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## Expected closeness or mobilisation: why do voters go to the polls? : Empirical results for Switzerland, 1981 - 1999

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EXPECTED CLOSENESS OR MOBILISATION:  
WHY DO VOTERS GO TO THE POLLS?  
EMPIRICAL RESULTS FOR SWITZERLAND, 1981 - 1999

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# EXPECTED CLOSENESS OR MOBILISATION: WHY DO VOTERS GO TO THE POLLS? Empirical Results for Switzerland, 1981 - 1999

## Abstract

Using data of Swiss referenda from 1981 to 1999, this paper presents new empirical results which allow us to discriminate better between the decision and mobilisation hypotheses of electoral participation. First, theoretical considerations which lead to these hypotheses are presented as well as the theory of expressive voting, and a survey of the available empirical evidence is given. Then, we describe the empirical approach before we come to its results. Those are much in line with the mobilisation but do not support the decision hypothesis. They are, however, also only partly compatible with the theory of expressive voting.

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Keywords: expected closeness, expressive voting, campaign expenditure, turnout, direct democracy.

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## 1 Introduction

Since A. DOWNS (1957) presented his economic approach of voting behaviour, the question whether the closeness of the expected result has an impact on participation in elections and referenda has been the topic of many theoretical and empirical studies. For the Federal Republic of Germany it could be shown in a series of investigations for the time after 1983 that – given certain conditions – participation in the elections for the Bundestag, the national parliament, is – *ceteris paribus* – significantly higher in those electoral districts where a close result with respect to the ‘first votes’ is expected, i.e. those votes which decide about who will ‘directly’ represent these districts in the coming electoral period in Bonn or Berlin, respectively.<sup>1)</sup> To the ‘conditions’ belongs that voters are able to build up expectations whether the decision will be close or not in their district. Quite generally, given the available empirical evidence, it can hardly be disputed that such a closeness effect, although this is not generally the case, plays a role in many elections.<sup>2)</sup>

While the empirical foundation of this hypothesis seems to be established more or less successfully, the same cannot be said for the theoretical foundation. There are still two competing hypotheses which are employed to explain this effect. The ‘decision hypothesis’ which goes back to A. DOWNS (1957) states that closeness has a positive effect on turnout because the probability that a single vote is decisive is the higher the closer the expected result is. Thus, participating is all the higher the more voters believe that they themselves have a chance to decide the election. However, given the situation of national elections or referenda, the probability that a single vote will be decisive is so small that this can hardly be an argument for participation in an election or referendum.<sup>3)</sup> The ‘mobilisation hypothesis’, which goes back to V.O. KEY (1950) and has been further developed, e.g., by G. KIRCHGÄSSNER (1990), states that the closeness effect is the result of mobilisation efforts of the candidates or of those in favour or against a motion. The closer the expected outcome is, the more they will try to mobilise their clientele.<sup>4)</sup> There, the small probability that a single vote will be decisive does not

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1. See for this G. KIRCHGÄSSNER (1990), G. KIRCHGÄSSNER and J. SCHIMMELPFENNIG (1992), G. KIRCHGÄSSNER and A. MEYER ZU HIMMERN (1996) as well as L.P. FELD and G. KIRCHGÄSSNER (2001). – In German general elections, voters have two votes. The first vote decides about who will directly represent the electoral district in the German Bundestag, while the second vote decides about the party composition of the parliament. While the first half of the MP’s are directly elected, the second half is elected via party lists in the different German Länder, and the different parties are allowed to send in addition to the directly elected members as many people from these lists as are necessary to insure that the final composition of the parliament corresponds to the distribution of the second votes. For a more detailed description of the German electoral system see, e.g., D.P. CONRAD (1978, pp. 102ff.).
  2. Four fifths of the 43 studies which are listed by J.G. MATSUSAKA and F. PALDA (1993) confirm the supposed connection between turnout and the (expected) closeness of the result.
  3. A. DOWNS (1957) has already shown that it is not rational for a rational citizen to participate in an election or a referendum. However, in some countries participation is in fact very high. This especially holds for national elections or referenda where the possible impact of a single citizen is the smallest. Thus, we have to face the ‘paradox of non-voting’.
  4. See for this also J.H. ALDRICH (1993), R. SHACHAR und B. NALEBUFF (1999), as well as references to earlier papers in G. KIRCHGÄSSNER (1990, p. 452).

play any role, while for the candidates – as opposed to the citizens – it is really every single vote that counts.

Apart from the fact that – given rational behaviour of the involved individuals – the mobilisation hypothesis seems to be much more plausible than the decision hypothesis, the question which of these two – if any one at all – holds in reality is an empirical question and can only be decided by empirical research. To do this, it is not sufficient to investigate the relationship between (expected or realised) closeness and participation, but an indicator for the mobilisation effort has to be employed which is independent of the closeness of the result. Such data are available for Swiss referenda. Although it would be preferable to use total expenditure of supporters and opponents in the different decisions, such data are only available for some very few referenda and these are only very rough estimates. For the period after 1981, however, we have data about the space that has been filled by the supporters and opponents of a proposition with advertisements in the six most important newspapers of the German and the French speaking parts of Switzerland.<sup>5)</sup> This only represents part of the effort (expenditure), but certainly a quite important one. If one assumes that expenditure for those (partly very expensive) advertisements are (highly) correlated with total mobilisation expenditure, this is an indicator for the mobilisation effort which fulfils the demanded independence from the expected closeness.

Citizens do, however, not only vote or participate in referenda because they are mobilised by the corresponding campaign. Given the available information, they might feel more or less competent to take a meaningful decision. Moreover, it is often tried in campaigns to emphasise the importance of the decision. A full analysis of voter mobilisation has to take into account these aspects as well.

In this paper, new empirical results about possible impact factors on the participation in referenda (and elections) are presented. We investigate the results of Swiss national referenda and initiatives between 1981 and 1999. These data allow us to discriminate better between the decision and the mobilisation hypotheses than it was possible up to now. Moreover, for those decisions where we have estimates about the financial consequences, we use those as a measure of the importance of a decision: We suppose that a proposition is the more important for the citizens the larger the financial consequences of its acceptance would be. (We interpret these consequences as a measure of the distance between the alternatives at stake.)

In the following, we first shortly recapitulate the theoretical considerations which lead to the decision and the mobilisation hypotheses (*Section 2*).<sup>6)</sup> In addition, we present the theory of expressive voting which is perhaps the most important of those approaches which assume that there is not only an investment but also a consumption value resulting from participating in an election. Moreover, we sum up the empirical evidence which is so far available for those ap-

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5. These are the following newspapers in German: *Neue Zürcher Zeitung*, *Tages-Anzeiger* and *Blick*, and the ones in French: *Journal de Genève*, *Tribune de Genève* and *Le Matin*. These data have been compiled and made available to us by HANSPETER KRIESI (University of Zürich).

6. A more detailed description is given in G. KIRCHGÄSSNER (1990).

proaches. Then, we describe our empirical approach (*Section 3*) before we come to the results (*Section 4*). Those are much in line with the mobilisation but do not support the decision hypothesis. Moreover, the expected financial consequences do also play an important role. The results are, however, only partly compatible with the theory of expressive voting. We conclude with a summary and an interpretation of the results (*Section 5*).

## 2 The Economic Theory of Participation

All economic theories of voter behaviour take as a starting point the assumption that citizens do not participate in elections or polls unless the benefits from this action are larger than its costs. Differences between different approaches ground in deviating assumptions about the definition of benefits. In the first attempts of the economic theory of participation, purely instrumental interpretations have been dominated which see the benefits in the (effective) participation in the election of a person or government or the decision about acceptance or rejection of a proposition. Because of the ‘paradox of non-voting’ mentioned above, this conception soon came into trouble, which on the one hand invoked rescue attempts of the decision hypothesis and on the other hand the search for alternatives. In the following, the approaches which have been developed as well as the available empirical evidence are presented.

