and NC. Differentials compare the difference in the rate of change between two entities, in this case whether the change in employment in NC was greater or less than the change in employment in the US. The purpose of the analysis is to compare industry trends at the national and state level in order to identify whether the state level performed better, the same, or worse than the nation as a whole. To provide a specific example, NC decreased employment in NAICS 337211 Wood Office Furniture Manufacturing from 4,569 in 1992 to 1,298 in 2012. This decline in 3,271 jobs (Table 10) corresponds to a 71.6% decline from 1992 to 2012. During the same period, employment in the US for NAICS 337211 declined from 29,747 in 1992 to 17,003 in 2012, a 42.8% decline. The differential reported in Table 11 is the percent change in the US minus the percent change in NC (42.8 – 71.6 = -28.8). Negative numbers indicate that NC performed worse than the US, while positive numbers indicate that NC performed better than the US over the time period reported.

Table 11: Employment differentials between NC and US, 1992-2012

NAICS Code	NAICS Label	Differential b/w NC and US
337127	**Institutional Furniture Mfg.**	**-41%**
4841	General freight trucking	-40%
337214	**Office Furniture (except Wood) Mfg.**	**-30%**
48423	Other specialized trucking, long distance	-30%
337211	**Wood Office Furniture Mfg.**	**-29%**
321912	Cutstock	-28%
442110	Furniture Stores	-19%
337122	**Nonupholstered Wood Household Furniture Mfg.**	**-19%**
32121	Veneer, Plywood & Eng. Wood Product Mfg.	-12%
337215	**Showcase, Partition, Shelving, and Locker Mfg.**	**-11%**
337124	**Metal Household Furniture Mfg.**	**-8%**
3211	Sawmill & Wood Preservation	-8%
493110	General warehousing & storage	-6%
313210	Broadwoven Fabric Mills	-5%
337920	**Blind & shade mfg**	**-3%**
113110	Timber Track Operations	1%
113310	Logging	7%
337121	**Upholstered Household Furniture Mfg.**	**9%**
337110	**Wood Kitchen Cabinet and Countertop Mfg.**	**18%**
48422	Other specialized trucking, local	20%
337125	**Household Furniture (except Wood and Metal) Mfg.**	**30%**
337212	**Custom Architectural Woodwork and Millwork Mfg.**	**59%**
337910	**Mattress mfg**	**87%**
423210	Furniture Merchant Wholesalers	160%
541420	Industrial design services	642%

NC performed worse than the US

NC performed better than the US

* bold indicates the manufacturing segments of the value chain
Source: Calculated from BLS/CEW, 1992, 2012

Employment differentials were greatest in segments of the value chain where North Carolina traditionally has not been strong, specifically institutional furniture manufacturing and office furniture manufacturing. One exception to this trend is the decline in nonupholstered furniture manufacturing, which has been a traditional strength in the North Carolina furniture value chain. Relative gains occurred in upholstered furniture, custom woodworking and millwork, and in mattress manufacturing. Notably, segments toward the ends of the value chain, industrial design services and furniture wholesale, grew much more rapidly than the US industry as a whole.[4] The next two sections extend the analysis to trends in establishments and wages.

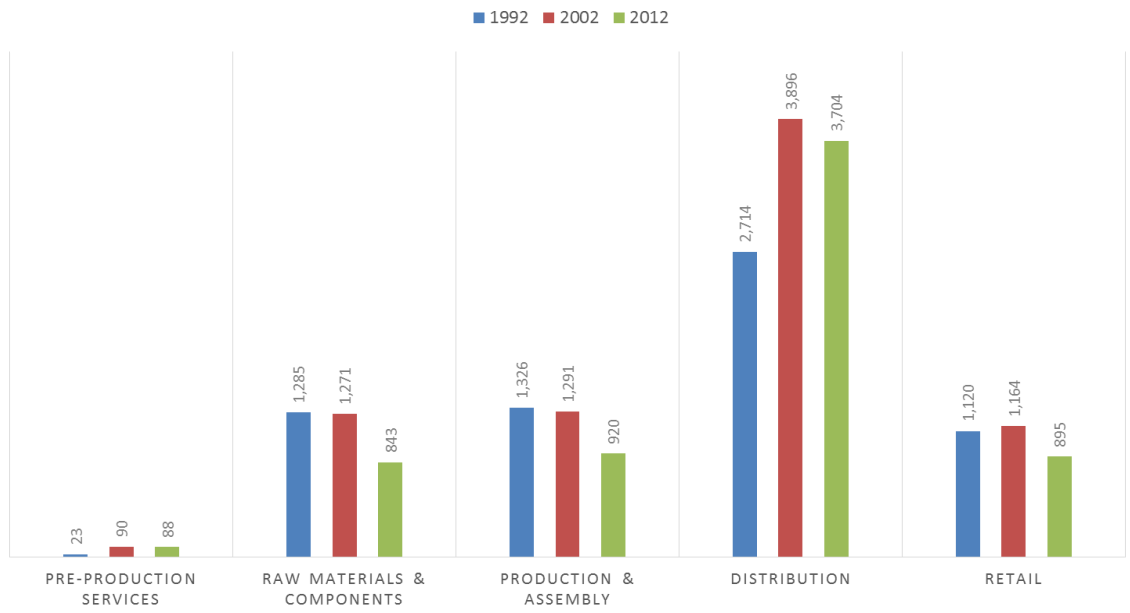
3.2. Establishment trends in the NC furniture value chain

The purpose for analyzing trends in establishments is to discover whether the number of businesses in each segment of the value chain has been affected more or less than employment. For example, it is possible for industries to reduce employment, while the number of business establishments remained

[4] It should be mentioned again that industrial design services are a very small segment of the furniture value chain in North Carolina.

relatively constant. Figure 12 illustrates the number of establishments in each segment of the value chain in 1992, 2002, and 2012.

Figure 12: Number of establishments in the NC Furniture value chain, 1992, 2002, 2012



Source: Calculated from BLS/CEW, 1992, 2002, 2012

The segments with the greatest losses in establishments from 1992-2012 were raw materials & components (-34%) and production & assembly (-31%). Segments with the greatest gains in the number of establishments were distribution (36%) and the very small pre-production services segment (283%). When compared to the change in employment (Table 12), the change in the number of establishments is less. In other words, industry employment reduces more quickly than establishments. For example, while employment in the production and assembly segment reduced by 58%, establishments reduced by 31%. Gains in establishments offer a mixed picture; while establishments in the distribution segment of the furniture value chain increased by 36% from 1992-2012, employment increased by 8%. The very small pre-production services segment increased employment faster than the number of establishments.

Table 12: percent change in establishment and employment, by value chain segment, 1992-2012

Segment	% change in establishments 1992-2012	% change in employment 1992-2012
Pre-production services	283%	739%
Raw materials & components	-34%	-73%
Production & assembly	-31%	-58%
Distribution	36%	8%
Retail	-20%	-25%

Source: Calculated from BLS/CEW, 1992 and 2012.

At the individual NAICS level, the greatest change in the number of establishments from 1992-2012 was in furniture stores, which declined by 225 establishments. Presumably, both the rise in large discount retailers and the economic downturn in 2008 affecting the housing market were important causes in the reduction of furniture retail establishments. The greatest gains in the number of establishments from 1992-2012 were in the distribution segment of the value chain. All subsegments within distribution gained at least 100 establishments in North Carolina during the time period studied.

Table 13: NC establishment change, 1992-2012

NAICS Code	NAICS Label	Establishment change, 1992-2012
442110	Furniture Stores	-225
113310	Logging	-201
337121	**Upholstered Household Furniture Mfg.**	**-149**
3211	Sawmill & Wood Preservation	-137
337122	**Nonupholstered Wood Household Furniture Mfg.**	**-115**
337110	**Wood Kitchen Cabinet and Countertop Mfg.**	**-75**
337215	**Showcase, Partition, Shelving, and Locker Mfg.**	**-56**
313210	Broadwoven Fabric Mills	-52
32121	**Veneer, Plywood & Eng. Wood Product Mfg.**	**-37**
321912	Cutstock	-27
337127	**Institutional Furniture Mfg.**	**-12**
337211	**Wood Office Furniture Mfg.**	**-10**
337910	**Mattress mfg**	**-10**
337124	**Metal Household Furniture Mfg.**	**-6**
337920	**Blind & shade mfg**	**-4**
337214	**Office Furniture (except Wood) Mfg.**	**-2**
113110	Timber Track Operations	7
337125	**Household Furniture (except Wood and Metal) Mfg.**	**9**
337212	**Custom Architectural Woodwork and Millwork Mfg.**	**30**
541420	Industrial design services	65
423210	Furniture Merchant Wholesalers	116
48423	Other specialized trucking, long distance	127
493110	General warehousing & storage	181
48422	Other specialized trucking, local	242
4841	General freight trucking	324

Source: calculated from BLS/CEW 1992 and 2012.

Table 14 provides the differentials for establishments at the individual NAICS level from 1992-2012. Differentials compare the difference in the rate of change between two entities, in this case whether the change in establishments in NC was greater or less than the change in establishments in the US. The purpose of the analysis is to compare industry trends at the national and state level in order to identify whether the state level performed better, the same, or worse than the nation as a whole.

The table shows that North Carolina performed worst in segments of the value chain in which it traditionally has not had a strong competitive advantage. Institutional and non-wood office furniture performed worse in North Carolina than the US as a whole, as did establishments in metal household furniture. Nonupholstered wood household furniture (NAICS 337214) is an exception to this trend, as North Carolina has a long history in making wood household furniture yet still performed worse than the industry as a whole. North Carolina performed best in the furniture wholesale and distribution segments, household furniture (except wood and metal), and custom architectural woodworking.

