

The Impact of Globalization of the Automotive Industry on the Quality of Life of the US Southeast

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1. Introduction

Over the past twenty-plus years, the changing global motor vehicle industry enabled the development of a vibrant automotive industry in the U.S. Southeast (Lambert & Miller, 2011). Detroit remains the hub of the U.S. automotive industry. However, instead of an east-west geographical orientation of the industry emanating from Michigan, the geographic distribution of auto assembly and supplier plants now displays a north-south orientation, with a concentration of plants along a corridor running from Detroit southward, principally through Ohio, Kentucky, Tennessee, and into Alabama. Today, there are 11 vehicle assembly plants located in the US Southeast and three more facilities have been announced. The Southern Auto Corridor – including the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia – has an embedded role within the global automotive industry. It is dominated by foreign owned firms and primarily serves as a production center within the North American Free Trade Agreement (NAFTA) automotive region. Because the newly developed regional industry is so embedded in a global context it makes a fruitful case for studying the impact of globalization.

The global automotive industry is characterized by production being conducted primarily in multi-country regions. The majority of parts production, assembly, and vehicles sales occur in integrated regions. These car production regions include NAFTA, the European Union (EU), MERCOSUR in Latin America, CIS for the former Soviet Block countries, and ASEAN in Asia. There are some countries (i.e., China, Korea, Japan, and India) that have a “go-it-alone” approach and are mostly integrated along national boundaries. Within the regions and countries, the automotive industry clusters in growth poles. In the last ten years, the Brazil, Russia, India, and China (BRIC) regions have significantly increased their share of world vehicle production while the developing country share has shrunk, but the basic geographic pattern of the industry appear to be holding. Sturgeon et al. (2009) have described the geographic and organizational pattern of the automotive industry as nested.

The conceptual model describing possible impacts of globalization on the quality of life (QOL) at the country level developed by Sirgy et al. (2004) is useful for understanding the implications of this globalization driven change in the geography of the U.S. automotive

industry. The conceptual model provides the necessary research questions that should be investigated empirically to assess the impact of the globalization of the automotive industry on the region's quality of life. The model defined globalization as *the diffusion of goods, services, capital, technology, and people (workers) across national borders*. The diffusion of goods, services, capital, technology, and workers across national borders take form in inflows and outflows. *Inflows* of goods, services, capital, technology, and workers in a country are those that enter the territory in question and are accounted for using government statistics. Conversely, *outflows* of goods, services, capital, technology and workers from a country are those that exit the target country and are accounted for using government statistics.

The "Southern Auto Corridor" arose mainly through the flows of capital, goods, and technology. The diffusion of services and people (workers) across national borders was less of a factor so these factors will not be a focus of this chapter. The diffusion of people (workers) that most significantly influenced the QOL of the region was migration of people from the northern parts of the U.S. to the southern states rather than across national boundaries. The foreign firms did send managers and experts, but their impact was more localized (e.g., the teaching of Japanese in some local schools). There was also a flow of services as service providers to the foreign automotive and parts manufacturers followed their customers (e.g., third party logistics providers). However, the story of globalization of the Southern Auto Corridor is mostly captured by understanding how the flow of capital, technology, and goods impact the region.

The diffusion of foreign capital to the region led to the flow of technology and goods. Foreign Direct Investment (FDI) from Japan, Germany, and recently from Korea, was a major force in shaping the Southern Auto Corridor. This capital came in the form of assembly plants and parts suppliers. Along with this capital investment came flows of technology. For example, Japanese manufacturing practices such as Just-in-Time (JIT) and kanban systems flowed into the region. The plants built with foreign capital needed imported parts for production so this led to an inflow of goods into the region. The foreign Original Equipment Manufacturers (OEMs) use their American assembly plants to a limited extent as an export platform so more goods are flowing from the region. Albeit, because of the regional nested structure of the industry the amount of exports from the NAFTA production region are limited.

2. The Southern Auto Corridor in the changing global automotive industry

The Southern Auto Corridor, including the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia, has an embedded role within the global automotive industry. It primarily serves as a production center within the North American Free Trade Agreement (NAFTA) automotive region. Due to political and industry factors, production in the global automotive industry is dominated by multi-country regional production bases (e.g., NAFTA, MERCOSUR in South America, European Union), albeit some countries (e.g., China, India) constitute their own production region. This structure makes it unlikely that despite globalization and the "flattening" of the world that the Southern auto corridor will become a major global export base, but it is connected with the global automotive industry that is in a state of flux. Nevertheless, the regional nested structure of the global automotive industry, in addition to the characteristics of the foreign-domestic automotive industry in the south, makes the local industry rather globally secure albeit tied to U.S. automotive

sales. Thus the flows of capital, technology, and goods that created the Southern Auto Corridor in the last 30 years is only likely to experience minor ebbs and flows despite the turbulent times.

There are massive changes occurring in the global automotive industry. That is, the perceived demise of Detroit, financial crisis resulting in governmental bailouts, the emergence of huge new markets in Brazil, Russia, India, and China (BRIC), alliances, and consolidations, as well as new fuel efficient and alternate energy vehicles. Nevertheless, the basic structural framework of "nested" global, regional, national, local business operations with growth poles at the local level remain. The global changes are likely play out within this structure of nested growth poles. The financial troubles of the "The Big Three" (i.e., GM, Ford, and Chrysler) helped accelerate these trends that had been occurring in the global automotive industry since the 1990s (Hiroaka, 2001). These changes are likely to influence the auto industry in the U.S., and accordingly the QOL in the region, but only peripherally because the industry is dominated by regional production.

