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Freaks, Geeks, and GDP

Why hasn't the Internet helped the American economy grow as much as economists thought it would?

By Annie Lowrey

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If you have attended any economists' cocktail parties in the past month or so—lucky you!—then you have probably heard chatter about Tyler Cowen's e-book, [The Great Stagnation](#). The book seeks to explain why in the United States median wages have grown only slowly since the 1970s and have actually declined in the past decade. Cowen points to an innovation problem: Through the 1970s, the country had plenty of "low-hanging fruit" to juice GDP growth. In the past 40 years, coming up with whiz-bang, life-changing innovations—penicillin, free universal kindergarten, toilets, planes, cars—has proved harder, pulling down growth rates across the industrialized world.

But wait! you might say. In the 1970s, American businesses started pumping out amazing, life-changing computing technologies. We got graphing calculators, data-processing systems, modern finance, GPS, silicon chips, ATMs, cell phones, and a host of other innovations. Has the Internet, the most revolutionary communications technology advance since Gutenberg rolled out the printing press, done nothing for GDP growth? The answer, economists broadly agree, is: Sorry, but no—at least, not nearly as much as you would expect.

A quarter century ago, with new technologies starting to saturate American homes and businesses, economists looked around and expected to find computer-fueled growth everywhere. But signs of increased productivity or bolstered growth were few and far between. Sure, computers and the Web transformed thousands of businesses and hundreds of industries. But overall, things looked much the same. The [GDP growth rate](#) did not tick up significantly, nor did [productivity](#). As economist Robert Solow put it in 1987: "You can see the computer age everywhere but in the productivity statistics."

An overlapping set of theories emerged to explain the phenomenon, often termed the "productivity paradox." Perhaps the new technologies advantaged some firms and industries and disadvantaged others, leaving little net gain. Perhaps computer systems were not yet [easy enough](#) to use to reduce the amount of effort workers need to exert to perform a given task. Economists also wondered whether it might just take some time—perhaps a lot of time—for the gains to show up. In the past, information technologies tended to need to incubate before they produced gains in economic growth. Consider the case of Gutenberg's printing press. Though the technology radically transformed how people recorded and transmitted news and information, economists have [failed to](#)

[find](#) evidence it sped up per-capita income or GDP growth in the 15th and 16th centuries.

At one point, some economists thought that an Internet-driven [golden age](#) might have finally arrived in the late 1990s. Between 1995 and 1999, productivity growth rates actually exceeded those during the boom from 1913 to 1972—perhaps meaning the Web and computing had finally brought about a "[New Economy](#)." But that high-growth period faded quickly. And some studies found the gains during those years were not as impressive or widespread as initially thought. Robert Gordon, a professor of economics at Northwestern, for instance, has found that computers and the Internet mostly helped boost productivity in durable goods manufacturing—that is, the production of things like computers and semiconductors. "Our central theme is that computers and the Internet do not measure up to the Great Inventions of the late nineteenth and early twentieth century, and in this do not merit the label of Industrial Revolution," he [wrote](#).

Gordon's work leads to another theory, one espoused by Cowen himself. Perhaps the Internet is just not as revolutionary as we think it is. Sure, people might derive endless pleasure from it—its tendency to improve people's quality of life is undeniable. And sure, it might have revolutionized how we find, buy, and sell goods and services. But that still does not necessarily mean it is as transformative of an economy as, say, railroads were.

That is in part because the Internet and computers tend to push costs toward zero, and have the capacity to reduce the need for labor. You are, of course, currently reading this article for free on a Web site supported not by subscriptions, but by advertising. You probably read a lot of news articles online, every day, and you probably pay nothing for them. Because of the decline in subscriptions, increased competition for advertising dollars, and other Web-driven dynamics, journalism profits and employment have dwindled in the past decade. (That Cowen writes a freely distributed blog and published his ideas in a \$4 e-book rather than a \$25 glossy airport hardcover should not go unnoted here.) Moreover, the Web- and computer-dependent [technology sector](#) itself does not employ that many people. And it does not look set to add workers: The Bureau of Labor Statistics [estimates](#) that employment in information technology, for instance, will be lower in 2018 than it was in 1998.

That the Internet has not produced an economic boom might be hard to believe, Cowen admits. "We have a collective historical memory that technological progress brings a big and predictable stream of revenue growth across most of the economy," he writes. "When it comes to the web, those assumptions are turning out to be wrong or misleading. The revenue-intensive sectors of our economy have been slowing down and the big technological gains are coming in revenue-deficient sectors."

But revenue is not always the end-all, be-all—even in economics. That brings us to a final explanation: Maybe it is not the growth that is deficient. Maybe it is the yardstick that is deficient. MIT professor Erik Brynjolfsson* explains the idea using the example of the music industry. "Because you and I stopped buying CDs, the music industry has shrunk, according to revenues and GDP. But we're not listening to less music. There's more music consumed than before." The improved choice and variety and availability of music must be worth something to us—even if it is not easy to put into numbers. "On paper, the way GDP is calculated, the music industry is disappearing, but in reality it's not disappearing. It is disappearing in revenue. It is not disappearing

in terms of what you should care about, which is music."

As more of our lives are lived online, he wonders whether this might become a bigger problem. "If everybody focuses on the part of the economy that produces dollars, they would be increasingly missing what people actually consume and enjoy. The disconnect becomes bigger and bigger."

But providing an alternative measure of what we produce or consume based on the value people derive from Wikipedia or Pandora proves an extraordinary challenge—indeed, no economist has ever really done it. Brynjolfsson says it is possible, perhaps, by adding up various "[consumer surpluses](#)," measures of how much consumers would be willing to pay for a given good or service, versus how much they do pay. (You *might* pony up \$10 for a CD, but why would you if it is free?) That might give a rough sense of the dollar value of what the Internet tends to provide for nothing—and give us an alternative sense of the value of our technologies to us, if not their ability to produce growth or revenue for us.

Of course, if our most radical and life-altering technologies are not improving incomes or productivity or growth, then we still have problems. Quality-of-life improvements do not put dinner on the table or pay for Social Security benefits. Still, even Cowen does not see all doom and gloom ahead, with incomes stagnating endlessly as we do more and more online and bleed more and more jobs and money. Who knows what awesome technologies might be just around the bend?

Correction, March 8, 2011: *This article originally misspelled Erik Brynjolfsson's surname. ([Return](#) to the corrected sentence.)*

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