

# Panel Data Minimum Distance Mode Regression

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## Abstract

We propose a new fixed effects estimator for the conditional mode for panel data using a minimal distance approach, for the case in which the dependent variable has a continuous conditional density with a well-defined global mode. We called this novel estimator of minimum distance modal regression (*MDMR*) estimator. We establish consistency and explicitly derive the limiting distribution of the *MDMR* estimator for panels with large number of cross-sections and time-series under both sequential and joint limits, and show that our estimator converges to the normal distribution at least as fast as other estimators already proposed. The proposed estimator is easy to implement and the Monte Carlo simulations for finite sample suggest that our proposed estimator may be affected by the skewness and the bandwidth. We found that using a smaller penalty when choosing the value for the bandwidth (larger value) leads to an unbiased estimator with small variances. Finally, we illustrate the use of the estimator with a simple application to the impact of Foreign Direct Investment (FDI) on economic growth in the seven major advanced nations (the *G7* countries).

**Keywords:** Fixed Effects, Minimal Distance, Modal Regression, Panel Data

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