### 2.1 The Decision Hypothesis

As put forward by A. DOWNS (1957, pp. 35ff.) and further developed by W.H. RIKER und P.C. ORDESHOOK (1968) the net benefit  $R$  of an individual voter participating in an election is determined by the benefit differential  $B$  that results from the comparison of the preferred with the second alternative – weighted by the likelihood of casting the decisive vote  $P$  – minus the costs of casting the vote  $C$ . This leads to the following well known expression:

$$(1) \quad R = P \cdot B - C.$$

If  $R$  is positive, the voter will cast the vote, otherwise not. This is what commonly is referred to as the decision hypothesis, which is highly dependent on the assumption that people only participate in mass decisions if they can expect to play a decisive role. Although this is a very desirable decision-framework from an economist’s point of view, it is rather demanding theoretically.<sup>7)</sup>

In a large electorate, e.g. at the national level, the probability of being decisive is very small. The expected utility  $P \cdot B$  is also very small and can be neglected.<sup>8)</sup> Costs, however, as small as they might be, are nevertheless high compared with the benefits. Therefore,  $R$  should be

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7. The casting of the individual vote is an ‘instrument’ to reach a certain goal, namely the electoral victory of the preferred candidate or the respective party. Hence, this approach is also denoted as the ‘theory of instrumental voting’. See for this, e.g. G. BRENNAN and A. HAMLIN (1998).

8. G. CHAMBERLAIN and M. ROTHCHILD (1981) present a method of how the probability of being decisive can be calculated.

negative, and as a consequence one should expect participation rates close to zero. But the more citizens abstain, the higher are the expected benefits from participation, as the probability of being pivotal increases. This again creates an incentive to participate. But due to the fact that numerous individuals will make similar calculations, the probability of being decisive will again decrease. Thus, in large electorates relation (1) is consistent with a small, but not with a medium or high participation rate.<sup>9)</sup>

To solve this contradiction, several attempts have been made to construct game theoretic models which lead to an (expected)  $P$  which is large enough to motivate rational individuals to participate in an election or referendum. But, this also does not really solve the problem.<sup>10)</sup> T.R. PALFREY and H. ROSENTHAL (1985, p. 62) show that the probability to cast the decisive vote is very small once the electorate is large, and if realistic assumptions about, e.g., strategic uncertainty and the characteristics of the other citizens are made. It remains that relation (1) is compatible with a low, but not with a medium or high turnout, as long as the electorate is large. We cannot avoid the paradox of non-voting in this manner. Thus, the decision hypothesis implies that citizens are subject to the “illusion of control” because it implies on the side of the electorate “an expectancy of a personal success probability inappropriately higher than the objective probability would warrant” (E. LANGER (1975)).

In a somewhat different approach, W.H. RIKER and P.C. ORDESHOOK (1968) reformulated equation (1). They added an additional variable  $D$  representing the utility an individual citizen receives from his participation, independent of the outcome. Therefore, the benefits of voting comprise a component of investment,  $P \cdot B$ , and a consumptive component,  $D$ . Thus,

$$(2) \quad R = P \cdot B + D - C.$$

$D$  can be interpreted as the utility a voter receives from meeting his civil duties.<sup>11)</sup> Relation (2) has no (straightforward) implications on the level of the participation rates; the critique mentioned against (1) above does not hold anymore. However, it still holds that  $P$  and by the same token  $P \cdot B$  are infinitesimally small and, therefore,  $P \cdot B \approx 0$ . Thus, relation (2) actually reduces to

$$(3) \quad R = D - C.$$

As long as there are no explicit assumptions on the concrete factors determining  $C$  and  $D$ , model (3) is tautological or at least trivial. Taking into account that  $C$  and  $D$  should not vary

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9. From this perspective the turnout in Swiss elections and referenda is high despite the fact that it is relatively low compared to other European countries.

10. See for this, e.g. J.A. FEREJOHN and M.P. FIORINA (1974), J.O. LEDYARD (1981, 1984), T.R. PALFREY and H. ROSENTHAL (1983) or TH. SCHWARZ (1987). For a critique of these approaches see, e.g., G.S. STROM (1975) as well as G. KIRCHGÄSSNER and J. SCHIMMELPFENNIG (1992).

11. See W.H. RIKER and P.C. ORDESHOOK (1968) for further explanations. Similar ideas can already be found in A. DOWNS (1957, pp. 262ff.). For critical remarks on this approach see R. ZINTL (1986).

too much with respect to the type of election, relation (3) cannot explain why turnout is generally higher for general than for state and/or local elections. Moreover, according to (3), the act of voting is mainly determined by ‘sociological’ factors which is not necessarily consistent with an (economic) model of rational voting behaviour.<sup>12)</sup>

On the other hand, there is – as already mentioned in the introduction – statistical evidence available that – even at the national level – expected closeness has an impact on turnout, even if this evidence is not overwhelming. Thus, both the benefits  $B$ , as well as the probability  $P$ , seem to influence the election turnout in addition to  $C$  and  $D$ . The question now is, how can this occur, if  $P \cdot B \approx 0$ ?

An alternative approach which looks at social interactions might be more promising. R. ZINTL (1986) argues that participation might be rational if it is a general accepted social rule that a citizen should vote and if social sanctions are laid on those who do not. Due to the small costs of voting, such sanctions can be rather moderate and still be effective. In a similar way, following J. ALDRICH (1993), E. OVERBYE (1995) argues that voting might be regarded as an investment decision, not in a specific electoral outcome, “but in a type of reputation which the individual is interested in maintaining when carrying out his/her everyday activities.” (p. 369.) This also presupposes that there is some generally accepted social norm, and by following this norm one can build up this reputation. The advantage of this approach over the one of W.H. RIKER and P.C. ORDESHOOK (1968) is that voting can still be seen as a rational investment decision, and that no recourse on the (easily tautological) consumption aspect is necessary. Thus, although costs and benefits are involved which are typically considered by sociologists and much less by economists, this is essentially still an ‘economic approach’.<sup>13)</sup>

Formally, however, all these aspects can be incorporated in the factor ‘ $D$ ’ in equations (2) and (3). The difference between W.H. RIKER and P.C. ORDESHOOK (1968) on the one hand and R. ZINTL (1986) and E. OVERBYE (1995) on the other hand is that in the first approach  $D$  contains (only) psychic elements (within one person), whereas in the latter one (primarily) social relations (between persons) play a role. Thus, the latter approach is more open to empirical testing. Nevertheless, it also holds that it is hardly capable to explain why  $B$  and especially  $P$  should have an influence on turnout: The loss of reputation one suffers might be higher if one is abstaining in general than in local elections, but why should this loss be larger if the expected outcome is close in a certain district than if it is landslide?

## 2.2 The Mobilisation Hypothesis

It can be inferred from the high participation rates of national compared to regional and local elections that utility  $D$ , even if it is independent of the election outcome, depends positively

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12. See G. KIRCHGÄSSNER (1980). For further critique, see, e.g., B. BARRY (1970, p. 13ff.), J.A. FEREJOHN and M.P. FIORINA (1974), G.S. STROM (1975, p. 908) as well as R. ZINTL (1986).

13. See also G. KIRCHGÄSSNER (1999, pp. 66f.). E. OVERBYE (1995, p. 369) argues that his approach might “provide a bridge between adherents of the public-choice paradigm and scholars who advocate ‘sociological’ approaches to political behaviour.”



on the importance of an election. If voters have a sense of duty, this should be more important with respect to more important elections, and if general elections are more important than state elections and those are more important than local elections, turnout should be higher in general than in state, and higher in state than in local elections. This argument, however, is not restricted to the voter's perspective. The more they regard the coming election or referendum as important, the more candidates, parties and/or interest groups will try to mobilise the electorate. They will try to reduce the costs of voting for instance by supplying additional information to the voters or by offering the elderly free rides to the polling stations. But these activities are not always undertaken with equal intensity. If one side can be sure of winning the decision, it will – *ceteris paribus* – be less motivated to mobilise citizens. The closer the expected outcome, the more those who have an interest in the decision outcome will try to 'activate' the voters' sense of duty and the more they make use of instruments which will reduce the costs of participation. Therefore, the interaction between expected closeness and the benefits  $D$  and the costs of voting  $C$  can be formalised as:

$$(4a) \quad D = D(E(CL), B), \quad D_1 > 0, \quad D_2 > 0,$$

$$(4b) \quad C = C(E(CL), B), \quad C_1 < 0, \quad C_2 < 0.$$

$C$  and  $D$  are not given exogenously but depend on the expected closeness  $E(CL)$  which is a (negative) monotonous function of the probability  $P$  that the voter will be decisive. The importance of the election is expressed by the utility component  $B$  which represents the additional benefits a voter receives when his/her preferred candidate wins the election. Besides the direct impact of  $B$ , and possibly of  $P$ , on the investment component, both variables have an impact on the consumptive component, even if  $P \cdot B \approx 0$ . Therefore, contrary to the decision hypothesis, the mobilisation hypothesis is a basis to explain the voters' reactions on expected closeness as rational behaviour.<sup>14)</sup>

If the mobilisation hypothesis holds, parties and interest groups should allocate scarce resources to those campaigns for which a close result is expected rather than to those where the outcome is predictable. Data on campaigning efforts therefore should be employed to distinguish between the mobilisation and the decision hypothesis if a relation between expected closeness and turnout can be observed.