Table 14: Establishment differentials between NC and US, 1992-2012

NAICS Code	NAICS Label	Differential b/w NC and US
337124	Metal Household Furniture Mfg.	-50%
32121	Veneer, Plywood & Eng. Wood Product Mfg.	-23%
337127	Institutional Furniture Mfg.	-20%
3211	Sawmill & Wood Preservation	-18%
4841	General freight trucking	-13%
337214	Office Furniture (except Wood) Mfg.	-11%
442110	Furniture Stores	-11%
337122	Nonupholstered Wood Household Furniture Mfg.	-10%
321912	Cutstock	-2%
337211	Wood Office Furniture Mfg.	0%
337920	Blind & shade mfg	4%
313210	Broadwoven Fabric Mills	4%
493110	General warehousing & storage	6%
337110	Wood Kitchen Cabinet and Countertop Mfg.	7%
337215	Showcase, Partition, Shelving, and Locker Mfg.	8%
113310	Logging	9%
337910	Mattress mfg	12%
113110	Timber Track Operations	16%
337121	Upholstered Household Furniture Mfg.	17%
48422	Other specialized trucking, local	46%
423210	Furniture Merchant Wholesalers	75%
337125	Household Furniture (except Wood and Metal) Mfg.	89%
48423	Other specialized trucking, long distance	94%
337212	Custom Architectural Woodwork and Millwork Mfg.	119%
541420	Industrial design services	167%

NC performed worse than the US

NC performed better than the US

Source: Calculated from BLS/CEW, 1992 and 2012

3.3. Wage trends in the NC furniture value chain

Wage trends help illustrate the competitiveness of an industry. When industries are nationally and internationally competitive, companies can increase their workers' pay to match national trends. When wages lag national trends, the competitiveness of the industry in that region relies on being a low-cost producer, which is always subject to competition from other regions, both nationally and internationally, where labor is cheaper. This section analyses the wage trends of the NC furniture value chain and finds that, while wages grew from 1992-2012 in all segments of the value chain, they generally grew less than the national average change in wages for the same period. When the value chain is disaggregated to the industry level, the picture is more nuanced, with mattress manufacturing and household furniture (except wood or metal) manufacturing as particularly notable bright spots for North Carolina.

Before analyzing the trends in industry wages in the North Carolina furniture value chain, it is perhaps illuminating to compare the average pay at the state and national level for each industry. Table 15 provides the annual average pay for each industry in the furniture value chain at the state and national level. The differences can be remarkable, particularly for timber track operations [NAICS 113110], office (except wood) [NAICS 337214] furniture and institutional furniture [NAICS 337127] manufacturing, and

furniture merchant wholesalers [NAICS 423210]. The only industry in NC paying significantly above the US average is the household furniture (except wood and metal) manufacturing [NAICS 337125]. Readers may want to refer back to these nominal wages as they review the following discussion about trends in wages.

Table 15: A comparison of NC and US average pay in the furniture value chain, 2012

NAICS Code	NAICS Label	NC Annual Average Pay	US Annual Average Pay	% of US wage
113110	Timber Track Operations	39,852	73,688	54%
337214	Office Furniture (except Wood) Mfg.	32,614	55,425	59%
337127	Institutional Furniture Mfg.	32,282	44,580	72%
337215	Showcase, Partition, Shelving, and Locker Mfg.	32,681	42,389	77%
48422	Other specialized trucking, local	34,883	44,825	78%
423210	Furniture Merchant Wholesalers	46,100	59,196	78%
337212	Custom Architectural Woodwork and Millwork Mfg.	38,612	46,878	82%
48423	Other specialized trucking, long distance	42,841	49,942	86%
337124	Metal Household Furniture Mfg.	32,990	37,907	87%
541420	Industrial design services	69,042	76,471	90%
3211	Sawmill & Wood Preservation	36,135	39,979	90%
113310	Logging	34,914	38,216	91%
337110	Wood Kitchen Cabinet and Countertop Mfg.	32,828	35,827	92%
337122	Nonupholstered Wood Household Furniture Mfg.	31,917	33,905	94%
313210	Broadwoven Fabric Mills	37,698	39,656	95%
442110	Furniture Stores	33,803	35,529	95%
493110	General warehousing & storage	39,675	41,441	96%
4841	General freight trucking	42,670	44,522	96%
337211	Wood Office Furniture Mfg.	41,944	43,481	96%
321912	Cutstock	32,004	32,945	97%
337121	Upholstered Household Furniture Mfg.	32,891	33,112	99%
32121	Veneer, Plywood & Eng. Wood Product Mfg.	42,501	42,544	100%
337910	Mattress mfg	42,907	42,290	101%
337920	Blind & shade mfg	39,666	38,905	102%
337125	Household Furniture (except Wood and Metal) Mfg.	45,575	38,846	117%

Source: calculated from BLS/CEW, 2012

Figure 13 illustrates the percent change in nominal wages for the North Carolina furniture value chain segments for three time periods, 1992-2002, 2002-2012 and 1992-2012. The figure shows that wages changed the most for preproduction services and least for the distribution segment of the value chain. The percent change in wages in North Carolina from 1992-2012 for all value chain segments was less than the average percent change for all US industries, with the exception of the very small pre-production services segment of the furniture value chain. The figure also shows that the 1992-2002 period made up the majority of the change in wages for the entire 1992-2012 period for all segments, except distribution. In other words, wage growth in the furniture value chain slowed after 2002 for all segments except distribution.

Figure 13: % change in wages: 1992, 2002, 2012

Source: Calculated from BLS/CEW, 1992, 2002, and 2012

Table 16 disaggregates the value chain segments into the industry level NAICS to better identify where wages in the North Carolina furniture value have grown the most. Nominal wages in raw material industries (logging [NAICS 113310] and timber tracks [113110]) grew in North Carolina by more than 100% from 1992-2012. Nominal wages in the components segment of the value chain grew more than the change in the average US wage for veneer, plywood, and engineered wood products [NAICS 32121]. Nominal wages in the manufacturing and assembly segment grew the most for mattress manufacturing [NAICS 337910] and household furniture (except wood or metal) [NAICS 337125], followed closely by wood office furniture [NAICS 337211] and institutional furniture [NAICS 337127] manufacturing. Industries near the ends of the value chain growing above the national average wage were industrial design services [NAICS 541420] and general warehousing and storage [NAICS 493110]. All other industries in the North Carolina furniture value chain grew less than the change in the national industry wage from 1992-2012.

Table 16: % change in nominal pay, 1992-2012*

NAICS code	NAICS Label	% change in Annual Pay 1992-2012
113110	Timber Track Operations	187.2%
337125	**Household Furniture (except Wood and Metal) Mfg.**	**126.3%**
337910	**Mattress mfg**	**120.9%**
541420	Industrial design services	120.4%
493110	General warehousing & storage	119.3%
113310	Logging	102.3%
337211	**Wood Office Furniture Mfg.**	**99.1%**
32121	**Veneer, Plywood & Eng. Wood Product Mfg.**	**95.6%**
337127	**Institutional Furniture Mfg.**	**88.7%**
337215	**Showcase, Partition, Shelving, and Locker Mfg.**	**81.3%**
3211	Sawmill & Wood Preservation	80.1%
48422	Other specialized trucking, local	79.8%
337122	**Nonupholstered Wood Household Furniture Mfg.**	**79.2%**
442110	Furniture Stores	76.5%
337124	**Metal Household Furniture Mfg.**	**76.2%**
321912	Cutstock	75.7%
337110	**Wood Kitchen Cabinet and Countertop Mfg.**	**73.9%**
337212	**Custom Architectural Woodwork and Millwork Mfg.**	**70.2%**
313210	**Broadwoven Fabric Mills**	**69.8%**
337214	**Office Furniture (except Wood) Mfg.**	**68.3%**
423210	Furniture Merchant Wholesalers	65.9%
4841	General freight trucking	64.5%
337121	**Upholstered Household Furniture Mfg.**	**62.4%**
337920	**Blind & shade mfg**	**57.9%**
48423	Other specialized trucking, long distance	46.9%

Note: From 1992-2012, the average % change in nominal wages for all US industries was 90%.
Source: calculated from BLS/CEW, 1992 and 2012

Table 17 compares whether wages in NC industries in the furniture value chain grew faster or slower than the industry wage at the national level. The national industry wage is the average wage for a specific NAICS at the national level. While wages in all industries grew by 90% (the metric for performance in Table 16 and Figure 13), the wage for a particular industry may have grown more or less than 90%. Table 17 summarizes the differential in the percent change among industries at the national and NC level. If wages for an industry grew faster in NC than at the national level, it is calculated as a positive number, while if wages grew slower, it is a negative number.

