



WORKING PAPER

After Manufacturing

Lessons for a New Reality from North Carolina

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Introduction

U.S. manufacturing employment has undergone a well-publicized transformation over the past forty years. The share of Americans employed in manufacturing began declining after 1970, with the absolute number beginning to decline in 1980, and the overwhelming majority of job losses occurring after 1990. Communities across the United States have been upended by this fundamental, long-term change in the economy—which is at the root of a harsh new reality characterized by slow growth and rising income inequality.

No state, including Rust Belt states like Ohio and Michigan, was struck harder by the loss of manufacturing employment than North Carolina. Yet parts of that state have managed to adapt successfully to growing international competition even as others have continued to lag behind. Some communities were able to shift into more competitive sectors or build their economies around nontraded sectors; others have been unable to rebound from the decline in manufacturing employment. The reasons why, and their connection to policy, need to be understood as other states, and the country as a whole, grapple with how to respond to this new era.

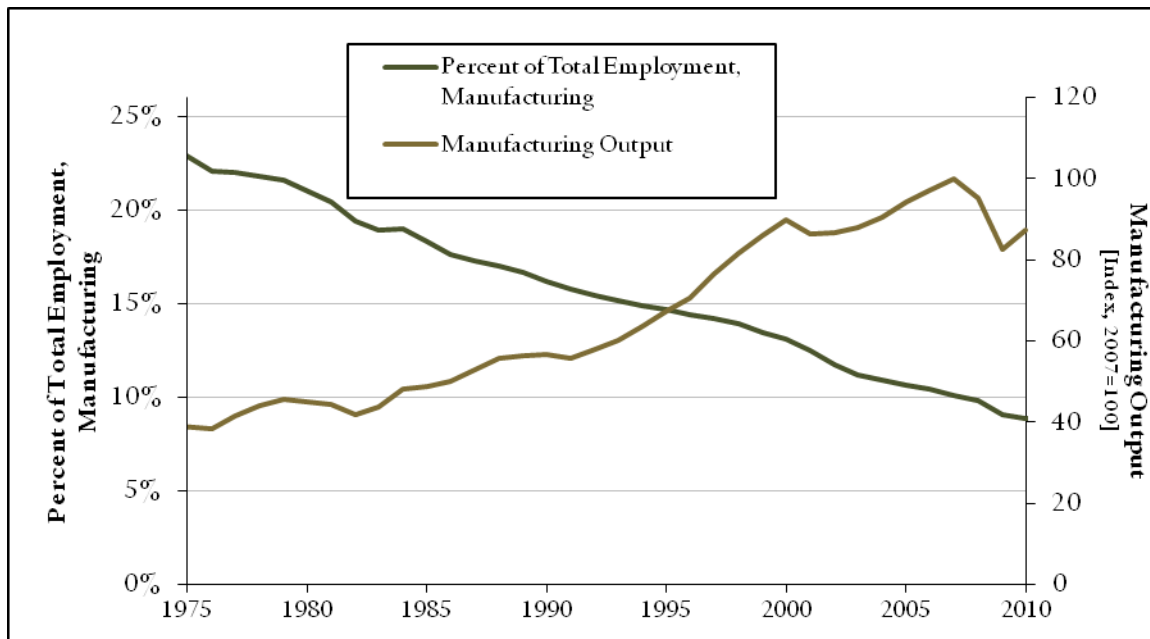
North Carolina's experience has many lessons for other regions. It underscores the important role that state governments, backed by federal support, can play in accelerating economic adjustment and mitigating the negative impact of change. Forward-looking state policies—including strong support for public education, the development and expansion of the state university and community college system, investment in roads and other infrastructure, and generally prudent fiscal management—provided the foundation. But local assets and initiatives have made the difference in why some regions adjusted well while others have been left behind.

As other states struggle with similar challenges, they need to develop a toolbox that helps regions trying to adapt to the loss of manufacturing jobs make the most of their local assets. This requires patient and steady financing of such building blocks as education and infrastructure, open-ended initiatives that do not depend on the success of any particular sector or technology, and the creation of strong regional institutions focused on economic development. And tough decisions must be made; every community is eager for help, but growth more often comes from bolstering already successful initiatives, even at the cost of increasing inequality among different regions. Although every state is dealing with unique challenges, the case of North Carolina provides a realistic guide to action for other regions across the United States as they face growing international competition.

Trade, Technology, and Economic Transformation

The transformation of U.S. manufacturing has been driven by globalization's competitive pressure. Businesses substituted domestic workers with outsourced international labor or with capital and technology. Their strategy worked. Since the mid-1970s, manufacturing output has nearly tripled. Productivity in manufacturing has remained strong, averaging 3.3 percent growth per year, since the late 1970s—even as average U.S. productivity fell from 2.5 percent to 1.5 percent.¹ Manufacturing's productivity gains allowed output to rise while employment fell. Over the same period, the share of Americans employed in manufacturing declined from one in four to one in ten (see Figure 1). Many of the workers fortunate enough to retain their jobs in the manufacturing sector have enjoyed rising productivity and relatively high and increasing incomes.

