



North Carolina in the Connected Age

Challenges and Opportunities
in a Globalizing Economy

Michael L. Walden

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1. The National Context

The Creation of the Connected Age

As in all states, the economy in North Carolina is influenced by events at the national level. Indeed, because the U.S. economy is so highly integrated in national markets, much of North Carolina's change and development are linked to national trends. For example, national economic expansions and recessions are echoed at the state level by similar booms and busts. In addition, national technological, demographic, and production changes are mirrored at the state level.

This chapter sets the national context for North Carolina's economy by tracing the nation's economic development since 1970. This analysis serves as the basis for evaluating North Carolina's economic progress in chapter 2.

The Connected Age: Shrinking Space and Time

Although three and a half decades constitutes but the blink of an eye in recorded history, life changed more dramatically between 1970 and 2005 than was the case in some earlier centuries. Like never before, people, countries, and economies became interrelated and interconnected. Technology overcame distance and culture. Communicating halfway around the world became just as easy as talking to a next-door neighbor. Products and labor increasingly flowed to markets without regard to international boundaries. The world became linked digitally, globally, and competitively. The Connected Age arrived.

Since most change occurs with a degree of gradualism over time, many living through the Connected Age did not comprehend the massive changes it brought. Yet the cumulative impacts on life, work, and spending are eye-catching when some key indicators are compared for 1970 and the early 2000s.¹

2 The National Context

In 1970:

- cell phones, the Internet, and personal computers did not exist
- GM, Ford, and Chrysler dominated U.S. auto sales
- only one in twelve women had a college degree, and jobs held by women paid less than half as much as jobs held by men
- fewer than half of married women worked for pay
- one of every four workers had a factory job
- the average household had 3.15 persons
- households spent almost twice as much on food eaten at home as on food at restaurants
- households spent more on food than on transportation
- the average size of a new home was fifteen hundred square feet, and the average household owned 1.7 vehicles
- 639 airline miles were flown for every person in the country
- African Americans were the largest minority

In the early 2000s:

- the majority of households have cell phones and personal computers, and one-third of households are connected to the Internet
- the Toyota Camry is the best-selling sedan
- one in four women has a college degree, and jobs held by females pay 68 percent as much as jobs held by men
- more than half of married women work for pay
- one of every ten workers has a factory job
- the average household has 2.57 persons
- households spend half again as much on food eaten at home as on food at restaurants
- households spend more on transportation than on food
- the average size of a new home is 2,330 square feet, and the average household owns 2.1 vehicles
- 2,254 airline miles are flown annually for every person in the country
- Hispanics are the largest minority

These numbers demonstrate some key trends in the Connected Age. We bought and used new technology, we spent more on travel and traveled more by air, we bought more foreign-made products, women became more educated and worked for better pay outside the home, households became smaller, factory work declined, we ate out more, we bought bigger homes and more vehicles and relied less on doing things ourselves, and our popula-

tion became more diverse. The following sections provide details on how the nation's work, life, people, technology, and government changed during the Connected Age.

Production: Shifts and Shakes

Americans produced more during the Connected Age. The national output of goods and services increased 138 percent, rising from \$5.2 trillion in 1970 to \$12.4 trillion in 2005 (both values in real, or inflation-adjusted, 2005 dollars).² This was an annual average growth rate of 2.5 percent, only slightly lower than the post-World War II growth rate.

Of course, a share of the economic growth resulted from the fact that more people lived and worked in the country. The nation's population jumped from 205 million to 295 million over the thirty-five-year period.³ Therefore, it is perhaps more revealing to examine changes in production per person. Here the news is also impressive. Goods and services production per person grew from \$25,380 to \$41,959 (constant dollars), a 1.5 percent average annual increase.⁴

Although the national economy indeed expanded during the Connected Age, it did not do so in a consistent, straight-line way. A business cycle was evident, signifying an irregular but recurring pattern of growth followed by recession. Recessionary periods occurred six times in the Connected Age: December 1969–November 1970, November 1973–March 1975, January 1980–July 1980, July 1981–November 1982, July 1990–March 1991, and March 2001–November 2001.⁵ As measured by the percentage decline in production, the recessions of 1974–75 and 1981–82 were the most severe, while those of 1969–70 and 2001 were the mildest.⁶

Even though national production increased, substantial variation occurred in the growth rates in specific economic sectors (figure 1-1). Growth was strongest in wholesale and retail trade, transportation/communications/public utilities (TCPU), agriculture, services, and finances and was weakest in manufacturing, construction, and government. As a result, the composition of the national economic pie changed. The goods-producing sector (manufacturing, construction, and agriculture) decreased from one-third of spending in the economy in the 1970s to less than one-fifth in the 2000s, while the service-producing sector (wholesale and retail trade, finances, TCPU, and services) correspondingly increased. And while a decline occurred in manufacturing's relative economic importance, total manufacturing output still increased (the growth rate for manufacturing is positive in figure 1-1). A