Empirical evidence of campaigning effects has already been collected earlier.<sup>15)</sup> In a quite recent analysis of elections in the USA and Canada, J.G. MATSUSAKA and F. PALDA (1993) have confirmed these results. They do find a weakly significant influence of closeness-indi-

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14. The idea that expected closeness has an impact on election turnout because candidates and parties (party elites) try to mobilise the electorate, and not because the voters themselves think they are the more influential the closer the expected outcomes is, is not new. It originated from the assumption that the number of mobilisation activities increases, the stronger candidates and/or parties compete among each other. See, e.g., V.O. KEY (1950, p. 507), K.S. PALDA (1975), W.N. CHAMBERS and P.C. DAVIES (1978), G.W. COX (1988) as well as J.G. MATSUSAKA (1993).

15. See, e.g. P.A. DAWNSON and J.E. ZINSER (1976), R.F. SETTLE and B.A. ABRAMS (1976), A.G. CALDEIRA and S.C. PATTERSON (1982), S.C. PATTERSON and G.A. CALDEIRA (1983) as well as G. COX and M.C. MUNGER (1989).

cators on turnout but this influence is quantitatively insignificant. Moreover, the significance of this relation disappears as soon as the regression is conducted at the individual level. They conclude that macro-studies may show an aggregation bias.<sup>16)</sup> Thus, studies that show a connection between closeness and turnout rather support the mobilisation than the decision hypothesis.

That expected closeness has an impact on the efforts of the political leaders to mobilise their supporters is also the idea of the “Follow-the-Leader-Model” developed by R. SHACHAR and B. NALEBUFF (1999). For U.S. state data of presidential elections between 1948 and 1988 they find that an increase of expected closeness of 1 percentage point increases turnout by 0.34 percentage points. They trace this back to the activities of the political elite, estimate a corresponding structural model, and use this to estimate the mobilisation efforts.<sup>17)</sup> The so constructed indicator variable for the mobilisation effort is regressed on time-dummies and the share of those who had been contacted by an activist during the respective campaign. The latter effect could be confirmed at the 10-percent significance level.<sup>18)</sup>

Interestingly, only three studies exist which examine the relation between expected closeness and turnout for popular referenda. The first two have been conducted by J.E. FILER and L.W. KENNY (1990). They examined 54 city-county consolidation referenda in different states of the U.S. between 1949 and 1976 as well as 42 referenda concerning indebtedness in the state of New York between 1920 and 1969. For their first sample, they find a negative but non-significant correlation between the measure for the relative closeness and turnout. For the second sample, however, instead of the closeness-indicator they use the share of new indebtedness as an explanatory variable, which shows a significantly positive influence on turnout. The authors conclude, that the benefit differential affects turnout considerably, from which they conclude that (the subjectively perceived)  $P$  cannot be extremely small. What they do not take into account, however, is that according to the mobilisation-hypothesis, the direct consequences can affect the consumption benefit  $D$  even if the likelihood of casting the decisive vote  $P$  is zero.

In a very comprehensive examination of the turnout of referenda, J.G. MATSUSAKA (1993) finds no systematic evidence for the closeness effect. Based on different samples of a population of 885 propositions in California between 1912 and 1990, he established that most of the closeness-indicators are not significant and that many of them point to the ‘wrong’ direction,

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16. Additional studies at the individual level are discussed in J. STRUTHERS and A. YOUNG (1989) as well as in D.C. MUELLER (2003, pp. 308ff.).

17. Similarly, J. NAGLER and J. LEIGHLEY (1992) have shown for the presidential elections of 1972 that the expenditures of the Democrats for television advertisements grew with the closeness of the result in a State. (For the Republicans the same effect resulted but, contrary to the one for the Democratic Party, it remained statistically insignificant.) Moreover, they could show that the television advertisements of the Democrats had a significant positive influence on their vote share.

18. It has already been established by G.H. KRAMER (1971) for the presidential elections of 1952 to 1965 as well as by P.W. WIELHOUWER and B. LOCKERBIE (1994) for the presidential elections between 1952 to 1990 that the likelihood of participating increases if a voter is contacted by a party. See for this also the former literature mentioned in G.H. KRAMER (1971, p. 2f).

which means that turnout is the higher the larger the relative distance between Yes- and No-votes is.<sup>19)</sup> His conclusion is that expected closeness plays a subordinate role for the explanation of turnout. The problem with these results is, however, that in California usually more than one proposition appears at the ballot. Hence, turnout for one proposition cannot possibly be independent of turnout for the remaining propositions of the same weekend. That this is not taken into account limits the meaningfulness of the study.

In contrast to this, M. SØBERG and TH.P. TANGERÅS (2003) find a highly significant and quantitatively meaningful effect of closeness for 230 referenda in Norwegian school districts between 1971 and 2001. The interpretation of this result has to take into account that those districts are rather small: the mean of citizens authorised to vote amounts to 386 people with a minimum of only 6. Hence, the objections against the closeness hypothesis that refer to large groups of people are partly not valid here. On the other hand, no distinction between the mobilisation and the decision hypothesis is possible in this context.

### 2.3 Expressive Voting

So far, the argument circled around the role of decisiveness and the costs of voting. It is not surprising, though, that the consumption benefit has not received equal attention by economists. The main problem with this concept is that of immunisation. As long as no clear-cut specification is supplied, any behaviour can be explained with reference to consumption benefits. It is not easy to find a specification that gives empirical meaning to this concept. Accordingly, empirical investigations in this direction remain difficult. Attempts have been conducted, nevertheless, mainly building on survey-data. The first and still most prominent is the already mentioned study of W.H. RIKER and P.C. ORDESHOOK (1986, p. 36). Their measure of ‘civic-duty’ was compiled using a scale named ‘sense for civic duty’ which builds on four questions about civic-duty of a pre-election survey. This measure is highly independent of the content of the election. Still, it can reflect elements of the importance of the election. As G. KIRCHGÄSSNER (1990, p. 449) has shown, if someone feels a sense of duty because he or she wants to be a good citizen, this feeling should be stronger the more important the election is. Of course, it may be possible to influence this feeling through campaigns, for example by emphasising the importance of the vote.<sup>20)</sup> However, the problem remains to determine the importance of the vote independently of turnout. Whereas this might be relatively easy for elections, it is much more difficult for popular referenda.

A somewhat more general definition of the consumption benefit was put forward by G. BRENNAN and L. LOMASKY (1985, 1993). According to them, a consumption benefit results simply from the opportunity to express one’s opinion, hence to express own preferences and

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19. If relative closeness and turnout are not correlated, the absolute difference will be positively correlated with turnout. (See for this G.W. COX (1988).) Therefore the positive correlation between the absolute difference and the turnout for these referenda can be interpreted as an indication that closeness lacks any influence on turnout.

20. See for this P.R. ABRAHAMSON and J.H. ALDRICH (1982).

convictions. Since the single vote does not count, this type of expression is very cheap; it is probably the cheapest possibility of expressing one's opinion without reservation.<sup>21)</sup> G. BRENNAN und L. LOMASKY suppose that in such situations the 'expressive', i.e. the moral or 'non-consequentialist' preferences are dominant over the purely instrumental or 'economic' preferences. Voters will choose (or express agreement with) the alternative they identify with most. As in the conventional approach this usually is the one that comes closest to their ideal point. However, G. BRENNAN and A. HAMLIN (1998, pp. 156ff.) introduce a further assumption which states that the identification with a proposition or person decreases rapidly as soon as the distance between this alternative and the ideal-point passes a certain threshold in both directions. If the distance between the two alternatives shrinks, according to this concept turnout decreases not so much because civic duty is reduced but simply because the 'identification areas' overlap which reduces the number of individuals which identify themselves with one of the two alternatives.