Figure 1. Percent of Total U.S. Employment, Manufacturing vs. U.S. Manufacturing Output (1975–2010)



Source: Federal Reserve Economic Data

But workers released by the manufacturing sector tend to be reabsorbed into less productive sectors such as health care, government, and education. The shift of workers out of a shrinking, if increasingly productive, manufacturing sector accounts in part for the economy-wide stagnation in real incomes. Real per-capita disposable income has not grown for five years, and total nonfarm private employment has not grown for more than a decade.² The problem is that the nontraded service sector and the public sector are composed of a large percentage of low-skilled, low-paid workers and a

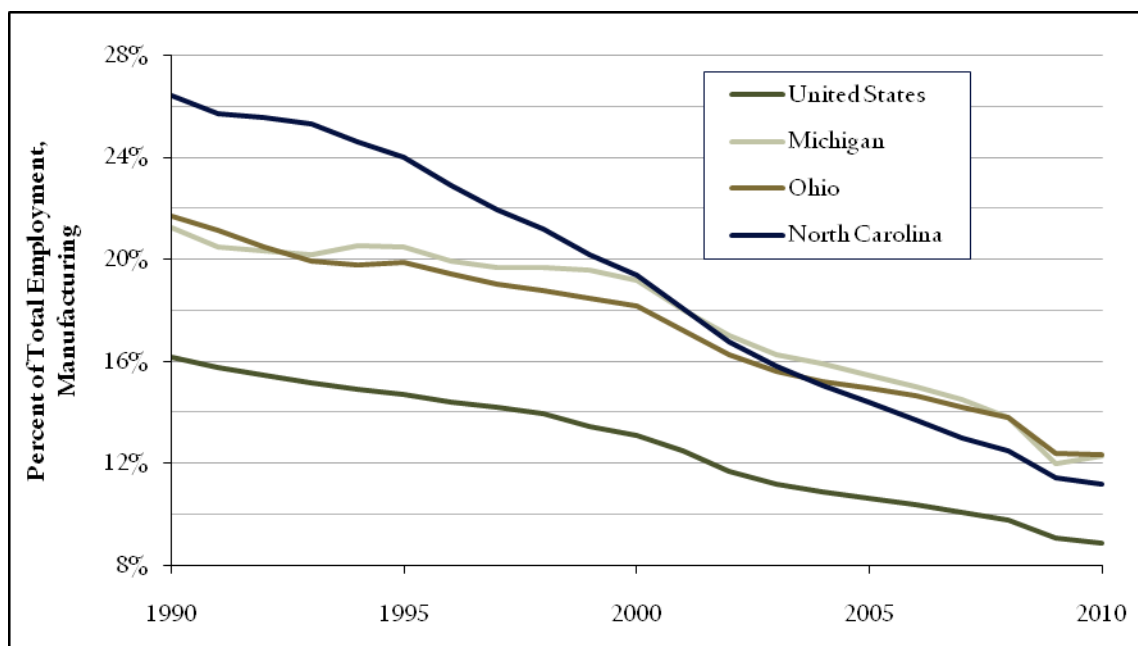
small percentage of highly skilled, highly paid workers. Most of the country's job growth has been within this lopsided, bifurcated labor market. The decline in manufacturing employment is therefore also associated with the increase in income inequality since the early 1970s.

At the same time, long-term demographic and educational developments threaten future economic prospects. Baby boomers are edging into retirement, increasing dependency ratios and raising the overall burden on the government and economy. Younger generations are not making the kind of gains in education needed for the economy in the years ahead. In coming decades, policymakers are likely to face an economic environment characterized by sluggish growth for which there will be few easy policy prescriptions.³

Washington acknowledges that states and communities across the country are wrestling with the same complex challenges, but too little attention is paid to the great variety of initiatives and practices they have adopted in response. Yet a few states have had some success in adapting to great change. North Carolina is one of them.

Ohio and Michigan were especially exposed to the decline in manufacturing, but North Carolina was even more exposed and suffered a larger manufacturing employment loss. More than one-quarter of the North Carolina workforce was employed in the manufacturing sector in 1990, a higher share than in Michigan or Ohio and nearly twice the national share (see Figure 2). Over the next twenty years, North Carolina's manufacturing job loss amounted to 10.5 percent of its workforce, again larger than Michigan's (9.5 percent) and Ohio's (8 percent).

Figure 2. Percent of Total Employment, Manufacturing (1990–2010)



Source: Federal Reserve Economic Data

Yet despite being hit hardest by manufacturing employment decline, North Carolina has outperformed Ohio and Michigan in job creation (see Table 1). Even as the state lost half of its manufacturing jobs, total employment rose by 23 percent over those two decades. In comparison, Ohio's job growth was only 3.5 percent, and Michigan had fewer jobs in 2010 than it had in 1990.

Table 1. Change in Employment, Total Nonfarm and Manufacturing (1990–2010)

	United States	Ohio	Michigan	North Carolina
Change in total nonfarm employment	20,131,000	168,000	-68,000	729,000
Percent change	18%	3.5%	-1.9%	23%
Change in manufacturing employment	-6,334,000	-432,000	-361,000	-402,000
Percent change	-36%	-43%	-44%	-48.3