Table 17: Industry wage differentials, 1992-2012

NAICS Code	NAICS Label	Differential b/w NC and US	NC employment, 2012
541420	Industrial design services	-41%	319
48423	Other specialized trucking, long distance	-35%	1,870
337920	Blind & shade mfg	-16%	350
423210	Furniture Merchant Wholesalers	-14%	2,531
48422	Other specialized trucking, local	-14%	4,704
337124	Metal Household Furniture Mfg.	-12%	631
337122	Nonupholstered Wood Household Furniture Mfg.	-9%	3,646
337214	Office Furniture (except Wood) Mfg.	-5%	106
337121	Upholstered Household Furniture Mfg.	-5%	16,744
313210	Broadwoven Fabric Mills	-5%	5,169
337110	Wood Kitchen Cabinet and Countertop Mfg.	-1%	3,137
337212	Custom Architectural Woodwork and Millwork Mfg.	0%	516
337215	Showcase, Partition, Shelving, and Locker Mfg.	2%	3,069
4841	General freight trucking	2%	30,059
337127	Institutional Furniture Mfg.	3%	414
442110	Furniture Stores	8%	7,596
3211	Sawmill & Wood Preservation	11%	3,785
321912	Cutstock	13%	433
113110	Timber Track Operations	13%	95
337211	Wood Office Furniture Mfg.	16%	1,298
113310	Logging	20%	2,554
32121	Veneer, Plywood & Eng. Wood Product Mfg.	21%	3,862
337910	Mattress mfg	33%	2,494
337125	Household Furniture (except Wood and Metal) Mfg.	39%	659
493110	General warehousing & storage	59%	17,800

NC performed worse than the US

NC performed better than the US

Source: Calculated form BLS/CEW, 1992 and 2012.

North Carolina kept pace, or another way to look at it is that it closed the wage gap between the national and NC wages, for 14 of the industry codes making up the furniture value chain. Why do wages in a region grow faster or slower than the national average? The answer ultimately has to do with the supply and demand conditions within an industry; wage rates rise faster than the national average when demand for the services or products produced by labor in a region is greater than supply.

3.4. Key takeaways

Problem areas:

- Massive declines in employment over the past 20 years, especially in non-upholstered (~28k, -88%) and upholstered (~9.5k, -36%) furniture manufacturing.
- Reductions in employment are generally greater than reductions in establishments in the furniture value chain. Establishments in North Carolina manufacturing non-upholstered furniture have declined by 51% (115) and 42% (149) for upholstered furniture since 1992.
- NC performed worst in the production and assembly portions of the value chain in which it traditionally has not had a strong advantage. Office, institutional and non-wood furniture industries have increased their concentration outside NC.

- Declines have effects upstream and downstream. Upstream industries (raw materials & components) have been affected more by the decline in furniture production than downstream industries (distribution & retail).
- Wages in the value chain generally have not kept pace with national levels. Household furniture manufacturing in NC has seen an erosion in wages paid to employees relative to the national industry.
- The employment declines in high value added industries (institutional & office furniture) is greater in North Carolina than in the US as a whole.

Bright spots

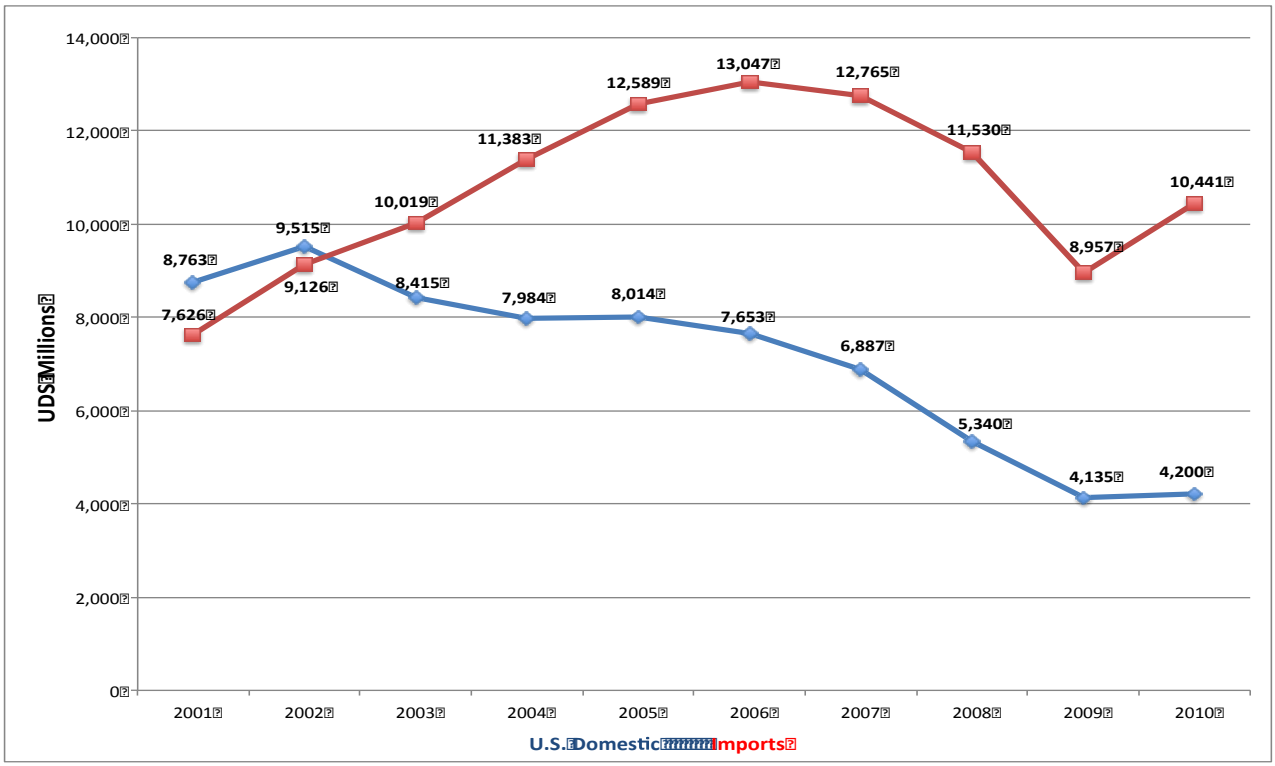
- NC performed best in the distribution and wholesale segment of the value chain in terms of growth in establishments and employment. However, growth in wages for this segment of the value chain lagged the national level by more than 10%.
- Design and custom architectural woodworking, though small segments of the furniture industry in NC, have seen rapid increases in both employment and establishments. One reason for the rapid increase may be the relatively modest wage paid in NC relative to the national industry.
- Mattress manufacturing in North Carolina has a strong competitive profile in terms of growth in wages, employment, and establishments.

4. Imports and exports

4.1. Imports

According to the U.S. Bureau of Labor and Statistics, over the last decade the number of furniture establishments in North Carolina has dropped by approximately 30%--from 1,323 to 933--while more than half the local labor force has been laid off- 40.000 workers. Although the causes that triggered this phenomenon cannot be explained by a single factor, the increased availability of foreign low-cost suppliers has certainly played a key role. As product standardization was characterizing the majority of furniture goods and competition was increasingly driven by price, numerous American furniture manufacturers decided to relocate operations to low-wage foreign countries. As Figure 14 highlights, this trend has been particularly evident in the domestic wood household production.

Figure 14: Domestic shipments and total imports in wood household furniture, 2001-2010

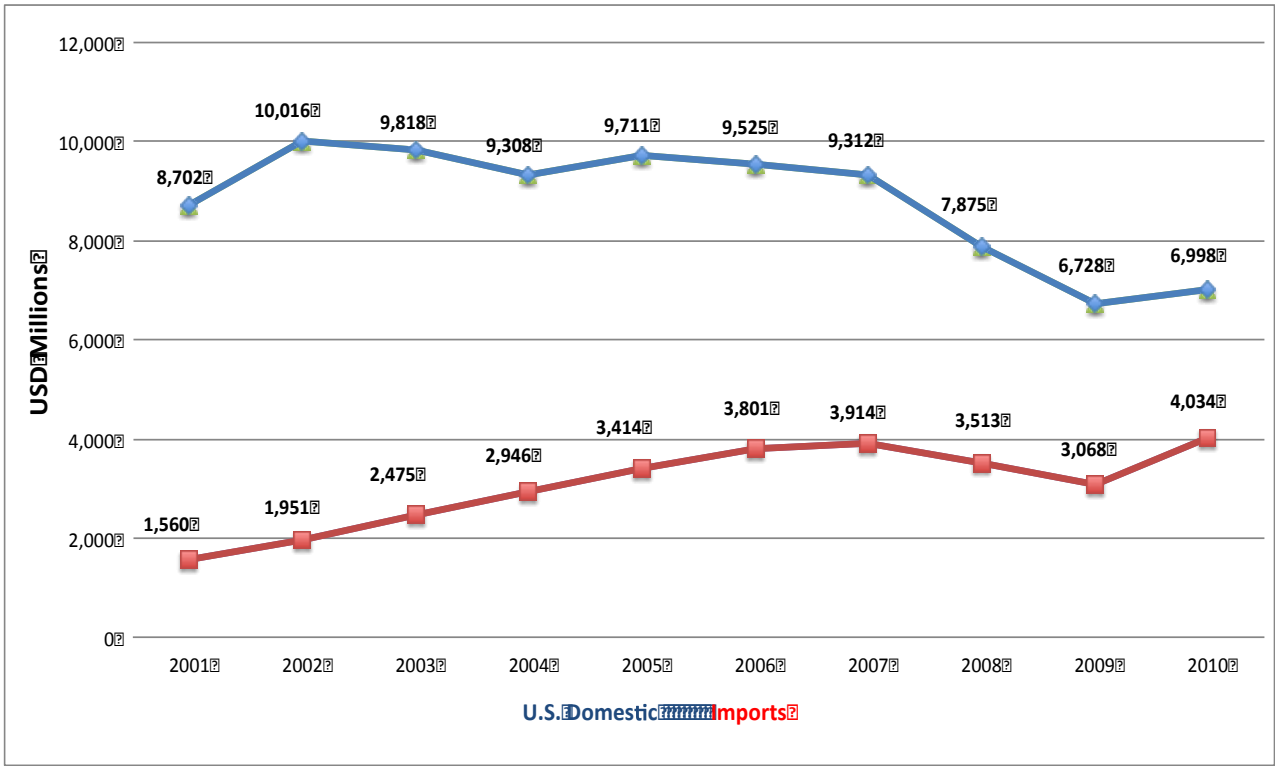


Source: Foreign Trade Division of the US Census Bureau, 2012.

