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Jobs, Productivity and the Great Decoupling

By ERIK BRYNJOLFSSON and ANDREW McAFEE
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A WONDERFUL ride has come to an end. For several decades after World War II the economic statistics we care most about all rose together here in America as if they were tightly coupled. G.D.P. grew, and so did productivity — our ability to get more output from each worker. At the same time, we created millions of jobs, and many of these were the kinds of jobs that allowed the average American worker, who didn't (and still doesn't) have a college degree, to enjoy a high and rising standard of living.

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Productivity growth slowed in the 1970s but revved up again in the 1990s and has stayed strong most years since. But as shown by the accompanying graph, which was first drawn by the economist Jared Bernstein, productivity growth and employment growth started to become decoupled from each other at the end of that decade. Bernstein calls the gap that's opened up "the jaws of the snake." They show no signs of closing.

We are creating jobs, but not enough of them. The employment-to-population ratio, or percentage of working-age people that have work, dropped over 5 points during the Great Recession, and has improved only half a point in the three and a half years since it ended [pdf].

As the jaws of the snake opened, wages suffered even more than job growth. Adj inflation, the average U.S. household now has lower income than it did in 1997. ' a share of G.D.P. are now at an all-time low, even as corporate profits are at an high. The implicit bargain that gave workers a steady share of the productivity gains has unraveled.

What's going on? Why have job volumes and wages become decoupled from the rest of the train of economic progress? There are several explanations, including tax and policy changes and the effects of globalization and off-shoring. We agree that these matter but want to stress another driver of the "Great Decoupling" — the changing nature of technological progress.

As digital devices like computers and robots get more capable thanks to Moore's Law (the proposition that the number of transistors on a semiconductor can be inexpensively doubled about every two years), they can do more of the work that people used to do. Digital labor, in short, substitutes for human labor. This happens first with more routine tasks, which is a big part of the reason why less-educated workers have seen their wages fall the most as we moved deeper into the computer age.

As we move ahead the Great Decoupling will only accelerate, for two reasons. First, computers will keep getting cheaper over time. Digital labor will become cheaper than human labor not only in the United States and other rich countries, but also in places like China and India. Off-shoring is only a way station on the road to automation.

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Second, technologies are going to continue to become more powerful, and to acquire more advanced skills and abilities. They can already drive cars, understand and produce natural human speech, write clean prose, and beat the best human Jeopardy! players. Digital progress has surprised a lot of people, and we ain't seen nothing yet. Brawny computers, brainy programmers, and big data are a potent combination, and they're nowhere near finished. The implications of their work for the labor force are nicely summarized by the venture capitalist Marc Andreessen, who says: "The spread of computers and the Internet will put jobs in two categories: People who tell computers what to do, and people who are told by computers what to do." Only one of these two job categories will be well paid.

The Great Decoupling is not going to reverse course, for the simple reason that advances in digital technologies are not about to stop. In fact, we're convinced that they are accelerating. And this should be great news for society. Digital progress lowers prices, improves quality, and brings us into a world where abundance becomes the norm.

But there is no economic law that says digital progress will benefit everyone evenly. As technology races ahead it can leave a lot of workers behind. In the short run we can improve their prospects greatly by investing in infrastructure, reforming education at all levels and encouraging entrepreneurs to invent the new products, services and industries that will create jobs.

While we're doing this, however, we also need to start preparing for a technology-fueled economy that's ever-more productive, but that just might not need a great deal of human labor. Designing a healthy society to go along with such an economy will be the great challenge, and the great opportunity, of the next generation.

We have to acknowledge that the old ride of tightly coupled statistics has ended, and start thinking about what we want the new ride to look like.

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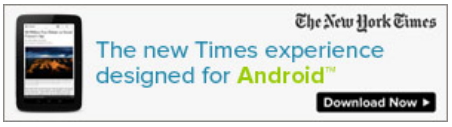

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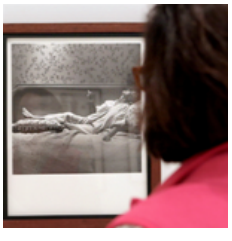

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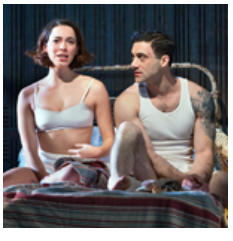

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