2.1 The rise of the BRIC auto markets

The first trend is the traditional global market dynamics are changing as market growth is occurring in emerging markets and the world's automobile manufacturers continue to invest into production facilities in emerging markets in order to tap into the new markets and reduce production costs. PricewaterhouseCoopers (2008) forecasts that, by 2015, 95% of light vehicle *growth* will originate from emerging markets. China became the largest auto market in 2009, surpassing sales in the United States. North America sales in 2010 were 13.9 million units, a modest 8.2% increase over 2009 that stands as one of the worst years in the industry's history. While auto sales in China were nearly 18 million units which is up about 30% over 2009. India has been the second-best performing major global auto market over the past decade, with car sales climbing to a record 1.82 million units in 2010. Brazil experienced sales of 3.4 million units, an increase of over 9% since 2009. In 2011, new car sales in China and the other BRIC nations are expected to surpass the combined volumes of Western Europe and Japan, and account for roughly 30% of global car sales (Scotia Economics, 2011). The U.S. and foreign-domestic automotive companies with facilities in the U.S. Southeast are active in the BRIC markets, but ventures in these markets are mostly in the form of foreign investment rather than exports from U.S based facilities. Some U.S. suppliers found that while they are having difficulties at home, their foreign operations were profitable so more investment is expected in production facilities in the growing markets (Office of Transportation and Machinery, 2009). The export statistics also show that the growing developing markets will not be major export markets. Exports to Canada and Mexico accounted for 73 percent of the total U.S. automotive parts exports in 2008, while the BRIC countries account for a mere 4% of automotive parts during the same period. The U.S. Southeast should experience some increased exports of autos and parts, but the volume will not be dramatic.

The emerging BRIC automotive industries also could be a source of increased imports of autos and parts, but Mexico and Canada should remain the main importers into the region because of the nested geographic structure of the industry. As the major automotive companies establish facilities in BRIC countries, especially China, this has resulted in the importation of more original equipment parts (Klier & Rubenstein, 2006). For example, GM imports V6 engines from China to install in North American built Equinox sports utility

vehicle. Currently, most of the imported Chinese auto parts are for the aftermarket, but imported parts could become more significant competition for the original equipment parts suppliers in the U.S. Southeast. Fully assembled vehicles from the BRIC could also impact the region. GM plans to double its imports of Chinese made vehicles into the American market to 736,547 units from 371,547 units over the next five years and make imports 7% of North American vehicle sales (Gao, 2009). Chinese automakers Chery and Geely, as well as, India-based Mahindra plan to import vehicles to the U.S. market. These BRIC imports are unlikely to capture a significant share of the U.S. market and the same political, transportation, and market factors that lead the Japanese and Europeans to set up U.S. production facilities will likely drive the BRIC automakers to do the same. For example, Nanjing Automobile Corp., China's oldest carmaker, announced plans in 2006 to locate a manufacturing facility and parts distribution center in Oklahoma.

2.2 Global alliances and consolidation of the industry

The second global industry trend is a consolidation of the industry. There has been the establishment of global alliances as U.S. automakers have merged with, and in some cases established commercial strategic partnerships with foreign automobile manufacturers (PricewaterhouseCoopers, 2008). Examples include GM and Fiat's strategic industrial alliance and Daimler forming a wide-ranging partnership with the Renault-Nissan alliance. Further, there has been industry consolidation.

OEMs are minimizing the number of suppliers that they use leading to fewer, but larger auto parts suppliers. Contracts are being offered to only a handful of suppliers causing consolidations (McCraken, 2005). These suppliers now interact with smaller supplier tier 2 firms instead of the automaker. Further, these consolidated parts makers supply multiple OEMs. For example, close to half of Toyota's U.S. parts supplies, in revenue terms, are produced by component manufacturers that also supply Detroit's automakers. Platform¹ strategies are now integral to OEMs product development, and as old models are replaced, the proportion of production that is based on key high volume platforms is increasing. According to the industry research organization Grant Thornton LLC (2009), the Detroit 3 will shrink their current 40 platforms (2009 number) to 29 by 2014, so this will mean fewer, but larger, suppliers. By 2014, ten global platforms will account for 46% of all production in North America and six of those platforms will belong to Ford or GM (Cannell, 2010).

The data on mergers and acquisitions supports the view that the industry is consolidating. According to data compiled by Bloomberg (2010), the number of auto parts deals peaked at 338 acquisitions completed in 2007 before falling to 294 in 2008 and 161 in 2009. However, recovery in U.S. automobile sales may spur a wave of auto-parts business acquisitions, drawing interest from hedge funds, private-equity investors, and rival manufacturers. MacDuffie (2010) claims the result will be the rise of "mega-suppliers," and he notes that already 180 first-tier suppliers control 80% of the global value of supplied parts. Nonetheless, the just-in-time nature of automotive production means that even the larger suppliers will need to keep a geographic presence near the final assembly.

