



# Group decision-making: An economic analysis of social influence and individual difference in experimental juries

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## ABSTRACT

In jury decision-making, individual viewpoints must converge to reach a group consensus. Convergence of viewpoints may reflect reasonable compromises, for example if jury deliberations reflect informational influences and social learning which allow individual jurors to correct biases, misunderstandings and/or imperfect recall of evidence. Conversely, some individuals may converge towards others' viewpoints because of normative influences including peer pressure and preferences for conformity and these can generate biases in the final jury judgements. This paper presents experimental data showing that groups do have a significant tendency to compromise in jury-like settings. Econometric evidence shows that group characteristics, including the presence of acquaintances and strangers within the jury group, affect the extent of compromise. The implications are that jury deliberations may be biased by factors not relevant to a specific case, limiting the objectivity of jury decisions.

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## 1. Introduction

The integrity of the justice system is a vital component of a country's institutional structure: many economic transactions are facilitated by the existence of the legal and justice system, which acts as an external enforcer for contractual agreements. The jury decision-making process also has many similarities to group decision-making in economic settings, for example decisions by policy-making committees or groups of investment managers, and so insights into juries may be applicable to the study of decision-making in other groups. The justice system aims to treat all individuals fairly and equally, and therefore the hope is that a jury would reach the same verdict on a particular case, regardless of its composition. If two different juries can come to substantially different verdicts simply due to differences in their membership then the justice system is undermined, with repercussions for society and the economy. Although the presence of such inconsistencies would be extremely damaging, the identification of the causal factors behind this problem would help policymakers to make remedial changes to the justice system.

There are debates about the pros and cons of using juries to decide outcomes and the jury system does have significant limitations. Jurors may be susceptible to bias especially if a defendant has received a lot of negative publicity – and though *voir dire* (pre-trial questioning of jurors) is meant to reduce the likelihood of selecting a biased juror, the *voir dire* process is not always effective (Cahoy and Ding, 2005). Goyal (2007) shows that the process of deliberation can introduce bias into the final decision when suggestible individuals' opinions are unduly swayed by the views of the others. There is also the problem of lack of effort or ineptitude from jurors, especially if incentives are not strong. In Visher's (1987) interviews of 331 jurors many jurors were swayed by irrelevant/legal issues e.g. attitudes, victims' and/or defendants' characteristics, and evidential issues e.g. cases involving the use of force. These influences may limit the competence and objectivity of jurors. Also most jurors decide in direction of initial majority. This may be because social influences are important. In some cases litigants view jury behaviour as random, suggesting that there may be significant doubts about the objectivity of jury decisions (Cahoy and Ding, 2005).

The use of a jury rather than a single judge can be justified on the basis of the Condorcet theorem: given imperfect information, as the size of a decision-making group increases, it is more likely that the group majority will reflect a correct judgement of probability of a given event, though only if the individual votes are

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uncorrelated (Ladha, 1995; Surowiecki, 2005; Austen-Smith and Banks, 1996). In this way, the aggregation of private information and judgement leads to more effective decision-making. Groups of randomly selected, heterogeneous people will bring a greater variety of personalities, perspectives and past experiences to a case, reducing a priori bias. A jury's *ex post* bias may also be smaller than a single judge's because the process of deliberation increases the likelihood that all the evidence and arguments for a case are remembered and considered before a decision is reached (Pritchard and Keenan, 2002). Juries may be a buffer against elitism and political influence and jurors may be better able to judge their peers than legal professionals (Cahoy and Ding, 2005). Group decisions are also more effective when random outliers are diluted, implying a larger group is better than a small one – though this may be undermined by strategic voting, in which case individuals may not be revealing their private information (Feddersen and Pesendorfer, 1998).

Limitations on the efficacy of group decision-making occur when votes are not statistically independent, and this can be characteristic of real-world juries – e.g. the effectiveness of majority rule decreases as the correlation between voters increases (Ladha, 1995; Dawkins, 2003). One potential constraint on jury deliberation is the impact of opinions of sub-sets of jurors. A minority of individuals can unduly influence a jury's decision. If we can understand how and why they might do so, it may be possible to suggest changes to the justice system to improve jury objectivity. Also, if a jury is unduly swayed by the opinions of an individual or small group then the process of deliberation will be ineffectual. In their post-trial study of 225 criminal jury deliberations, Kalven and Zeisel (1966) found the first ballot decided the outcome, suggesting that the process of deliberation had limited impact.

