Bivariate Probit Estimation for Panel Data:

a two-step Gauss-Hermite Quadrature Approach with an application to product and process innovations for France

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SUMMARY

This paper describes two methods for computing a bivariate probit model on panel data with correlated random effects. A first approach using simulated maximum likelihood has been already presented in the literature. An alternative method based on a two-step Gauss-Hermite quadrature in order to evaluate the likelihood function is proposed in this article. A simulation shows the importance to estimate the correlation in random effects and the correlation between both equations. Finally an application is performed to estimate the determinants of product or process innovations on a panel of French firms. It shows a very large correlation between individual effects.