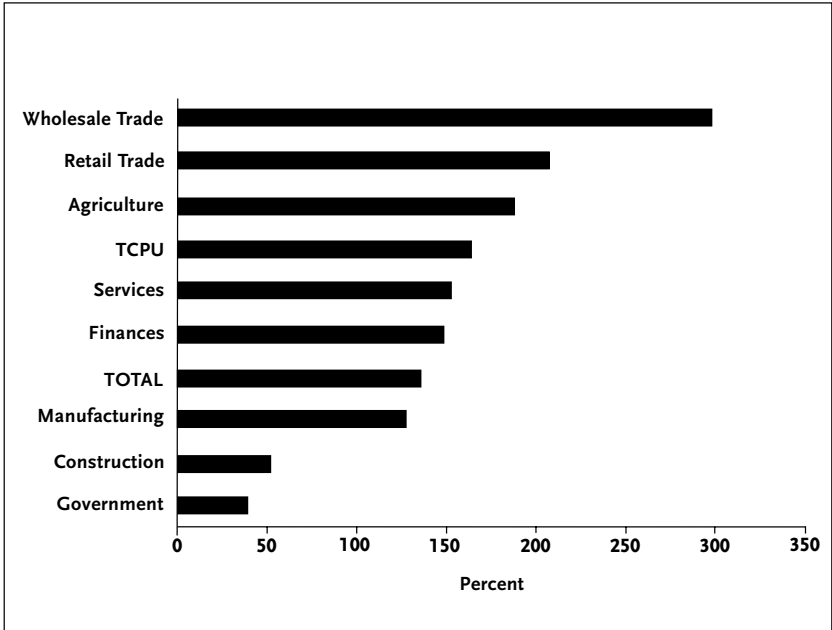


Figure 1-1. U.S. output growth rate by sector, 1977–2005.
 DATA SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, “Gross Domestic Product by State.”
 NOTE: Data not available before 1977.

marked shift also took place within manufacturing, with production moving to durable goods such as industrial machinery and electrical equipment and away from nondurable products such as apparel and printing.⁷

The nation’s production became more integrated with world trade in the Connected Age. The share of national production sold to foreign buyers, termed “exports,” more than doubled from 4.3 percent in 1970 to 10.5 percent in 2005. However, sales of foreign-made goods and services to U.S. buyers increased even more over the period, nearly tripling from 5.7 percent of national production to 16 percent.⁸

A key ingredient in any nation’s economic progress is labor productivity, sometimes referred to as “working smarter.” Labor productivity measures how much output a worker produces in a given period of time. Faster growth in labor productivity means that labor resources are being used more efficiently, so more can be produced with a given number of workers. Released workers can then be used in other enterprises. Earlier in the twentieth cen-

ture, this process enabled workers to move to the growing manufacturing sector, just as more recent improvements in manufacturing productivity have provided labor for the emerging technology and service sectors. Higher levels of labor productivity allow U.S. firms to compete more effectively with foreign firms using lower-cost labor, and a more productive labor force can also help contain price inflation.

A major story of the national economy during the Connected Age was the acceleration in labor productivity. In the 1970s, labor productivity grew at an annual average rate of less than 1 percent; in the 1980s, the average growth rate was 1.6 percent; in the 1990s, the average rate rose to 2 percent; and during 2000–2005, the average growth rate hit 3.2 percent.⁹ Several studies attribute this improvement to improved education and training of the workforce and the development and application of computer technology to the workplace.¹⁰

As the Connected Age progresses, these trends in production are expected to continue. Both the goods and services sectors will expand, but services will do so at a faster rate, enlarging the services piece of the total economic pie. Foreign trade's share of the national economy will increase from one-quarter to almost one-third of the economy, and exports—such as those to the growing Chinese market—will outpace imports.¹¹ Also, some forecasters are optimistic about labor productivity, believing that the historically high growth in worker efficiency enjoyed in the 1990s and early 2000s will be sustained.¹² Such an occurrence would have profound implications for the workforce, as I discuss later in this chapter.

Employment: Factory Flight

Employment in the national economy expanded along with production during the Connected Age, with the number of full- and part-time jobs increasing from 79 million to 142 million between 1970 and 2005.¹³ However, the 1.6 percent average annual growth rate in jobs was considerably lower than the post-World War II average of 2.6 percent.¹⁴

Progress in the labor market is generally measured by the unemployment rate, or the percentage of people working or actively looking for work who are unemployed. The national unemployment rate demonstrated a decidedly downward trend in the Connected Age. The rate averaged 6.2 percent during the 1970s, 7.3 percent during the 1980s, 5.8 percent during the 1990s, and 5.2 percent between 2000 and 2006. The peak rate during recessions also showed a declining pattern.¹⁵

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Yet the unemployment rate may give an incomplete picture of the labor market. The official statistics do not count as unemployed individuals who desire to work but who, out of frustration and lack of success, have stopped looking for work. Such individuals are termed “discouraged workers,” and alternative measures suggest that they add between 0.3 percent and 4.0 percent to the official unemployment rate. However, no indicators point to an upward trend in the rate of discouraged workers during the Connected Age.¹⁶

