

## **An Outline for the course in Berkeley; Winter, 2014**

Empirical observations and experimental results in economics over the last several decades, have begun to question, with increasing frequency and intensity, both economic assumptions and predictions that underlie classical economics. They forced economists to rethink their model of individuals and groups economic behavior. Questions such as, when and under what circumstances, individual are less rational then depicted in the classical model, and what other, less self centered, arguments of preferences are important to recognize and model? In search of a richer and more realistic assumptions and models about human behavior and decision-making, economists have turned to controlled laboratory experiments. The resulting work has significantly impacted how economists think about individual decision-making, game and group theory, and behavior within markets. (The impact of economic experiments on the field became especially clear when Vernon Smith and Daniel Kahneman shared the Nobel Prize in the fall of 2002.) One of the most excited outcome of this new experimental and behavioral program is the viable dialog resulted, mainly in the recent years, between experimentalists and theorists.

In his (Al Roth) introduction to, Laboratory Experimentation in Economics: Six Points of View, Cambridge University Press, 1987, Roth, A. E. (ed.), he writes:

“Although it became increasingly evident that no classification scheme would be adequate to the task of demonstrating the relationships as well as the differences between different bodies of work, I organized the paper around three principal kinds of dialogues, which I referred to as “Speaking to Theorists,” “Searching for Facts,” and “Whispering in the Ears of Princes.”

It is worth notating that all the three dialogs come under “dialogues” which may be surprising since one may expect, as in other sciences to find “testing theories” as the most or maybe even the only thing that experimental economics cares about so we’ll need to understand why (or should) experimental economics be so different. And of cause experimental economics is also about testing theories and providing “wind tunnel” for testing and improving mechanisms (e.g., auctions) to be implemented by governments and corporations.

It is not possible to cover the full range of areas where experimental methods are used in a semester and there is more than one way to organize such a course. We can have a list of issues and methodological challenges and discuss them pointing to the relevant literature. Instead, we have chosen subjects/areas where both of us studied and published, since in these are the areas that we are most knowledgeable, while addressing the methodological concerns most relevant in

these areas. As a result, the reference list contains disproportional number of our own work and we may have overlooked and/or omitted many others' good works. (See in the syllabus below).

There is more than one possibility to organize such course. We can have a list of issues and methodological challenges and discuss them pointing to the relevant literature. We have decided to simply cover topics from our research program (E.g., WARP, auctions) and cover the experimental literature while addressing of the issues and the methodological challenges and our solutions (syllabus below).

The plan is to cover the following topics: Private-Values and Common-Values Auctions. (4-5 lectures); How robust are “well known” anomalies to deliberations, (1 lecture); Bounded Rationality, (2 lecture). Students' presentations, (2 meetings). .

### **General Reading, Texts:**

It is difficult to single out simple text or source of readings. Here are some references to general sources.

Kagel J. and A. Roth, (1995) Handbook of Experimental Economics, Volume I.

Kagel J. and A. Roth, (1995) Handbook of Experimental Economics, Volume II.

[http://www.econ.ohio-state.edu/kagel/Auction\\_survey\\_1\\_11\\_all.pdf](http://www.econ.ohio-state.edu/kagel/Auction_survey_1_11_all.pdf)

These handbooks contain chapters, by leading experimentalist that survey the literature up to that time in the chapter particular area. The second Volume is forthcoming but the relevant, auction, Chapter will be made available.

Davis, D. and Holt, C. *Experimental Economics*, Princeton University Press, 1993.

Camerer, C. *Behavioral Game Theory*, Princeton University Press, 2003.

Roth, A. E. (ed.) *Laboratory Experimentation in Economics: Six Points of View*, Cambridge University press, 1987.

<b>Lecture # and Date</b>	<b>Subject(s)</b>	<b>Comments</b>
<b>4) Fri. Feb. 14</b>	<b>Auctions: Private Values</b>	
<b>5) Fri. Feb. 21</b>	<b>Auctions: Private Values</b>	
<b>6) Fri. Feb. 28</b>	<b>Auctions: Common Values</b>	
<b>7) Fri. Mar. 07</b>	<b>Auctions: Common Values</b>	
<b>10) Fri. Apr. 04</b>	<b>Robustness and Anomalies</b>	
<b>11) Fri. Apr. 11</b>	<b>Bounded Rationality</b>	
<b>12) Fri. Apr. 18</b>	<b>Bounded Rationality</b>	
<b>13) Fri. Apr. 25</b>	<b>Students presentations</b>	
<b>14) Fri. May. 02</b>	<b>Students presentations</b>	