In operationalising the concept of the expressive benefit G. BRENNAN and L. LOMASKY (1985, 1987, 1993) have rejected, however, the idea that 'expressiveness' shall not be influenced at all by the direct material consequences. In their opinion, such a possibility definitely exists, although it may be dependent on the situation. In any case, they start from the point that B can only have an indirect influence via D. This may be, for example, the result of a strong cognitive dissonance, which is caused by a big gap between the ideas of the individual and the reality.<sup>22)</sup> It looks like that (according to their view) the concept of expressive benefit may not be definable in general, but is very much dependent on the content and/or the characteristics of the alternative. This leads to a serious problem for the empirical research: How can empirically meaningful statements be made if these have to be based on characteristics of the voters that cannot be observed and in addition may change from decision to decision?

Accordingly, there are only a few studies which test the hypothesis of expressive voting by analysing the result of the decision. S. FEIGENBAUM, L. KAROY and D. LEVY (1988) follow this approach with their examination of the nuclear freeze referendum of 1982 in the US. This proposition resembled more a consultation over the future of nuclear energy production than a real policy proposal. Thus, one may take it for granted that most voters interpreted the poll in a way that no political consequences would be related to it. Hence, most of them would have expressed their moral preferences against such a 'bad' and dangerous technology even though this might have collided with their own material preferences. The results support this consideration: Even those sections of the population which were expected to profit much from nuclear energy voted against the proposition. K. KAN and C.C. YANG (2001) come to similar conclusions. Based on data in connection with the national elections in the USA in 1988, they

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21. The lacking influence of a single vote and the consequences thereof have first been discussed by J.M. BUCHANAN (1954), G. TULLOCK (1971) and H. KLIEMT (1986). From a broader perspective this is part of the theory of low-cost decisions. See for this G. KIRCHGÄSSNER (1992, 1996, 2000) as well as G. KIRCHGÄSSNER and W.W. POMMERHNE (1993). One implication of this theory is that the 'moral' or the ethical preferences, respectively, are weighted more strongly in voting and in other low-cost decision situations than this would be the case under market conditions.

22. See for this G. BRENNAN and L. LOMASKY (1993, p. 52).

showed that ‘cheering’ and ‘booing’ as motives for political decisions are not only statistically significant but even have a considerable influence on turnout and the decision itself. Moreover, they found no evidence for voters making their turnout decisions dependent on the estimation of the own influence in the decision. Finally, based on surveys for six national American elections between 1986 and 1996, C. COPELAND and D.N. LABAND (2002), have shown that those persons who exhibit expressive behaviour in general, are more likely to participate than others.

Evidence against the hypothesis of expressive voting is presented – according to their own interpretation – by K.V. GREENE and PH.J. NELSON (2002). Following the arguments of G. BRENNAN and A. HAMLIN (1998, p. 159), they put forward (against the background of a two-party system with a one-dimensional left-right-scale) the hypothesis that the voters may abstain more the stronger their own positions deviate towards the extremes.<sup>23)</sup> According to their results participation of such extreme voters, however, is not significantly lower than that of ‘moderate’ voters. Whether this result really contradicts the hypothesis of expressive voting is subject to critical suspicion. The only postulate of G. BRENNAN and A. HAMLIN (1998) in this direction is that the theory of expressive voting is incompatible with the conventional claims that extreme voters may turn out more than moderate voters. Insofar, the results K.V. GREENE and PH.J. NELSON (2002) are at least more in accordance with the theory of expressive voting than with the theory of instrumental voting.

From the side of experimental research, studies have focused on the role of closeness and the conditions of ‘low-cost’-decisions, though the latter is a precondition for the approach of expressive voting. R.R. CARTER and S.D. GUERETTE (1992) find no evidence for altruistic voting in less close decisions. In their examination, however, they did not test the relevance of moral preferences as claimed; the experiments shed much more light on the significance of rational behaviour, since the subjects did only have the choice between two monetary donations of different size. Moreover, the number of observations was very small. Building on these objections, A.J. FISHER (1996) has carried out a second experiment with different majority rules (and hence different chances of being decisive), in which the more individuals voted for charitable behaviour the smaller P became. J.R. TYRAN (2004) has criticised that none of these examinations asked the subjects about their expectations concerning their own influence on the decision. If corresponding self-assessments are taken into account, it can be shown that the subjects do not care about this influence but still act morally in a sense that they co-operate more the more they expect others to do the same.<sup>24)</sup>

Thus, the empirical evidence is not unambiguous. More inquiry has to be done to examine the hypothesis of expressive voting on the basis of the effects on turnout as proposed (but not conducted) by G. BRENNAN and A. HAMLIN (1998). In principle, such further examinations

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23. Hence, G. BRENNAN and A. HAMLIN (1998) allow for alienation as a reason for abstention which is hardly in line with the theory of instrumental voting. With a simple psychological model, G. KIRCHGÄSSNER (2003) shows, however, that within the rational choice approach abstention as a cause of alienation can also be explained without recursion to the expressive voting approach.

24. For the theory of such ‘reciprocal’ behaviour see e.g. E. FEHR and S. GÄCHTER (1998).

should take place on the individual level. However, it may also be worthwhile to examine this hypothesis with aggregated data, and this is particularly possible in the context of turnout for Swiss referenda.

## 2.4 Some further considerations

The research reviewed so far results in the following conclusions: The mobilisation hypothesis is not only theoretically more convincing but it is also empirically better supported than the decision-hypothesis. Expected closeness should only have an indirect influence insofar as it strengthens the mobilisation-activities under certain circumstances. Therefore, the closeness-hypothesis can mainly be confirmed for those situations in which the political elite and the voters, based on their experiences, are able to form reliable expectations concerning the closeness of the result to come. This may be easier for elections than for referenda and, correspondingly, the empirical evidence shows that the closeness-hypothesis can be confirmed clearer and more definite in the context of elections than for referenda.

Nevertheless, voters might be regarded as being rational: They understand that as single individuals they are not capable of influencing the result. But then, there must be other influential components beside their possible decisiveness that motivate them to participate. Such motivation may also be strengthened by mobilisation activities others than mere provision of information. Furthermore, there is no reason to act single-mindedly self-interested in the standard economic sense. However, there is also no obvious reason against it.

A further hypothesis regarding the explanation of turnout, which is quite popular in political science, is about the influence of the ‘competence’ of the voter. It has to be regarded as proven for Switzerland that citizens tend to participate all the more in referenda the more competent they feel themselves to take a decision.<sup>25)</sup> This competence may be influenced by the amount and quality of information that voters receive and are able to understand. There is a certain intersection with the mobilisation hypothesis in this respect. However, competence can also be connected to the complexity of a proposition.<sup>26)</sup>

The economic theory of voter behaviour has originally been developed for the analysis of elections with candidates and different electoral districts. Although there are many points in common between the choice between two candidates and popular votes on issues, there are also considerable differences. The position of the status quo might be more rigid for referenda than the position of an incumbent in an election, who has to take responsibility for his present politics, but definitely has some leeway for defining his future program. This can be compensated for initiatives by working out a counter-proposal, but at least in the case of referenda the proposed legal or constitutional regulation has to be defended. The more important difference

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25. See F. di Giacomo (1993).

26. See for this e.g. J.G. MATSUSAKA (1995) or the political science literature on the relation between competence or self-consciousness respectively of the voters and turnout: For Switzerland see e.g. L. NEIDHARD and J.-P. HOBY (1977), A. RIKLIN and R. KLEY (1981), F. DI GIACOMO (1993) as well as I. PAPADOPOULOS (1996).

lies, however, in the fact that there are stronger incentives to put forward extreme proposals by presenting an initiative than for a candidate to choose an extreme policy-platform in a two-party-system. Whereas such a candidate would have (almost) no chance, initiators in Switzerland, particularly if they are not members of the political elite, mostly aim at changing the political agenda. As, e.g., the vote of November 26, 1989, about the abolition of the Swiss army has shown, such an initiative can have far reaching political consequences (and hence be ‘successful’ in a certain sense) even though it is (clearly) rejected by a majority.

In a referendum, turnout is trivially given by the sum of Yes- and No-votes. Mobilisation efforts might have positive and negative impacts, which can be in the interest of their financiers. It is, e.g., not only a success of mobilisation efforts against a proposition if potential opponents participate but also if potential supporters abstain. Thus, it makes sense to consider not only the impact on turnout of the different variables but also their impact on the shares of the Yes- and No-votes, and one might distinguish between those efforts in favour and those against a proposition. One can (and we will) also consider the difference between Yes- and No-votes: It decides whether a proposition is accepted or rejected and, therefore, on the success of the mobilisation expenditure of the two sides.