Source: Federal Reserve Economic Data

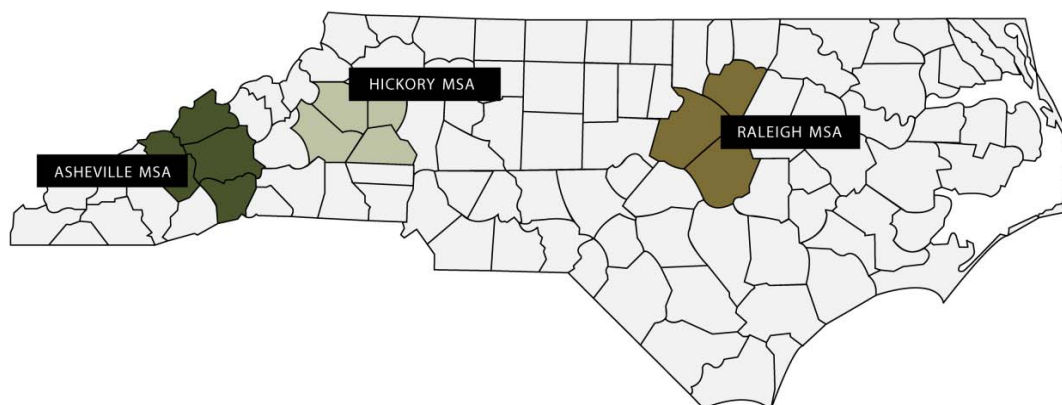
But North Carolina's adjustment has been less successful by other measures. Growth in median household income, which had been closing in on the national average in the 1990s, stalled over the past decade. Job growth has been concentrated in select areas of the state. Some communities and regions have undergone extraordinary transformations and seem to be set for future growth, albeit based on different foundations. Other communities have been flattened by change.

A Story of Three Economies

Behind North Carolina's regional divergence are three different types of economies, which in some cases overlap within the same region. One type represents the old manufacturing economy, subject to relentless decline in employment, as noted above. The other two economies represent alternative future paths in an economy without large-scale manufacturing employment. In one, the largest in terms of employment, the nontraded service sector (public and private) predominates. The other is characterized by competitive, internationally traded sectors specializing in technology-intensive goods and highly skilled professional services.

Three North Carolina metro areas nicely illustrate these differences: Hickory is an area of traditional manufacturing in the western Piedmont region; Asheville is a resort and retirement center dependent on the service sector in the heart of the Appalachian Mountains; and Raleigh, part of North Carolina's urban core, is home to high-tech industries and a substantial service sector.

Map of North Carolina: Hickory, Asheville, and Raleigh



All three areas suffered from a decline in manufacturing employment as a share of overall employment. But the decline was not smoothly distributed, nor was the subsequent quantity and quality of job growth (see Tables 2 and 3).

HICKORY: WEAVERS AND WOODWORKERS

Hickory represents an area dominated by traditional manufacturing. Total employment peaked at the end of the 1990s and has steadily declined since. Lacking a highly educated workforce or other institutional or natural assets, no other economic sector has yet taken its place. The region, home to furniture and textiles production, lost 46,000 jobs in manufacturing while business and professional ser-

vices, leisure and hospitality, and education and health, in combination, added only 17,600 jobs in the same period.

Nonmanufacturing sectors never had much of a foothold in the economy. Manufacturing, which at one time offered a good income regardless of education, seems to have crowded them out. The region has had difficulty replacing lost manufacturing jobs and now suffers from chronic unemployment and slow economic growth. The total workforce has declined by more than twenty-five thousand over the past twenty years. Median household income has grown slowly to \$40,346 in 2010, significantly below the North Carolina median household income of \$45,570.

The preeminence of manufacturing has had other consequences. Education levels are relatively low. In Hickory's Catawba County, only 20 percent of the population over the age of twenty-five has a bachelor's degree or higher. This made sense when jobs in manufacturing were plentiful, paid relatively well, and required little formal schooling. Hickory also does not have a local University of North Carolina (UNC) system campus. Historical chance plays a part in the location of such institutions, but local leadership may not have set as high a priority on it as did leaders in other parts of the state.

ASHEVILLE: BUSBOYS AND POETS

Asheville also suffered a severe decline in manufacturing, but it is now home to a range of successful service sector activities including recreation, health care, and arts and entertainment. This mountain area, by building on a regional hospital, a UNC campus, and well-known natural amenities, has overtaken Hickory in total nonfarm employment. Growth has been concentrated in the business services, leisure and hospitality, and health services sectors. Twice as many jobs were created as were lost in manufacturing. Median household income in this traditionally poor part of the state overtook Hickory in 2005 and rose by over \$5,000 to \$44,059 by 2010.

In contrast to Hickory, Asheville is characterized by relatively high levels of educational attainment. Almost 30 percent of the population above the age of twenty-five has a bachelor's degree or more. This service-based economy is likely to be typical of a large part of the U.S. economy in the years ahead. It creates jobs, often requiring education, but generates only modest growth in median household income.

RALEIGH: BANKERS AND GEEKS

Asheville's success, while encouraging in terms of employment, pales in comparison to Raleigh. Job growth in the past two decades has been impressive, with the recent recession having only a limited impact. Nonfarm payroll grew by almost 70 percent, including rapid growth in high-income business and professional services sectors. Raleigh is home to a broad range of internationally competitive businesses, especially biotechnology, information technology, and a variety of software-related businesses. At the same time, this area is also home to a significant number of jobs in leisure and hospitality. While it is helpful to think of this region as emblematic of a "bankers and geeks" economy, it actually coexists with a "busboys and poets" service sector. The region may have lost ten thousand jobs in manufacturing over the two decades, but it gained thirty-eight thousand in business services and over fifty-nine thousand in health care and leisure and hospitality.

This large, diverse economy has enjoyed strong growth in median household income, rising by almost \$7,000 over the past five years to \$60,026. Raleigh's high level of household income compares favorably with a statewide figure of \$45,570 and underscores the degree to which the regions of the state have diverged. Both Asheville and Hickory are close to the state average for overall income levels. Raleigh's income levels are roughly one-third higher. The most visible impact of structural change in the North Carolina economy, which is also visible across much of the United States, is the divergence among regions.