The second issue with official unemployment is the concept of underemployment. Underemployment occurs when an individual is employed in a job that underutilizes his or her skills. Examples are a displaced computer engineer selling cars and a former stockbroker employed as the manager of a fast-food restaurant. No official measures of underemployment exist, but some observers have expressed concern that the large shifts in employment among economic sectors in the Connected Age have increased the prevalence of underemployment.¹⁷

Figure 1-2 shows these employment shifts. Employment gains were strongest in services, finance, construction, and retail trade. Employment increased but did so below the average rate for the government, wholesale trade, and TCPU sectors and decreased in agriculture and manufacturing.¹⁸

A comparison of figures 1-1 and 1-2 leads to several conclusions. First, total employment increased much less than total production (57 percent versus 126 percent), implying an improvement in labor productivity during the Connected Age. Second, employment in agriculture and manufacturing declined even as production in those sectors rose, again as a consequence of dramatic improvements in labor productivity in these sectors. Productivity of manufacturing workers rose at an average annual rate of 3.9 percent, while farm worker productivity improved at an annual average rate of 5.3 percent.¹⁹ One study concluded that although total manufacturing employment fell, the number of highly skilled, highly productive manufacturing jobs increased between 1983 and 2002.²⁰

The changes in industry output and industry employment caused corresponding changes in workers' occupations. A worker's occupation indicates what he or she does rather than the industry in which he or she works. During the Connected Age, a greater share of people worked in professional, sales, and service jobs, while fewer worked as clerks, craft workers, operatives, or farmers (figure 1-3). These moves are in line with the era's increased focus on skilled jobs requiring more education and on services.

Richard Florida focuses on an occupational group he terms the “creative class”—workers involved in developing new ideas, inventions, and technol-

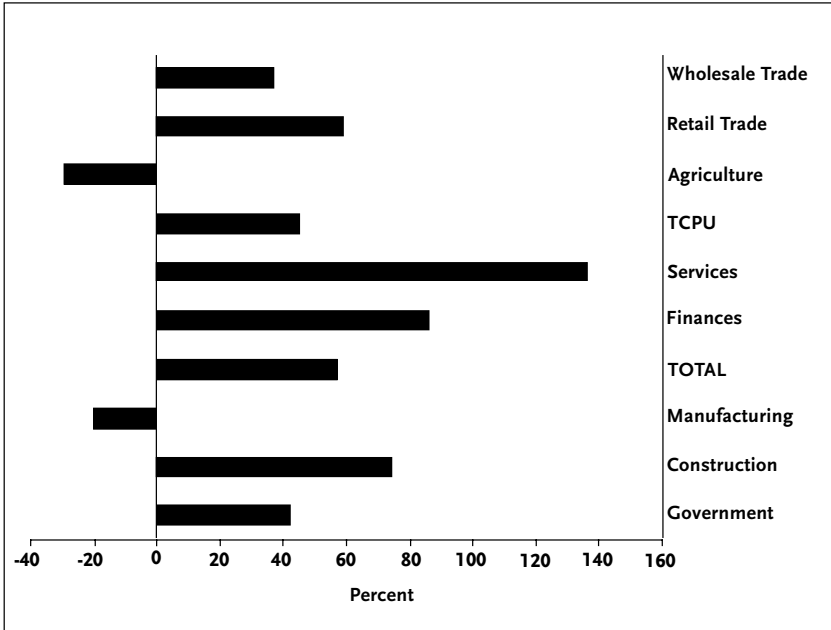


Figure 1-2. U.S. employment growth rate by sector, 1977–2005.

DATA SOURCE: Council of Economic Advisers, *Economic Report of the President*, tables B-46, B-100.

ogies. In this group, he includes architects, engineers, scientists, artists, writers, and high-end managers.²¹ According to Florida, the generation of ideas is critical to any country's modern economic development, since virtually any production job and many service positions now can easily move to low-cost regions. Only countries with thriving creative classes, he argues, will generate the new industries and businesses needed to prosper in the rapidly changing world economy of the Connected Age. Florida estimates that in recent decades, the creative class has comprised between 20 and 30 percent of the workforce.²²

Several trends influenced the labor market during the Connected Age, including the increased labor force participation of women, the shift in compensation away from wages and salaries to benefits, the increased educational attainment of the workforce, and the growing importance of labor availability in foreign countries. I will now highlight key features of each of these trends.