### 3 The Estimation Approach

Investigations into the influence of expected closeness on voter turnout usually take the form of cross-sectional examinations across different electoral districts for a certain election, employing control variables that depict the characteristics of the individual districts.<sup>27)</sup> Contrary to this, we proceed similar to J.G. MATSUSAKA (1993) who attempts to exploit the variation of voter turnout across time. As follows from the hypotheses above, the essential variables are the measures for the expected closeness of the decision, for the efforts to mobilise voters, for the distance between the alternatives as well as for the competence voters attribute to themselves.

Let YES be the number of Yes-, NO the number of No-votes and N the number of all voters entitled to vote. Voter turnout (TOU) – as the dependent variable – then results as the share of the Yes- and No-votes that have been casted at a certain poll.<sup>28)</sup>

Assuming rational expectation of the voters the expected closeness of the result can be approximated by actual closeness. Then, however, using ordinary least squares, the estimated parameters are no longer consistent. Thus, one should rather employ either an ex-ante meas-

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27. See for this e.g. the investigations for Germany by G. KIRCHGÄSSNER and A. MEYER ZU HIMMERN (1997) or L.P. FELD and G. KIRCHGÄSSNER (2001).

28. Source of the data: Results of the propositions of national votes, <http://www.admin.ch/ch/d/pore/va/index.html>. – The definition of turnout that is employed here deviates slightly from the official definition which is the share eligible voters who casted a vote. The difference to our measure lies in the treatment of the void and empty ballots. After all, in our sample they amount to 2.7 percent of the votes casted. Since we build our analysis also on the differences between the votes of the same weekend, it does not make much sense to treat those ballots the same as the Yes- and No-votes.

ure or use an instrumental variable estimator.<sup>29)</sup> There is no suitable ex-ante measure available, however, and it hardly will be possible to find suitable instruments, either. Therefore, as J.G. MATSUSAKA (1993) and M. SØBERG and TH.P. TANGERÅS (2003) did, we employ ex-post data. To capture the relative closeness we use the entropy measure proposed by G. KIRCHGÄSSNER und J. SCHIMMELPFENNIG (1992):

$$(5a) \quad \text{ENT} = -a \ln(a) - (1 - a) \ln(1 - a),$$

with

$$(5b) \quad a := \text{YES}/(\text{YES} + \text{NO}),$$

because the results with this measure are in most cases ‘better’ (in the sense that they result in higher (absolute values of the) t-statistics), and we will only report these results.<sup>30)</sup>

The next variable we need is the distance between the alternatives. In principle, we should first determine the relevant dimensions, then calculate the distances for each dimension and finally compile a one-dimensional measure according to a certain rule. This, however, would not only provoke theoretical considerations; it is simply the case that the required data is lacking. Therefore we have to restrict ourselves to the financial dimension, for which it is most likely to receive reliable data. We have collected information about how much money was at stake for a certain proposition, implying either additional expenditures, savings, tax-increases or decreases. As the measure for the distance we used the additional burden or relief in 1000's of Swiss francs per person entitled to vote. For 52 propositions in our sample the calculation of this measure was relatively easy and could be established unambiguously because of a far reaching consensus concerning the consequences.<sup>31)</sup> For 8 propositions the situation was less unambiguous, since these were complex policy proposals with several different (economic) consequences. In these cases there was no consensus concerning the consequences, and different sources had to be taken into account.<sup>32)</sup> In most cases, however, there have not been any financial consequences or it was impossible to calculate them, respectively,

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29. In the context of the elections for the German Bundestag G. KIRCHGÄSSNER and A. MEYER ZU HIMMERN (1997) as well as L.P. FELD and G. KIRCHGÄSSNER (2001) employed as instruments the results and closeness of the respective precedent election. The rationale of this is that voters can form their expectations from earlier election results. However, with a series of referenda this possibility is not given since the contents and the circumstances change from referendum to referendum.

30. For this function it holds that  $0 \leq \text{ENT} \leq 0.693$ . It has its (unique) maximum at  $a = 0.5$ . – We exclusively rely on the voters’ majority. Of course, there are votes, as, e.g., the one about the accession to the United Nations of March 3, 2002, for which the ‘Ständemehr’ (the majority of the cantons) has been much closer than the voters majority. In contrast to this the ‘Ständemehr’ failed clearly with 7 against 16 Cantons for the closest race on the voters’ level, the decision about the accession the European Economic Area (EEA) of December 6, 1992. Since in general the margin is discussed in votes of individuals and since it might be difficult to find an indicator that combines the voter margin with the ‘Ständemehr’, we will only rely on the voters’ margin.

31. The financial consequences have been compiled according to information provided in newspapers, particularly in the *Neue Zürcher Zeitung*, as well as in the ballot pamphlet that is distributed to all the eligible voters well in advance of every referendum weekend.

32. This concerns the propositions 348, 363, 298, 401, 409, 420 and 421.



because they did not play any role in the campaign. This requires introducing a dummy-variable for those propositions for which no distance measure could be calculated.<sup>33)</sup>

The financial consequences, however, can be assessed differently by different votes, depending on the proposition being a mandatory or an optional referendum or an initiative. First, the (a priori) probability to succeed with the proposition is differing very much across the different types of propositions. While on average only 8.7 percent of the submitted initiatives succeed, 75 percent of the mandatory and 50.4 percent of the optional referenda succeeded, which means that the referenda had been decided in the sense of the parliament.<sup>34)</sup> For different institutional types of popular decisions, voters might put different weights on the financial consequences. Second, the sums that are at stake are also differing very much across the different types: They are for those 11 initiatives, for which we could determine a distance measure, up to four times as high as for the referenda.<sup>35)</sup> To take this into account we introduce separate variables for initiatives and referenda.

As already mentioned in the introduction, we use the space that had been filled by the supporters and opponents of a proposition with advertisements in the six most important newspapers of the German and the French speaking part of Switzerland as our indicator for the mobilisation efforts. We have data for the period between 1981 and 1999.<sup>36)</sup> To facilitate the interpretation of the results, these data have been normalised so that their standard deviation is 1.0.

The variable for ‘complexity’ has been extracted from surveys that have been conducted on a regular basis after every vote since 1979. This variable gives the share of (participating and abstaining) people who declared in the survey that they were struggling with difficulties in deciding. As explained above, we assume that this variable has a negative impact on voter turnout.<sup>37)</sup>

As additional variables we introduce dummy-variables for the optional referendum and the initiative. The inclusion of these variables seems to be useful because voter turnout differs across them: turnout for mandatory referenda reached only 38.3 percent on average whereas for optional referenda the respective figure is 41.1 percent and for initiatives 43.2 percent.

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33. As long as we employ the distance variable, it makes sense to incorporate the respective dummy variable into the estimation equation even if it is not significantly different from zero. Here, the same argument as for the absolute term applies.

34. This applies for the whole sample period. For the last 30 years the average approval rate lies for optional referenda with 63.4 percent significantly higher. Sources of the data: *Statistical Yearbook of Switzerland* 2002, Table 17.3.2.1, p. 782.

35. The average amount is: (i) mandatory referenda: 223 millions CHF (25 observations), (ii) optional referenda: 241 millions CHF (24 observations), (iii) initiatives: 907 millions CHF (11 observations).

36. For the following propositions during this period these data are not available: 309, 310, 314, 315, 337, 375.

37. These data have also been collected by HANPETER KRIESI and made available to us. For the following propositions in this time period no data are available: 309, 310, (initiative and counter-proposal), 314, 342, 343. – Since the beginning of the seventies such surveys are regularly performed by the GfS-Research Institute in Bern in collaboration with political science institutes of the universities of Bern, Geneva and Zürich.

This certainly could result from the differing advertising efforts but it could also be the case that the voters attach varying importance to different proposition-types.

Considerable difficulties stem from the fact that, in general, several propositions are held at the same time: The 142 propositions in our sample have been decided on altogether 46 week-ends. If somebody casts a vote on a certain proposition, he/she normally casts a vote also for all the remaining propositions on the ballot. This implies in the first place, that the individual values of the explanatory variables can not quite be assigned to individual propositions. Rather, that proposition will have the strongest impact on turnout of all decisions at a week-end that is considered by the citizens as being the most important one. We assume that these can be identified by considering the advertising efforts: We assume that those propositions for which campaign expenditures were the highest have also been perceived by the voters as being the most important ones. Thus, we construct new variables for the mobilisation- and competence-indicators, which contain the values of this single most important proposition for all propositions at the same weekend.

