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Abstracts of research papers

Entry Deterrence and Learning Prevention on eBay, Fall 2007, Job Market Paper

Internet auctions (such as eBay) differ from the traditional format in that participants 1) typically face a choice over several simultaneous auctions and 2) often have limited information about their rival bidders. Since existing economic models do not account for these features of the bidding environment, it should not be surprising that even casual empiricism reveals a sharp discrepancy between the predictions of existing theory and the actual behavior of bidders. In particular, despite the second-price structure of eBay auctions (which, along with private values, implies that bidders submit a single bid), eBay bidders frequently bid multiple times over the course of a single auction and cluster their bids at the very end. In this paper, I show that the presence of multiple, contemporaneous auctions for similar items coupled with uncertainty regarding rival entry can explain both features. The multi-auction structure of eBay induces two types of aggressive bidding behavior: entry deterrence and learning prevention. While the incentive to deter entry leads to aggressive early bidding, the incentive to prevent rivals from learning the unobserved features of the auction by observing the price process can lead to late bidding. I analyze these features in a continuous-time stochastic auction model with endogenous entry, in which bidder types are differentiated by their initial information regarding the entry process. I establish non-parametric identification of the structural model and develop a computationally attractive method for estimating its parameters. Empirical estimates using eBay auctions of pop-music CDs confirm my theoretical prediction that the rate of entry into auctions depends on price. The analysis of comparative dynamics of the model shows the presence of entry deterrence and learning prevention in the data. I then test my model against alternative explanations of observed bidding behavior using a detailed field experiment. The method that I develop for identification and estimation of continuous-time interaction models is applicable to many settings in which agents compete in dynamic markets.

Empirical Content of Continuous-Time Principal-Agent Models, Fall 2007

There is a strong interest among corporate finance and industrial organization economists in estimating the effects of moral hazard and adverse selection in a variety of contractual settings. In this paper, I develop a methodology for the identification and non-parametric estimation of a continuous-time principal-agent model. My framework extends the existing literature on optimal dynamic contracts by allowing for the presence of unobserved state variables. To accommodate such heterogeneity, I develop an estimation method based on numerically solving for the optimal non-linear manager's response to the restrictions of the contract. Since my estimation methodology relies on observing optimal responses, as opposed to optimal contracts, it can be used to evaluate the optimality of particular executive contracts. To demonstrate this feature, I apply my methodology to executive contracts from the retail apparel industry. I then use the structural estimates of the contract parameters and the utility of the executive managers to evaluate the revenue and welfare effects of the introduction of the Sarbanes and Oxley act. I find that executive managers in general benefited from the introduction, while most of the welfare costs have been shifted to the shareholders.

Estimation of Continuous-Time Models of Interactions, Fall 2007

This paper provides a tractable methodology for the construction and structural estimation of continuous time dynamic models. The specific class of models covered by my framework includes competitive dynamic games where there are no direct spillovers between objective functions of players. I develop an estimation methodology based on the properties of the equilibrium of the model. Specifically, I compare the aggregate best responses of players with the observed dynamics of the state variable and minimize a particular information-based distance criterion. I provide a Bayesian MCMC-based method for efficient minimization of this distance criterion, describe its statistical properties, and establish asymptotic normality of the structural parameter estimates. The methodology that I design can be applied to welfare and revenue analysis of large dynamic models. As an example, I compute the revenue and welfare gains for a counter-factual exercise in which the eBay auction website changes the format of its auctions from second-price to a flexible ending.

A Note on Alternative Methods for Semiparametric Efficiency Bound Calculations, with Shakeeb Khan

This paper examines the importance of regularity conditions in computing semiparametric efficiency bounds. Using the example of an endogenous IV model with special regressors, we demonstrate that both the structure of the model and the structure of the set of regularity conditions affect the value of the efficiency bound.

Semiparametric Efficiency in Nonlinear LATE Models, with Han Hong

This paper examines semiparametric efficiency for the estimation of finite dimensional parameter vectors defined by generalized moment conditions under the local instrumental variable assumptions. These parameters identify treatment effects on the set of compliers under the monotonicity assumption. The distributions of covariates, treatment dummy and the binary instrument are not specified in a parametric form, making the model semiparametric. We derive the semiparametric efficiency bounds for both conditional models and unconditional models. We also develop multi-step semiparametric efficient estimators that achieve the semiparametric efficiency bound. Using data from the Florida Family Transition Program, we apply our estimation procedure to analyze the effect of a parent's employment on children's achievement for single-parent households that applied for state welfare support. We find that the linear regression estimate of the treatment effect has a substantial attenuation bias as compared to instrument-based methods. In general, parent's employment adversely affects child's achievement. Our result suggests that ignoring the selection effect leads to substantial bias in the estimate of the effect of parent's employment.

Measurement Error Models, with Xiaohong Chen and Han Hong

This paper presents an overview of the existing models of measurement error, providing several examples of how these models can be applied to the estimation of economic relationships.

Estimating Static Models of Strategic Interactions, with Patrick Bajari, Han Hong, John Krainer

We propose a method for estimating static games of incomplete information. A static game is a generalization of a discrete choice model, such as a multinomial logit or probit, which allows the actions of a group of agents to be interdependent. Unlike most earlier work, the method we propose is semiparametric and does not require the covariates to lie in a discrete set. While the estimator we propose is quite flexible, we demonstrate that in most cases it can be easily implemented using standard statistical packages such as STATA. We also propose an algorithm for simulating the model which finds all equilibria to the game. As an application of our estimator, we study recommendations for high technology stocks between 1993-2006. We find that strategic motives, typically ignored in the empirical literature, appear to be an important consideration in the recommendations submitted by equity analysts.

Assessment of the Results of Personal Income Tax Reform in Russia (in Russian), with S. Sinelnikov, S. Batkibekov, P. Kadochnikov, *Voprosi Ekonomiki*, 2003 (6).

As a result of the tax reform in the year 2000 Russia has switched income taxation from progressive to proportional, setting a uniform 13% personal income tax rate. In this paper we argue that de facto taxation before the tax reform was not progressive because the access to the mechanisms of tax evasion was better for richer cohorts of the population. Using the data from the Federal Tax Agency of Russia we empirically verify this argument.