One of the most dramatic labor market changes in U.S. history occurred

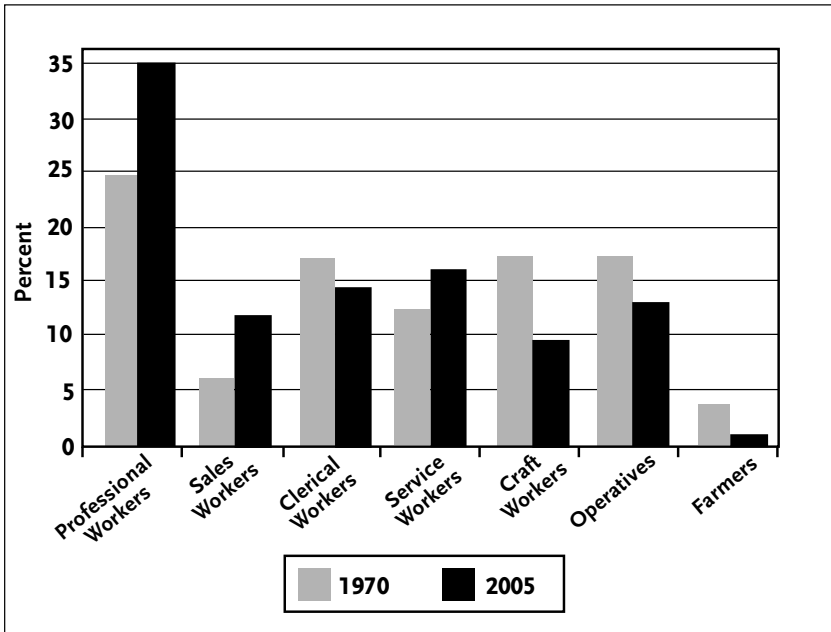


Figure 1-3. Distribution of employment by occupation, 1970 and 2005.

DATA SOURCE: U.S. Census Bureau, "Statistical Abstract of the United States," 2007, table 602, 1973, table 372.

in the latter part of the twentieth century with the increase in women's labor force participation. Between 1970 and 2003, the percentage of women ages twenty-two to sixty-five who were working or looking for work jumped from 46 percent to 70 percent.²³ Scholars have cited many factors as contributing to this rise in the number of working women, including their improved educational levels and thereby their prospects for better pay, the reduction in physically demanding jobs, the decline in large families, and improved household technology, which allows household tasks—still predominantly performed by women—to be accomplished in less time.²⁴ Research also suggests that some women enter the paid labor force to replace earnings reductions suffered by their husbands.²⁵

A major byproduct of the increased proportion of working women has been increased household spending on services. As women have moved into the workforce, households have increased their use of paid services, such as child care and cleaning, lawn, and meal services. The proportion of total consumer spending going to services rose from 46 percent in 1970 to 58 percent in 2005.²⁶

How workers are paid significantly changed during the Connected Age. Compensation paid from an employer to an employee can be separated into two parts, the wage or salary component and the benefits component. Wages and salaries are direct cash payments to the employee. Benefits are noncash payments for items such as retirement, vacation and sick leave, and health insurance. Benefits almost doubled their proportion of total worker compensation between 1970 and 2005, rising from 10.6 percent to 19.1 percent.²⁷

Americans acquired more formal education during the Connected Age. In 1970, barely half of adult males and females had high school or college degrees, and only 13 percent of males and just 8 percent of females had college degrees. By 2005, these numbers had increased dramatically—almost 85 percent of adult males and females had finished high school or better, and 29 percent of males and 27 percent of females had obtained college degrees.²⁸ Although these numbers are impressive, observers have expressed some concern about the quality of the educational outcome. Trends in standardized test scores give mixed results, with some falling, some remaining relatively unchanged, and others modestly increasing.²⁹

As the twenty-first century dawned, a new employment issue took center stage—U.S. companies moving jobs to foreign countries to take advantage of lower labor costs, a process alternatively referred to as offshoring or outsourcing. The globalization of the economy during the Connected Age accelerated the practice, which affected both blue-collar (factory) jobs and white-collar (service) jobs. In fact, by 2003, one estimate categorized half the offshored positions as service jobs; just under one in five were professional jobs.³⁰ One cost of offshoring is lost domestic jobs and the corresponding adjustments the former holders of these jobs must make. An estimated 9.9 million jobs were offshored in 2003, one-third more than in 1970.³¹

Some people view offshoring in a positive light. Some observers see it simply as an example of businesses using the economic principle of comparative advantage, where production moves to wherever input costs are lowest. Businesses using offshored labor can lower their costs and thus offer consumers lower prices. In this way, offshoring contributes to more affordable products and a higher standard of living.³² Furthermore, while offshoring loses jobs for the country, inshoring—the placement of jobs in the United States by foreign companies such as auto and pharmaceutical manufacturers—gains jobs. In 2003, the United States had an estimated 5.7 million inshored jobs, and the gap between offshored and inshored jobs narrowed during the Connected Age.³³

Again, no signs indicate that most of these employment trends will change

in the near-term future. Between 2004 and 2014, official U.S. government forecasts show that eight hundred thousand manufacturing jobs will be cut, while employment in the broad-based service sector will jump by 18 million.³⁴ Jobs at both ends of the pay spectrum—professional occupations paying the most and lower-skilled service jobs in food preparation, health care support, personal care, and maintenance paying the least—will be the fastest growing.³⁵ More of the available jobs will also require more skills, and here the question is whether the U.S. labor market will be able to provide those skilled workers. If not, then more jobs—in particular, higher-paying positions—will move to foreign countries because of the traditional lower costs and the new availability of skilled labor. As the U.S. educational edge over developing countries such as China and India first narrows and then disappears, the offshoring of jobs may extend to higher-paying occupations.³⁶ The role of the U.S. educational system, from K–12 to higher education, then becomes even more crucial in supplying the qualified workers needed to keep good-paying jobs in the country.³⁷

One Connected Age trend that may have run its course is the movement of women into the paid labor force. During the first five years of the twenty-first century, the percentage of women in the paid labor force declined. Preliminary analysis suggests that the labor market pull on women fell during this time.³⁸ If this finding is accurate and if the pull continues to lessen, a slow-down may occur in some segments of the service economy, such as prepared foods and home services.