Even if turnout for all propositions of the same week-end is very similar, there are clear differences, particularly if one considers the void and empty ballot-papers as not belonging to turnout. By regressing turnout on 46 dummy-variables for every voting-week-end, we receive an adjusted  $R^2$  of 0.987, but with a standard error of 0.876 and a strongest deviation of 3.24 percentage points. Thus, the respective values of an individual proposition seem to have an influence even if it is not the ‘most important’ one on the ballot sheet. For the indicators for mobilisation and competence we hence employ beside the newly constructed variables also the original variables containing the values of the individual propositions.

A statistical problem arises from the fact that the different propositions of one weekend build clusters: The residuals of the observations within a cluster are highly correlated. This biases the estimated variances of the parameters. To take this into account we employ robust standard errors.<sup>38)</sup> One further problem is that we, therefore, cannot take into account any additional autocorrelation of the residuals between the voting Sundays. As has been shown by additional examinations, this should however not have any consequences on the consistence of the estimated variances.<sup>39)</sup>

Thus, we get the following basic model:

$$(6) \quad Y = f(\text{DIST}_{\text{REF}}, \text{DIST}_{\text{INI}}, \text{MDIST}_{\text{REF}}, \text{MDIST}_{\text{INI}}, \text{MOB}, \text{MOB}^*, \text{ENT}, \text{ENT}^*, \text{COM}, \text{COM}^*, \text{MRE}, \text{INI}, \text{DV}(\text{DIST}_{\text{REF}}), \text{DV}(\text{DIST}_{\text{INI}}), \text{DV}(\text{MDIST}_{\text{REF}}), \text{DV}(\text{MDIST}_{\text{INI}})).$$

There, Y is the depending variable:

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38. The regression has been computed with Stata, Version 8, using OLS with the cluster option.

39. For individual models equations for the means of the 46 election weekends have been estimated. However, no significant autocorrelation could be found for the estimated residuals, regardless of weighting (with the number of propositions).

YES	Share of the Yes-votes of the electorate (in percent),
NO	Share of the No-votes of the electorate (in percent),
TOU	Turnout (YES + NO),
DIFF	Margin of the Yes over the No-votes (YES – NO).

The explanatory variables are:

$DIST_{REF}, (DIST_{INI})$	Distance (financial implications per capita) of a referendum (an initiative)
$MDIST_{REF}, (MDIST_{INI})$	Maximal distance (financial implications per capita) of a referendum (an initiative) at the weekend,
MOB	Measure for mobilisation expenditure,
ENT	Entropy measure for the closeness of the decision,
COM	Share of those who have difficulties to take a decision,
ORE (INI)	Dummy variable for the mandatory referendum (the initiative),
$DV(DIST_{REF}),$ $(DV(DIST_{INI}))$	Dummy Variable, which takes on ‘1.0’ for those polls where the corresponding distance measure is zero, and zero elsewhere.
$DV(MDIST_{REF}),$ $(DV(MDIST_{INI}))$	Dummy Variable, which takes on ‘1.0’ for those polls where the corresponding maximum distance measure is zero, and zero elsewhere.

Those variables earmarked with an ‘\*’ contain for all propositions belonging to the same week-end the values of the ‘most important’ proposition, whereas the remaining variables contain the original values for every single proposition.

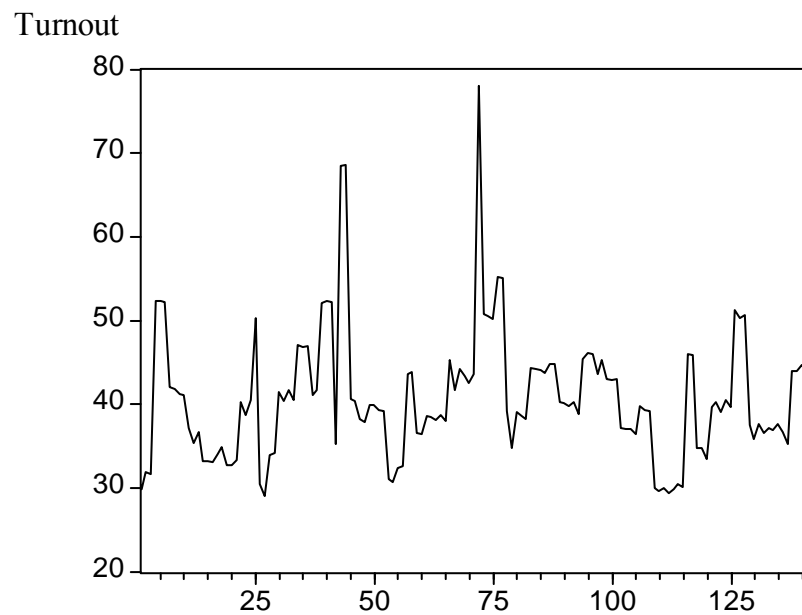
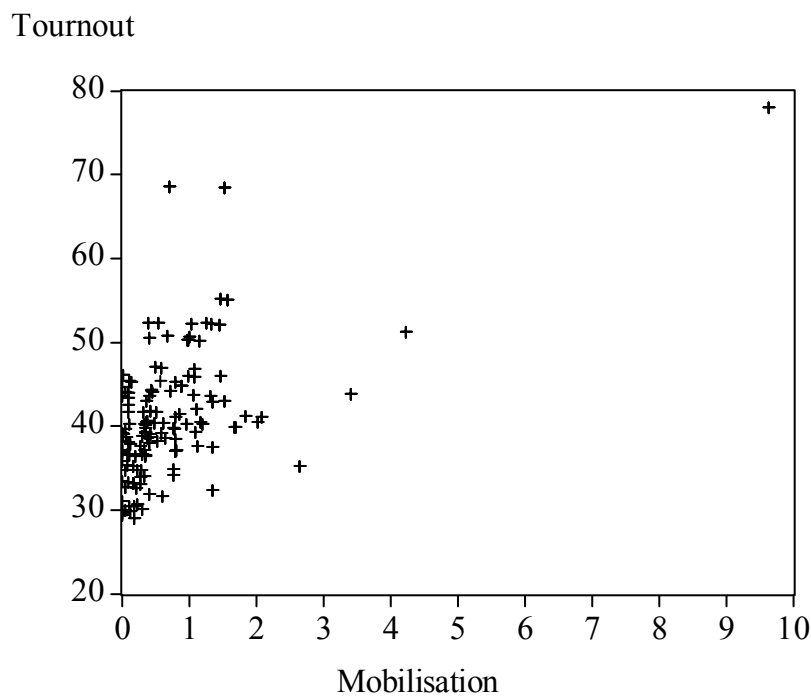


Figure 1: Participation in Swiss Referenda, 1981 – 1999, 142 Observations

As can easily be made out from a short glance on the data depicted in *Figure 1*, there was no time trend during the sample period<sup>40)</sup> but certainly some ‘outliers’. These are on the one hand the two propositions of November 26, 1989, – one of which was about the abolition of the Swiss army – but on the other hand also the vote on the accession to the European Economic Area of December 6, 1992.<sup>41</sup> The scatter-diagram in *Figure 2* shows the connection between turnout and campaigning efforts. It seems obvious from this graph that it should be the EEA-vote in particular that may cause problems. Therefore a test for normality of the estimated residuals has always to be conducted. Moreover, it will be necessary to check to which extent the results are driven by this single observation.



*Figure 2: Relation between Turnout and Mobilisation Expenditure, 1981 – 1999, 142 Observations*

#### 4 Empirical Results

We proceed according to the ‘encompassing-approach’ proposed by D.F. HENDRY (1995, p. 551ff.), according to which one should start with a general model which represents the em-

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40. Whenever we included a time trend in the regressions, its estimated coefficient was far apart from any significance. This is even true if an interaction variable between the time trend and the different types of decisions is included.

41. If we conduct a regression of turnout on dummy variables for these two election weekends we get for the estimated residuals a value of the Jarque-Bera-statistic of 3.050 with a p-value of 0.218. Thus, the null-hypothesis of normally distributed data cannot be rejected on any conventional significance level. Insofar, these three observations can be seen as being outliers in a statistical sense.

pirical data sufficiently well and encompasses all other models, then impose restrictions which can not be rejected empirically, in order to finally arrive at a ‘parsimonious’ model.<sup>42)</sup> Thus, we start by estimating the complete basic model (6). The results are presented in *Table 1* (relation 7). Considering the different groups of variables, we see that none of the estimated coefficients of the two simple distance measures and the corresponding dummy variables is significantly different from zero. The Wald-Tests in *Table 1a* confirm this picture: Even at the 10 percent level this group of variables does not contribute to the explanation of the variance of the dependent variable. Thus, we exclude these variables from our further estimations.

