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A Class of Model Averaging Estimators

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SUMMARY: Model averaging aims to a trade-off between efficiency and biases. In this paper, a class of model averaging estimators, g-class, is introduced, and its dominance condition over the ordinary least squares estimator is established. All theoretical findings are verified by simulations.

KEY WORDS: Finite Sample Size, Mean Squared Error, Model Averaging, Sufficient Condition.

JEL Classification codes: C13, C2.

1 INTRODUCTION

It is well known that the estimation based on a "small" model can be more efficient than that based on a "large" model, but the former can lead to substantial biases. Model averaging aims to a trade-off between efficiency and biases. However, in most of the existing literature, model averaging methods are mainly focused on large sample properties. For example, the asymptotic optimality is studied in Hansen (2007), Liang et al. (2011), Liu & Okui (2013) and Zhang et al. (2016b); the asymptotic distributions are developed in Hjort & Claeskens (2003), Zhang & Liang (2011) and Liu (2015); and asymptotic risk is compared in Hansen (2014). Few contribution was devoted to the finite sample properties of model averaging. Exceptions are Magnus et al. (2010) and Magnus et al. (2011), where the prior information and Bayesian tools are utilized. In the current paper, we study model averaging from a frequentist perspective and a review of Bayesian model averaging can be found in Hoeting et al. (1999).

Recently, Zhang et al. (2016a) studied the dominance of the Mallows model averaging (MMA) estimator (Hansen, 2007) over the ordinary least squares (OLS) estimator under the finite sample situation and found that when the sample size and the number of regressors satisfy a condition, the dominance holds. The current paper follows that work. Specifically, we provides a class of model