Essays on Technological Change and Labor Markets

Hiroya Taniguchi
Graduate School of Economics, Kyoto University

Abstract

This dissertation consists of three chapters about technological change and labor markets.

The first chapter investigates the sources and mechanisms of changes in the skill premium and their differences across countries. Although wage inequality has evolved in advanced countries over recent decades, it is unknown the extent to which changes in wage inequality and their differences across countries are attributable to specific capital and labor quantities. We examine this issue by estimating a sector-level production function extended to allow for capital–skill complementarity and factor-biased technological change using cross-country and cross-industry panel data. Our results indicate that most of the changes in the skill premium are attributable to the relative quantities of ICT equipment, skilled labor, and unskilled labor in the goods and service sectors of the majority of OECD countries.

The second chapter investigates the sources and mechanisms of changes in the skill wage gap and gender wage gap. The male–female wage gap has declined in many countries, while the skilled–unskilled wage gap has increased in some countries. The rate of decline in the gender wage gap tends to be greater for unskilled workers than skilled workers, while the rate of increase in the skill wage gap tends to be greater for male workers than female workers. Such differences are significant in the service sector, but not in the goods sector. To account for these trends, we develop and estimate a sector-level production function that allows for gender-specific capital–skill complementarity using cross-country and cross-industry panel data from OECD countries. We further derive and estimate the aggregate elasticities of substitution among different types of capital and labor, and evaluate the quantitative contribution of specific capital and labor quantities to changes in gender and skill premia. Our results show that ICT equipment is more complementary not only to skilled workers than unskilled workers but also to female workers than male workers. The pattern of changes in gender and skill premia can be interpreted in terms of the race between progress in ICT and advances in educational attainment and female employment.

The third chapter investigates the sources and mechanisms of changes in the aggregate labor share. Trends in the aggregate labor share are different across countries and across periods. Using firm-level panel data from 6 OECD countries for the years 2003–2017, we investigate the extent to which changes in the aggregate labor share are attributed to changes in the markup. Our results show changes in the aggregate labor share are largely attributed to changes in the markup. In the first half of the sample period, a decline in the aggregate labor share is attributed to the reallocation of value added toward the firms whose markup increases. In the last half of the sample period, it is attributed to not only such a reallocation but also an increase in the average of the firm's markup.