Firm specific human capital and unemployment in a growing economy

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Abstract

This study analyzes how the intensive use of firm specific human capital in firms affects the unemployment rate. For this purpose, I introduce into an equilibrium search model the possibility that workers quit their jobs. A worker changes his job when a firm that newly enters into the market offers a higher wage than his current wage. If firm specific human capital is important, it is difficult for a worker to quit his job, and, in consequence, the number of workers who quit their jobs is small. Thus, the unemployment rate is low. If the speed of technology obsolescence is high, the unemployment rate is high. © 2002 Elsevier Science B.V. All rights reserved.

1. Introduction

Until the end of the 1990s, the unemployment rate in Japan was significantly lower than that in the United States.[1] This study intends to explain the low unemployment rate in terms of the intensive use of firm specific human capital in Japanese firms. In the existing literature, these two phenomena have been related to each other only indirectly. Many studies have explained the low unemployment rate by various institutional features such as lifetime employment, the seniority wage system, and the dual structure of the

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[1] The unemployment rate in Japan was almost 2 percent in 1965–1995. However, the unemployment rate in the United States was larger than 6 percent in almost all periods in 1965–1995.

labor market.[2] Other studies relate these institutional features to the intensive use of firm specific human capital.[3] In this study, I construct an equilibrium search model that demonstrates a direct channel through which the unemployment rate can be related to the use of firm specific human capital.

This study extends the search model with economic growth developed by Aghion and Howitt (1994), who study how economic growth that causes technology obsolescence affects unemployment, in two directions.[4] The first extension is that workers quit their jobs. Workers who are employed by existing firms quit their jobs if they are offered higher wage by firms that enter into the market. The second extension is that workers accumulate firm specific human capital. If firm specific human capital is important in the firm, the wage becomes low when a worker quits the job, and it is difficult for workers to quit their jobs.

By extending the model of Aghion and Howitt (1994) in these two directions, this study demonstrates that the unemployment rate is related to firm specific human capital. The more important firm specific human capital is in the production process of the firm, the smaller the incentive for the worker to quit the job, and, in consequence, the lower the unemployment rate.

This paper considers the possibility of job-to-job quitting, which has seldom been considered in the equilibrium search theory developed by Diamond (1982), Mortensen (1982) and Pissarides (1990).[5] The exception is Pissarides (1994),[6] in whose equilibrium model a firm can choose two types of jobs: good job or bad job. Because the wage of a good job is higher than that of a bad job, only workers who are assigned to a bad job quit the job. In contrast to Pissarides's model, in this study workers quit their jobs because of wage differentials caused by economic growth with technology obsolescence.

2. The model

The model is based on an equilibrium search model that consists of workers, firms, the final good market that is competitive, and the labor market that has friction and, in consequence, causes unemployment. Time is continuous. The economy grows because of technological progress that is embedded only in newly entered firms. This technological progress causes technology obsolescence in the existing technology. I consider the steady state equilibrium. In this equilibrium, it holds that the economy grows at rate of $g + (1 - \gamma)h_g$, where g is the rate of technological change and also the rate of technology obsolescence and where $(1 - \gamma)h_g$ is the rate of accumulation of general human capital.

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[2] See, for example, Gordon (1982).

[3] Lifetime employment and the seniority wage system can be explained by the importance of firm specific human capital. See Aoki and Okuno (1996) for a theoretical study based on human capital theory developed by Becker (1964). Mincer and Higuchi (1988) and Okazaki (1993) conduct empirical studies. Koike (1999) is an observational study.

[4] Mortensen and Pissarides (1998a) also study the same topics.

[5] See Mortensen and Pissarides (1998b) for an excellent survey. Search theory has been used in other contexts. See Diamond and Fudenberg (1989) and Mortensen (1999) for an analysis of the business cycle, and Kiyotaki and Wright (1993) for an analysis of fiat money.

[6] See Burdett (1978) for a partial equilibrium analysis.