Lecture 4: Friday, February 14, 2014 Professor Levin

Lecture 5: Friday, February 21, 2014 Professor Levin

## Auctions: Private Values: Single and Multi Unit (MU) IPV, APV.

- Motivation: history, importance: value and volumes of trade; best application of game theory. The four “standard” (“simple) auction rules (formats).
- Equilibria, of the standard auction in the benchmark, Vickrey, environment.
- Converge of the main results from Riley & Samuelson; Myerson, both (1981). E.g. Revenue Equivalence, “strategic equivalence, optimal auctions.
- Comparative statics: risk aversion (RA); correlations; number of bidders, etc.
- MU demand auctions. Demand reduction; Complementary; Package auctions.

### Experimental issues:

- Testing theory.
- Deviation from Nash Equilibrium (NE): Overbidding in standard auctions and explanations: Risk aversion; Joy of Winning (JOW); Regret; Bounded Rationality.

### Methodological Experimental issues:

- How to incentivize; Instructions; Randomization of groups; Unit of observation; Subject population, controls such as risk preferences.

### References to lectures 4 and 5: in \* indicates first priority readings.

#### Theoretical:

Klemperer, Paul, Auctions: Theory and Practice, Princeton University Press, 2004. (Most of this is available on line.)

Levin D. and J. Smith, 1994, “Equilibrium in Auctions with Entry,” *American Economic Review*, Vol. 84, 585-599, 24.

\*Milgrom, P., and R. Weber, 1982, “A Theory of Auctions and Competitive Bidding,” *Econometrica*, 50:1485-527.

Milgrom, P., 2004, Putting Auction Theory to Work, Cambridge University Press (2004).

Myerson, R., 1981, “Optimal auction design,” Mathematics of Operations Research, 6, 58-73.

\*Riley, J. & Samuelson W., 1981, “Optimal Auctions,” *American Economic Review*, 71:381-92.

Smith J and D Levin, 1996, “Ranking Auctions with Risk-Averse Bidders,” 1996, *Journal of Economic Theory*, Vol. 68, 549-61.

Vickrey, W., 1961, “Counterspeculation, Auctions, and Competitive Sealed Tenders,” Journal of Finance, 16: 8-37.

Vijay Krishna, Auction Theory, Academic Press, 2002.

## Experimental:

- Georganas S., D. Levin and P. McGee, 2013-WP, "Do Irrelevant Payoffs Affect Behavior when Dominant Strategy is Available: Experimental Evidence from Second-Price Auctions."
- Chernomaz K. and D. Levin, 2012, "Efficiency and Synergy in a Multi-Unit Auction with and without Package bidding: An Experimental Study," *Game and Economic Behavior*, Vol. 76(2), 611-635.
- \*Kagel, J., 1995, "Auctions: A Survey of Experimental Research," in The Handbook of Experimental Economics, Kagel J and A. Roth (eds). Princeton University Press.
- Kagel J. and D. Levin, 1985, "Individual Bidder Behavior in First-Price, Private-Value Auctions," *Economics Letters*, No. 19, 125-128.
- \*Kagel J, D. Levin and R. Harstad, 1987, "Information Impact and Allocation Rules in Auctions with Affiliated Private Valuations: An Experimental Study," *Econometrica*, Vol. 55, 1275-1304.
- \*Kagel J. and D. Levin, 1993, "Independent-Private-Values Auctions: Bidder Behavior in First-, Second- and Third-Price Auctions with Varying Numbers of Bidders," *Economic Journal*, Vol. 103, 868-879.
- \*Kagel J. and D. Levin, 2001, "Behavior in Multi-Unit Demand Auctions: Experiments with Uniform Price and Dynamic Vickrey Auctions," **2001**, *Econometrica*, Vol. 69, 413-54.
- \*Kagel J. and D. Levin, 2005, "Multi-Unit Demand Auctions with Synergies: Some Experimental Results," *Games and Economic Behavior*, Vol. 53, 170-207.
- \*Kagel J, and D. Levin, 2009, "Implementing efficient multi-object auction institutions: An experimental study of the performance of boundedly rational agents," *Games and Economic Behavior*, Vol. 66, No. 1, 221-237.
- \*Kagel, J. H. and D. Levin, 2013, "Auctions: A Survey of Experimental Research, 1995-2010," prepared for The Handbook of Experimental Economics, vol 2. Kagel J. and A. Roth (eds). : Princeton University Press (forthcoming). <http://www.econ.ohio-state.edu/k>
- \*Levin D., 2005, Demand Reduction in Multi-Unit Auctions: Evidence from a Sports card Field Experiment: A Comment," *American Economic Review*, Vol. 95, 467-471.

