

Abstract

This paper presents a dynamic factor demand model with adjustment costs, in which workers and capital stock are quasi-fixed in the short run, but material and overtime hours of work are variable. Workers are quasi-fixed because of long-term employment. Scheduled and overtime hours of work enter the model as distinct factors of production. Corresponding to this distinction, total labor cost is divided into scheduled payments, which represent fixed costs of employment, and variable overtime payments. The model is based on the restricted cost function with quadratic adjustment costs for workers and capital stock. I specify the restricted cost function by a truncated translog function, and apply it to annual time series data for 1960 - 85 on the Japanese electrical machinery industry using 3SLS. The estimated model satisfies all regularity conditions, the over-identification restriction is not rejected at the 2 percent level, and indicates the presence of significant adjustment costs of both workers and capital stock. In particular, the estimated degree of quasi-fixedness of workers is about five times higher than comparable results for the U. S. manufacturing. Overtime hours and material are slightly substitutable in the short-run, whereas they are complements in the long-run. The model produces the standard empirical result that an equal increase in man-hours by increasing hours of work has a greater impact on output than that by increasing employment, although the difference in the impacts is quantitatively rather small.