Thoughts on research proposal

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Motivation

Questions

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I just read an interesting survey paper by Arthur Lewbel called, *the identification zoo*.

What is identification in applied paper?

- The concept of identifying something should preceed estimating it.
- Often, the applied paper (with a structural model) cites another method paper, arguing something is identified, e.g., choice probability, transition probability. by showing that the requirements are satisfied by our structual model.
- Next, the strucural model is parametric. Though the $\Pr(d|x)$ is non-parametrically identified, we can not say that the parameter β in $\Pr(d|x) = \frac{\exp(x\beta)}{1+\sum_j \exp(x\beta)}$ is identified.

Questions

1. What is the relationship between non parametrically identifyiing $\Pr$ and parametrically identifying the parameter in $\Pr$?
    - Showing parametric identification (identification by functional form) implies that $\Pr$ is identified.
2. It is hard to establish identification argument with moment based method. (see example under extreme based identificatio in the survey paper). But is there a way to do that? Does stacking moments help?
3. Is the precision of estimates related to the identification of the parameters?

Questions

4. Why do we sometimes add noisy measure of some variables?
    i. on the type?
    ii. on the personality trait?
    iii. on the ability?

(See a brief mention of *noisy measure on the unobservables* in section 4.7 from Olivier's paper.)

Side Note

1. Identification up to labeling. (*Up to* means that once you fix the label, then everything is identified. Like *up to location/scale*.)
2. The labeling is arbitrary. We need to assume a monotonic mapping $G(f_{Y_{t+1}|y_t,x_t^*})$? How does joint diagnolization circumvent this?