**Lecture 6: Friday, February 28, 2014**

**Professor Levin**

**Lecture 7: Friday, March 7, 2014**

**Professor Levin**

## **Auctions: Common Value Auctions and the Winner's Curse (WC).**

- Motivation: Mineral rights: Importance.
- Equilibria, and main theoretical results Convergence, Willingness to Pay
- Strategic equivalence FPA, DA.
- Comparative statics: risk aversion (RA); correlations; number of bidders.
- Almost Common Values.
- Theories to Explain the WC (probably will introduce in another lecture)

### **Experimental issues:**

- Testing theory.
- Overbidding in CVA and the WC.
- Learning and Experience
- Mitigating the WC.
- Subject Populations.

### **Methodological Experimental issues:**

- Similar to previous and; How to deal with losses in experiments?

### **References to lectures 6 and 7: in \* are first priority readings.**

#### **Theoretical:**

Klemperer, P. 1998, "Auctions with almost common values: the 'wallet game' and its applications," European Economic Review 42, 757–69.

Levin D., J. Kagel, 2005, "Almost Common-Value auctions revisited," 2005, *European Economic Review*, Vol. 49, 1125-1136.

\*Milgrom, P., and R. Weber (1982). "A Theory of Auctions and Competitive Bidding," Econometrica, 50:1485-527.

Milgrom, P., (2004), Putting Auction Theory to Work, Cambridge University Press (2004).

Klemperer, P. 1998, "Auctions with almost common values: the 'wallet game' and its applications," European Economic Review 42, 757–69. Wilson, R, 1977, "A Bidding Model of Perfect Competition," Review of Economic Studies, 44: 511-18.

#### **Experimental:**

Bazerman M. and W. Samuelson, 1983,, "I Won the Auction But Don't Want the Prize." *Journal of Conflict Resolution*," 27, 618-34.

- Campbell C., J. Kagel and D. Levin, 1999, "The Winner's Curse and Public Information in Common Value Auctions: Reply," *American Economic Review*. Vol. 89, 325-334.
- Charness G., D. Levin and D. Schmeidler, 2014-WP, "Generalized Winner's Curse: Theoretical and Experimental Investigation."
- Dyer D. J. Kagel and D. Levin, 1989, "A Comparison of Naive and Experienced Bidders in Common Value Offer Auctions: A Laboratory Analysis," **1989**, *Economic Journal*, Vol. 99, No. 394, 108-115.
- Kagel J., D. Levin, R. Battalio and D. Meyer, 1989, "First-Price Common-Value Auctions: Bidder Behavior and the 'Winner's Curse'," *Economic Inquiry*, V. 27, 241-58.
- \*Kagel J. and D. Levin, 1986, "The Winner's Curse and Public Information in Common-Value Auctions," *American Economic Review*, No. 76, 894-920.
- Kagel J. and D. Levin, 1991, "The Winner's Curse and Public Information in Common-Value Auctions: Reply," *American Economic Review*, Vol. 81, 362-69.
- \*Kagel J. and D. Levin, 1999, "Common-Value Auctions With Insider Information," *Econometrica*, Vol. 67, 1219-38.
- \*Kagel J. and D. Levin, 2002, "Bidding in Common Value Auctions: A Survey of Experimental Research," in *Common Value Auctions and the Winner's Curse*, Princeton U. Press.
- \*Kagel, J. H. and D. Levin, 2013, "Auctions: A Survey of Experimental Research, 1995-2010," prepared for The Handbook of Experimental Economics, vol 2. Kagel J. and A. Roth (eds). : Princeton Un.Press (forthcoming). <http://www.econ.ohio-state.edu/k> (**Section II, CV**)
- \*Levin D., J. Kagel and J-F. Richard, 1996, Revenue Effects and Information Processing in English Common Value Auctions," *American Economic Review*, Vol. 86, 442-460.
- Levin D. and P. Reiss, 2013-WP, "Could we overcome the Winner's Curse by (Behavioral) Auction Design?"
- Rose S. and D. Levin, 2008, "An Experimental Investigation of the Explosive Effect in Almost Common Value Auctions," *Journal of Economic Behavior and Organization*, Vol. 67, 927-946.