Over the past decade the domestic production of wood household furniture [NAICS 337122] dropped by 52%, while imports rose by 27%. As of 2010, imported goods accounted for 71% of the total value of wood household furniture sold in the U.S.

Like the production of wood household furniture, the domestic upholstery industry has been exposed to offshoring activities over the fifteen years to a remarkable extent (Figure 15). Imports have in fact risen from $1,560 to $4,034 million dollars and the related share of market has moved from 15.2% (2001) to 36.6% (2010).

Figure 15: Upholstered household furniture: domestic shipments and total imports (2001-2010)[5]



Source: Foreign Trade Division of the US Census Bureau, 2012

However, in 2010 the total value of domestic production was still greater than the value of imported goods and it accounted for 73.6% of the value of goods sold in the U.S. Overall, while the size of the domestic case goods industry decreased by half, the dimension of the U.S. upholstery production only dropped by 19%.

The different trend experienced by these two major production segments can be mostly explained by two factors: namely, the different level of customization characterizing upholstered and non-upholstered goods; the tradability[6] of these distinct categories of goods. Non-upholstered items are in fact typically marked by a low level of customization, which allows low-cost international manufacturers to produce large quantity of commodity goods therefore achieving economies of scale. Goods are then imported by American firms and kept in stock in domestic warehouses. Conversely, a higher degree of product customization and the make-to-order production logic generally marking the upholstery production prevents U.S. furniture players to outsource operations overseas.

The customization-versus-standardization argument is also a discriminating factor in the leather upholstery production. In fact, the lower degree of product customization—compared to full-fabric upholstered goods—allows U.S. manufacturers to relocate operations overseas and take advantage of

[5] NAICS 337121

[6] Tradability is the property of a good or service to be sold in another location distant from where it was produced. High transportation costs are recognized as an important factor limiting product tradability.

cheaper manufacturing costs. The comparison between the full-fabric and the full-leather upholstery productions provides a meaningful example of the way product's features can affect the organization of a supply chain.

An additional factor impact on the organization of furniture production is product's tradability. In this case, because case goods are relatively smaller than upholstered items, shipping costs per unit is lower and tradability is higher. However, in the case of leather upholstery, lower tradability is offset by product's standardization thus enabling offshoring.

As of 2012, the largest share of furniture goods imported in the U.S. was produced in the Far East—66% of total imports—with China alone accounting for 54% of total imports (Table 18). Together with China, top Asian importing countries are Vietnam and Malaysia.

Table 18: Top 5 importing countries into US (NAICS 337)

Country	2012 (USD Million)	% of Total Imports
China	$16,391.3	57.4%
Canada	$2,441.1	8.5%
Vietnam	$2,291.8	8.0%
Mexico	$1,863.4	6.5%
Malaysia	$753.9	2.6%

Source: Foreign Trade Division of the US Census Bureau, 2012

In spite of geographical proximity and the NAFTA, it is worth noting that imports from Canada and Mexico accounted for only the 15% of total U.S. imports.

In 2012, made-in-China furniture goods accounted for 57% of the total value of North Carolina's imports (Table 19). Unlike aggregated U.S. data, Italy is ranked as the third most important import country, although it is worth noting that the overall value of goods imported from Italy is about 10% of goods imported from China. Imports from Italy are partially a function of the fact that several Italian firms have established their U.S. headquarter close to the High Point Market, for example Natuzzi and Rossetto.

Table 19: Top 5 importing countries into NC (NAICS 337)

Country	2012 (USD Million)	% of Total Imports
China	$815.7	56.9%
Vietnam	$159.1	11.1%
Italy	$80.4	5.6%
Canada	$68.1	4.7%
Indonesia	$60.4	4.2%

Source: Foreign Trade Division of the US Census Bureau, 2012

4.1.1.1. Regulatory issues

Furniture imports have a number of regulatory issues that affect the quantity and sourcing of finished goods and furniture components in the US. Chief among the regulatory issues in furniture imports are anti-dumping issues, unfair subsidies, illegal logging, and flammability standards.

Tariff duties and anti-dumping: Anti-dumping violations for furniture have been enforced against China, Vietnam, and South Africa over the past ten years. Dumping is the act of a manufacturer in one country exporting a product to another country at a price below what it charges in the home market, or below its costs of production. Under U.S. law, anti-dumping duties are imposed by the Department of Commerce when foreign merchandise is sold in the U.S. at less than fair value, and when the International Trade Commission (ITC) rules that an industry was materially injured because of the imports. Among recent anti-dumping rulings are the 2008 rulings against China, Vietnam, and South Africa on innersprings, and the 2005 ruling against wooden bedroom furniture from China. Both cases resulted in extra duties to be charged on the items.

Unfair subsidies: The U.S. and Canada had a long-running trade dispute about softwood lumber "stumpage" fees collected for harvesting Canadian government owned timber. Softwood lumber is a key input into furniture, and the U.S. considered the below-market fees as constituting an unfair subsidy. The US collected anti-dumping and countervailing duties, but in 2006 an agreement between the two countries settled the issue. Under the agreement, Canada would voluntarily collect an export tax or reduce export volumes during periods of weak lumber prices for up to 9 years.

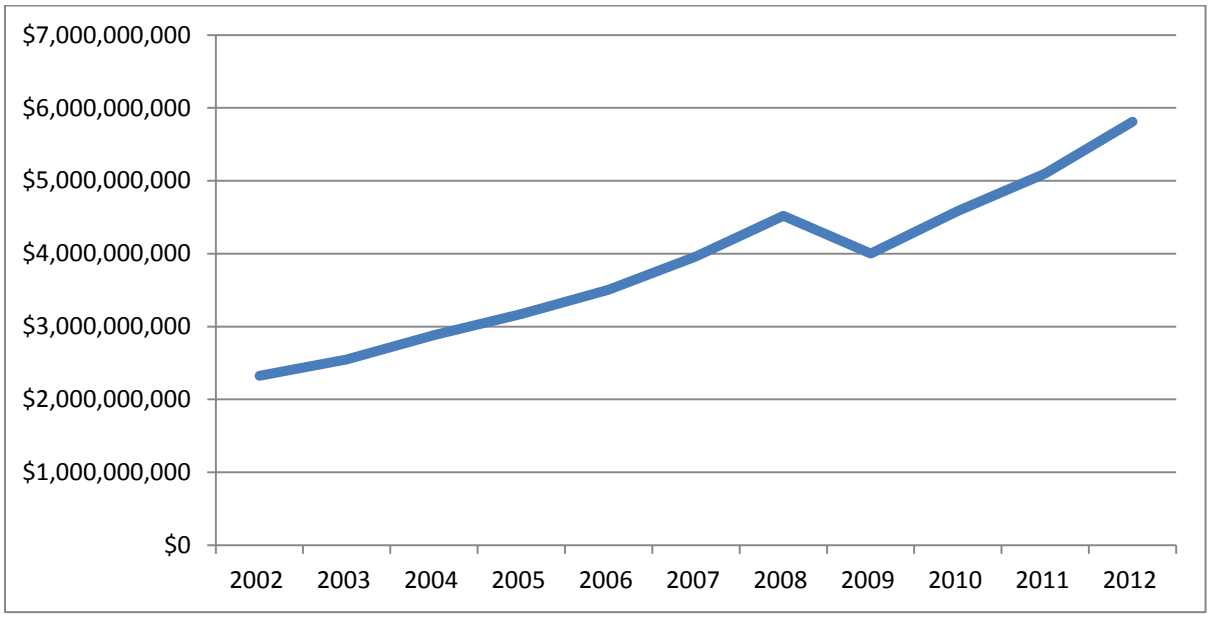
Illegal logging: Illegal logging is estimated at 10 percent of imports, primarily from Central Africa, South America, and Southeast Asia. Under the Lacey Act Amendments of 2008, importers have to declare the country of harvest, the genus and species of the plant, the quantity and measure, and the value. Failure to comply may result in fines or even a log-export ban from the country. The U.S. became the first country in the world to prohibit the import, sale or trade of illegally harvested wood and wood products.

Flammability standards: The Flammable Fabrics Act on 1953 may be amended to extend to residential upholstered furniture in addition to its application to mattresses, box springs, futons, and carpets since 1967. Additional flammability standards affect the imports of products as foreign manufacturers need to comply with domestic standards to sell in the U.S.

4.2. Exports

Exports in the U.S. furniture industry have remarkably grown over the past 10 years. In particular, a sharp increase of exports occurred between 2002 and 2008, when the total value of U.S. furniture goods sold abroad moved from $2.3 to $4.5 billion (Figure 16). Although exports dropped in 2008 and 2009, they resumed to rise in 2010 and 2011. As of 2012, the total value of U.S. furniture exports was $5.8 billion, the greatest value ever generated by the domestic industry.