At the heart of Raleigh's internationally recognized success story are three major research universities—Duke, UNC Chapel Hill, and North Carolina State—as well as many other public, nonprofit, and private institutions. Education levels in Raleigh are high. Over 47 percent of the population over the age of twenty-five has a bachelor's degree, a level that is among the highest in the country.

Table 2. Change in Employment, By Sector (1990–2010)

	Year	Hickory	Asheville	Raleigh
Total Nonfarm Private Employment	1990	164,000	130,000	292,000
	2010	143,000	167,000	496,000
	% change 1990–2010	-13%	28%	70%
Manufacturing Employment	1990	83,000	33,000	37,000
	2010	37,000	18,000	27,000
	% change 1990–2010	-55%	-45%	-27%
Professional and Business Services Employment	1990	5,000	7,000	37,000
	2010	11,000	15,000	85,000
	% change 1990–2010	120%	114%	129%
Leisure and Hospitality Employment	1990	10,000	13,000	27,000
	2010	11,000	22,000	51,000
	% change 1990–2010	10%	69%	89%
Education and Health Services	1990	8,300	12,700	27,300
	2010	18,900	31,100	61,900
	% change 1990–2010	127%	144%	126%

Source: Federal Reserve Economic Data

Table 3. Income, Educational Attainment, and Unemployment (2010)

	Hickory	Asheville	Raleigh
Median Household Income	\$40,346	\$44,059	\$60,026
Percent of Adult (25+) Population with Bachelor's Degree	17.6%	29.8%	41.4%
Percent Unemployed	13.1%	8.4%	8.4%

Source: U.S. Census Bureau

AFTER THE FLOOD

The story of these three regions could easily be one of the United States. The U.S. economy, rising on the ashes of labor-intensive manufacturing, is divided among weavers and woodworkers, busboys and poets, and bankers and geeks.

Some people live in regions dotted across the country where the economy has largely collapsed. Jobs are disappearing in the traditional industries, and no new sectors have risen to take their place. Hickory is just such an area. Many people also live and work in sectors and regions of the country where wages are low and growth in productivity is slow. They are employed overwhelmingly in the service sector. While many jobs are mundane and low skill (busboys), there is also a place for the arts, entertainment, and lifestyle entrepreneurs (poets). Asheville is representative of this kind of economy. Numerous jobs in education and health services combine both mundane and intrinsically rewarding tasks, and are filled by relatively well-educated people. But they are not necessarily well paid. In other regions, such as Raleigh, this large, nontraded service part of the economy coexists with technology and skill-intensive sectors that are competitive on a global basis, producing higher growth and higher wages. Places like Raleigh—or Austin or Northern Virginia—are the engines of growth for the economy as a whole.

The challenge facing each type of region—in North Carolina and the United States—is to determine which new jobs, and of which quality, will offset the losses of old jobs. Each region scrambles to find new jobs as old industries disappear. But while policymakers may dream of an economy populated by bankers and geeks, these sectors will never employ most people. Many more will be working as busboys and poets. And yet others will still be trying to make the transition up out of traditional manufacturing, epitomized by weaving and woodworking. The policy challenge is to develop a mixture of responses, adapted to the economic circumstances of each region.

Policies and Institutions in North Carolina's Prosperity

North Carolina's long-standing statewide initiatives—especially in the areas of infrastructure and education—provided a strong foundation for policymakers as they responded to the state's transforming economy.⁴ These initiatives, of course, were themselves heavily supported by a great wave of federal funding over the past half century, including for roads and higher education. Federal funding for basic research and Science, Technology, Engineering, and Mathematics (STEM) education, in particular, has been critical to the development of the large, research-intensive universities that are at the heart of those regional economies and home to bankers and geeks.

The divergent regional outcomes, however, suggest that some areas are better able to profit from the underlying policy and institutional environment. Statewide initiatives, much less federal initiatives, are not automatically adapted to regional needs.

Southeastern states, in general, and North Carolina, in particular, have grown more quickly than the rest of the country over the past fifty years, part of a fundamental shift in the United States toward the Sunbelt. But the relative strength of North Carolina's economy in recent years also depended on an earlier economic and institutional history that set the stage for postwar economic growth.⁵

The Great Depression forced a number of institutional and financial changes on North Carolina that set it apart, to its advantage, from other states. Responsibility for funding schools and roads was assumed by the state government. Three public institutions of higher education were consolidated into one system. Two new taxes—a sales tax and a personal income tax—helped pay for it all. An independently elected state treasurer also imposed a culture of conservatism, placing rigorous financial controls and reporting requirements on counties and municipalities.

As a result, North Carolina's fiscal situation is relatively favorable. Even after the recent financial crisis, North Carolina and many of its large counties and municipalities have a triple-A bond rating. State and local government employees participate in a state-run, defined-benefit retirement plan. The retirement plan is fully funded, leaving North Carolina less exposed to the same kind of pension liabilities faced by other states. (This prudence, however, does not extend to the state health plan.) The tax system, which draws heavily on income taxes instead of property taxes, generates enough revenue without overburdening businesses.

North Carolina's transportation infrastructure has been historically well funded. The state gas tax is high, allowing the state to build and maintain an extensive road system associated with a low-cost, low-density pattern of urban and suburban development. But increased fuel efficiency, combined with a reluctance to allow the gas tax to rise any further, means that money for roads will now be more limited.