¹ Originally, "platform" was a shared chassis or architecture of previously engineered vehicles. Typically, it consisted of the underbody and suspension. A platform is now defined as a collection of fixed hard points, so that different vehicles with the same points can be built on a single assembly line, with similar crash characteristics.

3. The diffusion of capital, technology, and goods that gave rise to the Southern Auto Corridor

Automotive production in the U.S. is concentrated in a north-south oriented region that runs between the Great Lakes and the Gulf of Mexico. Traditionally, the auto region had stretched east-west emanating from Detroit, but the growth area now stretches southward from Detroit following the I-65 and I-75 corridors. The southern end of this corridor is differentiated from the northern part of the corridor by the prominence of foreign plants that tend to focus on cars rather than light trucks. (Foreign domestics produce over 50% of the passenger cars for the NAFTA region, but less than 20% of the light trucks.) Beginning in the 1980s, auto plants and suppliers clustered in Michigan and the northern part of the corridor began migrating south seeking to lower their production costs and to move closer to the growing markets of the south. Meanwhile, foreign automakers and their related suppliers entered the US market, choosing to locate in the region. Realizing the economic development opportunity created by this trend, southern states launched aggressive programs and offered lucrative incentives to attract the industry. The combination of spatialization within the U.S., agglomeration economics, and globalization lead to development of the automotive industry in the U.S. Southeast.

In additions to demographics, developable tracts of land, economic development efforts, lower employee costs and right-to-work laws have been a major factor in attracting auto makers and suppliers to the region. Nationwide, the percentage of production workers belonging to a union in the industry has dropped in the past twenty years from 90% in the 1980s to only 33% of suppliers' plants and 75% of assembly plant production workers belonging to union. Foreign-owned companies have been leading the way in this non-unionized southward shift, particularly the parts suppliers. Contrary to popular opinion, the cost per hour for a fully trained employee in the automotive industry appears to be generally consistent throughout the US, but inflexible work rules that foster inefficiency, redundant operations, and legacy benefits skew the workforce advantage to the South (AccuVal Associates, 2009; McCallum, 2004). Whether the jobs are union or not, they provide high pay for the region.

4. Globalization's Impact on the emergence of the Southern Auto Corridor

4.1 The diffusion of capital

Until the 1970s, sales of vehicles in the U.S. were dominated by the "Big Three" U.S. automakers (GM, Ford, and Chrysler) based in Detroit. However, globalization and the entry of foreign automakers into the U.S. market led to changes in the U.S. automotive industry. The Japanese car companies in particular began importing small, high-quality cars and introduced new approaches to manufacturing that revolutionized the industry. Coinciding with the 1970s oil embargo, the smaller, more fuel efficient cars quickly gained popularity. The Corporate Average Fuel Economy (CAFE) standard also aided the foreign competition (Kleit, 2004). Imported vehicles went from 6% of U.S. vehicle sales (400,000 units) in 1961 to 33% (3.4 million units) in 2008. The Big Three's comfortable oligopoly was threatened by the global competition.

It was in the 1980s that several foreign-owned automakers located outside of the traditional Midwest region. In the 1990s and early 2000s more foreign-owned assembly plants choose to locate in the south strengthening the shift from north to south (see Table 1).

Southern States Car and Light Truck Production by Assembly Plant							
OEM	Plant	State	Date Production Started	2006	2007	2008	2009
Ford	Norfolk ²	Virginia	1925	133,437	49,564	0	0
GM	Doraville ³	Georgia	1947	128,888	110,265	84,108	0
Ford	Louisville	Kentucky	1955	214,276	186,677	97,605	97,605
Ford Truck	Louisville	Kentucky	1969	306,347	307,324	194,477	221,956
GM	Bowling Green	Kentucky	1981	45,418	37,940	32,348	7,589
GM	Shreveport ⁴	Louisiana	1981	189,767	161,879	94,237	38,506
Nissan	Smyrna	Tennessee	1983	465,045	410,991	310,669	192,556
Toyota	Georgetown	Kentucky	1988	503,885	514,590	456,297	348,237
GM (Saturn)	Spring Hill	Tennessee	1990	234,307	44,431	43,293	95,450
BMW	Greer	South Carolina	1994	104,632	154,999	170,739	121,666
Mercedes-Benz	Montgomery	Alabama	1997	173,600	174,356	152,500	90,616
Honda	Lincoln	Alabama	2001	287,713	314,144	282,735	181,640
Nissan	Canton	Mississippi	2003	278,464	292,671	232,879	181,437
Hyundai	Montgomery	Alabama	2005	236,773	250,519	237,042	195,561
Kia	West Point	Georgia	2009	0	0	0	15,005
Toyota	Blue Springs	Mississippi	Est. 2011	0	0	0	0
Volkswagen	Chattanooga	Tennessee	Est. 2011	0	0	0	0
V-Vehicle Co.	Monroe	Louisiana	TBA	0	0	0	0
Green Tech	Tunica	Mississippi	TBA	0	0	0	0
Southern Total				3,302,552	3,010,350	2,388,929	1,606,184
Share of US				30%	28%	28%	29%
Total US				10,915,248	10,584,943	8,520,913	5,611,800
Source: Automotive News Market Data (2010)							

Table 1. Global Automotive Assembly Plants in the U.S. Southeast

The end result of the movement away from Detroit is that the Southern States represent a larger part of the domestic auto industry. In 2009, the Southern states produced 1.6 million cars and light trucks, a decline from 3 million in 2006 according to Automotive News (2010). This production accounted for almost 30% of the cars and light-trucks produced in the U.S. Kentucky and Alabama are currently the top vehicle producing southern states. In 2005,

² Ford closed the Norfolk Virginia assembly plant in 2007.

