

EXPERIMENTAL ECONOMICS

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Keywords: Economic theory; Economic experiments; Decision-making; Economic psychology; External validity

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Summary

This chapter provides an overview of the evolution of the field of economic experiments and how it came to occupy its current place within the mainstream of the broader discipline of economics, traditionally not an experimental science. It starts with a brief history of how the field started. Then a perspective is provided of the similarities and differences between experiments carried out by economists and psychologists given that there is a degree of overlap between the pursuits of these two disciplines. The various ways in which economic experiments can inform research in economics are discussed. The chapter addresses the advantages of carrying out decision-making experiments in economics as well as the potential drawbacks and limitations of experimentation. It concludes by discussing the issue of external validity and generalizability of economic experiments and also includes some thoughts on how the author expects the field to evolve in the future.

1. Introduction

Experimental economics is an empirical approach to understanding behavior in economic transactions. Here researchers analyze decisions made by participants in a variety of economic “games” (or “experiments”) that have been specifically designed to simulate a particular economic transaction that the researcher wishes to study. Participants in such experiments are remunerated and the amount they receive depends on the decisions they make during the experiment. By all accounts, economics, as we study it today can be traced back to the work of Alfred Marshall (Marshall, 1920). For much of its modern existence, economics has been predominantly a theory-based and non-experimental discipline.

Empirical approaches to studying economic phenomena have relied almost exclusively on field-data coming from “natural experiments” generated by unique exogenous events such as a change in economic policy or a naturally occurring change in the economic environment. Such may include the impact on unemployment of an exogenous change in policy such as minimum wage legislation or an exogenous shock such as large scale migration into a particular region.

The idea that data capable of helping us to understand important economic phenomena could be generated via controlled laboratory experiments is of recent vintage and did not take hold till the last two decades of the 20th century. It was only then that experimental economics came to be established as part of the mainstream in Economics.

The Nobel Memorial Prizes handed out to Vernon Smith and Daniel Kahnemann in 2002, Thomas Schelling in 2005 and to Elinor Ostrom in 2009 hastened this acceptance. The Nobel Prize awarded to Alvin Roth in 2012 provided further evidence of the increasing prominence of experimental economics within the mainstream of economics. While the Nobel prize recipients Herbert Simon (in 1978) and Maurice Allais (1988) had a research agenda that incorporated experiments neither were considered experimental economists per se and therefore their achievements did not seem to have advanced the cause of experimental economics to the extent that the prizes to say Smith and Kahnemann or Ostrom did.

In the early years of experimental economics researchers tended to rely on experiments run using pen and paper and a convenient sample of university students. But increasingly researchers are relying on more elaborate computerized experiments carried out in computer laboratories with purpose designed software.

This has been made possible by rapid advances in computing facilities, which in turn has allowed researchers to generate voluminous amounts of data suitable for sophisticated econometric analysis. Researchers are also increasingly moving away from exclusive reliance on student subjects and carrying out “field” experiments with adult members of society or members of specialized groups who may be more representative of the population as a whole or of the subject pool whose behavior is of primary interest to the researcher. See for instance Carpenter et al. (2005) and Harrison and List (2004).

Participants typically arrive at a class-room or computer laboratory. They are given instructions for the experiment. Usually such instructions are given using an abstract, context-free language. The idea is that the use of neutral language prevents the participants from being influenced to behave in a particular manner by what they believe the researcher is trying to study; a phenomenon that usually falls under the rubric of “experimenter demand effects”. This issue is discussed in more detail in Section 5.

However, in recent years as experiments have become more elaborate, researchers are increasingly relying on instructions that use emotive terms and provide an explicit context to the experiment. As indicated in Harrison and List (2004, p1022), *“it is not the case that abstract, context-free experiments provide more general findings if the context*

itself is relevant to the performance of subjects.” For instance, Cooper and Kagel (2003) study behavior in signaling games and explain the context of the game to their participants using terms that refer specifically to the problem that they are studying.

They suggest that the use of a meaningful context, rather than neutral language and abstract framing, might better capture behavior in real-life. This is because in situations where there are significant demands on the participants’ cognitive skills, providing a specific context to the task often helps participants make the necessary connections to real-life phenomena and work through the problem better. However, the use of context-based language is still rare and it is more common to use context-free language.

Participants then make their decisions either using pen-and-paper or via computers. With very few exceptions, interactions are anonymous. This means that while participants may know other people who show up for a particular session, nevertheless when they are put together into separate pairs or groups while undertaking a joint decision or transaction, they are not privy to the identity of the other pair or group members. At the end of the session participants are paid their earnings from the experiment privately.

The payment that participants get depends on the decisions that they make during the course of the experiment. Again, with very few exceptions, payment is performance dependent and it is unusual for the participants not to be paid or to be paid a fixed amount (independent of performance) in an economics experiment.

This is one of the ways in which experiments in economics differ from those in psychology, where remuneration for participants is not always performance dependent. Sometimes participants in psychology experiments are paid a flat fee, sometimes they receive course credit and at times some of the participants are paid at random. The important distinction here is that compared to economists, psychologists put less emphasis on pay-off dominance or reward salience. Section 4 below elaborates on the similarities and differences between experiments in economics and those in psychology.

1.1. Why Experiment in Economics?

As mentioned above, traditionally, economics has not been an experimental science. Samuelson and Nordhaus (1985), for instance, comment

“(e)conomists cannot perform the controlled experiments of chemists or biologists because (they) cannot easily control other important factors. Like astronomers or meteorologists, (economists) generally must be content largely to observe.”

Lipsey (1979) makes the reservation against data collected via economic experiments more explicit by stating

“Experimental sciences, such as chemistry and some branches of psychology, have an advantage because it is possible to produce relevant evidence through controlled laboratory experiments. Other sciences, such as astronomy and economics cannot do this.” (Emphasis mine)

Given this non-experimental view, economists have traditionally adopted a more theoretical approach that relies on building mathematical models of behavior in order to explain, understand or predict behavior in a variety of economic transactions. These models proceed from a series of ex ante assumptions based on the researcher's intuition to proving theorems about behavior. The success of such models is measured by their internal coherence.

Rubinstein (2001) argues that it may not even be meaningful to try and obtain empirical validation of theoretical propositions because, according to him, theoretical models do not generate concrete predictions about behavior in any particular situation. Rather a theoretical model in economics is merely an abstract representation of the type of consideration or argument that decision makers might be relying on in making decisions in a particular economic transaction. Rubinstein suggests that the ultimate test of a model's realism is essentially its intuitive appeal.

