

From: KENNETH JUDD <kennethjudd@mac.com>
Subject: Your attacks on Su-Judd and DFS
Date: October 11, 2014 at 9:49:32 AM PDT
To: jinhyuklee@unist.ac.kr, kseo@kaist.ac.kr
Bcc: Che Lin Su <chelin.su@gmail.com>

Professors Lee and Seo,

I am writing you in regards to your paper "Comment on: Improving the Numerical Performance of BLP Static and Dynamic Discrete Choice Random Coefficients Demand Estimation".

Your main comment on the DFS paper also applies to the Su-Judd paper. Your abstract states

"We find that their NFP codes are not efficient enough to fairly compare NFP with MPEC. With our modifications to the NFP codes, NFP is comparable in computational time to MPEC in the same Monte Carlo experiments as in DFS. Moreover, when the inner loop of NFP is replaced by Newton's method (on which MPEC is based), NFP is faster than MPEC."

You have ignored some important facts.

First, Su and I already have pointed out the fact that NFP would be better if the inner loop used a modern version of Newton's method. We did that in the original version of our paper submitted to *Econometrica*. This point is not original to your paper. *Econometrica* told us to delete the section where we made that point and many others comparing NFP and MPEC.

Second, the key fact here is that Rust was wrong in his original NFP when he claimed that Newton's method was unstable. He ignored the modifications (such as trust region and line search methods) done in the 1970's that made Newton's method globally stable for optimization problems and also very reliable for nonlinear equations. If there was some value to your note it is that Rust's description of NFP was poor, and that you offer a better way to do NFP. It is odd that you decided to make a comment attacking DFS for implementing a poor implementation of NFP when the fact is that Rust's implementation suffered from many of the same problems. The fact that you chose to comment on DFS instead of Rust's paper indicates animus towards DFS, not a desire to make a point of general value. However, as I said above, your point is valuable but not original to you.

Third, you say that MPEC is based on Newton's method. This is a misleading statement. The point of Su-Judd is that these problems are constrained optimization problems and that one should solve them with the best methods available for constrained optimization problems. Those methods could use

Newton's method or other methods. In fact, Knitro is used in some cases and Knitro uses an interior point method to solve the problem, and is not described as an example of Newton's method. Therefore, you have fundamentally misled the reader about what MPEC is about.

Fourth, I am sad to see that you called my friends "unfair." Any paper should be judged as a part of a conversation. DFS focused on using MPEC for BLP models, and the implementation of NFP used by DFS was exactly as BLP people use. If anyone was unfair to NFP it was the BLP authors whose implementation of NFP was very unfair to NFP. Again, you chose to attack DFS when the real problem was the poor implementation of NFP by the BLP authors.

You are the ones being "unfair," trying to build your career by making misleading attacks on prior work.

These are my main comments. Your error bounds are nothing but use of standard error formulas. I have no technical criticism of them at this time; they appear to be correct. However, you misuse and distort these obvious results to attack DFS and Su-Judd in a way that will mislead the readers.

If you succeed in publishing this material, I will make public my comments on your paper, and the fact that you knew all these facts before you wrote the final version of your paper. We can then let others decide whether your work deserves attention.

Your paper is obviously aimed at pleasing the editors at Econometrica. You are likely aware of the great hostility that they have towards my collaborators and me. You figured that attacking us was better strategy than attacking Rust and the BLP authors, who are all members of the Econometric Society elite. I wish people would spend more time making true contributions to computational methods in economics than writing up misleading attacks aimed to please the ruling elite.

Sincerely,

Dr. Kenneth L. Judd
Paul H. Bauer Senior Fellow