

Bias of the Structural Quasi Score Estimator of a Measurement Error Model Under Misspecification of the Regressor Distribution

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KEY WORDS: Measurement error model, structural case, bias, misspecification, mixture of multivariate normals, quasi score estimator, robustness

MATHEMATICAL SUBJECT CLASSIFICATION: Primary 62J02, secondary 62F35

Abstract: In a structural error model the structural quasi score (SQS) estimator is based on the distribution of the latent regressor variable. If this distribution is misspecified the SQS estimator is (asymptotically) biased. Two types of misspecification are considered. Both assume that the statistician erroneously adopts a normal distribution as his model for the regressor distribution. In the first type of misspecification the true model consists of a mixture of normal distributions which cluster around a single normal distribution, in the second type the true distribution is a normal distribution admixed with a second normal distribution of low weight. In both cases of misspecification the bias, of course, tends to zero when the size of misspecification tends to zero. However, in the first case the bias goes to zero in a flat way so that small deviations from the true model lead to a negligible bias, whereas in the second case the bias is noticeable even for small deviations from the true model.

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