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ECONOMETRIC RESEARCH SEMINAR

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  Institut für Höhere Studien
  Stumpergasse 56, 1060 Wien

Charles R. Nelson,
University of Washington

"Valid Inference for a Class of Models Where Standard Inference Performs Poorly; Including Nonlinear Regression, ARMA, GARCH, and Unobserved Components"

ABSTRACT

Standard inference works poorly in models of the form $y = \gamma \bullet g(\beta, x) + \varepsilon$, because the standard error for $\hat{\beta}$ depends on $\hat{\gamma}$. In this paper we show that this problem is usefully studied by working with the linearization of g(.) and the resulting reduced form regression. Bias and dispersion in $\hat{\beta}$ depend on correlation between the 'regressors' and on γ, as does the size of the t-test. A reduced form test however is exact when g(.) is linear and has nearly correct size in examples from non-linear regression, ARMA, GARCH, and Unobserved Components models. Further, its distribution does not depend on the identifying restriction $\gamma \neq 0$.

with Jun Ma, University of Alabama.