Rubinstein, in many ways, echoes the sentiments of Friedman (1953). The latter suggests that the assumptions made by economists in building theoretical models do not propose to represent how the world works exactly. They merely proceed on the assumption that these are "as if" propositions distilling regularities in behavior that happen to be useful in deriving predictions. Therefore, even though a lot of theorizing in economics depends crucially on the assumptions we make about individual preferences and behavior, these assumptions should not be treated as empirical hypotheses to which the theory is committed.

Smith (1989) writes that economists are trained to view economics as a non-observational science.

"Consequently, we come to believe that economic problems can be understood fully just by thinking about them. After the thinking has produced sufficient technical rigor, internal coherence and interpersonal agreement, economists can then apply the results to the world of data."

As a result, often economists were not overly concerned with empirical validation of the assumptions or predictions of theoretical models and even when empirical validation was sought it was usually via finding a natural experiment that might generate data suitable for testing a particular theory. However, one problem with field, i.e., naturally occurring, data is that this data may not always be available or not available in the exact form that is needed to answer a particular question.

Moreover, since the data is generated by a one-time economic phenomenon it may not necessarily be in the form that allows us to make causal inferences; i.e. whether a particular phenomenon X caused another phenomenon Y. Natural experiments are also impossible to replicate.

Given this traditional view of how claims to knowledge in economics are formulated, it was commonly held that economic experiments cannot generate evidence that is *relevant* to the validity of an economic theory.

1.2. The Rise of Experimental Economics

So the question is, given this traditional view of economics as an essentially non-experimental science, how did experimental economics come to occupy an entrenched position in the mainstream of economics? In many ways the rise of experimental economics coincided with the widespread application of game theory in economics. Even though the rise of game theory can be traced back to the work of John von Neumann and Oskar Morgenstern (Von Neumann and Morgenstern, 1944), it was only in the 1970s that economic theory models came to rely on and apply concepts derived from game theory.

Part of the reliance on complex game theoretic models was caused by the shift in research emphasis from studying individual decision making and behavior in competitive markets, neither of which involves strategic considerations, to analyzing behavior in more complex markets and institutions such as oligopolies or auctions, where anticipating and responding to the strategies adopted by one's competitors is essential.

But given that so many of the assumptions of game theory rely on innate beliefs and preferences, finding natural data-sets to test the validity of these models is practically impossible. Experiments, however, provided a way out. Carefully designed experimental treatments can often usefully illustrate the impact of different institutions such as different auction mechanisms on economic behavior.

Plott (1991) argues that part of the increased acceptance of experiments was also caused by a shift in the way economists thought about the role of economics in general and economic theory in particular. In the middle-decades of the 20th century the prevailing view was that because economic phenomena were extremely complex, the only way to study them was to study economies "in the wild" and either to build theories to explain economic phenomenon or to understand the statistical properties of ongoing processes. But gradually the emphasis began to shift from studying particular economies as they are found in the wild to studying general theories, models and principles that govern the behavior of economic phenomena.

Part of this was certainly due to the impressive advances in theory which led to more sophisticated model building, increasingly incorporating game theoretic concepts. The argument became that general theories must apply to special cases. It is possible to generate simple yet real economies in the laboratory to which the general theory should be applicable. Laboratory experiments can then be used to test and evaluate the predictive capacities of general theories as well as setting up contests between which of many theories are better able to explain and predict complex economic phenomena.

Smith (1976) makes the point that the study of decision making by suitably motivated individuals in the laboratory has important and significant applications to the development and verification of theories. Results of laboratory tests can serve as rigorous empirical pre-tests of economic theory prior to the use of field data tests. Results obtained via experiments can be directly relevant not only to evaluating theories but also to inform further theory development.

Smith argues that in order for experiments to yield meaningful data, it is important to control subject preferences. More specifically, subjects' home-grown preferences must be "neutralized" while the experimenter "induces" new preferences. Subsequent behavior of subjects is then driven by these induced preferences. This can be achieved via the use of money as a reward medium as long as the following two major assumptions hold. (1) *Non-Satiation*: subjects must come into the lab with non-satiated preferences, i.e., given a choice between two alternatives that are identical except for the amount of money they offer, the one with the largest amount of money should be chosen. (2) *Saliency*: rewards must be directly related to the actions people take in the experiment.

Before proceeding further it is necessary to make an important distinction. Even though the words "experimental economics" and "behavioral economics" are often used as synonyms and seem to imply the same things to laypeople, these two are in effect very different research programs and start from a very different set of assumptions.

Vernon Smith, who can rightfully be thought of as the founder of experimental economics, was awarded the Nobel Memorial Prize "*for the use of laboratory experiments as a tool in empirical economic analysis, in particular, for the study of different market mechanisms*". Daniel Kahneman, on the other hand, received the prize "*for the introduction of insights from psychological research into economics, in particular with regard to judgements and decisions under uncertainty*". This is behavioral economics.

The work undertaken by Daniel Kahneman along with his long-time collaborator Amos Tversky systematically explored how decision-making heuristics introduce a number of biases in human behavior. An influential contribution made by the two is "Prospect Theory" that can be viewed as an alternative to expected utility theory (Kahneman and Tversky, 1979).

In recent years advances in behavioral economics have focused not only on stochastic choices, but also on choices made over time, including supposedly "irrational" behavior that lead to problems of self control or procrastination that could, for instance, explain why many people do not save enough or have difficulty managing their weights.

See for instance, Laibson (1997), Lowenstein and Elster (1992), Loewenstein and Prelec (1992) and Thaler (1987) for some strands of this work. Some of this is also surveyed in Camerer (1995). (*Tversky did not share in the Nobel Prize given to Kahnemann in 2002 since he had passed away prior to that and the Nobel Prize is never awarded posthumously.*)

The approach in behavioral economics emphasizes concepts like bounded rationality or the notion of the dual-self derived from the psychological literature. Such studies also often, though not always, rely on responses to hypothetical questions as opposed to laboratory experiments as an empirical methodology to test the predictions of behavioral theories. However, in spite of the fact that there are large overlaps in the research program undertaken by the two different approaches – experimental economics and behavioral economics - nonetheless there are important differences between the

disciplines as well. The former is an empirical methodology that can be used in the context of any economic theory, whether or not it is behavioral. The latter is committed to theoretical development that moves beyond the assumptions of neo-classical economics. This essay focuses on experimental economics. Section 3 discusses briefly how experiments in economics differ from those in psychology.

