

Global Economics

Did That Robot Take My Job?

- ▶ Companies have been buying technology instead of hiring, and Okun's Law is broken
- ▶ "Huge advances have allowed businesses to do more with less"

The U.S. produces almost one-quarter more goods and services today than it did in 1999, while using almost precisely the same number of workers. It's as if \$2.5 trillion worth of stuff—the equivalent of the entire U.S. economy circa 1958—materialized out of thin air.

Although businesses haven't added many people, they've certainly bulked up on machines. Spending on equipment and software hit an all-time high in the third quarter of 2011. "Huge advances in technology have allowed businesses to do more with less," vaporizing jobs for everyone from steelworkers to travel agents, President Barack Obama warned in December.

So are robots getting all the good jobs? This year may provide the answer as the economy gathers steam. Most economists, cheered by 540,000 hires since Labor Day, say technology inevitably destroys some jobs even as it ultimately creates new ones. But with more than 20 million Americans still jobless or underemployed, others worry that

something fundamental has changed. "What's different now is the speed and scale of what's happening," says Erik Brynjolfsson, director of the MIT Center for Digital Business. Brynjolfsson and Andrew McAfee, co-authors of the recently published book *Race Against the Machine*, argue that the economy is in the early stages of a "Great Restructuring" that is hollowing out the labor market and exacerbating inequality.

Nonsense, say economists including James D. Hamilton of the University of California at San Diego. There's nothing new about machines replacing people. In 1900, 41 percent of Americans worked on farms. Today, thanks to labor-saving tractors and combines, the figure is less than 2 percent. Yet ex-farm workers

found new jobs. And as manufacturing grew leaner in recent decades, factory workers—or their children—migrated to finance, health care, computers, and other growing industries.

"In 2005 the average U.S. worker could produce what would have required two people to do in 1970, what would have required four people in 1940, and would have required six people in 1910," Hamilton writes in an e-mail. "The result of this technological progress was not higher unemployment but instead rising real wages. The evidence from the last two centuries is unambiguous—productivity gains lead to more wealth, not poverty."

Americans have fretted about a dystopian future since the first industrial robot (called "Unimate") started work at a **General Motors** plant in Ewing Township, N.J., in 1961. The worries grew more acute last year as the job-poor recovery ground on. Chris Matthews, host of MSNBC's *Hardball*, recently ruminated on air about

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ubiquitous automated kiosks as well as the replacement of "seven or eight cameramen" on his program with machines. "Everywhere we go, it's robots," he said.

Google last year unveiled driverless cars. **Lionbridge Technologies** is taking orders for an automated translation service. Medical device maker **Boston Scientific** is automating its Quincy (Mass.) distribution center, the company's largest, with robots made by **Kiva Systems** of North Reading, Mass.

Technology is not just revolutionizing the assembly line. Paralegals can't match software in accurately searching thousands of documents for specific words or patterns. New software apps easily best journeyman sportswriters at penning routine game wrap-ups. "The era we're in is one in which the scope of tasks that can be automated is increasing rapidly, and in areas where we used to think those were our best skills, things that require thinking," says David Autor, a labor economist at Massachusetts Institute of Technology.

As digital technology spreads, the classic relationship between rising output and rising employment—known as Okun's Law—now appears to be broken. If the law, which postulates that every 3 percent gain in output should reduce the jobless rate by a percentage point, still applied, then today's nearly 9 percent rate would be about 1 percent.

Crowded unemployment lines, however, aren't necessarily a sign that machines are winning a zero-sum fight with humans. The surge of spending on automation and IT systems, for example, is one of the economy's strongest props. In the third quarter, non-residential investment, which includes labor-saving machinery, contributed

1.41 percentage points to gross domestic product growth, second only to consumer spending. Lincoln Electric Holdings, a maker of robotic welding gear, reported \$55.5 million in third-quarter profits, up 71 percent from the same period in 2010.

Businesses are spending more on technology now because they spent so little during the recession. Yet total capital expenditures are still barely running ahead of replacement costs. "Most of the investment we're seeing is simply replacing worn-out stuff," says economist Paul Ashworth of Capital Economics.

So if machines aren't responsible for the dearth of jobs, what is? Simple: lack of demand. Industry is using less of its productive capacity today than it did at the low point of the 1990-91 recession, according to the Federal Reserve. "We need a new source of demand," says MIT's Autor. "If people aren't buying stuff, then no one's hiring workers."

The prosperous 1990s revealed the power of demand to simultaneously boost employment and spending on new equipment and software in the late 1990s even more than today, yet the unemployment rate averaged 4.4 percent, notes economist Dean Baker of the Center for Economic & Policy Research in Washington, D.C. From the first quarter of 1997 through the end of 2000, even as productivity increased 14 percent, demand for goods and services was so great that the private sector created more than 9 million jobs.

One thing that's different now: Instead of lifting all boats, as it once did, technology is sorting workers into winners and losers. Over the past three decades job growth has been fastest among high- and low-skill jobs, while mid-skill occupations atrophied, according to economists Jaison Abel and Richard Deitz of the Federal Reserve Bank of New York. Although the economy created nearly 50 million new non-farm positions in that period, technology cut the ranks of some workforce mainstays, such as machine operators, by more than half.

Flat-lining living standards and a rich-man, poor-man job market add up to a scary new era. Despite their concerns, Brynjolfsson and McAfee remain "digital optimists." Eventually, they say,

revolutionary technologies will spawn unimagined new businesses and jobs. There's certainly room for them. By the Congressional Budget Office's reckoning, total output in the third quarter was 5 percent below potential. That amounts to almost \$800 billion of missing demand—enough to occupy both man and machine. —David J. Lynch

The bottom line Although machines may appear to get all the good jobs, there's nothing wrong with the labor market that resurgent demand wouldn't fix.

Matéria

GDP Growth vs. Job Creation