Figure 16: U.S. furniture exports (2002-2012) (NAICS 337)



Source: Foreign Trade Division of the US Census Bureau, 2012. Note: NIACS 337 is the broadest NAICS category for furniture production and comprises all furniture and related product manufacturing.

In 2012, the top 5 destinations of U.S. furniture exports were Canada, Mexico, the U.K., Saudi Arabia, and China. Despite being the largest furniture exporter in the U.S. market, China only accounted for the 2.4% of U.S. total exports. As a result, the U.S. furniture trade balance with China is particularly negative—$16 billion imports; $139 million exports.

Unlike imports statistics, in 2012 Mexico and Canada accounted for 63% of U.S. total exports (Table 20). With respect to Canada, the U.S. trade balance is therefore positive.

Table 20: Top 5 destinations for US furniture exports (NAICS 337)

Country	2012 (USD Million)	% of Total Exports
Canada	$30,851.9	53%
Mexico	$585.5	10%
U.K.	$166.5	2.8%
Saudi Arabia	$140.5	2.4%
China	$139.0	2.4%

Source: Foreign Trade Division of the US Census Bureau, 2012

In 2012 North Carolina was the 4th U.S. exporting state, accounting for 5% of total export. However, the value of North Carolina exports in 2012 was worth 20% of the total goods imported in the state in the same year—$1.43 billion imports; $297 million exports. Please see Table 21.

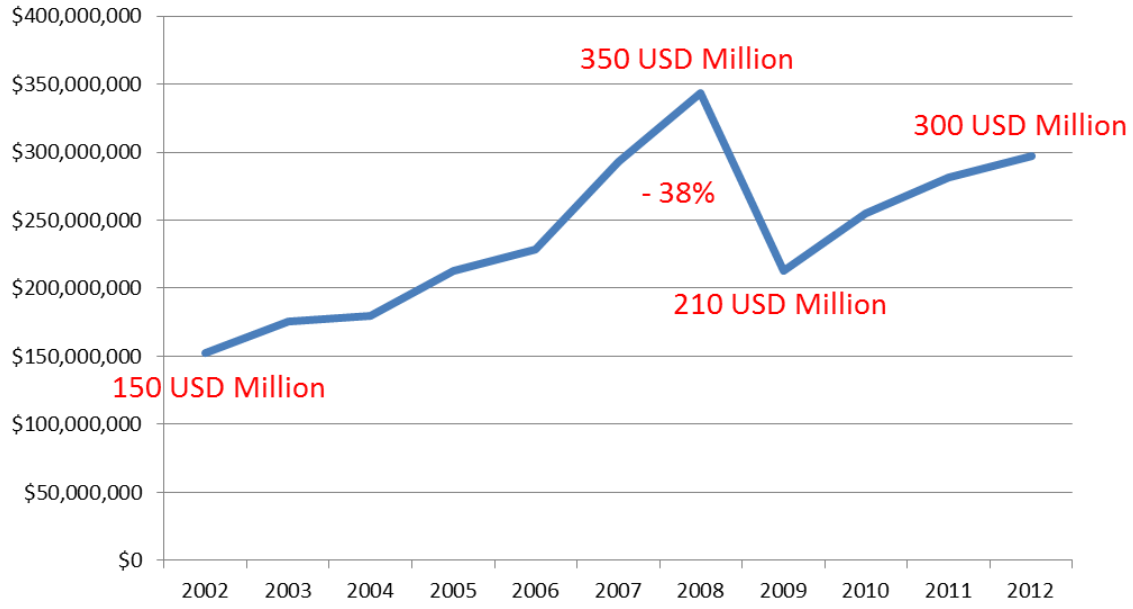
Table 21: Top 10 exporting states for furniture (NAICS 337)

State	2012 (USD Million)	% of US total
MI	$665.6	11.4%
CA	$533.6	9.2%
TX	$467.8	8.0%
NC	$297.2	5.1%
OH	$285.1	4.9%
FL	$270.7	4.6%
IL	$212.0	3.6%
IN	$209.8	3.6%
NY	$191.5	3.2%
WI	$183.5	3.1%

Source: Foreign Trade Division of the US Census Bureau, 2012

Like country-level statistics, North Carolina's exports have been significantly increasing over the past decade. In particular, exports sharply rose between 2002 and 2008, moving from $150 to $347 million. However, the 2008 economic downturn caused a drastic reduction of NC exports, which dropped by 38% in only 2 years. Unlike the trend describing U.S. aggregated data, in 2012 the level of NC exports was still below the 2008 peak (Figure 17).

Figure 17: NC furniture exports (NAICS 337)



Source: Foreign Trade Division of the US Census Bureau, 2012

In line with U.S. exports data, the largest destination for the North Carolina furniture industry is Canada, which accounts for the 40% of total exports (Table 22). In 2012, Saudi Arabia and the U.A.E. combined accounted for 12% of the total value exported from North Carolina—in the same year the two countries

accounted for only 3.8% of total U.S. export. With respect to these countries, North Carolina is the U.S. first exporting state.

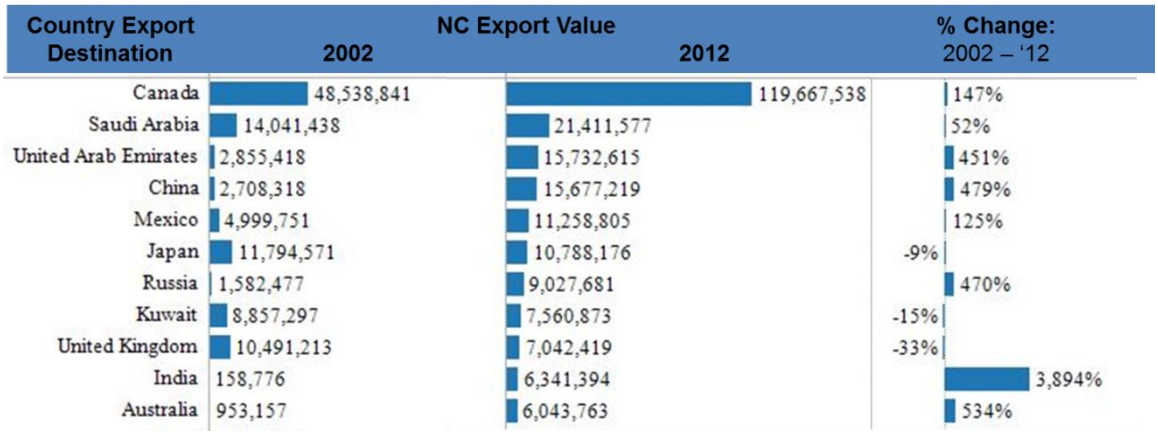
Table 22: Top 5 destinations for NC exports (NAICS 337)

Country	2012 (USD Million)	% of Total Exports
Canada	$119.7	40%
Saudi Arabia	$21.4	7%
U.A.E.	$15.7	5%
China	$15.7	5%
Mexico	$11.3	4%

Source: Foreign Trade Division of the US Census Bureau, 2012

Considerable growth in export destinations has occurred since 2002. Figure 18 summarizes the export value and percent change from 2002-2012 by destination countries for North Carolina's furniture exports. While Canada and Saudi Arabia lead in the total value of exports, India, Australia, China, UAE, and Russia have seen rapid increases over the period. The U.K., Kuwait, and Japan have modest declines since 2002.

Figure 18: Export value and % change, by country 2002-2012



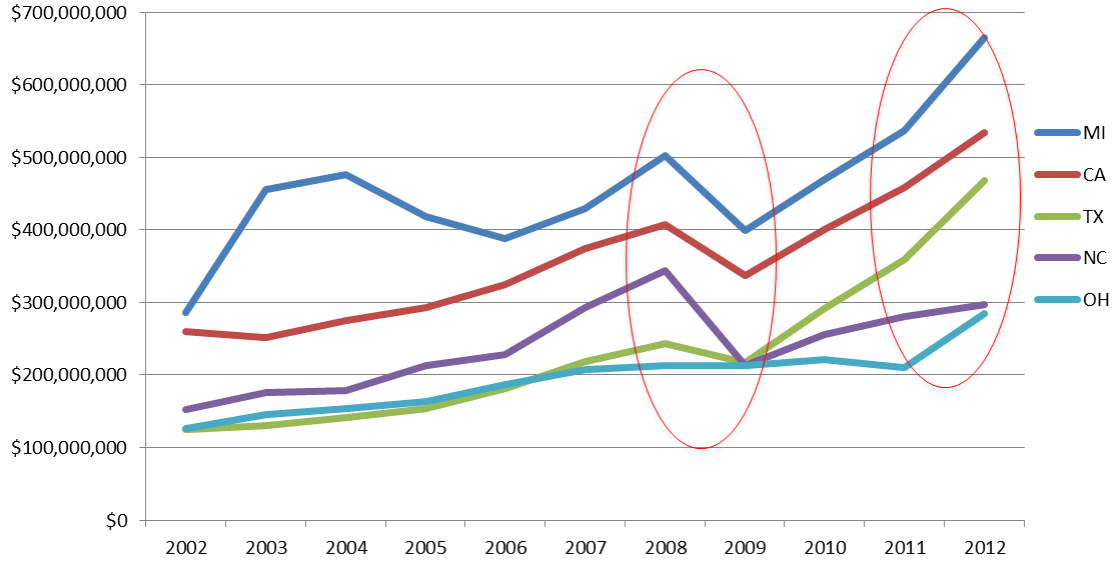
Source: Foreign Trade Division of the US Census Bureau, 2012

The most important destination of Michigan and California's exports is Canada, accounting respectively for 56% and the 33% of total exports. In absolute terms, Michigan generates $372 million of exports, California $179 million and North Carolina $119 million to Canada. California is the most important U.S. state exporting to Asia—$80 million, or 15% of total exports. The North Carolina furniture industry generates $32 million in Asia, 10% of total exports. The most important destination for Texas is Mexico, where the local industry generates $266 million in furniture exports. In 2012, North Carolina exported to Mexico only $11 million.

