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The option to wait in collective decisions and optimal majority rules ☆

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ABSTRACT

We consider a model in which voters over time receive more information about their preferences concerning an irreversible social decision. Voters can either implement the project in the first period, or they can postpone the decision to the second period. We analyze the effects of different majority rules. Individual first period voting behavior may become "less conservative" under supermajority rules, and it is even possible that a project is implemented in the first period under a supermajority rule that would not be implemented under simple majority rule.

We characterize the optimal majority rule, which is a supermajority rule. In contrast to individual investment problems, society may be better off if the option to postpone the decision did not exist. These results are qualitatively robust to natural generalizations of our model.

1. Introduction

In most political economy models, individuals know their preferences over candidates or social actions. In another branch of the literature, individuals know their fundamental preferences, but which action is best suited to implement them depends on an unknown state of the world. The main objective of this type of models is to analyze how individuals can aggregate dispersed information through strategic voting.[1]

In the present paper we focus on a third case that has received little attention so far: collective decisions under uncertainty when individuals discover their own preferences over time. In our model, individuals get additional information over time about their heterogeneous preferences regarding an investment project, and have to choose whether to implement it immediately, or delay the decision. In the latter case, they can either implement it after receiving additional information, or pass on it completely. While investment problems under uncertainty have been analyzed extensively for single decision makers,[2] we analyze such problems when the decision is made by a society through voting. Our main focus is twofold: firstly, we examine the effect of the majority rule on individual voting behavior and social decisions. We show that a higher majority rule makes individual voters in the first period more conservative towards projects whose expected payoffs in the future are low, and less conservative towards projects whose expected payoffs in the future are high. From an ex-ante point of view, this change of individual voting behavior is desirable and has the effect that the *optimal* majority rule is larger when society has the option to wait than when voters are forced to make a final up-or-down decision in the first period. In particular, we show in a symmetric setting, where simple majority rule is optimal without the option to wait, a supermajority rule becomes optimal with the option to wait.[3] Secondly, we show that society is often worse off (from an ex-ante point of view) if voters have the option to wait, rather than being forced to decide once and for all. This result holds even if society adopts the optimal majority rule in both cases.

Specifically, we consider the following dynamic social investment problem. In the first period, each voter knows his first period payoff, but his second period type is random. If the project is implemented in the first period, it is irreversible and payoffs to voters accrue in both periods according to their type realizations. Alternatively, if the project is not implemented in the first period, voters find out their respective second period types, and vote on whether to implement the project for the second period. We parameterize projects according

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[1] See, e.g., Austen-Smith and Banks (1996), Feddersen and Pesendorfer (1996), Feddersen and Pesendorfer (1998).

[2] See Dixit and Pindyck (1994) for a review of this literature.

[3] By a supermajority rule, we mean a voting rule that specifies that the status quo is only to be changed if a certain proportion of the electorate (greater than the 50%, the "simple majority") votes in favor of change.

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to the relative size of the gain of winners to the loss of losers. A "good" project is one where this ratio is large.

A possible advantage of delaying investment in the first period is that agents receive information about their payoffs in the next period: There is an "option value of waiting". We analyze how the type of majority rule influences the value of waiting, and thus, the voting behavior of individuals and the first period implementation decision. The expected second period payoff for a voter, if the project is delayed in the first period, may go in either direction as the majority rule changes: a higher majority rule may increase the risk that a "good" project with a positive expected value (i.e., one in which winners gain more than losers lose) is not implemented in the second period, thus diminishing the value of waiting and inducing voters to implement the project already in the first period. In contrast, a higher majority rule decreases the risk that a "bad" project is implemented in period 2, thus increasing the value of waiting.

A higher value of waiting makes voters more reluctant to implement the project already in the first period. Thus, a higher majority rule makes each voter more willing to agree to good projects, even if he is a loser today, and less willing to agree to bad projects, even if he is a winner today. There is also a second, direct, effect of a higher majority rule: more voters have to agree, making first-period implementation less likely. For bad projects, both effects go in the same direction, making implementation less likely for higher majority rules. In contrast, for good projects, the first effect may outweigh the second one, leading to more projects being implemented in period 1 under a higher majority rule.

