

**Remarks
of
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**Productivity in the 21st Century
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It is difficult to overstate the importance of productivity growth in the U.S. economy. Indeed, productivity growth is the foundation of long-run economic well being. To take an example, suppose that faster productivity growth raises the long-run (potential) GDP growth rate from 2.9 percent to 3.1 percent. What difference does this small increase make? Real GDP in the United States is roughly \$10.2 trillion. Growing at a 3.1 percent rate for 10 years increases GDP to \$13.8 trillion, whereas a 2.9 percent rate over the same period yields only \$13.6 trillion. The difference – \$266 billion – is roughly \$1,000 for every man, woman and child in America today. Over shorter horizons, productivity growth has important implications for inflation dynamics, and therefore stabilization policy.

The economy-wide importance of productivity dictates that economy-wide, or macroeconomic, studies of productivity are a natural first step in a research program to understand rapid productivity growth. Historically, macroeconomic studies have usually focused on the non-farm business sector (excluding housing) because the business sector is the broadest measure of the economy for which we have sufficiently high-quality data. The output of other sectors of the economy such as government or for owner-occupied housing is not well measured.

Lessons from U.S. Data

What, then, are the broad facts regarding productivity growth? The growth rate of labor productivity picked up after 1995, from about 1.4 percent per year over the period from 1973 to 1995, to about 3 percent per year between 1995 and 2001. (These estimates reflect a cyclical adjustment as described in the *Economic Report of the President 2002* [page 61]. Without cyclical adjustment, the corresponding numbers are 1.4 and 2.6 percent.) A part of the acceleration is attributable to the capital deepening – particularly the accumulation of information capital. And another component of the acceleration is the rapid productivity growth in the computer-producing sector. But most of the acceleration appears to be more rapid growth of “total factor productivity.” Put differently, most of the success story is in the statistical residual that begs for further analysis and explanation.

Whatever the cause, the faster growth in productivity has persisted through the more rocky period of recent economic growth. Non-farm productivity grew at a 2.9 percent annual rate during the most recent six quarters (from the fourth quarter of 2000 to the second quarter of 2002) – a period that includes both a recession and a recovery. And this more rapid productivity growth is continuing to boost real wages. Real wages as measured by the Employment Cost Index (deflated by the Consumer Price Index) grew 2.5 percent during the most recent 12-month period – an increase from 0.5 percent during the year-earlier period. Real hourly compensation grew 2.9 percent, up from 0.8 percent during the year earlier period.

Lessons from International Comparisons

One of the intriguing aspects of the post-1995 acceleration in U.S. productivity is that it has not been shared uniformly by other industrialized economies. Using data compiled by the Organization for Economic Cooperation and Development (OECD), total factor productivity growth in the United States accelerated from 0.3 percent annually over the 1990-94 period to 1.3 percent from 1995-99. This acceleration dwarfs the modest increase from 0.6 percent to 0.8 percent in France or 1.8 to 2.0 percent in Australia. Even more striking, total factor productivity

growth fell from 1.5 percent to 1.1 in Canada, 1.6 percent to 0.8 percent in Germany, from 0.7 percent to 0.5 percent in Japan, and from 1.7 percent to 0.1 percent in Italy.

This panel carries the title “Is There A Productivity Miracle?” The relatively good performance in the United States suggests that there is not a miracle – it is not simply the case that new technologies arrived like manna from heaven and bestowed more rapid productivity growth. Instead, the U.S. advantage must derive as well from other features of the economy – the competitive features of its product markets, or labor market flexibility, or other factors.

Indeed, in another report, the OECD concluded that product and labor market regulatory policies, as well as the policy infrastructure for innovation have important impacts on productivity growth: “Product and labour market policies influence growth. Easing regulatory restrictions enhances productivity...Productivity performance varies across countries reflecting the ability to reach and shift the technological frontier which depends on innovative effort.”

For purposes of understanding the future of productivity growth in the U.S. economy, it is important to acquire a better understanding of the features of the market, regulatory, and policy environment that have the largest impact. To do so, researchers have turned to detailed studies of industries and firms.

The Promise of Industry and Firm Studies

Industry studies offer the promise of providing insight into many important, policy-related questions that *cannot* be answered with economy-wide productivity measures. Industry data might shed light on the means by which the structure of product market competition and the regulatory institutions, the means by which the market for corporate control and or laws and institutions that allow businesses to fail, the channels by which research and development, and how the institutions that affect labor mobility and channel migration from low-productivity industries to high-productivity industries affect productivity growth.