Standard of Living: Has the Global Tide Lifted All Boats?

One of the most important issues associated with the Connected Age economy is whether households improved their standards of living and, if so, whether some households improved more than others. With the numbers of factory jobs declining and of service jobs increasing, economists have expressed concern that average worker pay fell. At the same time, the increase in the number of high-paying jobs has led to questions about widening income inequality. These questions are challenging because many alternative measures of economic well-being and different interpretations of these measures exist.

Broad measures indicate that the average standard of living increased during the Connected Age. Between 1970 and 2005, after-tax personal income per person, in real dollars, rose 101 percent and personal spending per person, also in real dollars, jumped 121 percent.³⁹ Real dollar median household

income per person rose a smaller but still healthy 58 percent.⁴⁰ The broadest measure of hourly compensation, which includes the value of both cash and noncash benefits, increased 54 percent in constant-purchasing-power dollars.⁴¹ Yet a measure of hourly cash wages earned, which minimizes the effects of extremely high and extremely low wages and does not include the value of noncash benefits, showed only a 9 percent increase over the period.⁴² Finally, wealth is another measure of well-being. Wealth is the accumulated value of a person's assets after subtracting what is owed (liabilities). In constant dollars, wealth per person rose 36 percent between 1970 and 2005.⁴³

While all income numbers indicate an improved (to varying degrees) average standard of living over the time period, a further issue concerns whether all households shared in this prosperity. Unfortunately, total compensation and wealth data do not exist for persons or households of different income classes. However, wage rate, total income, and consumption have changed for households of various income levels. Both total income and consumption increased for all income categories, but the gains were greatest for the highest- and lowest-income categories and were more modest for the middle-income categories.⁴⁴ Wages earned per hour show a clear pattern in which workers earning higher wages receive the largest increases and workers earning lower wages receive the smallest increases.⁴⁵ Some measures show the real wages of both high school graduates and high school dropouts declining.⁴⁶

Researchers studying standard-of-living patterns during the Connected Age have reached one major conclusion: the financial benefits of education and skills expanded during the period. The pay gap between college-educated workers and non-college-educated workers grew, as did the pay gap between professional workers and other workers. Analysts attribute the results to the changing nature of work and to the increasing importance of education in utilizing modern technology.⁴⁷

Poverty is related to the standard of living. Between 1970 and 2005, the official poverty levels did not improve and in fact trended upward slightly.⁴⁸ However, this trend masked significant demographic changes affecting the poverty rate. Specifically, female-headed households, unrelated individuals, and lower-income immigrants increased their share of the total population during the Connected Age, and these groups typically have higher rates of poverty. Among two-parent households, poverty rates trended downward from 1970 to 2005.⁴⁹

Some evidence indicates that one group, displaced factory workers, clearly faced economic challenges during the Connected Age. As I have already discussed, the number of factory workers declined as import competition and

productivity improvements motivated manufacturing firms to rely more on technology and advanced machinery in their production processes. Former manufacturing workers tended to be older and less educated than workers who lost jobs in other sectors. Consequently, displaced factory workers comprised one of the groups least prepared to find good-paying alternatives in the Connected Age. Surveys show that when these workers found new employment, they suffered average earnings losses of 12 percent, with a quarter having losses of 30 percent or more.⁵⁰

Finally, changes in the cost of living—also known as inflation—and in interest rates affected the standard of living. Rapid increases in inflation can reduce living standards if household incomes fail to keep up. High interest rates, which are directly tied to high inflation, inhibit households' ability to borrow money for big-ticket items such as homes and vehicles and make it more costly for businesses to update their machinery, buildings, and technology.

Declining trends in both inflation and interest rates have been a hallmark of the Connected Age. The average annual inflation rate dropped from 7.1 percent in the 1970s to 2.6 percent in the first decade of the twenty-first century.⁵¹ The reduction was sharpest for manufactured products, where the spread of low-cost, worldwide production resulted in price reductions for apparel, technology, furniture, and appliance products.⁵² Similarly, both short-term and long-term interest rates plunged by 3 percentage points between 1970 and 2005.⁵³ According to some observers, the reduction in interest rates resulted from the integration of world financial markets.⁵⁴

More concerns and questions about future trends have perhaps arisen regarding the American standard of living than for any other element in the Connected Age. Long-run forecasts show the average standard of living, as measured by income available per person after taxes, continuing to rise.⁵⁵ Optimists see globalization as helping U.S. workers by moving them into more productive, higher-paying occupations and by keeping both the inflation rate and interest rates low as worldwide production takes place in low-cost regions.⁵⁶ Others are more pessimistic. They see U.S. workers' standards of living under increasing assault from cheaper foreign labor, the offshoring of even higher-paying jobs, domestic deregulation that forces businesses to cut costs even more, and the continuing decline of labor unions that protect the workers' interests.⁵⁷ Maybe nowhere are the expectations for the future of the Connected Age more divergent than for the standard of living.