For relation (7) as well as relation (8) in *Table 1* it holds that the two variables for the mobilisation effort are highly significant whereas the estimated t-statistics for the two closeness measures are never above 1.0. This indicates that expected closeness has no independent impact on turnout besides the mobilisation efforts. The same is indicated by the corresponding p-values reported in *Table 1a*: These values are in both cases even above 0.50, whereas the significance levels for the common hypotheses of the two mobilisation variables are in both cases below 0.01.<sup>43)</sup> Correspondingly, the exclusion of the two closeness-variables in relation (9) hardly changes the values and significances of the estimated parameters of the remaining variables, and it even improves the Schwarz-criterion. If, on the other hand, the two mobilisation variables are excluded as in relation (10), all measures of the total equation deteriorate considerably, whereby the adjusted multiple correlation coefficient is reduced to less than half of its previous value. At the same time, the estimated coefficients of the two closeness variables are now significantly different from zero at the 5 and 10 percent levels. This is strong evidence in favour of the mobilisation and against the decision hypothesis: The significance of the closeness variables does not stem from the fact that the citizens believe that their own, single vote has a decisive impact, but from the mobilisation efforts of the interested groups which are – *ceteris paribus* – the higher the closer the expected outcome is. Because, on the other hand, mobilisation efforts also depend on other factors, the indicators for the quality of the estimates deteriorate considerably if the closeness variables are employed instead of (better) indicators for the mobilisation effort.<sup>44)</sup>

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42. This ‘top-down’-approach is part of the more general LSE-approach in econometrics. See for this also G.E. MIZON (1984) as well as – for a more general description of this approach – A. PAGAN (1987).

43. This does not change if we – because of possible multicollinearity – include only one of the two entropy variables into the equation. In relation (8) we then get a t-value of 1.07 for the entropy measure of the decision itself and of 1.10 for the entropy measure of the most important decision of the weekend.

44. The simple correlation coefficients between the closeness and mobilisation variables are 0.263 for the individual decisions and 0.330 for the most important decision of the weekend. Even taking into account the cluster property of the data these coefficients are significantly different from zero at least at the 1 percent level. On the other hand, these correlations are not especially strong. This indicates that besides the expected closeness other factors also have a considerable impact on the mobilisation efforts (or the financial means which are used to mobilise the citizens, respectively).

**Table 1: Turnout in Swiss Referenda and Initiatives  
1981 – 1999, 142 Observations**

Dependent Variable	Turnout (7)	Turnout (8)	Turnout (9)	Turnout (10)
Constant term	36.320** (4.36)	35.544*** (4.34)	44.274*** (10.32)	19.359(*) (1.91)
Distance at a referendum	-12.793(*) (1.85)			
Distance at an initiative	5.726 (0.87)			
Maximal distance at a referendum	34.700*** (3.95)	32.433** (3.39)	33.266** (3.58)	33.510* (2.65)
Maximal distance at a initiative	12.647 (1.61)	13.820 (1.63)	12.835 (1.48)	10.383 (1.13)
Mobilisation	2.243** (3.06)	2.275** (3.18)	2.235** (3.27)	
Mobilisation for the most important decision	2.541*** (3.75)	2.490*** (4.00)	2.751*** (4.47)	
Entropy closeness measure	3.511 (0.54)	3.930 (0.58)		14.575(*) (1.72)
Entropy closeness measure of the most important decision	11.106 (1.00)	10.545 (0.92)		24.100* (2.02)
Complexity	-23.170*** (4.75)	-21.310*** (4.78)	-20.034*** (5.09)	-20.379*** (4.11)
Complexity of the most important decision	17.970(*) (1.89)	-19.057* (2.02)	-19.001* (2.33)	-11.278 (0.97)
Mandatory referendum	-2.608* (2.08)	-2.569* (2.10)	-2.940* (2.46)	-1.731 (1.02)
Initiative	-2.138 (1.45)	-2.187(*) (1.90)	-2.543* (2.42)	0.606 (0.45)
Dummy variable for the distance at a referendum	-1.741 (1.61)			
Dummy variable for the distance at an initiative	0.046 (0.02)			
Dummy variable for the maximal distance at a referendum	5.613* (2.19)	4.921(*) (1.94)	5.220* (2.13)	5.613(*) (1.90)
Dummy variable for the maximal distance at in initiative	6.581(*) (1.78)	6.228 (1.62)	6.106 (1.62)	6.608 (1.60)
$\bar{R}^2$	0.593	0.596	0.593	0.275
Standard error	4.839	4.817	4.835	6.455
Schwarz-criterion	6.457	6.340	6.293	6.871
Jarque-Bera Statistic	2.145	2.122	3.156	1421.391***

The numbers in parentheses are the absolute values of the estimated t-statistics. ‘(\*)’, ‘\*’, ‘\*\*\*’ or ‘\*\*\*\*’ denote that the corresponding null hypothesis can be rejected at the 10 percent, 5 percent, 1 percent or 0.1 percent significance level, respectively.

**Table 1a: Results of the Wald-Tests**

Dependent variable (relation)	Turnout (7)	Turnout (8)	Turnout (9)	Turnout (10)
<u>Excluded variables</u>				
Distance at a referendum				
Distance at an initiative	1.69			
Dummy variable for the distance at a referendum	(0.1679)			
Dummy variable for the distance at an initiative				
Maximal distance at a referendum				
Maximal distance at an initiative				
Dummy variable for the maximal distance at a referendum	4.24**	3.08*	3.43*	2.26(*)
	(0.0054)	(0.0253)	(0.0157)	(0.0778)
Dummy variable for the maximal distance at an initiative				
Mobilisation	52.72***	50.87***	62.16***	
Mobilisation for the most important decision	(0.0000)	(0.0000)	(0.0000)	
Expected closeness	0.69	0.65		3.65*
Expected closeness of the most important decision	(0.5059)	(0.5257)		(0.0338)
Complexity	14.53***	13.94***	14.33***	8.78***
Complexity of the most important decision	(0.0000)	(0.0000)	(0.0000)	(0.0006)
Mandatory referendum	2.16	2.38	3.62*	1.95
Initiative	(0.1271)	(0.1039)	(0.0349)	(0.1536)
The numbers are the values of the corresponding F-statistics. The numbers in parentheses are the p-values. The numbers of degrees of freedom are the numbers of excluded variables and '45'. '(*)', '**', '***' or '****' denote that the corresponding null hypothesis can be rejected at the 10 percent, 5 percent, 1 percent or 0.1 percent significance level, respectively..				

It is also interesting to consider the extremely high value of the Jarque-Bera Statistic in relation (10). It results from a single outlier, the already mentioned referendum about whether Switzerland should join the European Economic Area. This was the closest result in our sample with 0.52 percentage points more No- than Yes-votes (measured in relation to the total electorate). As *Figure 2* shows, this was also by far the referendum with the highest mobilisation expenditure. Thus, model (10) is – in contrast to models (7) to (9) – apparently not able to explain the high participation at this referendum.<sup>45)</sup>

As the results of the Wald-Tests for relation (9) in *Table 1a* show, all other groups of variables contribute significantly to explanation of the turnout. In addition, we also examined whether there are additional variables that have an influence on turnout. We considered two

45. If we exclude this observation from equation (10), for the Jarque-Bera Statistic we get a value of 3.117 (p = 0.21). At the same time, the adjusted multiple determination coefficient raises to 0.441.

groups. On the one hand these have been variables which are connected to the vote: the number of propositions on the ballot sheet as well as the position of the single proposition on this sheet. On the other hand we looked at economic variables: the unemployment rate, the inflation rate, the fiscal quota and the development of wages. Since F. SCHNEIDER, W.W. POMMERHNE and B.S. FREY (1981) have shown that the economic development may have an influence on voting behaviour, it might be that this also affects turnout. Finally, we also took into account a time trend. None of these variables, however, did reach even the 10 percent level of significance. Therefore, we do not consider these variables any further and use relation (9) as our basic model.