³ General Motors Corp closed the Doraville, Georgia plant in 2008.

⁴ General Motors Corp. will close its assembly and stamping plants in Shreveport, La., no later than June 2012.

Tennessee was ranked in 5th place in vehicle and production and Georgia in 10th place, but Big 3 plant closings in those states led to significant declines in production. In 2009, Kentucky produced 649,422 cars and light trucks and accounted for 11.5% of U.S. production while Alabama produced 467,817 cars and light-trucks accounting for 8.3% of U.S. production. The U.S. Southeast is now a major region in the global automotive industry serving primarily the U.S. market, but connected to world markets.

Despite being globally competitive, the Southern states including Kentucky, Louisiana, and Tennessee have lost automotive assembly jobs recently due to Big 3 plant closings, but far fewer than in traditional auto assembly states because of foreign-domestic assembly plants. While the Big 3 were closing plants such as GM's 3,000 person Hummer and pick-up plant in Louisiana and a 1,200 employee minivan plant in Georgia, foreign-domestics such as Kia created 2,500 direct jobs with an assembly plants in Georgia producing SUV crossovers and Toyota plans to add over 2,000 assembly plant workers in Mississippi assembling Corollas. In the Southeast, auto assembly facilities directly employ more than 32,000 people and create numerous other jobs at parts suppliers located near auto plants. The overall impact of these countervailing employment trends can be seen in assembly employment in Alabama, which is all foreign-domestic auto assembly plants, and Kentucky, which has both the Big 3 and foreign-domestics. Since 2000, Alabama's motor vehicle manufacturing employment increased from 2,600 to 10,800 in 2009, while Kentucky's decreased from 20,400 to 12,600. The diffusion of foreign capital made the region more resilient, but hurt domestic competitors.

The end result of these trends is the automotive industry is a major employer for the region. Employment in the auto parts industry for the Southern Auto Corridor is estimated at about 150,809 and accounts for around 30 percent of total employment in the U.S. automotive parts industry. Employment in this industry for the region has decreased by about 15% since 2001 versus 30% nationally. (According to the Bureau of Labor Statistics, employment in NAICS 3363 dropped from 774,700 in 2001 to 543,700 in 2008.) In the South, bodies and body parts had the highest number employed and was the only category to show an overall increase since 2001; however, miscellaneous automotive parts were the only category to have an increase from 2007-2008. In addition to greater a significant amount of quality jobs, the industry represents a significant part of the region's overall economy.

Motor Vehicle, Body, Trailer, and Parts Manufacturing (NAICS 3361-3) is a major contributor to the state economies of the U.S. Southeast and represents 27% of the U.S. total according to the most recent U.S. Census Bureau data. The industry represented over \$26 billion of the value added by industries within the region in 2007. This is a 16% increase from 1997. Kentucky (\$5.9 billion) led the way with the highest gross domestic product (GDP) for the motor vehicle industry in the 12 study states, with Tennessee (\$5.15 billion) coming in second and Alabama (\$3.2 billion) is third. The diffusion of global capital in the automotive industry has had a significant impact on the U.S. Southeast.

4.2 The diffusion of technology

With the development of highways in the 20th century, the U.S. automotive industry grew into an "hour-glass pattern" centralized in Detroit (Hurley, 1959). Fordist mass production methods and oligopolistic features of the industry encouraged an agglomeration of component suppliers around Michigan. In order to reduce transportation costs, the Detroit automakers shipped "knocked-down" cars mostly by rail

to regional assembly plants. Some of these reassembly branch plants were in Southern states; however, the diffusion of advanced Japanese manufacturing technology made these branch plants obsolete.

Starting in the 1960s, the Japanese car companies in particular began importing small high quality cars and introduced new approaches to manufacturing (e.g., Just-in-Time, Kanban, Kaizen) that revolutionized the industry. Coinciding with the 1970s oil embargo, the smaller more fuel efficient cars quickly gained popularity. However as explained earlier, political forces, transportation costs, and the need to be near the final customer led the foreign automakers to bring their technology to U.S. assembly facilities. The Japanese transplants were soon able to achieve productivity and quality levels similar to plants in Japan by bringing their technology along with their FDI (Pil and MacDuffie, 1999). The diffusion of technology in the automotive industry helped the region to become globally competitive.

4.3 The diffusion of goods

The foreign-owned assembly locating in the Southern Auto Corridor led to a significant increase in imported auto parts. These foreign-owned plants have different characteristics than traditional plants. For one, these plants are more dependent on ports (and airports) to meet supply chain requirements. For example, the Port of Charleston experienced a significant increase in auto trade volume with the opening of the BMW plant in 1993. The plants also have different production processes. The Mercedes plant in Alabama is not completely the equivalent of one of Mercedes' production facilities in Europe. It does not produce engines, which come from Germany, and it relies heavily on modular production, like the Nissan plant in Canton, MS, taking out some of the complexity of building automobiles (Maynard, 2004). However, developments in technology, in particular modularity of production, maintained quality.

