

# Endogenous Switching Regression Model and Treatment Effect Estimators for Count Data: Alternative Parametric Approaches

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## Abstract

Endogenous treatment and count data outcome are common features in empirical research in health economics. We consider a switching regression model for count data outcome, where a potential outcome differs across two alternate states and individuals endogenously select into one of the states. This framework allows us to derive simple expressions for treatment effects commonly used in the program evaluation literature: the average treatment effect (ATE), the average treatment effect on the treated (ATT), the local average treatment effect (LATE), and the marginal treatment effect (MTE). In this paper, we discuss two alternative parametric approaches to estimate the switching regression model for count data outcome. The one extends log-normal latent heterogeneity models, and the other utilizes copula functions to permit flexible dependence structures. Both approaches provide a versatile specification by allowing a flexible univariate distribution for the selection mechanism. A Monte Carlo study demonstrates the performance of our proposed estimators. Real-data applications that examine the effects of private insurance on the frequency of doctor visits using the data sets employed by previous studies illustrate the value of the proposed estimators.

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