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Bibliography

Allais, M. (1953). 'Le Comportement de l'Homme Rationnel devant le Risque: Critique des Postulats et Axiomes de l'Ecole Americaine', *Econometrica*, 21 (4), 503-546. [One of the first articles to demonstrate the people often violate the postulates of expected utility theory as first propounded by John von Neumann and Oskar Morgenstern.]

Andreoni, J. (1988). 'Why free ride? Strategies and learning in public goods experiments', *Journal of Public Economics*, 37, 291-304. [The first article to use economic decision-making experiments to study the phenomenon of free-riding in public goods experiments; also introduced partners versus strangers paradigm where partners refers to groups whose composition remains fixed over time while strangers refers to a situation where participants are randomly re-matched from one round to the next.]

Andreoni, J. (1990). 'Impure altruism and donations to public goods: a theory of warm-glow giving?', *Economic Journal*, 100: 464-477. [This paper along with Andreoni (1995a, 1995b) looks at various aspects of behavior in public goods games; even though rational self-interest suggests free-riding the fact remains that a large number of people do contribute to the public good. These three papers undertake a systematic study of why people contribute and how one might be able to encourage cooperation and reduce free-riding.]

Andreoni, J. (1995a). 'Cooperation in public-goods experiments: kindness or confusion?', *American Economic Review*, 85: 891-904. [See Andreoni (1990) above.]

Andreoni, J. (1995b). 'Warm-glow versus cold-prickle: the effects of positive and negative framing on cooperation in experiments', *Quarterly Journal of Economics*, 110: 1-21. [See Andreoni (1990) above.]

Asch, S. E. (1951) 'Effects of group pressure upon the modification and distortion of judgment', in H. Guetzkow (ed.) *Groups, leadership and men*. Pittsburgh, PA: Carnegie Press. [This paper along with Asch (1955, 1956) looks at the phenomenon of "conformism" where human ignore their own instincts or insights and go with the decisions made by the majority most likely because not conforming to the opinion of the majority is psychologically painful.]

Asch, S. E. (1955) 'Opinions and social pressure', *Scientific American*, 193: 31-35. [See Asch (1951) above.]

Asch, S. E. (1956) 'Studies of independence and conformity: A minority of one against a unanimous majority', *Psychological Monographs*, 70 (Whole no. 416). [See Asch (1951) above.]

Banerjee, A. and Duflo, E. (2011). *Poor Economics*, New York, NY: PublicAffairs (Member of Perseus Books Group). [Banerjee and Duflo are pioneers of using randomized control trials in understanding the impact of policy interventions on target groups. This book provides an overview of their work in this area.]

Bardsley, N., Cubitt, R., Loomes, G., Moffatt, P., Starmer, C and Sugden, R. (2010). *Experimental Economics: Rethinking the Rules*, Princeton, NJ and Oxford, UK: Princeton University Press. [A comprehensive overview of the role and contribution of experimental methods in the economic sciences.]

Berg, J., Dickhaut, J., and McCabe, K. (1995) 'Trust, reciprocity, and social history', *Games and Economic Behavior*, 10: 122-142. [The first experimental paper to show how trust and reciprocity play a role in economic transactions using an ingeniously design game.]

Bernoulli, D. (1738). 'Specimen theoriae novae de mensura sortis,' *Commentarii Academiae Scientiarum Imperialis Petropolitanae* 5, 175-192. English translation in *Econometrica*, 22, 1954, 23-36. [Introduced the St Petersburg Paradox and the notion of risk aversion, that people are not always willing to pay an amount that equals the expected value of a lottery.]

Binmore, K. and Klemperer, P. (2002). 'The Biggest Auction Ever: the Sale of the British 3G Telecom Licences', *Economic Journal*, 112 (478): C74–C96. [This paper provides an overview of the role played by economists in organizing the third-generation mobile-phone license auction in Great Britain, a process that ended in 2000. It raised US \$34 billion or roughly 2.5% of Britain's GNP at the time. It was widely described at the time as the biggest auction ever in human history.]

Bolton, G. E. and Ockenfels, A. (2000) 'ERC: a theory of equity, reciprocity, and competition', *American Economic Review*, 90, 166-193.[One of the early papers to develop theoretical models that incorporate notions of cooperation, competition and reciprocity in utility functions.]

Brunner, C., Goeree, J., Holt, C. and Ledyard, J. (2010), 'An Experimental Test of Flexible Combinatorial Spectrum Auction Formats', *American Economic Journal: Micro-Economics*, 2(1), 39-57. [Reports results from laboratory experiments designed to test the efficacy of simultaneous multi-round auctions used the US Federal Communications Corporation in order to license the use of the broad-band spectrum for mobile telephone services.]

Camerer, C. (2003). *Behavioral Game Theory*, Princeton, NJ: Princeton University Press.[An excellent textbook which provides a comprehensive overview of economic experiments that incorporate behavioral economics into formal models of game theory. Suitable for students at a post-graduate level.]

Camerer, C. (1995) 'Individual decision making', in Chapter 8 in J. Kagel and A. E. Roth (Eds.) *Handbook of Experimental Economics*, (pp. 587 – 703), Princeton, NJ: Princeton University Press. [The first volume of the Handbook which provided a comprehensive overview of experimental research in economics covering a wide range of topics from individual decision making to game theory to industrial organization. Essentially surveyed all experiments since their inception to about the mid-1990s.]

Camerer, C. (2011). 'The promise and success of lab-field generalizability in experimental economics: A critical reply to Levitt and List', Unpublished Manuscript, Caltech, December 2011. [Discusses the issue of external validity of economics experiments and addresses critics who raise questions about such external validity. Points out situations where external validity is more or less important and/or relevant.]

Cameron, L. A. (1999) 'Raising the stakes in the ultimatum game: experimental evidence from Indonesia', *Economic Inquiry*, 37: 47-59. [Shows that paying people larger sums of money does not change the basic findings in ultimatum games and thereby refutes the argument that the preference for fair outcomes often evident in ultimatum game experiments is due to the small stakes involved.]