The comparison of the export trend in the U.S. top 5 exporting states (Figure 19) shows that North Carolina is the only state that has not fully recovered from the 2008 economic downturn. The first

highlighted circle shows that the top 5 states all declined in total exports in 2008-2009. However, the recovery from 2011-2012 has been uneven. The second circle highlights that all states, except North Carolina, recovered from the 2009 decline in exports and have exceeded their pre-crisis levels. North Carolina exports have not reached 2008 levels and the rate of growth is not nearly as fast as other top exporting states.

Figure 19: Export trends of US top 5 exporting states (NAICS 337)



Source: Foreign Trade Division of the US Census Bureau, 2012

The performance of North Carolina is particularly concerning if we consider the rate of growth of Michigan, California, and Texas between 2008 and 2012 (Figure 20). As we will see in the following section, the growth in furniture exports by these states cannot be explained simply as a function of different furniture market segments recovering from the economic downturn at different rates. In short, North Carolina appears to be losing the competition for furniture exports, even in its traditional area of competitive advantage, household furniture.

Figure 20: Growth in furniture exports, by state, 2002-2012

Exporting State	Export Value (2012)	% Change 2002 – 2007	% Change 2007 – 2012	% Change 2002 – 2012
All States		70.6%	46.6%	150.2%
Michigan	665,589,517	50.1%	54.8%	132.4%
California	533,616,290	43.8%	42.8%	105.4%
Texas	467,750,595	73.9%	114.3%	272.6%
North Carolina	297,178,757	92.2%	1.3%	94.8%
Ohio	285,123,090	64.6%	37.1%	125.7%

Source: Foreign Trade Division of the US Census Bureau, 2012

4.2.1.1. Export Dynamics in Household & Office Furniture

In order to better understand the dynamics characterizing furniture exports, we break down NAICS 337 into NAICS 3371, 3372, and 3379, representing household and institutional furniture [NAICS 3371] and kitchen cabinet manufacturing and office furniture manufacturing [NAICS 3372], and furniture related products [NAICS 3379].

NAICS 3371 is an important industrial segment for the U.S. exports, as this category accounts for 60% of the total value generated by domestic furniture exports. As of 2012, North Carolina was the 3rd exporting state in the country and its exports were worth $235 million. In the same year, the exports generated by North Carolina in this segment accounted for the 79% of the total value exported from the local furniture industry (Table 23). [7]

Table 23: Top 10 U.S. states exporting household furniture (NAICS 3371)

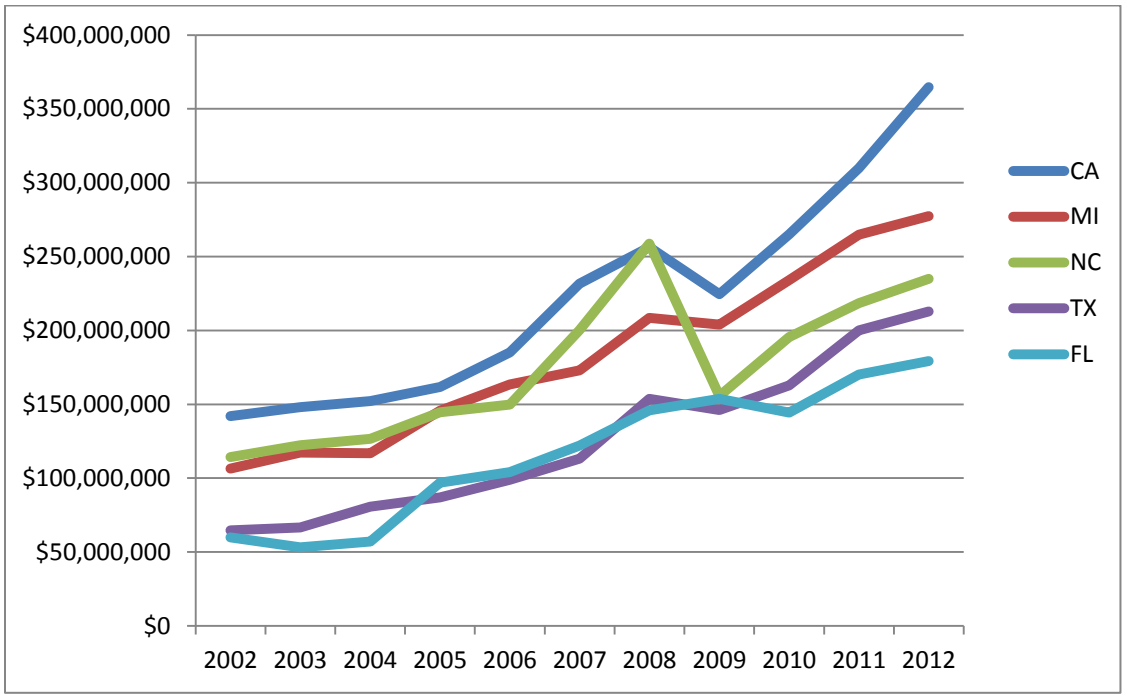
State	2012 (USD Million)	% of US total
CA	$364.7	10.3%
MI	$277.3	7.8%
NC	$234.9	6.7%
TX	$212.8	6.0%
FL	$179.2	5.1%
OH	$178.8	5.1%
IN	$173.3	4.9%
NY	$145.0	4.1%
WI	$139.6	3.9%
MS	$105.1	2.9%

Source: Foreign Trade Division of the US Census Bureau, 2012

The analysis of the exports trend among the top 5 exporting states highlights that in 2008 North Carolina was the most important state in the country (Figure 21). Yet North Carolina was also the state affected the most by the 2008 recession, when the value of exports dropped by 40% in only two years. Like the exports tend in NAICS 337, North Carolina is the only top 5 state that has not yet reached the export value it generated in 2008.

[7] NAICS 3371 comprises upholstered household furniture (337121), wood household furniture (337122), metal household furniture (337124), household furniture except wood and metal (337125), and institutional furniture (337127).

Figure 21: Exports for household furniture (NAICS 3371), by state, 2002-2012



Source: Foreign Trade Division of the US Census Bureau, 2012

The export analysis concludes with the discussion of office furniture, a type of production in which value added and wages are relatively higher compared to other furniture segments. In 2012, the exports generated by U.S. firms competing in this market accounted for 36% of the total value of the U.S. furniture exports. Although ranked among the U.S. top 10 exporting states, the office furniture industry in North Carolina only exported $54 million in 2012—2.6% of total U.S. office furniture exports. The most important state in this market segment is Michigan. (Please see Table 24.)

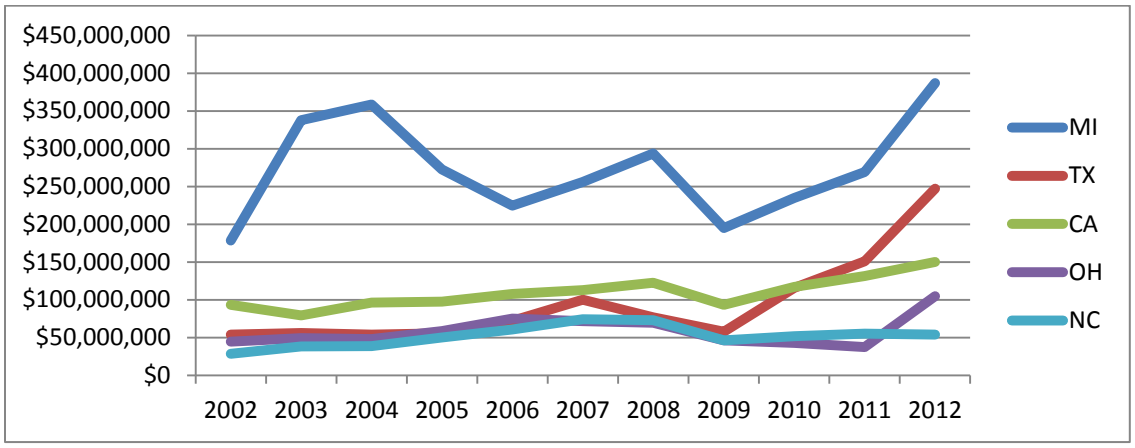
Table 24: Top 10 U.S. states exporting office furniture (NAICS 3372)

State	2012 (USD Million)	% of US total
MI	$386.8	18.5%
TX	$247.2	11.8%
CA	$149.9	7.1%
OH	$104.9	5.0%
IL	$89.4	4.2%
FL	$65.9	3.1%
PA	$65.3	3.1%
NC	$54.1	2.6%
NY	$41.0	1.9%
WI	$36.0	1.7%

Source: Foreign Trade Division of the US Census Bureau, 2012

Furthermore, while top exporting states like Michigan and California have increased their exports over the past decade, the value of North Carolina exports has remained stable. Interestingly, Texas has increased exports from 2009 to 2012, from $54 to $247 Million (Figure 22).