There has been some suggestive work thus far in this vein. At the industry level, for example, recent work by Jack Triplett and Barry Bosworth suggests that the famed “cost disease” of the service sector may be cured. In 13 of the 22 service industries for which adequate data are available, post-1995 labor productivity growth accelerated in a fashion mirroring the aggregate data. The finding is similar in spirit to that of Martin Baily and Robert Lawrence, who found evidence supportive of acceleration in service industries that were major purchasers of information technology (*e.g.*, finance or wholesale and retail trade). These efforts are examples of pushing the existing data at a disaggregate level to better understand the aggregate productivity patterns.

Another promising line of research involves firm-specific research. The National Bureau of Economic Research “pin factory” (named in honor of Adam Smith’s observations on the gains from division of labor) program focuses on site visits to firms. This kind of initiative, while preliminary, holds the promise of better understanding the impact of management techniques, contract structures, and the overall economic environment on productivity growth at the firm level. As another example, recent work by Brent Boning, Casey Ichniowski and Kathryn Shaw suggests that problem-solving teams and group incentive pay serves – individually and in conjunction with one another – to raise productivity in steel production processes.

I raise these studies not for their particular conclusions, nor in any attempt to provide a comprehensive survey of the areas represented, but rather to highlight the importance of understanding the microfoundations of rapid productivity growth. Policy should be oriented around more rapid long-run growth; this effort will benefit from a more sophisticated understanding of the process of productivity growth.

In this regard, I want to point out a particular area in which there is direct promise for improvements. At present, the promise of industry studies runs into difficulty with the data infrastructure. To deflate a nominal aggregate like nonfarm business output requires high-quality deflators for about 1,000 components of final demand. It is a tribute to the U.S. statistical agencies that we have the ability to do so. However, to move to comprehensive industry analysis, necessitates the ability to deflate both the output *and* the purchases of each industry – a

task that requires deflating the roughly 500 by 500 “matrix” of industrial flows. At present, researchers employ a variety of reasoned guesses and short cuts to fill the data void. But, because no price index exists for some industries – for example, an industry as important as business services – the process of adding up industry-level data to yield the total is problematic or impossible. Put differently, until we can do the adding up with an acceptable degree of precision, we will not be able to reconcile fully the insights from industry studies with our knowledge of productivity patterns for the economy as a whole.

In view of these data challenges, it is worth emphasizing that the efforts of the statistical agencies have yielded on-going improvements in our data infrastructure. The Producer Price Index program at the Bureau of Labor Statistics has generated new price indexes for a roughly an additional 50 service industries, allowing us to analyze productivity growth. The Bureau of Economic Analysis has also brought these price indexes into their input-output system and also generated new gross output by industry data. This is an example of the ongoing efforts to improve the data used to inform us about productivity and economic performance more generally.

Let me close by highlighting the data-sharing initiative as embodied in H.R. 5215, the Confidential Information Protection and Statistical Efficiency Act. This would authorize the sharing of business data among the Bureau of the Census (Census Bureau), the Bureau of Economic Analysis (BEA), and the Bureau of Labor Statistics (BLS). The ability to share data would improve the accuracy and reliability of economic statistics, and reduce the duplicative paperwork burdens imposed on businesses. In addition, it would establish a uniform set of statutory protections to ensure the confidentiality of information acquired from the public under a pledge of confidentiality for exclusively statistical purposes, including tough criminal and civil penalties for inappropriate disclosure.

Enhanced data sharing will improve the ability of the Census Bureau, BEA, and BLS to track rapidly changing trends in the U.S. economy. The proposal will allow these agencies to improve employment, price, and shipment data by better classifying establishments in appropriate industries. Research compared the Census Bureau’s and BLS’s business lists for

1994 and found that 30 percent of the same single-establishment firms had been assigned different industry codes at the four-digit Standard Industrial Classification level. Industry analyses that rely on employment or price survey data from BLS and shipments survey data from the Census Bureau may well provide unreliable characterizations of changes in real output and productivity for particular industries. Moreover, as the economy changes it may get worse.

Conclusion

I applaud the American Enterprise Institute and the Department of Labor for highlighting the fundamental importance of productivity for the future of the U.S. economy. Understanding the foundations of productivity growth will shed important light on the structure of pro-growth economic policy, both in the United States and abroad.