A revised Brown and Payne model of voting behaviour applied to the 2009 elections in Italy

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Abstract When elections are close in time, voters may stick to their preferred party or choose a different option for several reasons; reliable estimates of the amount of transitions across the available options can allow to answer a number of relevant questions about electoral behaviour. We describe a modified version of the model due to Brown and Payne (J Am Stat Assoc 81:453–460, 1986) and argue that it is based on simple, yet realistic, assumptions with a direct interpretation in terms of individual behaviour and compares well with other models proposed more recently. We apply the model to an Italian borough where, during June 2009, two elections were held simultaneously and a runoff took place two weeks later. Estimates of the joint distribution of voters between the European Parliament election and the other two elections provide evidence of substantially different kinds of voting behaviour which, given the specific context, we interpret in the light of the recent literature on the subject.

Keywords Voter transition · Strategic voting · Ecological inference

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1 Introduction

When two or more elections are held simultaneously, or within a short time period, a substantial proportion of voters simply stick to their preferred party, a behaviour classified as sincere or expressive; instead, when they make apparently inconsistent choices, they are said to split ticket see Alvarez et al. (2006), Blais et al. (2005). A relevant case when this may happen, known as strategic vote, arise when the voter’s choice takes into account the expected results, like when one chooses a less-preferred party (or candidate) because it has better chances of winning against the least preferred one. Statistical methods for estimating the extent of different types of vote splitting are based on individual data, collected by surveys, or on aggregate electoral data.

Surveys are the basis for studies which analyze strategic and sincere vote in the light of preference ranking of candidates (see, for example, Herrmann and Pappi 2008). Such methods consider vote decision as a function of the so called expected utility gain of voting a certain candidate, so that a voter is assumed to vote strategically when the expected gain of voting a second preference exceeds that of voting the first preference. Thus, a strategic vote would be cast when the expected probability to be decisive through a vote to a second preference is perceived to exceed the probability to affect the race by voting the first preference. Other methods, like those used by Blais et al. (2005), compare the vote predicted when variables which may explain strategic choice are, or are not, taken into account. These studies employ multinomial probit models to estimate the party respondents are most likely to support either by accounting for a number of covariates (e.g. past vote, feelings about the parties, perceptions of the race, etc. or by considering only their preferences. The convergence between the two predictions should be interpreted as a sincere vote.

Methods based on direct surveys have advantages (but also drawbacks) relative to those based on aggregated data. Clearly, the information that can be obtained by direct interviews is much richer and can allow estimation of the rate of specific voting behaviours within a single election. On the other hand, methods based on aggregate data are inexpensive and free from potential biases due to individuals who refuse to respond or misreport their voting choices. Ecological inference seeks to draw conclusions about individual-level behaviour from electoral data aggregated within local units. The nature of ecological inference is often not well understood and the impact of the so called “ecological fallacy” is frequently overestimated (for a clear definition see Wakefield 2004, p. 10). In addition, the fact that the methods of King (1997) could handle only two party systems, has led some scientists (see for example Ames et al. 2009) to mistake this for an intrinsic limitation of ecological inference.

Ecological inference aims, essentially, to estimate the joint distribution of voters according to the choices made in two simultaneous (or close in time) elections on the basis of electoral data aggregated at the level of polling stations. Intuitively, if several local units share a common pattern, this should be estimable from electoral data available for those local units. The difficult problem is how to translate this intuition into realistic assumptions on the voting behaviour of individuals and derive a probabilistic model for the distribution of voters within polling stations. The model proposed by Brown and Payne (1986), as we argue in Sect. 2, is based on assumptions which are rather plausible for the specific context of voting behaviour. In the same