Carpenter, J., Harrison, G. and List, J. (2005) *Field Experiments in Economics*, Greenwich and London: JAI Press. [A comprehensive survey of economic experiments carried out in the "field" that is naturally occurring situations rather than inside the laboratory.]

Cason, T. (1995). 'An Experimental Investigation of the Seller Incentives in the EPA's Emission Trading Auction,' *American Economic Review*, 85(4), 905-22. [This paper and Cason and Plott (1996) cited below both carry out experimental investigations looking at the efficiency of auctions carried out by the Environmental Protection Agency in the USA in order to allocated emissions trading permits.]

Cason, T. and Plott, C. (1996). 'EPA's New Emissions Trading Mechanism: A Laboratory Evaluation,' *Journal of Environmental Economics and Management*, 30(2), 133-160.

Chamberlin, E. H. (1948) 'An experimental imperfect market', *Journal of Political Economy*, 56, 95-108.[One of the first attempts to use experiments to study the functioning of markets, specifically markets that are monopolistically competitive. Relied on classroom experiments without monetary incentives rather than laboratory experiments.]

Charness, G. and Rabin, M. (2002). 'Understanding social preferences with simple tests,' *Quarterly Journal of Economics*, 117, 817-869. [An important contribution to the literature on social or other-regarding preferences; looks at the role of trust, reciprocity, spite, generosity etc. in a variety of simulated economic transactions.]

Charness, G., & Sutter, M. (2012). Groups make better self-interested decisions. *Journal of Economic Perspectives*, 26(3): 157-176. [An overview of experiments that explore the differences in decisions made by groups as opposed to individuals in a wide range of situations involving strategic decision making.]

Chaudhuri, A. (2009). *Experiments in Economics: Playing Fair with Money*, London and New York: Routledge. [An easily accessible book for a general audience talking about the role of social norms and notions of fairness, trust and reciprocity in economic transactions mostly on the basis of findings from experimental economics.]

Chaudhuri, A. (2011). 'Sustaining cooperation in laboratory public goods experiments: a selective survey of the literature', *Experimental Economics*, 14 (1), 47-83. [Provides an overview of the experimental literature in public goods experiments between 1995 and 2010.]

Cooper D. and J. Kagel. (2003). 'The Impact of Meaningful Context on Strategic Play in Signalling Games,' *Journal of Economic Behaviour and Organization*, 50(3), 311-337. [Traditionally experimental economists rely on abstract and context-free instructions for their experiments. This paper, one of the early ones to do so, shows that often providing an explicit context for the experiment helps participants make better connections to their day-to-day lives and thereby make better decisions.]

Cooper, D. and Kagel, J. (2008) "Other Regarding Preferences: A Survey of Experimental Results," forthcoming in Roth, A.E. and Kagel, J. (Eds.), *The Handbook of Experimental Economics*, Volume 2, Princeton, NJ; Princeton University Press. [A comprehensive survey of experimental findings demonstrating that in a wide variety of situations involving strategic decision making humans show a concern for the payoffs accruing to others, i.e., they have other-regarding preferences rather than only self-regarding preferences.]

Cooper, R., DeJong, D. V., Forsythe, R., and Ross, T. W. (1989). 'Communication in the battle of the sexes game: some experimental results', *Rand Journal of Economics*, 20, 568-587. [A wide variety of situations in industry and elsewhere require coordinated actions by a group of workers. Such situations arise for instance in any industry involved in team production. Participants often find it difficult to coordinate. This paper and the next two Cooper et al. (1990, 1992) explore a variety of interventions that can help facilitate such coordinated actions.]

Cooper, R., DeJong, D. V., Forsythe, R., and Ross, T. W. (1990) 'Selection criteria in coordination games: experimental results,' *American Economic Review*, 80(1): 218-233. [See Cooper et al. (1989) above.]

Cooper, R., DeJong, D. V., Forsythe, R., and Ross, T. W. (1992). 'Communication in coordination games', *Quarterly Journal of Economics*, 107, 739-771. [See Cooper et al. (1989) above.]

Cox, J., Friedman, D and Sadiraj, V. (2008). 'Revealed altruism', *Econometrica*, 76(1), 31-69. [Develops a non-parametric theoretical model of altruistic behavior in humans and thereby generalizes the parametric theoretical model developed in Cox et al. (2007) cited below.]

Cox, J., Friedman, D. and Gjerstad, S. (2007). 'A tractable model of reciprocity and fairness', *Games and Economic Behavior*, 59, 17-45. [Develops a parametric theoretical model of altruistic behavior in humans. The paper by Cox et al. (2008) cited above generalizes this parametric model by developing a non-parametric model.]

Davidson, D., Suppes, P and Siegel, S. (1957). '*Decision Making: An Experimental Approach*', Stanford, CA: Stanford University Press. [An early overview of decision making experiments looking at choice under uncertainty.]

Davidson, D. and Marschak, J. (1959). 'Experimental tests of a stochastic decision theory' pages 233-69 in C.W. Churchman and P. Ratoosh (Eds.) *Measurement: Definitions and Theories*, New York, NY: Wiley. [An overview of experiments on choice under uncertainty.]

Davis, D. and Holt, C. (1992), *Experimental Economics*, Princeton, NJ: Princeton University Press. [Useful textbook providing an introduction to experimental economics and the nuts and bolts of running experiments.]

de Quervain, D., Fischbacher, U., Treyer, V., Schallhammer, M., Schnyder, U., Buck, A. and Fehr, E. (2004). 'The neural basis of altruistic punishments', *Science*, 305, August 27, 2004, 1254-1258. [Uses fMRI scans of the participants' brains in public goods game while they are trying to decide whether to undertake costly punishment of free-riders or not.]

Duffy, J. (2008). 'Macroeconomics: a survey of laboratory research', forthcoming in A. E. Roth and K. Kagel (Eds.), *Handbook of Experimental Economics*, Volume II, Princeton, NJ: Princeton University Press. [A comprehensive overview of economic experiments studying issues in macroeconomics. Experimentalists have tended to focus on more micro-theoretic and game-theoretic issues and hence macro experiments are still rare. But there is now a burgeoning literature on macro experiments and this chapter provides an overview of those.]

Dufwenberg, M. and Kirchsteiger, G. (2004). 'A theory of sequential reciprocity', *Games and Economic Behavior*, 47, 268-298. [Rabin (1993) developed a theory model incorporating notions of fairness into game-theoretic models. Rabin's model is valid only for simultaneous move games. This paper generalizes Rabin's model and extends it to more elaborate sequential move games.]