Successive North Carolina governors have also made education a priority. Beginning in the 1940s and 1950s, teacher salaries were raised and various public health initiatives begun. A long line of modernizing governors continued to increase teacher salaries; by 1990 they were about 89 percent of the U.S. average, slightly ahead of South Carolina and Georgia.⁶ In the 1990s during the administration of Governor Jim Hunt, who was especially focused on challenges from the international econo-

my, North Carolina established the first statewide kindergarten program. Hunt was also an early proponent of testing in order to raise standards. School spending grew by 176 percent between 1972 and 2004, compared to an average increase nationwide of 142 percent.⁷ By some measures, these initiatives paid off. North Carolina SAT scores converged on the national average by 2006, though high school graduation rates continue to lag.⁸

Nowhere is the commitment to education more evident than in the development of the UNC and community college systems. The state ranked third nationally in appropriations per full-time public college student in 2010.⁹ The UNC system has eleven campuses across the state, including Western Carolina University in the mountains to the west of Asheville and UNC Pembroke in Robeson County, a poor, rural area in the southeast. North Carolina's network of fifty-eight community college campuses serves as a model nationally and internationally. The system has a strong track record of serving the targeted needs of individual employers—customizing curriculum and delivering it in ways that meet the needs of workers who are being hired for specific jobs. Some labor economists have reservations about investment in this kind of skill building, as opposed to workers learning more generic skills with a longer shelf life. But North Carolina views it as an economical and effective tool for recruiting and retaining business.¹⁰ In the economy of the future, training and retraining for skills designed for a specific shop floor are most likely to help businesses immediately adapt to international competition.

By the 1990s, North Carolina began offering financial incentives targeted at specific firms as part of a business recruitment battle. Interstate rivalry hit home when Alabama won a new Mercedes plant in 1993 after offering concessions exceeding \$250 million. North Carolina joined the race that same year through the establishment of the Governor's Competitive Fund and the subsequent passage of the William S. Lee Act, which provided more concessions to investments in relatively poor and rural areas.¹¹ Newer initiatives, such as the Jobs Development Investment Grants, emphasize a more discretionary approach. For big projects, state leaders have passed specific legislation authorizing generous subsidies. In 1998, for example, a bill was passed authorizing \$145 million to entice Federal Express to base its new Mid-Atlantic hub at the Piedmont Triad airport.

North Carolina also developed a distinctive set of institutions targeted toward economic development that have helped smooth adjustment to rapidly escalating trade and technology-related change. The State Board of Science and Technology, established in the 1980s, set the agenda for statewide policy on biotechnology, nanotechnology, and aviation. Around the same time, a series of Small Business and Technology Development Centers were created on all UNC campuses, part of an effort to balance industrial recruitment with small business development.

The state's UNC system, and especially its two land-grant institutions, North Carolina State University and North Carolina A&T, have made a general commitment to the state's economic development. They host colleges and departments with an applied focus on industrial engineering, transportation, power systems engineering, renewable energy, agriculture (including crop science, poultry science, and fisheries), and nonwoven textiles (including high-tech materials with nontraditional uses).

Urban areas home to traditional manufacturing have certainly struggled to replace lost jobs with new ones, either in high technology or in services. But greater diversity in their regional economies combined with the presence of educational institutions and good infrastructure have helped to ease the transition. The result has been a growing divide between urban and rural areas.¹² State leaders responded in 1999 by establishing the Golden Leaf Foundation, which contains monies from multi-

state tobacco settlements, and the North Carolina Rural Economic Development Center to specifically target rural economic development.

North Carolina faces the same financial difficulties as many other states in the wake of the recession. But the willingness by state leaders over the past several decades to spend significant sums of money on infrastructure and education left the state better able to cope with these challenges. Nevertheless, these assets were not spread evenly across the state, benefiting some regions significantly even as others were left behind.

Adjustment Policies in Practice

WEAVERS AND WOODWORKERS: GAMBLING FOR RESURRECTION

In July 2003, over four thousand workers lost their jobs at the Pillowtex textile plant in Kannapolis, a traditional manufacturing town east of Hickory. It was the largest one-day job loss in the state's history. By fall 2008, researchers from seven institutions from across North Carolina, including Duke, Chapel Hill, and NC State, had moved into two new buildings constructed on the site of the old textile mill, intended to be the heart of a new North Carolina Research Campus. This dramatic initiative, aimed at basic and applied research in plant and food science, was made possible through a partnership with Dole Foods and its former CEO David H. Murdoch.

The new research campus is quite a gamble. It requires continued support from Dole and other partners, as well as from the UNC system (\$23 million in 2010 and 2011) at a time when the system faces serious funding challenges. The city of Kannapolis and Cabarrus County issued bonds to help fund the development of the campus, eager to support such a dramatic response by state leaders. But with only 22.5 percent of the adult population of Cabarrus County having a four-year college degree, many local citizens will never find work on the campus.¹³ While there are economic spillovers from such an enterprise, it remains a long-term project with limited local benefits in the short term.

Big plays of this kind—a large, complex investment in buildings and programs—are inherently risky and demand patience. It is possible to spend a great deal of money over many years and not see any significant return on investment. The Global TransPark project, near Kinston in the rural east of the state, is just such a case. First set in motion in 1986 under the leadership of Governor Jim Martin, it was designed to be a transportation and logistics hub in the heart of one of the most distressed areas of the state. Kinston is located in one of the few counties in North Carolina that experienced absolute population loss in the past decade, a falloff associated with the decline of tobacco farming, another of North Carolina's traditional industries.