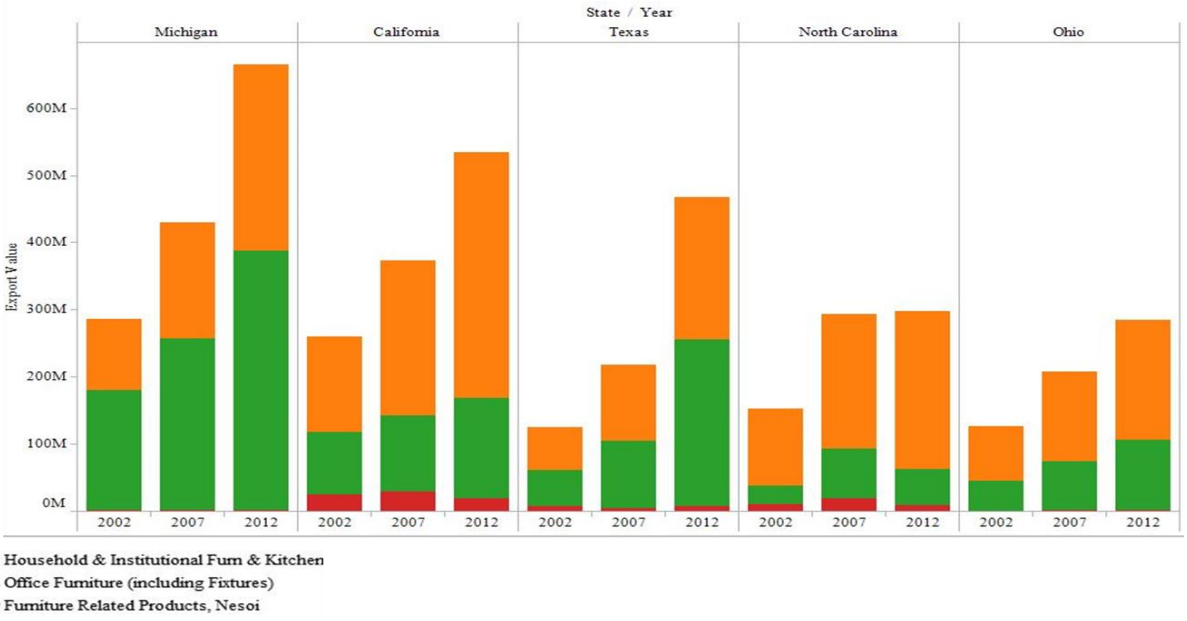
Figure 22: Exports for office furniture [NAICS 3372], by state, 2002-2012.



Source: Foreign Trade Division of the US Census Bureau, 2012

The data for state exports by major type of furniture are shown in Figure 23. Michigan and Ohio, states traditionally strong in office furniture, recovered from the effects of the 2008 financial crises and continued their growth in exports for these goods. Texas grew rapidly after the financial crisis to become an important player in the office furniture segment. Exports in household furniture – North Carolina's traditional competitive advantage in the industry – are quickly becoming the bailiwick of Michigan and California, and even Texas, as illustrated in both Figure 21 and Figure 23.

Figure 23: State furniture exports, by type, 2002, 2007, 2012



Source: CGGC, calculated from Foreign Trade Division of the US Census Bureau, 2002, 2007, 2012

4.3. Key takeaways

Imports:

- Despite NAFTA, North Carolina's imports from Mexico and Canada are not sizable when compared to Asia. Vietnam and China combined account for the 70% of total imports in 2012. Our interviews with companies indicate that the manufacturing supply chain may shift away from China and Asia and "near-shore" to Mexico as the difference in relative wages and logistics costs between these regions reduces.

- Imports for casegoods sold in the U.S. market will remain high due to lower wages overseas and favorable tariff policies. It is uncertain whether the near-shoring opportunity offers additional incentives to place segments of the upholstered furniture manufacturing in Mexico. Manufacturing segments of the furniture value chain that do not require customization or have high logistics costs (i.e. disassembled or "kit" furniture) will likely continue to drift away from the U.S.

Exports:

- North Carolina's exports grew steadily from 2002 to 2008, moving from 150 to 300 USD million. However, due to the 2008 economic crisis, exports dropped by 38% from 2008-2009. Although exports grew in 2010 and 2011, they haven't reached the 2008 peak.

- North Carolina's exports grew faster (92%) than all other top exporting states and U.S. average between 2002 and 2007, but significantly slower between 2007 and 2012 (1.3%). NC was affected the most by the 2008 economic downturn. Compared to top 3 exporting states, NC has not been growing at the same pace after 2008. States with higher growth rates (Michigan & Texas) are more concentrated in office and institutional furniture, yet are making inroads into exports for household furniture.

- Canada accounts for 40% of NC's total exports in furniture. NC is the most important U.S. state for exports to Saudi Arabia and UAE (37 USD Million; 12% of total exports). Significant growth in exports over the last decade to India, Australia, China, Russia and UAE. Asia remains an underdeveloped market for NC furniture.

5. Findings and strategic considerations

5.1. Supply chain development opportunities

1. Capitalize on the regional textile and related product manufacturing base to develop new products, cross-fertilization across industries, and adopt new manufacturing practices . The region contains product manufacturing in closely related industries including woven fabrics for upholstered furniture, nonwoven fabrics for interior furniture fabric, and related home furnishings industry concentrated in nearby states. Carpet & rug industry is concentrated in Georgia. Textile industry concentrated in North Carolina, which is the largest yarn and nonwoven manufacturing state; second largest woven fabric, and has major suppliers of mattress ticking, fiberfill, and fabric treatment companies. Identifying ways these manufacturing bases can work together to develop new products, competitive workforces, and other forms of interaction among industries will require economic developers, policymakers, and educational institutions for these industries do not currently work together.

2. Target new buyers in the contract, institutional and hospitality furniture markets. Buyers in these markets still consider price in the equation, but there are several qualities that are equally, if not more important, in the decision making process. Buyers in these markets place more emphasis on quality, durability and performance and are willing to pay a premium for these attributes. Furthermore, many products must meet rigorous product (BIFMA, LEED) and process standards that inculcate functional or sustainable capabilities of the products. Compliance with these standards may represent an initial cost for manufacturers, yet also represent a barrier to entry for foreign suppliers that cannot attain these standards. Government and Institutional/public-use buyers (government purchases, schools, hospitals) can be incentivized to purchase domestic over foreign goods as part of the procurement process.

3. Promote growth of household furniture retailers or brand marketers in NC. The furniture value chain is transitioning from a producer-driven to a buyer-driven value chain. However, NC lacks headquarter locations of top furniture retailers. Developing this capacity can be existing manufacturers that transition into retail and brand development companies, or entrepreneurs that create new firms that purchase furniture from NC furniture companies.

4. Encourage/facilitate furniture manufacturers to work with buyers in a range of segments in the furniture value chain. For example, a NC furniture manufacturer could develop a relationship with a hotel chain (i.e., Starwood, Marriott, Hilton) to develop a furniture line for hotel rooms (already a popular strategy for linens, pillows and beds), develop private label furniture brands with department stores/mass merchants (i.e., Belk – HQ in NC), or existing specialty furniture retailers that do not own manufacturing (i.e., Haverty's).

5. Re-focus on design. American furniture has a long history of innovative furniture design in multiple market segments, including Eames/Herman Miller, Cherner, and George Nakashima in office and residential furniture. Limited production and craft furniture remain strong in the U.S., yet furniture

production in the U.S. and North Carolina has largely ceded the design premium to Europe, particularly Italy and Northern Europe. Re-focusing on design will allow furniture manufacturers to-capture the design innovation premium for all market segments.

5.2. Recommendations for specific segments of the furniture value chain

Production

- **Finding**: Bulk of case goods production has been relocated overseas, yet a good deal of upholstery is still produced locally because of customization requirements and and higher freight costs.
- ***NC***: support established local firms that pursue product differentiation, innovation and strive to keep production alive. Incentives should not only be directed at greenfield investments, but to promote cooperation between schools of industrial design and local manufacturers.
- ***HP Market***: attract national and global international designers with whom local firms can develop business relationships and ultimately generate new products.
- ***Firms***: if oriented to keep manufacturing locally, pursue product innovation and customization, both in case goods and upholstery; invest in the ability to manufacture products that are customized for regional, domestic and international markets.

Export

- **Finding**: Exports are growing in the U.S., yet NC is struggling compared to other major states like California and Michigan.
- ***NC***: support local firms' internationalization through international b2b sessions or trade visitations. In addition, invite global delegations of buyers to NC.
- ***HP Market***: attract global buyers, and develop activities with tradeshows located in strategic markets.
- ***Firms*:** develop products for specific target markets; invest in developing relationships with international partners (i.e. through joint exhibition at global fairs); develop cooperation with international designers.

Retail

Finding: Growth of contemporary lifestyle brands (especially among young global designers and architects); Growth of low-end market (i.e. Costco, Walmart, Target); On-line sales in b2c are growing but still representing a small fraction of total sales

- ***NC***: Equalize tax rates between e-commerce and brick & mortar stores.
- ***HP Market***: create events for international cutting-edge designers (like Milano is doing through the 'Fuori Salone'); Dedicate space for big wholesalers and on-line retailers.
- ***Firms***: depending on firms' positioning in the final market, focus on one of the emerging trends of contemporary lifestyle brands, low-end markets, or online sales. Develop and/or improve sales platforms that service these specific, niche markets.