According to Klier and Rubenstein (2007) vehicles built by foreign-owned carmakers at assembly plants located in the U.S. and Canada for sale in the U.S. had 66.2% domestic content. This level is only slightly below the 79.4% recorded by the Detroit Three. BMW currently has about 60% local content, but plans to increase this amount to cut currency and logistics costs. The new version of Toyota's Tundra truck went from 60% locally sourced parts to 90% local parts, with the remaining 10% mostly from Japan (Hannon, 2008). On the other hand, according to the American Automotive Trade Policy Council (AAPC), which represents the domestic manufacturers in trade issues, the Big Three derived about 77% of their parts from U.S. and Canadian factories, whereas the Japanese companies sourced slightly less than half from domestic sources. Honda had the most domestic content at 59%. It should be noted that the domestic content figures can be misleading because they can include transportation, distribution costs, and even dealer profits--domestic costs that would be necessary even if the vehicle were wholly produced abroad (Parker, 1990). Today, the distinction between "American" and "foreign" vehicles is becoming less clear because of the global diffusion of goods.

Even though the South Auto Corridor is not a major export base for the foreign automotive companies, their presence did lead to an increase in exports from the region. After 15 years of building cars and SUVs in South Carolina, BMW has now shipped over one million cars to overseas markets. Nissan exports U.S.-built light trucks to the Middle East and has shipped Quest minivans to China. Providing production for the North American market is

the main business objective for the foreign plants in the Southern Auto Corridor, but they have resulted in greater vehicle exports from the region.

5. Applying the Globalization/Quality-of-Life (QOL) model

Sirgy et al. (2004) developed a conceptual model describing possible impacts of globalization on the QOL at the country level. The conceptual model provides the necessary research questions that should be investigated empirically to assess the impact of globalization on a country's quality of life. The model also provides fruitful conceptual resources to help formulate public policies guided by this quality-of-life assessment. Specifically, globalization was defined as *the diffusion of goods, services, capital, technology, and people (workers) across national borders*. The diffusion of goods, services, capital, technology, and workers across national borders take form in inflows and outflows.

In regards to *global diffusion of goods*, Example indicators include total volume and market value of the country's imports from foreign countries (see Table 2). Example indicators of outflow of goods include total volume and market value of the country's exports of goods to foreign countries (see Table 2).

Globalization dimensions	Globalization Measures
Global diffusion of goods	<ul style="list-style-type: none"> • Increased outflows of goods: • Total volume of the country's exports to foreign countries, • Total value of the country's exports to foreign countries, • Number of exporting firms in the country, and • Proportion of foreign sale to total sale among the country's exporting firms.
	<ul style="list-style-type: none"> • Increased inflows of goods: • Total volume of the country's imports from foreign countries, • Total value of the country's imports from foreign countries, • Number importing firms in the country, and • Proportion of foreign goods purchased to total good purchases among the country's importing firms.
Global diffusion of services	<ul style="list-style-type: none"> • Increased inflows of hospitality services • Number and dollar sales of foreign travel companies established in the country in question, • Number and dollar sales of foreign lodging facilities established in the country in question, and • Number and dollar sales of foreign restaurant established in the country in question.
	<ul style="list-style-type: none"> • Increased outflows of hospitality services • Number and dollar sales of state travel companies established in foreign countries, • Number and dollar sales of state lodging facilities established in foreign countries, and • Number and dollar sales of state restaurant established in foreign countries.

	<ul style="list-style-type: none"> • Increased inflows of entertainment services • Number of units of foreign theatre plays, musical concerts, and other entertainment shows and events consumed by the residents of the country in question, and • Dollar sales of foreign theatre plays, musical concerts, and other entertainment shows and events consumed by the residents of the country in question
	<ul style="list-style-type: none"> • Increased outflows of entertainment services • Number of theatre plays, musical concerts, and other entertainment shows and events provided by entertainment firms from the country in question in foreign countries, and • Dollar sales of theatre plays, musical concerts, and other entertainment shows and events provided by entertainment firms from the country in question in foreign countries.
	<ul style="list-style-type: none"> • Increased inflows of education service • Number of foreign primary and secondary schools established in the country in question, • Number of foreign institutions of higher learning established in the country in question, and • Number of foreign training facilities established in the country in question.
	<ul style="list-style-type: none"> • Increased outflows of education service • Number of state primary and secondary schools established in foreign countries, • Number of state institutions of higher learning established in foreign countries, and • Number of state training facilities established in foreign countries.
Global diffusion of capital	<ul style="list-style-type: none"> • Increased inflows of capital • Amount of foreign direct investment into the country by foreign firms and • Number of firms in the country that are subsidiaries to foreign firms.
	<ul style="list-style-type: none"> • Increased outflows of capital • Amount of foreign direct investment by the state-affiliated firms in foreign markets, • Number of firms in foreign countries that are subsidiaries to state-affiliated firms.
Global diffusion of technology	<ul style="list-style-type: none"> • Increased inflows of technology • Number and dollar value of international patents acquired by firms incorporated within the country, • Number and dollar value of technology license contracts granted to the country's firms by foreign firms, • Number and dollar value of franchise, management, and consulting contracts granted to the country's firms by foreign firms, and • Total value of importation of software.

