

There's an Antidote to America's Long Economic Malaise: College Towns

Many places that bounced back from losing jobs to China are home to a major university; 3-D printers in Auburn, Ala.

By Bob Davis | Photos by Bob Miller for The Wall Street Journal

OPELIKA, Ala.—Lee County, Ala., lost 7,000 jobs in industries from textiles to tires to fitness equipment when Chinese competition invaded America. Vacant storefronts dotted downtown Opelika, the county seat, and disability claims soared as older workers with limited skills struggled to find new jobs.

Instead of merely surviving, though, Lee County is now thriving. Its unemployment rate of 4.7% in October was slightly lower than for the U.S. as a whole. Since 2001, the east-central Alabama county has added 14,000 jobs, five times the growth rate in the rest of the country.

Why has Lee County been so resilient? One of the biggest reasons is that it is home to a major college town.

During the manufacturing downturn that began in the late 1990s, Auburn University in Auburn, Ala., provided a steady source of employment, improved the nimbleness of the local workforce and helped attract new businesses to replace those that fled when times got tough.

In 2014, General Electric Co. chose its new plant in Auburn as the company's first to use 3-D printing to make high-volume products. Thirty printers that look like a row of commercial pizza ovens build thousands of jet-engine nozzles a year, tended by a few technicians in lab coats.

About 190 people work in the factory, which also produces turbine blades using conventional manufacturing methods, and GE expects the workforce to increase to 300 employees. Starting pay is about \$16 an hour, compared with about \$12 an hour for many manufacturing jobs elsewhere in the county.

Ricardo Acevedo, the plant manager, says GE picked Auburn because the company could count on an educated workforce and work with the university on research projects. "We need to understand the properties" of the metallic powder used in 3-D printing to improve product consistency, he says.

The political backlash that led to Donald Trump's presidential triumph this year was powered partly by anger that global trade and technological innovation didn't deliver prosperity or social stability. Many college towns have been able to

withstand
those
economic
challenges,
research





Ricardo Acevedo, General Electric's plant manager in Auburn, Ala. Total employment at the plant is expected to climb to 300 from the current 190.

shows.

A nationwide study by the Brookings Institution for The Wall Street Journal

found 16 geographic areas where overall job growth was strong, even though manufacturing employment fell more sharply in those places from 2000 to 2014 than in the U.S. as a whole.

Among the 16 surprisingly resilient areas, half are home to a major university, including Athens, Ga., Charlotte, N.C., Charlottesville, Va., Corvallis, Ore., and Auburn, according to Brookings, a think tank in Washington.

Mr. Trump won the presidential vote in about 85% of the counties in areas that Brookings identified as resilient, in line with his percentage nationwide.

“Better educated places with colleges tend to be more productive and more able to shift out of declining industries into growing ones,” says Mark Muro, a Brookings urban specialist. “Ultimately, cities survive by continually adapting their economies to new technologies, and colleges are central to that.”

Massachusetts Institute of Technology economist John Van Reenen concluded that doubling the number of universities in 78 countries from 1950 to 2010 produced a 4% increase in gross domestic product per person in regions where the new universities are located.

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Universities boost more than just highly educated people, says Enrico Moretti, an economics professor at the University of California at Berkeley. The incomes of high-school dropouts in college towns increase by a bigger percentage than those of college graduates over time because demand rises sharply for restaurant workers, construction crews and other less-skilled jobs, he says.

Tapping the resources of nearby colleges and universities helps communities cope with economic turmoil. The U.S. has about 4,700 two- and four-year colleges, giving almost everywhere a potential anchor for economic development.

In places where colleges are few in number, small in stature or struggling financially, bigger universities could build satellite campuses or use technology to expand their reach, according to economists who have studied the economic power of colleges.

At Auburn University, state extension agents, whose job is to spread university research throughout the state, train farmers to use Global Positioning Systems technology to monitor their fields, help laid-off workers sharpen their résumés and teach them job-interview skills.

Places where academics work closely with local employers and development officials can especially benefit. “Universities produce knowledge, and if they have professors who are into patenting and research, it’s like having a ready base of entrepreneurs in the area,” says Harvard University economist Edward Glaeser.

