

Panel Models with Interactive Effects*

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Abstract

The multiplication of individual specific effects, λ_i , and time-specific effects, $f_t, \lambda_i' f_t$, provides a more general formulation than the traditionally used additive form to capture the unobserved heterogeneity in panel data modeling. It is also a useful approach for dimension reduction or for modeling cross-section dependence. However, λ_i and f_t are unobservable. We explore the implications for econometric modeling under various formulations of the interactive effects models and suggest a quasi-likelihood approach as a common framework to study issues of estimation and statistical inference when regressors are either strictly exogenous or predetermined and under different combinations of the data size of cross-sectional dimension, N , and time series dimensions, T . We also review some popular estimation methods in light of the quasi-likelihood approach. Monte Carlo studies are conducted to highlight the issues involved.

Keywords: Interactive Effects; Static and Dynamic Models; Initial Observations; Asymptotic Bias

JEL Classifications: C01; C13; C23

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Health status and labour market outcome: empirical evidence from Australia

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Abstract

This paper uses eight waves of Australia Household, Income, and Labour Dynamics data (HILDA) to study the issues of state dependence and the short-run and long-run response to health shocks on labour market. We consider six alternative panel data binary dependent variable models with different ways of modeling labour market dynamics and individual heterogeneity. We find that the key results with regard to labour market dependence and the impacts of health shocks are sensitive to model specification and pooling of male and female samples, with differences as large as ten-folds. Specification analysis is conducted and favors the dynamic fixed-effects logit model for separate male and female samples. Methods for evaluating dynamic response paths to a one-time health shock are also suggested and results presented.

JEL Classification: I10, I12, J21, J24

Keywords: health status, labour force participation, state dependence, dynamic fixed-effect binary logit model

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Do China's High-Speed-Rail Projects Promote Local Economy?

---New evidence from a panel data approach

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Abstract: This paper evaluates the effect of High Speed Rail (HSR) projects on the economic growth of targeted city nodes (HSR cities) in China using prefectural-level city data from 1990 to 2013. Employing a panel data program evaluation method devised by Hsiao, Ching and Wan (2012), we construct hypothetical counterfactuals for per capita real GDP of HSR cities in the absence of their respective HSR projects using the outcomes in selected non-HSR cities. We find that the responses to HSR treatment are heterogeneous with regard to location, route, and region. The location-level impact ranges between 5% and 59% and is not temporary. HSR cities with positive effects concentrate along the Hu-Ning Segment, the Yong-Tai-Wen-Fu-Xia Segment, and within the Hunan province along the Wu-Guang HSR. These cities are mainly located in the eastern coastal regions of China, in core urban agglomeration regions that allow them to be transportation hubs. In general, the gain for local economies is greater for cities that are more industrialized, with more ability of the service sector to absorb enough labor, and with better supporting infrastructure. On the other hand, local protectionism hampers the development of HSR cities. We also show that at different project stages, HSR cities experience different gains.

JEL classification: C23, C51, C54, O18, R11

Keywords: counterfactual, economic growth, infrastructure, High-Speed-Rail, location-level heterogeneity, panel data, program evaluation, transportation

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