

Identification and estimation of average effects in dynamic random coefficient models

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Abstract

Dynamic fixed effect models are popular in empirical research. However, they allow for unobserved heterogeneity only in the intercept but not in the coefficients, although the coefficients can be important parameters such as Cobb-Douglas coefficients of firm's production function or return to education in Mincer equation. This paper studies a dynamic fixed effect model where both its intercept and coefficients are heterogeneous, called a dynamic random coefficient model. It is shown that the model is partially identified when the length of panel data is fixed, and the sharp identified set of the model is characterized. The characterization does not require any support restriction. A computationally feasible estimation and inference procedure based on fast and exact global polynomial optimization algorithm is proposed. The method is applied to life-cycle earnings and consumption dynamics using Panel Study of Income Dynamics (PSID) dataset. The estimates suggest that there is large heterogeneity in earnings persistence and earnings elasticity of consumption across households and that there is strong correlation between the two. Calibration of structural life-cycle model is performed to make sense of the estimation results.

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