Edwards, W. (1953a). 'Experiments on economic decision making in gambling situations: Abstract', *Econometrica*, 21, 349-50. [Early experiments on decision making under uncertainty.]

Edwards, W. (1953b). 'Probability preferences in gambling', *American Journal of Psychology*, 66, 349-364. [See Edwards (1953a) above.]

Falk, A. and Fischbacher, U. (2006). 'A theory of reciprocity', *Games and Economic Behavior*, 54, 293-315. [A similar exercise to Dufwenberg and Kirchsteiger (2004) cited above; develops a theoretical model of fairness and reciprocity that is valid for sequential move games.]

Fehr, E. and List J. (2004). 'The hidden costs and returns of incentives - trust and trustworthiness among CEOs', *Journal of the European Economic Association*, 2 (5), 743-771. [Compares the behavior of CEOs and students in a game designed to measure people's levels of trust and report that CEOs exhibit greater trust than students.]

Fehr, E., and Fischbacher, U. (2002) 'Why social preferences matter: the impact of non-selfish motives on competition, cooperation and incentives', *Economic Journal*, 112: C1-33. [An overview of experimental research on other-regarding (social) preferences and why they matter in economic transactions such as the private provision of public goods or behavior in markets.]

Fehr, E., and Gächter, S. (1998) 'Reciprocity and economics: the economic implications of homo reciprocans', *European Economic Review*, 42, 845-859. [Explores the role of reciprocal motivations and their implications for agency theory among other things – how paying efficiency wages may lead to higher effort and why firms are unwilling to lay-off workers even in the face of widespread unemployment.]

Fehr, E., and Gächter, S. (2000). 'Cooperation and punishment in public goods experiments', *American Economic Review*, 90, 980-994. [One of the early papers that shows that allowing costly punishment of free-riders leads to higher contributions to a public good.]

Fehr, E., and Gächter, S. (2002). 'Altruistic punishment in humans', *Nature*, 415, 137-140. [Closely related to Fehr and Gächter (2000); shows that costly punishment of free-riders increases cooperation even in short-lived interactions where there are no possible future benefits from acting in a non-self-interested manner in the present.]

Fehr, E., Gächter, S., and Kirchsteiger, G. (1997) 'Reciprocity as a contract enforcement device: experimental evidence', *Econometrica*, 65, 833-860. [An early paper that looks at reciprocity in the context of agency relationships; shows that employees often reciprocate higher wages by putting in higher effort even if it is not in the employees' self-interest to do so.]

Fehr, E., Kirchsteiger, G., and Riedl, A. (1998). 'Gift exchange and reciprocity in competitive experimental markets', *European Economic Review*, 42, 1-34. [Similar to Fehr, Gächter and Kirchsteiger (1997) in terms of looking at the role of reciprocity in principal-agent relationships and how this might lead to outcomes that are different from the predictions of competitive behavior.]

Fehr, E., Kirchler, E., Weichbold, A. and Gächter, S. (1998). 'When social norms overpower competition: gift exchange in experimental labor markets', *Journal of Labor Economics*, 16, 324-351. [Similar to Fehr, Kirchsteiger and Riedl (1998) and used experiments to study the implications of reciprocal behavior in labor market interactions.]

Fehr, E., and Schmidt, K. (1999). 'A theory of fairness, competition and cooperation', *Quarterly Journal of Economics*, 114, 817-868. [Builds a theoretical models to explain how concerns for equity may affect people's behavior in markets and how they might lead to different predictions than neo-classical economic theory.]

Fiorina, M. P., and Plott, C. (1978). 'Committee decisions under majority rule: an experimental study', *American Political Science Review*, 72, 575-98. [One of the early papers to introduce decision making experiments in political science research by looking at how group decision making and the rules governing that process might lead to different outcomes compared to individual decision making.]

Flood, M. M. (1958) 'Some experimental games', *Management Science*, 5, 5-26. [Reports early results from a repeated prisoner's dilemma game in which the author took part.]

Forsythe, R., Horowitz, J. L., Savin, N. E., and Sefton, M. (1994) 'Fairness in simple bargaining experiments', *Games and Economic Behavior*, 6: 347-369.[A paper that tries to distinguish notions of fairness from notions of altruism by comparing behavior in the ultimatum and dictator games; thereby introduced the dictator game to the experimental literature.]

Fouraker, L.E., Shubik, M., Siegel, S. (1961). "Oligopoly bargaining: The quantity adjuster models". Research Bulletin 20. Pennsylvania State University, Department of Psychology. [This paper and the book Fouraker and Siegel (1963) cited below were the earliest attempts to understand bargaining behavior in oligopolies using experiments. This is turn led to the large and rich literature in oligopoly market experiments.]

Fouraker, L.E. and Siegel, S. (1963). *Bargaining Behavior*. New York, NY: McGraw–Hill.

Friedman, D., and Sunder, S. (1994). *Experimental Methods: A Primer for Economists*, Cambridge; New York: Cambridge University Press. [A textbooks on the use of experiments in economics including detailed information about how to run experiments and how experimentation in economics differs from that in psychology in spite of overlaps in the approaches of the two disciplines.]

Friedman, M. (1953). 'The methodology of positive economics', pages 3-43 in *Essays in Positive Economics*, Chicago, IL: Chicago University Press. [Argues that economics is essentially a non-experimental science and discusses the reasons why traditionally economics has taken a theoretical model-building approach to understanding behavior.]

Goeree, J. and Holt, A. (2001) 'Ten little treasures of game theory and ten intuitive contradictions', *American Economic Review*, 91(5), 1402-1422. [Presents a sequence of experiments where for some parameter values the Nash equilibrium prediction performs extremely well ("treasures") while for other parameter values in the same experiment the Nash equilibrium prediction performs poorly ("contradictions").]

Güth, W., Schmittberger, R., and Schwarze, B. (1982) 'An experimental analysis of ultimatum bargaining', *Journal of Economic Behavior and Organization*, 3, 367-388. [This paper introduced the "ultimatum game" which has become well-known and a paradigmatic game in the experimental literature.]