	<ul style="list-style-type: none"> • Increased outflows of information • Number and dollar value of patents belonging to state-affiliated firms sold to foreign firms, • Number and dollar value of technology license contracts granted to foreign firms by state-affiliated firms, • Number and dollar of franchise, management, and consulting contracts sold to foreign firms by state-affiliated firms, and • Total value of exports of software.
Global diffusion of workers	<ul style="list-style-type: none"> • Increased inflows of workers • Number of immigrants admitted into the country • Number of foreign skilled workers working for firms in the US • Number of foreign unskilled workers working for firms in the US
	<ul style="list-style-type: none"> • Increased outflows of workers • Number of domestic citizens who immigrated to other countries • Number of domestic skilled workers working temporarily in foreign countries. • Number of domestic unskilled workers working temporarily in foreign countries

Table 2. Dimensions and Measures of Globalization

Source: Adapted from Sirgy et al. (2004)

With respect to the *global diffusion of services*, economists traditionally classify most services in three major categories: hospitality, entertainment, and education. There are inflows and outflow of these types of services. An example of inflows of hospitality services is number and dollar sales of foreign travel companies established in the country in question (see Table 2). An outflow indicator may be number and dollar sales of state travel companies established in foreign countries (see Table 2). Similar inflow and outflow indicators are used in the entertainment and education service sectors (see Table 2).

Turning to *global diffusion of capital*, inflow indicators may take form in the amount of foreign direct investment into the country by foreign firms; and conversely, outflows may be amount of foreign direct investment by the state-affiliated firms in foreign markets (see Table 2).

The third dimension of the model focuses on *global diffusion of technology*. In this context, inflow indicators are typically represented as number and dollar value of international patents acquired by firms incorporated within the country (see Table 2). In contrast, an example of outflow indicators is number and dollar value of patents belonging to state-affiliated firms sold to foreign firms (see Table 2).

The final globalization dimension is *global diffusion of workers*. Inflow indicators of this dimension may be represented in terms of number of immigrants admitted into the country (see Table 2). Outflow indicators may include number of domestic citizens who immigrated to other countries (see Table 2).

Sirgy et al. have made a case of how globalization impacts the quality of life of a country through economic, consumer, and social well-being of the country residents. Their theoretical argument is mostly captured through the theoretical propositions shown in Table 3.

Globalization Dimension		Impact of economic well being	Impact on consumer well being	Impact on social well being	Public policy implications
Global diffusion of goods and services	Export of goods and services	<ul style="list-style-type: none"> • Job creation in the export-related industry (+) • Increase in per-capita income (+) • Increase in efficiency (+) • Increase in trade retaliation from the importing countries (-) • Increase in low paying jobs (-). 	<ul style="list-style-type: none"> • Increased accessibility to high quality products due to high spending power (+) • Availability of high quality goods resulting from the firm's exporting effort and R&D (+) • Availability of low priced products resulting from full utilization of production capacity (+) • Increased public sector spending for consumers such as enhanced consumer safety (+) 	<ul style="list-style-type: none"> • Increase in public sector spending resulting from increased tax revenues (+) • Decreased environmental well being (pollution and deletion of natural resources) (-) 	<ul style="list-style-type: none"> • Develop export promotion programs • Use increased tax revenues to provide higher quality public sector services for consumers (e.g., better consumer protection) • Develop export assistance programs that help reduce trade retaliations from importing countries
	Import of goods and services	<ul style="list-style-type: none"> • Job creation in the import-related industry (e.g, distribution) (+) • Increase in competitiveness 	<ul style="list-style-type: none"> • Availability of higher quality and low priced goods (+) • Low cost of living from low priced 	<ul style="list-style-type: none"> • Increased public sector spending for the society (+) • Increase in leisure well being (+) • Increase in 	<ul style="list-style-type: none"> • Encourage importation of lower priced and higher quality goods than domestic

		<p>ss of domestic firms (+)</p> <ul style="list-style-type: none"> • Loss of jobs in domestic competing firms (-) 	<p>importers (+)</p> <ul style="list-style-type: none"> • Increase in consumer choices (+) • Increased public sector spending for consumers (+) 	<p>cultural well being resulting from the importation of cultural services (+)</p> <ul style="list-style-type: none"> • Increase in cultural diversity (ethnic and religious diversity) (+) • Decrease in public spending resulting from the loss of tax revenue in the domestic competing firms (-) 	<p>products</p> <ul style="list-style-type: none"> • Help domestic firms compete against imports • Provide financial assistance and placement services to the displaced workers • Provide training for displaced workers
Global diffusion of capital	Outflow of capital	<ul style="list-style-type: none"> • Increase in competitiveness of domestic firms (+) • Multinational domestic firms can provide technological advance, high paying jobs at home (+) • Reduction of job opportunities for domestic workers (-) • Allow domestic firms to bypass trade barriers (+) 	<ul style="list-style-type: none"> • Low priced products and services to domestic consumers resulting from low production costs abroad (+) • High quality products and services to domestic consumers (+) • High import price resulting from devaluation of local currencies (-) 	<ul style="list-style-type: none"> • Enhanced public service quality resulting from increased tax revenue from more competitive domestic firms (+) • Long-term benefits to the society through increased public spending (+) 	<ul style="list-style-type: none"> • Develop policies to help domestic firms' foreign investment • Develop policies to provide support and training for displaced workers

