Priorities and Directions for Future Productivity Research: Health Care, Intangible Capital and High-tech

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ABSTRACT

This article identifies health care, intangible capital, and the high-tech sector as priority areas for productivity research. In terms of health care, it highlights the importance of getting prices right and the key role that a satellite account for health care can play for productivity measurement. Regarding intangible capital, it stresses the importance of developing better price deflators for investment in tangible capital as well as better depreciation rates. Finally, it notes that because of the rapidly changing nature of the high-tech sector measurement issues remain a priority.

I AM VERY PLEASED TO HAVE an opportunity to participate in this panel discussion. Each panelist was asked to discuss three agenda items for future research on productivity. It is challenging to be limited to just three items as many topics are worthy of further research. That said, I will focus on three items in the area of economic measurement.

Health Care

Health care makes up a large and rising share of GDP in advanced economies. Accordingly, getting prices right for health care is of paramount importance for accurate productivity measurement in that sector and for the economy overall. Progress is being made, with a CRIW conference in Washington, D.C., in October 2013 that focused on measuring and modeling health care costs; in addition, the U. S. Bureau of Economic Analysis has made significant progress developing a satellite account for health care. Akin to what happened with R&D, a satellite account for health care should help to focus attention and spur additional work on the key measurement issues.

Intangible Capital

Intangible capital is another area in which I believe further work would bring substantial benefits. In particular, developing better price deflators for business investment in intangible capital and better estimates of depreciation rates for intangible capital should be high priorities. Regarding price deflators, in many cases GDP deflators (or something close) are being used as deflators for investment in intangible capital.

1 The author is Professor of Economics at Wellesley College. This article is based on a presentation to the closing panel on priorities and directions for future productivity research at the conference "Productivity: Measurement, Drivers, and Trends" organized by the International Association for Research in Income and Wealth and the University of New South Wales held in Sydney, Australia November 26-27, 2013. Email: dsichel@wellesley.edu.

While this is a reasonable stand-in until something better can be developed, trends in deflators for some categories of intangible capital could be quite different from the GDP deflator. Accordingly, measures of real GDP and productivity could look different with improved deflators for intangible investment goods. Similarly, developing better estimates of depreciation rates for intangible capital would be valuable. More generally, there is scope for considerable further work on estimates of depreciation rates. For example, depreciation rates for many types of capital in the U.S. accounts are based on empirical work from quite some time ago. Developing more up-to-date estimates could have important implications for measures of capital services and multifactor productivity. Fortunately, progress is being made in these areas. For example, some of the papers in this conference (Corrado, Goodridge and Haskel, 2013; de Rassenfasse, 2013) touched on these issues.

High-tech sector

This might be an overly strong a statement, but I think there is a sense in some quarters that the measurement problems of the high tech sector have been tackled. Notwithstanding the significant progress made previously, I would argue that significant measurement challenges remain. This sector remains exceptionally dynamic and its scope continues to broaden. Even for high-tech hardware, changes in market dynamics may require updating current techniques that once seemed sufficient. For example, the paper I presented at this conference (Byrne, Oliner, and Sichel, 2013) highlighted how changing market dynamics for microprocessors may be biasing the Producer Price Index (PPI) for semiconductors. More generally, while price deflators for personal computers (PCs) often are estimated with hedonic techniques, the nexus of innovation has moved beyond PCs to mobile devices and areas that are, perhaps, less visible like navigation equipment (GPS). As these new market segments grow, it will become increasingly important to ensure that the best possible price deflators are being used.

Another area warranting additional work is import and export prices. For the United States, a significant share of high-tech goods are imported (and some important categories are exported in significant quantities as well). Getting export prices right will matter directly for measures of real GDP and productivity. While import prices largely wash out of real GDP measures, they are becoming increasingly important for measures of real business investment as the import share for high-tech investment goods (and some other categories of business investment) has risen. Currently, in the United States, import prices largely are calculated using matched-model rather than hedonic methods, raising the possibility that import prices for some products could suffer from bias. And, if import prices affect (and potentially) bias measures of real business investment, they also will affect measures of capital services. Hence, getting import prices right is important for getting measures of capital services and multifactor productivity right. Here too, this conference highlighted some important work in this area (e.g. Reinsdorf, 2013) that highlighted the potential of using hedonic indexes for import prices for high-tech products and the possibility of biases in current matched-model import price indexes for high-tech products.

Software prices remain another critical area. In the United States, the Bureau of Economic Analysis is using sensible proxies for software prices. That said, further development and refinement of these price indexes is important given the large and growing share of software in nominal business investment. Beyond these traditional types of software, new and rapidly growing types of software—like Apps for mobile devices—also need to have accurate deflators developed.

Looking further ahead, it likely will become necessary for national income accountants to think beyond pricing hardware and software as separate products. As more and more computing moves to the cloud, the distinction between hardware and software becomes less and less relevant for many users. Users purchasing computing services from, say Amazon, are interested in the price of computing services, not the price of the individual bits of hardware and software that Amazon is using to produce those computing services. One other recent example of the blurring distinction between hardware and software is instructive. For laptop computers, we normally would think of battery life as a characteristic of the hardware. But, Apple recently introduced a new operating system, Mavericks, that changed the sequencing of calculations in a way that significantly increased battery life. Accordingly, battery life is no longer a characteristic of hardware alone, but rather is a joint outcome of hardware and software.

For those interested in economic measurement, there remains plenty to work on!

References

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