The central feature of the project is a full-size commercial runway large enough to land a 747. The theory was that this would be the heart of a multimodal transportation hub ideal for a world of just-in-time production networks. But it lacked a rail or four-lane highway connection and was a constant drain on the state budget for more than twenty years. The giant, unused landing strip in the midst of tobacco and cornfields attracted much criticism. Money was obtained from a variety of creative sources, including the escheats fund—a pool of unclaimed funds held by the state treasurer that at one time amounted to almost \$700 million.

And yet this facility is now home to a significant aircraft production facility operated by Spirit Aero Systems. It is where the Airbus A350's central fuselage is made (using woven carbon fibers, an area of research at NC State's College of Textiles) and where production will also soon start for the Gulfstream 280's wings. North Carolina committed a lot of money when it finally found what it saw as a dream tenant for the facility. It made available grants totaling \$125 million, subject to performance criteria over several years. The Golden Leaf Foundation donated \$100 million for the con-

struction of new facilities, including a branch of Lenoir Community College also to be located at the airport.

It is too soon to say that the TransPark is a success. It will likely take many more years to build a sustainable cluster. Many governors would give a great deal for 1,100 high-technology manufacturing jobs—with pay far above the average for the area—in the aerospace industry. The price tag, however, is many hundreds of thousands of dollars per job spent over many years.

Hickory itself has also had some dramatic new recent investments. Google and Apple both chose the area for the establishment of new server farms. Attracted by easy access to water, low-cost land, and low-cost energy, these two technology giants have proposed billions of dollars of investment over the next decade. The state and local governments went to great lengths to make the deal work; the legislature exempted their electricity use from sales tax and granted Google a complete exemption from the property tax.¹⁴ These projects are not as risky as an empty airfield, but the employment prospects are negligible. Construction will employ several hundred people over many years. The server farms themselves will employ almost nobody.

Why has there not been more job-rich inward investment into the Hickory region? Notwithstanding a long history of manufacturing, its workforce has limited skill levels well below the level needed for advanced manufacturing. And while there is a community college—Catawba Valley Community College—available for specialized training, there is no engineering program nearby.

In the cases of TransPark and Google, with limited alternatives, public leaders were willing to accept risk in response to loss.¹⁵ It is hardly feasible to mobilize these kinds of resources for every community facing economic decline. It may be politically easier than doing nothing, but such projects are intrinsically speculative—and therefore not comfortable decisions for governments to make.

One way to distinguish the economic development projects is by the generic character of the investment. The research campus at Kannapolis, an educational initiative tied to research and development, may support several possible economic trajectories, but it will make use of only a limited number of highly skilled employees. The TransPark facility, a specific asset with a limited set of alternative uses, offers the prospect of more jobs for a broader number of people, but it is a high-risk initiative. Server farms, capital-intensive projects that rely entirely on economic spillovers for their impact, may be low risk, but they have only a limited impact on employment.

All these responses have in common a single-shot characteristic—educational and infrastructure resources (combined with tax concessions) bet on a single large project. It reflects the lack of diversity in the underlying economy and institutions. There are fewer options beyond the traditional economic base and no large university or medical center. For Hickory, as for similar regions across the United States, there are no realistic low-risk and high-impact policy options.

BUSBOYS AND POETS: SUPER-SIZED SERVICES

North Carolina is home to areas of outstanding natural beauty. Visitors and retirees come to the mountains and beaches in large numbers. They bid up property values, but mostly require low-wage service sector jobs to meet their needs. This makes the financial circumstances of the busboys and poets who work in this sector and in these regions somewhat precarious.

But the economic foundations of these areas tend to be more diverse, characterized by a range of medical, educational, recreational, and other services. Any visitor to Asheville will be left with the

impression of a vigorous and dynamic economy that is a magnet for younger, relatively well-educated workers. As a result, initiatives in response to the loss of manufacturing—which had a significant impact in what were historically low-wage areas—have tended to be more diverse, drawing on a range of medical, educational, and other institutions.

Mission St. Joseph’s health system in Asheville has a national reputation and is a powerful inducement to retirees looking to move to the area. An early adopter of best practices in evidence-based care, it is at the heart of a regional health information technology network. Asheville is also home to Project Access, through which uninsured or underinsured patients can get specialist care. These successes owe less to state initiatives and more to local control of the hospital that is seen as a crucial asset in the competition for visitors and retirees.

Beyond the hospital, Asheville has cultivated other assets. It encouraged the careful redevelopment of its well-preserved downtown as a historic district. Local initiatives have celebrated and promoted the arts and traditional crafts of the Appalachian region.¹⁶ Other initiatives have required state and federal resources. For example, the extraordinary biodiversity of the mountains is promoted through the North Carolina Arboretum, which claims an explicit economic development mission. An affiliate of the UNC system, it received more than \$15 million from bonds and direct appropriations over several years for new construction, in addition to operating funds. Asheville is also the repository for weather data held by the National Oceanic and Atmospheric Administration.

These assets are connected in a variety of ways to UNC Asheville. The campus serves as a platform for specialized programs in health care, the arts, and environmental science. The economic development goal—embodied in Asheville’s Hub project—is to piece together a series of high-value niches around these assets that will increase opportunities and wages in a busboys and poets economy.¹⁷ If it cannot be done in Asheville, it will prove more difficult in other regions of the country.

Similar challenges exist at the other end of the state. The establishment of a medical school as part of East Carolina University, a significant initiative in the eastern part of the state, has been an acknowledged success. The result of a titanic political struggle, it has significantly increased access to health care in a poor, rural region, and has given the Pitt County area a long-term economic boost. The presence or absence of an academic medical center is a critical factor for providing an economic base that limits the impact of job loss.

