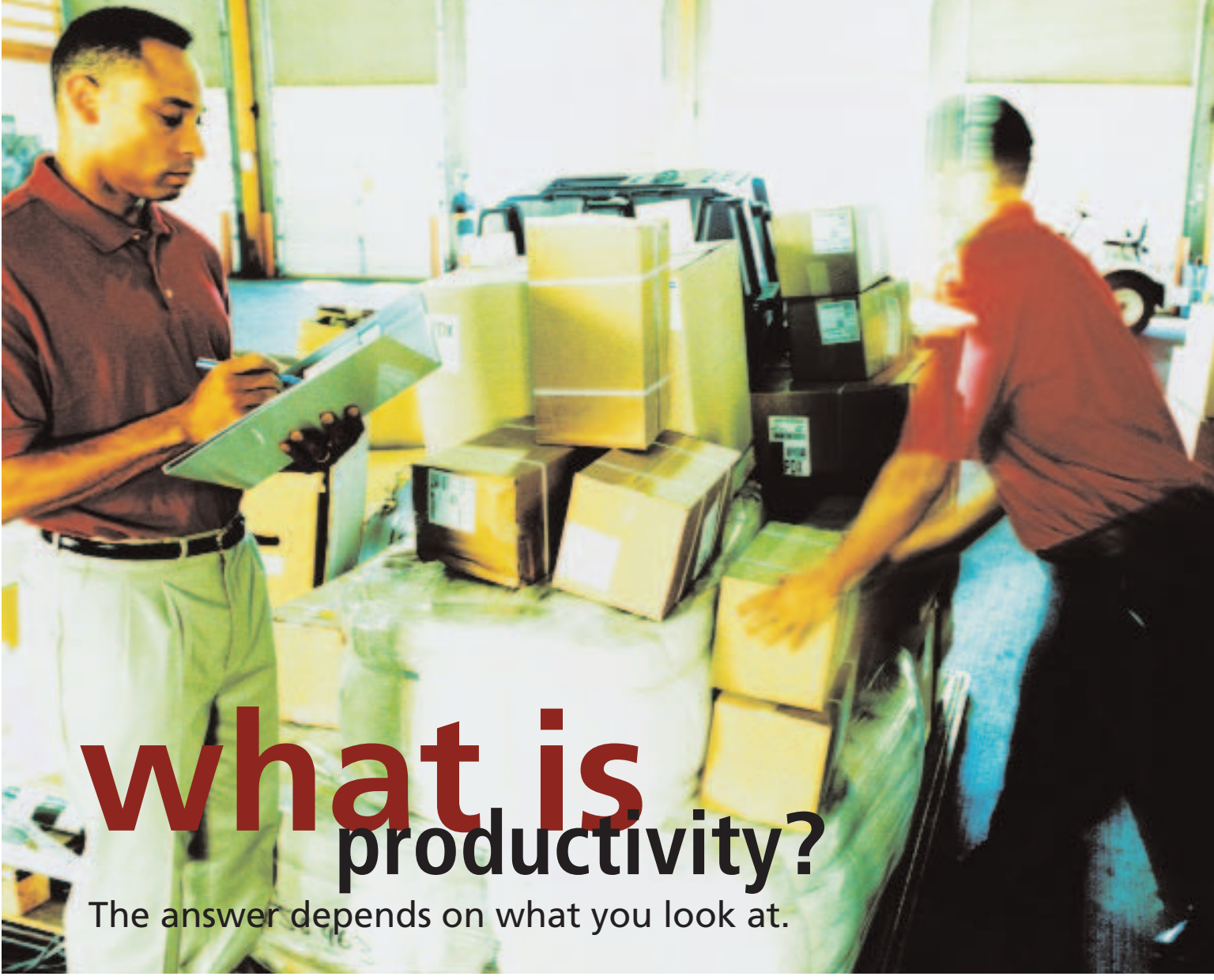

what is productivity?

The answer depends on what you look at.

Labor Productivity

When news stories mention "productivity," they almost always mean *labor productivity*, which measures the output that an hour of labor produces. Often expressed as "output per hour" or "output per worker-hour," labor productivity tends to focus on manufacturing rather than services because manufacturing output is easier to quantify.

Measuring productivity at an auto assembly plant, for example, is fairly straightforward. It's either:

- **a physical measure —** the total number of cars produced in a given period of time (a week, a month, a year) divided by the number of worker-hours needed to produce them, or

- **a monetary measure —** the total dollar value of cars produced in a given period of time divided by the total number of worker-hours needed to produce them.

And if you want productivity figures for the *entire* auto industry, the numbers are readily available. The Big Three — Daimler-Chrysler, Ford, and General Motors — know exactly how many vehicles roll off their assembly lines, and they have an accurate idea of how many hours their employees work.