**How robust are “well known” anomalies to deliberations.**

- Experimental work and the production of anomalies.
- The importance of using (and misusing) of anomalies in economics.
- Anomalies and the economic model.

**Methodological Experimental issues:**

- Different ways of allowing deliberations strengths and weaknesses.
- Free deliberation with vs. creating predetermined messages.
- “Truth wins” learning in deliberations: synergies or just first order effects.

**References to lectures 10.**

- Charness G., E. Karni and D. Levin, 2007, “Individual and Group Decision Making Under Risk: An Experimental Study of Bayesian Updating and Violations of First-Order Stochastic Dominance,” 2007, *Journal of Risk and Uncertainty*, Vol. 35, 129-48.
- Charness G., E. Karni and D. Levin, 2010, “On the Conjunction Fallacy in Probability Judgment: New Experimental Evidence,” 2010, *Games and Economic Behavior*, Vol. 68(2), 551-56,
- Charness G., E. Karni and D. Levin, 2013, “Ambiguity Attitudes: An Experimental investigation,” *Journal of Risk and Uncertainty*, Vol. 46 (1), 1-25, (lead article).
- Cooper, D. and J. Kagel, 2005, “Are Two Heads Better Than One? Team versus Individual Play in Signaling Games,” *American Economic Review*, 95(3): 477-509.

More will be added later

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**Lecture 11: Friday, April 11, 2014**

**Professor Levin**

**Lecture 12: Friday, April 18, 2014**

**Professor Levin**

**Bounded Rationality:**

- Relaxation of beliefs (but preserving individual rationality). “Cursed Equilibrium,” “K-Level Hierarchy,” and other models.
- Trembling hands (but preserving consistent beliefs).
- Experimental evidence.

**Methodological Experimental issues:**

**References to lectures 11 and 12: in \* are first priority readings.**

**Theoretical:**

- Crawford V. and N. Iriberry, 2007, "Level- $k$  Auctions: Can Boundedly Rational Strategic Thinking Explain the Winner's Curse and Overbidding in Private-Value Auctions?" *Econometrica*, **75**, 1721-1770.
- Eyster E. and M. Rabin (2005), "Cursed Equilibrium," *Econometrica*, **73**, 1623-1672.
- Jehiel P., 2005, "Analogy-based Expectation Equilibrium," *Journal of Economic Theory*, **123**, 81-104.
- McKelvey R. and T. Palfray, 1995, "Quantal Response Equilibria for Normal Form Games," *Games and Economic Behavior*, Vol. 10, 6-38.

**Experimental:**

- Charness G. and D. Levin, 2005, "When Optimal Choices Feel Wrong: A Laboratory Study of Bayesian Updating, Complexity, and Psychological Affect," *American Economic Review*, Vol. 95, 1300-1309.
- Charness G. and D. Levin, 2009, "The Origin of the Winner's Curse: A Laboratory Study," *American Economic Journal, Microeconomics*, Vol.1, No.1, 207-36.
- Hoffman R., J. Kagel and D. Levin, 2011, "Simultaneous versus Sequential Information Processing," *Economics Letters*, Vol. 112, No 1, 16-18.
- Ivanov A., D. Levin and J. Peck, 2009, "Hindsight, Foresight, and Insight: An Experimental Study of a Small-Market Investment Game with Common and Private Values," *American Economic Review*, Vol. 99, No. 4, 1484-1507.
- Ivanov A., D. Levin and J. Peck, 2014-WP, "Separating Non-Computational Reasoning from Bayesian Updating: An Experimental Investigation."
- Ivanov A., D. Levin and M. Niederle, 2011, "Can Relaxation of Beliefs Rationalize the Winner's Curse? An Experimental Study," *Econometrica*, Vol.78, No 4, 1435-1452,
- Jung Y. J., Kagel and D. Levin, 1994, "On the Existence of Predatory Pricing: An Experimental Study of Reputation and Entry Deterrence in a Chain-Store Game," *RAND Journal of Economics*, Vol. 25, 72-93.
- Levin D., and P. Reiss (2013-WP), "Could we overcome the Winner's Curse by (Behavioral) Auction Design?"



