

Decomposing Productivity Growth in the U.S. Computer Industry^{*}

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Abstract

In this paper, we examine the sources of the productivity growth in the U.S. computer industry from 1978 to 1999. We estimate a joint production model of output quantity and quality that distinguishes two types of technological changes: process and product innovations. Based on the estimation results, we decompose total factor productivity (TFP) growth rate into the contributions of process and product innovations and scale economies. The results show that product innovation associated with better quality accounts for about 30 percent of the TFP growth in the computer industry. Furthermore, we find that the TFP acceleration in the computer industry in the late 1990s is mainly derived from a rapid increase in product innovation.

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