Lectures on Identification

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Identification issues were a central theme in the early econometric research done in the 1940's and 1950's much of it centered around the Cowles Commission. The topic remains at the core of econometrics but it fell somewhat out of the spotlight until a recent renaissance. Now identification issues are at the fore, particularly in applied microeconometric research, and new identifying models are a major stimulus to development of new econometric methods and inferential procedures.

Study of the identifying power of models is worthwhile because it leads to understanding of many issues including:

1. the nature of the information about economic processes contained in data,
2. the role of "assumptions" in econometric inference,
3. the extent to which the restrictions of models are falsifiable,
4. econometric architecture - the design of procedures to extract information about economic magnitudes from economic data,
5. the role of measurement - what is measured and how it is measured - in determining the information content of economic data and the limits to econometric inference.

The six lectures present a study of identification analysis starting with the parametric Cowles model of the 1940's and tracing development through to a number of semi- and non-parametric extensions that are the subject of recent and continuing research. Recent research allows the study of the identifying power of models in which latent variables may be non-additive. This allows identification analysis of a number of problems in which outcomes and endogenous explanatory variables vary discretely. Set rather then point

identification is a generic feature of models admitting discrete variation. The later lectures will focus on discreteness and set identification. Here is a provisional schedule.

Lecture 1: Identification: Introduction, motivation, principles and examples

The purpose and importance and some history of identification analysis. Structures, models, and the construction of Leo Hurwicz. Definitions of point and set identification. The identifying power of models and how it can be determined. Identifying correspondences and analogue estimation. Examples: instrumental variables models, linear simultaneous equations models.

Lecture 2: Identification with continuous variation 1

Single equation IV models, parametric and nonparametric. IV models and discrete endogenous variables. Triangular models and control function methods in additive error models. Varieties of independence conditions.

Lecture 3: Identification with continuous variation 2

Quantile functions and their properties. Non-additive error models. Quantile based control function methods. Excess heterogeneity and index restrictions. Identification of average structural features.

Lecture 4: Identification with discrete variation 1

Discrete variation in instrumental variables and support issues. Discrete explanatory endogenous variables: set identification using control function methods. Set identification in IV models for binary outcomes.

Lecture 5. Identification with discrete variation 2.

Instrumental variables models for discrete outcomes, set identification, multivariate discrete outcomes, measurement error models.

Lecture 6. Reflections and discussion.

New directions in identification analysis, unsolved problems, questions, perhaps answers.