Structural Estimation
Problem Set 1
Question 2

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Question 2

Before discussing the view of structural estimation and reduced form estimation, it is essential to identify what are the purposes of these estimations. From my understanding, I regard econometrics, at least under specific conditions, as a tool for economists to build, to test, or to predict particular economic theories. With this perspective, whether structural estimation is better than reduced form estimation is no more than the timing of research and the belief of researcher.

The timing of research means that the role of particular study within a field. When researchers explore a new field, it contains many unknown and lacks theories. For these precursory studies, unrevealing the relationships of factors and identifying the role of variables are critical. It is difficult, and not necessary, to construct a structural estimation model. However, while some fields are explored, examining how these theories work comprehensively could have become the primary focus, the structural estimation then will find its role. For these purposes, the number of assumptions, which is something Keane (2010) argued quite a lot, should not be an issue. Just as Rust (2010) stated in his conclusion, these are just different methods.

The belief of research, on the other hand, relates to the belief of social science. When talking about the belief of social science, it is worth noting that there exist differences between science and social science. However, while most people regard science as more scientific, the complicatedness of social science makes it less scientific. While this comparison might not make any sense, as these two are in nature different studies, some people often want to make their studies look more scientific, because they believe the scientific research could make the conclusion closer to the truth. However, if someone accepts the complicatedness, then to construct an unrealistic but useful model will be these people's goal. From this point of

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view, structural modelers, a term comes from Rust (2010), are closer to the researchers who accept there are differences between science and social science, whereas statistical modelers, including experimental econometricians, believe that social science is not different from science in its nature or research methodology.

From the discussion above, I think my argument leaned more toward Rust (2010) than Keane (2010). First, I am not convinced that discussing the number of assumptions is a critical issue when contrasting econometric approaches. The assumption is strong whether people are rational or not rational (or say, bounded rational). As we do not know the reality, any setting we make is an assumption. In that sense, we can only relax the mathematical but not the economic assumptions. Moreover, while assumptions sometimes are not comparable. We can hardly say the normality assumption is stronger than assuming people have utility functions because they describe two different things. Although Keane (2010) also pointed out that it is not the number of assumptions that make the difference between these approaches, I believed that distinguishing the type of papers using these methods would be more plausible in discussing this issue.

Second, the goal of the research is what matters in choosing the method of estimation. In the real world, factors correlate with each other. Therefore, structural equations could capture the interaction, at least in some degree, if researchers are interested in how the economic system works. This property is essential especially when there is a limitation of data. On the other hand, a purified experimental environment could reveal the relationships between factors more evident in some content than structural estimation, if the researcher believes that the artificial environment is sufficient to duplicate the real-world behavior. As Keane (2010) pointed out: *"Where I think there is legitimate ground for disagreement is over the specific types of models and assumptions different people feel comfortable with,"* the choice of approaches depends on how researchers see the world.

In conclusion, I believe that these two papers have done a fascinating job on contrasting the two econometric approaches. However, while I don't think the source of the difference between structural and experimental approaches comes from the number assumptions, I also doubt that it comes from the explicitness or implicitness of these two methods (Keane, 2010). I am more convinced that these two approaches are just two different methods which are utilized by different type of researchers.

Reference

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