Demographics: Who Will Do the Work?

The important demographic trends affecting the economy during the Connected Age include the aging of the population, the falling birthrate, and increased immigration.

Improvements in life expectancy and the aging of the baby boom generation combined dramatically to increase the percentage of the population qualifying as elderly. The number of people sixty-five years of age and older increased 83 percent between 1970 and 2005, much higher than the 45 percent increase in the total population. Consequently, the elderly population accounted for 12.4 percent of the total population in 2005, up from 9.8 percent in 1970.⁵⁸ The growing elderly population has profound implications for the workforce and government expenditures in the Connected Age, topics addressed later in this chapter.

At the same time, the relative size of the younger population declined. The population aged nineteen or under increased only 6 percent, dropping from 38 percent of the total in 1970 to 28 percent in 2005.⁵⁹ A major reason for this change was the decline in the birthrate. Between 1970 and 2004, the average number of births per woman dropped 23 percent, and average household size fell comparably.⁶⁰ These trends resulted from a delay in childbirth as a result of the increased time young women spent obtaining formal education and of their movement into the paid labor force.⁶¹ In addition, economists have found a negative association between rising income and the birthrate. Children require parents to devote considerable time to child rearing and guidance. As average incomes rise, the value of parental time also rises. Hence, economists have long observed a correspondence between a declining birthrate and rising household income.⁶²

A major demographic shift during the Connected Age was an increase in the rate of immigration. After declining each decade since the 1930s, immigration began to increase in the 1970s. By the twenty-first century, an estimated 1 million immigrants entered the country each year.⁶³ The composition of the new immigration also differed from that of earlier decades. Immigrants during the Connected Age have had lower educational levels and fewer formal skills than earlier arrivals and than the U.S. population as a whole.⁶⁴ Some research suggests that the increase in the supply of lower-skill immigrants in the U.S. economy contributed to the slow growth of wages for domestic low-skilled workers.⁶⁵

A link exists between the three demographic trends of the Connected Age. The aging population has created a demand for low-skilled workers,

especially in the construction and service industries. Immigrants have filled the gap in the supply of these workers created by the relatively slow increase in the domestic youth population and by the greater percentage of young people delaying entering the job market as they pursue college degrees. By the first decade of the twenty-first century, immigrants accounted for more than a third of the employment in the janitorial services industry and almost a quarter of the workers in the construction industry.⁶⁶

In coming decades, the retirement of the baby boom generation, combined with the slower growth of subsequent generations, will cause the labor force to grow at its lowest pace in seven decades. Through 2050, labor force growth will amount to only one-third of 1970s rates and half the 1980s rates.⁶⁷ Without a tremendous surge in domestic fertility, the expected shortfall in workers will be made up by some combination of gains in labor productivity (each worker producing more) and foreign immigration. To achieve more productivity requires improved educational outcomes and investments in technology and equipment, but there are no assurances that these developments will occur. Past foreign immigration has already sparked political and social reactions that put its continuation in doubt. Therefore, the question of who will do the work in the future remains very much unanswered.

Technology: Digits over Distance?

If one characteristic defines the Connected Age, it is technology. Technology has digitally, globally, and competitively connected the country, workers, and businesses.

One of these technologies, air-conditioning, has existed for several decades, but only in the Connected Age did it become pervasive. While only one-third of all housing units had air-conditioning in 1970, almost two-thirds were equipped with it by 2005.⁶⁸ Although some people may consider the technology mundane, its importance should not be underestimated. Affordable, available air-conditioning made regions previously considered uninhabitable because of their hot, humid summers acceptable for year-round production and living. Air-conditioning particularly benefited the southern United States, which also had the advantage of relatively mild winters and thus low heating costs. Some economic historians have argued for a link between tropical environments and slower economic development.⁶⁹ Air-conditioning offers a way to break this link.

However, the technology most defining the Connected Age is the microchip. Initially developed in the 1950s, the chip underwent major improve-

ments during the 1970s and 1980s that led to large-scale integrated circuits, programmable integrated circuits (microprocessors), and miniaturization. All of the signature tech applications of the Connected Age—personal computers, the Internet, and cell phones—constituted direct applications of the microchip technology. By 2005, 208 million people had cell phone service, and in 2003 62 percent of households owned a computer and 55 percent used the Internet.⁷⁰

The most obvious way technology has affected the economy is in communications. One estimate suggests that the cost of communicating information fell by a factor of ten thousand between 1970 and 2000.⁷¹ Increased communication not only has benefited the quality of life for families but also has promoted business efficiency by increasing the geographic range of contacts and reducing the time needed to detect and address business issues.