Measuring labor productivity in services industries is more of a challenge. Take nail salons, for example. Theoretically, you could gauge the productivity of a single nail salon if someone kept track of how many manicures the staff performed in a week or a month. But you'd have a tough time mea-

suring productivity for the entire industry because there are thousands of nail salons, and no one keeps track of how many manicures and pedicures they perform.

To learn more about the fine points of measuring labor productivity, visit the U.S. Bureau of Labor Statistics web site: **http://www.bls.gov/lpc/faqs.htm**

Another View: Multifactor Productivity

Whereas labor productivity measures the output per unit of *labor* input, *multifactor productivity* looks at a combination of production inputs (or factors): labor, materials, and capital. In theory, it's a more comprehensive measure than labor productivity, but it's also more difficult to calculate.

To get a better handle on the difference between labor productivity and multifactor productivity let's look at what economist Jack Triplett had to say on this topic during a panel discussion organized by the National Association of Business Economists in 2001.

Here are Jack Triplett's remarks:

"Let's look at equation 1:

(1) Labor Productivity (output per hour)=Output/Labor Inputs

"Labor productivity is the output per hour worked. When we examine labor productivity, our units of measurement are always rates of growth rather than levels.

"Let's now look at equation 2:

(2) Multifactor Productivity=Output/(KLEMS)

"Multifactor productivity growth is the rate of growth in output relative to the rate of growth of all production inputs. In equation 2, KLEMS represents all production inputs: K is capital services; L is labor services; E, energy; M, materials; and S refers to purchased services — business services, for example. It is a complicated index number — the idea is to get a measure of the change in output relative to the change in all of the inputs.

"I like to tell an anecdote that illustrates the difference between labor productivity and multifactor productivity. A number of years ago I visited a machine tool plant that made very, very high-tech machine tools. It was quite an old plant — built in the nineteenth century. It had three stories. Workers always brought the materials in on the first floor, did the subassemblies on the second floor, and the final assembly on the top floor. They had always done it that way. Over the years the machines got bigger and bigger so that it became difficult to get them down from the top floor. One day someone said, "Why don't we just bring the materials in on the top floor and do the final assembly on the bottom floor?" So they did and the result had a big positive effect on productivity.

"Now, that's an illustration of multifactor productivity in the sense that somebody had a bright idea that resulted in the change in the labor productivity — not because there was a big technical change but because it was a good idea. Did it change labor productivity? Sure, because more output was produced with the same number of workers or a smaller number of workers. Did it change multifactor productivity? Well, that's a little more complicated because you've got KLEMS. Suppose that a management consultant had made the suggestion.

Management consultants are "S." And suppose the management consultant had been paid the discounted stream of saving over this period — then it would show up as "S" and would have no increase in multifactor productivity output. But suppose this had just been a bright idea from a worker who said, "Hey, I'm tired of getting these machines down from the top floor — let's change this." He didn't get paid for it. Then there's no input that's accounted for, and in conventional accounting that would show up in multifactor productivity.

"The point I'm making here is that the multifactor productivity measure is often preferred because it's a measure of technological change. But it's a measure of a lot of stuff. It's a measure of all the things that changed output but didn't get accounted for in KLEMS, our conventional classification of inputs. And that can be a big technological change, but it can also be a very small change that just occurs on the factory floor. And it's an accumulation of those small changes that give you the rate of change in multifactor productivity."

A transcript of the entire discussion is available online at http://www.findarticles.com/cf_0/m1094/3_36/78177929/print.jhtml

In Other Words

Sometimes it helps to hear things said in different ways. We hope the following excerpts and quotations will add to your understanding of productivity.

Productivity is a measure of how efficiently an economy transforms its labor, capital, and raw materials into goods and services.

Bank of Canada web site
http://www.bankofcanada.ca/en/backgrounders/bg-p4.htm

Productivity is a broad, shorthand measure that economists and government statisticians use to describe the output that an hour of labor produces. It is calculated simply by dividing the government's estimate of total output by the number of hours worked by all employees and the self-employed. If output per hour worked rises, productivity is said to increase.

Martin and Kathleen Feldstein
http://www.nber.org/feldstein/bg081401.html

Productivity . . . is seen as a key to rising living standards. . . . because if workers produce more per hour companies can sell more, boost profits and raise wages at the same time without raising prices. If productivity falters, pressures for higher wages could force companies to raise prices, worsening inflation.

CNN/Money web site
11/07/01

The biggest factor in increasing economic growth and raising living standards over time is the economy's ability to produce more out of less, also known as productivity.

"But Don't Forget the Silver Lining"
Justin Fox, *Fortune* magazine, 9/2/02
http://www.fortune.com

Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.

– Paul Krugman