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International comparisons of productivity growth: the role of information technology and regulatory practices☆

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Abstract

While information technology (IT) is credited with the recent acceleration in productivity in the United States, many other industrial countries have not experienced a pickup in productivity growth. To explain this productivity divergence, we use panel data from 1992 to 1999 for 13 industrial countries and find that this divergence is driven in part by differences in both the production and adoption of information technologies. Based on this finding, we proceed to investigate what factors might play a role in explaining differences in IT adoption. Our results support the view that burdensome regulatory environments and, in particular, regulations affecting labour market practices have impeded the adoption of information technologies and have slowed productivity growth in a number of industrial countries.

JEL classification: C12; C33; D24; L50; O47
Keywords: Information technology; Labour productivity; Business regulations; Employment protection legislation; International panel data

1. Introduction

In recent years, the United States has experienced an impressive pickup in productivity growth that, for the most part, has not occurred abroad.[1] What is remarkable about this development is that the chief explanation for the acceleration in US productivity—the

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[1] For evidence on this observation, see, for example, Gust and Marquez (2000) or Scarpetta et al. (2000).

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proliferation of computer and information technology (IT)—is available worldwide.[2] Indeed, this divergence in productivity is puzzling given that many industrial countries have many of the same structural and institutional characteristics as the United States such as well-educated workforces, an openness to trade, and well-developed legal frameworks. What, then, explains the failure of productivity growth to pick up in many of these other industrial countries?

This paper provides evidence for a view that can account for this recent productivity divergence between the United States and other industrial countries by emphasizing the role of regulatory practices in influencing the diffusion of information technologies. According to this view, burdensome regulations in various countries, but particularly in a number of European countries, have impinged on firms' incentive to adopt new technologies, slowing their rate of adoption. The delay in the adoption of new technologies in these countries then translates into slower productivity growth vis-à-vis the United States.

With a wide variety of regulatory differences across countries, this view has been expressed in a number of ways. Some proponents focus mainly on product market regulations, specifically those inhibiting competition in goods markets. One variant in this genre, for instance, focuses on regulations raising the cost to entry of new firms. Others focus more specifically on labour market regulations, specifically those that undermine the ability of firms to adjust their workforce in a flexible manner. One proponent of this view is Greenspan (2000), who argues that in order to reap the high returns associated with information technologies, a firm must be able to reorganize its workforce, and employment protection legislation (EPL) interferes with a firm's ability to do so:

> Europe and Japan have participated in this recent wave of invention and innovation and have full access to the newer technologies. However, they arguably have been slower to apply them. The relatively inflexible and, hence, more costly labour markets of these economies appear to be an important factor.

Another proponent advocating the importance of labour market regulations is Feldstein (2001):

> In Europe, fundamental changes in employment practices, labour markets, and management incentives are necessary to encourage rapid adoption of new technology that can raise productivity while increasing employment. Without such changes, the gap between US and European incomes will continue to widen.

Figs. 1 and 2 show that the Greenspan–Feldstein argument is not lacking in empirical support. Specifically, Fig. 1 plots the change in labour productivity growth between 1991–1995 and 1996–2000 against the change in the ratio of IT expenditures to GDP between 1992 and 1999. As shown there, countries whose IT expenditures rose sharply in the 1990s also experienced a pickup in productivity growth. In contrast, countries where spending on information technologies fell or only picked up marginally did not

[2] See, for example, Gordon (2000), Oliner and Sichel (2000), Jorgenson and Stiroh (2000), and US Council of Economic Advisors (2001).