On the normative side, we focus on an ex-ante point of view, that is, taking expectation over both voter type realizations and project types. We show that, relative to a situation where all decisions have to be made in the first period, the option to wait (weakly) increases the optimal majority rule in large electorates. Intuitively, higher majority rules have the advantage that, for socially bad projects, voters become more conservative and thus fewer of these projects are implemented, while for good projects, voters become more willing to implement in the first period. Moreover, since the best projects are already implemented in period 1, those projects that are reconsidered in period 2 form a negative selection from the set of all projects, and a higher majority rule is socially beneficial for these cases as well.[4]

We also characterize the ex-ante optimal supermajority rule explicitly under the additional assumptions that each voter has a 50 percent chance of being a high type, and that project types are uniformly distributed at the constitutional stage. The optimal supermajority rule in this case is approximately (i.e., up to integer constraints) between $7/11 \approx 63.6\%$ and 2/3, for any number of voters.

It is also interesting to analyze the social ex-ante value of the option to wait. In unilateral investment problems, this value is always nonnegative, and often positive, as individuals may strictly benefit from postponing the decision. In contrast, a *society* may be better off if it is forced to invest either immediately or not at all, rather than having the option of postponing this decision. Indeed, we show that, from an ex-ante point of view (and with uniformly distributed project costs), this is the case even if society chooses the *optimal* majority rule for the case when waiting is possible.

Our results shed light on an important question in the endogenous determination of institutions: why do some organizations choose supermajority rules, and which features of decision problems influence this choice? Majority rules within organizations vary considerably, from simple majority to unanimity. Often, the choice of the majority rule that is to govern future decision making is a contentious issue itself, such as in the recent EU summit, which eventually adopted a supermajority rule. Most countries use supermajority rules for a change of the constitution, and, often implicitly, for "normal" legislation.[5] This paper contributes to the literature on the relative advantages of different majority rules by providing a new rationale for supermajority rules, which relies on voters' uncertainty over the consequences of project implementation, and the option value of waiting until new information is available. Thus, our model is most relevant for societies that frequently face decision problems with such characteristics.

Several previous papers have analyzed supermajority rules from an economic point of view. Buchanan and Tullock (1962) argue that, under a simple majority rule, a majority of people may implement socially bad projects because they can externalize a part of the associated cost to the losing minority, while under unanimity rule, only Pareto improving projects are implemented. However, Guttman (1998) shows that unanimity rule leads to a rejection of many projects that are not Pareto improvements, but nevertheless worthwhile from a reasonable social point of view. Assuming that the social goal is to minimize the sum of both types of mistakes, he shows that simple majority rule is optimal in a symmetric setting. The same result obtains in a symmetric setup in our model if voters have to make a once-and-for-all decision about the project in the first period. However, with the option to postpone a decision to the second period, we show that a supermajority rule is optimal.

Messner and Polborn (2004) analyze an overlapping generation model in which the median voter in the constitutional election decides on the majority rule that governs implementation decisions on possible projects in the future. For any project, these voters are simple one-time, up-or-down decisions. In contrast, in the present paper, our focus is on the timing of the implementation of reforms. Also, the electorate remains constant over time, thus removing the strategic incentive for the initial median voter to use supermajority rules to transfer power from future voters to his (more conservative) "average future self". Other rationales for supermajority rules include the problem of time inconsistency of optimal policies under simple majority rule (Gradstein, 1999; Dal Bo, 2006), the possibility of electoral cycles under simple majority rule (Caplin and Nalebuff, 1988), and protection against excessive redistribution (Aghion and Bolton, 2003).

Our model is most closely related to a small literature in which voters learn about their preferences over time. Compte and Jehiel (2008) develop an infinite-period search model in which the stopping decision is made by a committee, and proposals arrive exogenously and over time. The trade-off is that unanimity rule guarantees that only efficient projects are implemented, but it takes less time to reach an implementation decision under simple majority rule. If voters are sufficiently patient then higher majority rules imply that voters become more picky and average welfare increases. Albrecht et al. (2008) consider a simplified version of this framework in which all voters draw valuations from the same distribution and obtain results also for the case of intermediate and low patience levels. They show that the optimal majority rule is monotonically increasing in voters' discount rate and, if voters are sufficiently impatient, their expected equilibrium payoff increases with the size of the committee.

Both of these papers focus on the analysis of individual voting behavior and welfare under different (exogenous) majority rules in

[4] Even at the interim stage (i.e., in the first period when voters know the project type and their own first-period type), simple majority rule may be Pareto inefficient for some bad projects. This is the case if there is a simple majority of voters who approve immediate implementation under simple majority rule, but would prefer to postpone implementation, if the majority rule is changed to unanimity rule.

[5] For example, in parliamentary systems with a strong committee organization, a legislative proposal usually needs the support of *both* the respective committee and the house. In parliamentary systems with two chambers, certain legislative proposals need the support of both chambers. Tullock (1998), p. 216, estimates that legislative rules in the US for changing the status quo are "roughly equivalent to requiring a 60% majority in a single house elected by proportional representation".