The presence of a university isn’t always enough to produce an economic revival. The agricultural county of Merced, Calif., expected a boom when the University of California opened a campus there in 2005, says University of Calgary economist Alexander Whalley, who worked in Merced for 10 years.

Merced County, located between San Jose and Fresno in the San Joaquin Valley, is still struggling with a poorly educated workforce. Its unemployment rate in October was 8.6%, compared with 4.9% nationwide. The U.S. unemployment rate fell to 4.6% in November, but county-by-county data haven’t been released yet.

The Binghamton, N.Y., area hasn’t recovered from a big decline in electronics manufacturing despite being the home of Binghamton University. Officials say the region now has a plan to work with colleges and universities to improve workforce skills and attract firms in advanced manufacturing and agriculture.



Auburn University students in a manufacturing laboratory. At bottom right, Conyers Coupland shows his professor, Lewis Payton, an Auburn logo printed out of solid metal.

“You need reasons for companies to stay in upstate New York,” says Binghamton University’s president, Harvey Stenger. “We are trying to provide the glue to help them stick around.”

David Autor, an MIT economist who has studied trade, labor markets and technological change, along with two colleagues calculated which areas of the U.S. were most affected by China’s rise, based on the increase in Chinese imports per worker in each area from 1990 to 2007.

At the very top of the list is Kentucky’s Calloway County, with a population of about 38,000 in the rolling hills of the western part of the state. In 2001, toy maker Mattel Inc. announced it was moving production to Mexico to better compete with China. The only other major manufacturer in Calloway County, lawn-mower engine maker Briggs & Stratton Corp., was rapidly losing market share to Chinese companies by about 2008.

Martha Lamb, a diner owner in Murray, Ky., the county seat and its largest city, says she was so upset by Mattel’s move that she had harsh words for executives who wanted her to cater an event: “Go call a Mexican restaurant ”

After hearing the news of Mattel's move, Calloway County's chief executive, Larry Elkins, says he "walked around my desk a few times and said, 'Oh, shit.'" Mattel declined to comment. The county's unemployment rate hit 9.3% in 2003.

It is now below 4%, and the total number of jobs in Calloway County is up 12% since Mattel left in 2002. Murray is considered such an economic hub that half a dozen banks have opened branches in the city of 18,000 during the past four years.

Economic-development officials say Murray State University, known for its business and engineering departments, was crucial to the recovery.

Within a year of Mattel's exit announcement, window maker Pella Corp. moved into the empty plant. The closely held company got economic incentives but says it also looks for college towns that feel similar to Pella, Iowa, its headquarters and the home of Central College, a small liberal-arts college.

Brad Cary, Pella's plant manager in Murray, says he recruits Murray State graduates, counts on Murray State's influence to boost standards at local public schools, and turns to the university for help with software and manufacturing issues.

Pella has 900 employees in Murray, about the same number as Mattel did. The window maker is less vulnerable to Chinese competition than other industries are because Pella customizes windows for individual homes. "It's very challenging to do that overseas," says Mr. Cary.

Briggs & Stratton used professors and graduate students from Murray State and Auburn, which is near another Briggs plant, when it redesigned its lowest-cost engine to compete better with China.

An Auburn University engineering professor in Alabama worked on the precision measurements necessary to reformulate the engine's aluminum alloy. Murray State professors helped the factory in Kentucky figure out how to manufacture the new design. Since 2010, employment at the Briggs & Stratton plant in Murray has held steady at about 900 employees, according to the company.

Murray State graduate Jordan Love got an internship at Pella, where he redesigned the software controlling vinyl saws. That turned into a \$61,000-a-year job, good money in a county where median household income is about \$40,000.



Mr. Love, 23 years old, was the first in his family to graduate from college. His hometown of Madisonville, Ky., 90 miles northeast of Murray, was reeling from plant closures while he was growing up. He and his friends



A burned-down textile factory and homes that were built for mill workers in Opelika, Ala. The city has bounced back from job losses caused by Chinese competition.

figured they would have to move away to get jobs.