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Appendix A – The Input-Output structure of the Furniture Value Chain

Prepared by Stacey Frederick

The furniture value chain input-output analysis was created using the U.S. Bureau of Economic Analysis (BEA) Annual Input-Output (I-O) Accounts.[8] The inputs (raw materials) to the furniture industry (defined by NAICS code 337, Furniture and Related Products) were calculated using data from 2011 in the "The Use of Commodities by Industries after Redefinitions" (values in millions by producers' prices) table. The value represents the value of purchases by the furniture industry in 2011 for the particular NAICS code and the share represents the share of purchases a commodity represents for companies in the furniture industry. For example (Figure A1), 13% of the intermediate purchases (8% of overall purchases) by companies in the furniture industry were wood products (commodity code 321). From the perspective of the wood products industry (represented by NAICS code 321), the furniture industry purchased 6% of the output in 2011 (Figure A2).

The buyers of the furniture industry were also calculated using the "The Use of Commodities by Industries after Redefinitions" table for 2011. The value for U.S. supply is not directly included in the I-O tables, but can be calculated. Domestic supply represents the total amount of a commodity available for consumption within the United States: it equals domestic output, plus imports, less exports, less change in inventories.[9] The U.S. supply for the furniture industry was calculated using this process and the values for each group represent how much of the output of the U.S. supply of furniture went to final users or used as intermediates. For example, 50 percent of the U.S. supply of furniture was for personal consumption, 26 percent was to private fixed investments (businesses), 3 percent was to various groups in the government and 21 percent was used as an intermediate input for another industry (Figure 1).

Note: data are only available at the three-digit NAICS code level on an annual basis. Every five years a benchmark I-O table is created that provides more detailed data at the six-digit NAICS code level using the results of U.S. Census data. There is, however, a significant lag before this is made available to the public. Results from the 2007 U.S. Census will only be available in December 2013.

[8] U.S. BEA. (2011). Industry Economic Accounts: Annual Industry Accounts: Input-Output (I-O) Accounts. Retrieved August 6, 2013, from U.S. Bureau of Economic Analysis (BEA) www.bea.gov/industry/index.htm

[9] www.bea.gov/faq/index.cfm?faq_id=453

Figure A1: Furniture Industry I-O Analysis

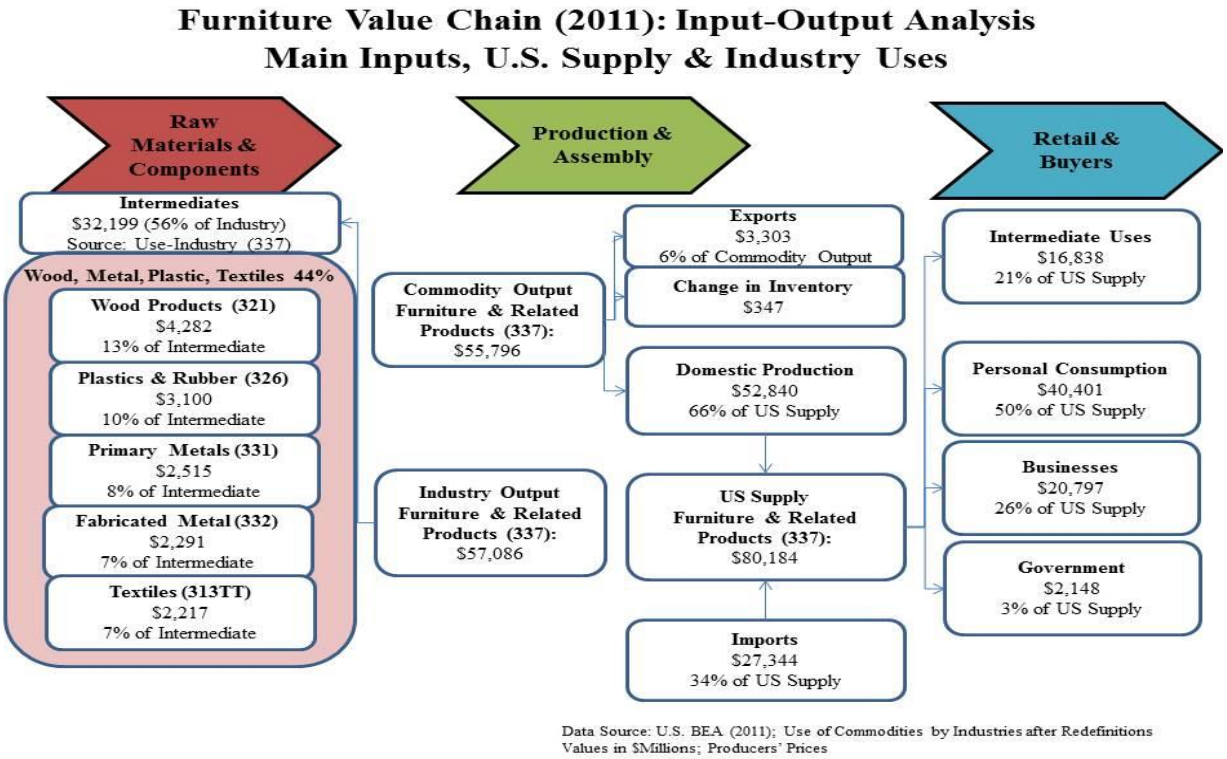
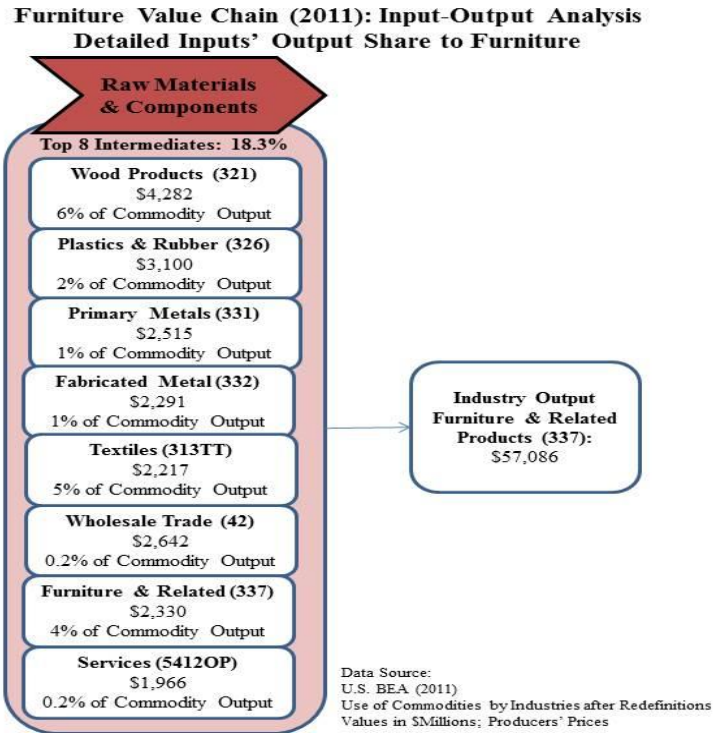


Figure A2: Importance of the Furniture Industry for the Inputs to the Furniture Industry



Appendix B- NAICS codes and top 10 states for furniture value chain

Value Chain Segment	Value Chain Subsegment	2002 NAICS	NAICS Label
Pre-production services	Furniture Design & engineering	541420	Industrial design services
Raw materials and components	Wood, metal, leather, plastic, glass & rattan	113110	Timber Track Operations
Raw materials and components	Wood, metal, leather, plastic, glass & rattan	113310	Logging
Raw materials and components	Wood, metal, leather, plastic, glass & rattan	3211	Sawmill & Wood Preservation
Raw materials and components	Wood, metal, leather, plastic, glass & rattan	3161	Leather hide tanning & finishing
Raw materials and components	plywood, cutstock, frame & upholstery	321912	Cutstock
Raw materials and components	plywood, cutstock, frame & upholstery	32121	Veneer, Plywood & Eng. Wood Product Manufacturing
Raw materials and components	plywood, cutstock, frame & upholstery	313210	Broadwoven Fabric Mills
Assembly	Household Furniture	337121	Upholstered Household Furniture Manufacturing
Assembly	Household Furniture	337122	Nonupholstered Wood Household Furniture Manufacturing
Assembly	Household Furniture	337124	Metal Household Furniture Manufacturing
Assembly	Household Furniture	337125	Household Furniture (except Wood and Metal) Manufacturing
Assembly	Office & Institutional Furniture	337127	Institutional Furniture Manufacturing
Assembly	Office & Institutional Furniture	337211	Wood Office Furniture Manufacturing
Assembly	Office & Institutional Furniture	337212	Custom Architectural Woodwork and Millwork Manufacturing
Assembly	Office & Institutional Furniture	337214	Office Furniture (except Wood) Manufacturing
Assembly	Office & Institutional Furniture	337215	Showcase, Partition, Shelving, and Locker Manufacturing
Assembly	Furniture related products	337910	Mattress mfg
Assembly	Furniture related products	337920	Blind & shade mfg
Assembly	Furniture related products	337110	Wood Kitchen Cabinet and Countertop Manufacturing
Assembly	Furniture related products	337129	Wood TV, Radio & sewing machine housings
Distribution	Furniture transportation	4841	General freight trucking
Distribution	Furniture transportation	48422	Other specialized trucking, local
Distribution	Furniture transportation	48423	Other specialized trucking, long distance
Distribution	Furniture warehousing	493110	General warehousing & storage
Distribution	Furniture wholesale	423210	Furniture Merchant Wholesalers
Retail	Furniture stores	442110	Furniture Stores

Appendix C – Innovating through design

Appendix D – 2013 list of buyer groups from *Furniture Today*