



Community Economics

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LABOR PRODUCTIVITY, WHY SHOULD WE CARE?

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Economists, business analysts and policymakers have all focused considerable attention on U.S. productivity growth in recent years. It appears that labor productivity growth has improved sharply, perhaps approaching the pace of the “golden age” of the 1950s and 1960s. The impact of growth rates in labor productivity on economic output and living standards is pronounced. If labor productivity were to grow at 1.5 percent (the average from 1973 to 1995), output per hour worked would rise by 35 percent after 20 years. Growth of 2.7 percent (the average from 1995-1999) implies that it would be 70 percent higher after 20 years. Productivity is a staple of economic growth and a central determinant of living standards.

In the simplest sense, labor is paid for the value of its contribution to output. If output prices remain the same and productivity increases, the value of that more productive labor increases and correspondingly wages or income to labor increases. This is the standard line of reasoning for explaining why education and training pays-off for workers. A more highly educated or trained workforce is more productive and hence receives higher levels of compensation. Standard textbook economics asserts that productivity growth and the growth of real wages are equal. Quite often this proposition is stretched to make the claim that productivity growth equals the growth of real per capita income. In reality though, the relationship between productivity and income is not that clean. Income broadly defined includes many streams above and beyond wages. Interest income and dividend payments, for example, are not directly tied to the productivity of those receiving those payments.

Writing in the 1700s Malthus advanced a theory of population that argued that population would grow geometrically while food supplies would increase arithmetically. Hence, at some foreseeable time in the future population growth would outstrip the ability of the earth to generate sufficient food. While today we do experience periods of famine in some parts of the world due to short-term climatic shifts, we have not experienced the direr predictions of Malthus. What was Malthus fundamental error? He underestimated growth rates in productivity, specifically productivity growth rates in agriculture.

At the time when Malthus was writing, the population was fairly evenly distributed between farmers and people living in more urban settings. In today’s developed economies, a small fraction of the total population (in the U.S. less than two percent) produces sufficient food for the whole of the population. Indeed, the surge in agricultural productivity over the past 100 years has placed many rural communities, particularly in the Great Plains area of the U.S., in great peril. Productivity gains are such that large tracks of land can be farmed by a small handful of farmers. Because of these large productivity gains in agriculture, we simply do not need as many farmers as we did 50 years ago.

Let us consider the evolution of labor productivity in the post-war period of the U.S. The quarterly change in output per hour for all persons from the first quarter 1947 to the second quarter 2004 is plotted in Figure 1. Two features stand out. First, labor productivity has a very obvious business cycle component; productivity growth is low or even negative during recessions and high in the early stages of expansions when the economy is expanding rapidly. This pro-cyclicality of productivity is well known and the short lags reflect the lack of instantaneous adjustment in factor markets. Much has been written in business literature about how firms may delay hiring additional workers as the economy comes out of recession making existing workers appear much more productive in the short-term. But these short-term spikes are seldom sustainable and firms are forced to hire additional workers.

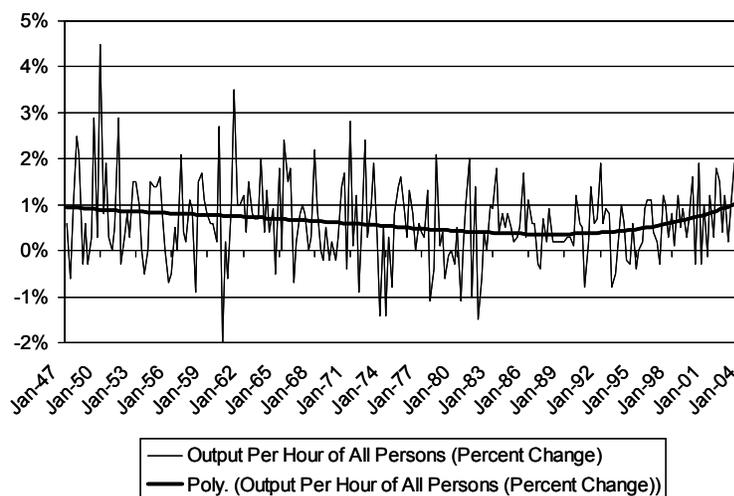
Second, looking beyond the cyclical movements, labor productivity growth was decidedly on a downward trend from 1947 through the late 1980s. Despite considerable research efforts, this “productivity slowdown” remains largely unexplained. From 1996 onwards, however, there has been a sharp strengthening in productivity growth to rates similar to the “golden age” of the 1950s and 1960s. But this “U-turn” in productivity growth rates, while a good thing for the overall economy and future prospects for our standard of living, has raised numerous questions with the central question being why. The standard textbooks explanations include increases in general knowledge, the advantages of particular organizational structures or management techniques, reductions in inefficiencies, and the reallocation of resources to more productive uses. Clearly these textbook answers play a role but do not explain the “U-turn”.

If we return to Malthus, the fundamental error in his analysis was that he assumed technology to be fixed. Clearly Malthus did not envision the rapid increases in agricultural technology such as threshing machines and mechanical tractors. In the business literature the one component that is receiving significant attention uses terms such as “productivity of computer output” and “productivity of computer use.” Clearly rapid advances in computer technology during the 1980s through today have resulted in huge increases in many aspects of labor productivity. Today, one accountant with a desktop computer can do the work of dozens if not 100 accounts using old technology adding machines. Computer technologies have also allowed for an explosion of more advanced production machinery, for example robotic assembly lines. This latter phenomenon is often referred to as “capital deepening.” As firms invest in new equipment and structures, the workforce becomes better equipped and is able to produce more output; hence productivity growth rises proportionally with capital deepening.

Labor quality also plays an important role. Between 1959 and 1998 growth in labor input exceeded growth in hours worked (2.1% vs. 1.6%), implying steady growth in labor quality. As the workforce evolves and workers with different skills and marginal products are employed at different rates, this change in composition directly affects how much output can be produced from a given quantity of worker hours. If labor productivity is tied to experience, is the fact that the baby-boomers are at the height of their earning potentials contributing to this rise in the growth rate of labor productivity? If we answer this question “yes”, what are the implications for the economy as the baby-boomers begin to retire en masse?

If, and it remains a large if, the surge in labor productivity, is a product of rapid advances in technology (e.g., computers) sustainable over the long-term? Once these new technologies are fully integrated into the economy will we see a return to a long-term decline in productivity growth? What are the implications for workers who lack the inherent human capital to take advantage of these new technologies? Is it a coincidence that the increase in income inequality in the U.S. corresponds to these rapid changes in technology? Are all industries able to capture the increase in productivity flowing from these changes in technology? While the recent surge in labor productivity is generally good for the overall economy, the surge has raised numerous big picture questions.

Figure 1. Quarterly change in labor productivity 1947-2004



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