MACS 40200 Problem Set 1

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The Case for Structural Estimation

From reading both Keane (2010) and Rust (2010), I believe structural estimation presents a coherent connection between empirical and theoretical work. As Keane states, the dialogue between data and theory is what characterizes not only economics, but "hard" sciences as well even though history sometimes presents an atheoretical view. "This distorted history ignores the fact that Galileo did not decide to roll balls down inclined planes simply out of some general curiosity. His experiments were motivated by a theoretical framework that he already had in mind" (Keane, 14). The lack of economic theory present in certain studies, such as Angrist (1990), limit the inferences the researcher can make: "It is not clear from Angrist's estimates what causes the adverse effect of military experience on earnings. Is the return to military experience lower than that to civilian experience, or does the draft interrupt schooling" (Keane, 5).

As both econometricians note, the criticism often made of structural estimation is the reliance on models that make "too many assumptions". Nevertheless, to make causal statements, the "experimentalist" approach depends on many assumptions as well, some of which weaken its relative validity. Such is the case, as Rust notes, with *additive separability*, *conditional dependence* and *rational expectations*. As he states, the first two "are *very strong assumptions*" while the third is "hardly an innocous assumption." (Rust, 5) They can be justified and follow a statistical rationale that allow the researcher to make important statements. This requires statistical theoretical work: "Some econometricians [...] are content to restrict their attention to a much less ambitious set of questions, using statistical models and imposing statistical assumptions that make them more comfortable. I might describe these types of econometricians as *statistical modelers*." (Rust, 8)

Nevertheless, I do not agree with the simple solution Rust provides: "if I am uncomfortable with a particular model, I just don't use it. If others are comfortable with statistical approaches, by all means they should use them." (Rust, 7) The metric with which researchers choose to use a certain methods over others should not be how comfortable they feel with them, but rather the one best fit to answer the research question.

References

- Keane, Michael P., "Structural vs. Atheoretic Approaches to Econometrics," Jour- nal of Econometrics, May 2010, 156 (1), 3–20.
- Rust, John, "Comments on: 'Structural vs. Atheoretic Approaches to Econometrics' by Micahel Keane," Journal of Econometrics, May 2010, 156 (1), 21–24.