	Inflow of capital	<ul style="list-style-type: none"> • Increased competitiveness of domestic firms (+) • Job creation from the operations of foreign firms (+) • Facilitate export into nearby countries (+) • Substitute imports (+) • Drive domestic firms out of competition (-) 	<ul style="list-style-type: none"> • Increased product availability from local production (+). • Low production cost and price of domestically produced foreign products (+) • Increased public spending for consumers (+) 	<ul style="list-style-type: none"> • Improved quality of public services resulting from increased public spending (+) • Environmental pollution and degradation (-) • Misuse of labor (e.g. child labor; labor abuse) (-) 	<ul style="list-style-type: none"> • Develop open market policies to remove restrictions on foreign capital • Provide incentives for foreign investment • Develop policies to encourage social responsibility of foreign firms
Global diffusion of technology	Outflow of technology	<ul style="list-style-type: none"> • Increased income of domestic firms through licensing or technology transfer (+) • Job creation through exports related to the transferred technology (+) 	<ul style="list-style-type: none"> • Availability of low priced high quality products through foreign manufacturing (+) 	<ul style="list-style-type: none"> • Increased public spending through increased income (+) 	<ul style="list-style-type: none"> • Develop policies to facilitate technological transfer
	Inflow of technology	<ul style="list-style-type: none"> • Enhanced organizational productivity (+) • Improve job opportunities through enhanced worker skills (+) • Enhance organizational performance 	<ul style="list-style-type: none"> • Availability of better and cheaper products to domestic consumers (+) • Better service to consumers through new management technology 	<ul style="list-style-type: none"> • Increased public spending resulting from local firm's high performance (+) 	<ul style="list-style-type: none"> • Develop foreign investment policies to facilitate technology transfer • Develop policies to protect intellectual property

		through management technique (+)	(+)		
Global diffusion of workers	Outflow of workers	<ul style="list-style-type: none"> • Repatriation of foreign income into the country (+) • Reduction of unemployment rate at home (+) 	<ul style="list-style-type: none"> • Enhanced customer service and product quality resulting from the demands of cosmopolitan customers (+) • Additional income (+) 	<ul style="list-style-type: none"> • Increase in leisure well being (+) • Increase in cultural well being (+) 	<ul style="list-style-type: none"> • Develop policies to reduce restrictions on employment in foreign countries
	Inflow of workers	<ul style="list-style-type: none"> • Enhanced technological know-how (+) • Increase in productivity of domestic firms resulting from skillful workers (+) • Increase in production efficiency through the inexpensive labor (+) • Reduced job opportunities for domestic workers (-) 	<ul style="list-style-type: none"> • Enhance product and service quality through the skilled foreign labor (+). • Availability of low price products and services through inexpensive labor (+) 	<ul style="list-style-type: none"> • Increase in cultural well being (ethnic, racial, and religious diversity) (+) • Increase in social conflict (-) 	<ul style="list-style-type: none"> • Develop policies for public sector services to accommodate foreign workers • Simplify restrictions on the use of foreign workers • Develop policies to help and train displaced domestic workers.

Table 3. Impact of Globalization on Quality of Life

Source: Adapted from Sirgy et al. (2004)

Table 3 shows the impact of each of the five globalization dimensions on the economic, consumer, and social well-being of the countries in questions. For example, the model asserts that the economic well-being of a country can be impacted both positively and negatively. Examples of positive impact associated with the export of goods and services may be job creation in the export-related countries, and increase in per capita income and efficiency. In contrast, increase in trade retaliation from the importing country and low

paying jobs may be examples of negative impact associated with the export of goods and services (see Table 3).

5.1 Global diffusion of capital

5.1.1 Inflow of capital

The global diffusion of capital allowed the Japanese, German, and Korean vehicle and parts manufacturers to establish assembly plants in U.S. Southeast. This had a major impact on the economic well-being of the region. Following the model, this forced the Big 3 automakers to become more competitive and produce better quality vehicles. The foreign-domestic plants created thousands of well paying jobs in the Southern states. To a limited extent these assembly plants led to exports of complete vehicles. Further, there was import substitution as the foreign OEMs produced vehicles locally rather than importing complete vehicles. However on the downside, due to the increased competition from foreign domestics, the Big 3 were forced to close down numerous assembly plants.

Consumer well-being was generally positive as U.S. consumers had more and higher quality choices in automobiles. The foreign-domestics were able to lower their transportation costs and take advantage of currency differentials to provide vehicles at lower costs to the consumer. The results were increased purchases of vehicles.

The impact on social well-being was more mixed. There is some debate whether the economic development incentives handed out to the automakers outweighed the public benefit, but generally the foreign companies and their employees pay more to the government in taxes than was extracted in the site location negotiations. Also, the increased vehicle sales provided taxes and the end result was that the public services could be increased. The Japanese, German, and Korean automotive companies place a heavy emphasis on being environmentally friendly and green, but they almost all selected greenfield sites. The United Automotive Workers claim these foreign-domestics are anti-union so this could have a negative impact on social well-being particular for union members.

5.2 Global diffusion of goods and services

5.2.1 Outflow of goods

Economic well-being was positively impacted by the increase in vehicle exports from the U.S. Southeast. As discussed earlier, the foreign-domestics mainly established plants in the Southern Auto Corridor to serve the NAFTA market, but there are examples of these plants being sources of vehicles to serve markets outside of NAFTA. These exports created more jobs at the assembly plants and the parts manufacturers who supply the assembly plants. These jobs lead to increases in per capita income. There is the potential for trade retaliation from importing countries, but this does not appear to be the case with the exports from companies such as Nissan and BMW.