Technology has also impacted the economy in more subtle yet equally important ways. Businesses have long struggled with the issue of inventory management. If not enough product is kept in stock, customers will be turned away and business profitability will fall. Conversely, if overstocking occurs, future production is cut and workers are laid off. In fact, unwanted inventory accumulation is one of the main reasons for economy-wide recessions. Inventory-management programs using the technology of the Connected Age have significantly reduced the chances of both understocking and overstocking and bear partial responsibility for the shorter and milder recessions experienced in recent decades.⁷² And although not technology in the strictest sense, significant improvements in ocean shipping containers helped to facilitate the great strides in world trade that occurred during this era.⁷³

Thomas L. Friedman argues that these technological achievements have “flattened” the world economy, rendering distance increasingly obsolete and allowing companies around the world to compete with each other in the global marketplace.⁷⁴ He foresees this flatness increasing even more with further advances in technology that lower the cost of space. If he is right, then global competition will expand even more in the future and extend from manufacturing and simple services (catalog ordering, technical assistance) to professional and high-level services, possibly putting high-cost countries such as the United States at a disadvantage and slowing or reversing gains in living standards.

However, not all observers of the modern world agree. Edward E. Leamer argues that the world has been flattening for centuries as transportation and communications have advanced but that we perceive globalization as new

because we are so caught up in today's gadgets.⁷⁵ But Leamer also presents evidence that the income disparities between countries such as the United States and Japan at the high-income extreme and China and India at the low-income extreme have not diminished but in fact have widened. According to Leamer, distance cannot be completely conquered by technology; rather, accessibility to customers and firsthand knowledge of customs and preferences will always have benefits. In addition, an assembly line will never duplicate talent, creativity, and innovation. This analysis suggests no requirement that incomes will flatten as world trade broadens.

Government: In the Way or Out in Front?

Government can play two major roles in the economy—directly, via the amount of tax revenue it takes and spending it generates, and indirectly, via the laws and regulations it enacts.

In terms of size, total government (federal, state, and local combined) grew modestly relative to other economic sectors during the Connected Age. Total government spending accounted for 28 percent of the economy in 1970 and 31 percent in 2005.⁷⁶ However, the composition of government spending shifted significantly during this time. Despite the additional defense spending allocated for the wars on terrorism and in Iraq and Afghanistan, federal defense spending as a percentage of the economy fell by more than 50 percent between 1970 and 2005. In contrast, federal health spending rose almost 300 percent and Social Security spending increased 45 percent over this period.⁷⁷ These spending increases were certainly driven by the aging population and the public's increased demand for health care. At the state and local levels, health, public safety, and public assistance spending took added shares of the economy, while relative spending on highways declined.⁷⁸

Government spending falls into two categories: spending on government provision of services, such as building and maintaining roads, providing education in public schools, and paying police and firefighters to keep citizens safe, and spending on government transfers—that is, the government providing income to households or paying for a particular kind of spending, such as medical care. With transfers, only those who directly receive the income or have the cost paid obtain the benefits of the spending. During the Connected Age, government spending on services declined from 18 percent to 15 percent of the economy (gross domestic product), while government spending on transfers doubled from 6 percent to 12 percent of the economy, with the largest share of the increase going to health care expenditures.⁷⁹ These

numbers imply that government did relatively less of those activities that all citizens collectively can see and appreciate (services) while doing more to support specific beneficiaries and functions (transfers).

Two important trends in governmental laws and regulations, particularly at the federal level, occurred during the Connected Age. Beginning in the late 1970s, the federal government deregulated several large industries—that is, removed or reduced rules and regulations about where and how companies operate and about the prices they charge. By the beginning of the twenty-first century, deregulation had been applied to the airline, telecommunications, trucking, energy, financial services, and agricultural industries. Advocates of deregulation claim that it has led to lower prices for consumers, greater choices, more responsive firms, and greater efficiency in resource allocation.⁸⁰ Critics worry that deregulation has resulted in industry instability, lower quality, and a greater focus on short-run profits.⁸¹ Nonetheless, deregulation clearly was aimed at increasing the degree of domestic competition in the economy, a key feature of the Connected Age.

The federal government also increased competition by agreeing to several international agreements that lowered trade barriers among countries. The most notable were the North American Free Trade Agreement (NAFTA), an agreement among the United States, Mexico, and Canada; the General Agreement on Tariffs and Trade (GATT), a worldwide trade deal; and the Central American Free Trade Agreement (CAFTA), a treaty involving the United States and various Central American countries. Estimates show that these agreements reduced tariffs on U.S. imports by as much as 60 percent between 1970 and 2000.⁸² At the same time, the fall of the Soviet Union and the removal of the iron curtain across Eastern Europe, combined with the integration of China and India into the world economy, approximately doubled the world supply of labor and contributed to lower prices for many products and a moderating inflation rate.⁸³ Again, advocates and opponents of globalization have sparred about whether trade agreements and closer international economic interaction have benefited or harmed the economy and workers.⁸⁴

One of the biggest challenges for government at all levels will be managing the inevitable conflict between public spending and taxes. While this conflict has always existed—citizens want public services but prefer not to pay taxes for the provision of those services—the Connected Age arguably has intensified and will continue to intensify this conflict. On the one side are economic and demographic pressures for higher rates of public spending—to educate workers so the country can compete in the global market, to repair and build public infrastructure to handle the increasing demands of trade, and to pro-

vide financial support both for the growing elderly population and for those households left behind in the era's competitive race. On the other side is the potential negative effect of higher tax rates on a locality's ability to attract and retain businesses and households in an increasingly mobile world. The tug-of-war between these two sides will only have a stronger effect on public decision makers in future decades.

