SEMIPARAMETRIC RANDOM COEFFICIENT REGRESSION MODELS

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Abstract. Linear regression models with random coefficients express the idea that each individual sampled may have a different linear response function. Technically speaking, random coefficient regression encompasses a rich variety of submodels. These include deconvolution or affine-mixture models as well as certain classical linear regression models that have heteroscedastic errors, or errors-in-variables, or random effects. This paper studies minimum distance estimates for the coefficient distributions in a general, semiparametric, random coefficient regression model. The analysis yields goodness-of-fit tests for the semiparametric model, prediction regions for future responses, and confidence regions for the distribution of the random coefficients.

Key words and phrases: Minimum distance, empirical characteristic function, errors-in-variables, deconvolution, random effects, statistical inference.