Harrison, G. W. and List, J. (2004). "Field Experiments," *Journal of Economic Literature*, 42, 1009-1055. [The first comprehensive review of experiments undertaken outside the lab in naturally occurring setting with non-traditional participant and the advantages/disadvantages of such field experiments over traditional laboratory experiments; also provides a classification and description of different types of field experiments.]

Henrich, J. P., Boyd, R., Bowles, S., Camerer, C., Fehr, E., and Gintis, H. (Eds.) (2004). *Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-scale Societies*, Oxford: Oxford University Press. [Presents the results of economic experiments – mostly dictator game and ultimatum game experiments – carried out among small scale tribal societies in different parts of the world.]

Hoggatt, A.C. (1959). "An experimental business game", *Behavioral Science*, 4, 192–203.

Holt, C. A. (1995) 'Industrial organization: a survey of laboratory research', Chapter 5 in J. Kagel and A. E. Roth (Eds.), *Handbook of Experimental Economics*, (pp. 349 – 443), Princeton, NJ: Princeton University Press. [A comprehensive overview of experiments looking at behavior in oligopolistic markets covering the period from the early 1960s to the mid-1990s.]

Isaac, R. M., and Walker, J. M. (1988a). 'Communication and free-riding behavior: the voluntary contributions mechanism', *Economic Inquiry*, 26, 585-608. [Presents experimental evidence that the ability to talk among group members participating in a public goods game leads to increased cooperation in the form of higher contributions and lower free-riding.]

Isaac, R. M., and Walker, J. M. (1988b). 'Group size effects in public goods provision: the voluntary contributions mechanism', *Quarterly Journal of Economics*, 103, 179-199. [Compares the extent of free-riding in public goods game with large and small groups and shows that contrary to ex ante hypothesis the problem of free-riding does not become worse in larger groups.]

Kagel, J. H. (1995). 'Auctions: a survey of experimental research' Chapter 7 in J. Kagel and A. E. Roth (Eds.), *Handbook of Experimental Economics*, (pp. 501 – 585), Princeton, NJ: Princeton University Press. [A comprehensive overview of experiments looking bidding strategies in auctions and to what extent behavior corresponds or deviates from theoretical predictions in auctions; covering the period from the start of experiments in the 1970s to the mid-1990s.]

Kahneman, D. and Tversky, A. (1979) 'Prospect Theory: An analysis of decision under risk', *Econometrica*, 47(2), 263-292. [An alternative approach to the von Neumann-Morgenstern expected utility theory; suggests that people start from particular reference points and assign different weights to gains and losses from that initial starting point. This work won Kahneman a Nobel Prize in 2002.]

Knoch, D., L. Giannotti, T. Baumgartner and E. Fehr, (2010), "A neural marker of costly punishment behavior", *Psychological Science*, 21(3), 337-342. [Uses electroencephalography, to show that a highly specific neural marker—baseline cortical activity in the right prefrontal cortex—predicts individuals' willingness to engage in costly punishment of violators of cooperative social norms.]

Kugler, T., Kausel, E., & Kocher, M. (2012). Are groups more rational than individuals? A review of interactive decision making in groups. *Wiley Interdisciplinary Reviews: Cognitive Science*, 3(4), 471-482. [An overview of experiments that explore the differences in decisions made by groups as opposed to individuals in a wide range of economic transactions involving both individual as well as strategic decision making.]

Laibson, D. (1997). 'Golden Eggs and Hyperbolic Discounting', *Quarterly Journal of Economics* 112(2), 443-477. [One of the early papers in the behavioral economics literature discussing why preferences are often not consistent over time and how people often have present biased preferences which leads them to discount benefits that occur in the future.]

Ledyard, J. O. (1995) 'Public goods: some experimental results', Chapter 2 in J. Kagel and A. Roth (Eds.), *Handbook of Experimental Economics*, (pp. 111 – 193), Princeton: Princeton University Press. [A comprehensive overview of experiments on voluntary contributions to a public good covering the period from the 1960s to the mid-1990s.]

Ledyard, J. O., and Szakaly-Moore, K. (1994). 'Designing organizations for trading pollution rights', *Journal of Economic Behavior & Organization*, 25(2), 167-196. [Discusses how to optimally design institutions for trading pollution rights and thereby lower environmental pollution.]

Lei, V., C. Noussair and Plott, C. (2001). 'Nonspeculative Bubbles in Experimental Asset Markets: Lack of Common Knowledge of Rationality vs. Actual Irrationality,' *Econometrica*, 69(4), 813-59. [Usually bubbles in asset markets are explained by appealing to speculative behavior on the part of investors; this paper shows how such bubbles might arise even in the absence of speculation due to behavior which contains an element of irrationality.]

Levine, D. K. (1998) 'Modeling altruism and spitefulness in experiments', *Review of Economic Dynamics*, 1, 593-622. [Incorporates notions of altruism and spite in the utility function, something that is not usual in neo-classical models of economics and then shows how game theoretic predictions may change when one allows for such emotions in the utility function.]

Levitt, S. and List, J. (2007a). 'Viewpoint: On the Generalizability of Lab Behavior to the Field', *Canadian Journal of Economics*, 40(2), 347-370. [This paper and an accompanying paper Levitt and List (2007b) cited below both discuss various limitations of laboratory experiments and argue that it is not possible to draw meaningful conclusions about the real world based on data generated in the laboratory.]

Levitt, S. and List, J. (2007b). 'What do laboratory experiments measuring social preferences reveal about the real world?', *Journal of Economic Perspectives*, 21(2), 153-174. [See Levitt and List (2007a) above.]

Lipsey, R. (1979). *An Introduction to Positive Economics*, 5th edition, London: Weidenfeld and Nicolson. [An under-graduate textbook in economics.]

List, J. (2006). 'The behavioralist meets the market: measuring social preferences and reputation effects in actual transactions', *Journal of Political Economy*, 114(1), 1-37. [Questions the findings of other-regarding behavior reported on the basis of laboratory experiments. Finds that while some agents behave in an other-regarding manner in the laboratory, they become significantly more self-interested in naturally occurring settings; goes on to raise questions about the generalizability of laboratory findings to real world settings.]

Loewenstein, G. and Elster, J. (1992). *Choice over time*, New York, NY: Russell Sage Foundation Press. [Provides a broad overview of how humans make decision over time in the sense how they choose between rewards that are available at different points of time; this has implications for instance of what type of salary profile we might choose and how that might affect worker productivity.]