But a long-term development strategy that relies on health care comes with risks, too. In the past two decades, health care has been a reliable and stable source of employment growth. Areas like Asheville that are home to a cluster of health services have benefited accordingly. But health care may not continue to be the economic boon it has been in the past. While some health care professionals are highly paid, they are only part of a larger army of lower-paid allied health professionals and other service workers. Productivity growth in this sector is glacial, and a major customer is the government itself. Without increases in productivity, health care wages will plateau and the expense on the public purse will grow unsustainable.

Nevertheless, building on and around an “eds and meds” economy is the primary lesson from Asheville. Any visitor to downtown Asheville familiar with Richard Florida’s concept of the “creative class” would recognize it all around.¹⁸ If a range of local assets can be mobilized and a service economy developed that is diverse and rewarding, the result is employment stability and a high quality of life—even if wage levels are modest compared to other urban areas. The longer-term challenge for this kind of economy, faced across the country, is raising productivity in the core sectors of health and education to generate even modest growth in real wages in the future.

BANKERS AND GEEKS: TALENT AND TECHNOLOGY

In some respects the explanation for the economic success of the Research Triangle can be reduced to the fortuitous shared location of three research universities—Duke, UNC Chapel Hill, and NC State—close to the state capital.¹⁹ If human capital is the critical feedstock of the future economy, and if policy matters, then a higher education cluster of this kind should be the ideal arrangement.

In the 1950s, the graduates of these three institutions often left the state. Today they stay, and are joined by other highly educated young adults from across the country. During the Great Recession, in-migration to the Raleigh metro area by educated adults remained strong.²⁰ The difference is the diverse, technology-intensive clusters that have grown up in the region, sparked by the Research Triangle Park (RTP) that was set up in the late 1950s.

The Research Triangle is a nonprofit foundation, supported by private and public funds, which controlled a large patch of land between Raleigh, Durham, and Chapel Hill. Only in the mid-1960s, with the location of a National Institutes of Health (NIH) facility and the recruitment of an IBM plant, did the park begin to realize its success.²¹ Today, it is home to one hundred seventy companies employing thirty-two thousand workers, among them Cisco Systems and Glaxo Smith Kline. It also includes a large Environmental Protection Agency (EPA) facility and one of the country's largest nonprofit contract research entities, the Research Triangle Institute (RTI).

The area of statistics illustrates how the RTP builds on the intellectual capital provided by universities. All three universities, and especially NC State, have nationally recognized statistics scholars. This is one reason why the Centers for Disease Control established the Center for Health Statistics in the RTP and why the three institutions established the National Institute for Statistical Sciences. The best-known example of the region's strength in statistics dates back to the founding of the SAS Institute in the 1970s. The brainchild of an NC State faculty member, it is now the largest privately held software company in the world focused on analytics and data mining. In a world swamped with data, this regional competitive advantage will only grow in value.

State policy assisted many of these developments. Throughout his four terms, Governor Hunt launched initiatives and built institutions designed to capitalize on the success of the Research Triangle Park. The establishment with state funds of the North Carolina Biotechnology Center (NCBC) in the early 1980s drew on an existing strength—the presence of two academic medical research centers. The NCBC supported the growth of the biotech cluster by coordinating university funding, improving the regulatory environment, and supporting start-ups with seed money and business services. By the beginning of the twenty-first century, it was clear that workforce issues could be a constraint on this sector. In response, the Golden Leaf Foundation invested more than \$60 million in biotech training facilities at NC State and NC Central University. The Research Triangle is now one of the leading biotech clusters in the world.

These efforts also reveal a geographic imbalance in state policies' impact. All political leaders in North Carolina would insist that the biotech initiative was a statewide initiative. To that end, \$6 million in money for biotech training was given to the community colleges. The North Carolina Research Campus at Kannapolis, among other UNC institutions, also has biotech training facilities. But the overwhelming benefits of this success have been felt in the Triangle. It is there that the major firms are located, and it is there that an entrepreneurial ecosystem has developed to support numerous start-ups. Initiatives to grow technology-intensive, highly competitive sectors succeed where there is already technology and talent.

Another initiative shows the virtues of policy flexibility. The Microelectronics Center of North Carolina (MCNC), established at the same time as the NCBC, focuses on coordinating the state's high-speed information technology backbone. Sale of a spin-off technology allowed the institution to split, one part concentrating on technology infrastructure and the other (ultimately taken over by RTI) providing venture funding to early-stage technology companies. The IT backbone supported by MCNC was also able to provide grid computing to the biotech community.

Institutions and education were combined with a pronounced appetite for physical projects. In the mid-1980s, NC State had over eight hundred acres deeded to it from the state. The land abutted the campus in the heart of Raleigh and was planned to become a university-industry science park. Once again, the project has taken a long time to develop. Hundreds of millions of dollars in state funds have been spent on a series of engineering buildings and, lately, a high-technology library. It is now home to more than two dozen corporate partners and is recognized by many as one of the most successful university science parks in development. Likewise, UNC Chapel Hill has benefited from substantial state investments in its research hospital and the health sciences. In 2008, the legislature authorized over \$140 million for the Lineberger Cancer Center in addition to the millions of dollars in annual state support for its research programs.

Taken together, the pattern is one in which favorable underlying circumstances—the location of major universities—were the basis for many subsequent investments and initiatives. In this sense, the success of the Triangle is a “winner takes more” story. The pattern of spending extends beyond universities to include other cultural amenities in the region. The state provided \$54 million for state-of-the-art educational and research facilities at Raleigh's North Carolina Museum of Natural History and \$67 million for a new wing at Raleigh's North Carolina Museum of Art.

