

February 12, 2004

ECONOMIC SCENE

Information Technology May Have Cured Low Service-Sector Productivity

By HAL VARIAN

PRODUCTIVITY growth took a breather last quarter, slowing to 2.7 percent, after the previous quarter's torrid 9.5 percent growth. Still, by historical standards, 2.7 percent is a respectable number.

From 1948 to 1973, productivity grew at close to 3 percent annually, doubling the living standard in that period. Then came the dark age of productivity growth: from 1974 to 1994, it averaged only 1.4 percent a year. From 1995 to 2000, we had something of a productivity renaissance, with growth climbing to more than 2.5 percent a year.

When the economy started to slow down in 2000, many economists expected productivity growth to fall back under 2 percent. But contrary to these expectations, productivity has continued to grow strongly.

It is difficult to overstate the importance of productivity growth for the long-run health of the economy. Over the years, virtually all economic progress has come from productivity growth. An increase of half a percent a year can make a huge difference over 20 or 30 years.

So it's pretty important to understand why productivity growth declined so sharply in the 70's and rebounded so strongly in the 90's.

Unfortunately, there is no consensus about why productivity growth slowed in the first place, though there is no shortage of theories. Various factors, including the 1973 oil price shock, the baby boomers' entry into the labor market, an increase in regulation and a slowdown in technological innovation seem to have played a role.

But there is an emerging consensus about why productivity growth surged again in the mid-90's: most economists say information technology played a major role.

This isn't to say that the productivity renaissance is completely understood. Was the resurgence in productivity growth limited to a few industries, or was it widespread? How long will it continue? How, exactly, has information technology made businesses more efficient? What specific kinds of information technology make a difference?

A whole army of economists are digging into these issues, and some interesting findings have begun to emerge. Recently two Brookings Institution economists, Jack E. Triplett and Barry P. Bosworth, have been investigating productivity growth in the services industry and have reached a surprising conclusion: most of the post-1996 growth in productivity has come in services. (A summary of their work is available at <http://www.brookings.org/views/articles/bosworth/200309.htm>. The numbers in this column are based on their later, unpublished study.)

Why is this surprising? Way back in 1967, the noted economist William Baumol diagnosed what has subsequently become known as Baumol's disease. He argued that most services were, by their nature, labor-intensive. Indeed, the perceived quality in service industries often depends on how much labor is involved.

No one cares how many workers it takes to build the cars we drive, but the teacher-student ratio is viewed as a critical determinant of the quality of our schools. Or to use one of Mr. Baumol's most striking examples: even after 300 years it still takes four musicians to play a string quartet.

As Mr. Baumol pointed out, this is bad news for economic growth. As economies mature, consumption shifts more and more toward services. If productivity growth in services is inherently sluggish, economic growth must inevitably slow.

Or at least that's been the conventional wisdom. But the recent evidence compiled by Mr. Triplett and Mr. Bosworth shows that information technology may just be the cure for Baumol's disease.

They found that from 1995 to 2001, labor productivity in services grew at a 2.6 percent rate, outpacing the 2.3 percent rate for goods-producing sectors. Furthermore, this phenomenon was widespread: 24 out of the 29 service industries they studied exhibited growth in labor productivity after 1995, and 17 experienced accelerated growth.

Interestingly enough, the service industries where overall productivity did not grow were hotels, health, education and entertainment. These are all examples where customers tend to perceive that more labor is associated with higher quality, as Mr. Baumol had originally suggested.

Robert Gordon of Northwestern University and others have pointed out that information-technology-producing industries have had a big effect on aggregate productivity growth since they have themselves been extraordinarily productive. Indeed, semiconductor manufacture and the computer and electronics industry lead the pack among manufacturing industries with respect to productivity.

But as Mr. Triplett and Mr. Bosworth point out, it's the fact that information technology has become so powerful and so cheap that led to it having such an important role in the productivity resurgence in services.

When you look at the service industries that have performed well (telephony, wholesale trade, retail trade and finance) it is not hard to understand how information technology could be an important factor. It's just a lot easier now for sellers to track inventory, monitor operations, communicate with customers, and react to shifts in consumer demand.

Big retailers like [Wal-Mart](#) have benefited tremendously from information technology, but even ma-and-pa retailers have been helped. Fifteen years ago, only the largest chains could afford "smart" cash registers. Today any family-run video store or restaurant can buy a cash register that not only tracks purchases but also monitors inventories. Nowadays, a cash register is just a P.C. with a different interface.

Perhaps it is not too surprising that manufacturing productivity growth has lagged behind that of services. American manufacturers faced some pretty intense foreign competition in the 70's and 80's, and they were forced to become efficient. Services weren't subjected to the same competitive forces, and they lagged behind during this period.

Furthermore, companies that provide services tend to be smaller than big manufacturing concerns. They just couldn't afford the investments in information technology systems that improved manufacturing efficiency.

But as the price of information technology fell, it became more affordable, allowing productivity enhancements to spread through the economy - even to those small and medium-size service enterprises that provide so much of our employment.

Baumol's disease appears to be in remission, at least for a significant number of service industries.

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