Loewenstein, G. and Prelec, D. (1992). 'Anomalies in Intertemporal Choice: Evidence and an Interpretation', *Quarterly Journal of Economics*, 107, 573-598. [The look at choices over time and how behavior often differs from those predicted by neo-classical expected utility models and the implications for savings behavior and the framing of choices.]

Marshall, A. (1920). *Principles of Economics* (Revised Edition), London: Macmillan; reprinted by Prometheus Books. [The book that encapsulated the critical arguments of neo-classical economics; essentially the book that started off the economics that we teach our students today.]

May, K. (1954). 'Intransitivity, utility and the aggregation of preference patterns', *Econometrica*, 22, 1-13. [Presents experimental evidence on how neo-classical utility theory often fails to correctly represent true preferences of consumers.]

McAfee, R. and McMillan, J. (1996). 'Analyzing the airwaves auction', *Journal of Economic Perspectives*, 10(1), 159-175.

Milgram, S. (1974). *Obedience to Authority: An Experimental View*. Harpercollins. [Discusses and describes the simultaneous ascending auction used by the US government to auction off the broad-band spectrum.]

Mosteller, F. and Nogee, P. (1951). 'An experimental measurement of utility', *Journal of Political Economy*, 59, 371-404. [An early experimental attempt to test the validity of utility theory and the concept of marginal utility.]

Nash, J. F. (1950a). 'Equilibrium points in n-person games', *Proceedings of the National Academy of Sciences*, 36, 48-49. [Introduce the notion of the "Nash equilibrium" as a set of best responses by each player to the strategies being adopted by the other players.]

Nash, J.F. (1950b). 'The bargaining problem', *Econometrica*, 18, 155-162. [Presents an analysis and solution to bargaining problems such as in bilateral monopolies.]

Nash J.F. (1951). 'Non-cooperative games', *Annals of Mathematics*, 54, 286-295. [Introduces the notion of non-cooperative games which are characterized by the absence of binding commitments as opposed to cooperative games where binding commitments are possible.]

Noussair, C. (2011). 'Trends in academic publishing in experimental economics', Keynote address at the Wiley Economics Online Conference "Communications with Economists: Current and Future Trends", November 16-18, 2011. [Provides an overview of the rise of experimental economics in the first decade of the 21st century and anticipates future trends in its development.]

Ochs, J. (1995) 'Coordination problems' Chapter 4 in J. Kagel and A. E. Roth (Eds.) *Handbook of Experimental Economics*, (pp. 195 – 251), Princeton, NJ: Princeton University Press. [A comprehensive overview of experimental research looking at problems where agents have to coordinate their actions.]

Ostrom, E., Gardner, R., and Walker, J. (1994). *Rules, Games, and Common-Pool Resources*, Ann Arbor: University of Michigan Press. [Uses game theory, experiments, empirical and institutional analysis to understand the problems of managing natural resources.]

Ostrom, E., Walker, J., and Gardner, R. (1992). 'Covenants with and without a sword: self-governance is possible', *American Political Science Review*, 86, 404-417. [Uses experiments to study the problem of free-riding (or over-extraction) in common pool resource usage situations; examines whether such over

extraction can be curtailed via communication and the creation of cooperative norms or whether one needs to resort to punishment of violators in order to achieve that goal.]

Oswald, A., (2010), "Notes on economics and the future of quantitative social science", Unpublished manuscript, Department of Economics, University of Warwick. Available from: <http://www2.warwick.ac.uk/fac/soc/economics/staff/academic/Oswald/maysciencedata2010.pdf>. [Discussed the increasing prominence of experimental research in economics and looks at the possible implications of this trend for the future.]

Plott, C. R., and Smith, V. L. (1978). 'An experimental examination of two exchange institutions', *Review of Economic Studies*, 45, 133-153. [An early influential study looking at the behavior of prices in one-side oral auctions and posted price institutions.]

Plott, C.R. (1982). 'Industrial organization theory and experimental economics', *Journal of Economic Literature*, 20, 1485-527. [An overview of the experimental literature in industrial organization, much of it undertaken by the author and also a discussion of why experiments are well-suited to study issues in industrial organization; and to what extent experiments either bear out or call into question the theoretical propositions in the industrial organization literature.]

Plott, C. R. (1991). 'Will economics become an experimental science?', *Southern Economic Journal*, 57 (4), 901-19. [Presidential address to the Southern Economic Association discussing the role of experiments in economics and how they can influence economic theory.]

Preston, M.G. and Baratta, P. (1948). 'An experimental study of the auction value of an uncertain outcome', *American Journal of Psychology*, 61, 183-193.

Rabin, M. (1993). 'Incorporating fairness into game theory and economics', *American Economic Review*, 80, 1281-1302. [Develops a theoretical model incorporating notions of fairness in the utility function and show how outcomes that are not equilibria in the standard sense can emerge as equilibria with this alternative formulation.]

Roth A. (1995). 'Introduction to Experimental Economics' in J. Kagel and A. Roth (Eds.), *Handbook of Experimental Economics* (pp. 3 – 109), Princeton, NJ: Princeton University Press. [Provides an introduction to a volume that presents a comprehensive overview of economics experiments from the 1960s to the mid-1990s.]

Roth, A. (1995) 'Bargaining experiments', in J. Kagel and A. Roth (eds.), *Handbook of Experimental Economics*, (pp. 253 – 348), Princeton: Princeton University Press. [A comprehensive overview of experiments looking at bargaining and negotiations from the beginning of experiment economics in the 1950s to the mid-1990s.]

Rousseas, S.W. and Hart, A.G. (1951). 'Experimental verification of a composite indifference map', *Journal of Political Economy*, 59, 288-318. [An early attempt to use experimental techniques to create and study indifference curves for individual consumer.]

Rubinstein, A. (2001). 'A theorist's view of experiments', *European Economic Review*, 45, 615-628. [This paper argues that economic theory is an abstract investigation of the concepts and considerations involved in real life economic decision making rather than a tool for predicting or describing real behavior and hence experimental attempts to either prove or disprove those theories are not of much value.]

Samuelson, P., and Nordhaus, W. (1985). *Economics*, New York: McGraw-Hill. [Under-graduate textbook in economics.]

