
GLOBAL ECONOMICS

Does the “New Economy” Measure Up to the Great Inventions of the Past?

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The author examines whether the recent explosion in technological advances, including the Internet, has truly launched another industrial revolution, as is commonly supposed.

Although multifactor productivity growth rates have improved in narrow sectors of the economy, they have deteriorated more broadly. Among the reasons for this decline is the diminishing returns to increased computing power, mainly caused by limited amounts of human time required to interact with computers. Although the Internet is a fun and useful innovation, it has not transformed life on a scale comparable to that of the earlier great inventions.

“New Economy” optimists believe recent trends in productivity growth define a new industrial revolution that rivals the great inventions of the 19th and 20th centuries. Skeptics, however, find no evidence of structural change in productivity gains outside the durables goods manufacturing sector, which has benefited from a declining true cost of computing since 1995.

The author bolsters the skeptics’ argument by decomposing contributions to growth in output per hour for the five-year period ending in 1999, an apparent new “golden age” of productivity growth. After adjusting for cyclical effects, he confirms that growth increased at an appreciably higher rate than during the 1972–95 period, but much of the gain can be attributed to capital deepening (growth in capital per hour) from technology investment or computer and other durable

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goods production. Surprisingly, he finds that productivity growth *decelerated* in the nonmanufacturing economy, the recipient of three-quarters of all computer investment, which is a long suspected but little understood paradox.

To explain the paradox, the author offers some perspective on the information revolution. History should not regard the computer as the direct equivalent of earlier inventions, such as electricity or the internal combustion engine. These innovations, and others like them that belong to “the group of five” (i.e., electricity, petrochemicals, pharmaceuticals, electronic media, and indoor plumbing), thoroughly transformed daily life and accounted for the last golden age of productivity, from 1913 to 1972.

The author suggests that the New Economy shortfall can be explained by diminishing returns and a five-decade decline in computer prices. Increasing technological enhancements have shifted to the right the supply curve for computer products, without shifting the corresponding demand curve for services. After accounting for steeper price/quantity slopes, the author finds the decline in price/elasticity consistent with the notion that the most significant changes derived from computer investment likely occurred a decade ago.

In addition, the greatest imagined productive benefits associated with the exponential growth in computing power are tempered, or canceled, by the extreme onset of diminishing returns. In this case, the diminishing returns primarily stem from the constraints of time and physics on individuals and industries. The earliest innovations—such as word processing, which permitted on-document editing—provided users the highest marginal utility. Today, however, software that enables graphical interfaces or ease-of-use devices offers little in the way of increased productivity. Gains are limited as well in industries where humans cannot be replaced or in person-to-person services where computers are not used.

The Internet seems to have contributed little to consumer surplus, at least compared with supermarkets or highways, for example, after the automobile became popular. So far, the Internet’s impact on productivity has centered on its infrastructure builders and software developers. Payoffs to other intermediate goods industries have been either

nonexistent, undetected, or negative. The author suggests the following reasons for negative productivity effects: (1) market-share protection, (2) recreation of old activities, (3) duplicative aspects, and (4) consumption on the job. Thus, although improvement in information technology will no doubt continue to affect people's lives, the standard of living will not likely increase to the same extent that it did during other boons in technology; most of the productivity gains from computers seems to lie in the past.

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