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A Study on Falsifiability of Incompletely Specified Economic Models

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Abstract – A general framework is given to analyze the falsifiability of economic models based on a sample of their observable components. It is shown that, when the restrictions implied by the economic theory are insufficient to identify the unknown quantities of the structure, the duality of Specified Models with zero–one cost function delivers interpretable and operational formulations of the theory of specification correctness from which tests can be constructed to falsify the model. This paper study of the situation is such that the solutions of the problem of Some Contributions to the Incompletely Specified Models are necessarily optimized by the same value of . Two sided tests of Specified Models are optimized by roughly the same value of that optimizes the estimation problem. However, tests of Specified Models need not have this property.

Keywords: Falsifiability, Incompletely, Specified, Economic, Models, etc.

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INTRODUCTION

In many contexts, the ability to identify econometric models often rests on strong prior assumptions that are difficult to substantiate and even to analyze within the economic decision problem. A recent approach has been to forego such prior assumptions, thus giving up the ability to identify a single value of the parameter governing the model, and allow instead for a set of parameter values compatible with the empirical setup. A variety of models have been analyzed in this way, whether partial identification stems from incompletely specified models.

All these incompletely specified models share the basic fundamental structure that a set of unobserved economic variables and a set of observed ones are linked by restrictions that stem from the theoretical economic model. In this paper, we propose a general framework for conducting inference in such contexts. This approach is articulated around the formulation of a theory of compatibility of the true distribution of observable variables with the restrictions implied by the model as a specified economic models problem (Galichon, Henry, 2008. Galichon, Henry, 2008. Manski, 2005. Pakes, *et. al.,* 2004. Andrews, *et. al.,* 2003).

Given a theorized distribution for latent variables, compatibility of the true distribution of observed variables with the model is shown to be equivalent to the existence of a zero cost specified models plan from the hypothesized distribution of latent variables to the true distribution of observable variables, where the zero–one cost function is equal to one in cases of violations of the restrictions embodied in the model (Tamer, 2003. Villani, 2003. Dudley, 2002).

REVIEW OF LITERATURE:

The paper is organized as follows. The sets out the framework, notations and defines the problem considered. The case of parametric restrictions on the distribution of unobserved variables, gives the optimal specified economic models formulation of the compatibility of the distribution of observable variables with the economic model at hand, and discusses strategies to falsify the model based on a sample of realizations of the observable variables (Brock, Durlauf, 2001. Hansen, Sargent, 2001. Bozivich, *et. al.,* 2007).

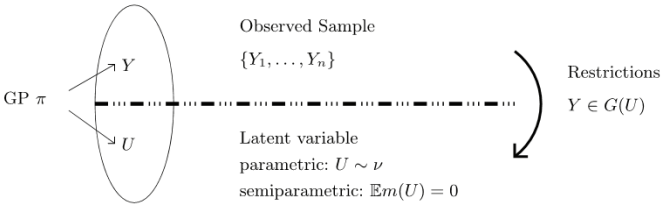

Fig- 1 Summary of the structure GP stands for generating process

We consider, as in (Bancroft, 2007), an economic model that governs the behaviour of a collection of

economic variables (*Y, U*), where Y is a random element taking values in the Polish space *Y* (endowed with its Borel σ-algebra *BY*) and *U* is a random element taking values in the Polish space *U* (endowed with its Borel σ-algebra B*U*). *Y* represents the sub collection of observable economic variables generated by the unknown distribution *P,* and *U* represents the sub collection of unobservable economic variables generated by a distribution v. The economic model provides a set of restrictions on the joint behaviour of observable and latent variables, i.e. a subset of $Y \times U$, which can be represented without loss of generality by a correspondence $G: U \Rightarrow Y$ (Fig. 1).

1. Parametric restrictions on unobservable:

Consider first the case where the economic model consists in the correspondence $G: U \Rightarrow Y$ and the distribution v of unobservable. The observables are fully characterized by their distribution *P*, which is unknown, but can be estimated from data (Hosteller, 2005. Bennett, 2006). Paull, 2008). The question of compatibility of the model with the data can be formalized as follows: Consider the restrictions imposed by the model on the joint distribution π of the pair (Y, U):

– Its marginal with respect to *Y* is *P*,

– Its marginal with respect to *U* is *v*,

– The economic restrictions $Y \in G(U)$ hold π-almost surely.

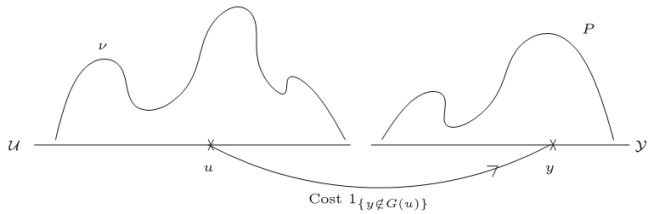

Fig. 2 Specified Models plan from mass distribution *v* on *U* to mass distribution *P* on *Y* with cost of transportation equal to 1 if the restrictions are violated, and 0 otherwise

A probability distribution π that satisfies the restrictions above may or may not exist. If and only if it does, we say that the distribution *P* of observable variables is compatible with the economic model (*G, v*).

CONCLUSION:

We have proposed a specified economic models formulation of the problem of testing compatibility of an incompletely specified economic model with the distribution of its observable components. In addition to relating this problem to a rich optimization literature, it allows the construction of computable test statistics and the application of efficient combinatorial optimization algorithms to the problem of inference in discrete games with multiple equilibria. A major application of tests of incomplete specifications is the construction of confidence regions for partially identified parameters. In this respect, the specified economic models formulation proposed here allows the direct application of the methodology proposed in the seminal paper of the general models with multiple equilibria.

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