**Lecture 13: Friday, April 25, 2014**

**Professor Kariv/ Levin**

**Lecture 14: Friday, May 2, 2014**

**Professor Kariv/ Levin**

**Meetings 13 and 14 are Students Presentations.**

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**Additional Bibliography on auctions for interested student; theory and experimental:  
auction and IO, Multi units etc.;**

**Multi-unit demand auctions**

\*Dasgupta, P. and E. Maskin, 2000, "Efficient Allocations," *Quarterly Journal of Economics*, Vol. 115, No. 2, pp. 341-88.

Cramton, Peter, 2004, "Simultaneous ascending auctions," available on his web site.

Cramton and Schwartz, 2002, "Collusive bidding in the FCC spectrum auctions" Contributions to economic analysis and policy (see Cramton's web site for a copy to download).

**Package/Combinatorial/Synergies**

Cantillon Estelle and Pesendorfer Martin, "Combination Bidding in Multi-Unit Auctions" Working paper LSE 2006.

\*Milgrom, Paul "Package Auctions and Package Exchanges," Fishers-Schultz Lecture, European Econometric Society, 2004 (avail on his web site).

\*Brunner, C, Goeree, J. K., Holt, C. A. and Ledyard, J. O. "An Experimental Test of Flexible Combinatorial Spectrum Auction Formats" *AEJ: Microeconomics* 2 (1) Feb 2010: 39-57.

Porter et al., 2003, "Combinatorial Auction Design," Proceedings of the national Academy of Sciences, 100 (19) September, 11153-57. Can be downloaded from [www.pnas.org/cgi/doi/10.1073/pnas.1633736100](http://www.pnas.org/cgi/doi/10.1073/pnas.1633736100)

Kagel, J. H., Lien, Y. and Milgrom, P. 2010 (August) "Ascending Prices and Package Bidding: An Experimental Analysis" *AEJ: Microeconomics*, 2: 160-185.

Holt, C and Goeree, J. "Hierarchical package bidding: A paper and pencil combinatorial auction" *Games and Economic Behavior*, 70(1) Sept 2010: 146-69.

**Auctions and IO**

Das Varma, Gopal, 2002, "Standard Auctions with Identity-Dependent Externalities," RAND Journal of Economics, Vol. 33, No. 4, pp. 689-708.

\*Goeree, Offerman and Sloof, 2006, "Demand reduction and preemptive bidding in multi-unit license auctions," WP, Should be available from web site of J. Goeree or T. Offerman.

\*Moldovanu B, P. Jehiel and E. Stacchetti, 1996, "How (not) to Sell Nuclear Weapons," *American Economic Review*, 86(4), 814-829.

\*Offerman, T. and Potters, J., 2006, "Does Auctioning of Entry Licenses Induce Collusion? An Experimental Study," *Review of Economic Studies*, 73, 769-91. (available on Potters web site)

### **More on Auctions, IO, and Internet Auctions**

Georganas, S. and Kagel, J. H. (2011) "Asymmetric auctions with resale: an experimental study" *Journal of Economic Theory*, vol 146, 359-71.

Ariely, D., A. Ockenfels, and A. E. Roth. 2005. An experimental analysis of ending rules in Internet auctions. *RAND Journal of Economics* 36:890-907.

Ely, J. C. and T. Hossain 2009. Sniping and squatting in auction markets. *AEJ Microeconomics*, 1: 68-96.

Shahriar, Q. and J. Wooders. 2011. An experimental study of auctions with a buy price under private and common values. *Games and Economics Behavior*, 72 (2011) pp. 558–573.

Blecherman, B. and C. Camerer (1998), "Is There a Winner's Curse in the Market for Baseball Players?," Unpublished.

Capen E., R. Clapp, and W. Campbell (1971), "Competitive Bidding in High-Risk Situations," *Journal of Petroleum Technology*, **23**, 641-653.

Cassing J. and R. Douglas (1980), "Implications of the Auction Mechanism in Baseball's Free agent Draft," *Southern Economic Review*, **47**, 110-121.

Levis M. (1990), "The Winner's Curse Problem, Interest Costs and the Under pricing of Initial Public Offerings," *Economic Journal*, **100**, 76-89.