The efficacy of juries may be better in some situations than others. Jury size for example may have a significant influence. Mukhopadhyaya (2003) observes that 12 person juries may be better than 6 because there will be more information/perspectives from larger juries. Conversely there may be a free-rider problem if individual jurors rely on the efforts of others and don't make an effort themselves. Grofman and Feld (1976) observe that a smaller jury may lead to substantial cost savings in terms of jury days and trial processing time but they identify the importance of clique avoidance, especially when jury panels serve on a number of cases leading to possible overlapping of jurors across multiple cases.

In experimental work for this paper, participants were collected into small mock juries of five or six individuals. They were asked to read the evidence for a case and reach – firstly an individual verdict, and secondly – after deliberation, a unanimous group verdict. The purpose of the experiment was to investigate whether different juries examining the same case would come up with the same verdict and, if not, to identify some of the factors which caused them to diverge. In particular, the analysis examines the impact of social influences on jury deliberations and also extends the experimental approach into the analysis of evidence from a civil case (MacCoun, 2005).

## 2. Theoretical background: influences on group decision-making

It has frequently been observed that people have a strong tendency to conform or cluster in their behaviour. Examples include evidence that opinion polls can influence voters to vote in the way that the opinion poll predicts, evidence that investors choosing assets are influenced by the choices of other investors, as seen in numerous asset bubbles, and the fashions and fads which frequently sweep through the markets for consumer goods. Although social influences on individuals' judgements are inevitable in juries

due to the requirement for a unanimous verdict, it is difficult to separate justifiable compromises from misguided conformity. This is particularly true when some individuals are more or less susceptible to social influence than others and may translate into too much or too little compromise in a jury setting.

### 2.1. Informational influences: herding and information cascades

Communication between individuals generates copying and herding behaviours by homogenising individuals' information. When there is a single optimal choice then convergence can occur if 'early individuals explain the benefits of alternatives to later ones' (Bikhchandani et al., 1992), a result predicted by Goyal (2007) with respect to social networks. In a jury context, a unanimous verdict must be reached during deliberation phases and so communication is clearly relevant to jury decision-making. During deliberation jurors review the evidence from the trial and discuss their personal viewpoints, helping to ensure that all the important information is remembered and that the reasoning behind a particular verdict is fully evaluated. This process may highlight gaps in people's memories or in their logic and so help the group converge on the right outcome. The assumption of one optimal outcome is defensible in this context because very clear decision-rules are outlined to the jurors by the judge and their decision is usually a simple guilty/not guilty verdict – based on identifying some underlying truth about an incident. Although there are no 'early individuals' in a jury setting and jurors will not be sure whether their verdict was optimal, in theory the pooling of information and viewpoints should still have potential to improve the group's chance of identifying the optimal outcome. On the other hand this theory assumes that communication is perfect and opinions are uncorrelated, whereas in reality imperfections may exist which cause the group to converge on the wrong outcome.

Bikhchandani et al. (1992) and Banerjee (1992) show that, with Bayesian updating of information, a group may converge on a suboptimal choice. In Bayesian models, once a certain number of people have chosen the same option, it becomes privately optimal for all subsequent individuals to copy them, regardless of their private signal. This may reflect a process of social learning when the information implicit in the previous actions of others outweighs the individuals' private information and triggers an information cascade. Nonetheless social learning can generate negative "herding externalities" if groups of people make the wrong decision even though the aggregate of their private information would have allowed them to make the right decision. Unlike in a legal scenario, individuals in these models make their choices independently and sequentially, and they receive an individual payoff depending on their chosen option and the state of the world that arises after the choices have been made. Bayesian analysis may nonetheless be relevant to jury decision-making. MacCoun (1989) explains how the process of adjusting judgements in the light of new evidence can be modelled as a Bayesian learning process. In addition, social learning can be modelled as a Bayesian process when others' judgements are part of an individual juror's information set.

Experimental evidence of informational influence via Bayesian social learning has been found in many experimental studies, including Anderson and Holt (1996, 1997). The sociology literature also analyses parallel forces of normative influence such as peer pressure, famously identified by Asch (see Bond and Smith, 1996 for a meta-analysis). The Asch experiment was particularly striking because it showed that individuals often followed others despite unambiguous contrary private information. Subjects were asked to estimate the relative lengths of lines having heard, from experimental confederates posing as other subjects, answers which contradicted the observable evidence. The results showed that 36.8% yielded to the judgement of the misleading majority and

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