“There was a sense of blue-

collar despair in Madisonville,” he says. “In Murray, you get a different vibe” because of Murray State.

Mark Manning, president of Murray-Calloway Economic Development Corp., says it is important for the university and town to woo companies together.

That can be easier at land-grant universities such as Auburn. Each state has at least one land-grant institution, initially funded by a grant of federal land or a payout in a program started during Abraham Lincoln’s presidency.

Land-grant universities were required to focus on agriculture and engineering—which turned into a broad applied research mission—and to promote their work statewide. Such institutions became a kind of natural experiment.

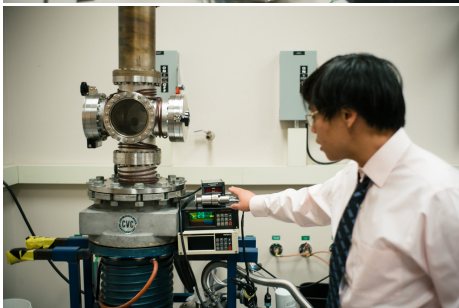
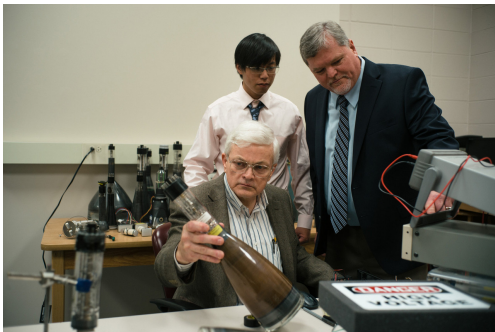
The result was that many land-grant counties became economic stars over time, even though those counties differed little from others nearby.

Between the late 1860s and 1940, manufacturing productivity in counties with land-grant universities rose 57% more than in similar counties without them, calculates Shimeng Liu, an economist at Jinan University in China who studied land-grant colleges when he was a researcher in the U.S.

Since 2000, the median unemployment rate in counties with flagship land-grant universities was 1.2 percentage points lower on average than in other counties, according to an analysis by the Journal.

In Alabama, Lee County economic-development officials have used Auburn to attract higher-tech companies to replace companies that shut down.

Phillip Dunlap, Auburn city’s director of economic development, says he can even be picky. He looks for higher-paying companies that employ 100 to 150 workers to make sure the area doesn’t get too dependent on one company.



Auburn mechanical engineer Tony Overfelt, top, and city economic-development chief Phillip Dunlap, bottom right, promoted Lee County to General Electric officials as a 3-D printing hub.

At a community meeting at a Presbyterian church, Mr. Dunlap promised “never to recruit an industry that had smokestacks taller than the one on campus” at a small power plant, he says. He has discouraged tire companies, distributors and low-end assembly

coming to the city of Auburn.

Auburn University and the city are focusing on 3-D printing as an industry of the future, which will need substantial engineering research to become a manufacturing staple. Three-dimensional printers now are generally used to make models and prototypes.

The university bought the same 3-D printer that GE uses at its plant in Lee County so that Auburn students can learn to use the machine. Auburn also helps companies in the area that can't afford 3-D printers make prototypes.



A technician at a General Electric plant in Auburn, Ala., monitors a 3-D printer while it builds a jet-engine nozzle. GE picked Auburn for the printers partly because of access to Auburn University for research projects. PHOTO: BOB MILLER FOR THE WALL STREET JOURNAL

Barton Prorok, a materials-engineering professor at Auburn, is trying to build what he calls a “poor man’s” 3-D printer using vacuum tubes from old televisions and oscillators, rather than a laser. His favorites are 1930s German-made tubes, which he finds on eBay.

The new technology “will bring manufacturing back to this country,” says Tony Overfelt, an Auburn mechanical engineer who was on the team that promoted Lee County to GE officials. “These plants will operate day or night, lights out,” he says.

Briggs & Stratton has already said it is interested in the college’s 3-D printing research for modeling and to produce complicated engine parts.

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By **BOB DAVIS** | PHOTOS BY BOB MILLER FOR THE WALL STREET JOURNAL

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