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Is the New Economy Contagious?

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If I were to invent a cheaply produced engine that enabled an automobile to travel 500 miles on one gallon of gasoline, I would surely become very wealthy. Not only that, but the company I would start to produce these new engines for sale to existing automobile manufacturers would become very large, and very profitable. My productivity, and that of my company (as conventionally measured) would also be phenomenal, and the growth of real output and productivity in the country where I reside would also skyrocket. But, in the absence of competition from another equally innovative inventor, the benefits of this would be rather concentrated: I would get them all since I could set the price of my new engine high enough that everyone would be nearly indifferent between buying by the new one, and the old inefficient ones. Furthermore, while I am the clear winner, the oil producers are clear losers – they become the "old economy."

This is not exactly how the new economy has worked, but it is close. And it can help us to understand whom profits from the introduction of information technology and whether those gains are likely to be shared either across industries or across international borders. In particular, the parable will help us understand whether Europe is on the verge of a productivity miracle similar to the one that has taken the U.S. by such a storm.

First, let us look at the facts. The current consensus is that the sustainable annual real growth in the U.S. has risen to at least 4 percent. That is, with the unemployment rate steady, American GDP can grow at a rate that is 1½-percentage points higher than it could just 5 years ago.

The productivity acceleration appears to be a uniquely American phenomenon and has not been shared by other countries around the world. In particular, the growth statistics suggest that the European economies have not experienced the same pickup in growth.

The sources of the increased American growth are now well-know. Roughly equal roles have been played by rising employment, increased investment in information technology equipment, and more efficient use of the existing technology. Of these, though, the acceleration in investment in information technology equipment has been nothing short of spectacular. Adjusted for inflation, the growth rate of investment in computer hardware more than doubled from about 20% per year in the first half of the 1990s to nearly 50% per year during the second half of the decade. This is an unmistakable sign of what has happened, and something for which there is no analog in Europe, at least not yet.

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But even if the Europeans were to increase the rate at which they are installing new computers, would that be enough? I suspect that the answer is no, and to see why return to my example of the automobile engine. In that case, it was I, not the companies that installed the engines in their vehicles, who reaped the benefits because I invented and produced it. In the same way, it is the producers of computer hardware that reap the benefits, not the users, and so it is the countries were computers are made that will be see increases in growth and productivity, not those that install the equipment.

This is really not the entire story, since in my example I do not face any competition. So let's make things a bit more complicated, and take the more realistic case in which there are other inventors equally capable of producing high-efficiency engines. Now things are clearly more complicated. First, competition will drive down retail prices and everyone who drives will now share the benefits of my new engine. But more importantly, I will be forced to engage in research and development so that I can stay at the cutting edge of the technological frontier ahead of my competitors. If I can do this, with each new generation of cheaper engines, I will get another boost in my profits and productivity. But again, the benefits of the innovation accrue to the inventors and producers, not the users.

Computers are much more like the example in which the revolutionary automobile engine producer faces competition. There are numerous microchip manufacturers, and they are bombarding us with news almost daily about faster and more powerful computers. For example, Intel has just announced that, within 5 years, they expect to produce chips with 10 times as many transistors, running at 7 times faster, than the newest most powerful chips they just started selling in mid-December 2000. Given their track record, there is no reason to doubt that this will come to pass. By investing enormous amounts in research and development, the American semiconductor industry has remained at the technological frontier.

The vast majority of information technology equipment is installed by firms to help them in their production of goods and services that are then sold at the retail level. Consumers purchase only a small percentage of the computers that are produced. Instead, business use information technology to enhance virtually every phase of the production of goods and services from the use of robots to weld the steel frames of automobiles, to the touch-screen computers employed by restaurants to insure the timely and accurate ordering and delivery of a diner's meal.

But, as is the case in my example, the computer and chip producers are selling their products to those who install them for prices that reflect the improvement that the users are able to obtain. Computers will enable faster growth elsewhere in the economy, but when we go and see who has made the money, it will be the IT producers.

So, will the new economy continue in the U.S., and will it be contagious? For the U.S., this means that as long as Intel, IBM, JDS Uniphase, and their kind continue to push the frontiers of technology forward at the same torrid pace of recent years, we can expect the next five years to be like the last five. But for Europe, and other parts of the world that use but do not produce IT equipment, the outlook is less optimistic. To the extent that European firms increase their *production* of information technology equipment, rather than simply the installation and use of computers, the answer will be yes since the benefits of computers accrue to those who build them.