Compared to Asheville, and especially Hickory, Raleigh has a deep-enough pool of technology and talent that many niches have taken root in a variety of industries beyond information technology and biotech (e.g., financial services, computer games, smart grid and power systems engineering, and open-source software). As a result, there are spillovers. The smart grid needs software. Biotech needs cloud computing and high-level data analysis. And they all need a reliable supply of talent.

A dynamic, technology-intensive economy carries along with it many of the sectors—health services, education, recreation—that flourish in Asheville. In Raleigh, the bankers and geeks live alongside the busboys and poets. Because labor markets in the service sector tend to be determined by local forces, it is better to be a busboy in Raleigh than anywhere else in the state. This is why inequality associated with the decline in manufacturing has a pronounced regional characteristic. It is communities rather than individuals that are being driven apart by globalization.

What Is to Be Learned?

Many regions in the United States do not fall conveniently into the economy types described above. For every Detroit or Buffalo, where industrial decline seems to be impossible to halt, there is a Rochester or an Akron, where painful economic restructuring has yielded new economic possibilities, in medical technology and polymers, respectively. These possibilities offer a tightrope walk out of the worst that change can bring. Two manufacturing towns in the heart of North Carolina—Winston-Salem and Greensboro—are also examples of such economies, racing to meet the threat of decline with new initiatives in such areas as biomedical engineering, aircraft manufacturing, and logistics.

What is required is a toolbox for action that meets the needs of these fragile economies—regions struggling to make the most of their particular mix of assets following the decline of manufacturing employment. Asheville’s natural advantages and Raleigh’s unparalleled cluster of research institutions are not available everywhere. The best future for most regions is to achieve some mix of service-sector growth combined with a few internationally competitive businesses. But what actions are needed from policymakers—federal, state, or local—to sustain any region as it pursues its own specific, upward path toward a stable and diverse economic future?

BLOCK AND TACKLE

Economic growth and prosperity are a question of fundamentals. In North Carolina, educational institutions and infrastructure are the foundation on which other policy initiatives rest. And they cost money. Unfortunately, federal resources, which have provided an indispensable base for funding in these areas since the 1940s, are certain to be constrained for the foreseeable future, placing a premium on innovative ways to finance any such initiatives. Creative financing has already been put to use in North Carolina, but a wider portfolio of options will have to be considered by all policymakers at every level in the future.

- State funding of education and transportation is also indispensable, especially in the K-12 area. These funds are being crowded out by other claims, for example for prisons and Medicaid payments. Nonetheless, they should remain a priority of state government.
- States should adopt a variety of financing mechanisms that share the burden of paying for critical investments through fees or dedicated taxes.
- Local governments need to take fate into their own hands. Collaboration around existing assets will allow communities to make the most of what money is available from state and federal sources.

BE PATIENT AND FLEXIBLE

It should be no surprise that place-based initiatives designed to foster growth through large, long-term investments are slow to prosper. When they involve public partners, such projects invariably attract scrutiny and criticism. Generic investments with multiple uses may find it easier to secure champions and stakeholder support.

- State and local policymakers should pursue open-ended initiatives. The Research Triangle was not designed to develop a biotech cluster. It was imagined, correctly, that pooling talent would yield something big, but no one predicted its ultimate character. Flexibility in implementing a vision is crucial.
- Initiatives need sustained political support. Manufacturing was widely distributed in North Carolina in many rural areas. Leaders shared a long-term commitment to bridging the urban-rural divide, which has allowed initiatives to endure in the face of slow progress.
- Success demands patience. Economies grow slowly and payoffs come slowly. The powerful and appropriate impulse to keep score on public spending should be weighed against the need for investments of an uncertain duration with hard-to-measure payoffs.
- Failure should be accepted as a possibility.

BUILD INSTITUTIONS

North Carolina is home to a wide range of institutions—regional partnerships, technology centers, and boards—that are more or less focused on economic development. These represent the intellectual and political infrastructure that underpins new policies and practices. Growth in Asheville and Raleigh is associated with local and regional commitments by leaders.

- Institutions help set the agenda and coordinate action.
- Regional and local institutions know regional and local assets, adapting action to meet local conditions.
- Institutions lower the discount on the future, allowing for long-term commitment to projects.

BACK WINNERS

North Carolina's experience suggests that the risk is lower when initiatives build on substantial existing assets. Greenfield gambles are less likely to succeed, even if they are more likely to be supported by strong political claims. If it is true that any effective response to economic adjustment requires money, it must also be true that not all initiatives are equally worth pursuing.

- Federal spending, through its support for research and for higher education in the STEM fields, plays a critical role in sustaining the technology-intensive, internationally competitive part of the economy.
- The nontraded service sector, of necessity, is shaped by local initiatives. Federal and state support is best mobilized by local institutions and local leaders around their own needs. Federal workforce funding, for example, should be administered with significant local discretion.

- The measure of economic success varies across regions. There are few regions like the Research Triangle. Inequality across communities is here to stay.

Americans already live in an economy divided between bankers and geeks and busboys and poets. This is the heart of the challenge facing policymakers. The power and wealth of the United States depends on its finding the resources to fuel the work of bankers and geeks while sustaining the lives of busboys and poets. Nor will manufacturing in its more traditional forms completely disappear—high-design, niche products will always find a market, as European luxury goods producers have long understood. But the economy as a whole will never rest on that kind of activity as it once rested on mass-market manufacturing.

Endnotes

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