

Accepted Manuscript

The ABC of simulation estimation with auxiliary statistics

Jean-Jacques Forneron, Serena Ng

PII: S0304-4076(18)30046-0

DOI: <https://doi.org/10.1016/j.jeconom.2018.03.007>

Reference: ECONOM 4486

To appear in: *Journal of Econometrics*



Please cite this article as: Forneron J.-J., Ng S., The ABC of simulation estimation with auxiliary statistics. *Journal of Econometrics* (2018), <https://doi.org/10.1016/j.jeconom.2018.03.007>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The ABC of Simulation Estimation with Auxiliary Statistics

Jean-Jacques Forneron*

Serena Ng[†]

January 2018

Abstract

The frequentist method of simulated minimum distance (SMD) is widely used in economics to estimate complex models with an intractable likelihood. In other disciplines, a Bayesian approach known as Approximate Bayesian Computation (ABC) is far more popular. This paper connects these two seemingly related approaches to likelihood-free estimation by means of a Reverse Sampler that uses both optimization and importance weighting to target the posterior distribution. Its hybrid features enable us to analyze an ABC estimate from the perspective of SMD. We show that an ideal ABC estimate can be obtained as a weighted average of a sequence of SMD modes, each being the minimizer of the deviations between the data and the model. This contrasts with the SMD, which is the mode of the average deviations. Using stochastic expansions, we provide a general characterization of frequentist estimators and those based on Bayesian computations including Laplace-type estimators. Their differences are illustrated using analytical examples and a simulation study of the dynamic panel model.

JEL Classification: C22, C23.

Keywords: Indirect Inference, Synthetic Likelihood, Auxiliary Statistics, Laplace Type Estimator.

*Department of Economics, Columbia University. Email: jmf2209@columbia.edu

[†]Department of Economics, Columbia University, and NBER. Email Serena.Ng at Columbia.edu.

Correspondence Address: 420 W. 118 St. Room 1117, New York, NY 10025.

Financial support is provided by the National Science Foundation (SES-0962431 and SES-1558623). We thank Richard Davis for discussions that initiated this research, Neil Shephard, Christopher Drovandi, two anonymous referees, and the editors for many helpful suggestions. Comments from seminar participants at Columbia, Harvard/MIT, UPenn, and Wisconsin are greatly appreciated. All errors are our own.

Download English Version:

<https://daneshyari.com/en/article/7357902>

Download Persian Version:

<https://daneshyari.com/article/7357902>

[Daneshyari.com](https://daneshyari.com)