Labour demand, elasticity and adjustment: a dynamic model with firm and time specific adjustment and application to Finnish firm data

This thesis deals with labour demand, the elasticities of labour demand and adjustment through the theory of labour economics, an econometric model and its application to panel data set of Finnish firms. First a continuous and discrete time model of labour demand are specified with strictly convex or quadratic adjustment costs. In the econometric part of the study a model for labour demand with firm and time specific elasticities and adjustment are specified. The adjustment parameter is also explicitly modeled.

From the econometric model for labour demand the wage-, output-, capital- and trend elasticity are calculated for each observation in time. Then these elasticities are averaged according to the factor of interest which in this thesis are 1. time, 2. industry and 3. size of firm. The same applies for the adjustment parameter. Especially the wage elasticity is of special interest as it describes the effects of the tax wedge of labour on labour demand.

In the econometric part of the thesis the elasticities and adjustment of labour demand are estimated from an unbalanced panel data set of the 500 largest enterprises in Finland as measured by turnover. The data covers the years from 1986 to 2003 and has a total of 8185 observations. As an econometric research method a fixed effects nonlinear seemingly unrelated regressions (SUR) algorithm is used to estimate labour demand. The results indicate that the wage and output elasticity of labour demand have increased during the observed period from 1986 to 2003. The wage elasticity has increased from -0.6 to -0.75 and the output elasticity from 0.8 to 0.9 in the long run during the data period. The same pattern is observed for these elasticities in the short run as well. Technical change has decreased labour demand by approximately two percent p.a. in the short and long run. These results confirm that Finnish labour markets have become more flexible due to increased competition and integration of product markets which in turn are due to the single market policies of the EU and the effects of globalization on labour markets. The only surprise in the results is that the adjustment parameter has decreased slightly during the end of the observation period which points to mounting adjustment costs of labour demand and rigidities in the adjustment of labour markets.

The results also show that the elasticities and adjustment of labour demand vary strongly with the industry of the firm. This points to the heterogeneity across firms and industries which validates the research strategy and methodology used here and should not be overlooked in empirical research in general. On the other hand firm size is not found to be a significant factor in determining the elasticities or adjustment. Therefore the explicit modeling of firm and time specific adjustment should be taken into account in future research on labour demand and its elasticities.