

All wired up: Professor explains how technology really helps the economy

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Erik Brynjolfsson, the Schussel Family Professor at MIT's Sloan School of Management

Information technology is all around us — but how does it really change the way we do business? Erik Brynjolfsson, the Schussel Family Professor at MIT's Sloan School of Management, explores this question in his new book, "Wired for Innovation," written along with Adam Saunders, a lecturer at The Wharton School of the University of Pennsylvania.

Q. What effects does information technology have on the economy?

A. Since about 1995, the U.S. economy has experienced a productivity resurgence. The consensus among economists is that the lion's share of that is due to information technology. In the book and my research we

focus specifically not on how IT is by itself is changing productivity, by rather by the way that IT is leading to complementary innovations. Some manufacturing companies have re-thought the whole production process, changed the way they link to their suppliers, and eliminated inventory. Other sectors like health care are much further behind. But in all of the companies we looked at, these organizational changes are bigger and more costly than the technology investments themselves.

New business practices are really driving productivity. But one of the great ironies of the [information age](#) is that although we have more fine-grained data about the economy, we know less about the true sources of value than we did before. There are many ways companies are adding value to the economy, but it's often showing up as greater consumer value rather than in [GDP](#).

A striking example is the music industry, which as a share of GDP appears to be shrinking, because its revenues are getting smaller. But the amount of music people are listening to is not getting smaller. There are more downloads of songs and more people listening than ever before. The issue is those downloads have a very low price, often zero price, so they don't show up in our GDP statistics. Does that mean consumers aren't getting the same enjoyment from them? No. It just means we're not measuring the value properly.

Q. So we save money on music, or by using Wikipedia for free instead of buying an encyclopedia. In theory that creates demand for other goods and services. But why should that demand go anywhere right now when whole industries, like the automakers, are struggling to make new, attractive products?

A. There is a big disruption going on. This current recession, the Great Recession, is not a simple cyclical downturn in demand. Instead, when demand comes back, it's going to be for a lot of new products and new

services and in whole new industries. So it's not just a Great Recession; it may be The Great Restructuring, a fundamental reorganization of business activity. It's not simply a matter of going back and buying the same things we used to buy. Some of them won't exist any more. One reason I think we're seeing such a lag in hiring and employment is that people aren't simply being hired back into the same old jobs they did before. It's going to take a lot of entrepreneurial activity to figure out the best way of grappling with these problems. I think it's going to happen and in the end the economy will be even more productive than in the past. But the transition is clearly very painful.

Q. So we have a few clear winners now, but the rest will be determined later.

A. There are different kinds of winners. Companies like Google can be big beneficiaries directly, but there are also people who benefit from Google's free services. We use Google Scholar to check citations and that's a tremendously easier way than what we used to have. And a lot of small businesses are using Google Ads to find new customers. I think tech companies are most visibly affected, but the bigger effect is upon technology-using companies. And that accounts for most of the economy.

We study the market as a kind of information-processing entity. But companies are also information-processing entities. When the cost of information processing falls by 90 percent over five years, it has real effects on the organization of firms. We're spreading knowledge much faster. The pace of discovery is quickening because many companies are using IT to change the way they do innovation. They're doing business experiments, measuring things in excruciating detail — what's happening to their customers, their shop floor, their employees, suppliers, their goods even after they're sold, in ways they never did before. And since our living standards ultimately depend on what technology can do to

speed innovation, it's going to have a much bigger impact on us than any single innovation by itself.

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