Consumer and social well-being also received peripheral benefits. The export related jobs allowed southerners to have greater spending power, not just for exports, but for improved quality vehicles. Further, the foreign domestics established U.S.-based R&D centers that impact consumer well being. For example, Toyota, along with Ford and GM, established a national battery manufacturing center in Kentucky that has great potential to help develop better quality products. The exports allowed the plants to better utilize production lines to balance NAFTA sales. The taxes derived from these exports allowed greater public

spending. These benefits of exports are only marginal compared to the vehicles made for NAFTA consumption, but they were positive.

5.2.2 Inflow of goods

The globalization of the automotive industry led to an increase of vehicle and parts imports into the U.S. Southeast that positively and negatively impacted economic well being. Logistics based companies grew and were attracted to the region to handle the increase in imports and this created distribution related jobs. For example, Wallenius Wilhelmsen Logistics of Sweden, which handles the vehicle processing and yard management business at Volkswagen's new plant in Chattanooga, created eighty new jobs. Imports of vehicles and parts forced the Big 3 to adopt more competitive practices; however the increased imports also forced significant lay-offs by American vehicle manufacturers.

Consumers generally benefited from the imports as they had the choice of higher quality vehicles at competitive prices. This resulted in increased consumer spending. Social well-being also generally increased, but the loss of tax revenue from the Big 3 dampened this impact.

5.3 Global diffusion of technology

5.3.1 Inflow of technology

The foreign automakers brought new technology, such as manufacturing techniques, that improved the economic, consumer, and social well being of the region. Practices such as JIT and lean manufacturing were not just adopted by the automotive industry, but across the spectrum of manufacturers and service providers. These techniques improved organizational productivity and for those workers willing and able to adopt the new approaches, increased job opportunities. Lean manufacturing allowed products to be made better and at lower costs by reducing waste in the system. These more profitable companies paid more taxes which allowed increased public spending. Although some might have been left behind by these new technologies, overall the diffusion of these new technologies improved the region's quality of life.

6. Summary and conclusion

The chapter uses the integrated model of globalization developed by Sirgy et al. (2004) to frame the complicated impact of the globalization of the automotive industry on the QOL of the residents of the U.S. Southeast. Over the past twenty plus years, the changing global motor vehicle industry enabled the development of a vibrant automotive industry in the U.S. Southeast dominated by foreign-owned firms at the expense of the Big 3 based in Detroit (Klier & Rubenstein, 2008). These foreign automakers initially started out as importers, but due to business and political factors began establishing production in the North American region (Sturgeon et al., 2009). As a result, the U.S. Southeast accounts for roughly 30% of the U.S. auto industry and is home to the most stable and competitive component of the market. Over 400,000 residents of the region are employed in living wage jobs with the transportation equipment manufacturing sector and the industry contributes over \$26 billion to the regional economy. This economic boom was a recent phenomena caused by globalization.

The integrated model of globalization developed by Sirgy et al. (2004) helps show how the globalization of the automotive industry impacted the QOL of the U.S. Southeast. The

inflows of foreign capital, technology, and goods along with outflows of goods generally improved the economic, consumer, and social well-being of the region. There were some negative impacts particularly related to the increased global pressure faced by the Big 3 automakers and their suppliers. This led to some plant closing and jobs losses in the region, but overall the region is more globally competitive and well positioned to face global because of the infusion of foreign capital and technology.

The model includes public policy implications and the Southern states predominately did what the model recommends. Regarding the diffusion of global capital, the region opened their markets to foreign firms, launched aggressive economic development programs to provide incentives for foreign investment, and encouraged the auto assembly plants to be socially responsible. The states facilitated the technology transfer process through such programs as university research centers and technology transfer programs. The states established export promotion programs to increase the outflow of goods from the new automotive facilities. The inflows of goods were not impeded and the states established worker displacement programs including retraining and financial assistance. The public policies of the states facilitated the beneficial aspects of globalization.

This chapter only examined the impact of the globalization of the automotive industry. Overall, globalization had a much more mixed impact on the region. Traditional industries for the Southern U.S., such as textiles and furniture, have been decimated by the forces of globalization. While other industries, such as aerospace, have emerged (Gates 2009). A complete examination of the impact of globalization on the QOL on the U.S. Southeast is a complicated and ongoing process beyond the scope of this chapter. In order to get a more comprehensive understanding of the impact of globalization, each industry would need to be examined and their interrelationships uncovered.

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The Economic Geography of Globalization

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Very often the process of globalization is referred the word economy evolution. Often we measure and study globalization in the economic relevance. The economy is possibly the most recognized dimension of globalization. That is why we see many new phenomena and processes on economic macro levels and economic sectoral horizons as well as on specific "œgeography of globalization". The book *The Economic Geography of Globalization* consists of 13 chapters divided into two sections: *Globalization and Macro Process* and *Globalization and Sectoral Process*. The Authors of respective chapters represent the great diversity of disciplines and methodological approaches as well as a variety of academic culture. This book is a valuable contribution and it will certainly be appreciated by a global community of scholars.

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