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The Digital Economy: what is new and what is not?

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Abstract

There are many signs indicating that something new has happened in the United States economy during the last decade. While the surge in labor and total factor productivity growth rates in the latter half of the 1990s was impressive and widely interpreted as a sign of a 'New Economy,' it remains to be seen whether it was a fleeting phenomenon or the beginning of a new trend. But there are other indicators that are less cyclical in nature and that appear more likely to persist.

In this paper, I argue that the observed changes are at least consistent with the view that digitization of information, combined with the Internet, represents a form of general-purpose technology that is giving rise to a vast new array of possible combinations that we may refer to as the New Economy. The level of connectivity between actors and ideas is increasing dramatically. We have only begun to see the impact, and only part of it is measurable.

Interpreted in this way, the New or Digital Economy is about dynamics, not static efficiency. It is more about new activities and products than about higher productivity. What is really new in the New Economy is the proliferation of the use of the Internet, a new level and form of connectivity among multiple heterogeneous ideas and actors, giving rise to a vast new range of combinations. There are some measurable effects on productivity and efficiency, but the more important long-run effects are beyond measurement.

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1. Introduction

There are many signs indicating that something new has happened in the United States economy during the last decade. While the surge in labor and total factor productivity growth rates in the latter half of the 1990s was impressive and widely interpreted as a sign of a ‘New Economy,’ it remains to be seen whether it was a fleeting phenomenon or the beginning of a new trend. But there are other indicators that are less cyclical in nature and that appear more likely to persist. There is evidence of a wave of innovation. Census Bureau data show that the number of US patents issued to US corporations more than doubled between 1990 and 2001 and that R&D expenditures by industry surpassed government R&D expenditures in 1980 and more than doubled since 1990. Tobin’s Q ¹ more than doubled over the course of the 1990s, indicating a sharp rise in intangible capital (including knowledge capital) relative to tangible capital. There has also been a surge in production of IT, heightened competition in an increasingly deregulated economy facing strong international competition, a rising amount of R&D done in small companies, a rise in technology alliances and acquisitions, and new forms of financing (Baily and Lawrence, 2001). The ratio of inventories to shipments in the durable goods industries has declined by about 40% since the early 1980s, suggesting that shorter and more flexible manufacturing processes and just-in-time deliveries have reduced the need for inventories.

Regardless of whether one regards such data as convincing evidence of a New Economy or simply as indicators of some interesting and possibly new patterns, the question is: What is the cause of the different behavior of the US macro economy in the late 1990s compared to earlier periods? What is driving the observed changes?

In this paper, I argue that the observed changes are at least consistent with the view that digitization of information, combined with the Internet, represents a form of general-purpose technology that is giving rise to a vast new array of possible combinations that we may refer to as the New Economy. The level of connectivity between actors and ideas is increasing dramatically. We have only begun to see the impact, and only part of it is measurable.

Interpreted in this way, the New or Digital Economy is about dynamics, not static efficiency. It is more about new activities and products than about higher productivity. While economic growth can be described at the macro level, it can never be explained at that level. Economic growth results when a variety of actors create and use new technology. New technology is the result of new combinations of ideas. When connectivity increases, the number of possible new combinations increases also.

The paper is organized as follows. The theoretical background is presented in the next section. This is followed by a brief review of historical examples of general-purpose technologies and their economic impact. Next, the effects of digitization and the Internet are reviewed: the productivity enhancement in traditional industries, the restructuring of economic activity within industries, the market efficiency effects, and the potential arising from entirely new products and industries. The paper concludes with a brief summary.

¹ Tobin’s Q refers to the ratio between the market value of a firm’s assets and their replacement value.

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