Issues: What the Connected Age Hath Wrought

Improvements as well as challenges can be found in any era, and the Connected Age is no exception. Many prominent gains were made. The average household earned more, spent more, and became richer after 1970. More people acquired more education, and life expectancy grew. Economic ups and downs became milder, and the inflation rate and interest rates trended lower. Women's educational and employment opportunities increased, and more women took advantage of those opportunities. Technology created new worlds for consumers to explore and brought sophisticated production and management tools to business. Increased domestic and international competition expanded the ranges of choices and lowered many prices for buyers.

At the same time, the Connected Age created challenges. For decades, manufacturing had offered good-paying jobs to millions of workers with limited formal education. During the Connected Age, the manufacturing sector shed 3.5 million jobs.⁸⁵ Without retraining, many of these workers have had to accept lower-paying positions in the service sector. The bridge to the middle class that manufacturing for generations provided to individuals who did not pursue education beyond high school collapsed during the Connected Age.

In the Connected Age, education mattered as had never before been the case. Education replaced unions, experience, and personal connections as the major determinant of economic status. Workers with education got ahead in the Connected Age, and those without education increasingly struggled. The widening income disparity observed during the Connected Age was based on a gap between the highly educated and the less educated. Yet as the period progressed, even domestic workers with education faced competition from global competitors with the same training. While households' overall average income mobility apparently did not drop during the era, such mobility was reduced for young households and for households whose members did not possess college educations.⁸⁶

The Connected Age produced a concern not seen in the country for several decades — whether a falling birthrate would fail to produce a sufficient supply

of domestic workers. The baby boom generation (people born between 1946 and 1965) began to retire during the Connected Age and will be fully retired by 2020. Since the succeeding generation is smaller by 10 million persons, some observers forecast too few well-trained, well-educated workers to meet the country's future labor demands.⁸⁷ The shortage will have to be closed by some combination of increased worker productivity, increased immigration, and increased imports.

The greatest spending challenge confronting citizens in the Connected Age was health care. Both private and public budgets for health care exploded as the number of elderly persons grew and they lived longer and as medical technology and accomplishments improved. Attempts to rein in cost increases through limitations on care—the approach taken by health maintenance organizations—faced resistance. Meeting future health care demand within budgetary limits will constitute a major challenge in the future.

Many domestic businesses looked to foreign markets for opportunities during the Connected Age, just as foreign enterprises expanded sales in the United States. Technology had indeed shrunk the world and increased ties between continents and countries. Yet the memory of 9/11 and the dark cloud of international terrorism have raised questions about the safety and certainty of international linkages. Some observers worry that added measures to provide security for travelers in particular threaten the future vitality and productivity of the economy by restricting the movement of highly skilled and entrepreneurial individuals.⁸⁸

Advances in communications and transportation and the enhanced competitiveness of the business world quickened the era's pace of change. Firms had to move fast and production had to change rapidly to keep up with altering consumer tastes and the constant repositioning of competing sellers. "Just in time" replaced "You'll have it soon." Long-term commitments became hazardous for businesses, and employees often paid the price. Pensions and health care increasingly shifted from being part of the employer-provided package to the employee's responsibility. In the competitive Connected Age, workers found themselves increasingly on their own.

Naturally, then, people frequently looked to government to provide shelter from the fallout from the Connected Age. Areas in which government has been asked to lead include education, worker retraining, health care, pension protection, and homeland and international security. In recent decades, government increasingly funded its spending through borrowing instead of taxes. This type of financing, combined with substantial spending promises to future citizens in the form of Social Security and Medicare, has led econo-

mists to predict significantly higher tax rates in the future.⁸⁹ Consequently, a looming public finance crisis may be one of the legacies of the Connected Age.

Finally, as the Connected Age moved into its fourth decade, an issue arose that affects virtually every household and individual—energy. Like its predecessor, the Industrial Age, the Connected Age was built on fossil-fuel energy. With the exception of a seven-year period between 1974 and 1981, oil and gasoline prices, in inflation-adjusted terms, trended downward, reaching historically low levels in the late 1990s. This cheap energy contributed to the era's economic growth and productivity improvements. However, as countries in Eastern Europe and Asia joined the economy of the Connected Age, world energy consumption rose dramatically after 2000, and energy prices followed. Some observers fear that worldwide oil and gas supplies will gradually become depleted, leading to a continual rise in energy prices and a consequent future curtailment of economic growth. Others see a combination of new supplies of oil, improvements in energy efficiency, and the introduction of alternatives to fossil fuels allowing the connected world economy to maintain its advance.⁹⁰ Whichever path proves correct, energy supplies and energy prices certainly will have a profound impact on the future of the Connected Age.

But what has the Connected Age brought to North Carolina, and where will it take the state? The next six chapters provide some answers and perspective.