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Theme: Special Sessions

Session: FrG2 - Efficiency

Title: **Fixed Effect Estimation of Time-Varying Technical Efficiency**

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Abstract: Within the fisheries literature there has been a growing interest in obtaining estimates of fisheries production in order to determine vessel specific measures of technical efficiency that may be used to estimate the capacity of the fleet. Given that many data sets are panels there has arisen a growing need to determine time-varying levels of vessel specific technical efficiency to control for technological progress within the industry. This has lead to the utilization of various time-varying technical efficiency estimations that are constrained by the parametric assumptions invoked by the researcher.

This paper considers fixed effect estimation of a production function where inputs and outputs are observed and vary over time, space, and cross-sectional unit. We exploit the variability in the spatial dimensions to identify (among other things) a time-varying technical efficiency parameter, without the usual decomposition of the parameter into a cross-sectional component and a time-varying component. Asymptotics along the spatial dimension preclude an incidental parameter problem in the estimation of technical efficiency. We discuss empirical considerations and apply our results to the productivity of bottom-trawler fishing vessel in the flatfish fisheries of the Eastern Bering Sea.