This study analyses the relationship of technical progress and unemployment when technological acceleration increases capital productivity but reduces the transferability of skills between jobs. The model combines the vintage capital framework (Aghion and Howitt 1994, Mortensen and Pissarides 1998) with skill dynamics (Violante 2001), producing a framework where both physical and human capital have the vintage property, whereas previous studies consider only vintage physical capital. We investigate the effects of technical progress and skill dynamics on wage growth, job creation and destruction and equilibrium unemployment for workers with vintage specific skills and for workers with general skills. The model considers capital productivity increasing with technical progress and two dimensional skills (Violante 2001). A workers productivity in the current job increases by learning by doing, but upon changing jobs her productivity is reduced because only a fraction of skills are transferable to a job of a more recent vintage. Transferability depends on the technological distance between jobs. Acceleration in technical progress increases capital productivity in competing jobs at the technological frontier but decreases the transferability of skills to these jobs, implying an ambiguous effect on the outside option and wage growth of workers.

Specificity of skills determines the effect of technical progress on wage growth, job creation and destruction and equilibrium unemployment. For workers with specific skills technical progress causes an adverse effect on the outside option and wage growth as the increase in capital productivity is offset by loss of skills upon changing jobs.

When match technology is fixed and skills are specific slower wage growth implies higher profitability of jobs, longer job duration and lower equilibrium unemployment. In jobs for which updating of technology is feasible, the need to update becomes less frequent as the profitability of jobs increases. These results are the opposite to those obtained in earlier studies (Mortensen and Pissarides 1998, Pissarides 2000). When renovation is feasible, the effect of technical progress on equilibrium unemployment depends on whether only capital or both capital and workers’ skills are updated. Equilibrium unemployment increases in the former case and decreases in the latter case.

Keywords
- technological progress
- skills
- unemployment

Additional information
- Muita tietoja-Övriga uppgifter