

# **Estimating Economic Relationships Subject to Firm-and Time-Varying Equality and Inequality Constraints**

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Applied econometricians often fail to impose economic regularity constraints in the exact form economic theory prescribes. We show how the Singular Value Decomposition (SVD) Theorem and Markov Chain Monte Carlo (MCMC) methods can be used to rigorously impose time- and firm-varying equality and inequality constraints. To illustrate the technique we estimate a system of translog input demand functions subject to all the constraints implied by economic theory, including observation-varying symmetry and concavity constraints. Results are presented in the form of characteristics of the estimated posterior distributions of functions of the parameters.

**Keywords:** equality constraints, inequality constraints, Singular Value Decomposition, Markov Chain Monte Carlo, Bayes, input demands

**JEL Classifications:** C11, C 13, C3, C51, D2.

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