Sanfey, A.G., Rilling, J.K., Aronson, J.A., Nystrom, L.E. and Cohen, J.D. (2003), 'The neural basis of economic decision-making in the ultimatum game', *Science*, 300 (5626), June 13, 2003, 1755-1758. [Uses fMRI techniques to look for how the brain responds to unfair offers in the ultimatum game and on to demonstrate the powerful effect of emotions in decision-making.]

Sauermann, H., Selten, R. (1959). "Ein oligopolexperiment". *Zeitschrift für die gesamte Staatswissenschaft*, 115, 427–471. [One of the earliest experiments to use experiments to study the behavior of firms in oligopolistic markets.]

Sauermann, H., Selten, R. (1960). "An experiment in oligopoly" (translation of Sauermann and Selten (1959), *General Systems* 5, 85–114.

Schelling, T. C. (1957) 'Bargaining, communication, and limited war', *Conflict Resolution*, 1, 19-36. [This paper and the companion studies Schelling (1958, 1960) cited below introduce the problems of coordinating the actions of multiple agents in the absence of prior communication and discusses the implications for arms races and wars between countries.]

Schelling, T. C. (1958) 'The strategy of conflict: prospectus for a reorientation of game theory', *Journal of Conflict Resolution*, 2, 203-264.

Schelling, T. C. (1960). *The Strategy of Conflict*, Cambridge: Harvard University Press.

Schelling, T. C. (1978). *Micromotives and Macrobehavior*, New York: W. W. Norton. [Discusses how decisions made by individuals on the basis of their own individual preferences without regard to others' preferences have profound consequences at the societal level; for instance an individual preference to live in close proximity to others of similar ethnicity and religion can result in completely segregated populations.]

Serra, D. And Wantchekon, L. (Eds.) (2012). *Research in Experimental Economics Volume 15: New Advances in Experimental Research on Corruption*, 2012, Bingley, UK: Emerald Publications. [A comprehensive overview of experiments that study various aspects of the problem of corruption, particularly in developing countries.]

Siegel, S., and Fouraker, L. E. (1960). *Bargaining and Group Decision Making: Experiments in Bilateral Monopoly*, New York: McGraw-Hill. [Some of the earliest experiments looking at decision making in bargaining contexts such as between unions and managements and in bilateral monopolies.]

Sims, C.A. (1996). 'Macroeconomics and Methodology', *Journal of Economic Perspectives*, 10, 105-120. [Argues that experiments have limited use in economics, particularly in studying macroeconomic issues.]

Smith, V. L. (1962) 'An experimental study of competitive market behavior', *Journal of Political Economy*, 70, 111-137. [This paper and its companion paper Smith (1964) cited below were the first attempts to use decision making experiments to study the functioning of competitive markets using constructed demand and supply curves based on buyer valuations and seller costs.]

Smith, V. L. (1964) 'Effect of market organization on competitive equilibrium', *Quarterly Journal of Economics*, 78(2), 181-201. [See Smith (1962) above.]

Smith, V.L. (1976). 'Experimental economics: induced value theory', *American Economic Review*, 66(2), 274-279. [Discusses how to make experimental participants take the experiment seriously via decisions that are guided primarily by the payments generated within the experiment.]

Smith, V. (1982). 'Microeconomic systems as an experimental science', *American Economic Review*, 72(5), 923-955. [Argues that it is possible to think about an experiment as a micro-economy and that the results generated in that micro-economy can have useful implications for theory testing and refinement.]

Smith, V.L. (1989). 'Theory, experiments and economics', *Journal of Economic Perspectives*, 3(1), 151-169. [Discusses the role experiments can play in informing economic theory.]

Smith, V.L. (2008). *Rationality in economics: Constructivist and Ecological Forms*, Cambridge, UK: Cambridge University Press. [A collection of the writings and thoughts of Vernon Smith, Nobel Laureate in Economics in 2002.]

Smith, V.L., Suchanek, G.L. and Williams, A.W. (1988). 'Bubbles, crashes and endogenous expectation in experimental spot asset markets', *Econometrica*, 56(5), 1119-1155. [An early experimental study that shows how asset bubbles arise in simple laboratory markets and their implications for asset trading in real life.]

Thaler, R. (1987) 'The psychology of choice and the assumptions of economics' in A. E. Roth (Ed), *Laboratory Experimentation in Economics: Six Points of View*, Cambridge, UK: Cambridge University Press. [A critique of rational choice theory; discusses how human choices deviate from the usual assumption of rational self-interest in economics sometimes due to psychological biases, bounded rationality and the uses of simple heuristics.]

Van Huyck, J. B., Battalio, R. C., and Beil, R. O. (1990). 'Tacit coordination games, strategic uncertainty, and coordination failure', *American Economic Review*, 80, 234-248. [This paper introduced into the literature the so-called minimum effort game, a coordination problem with multiple payoff ranked equilibria and showed that experimental participants routinely have a hard time coordinating to the payoff

dominant outcome. This in turn led to a large literature trying to understand why this is the case and what kind of interventions might facilitate coordination to the payoff dominant outcome.]

Von Neumann, J., and Morgenstern, O. (1944). *Theory of Games and Economic Behavior*, Princeton, NJ: Princeton University Press. [This book introduced the mathematical tools of game theory in economic analysis.]

Thurstone, L. L. (1931). 'The indifference function', *Journal of Social Psychology*, 2, 139-167. [One of the first experimental articles; uses economic experiments to estimate a consumer's indifference curve.]

Zizzo, D. (2010). 'Experimenter demand effects in economic experiments', *Experimental Economics*, 13, 75-98. [Discusses how different types of experimenter demand effects can arise and can be addressed; but more importantly discusses which demand effects are more innocuous and which ones are more in need of attention.]

Biographical Sketch

Ananish Chaudhuri is Professor of Experimental Economics and Head of the Department of Economics at the University of Auckland Business School in Auckland, New Zealand. He was born in Calcutta (Kolkata) and has a B.Sc. (Honours) in Economics from Presidency College in Calcutta, an M.A. in Economics from Jawaharlal Nehru University in New Delhi and an M.A. and a Ph.D. in Economics from Rutgers, the State University of New Jersey. Prior to joining the University of Auckland he taught at Washington State University and Wellesley College. Between 2007 and 2010, he was the Editor-in-Chief of the *New Zealand Economic Papers* and is currently an Associate Editor for the *Journal of Economic Psychology*, the *Journal of Economic Behavior and Organization* and the *Journal of Socio-Economics*.