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Common value elections with private information and informative priors: Theory and experiments ☆

Friederike Mengel [a], Javier Rivas [b,*]

[a] Department of Economics, University of Essex, Wivenhoe Park, Colchester CO4 3SQ, United Kingdom
[b] Department of Economics, University of Bath, Claverton Down, Bath BA2 7AY, United Kingdom

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ABSTRACT

We study efficiency and information aggregation in common value elections with continuous private signals and informative priors. We show that small elections are not generally efficient and that there are equilibria where some voters vote against their private signal even if it provides useful information and abstention is allowed. This is not the case in large elections, where the fraction of voters who vote against their private signal tends to zero. In an experiment, we then study how informativeness of priors and private signals impact efficiency and information aggregation in small elections. We find that there is a substantial amount of voting against the private signal. Moreover, while most experimental elections are efficient, we find that it is not generally the case that better private information leads to better decisions.

1. Introduction

Consider a meeting of the executive board of a business where a decision by voting is due as to which of two foreign markets to expand. All members of the executive board have the same target, to increase the profits of the business, yet they may have different opinions about which market will be best for their company. Assume all board members have access to a report detailing which market is likely to be the most profitable one. On top of that, board members may have their own private information based on their past experience, their discussions with other colleagues, etc. The question we ask in this paper is twofold: can it be rational for board members to ignore their private information and vote following the report even when private information is informative *and* abstention is allowed? Will the committee arrive at the best possible decision given the information they have available?

To answer these questions we consider a common value election between two candidates where voters are not perfectly informed about who is the best candidate. Instead, each voter receives information about the identity of the best candidate from two sources, one public and one private. The public source of information is a common prior shared by all voters. The private source of information consists of an idiosyncratic signal of a certain quality, which could for example reflect the

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* Corresponding author.
E-mail addresses: fr.mengel@gmail.com (F. Mengel), j.rivas@bath.ac.uk (J. Rivas).
URL: http://people.bath.ac.uk/fjrr20/ (J. Rivas).

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voter's expertise. Each voter knows the quality of his own signal but not the quality of the signals others receive nor these signals themselves. In this setting it may happen that some voters decide to abstain because they believe that their vote is going to harm the chances of the best candidate winning the election. This is known as *strategic abstention* (see for instance McMurray, 2013 or Feddersen and Pesendorfer, 1996), which can occur if the signal quality of these voters is low, so that they prefer leaving the decision of selecting a candidate to other, possibly better informed, voters (self-selected experts). In this paper we ask under which conditions a voter may even vote against his signal and what are the implications of such behavior for efficiency and information aggregation.

From our theoretical analysis we obtain three main results: first, we find that a significant amount of voting against the signal can be observed in equilibrium. Voting against the signal can be rational if the voter deems the signal of too low quality compared to the information contained in the asymmetric (and hence informative) prior. Second, we find that voting does not generally aggregate information efficiently (due to mis-coordination as a result of equilibrium multiplicity). Still, efficient equilibria can feature voting against the signal in some cases. Third, for elections with a large number of voters we prove that the effect of an asymmetric common prior vanishes to zero and the election resembles one where the common prior is non-informative.

Our analysis is closely related to McMurray (2013), who studies Condorcet (1785)'s classic common value environment with symmetric priors. The main difference between McMurray (2013) and the present paper is that we allow for the common prior to be asymmetric: i.e. not all candidates are equally likely to be the best one a priori. This gives rise to a phenomenon not present in McMurray (2013): voters can vote against their own signal. With symmetric priors any signal is at least as good as the prior in predicting the best candidate. This means that no voter has incentives to vote against his signal and their decision then reduces to whether to abstain or not. In our paper the fact that a signal may be less informative than the common prior means that some voters will choose to vote against their private signal. Contrary to previous literature (Feddersen and Pesendorfer, 1996; Rivas and Rodríguez-Álvarez, forthcoming), voting against the private signal is observed in a setting without biased voters.

Our experiments test both the predictions of the symmetric case studied in McMurray (2013) as well as the predictions of the asymmetric case introduced here for small elections. As expected from the theoretical analysis, few voters (<10%) vote against their signal with uninformative (symmetric) priors, but 40–80%, depending on signal accuracy, do so in the case with informative (asymmetric) priors. Turnout is higher in the asymmetric case (83–86%) than in the symmetric case (78%) and slightly higher than theoretically expected. The experiments deliver a surprising result in terms of efficiency. While, as expected, more informative priors lead to higher efficiency, more informative signals do not always have this effect. Specifically, in the case of asymmetric priors more informative signals can lead to lower efficiency. This is because in the asymmetric prior voters do not abstain enough and do not react to signal quality enough, particularly when overall signal quality is high.

Duggan and Martinelli (2001) and Meirowitz (2002) have previously studied common value elections with continuous private signals. Both of these papers study a model where abstention is not allowed and the unique symmetric equilibrium has voters voting for a certain option if and only if their signal quality is past a certain threshold, otherwise they vote for the other option. With abstention, a voter whose signal quality is not high enough may choose to abstain and delegate the decision to other voters. Without abstention, this is not possible and the voter is forced to choose between the two options. Thus, the fact that voters can abstain makes the finding that voters may vote against their signal more robust. On top of that, compared to Duggan and Martinelli (2001) and Meirowitz (2002), in our model with abstention the symmetric equilibrium need not be unique and, in particular, it is possible to find parameter configurations such that there are two equilibria where in one equilibrium no one votes against their private signal while in the other equilibrium there are some voters who do.

Our research contributes to the literature on common value elections and strategic abstention. The classic paper of Austen-Smith and Banks (1996) raised serious questions about Condorcet's implicit assumption that all voters will vote naively, i.e. vote as if they were the only voter. They showed that voting against the signal can arise if abstention is not allowed and all voters have the same signal quality. In Feddersen and Pesendorfer (1996) voters are of three types: partisans, fully informed and uninformed. Partisans support a certain candidate irrespective of the information available while fully informed and uninformed voters prefer the best candidate. Fully informed voters know for certain who is the best candidate while uninformed voters have no information about the best candidate other than the common prior. They show that a positive fraction of uninformed voters abstain even when they strictly prefer one candidate over the other (swingers voter's curse). Battaglini et al. (2010) experimentally tested this model and found results in terms of efficiency, turnout and the margin of victory that are in line with theory. We find theoretically and experimentally that being uninformed is not a requirement for the swingers voter's curse (see also McMurray, 2013). Indeed, the fact that voters posses information of different qualities leads to a self selection in abstention; those with lower quality signals abstain, even if their signal is more informative than the prior, and even if based on the information they have they strictly prefer one candidate over the other.

In Feddersen and Pesendorfer (1997) voters receive information from different sources, where each source may provide information of different qualities. However, they do not allow for abstention, which is a crucial difference to our model. Feddersen and Pesendorfer (1998) allow voters to abstain. However, all voters receive information of the same quality. The reason why voters still do not always vote with their signal is that some voters are biased towards one of the candidates which can induce others to vote against their signal to compensate the bias. In our paper, no voter is biased and the driving