In the following, we perform estimations for all four dependent variables. In doing so, however, we distinguish between mobilisation expenditure for and against a proposal, as these expenditure might have very different effects, especially on the Yes- and No-votes. The corresponding estimates are given in *Table 2*. The models explain between 43 and somewhat more than 60 percent of the variances of the dependent variables, whereby the explanation for the No-votes and for turnout are clearly better than the one for the difference and especially the one for the Yes-votes. According to the Jarque-Bera statistic, the null hypothesis that the estimated residuals are normally distributed cannot be rejected for all four equations at any conventional significance level.

As the estimated parameters in *Table 2* as well as the results of the *Wald-Tests* in *Table 2a* show, mobilisation has a strongly significant impact on Yes- and No-votes and especially on turnout, while the impact on the margin is also significant but of minor importance. As can be seen in *Table 2b*, this impact is also quantitatively important. Comparing the decision with the largest effort, the EEA-decision, with those without any mobilisation effort mobilisation for Yes-votes increases its share by about 16.5 percentage points and reduces the share of No-votes by about 7 percentage points. Thus, it increases turnout by about 9.5 percentage points and the margin by nearly 24 percentage points. Mobilisation against a proposal can have an even stronger effect. It has nearly no impact on the Yes-votes, but it increases the share of No-votes at the most by about 40 percentage points, and by the same amount turnout and the margin of No-votes over Yes-votes also increase. Taking the two effects together, these resulted in an additional turnout of nearly 50 percentage points and an additional advantage of the No- compared to the Yes-votes of about 16 percentage points of the EEA ballot in comparison with the decision with the smallest mobilisation effort. Because the highest mobilisation expenditure for and against a proposition were both for the EEA ballot and because, as the figures in *Table A2* in the Appendix show, they were of about the same size, these results indicate that it is easier to mobilise against a proposal than in favour of it.<sup>46)</sup>

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46. This is in accordance with earlier results for Switzerland and the United States according to which financially strong interest groups can rather prevent the acceptance of a proposal by the citizens than get their own proposals approved. See, e.g. H.P. HERTIG (1982), E. GRUNER and H.P. HERTIG (1983) as well as C. LONGCHAMP (1991) for Switzerland or E. GERBER (1999) for the United States. For a survey of other studies see G. KIRCHGÄSSNER, L.P. FELD and M.R. SAVIOZ (1999, pp. 27ff.).



**Table 2: Results of Swiss Referenda and Initiatives  
1981 – 1999, 142 Observations**

Dependent Variable	Yes-vote (11)	No-votes (12)	Turnout (13)	Margin (14)
Constant term	24.272*** (6.80)	18.982*** (5.32)	43.254*** (10.45)	5.289 (0.91)
Maximal distance at a referendum	-0.317 (0.03)	33.033** (3.45)	32.716** (3.35)	-33.349(*) (1.85)
Maximal distance at an initiative	-6.761 (0.87)	19.969*** (3.61)	13.208 (1.64)	-26.730* (2.48)
Mobilisation for Yes-votes	1.982 (1.67)	-3.277* (2.32)	-1.294 (1.02)	5.259* (2.31)
Mobilisation for Yes-votes at the most important decision	1.551 (1.43)	1.770 (1.25)	3.322** (3.16)	-0.219 (0.10)
Mobilisation for No-votes	-2.468 (1.33)	7.937*** (4.83)	5.468*** (3.63)	-10.405** (3.29)
Mobilisation for No-votes at the most important decision	2.560 (1.51)	0.095 (0.06)	2.656 (1.59)	2.465 (0.91)
Complexity	-22.755*** (3.83)	3.698 (0.72)	-19.057*** (4.89)	-26.453* (2.54)
Complexity of the most important decision	9.894 (1.10)	-28.000** (3.19)	-18.106* (2.07)	37.894* (2.46)
Mandatory referendum	1.783 (1.55)	-4.787*** (4.25)	-3.004* (2.44)	6.569** (3.42)
Initiative	-8.946*** (7.61)	5.506*** (4.51)	-3.439** (3.21)	-14.452*** (6.73)
Dummy variable for the maximal distance at a referendum	3.190(*) (1.85)	2.235 (0.89)	5.425* (2.20)	0.955 (0.27)
Dummy variable for the maximal distance at in initiative	0.991 (0.35)	5.422* (2.03)	6.413(*) (1.78)	-4.431 (1.07)
$\bar{R}^2$	0.436	0.616	0.612	0.527
Standard error	5.260	5.452	4.722	9.617
Schwarz-criterion	6.516	6.587	6.300	7.723
Jarque-Bera statistic	0.153	2.309	3.983	0.664

The numbers in parentheses are the absolute values of the estimated t-statistics. ‘(\*)’, ‘\*’, ‘\*\*\*’ or ‘\*\*\*\*’ denote that the corresponding null hypothesis can be rejected at the 10 percent, 5 percent, 1 percent or 0.1 percent significance level, respectively.

**Table 2a: Results of the Wald-Tests**

Dependent Variable	Yes-votes (11)	No-votes (12)	Turnout (13)	Margin (14)
<u>Excluded Variables</u>				
Maximal distance at a referendum Dummy variable for the maximal distance at a referendum	3.95* (0.0264)	6.28** (0.0039)	5.85** (0.0055)	3.27* (0.0474)
Maximal distance at an initiative Dummy variable for the maximal distance at an initiative	2.77(*) 0.0733	6.52** (0.0033)	1.63 (0.2068)	3.42* (0.0415)
Maximal distance at a referendum Maximal distance at an initiative Dummy variable for the maximal distance at a referendum Dummy variable for the maximal distance at an initiative	2.68* (0.0437)	6.13*** (0.0005)	3.08* (0.0253)	2.86* (0.0338)
Mobilisation for Yes-votes Mobilisation for Yes-votes at the most important decision	5.66** (0.0064)	2.69(*) (0.0789)	5.25** (0.0089)	4.38* (0.0183)
Mobilisation for No-votes Mobilisation for No-votes at the most important decision	1.22 (0.3057)	15.33*** (0.0000)	12.29*** (0.0001)	6.87** (0.0025)
Mobilisation for Yes-votes Mobilisation for No-votes	1.60 (0.2136)	11.78*** (0.0001)	7.61** (0.0014)	6.10** (0.0045)
Mobilisation for Yes-votes at the most important decision Mobilisation for No-votes at the most important decision	3.36* (0.0437)	0.98 (0.3844)	15.18 (0.0000)	0.43 (0.6530)
Mobilisation for Yes-votes Mobilisation for Yes-votes at the most important decision Mobilisation for No-votes Mobilisation for No-votes at the most important decision	13.58*** (0.0000)	20.89*** (0.0000)	54.94*** (0.0000)	3.56* (0.0131)
Complexity Complexity of the most important decision	8.73*** (0.006)	5.44** (0.0077)	12.88*** (0.0000)	4.36* (0.0185)
Mandatory referendum Initiative	40.43*** (0.0000)	33.11*** (0.0000)	5.21** (0.0092)	39.51*** (0.0000)
The numbers are the values of the corresponding F-statistics. The numbers in parentheses are the p-values. The numbers of degrees of freedom are the numbers of excluded variables and '45'. '(*)', '**', '***' or '****' denote that the corresponding null hypothesis can be rejected at the 10 percent, 5 percent, 1 percent or 0.1 percent significance level, respectively..				

**Table 2b: Maximal Quantitative Impact<sup>1</sup>**

Dependent Variable	Yes-vote	No-votes	Turnout	Margin
Maximal distance at a referendum	-0.084	8.701	8.617	-8.784
Maximal distance at an initiative	-3.740	11.047	7.307	-14.787
Mobilisation for Yes-votes	16.565	-7.066	9.499	23.631
Mobilisation for No-votes	0.455	39.747	40.202	-39.292
Complexity	-7.418	-14.017	-21.436	6.599
Mandatory referendum	1.783	-4.787	-3.004	6.569
Initiative	-8.946	5.506	-3.439	-14.452
<sup>1</sup> ) Comparison of the referenda/initiatives when the respective explanatory variable took on its highest and its lowest values.				

Compared with the mobilisation effort the financial consequences of a proposal seem to have only a small impact, even if it is quantitatively not unimportant, if it is considered for itself. The estimated coefficients for the referendum are considerably higher than for the initiative. This holds especially for the turnout. On the other hand, it has to be taken into account that, as mentioned above and is shown in *Table A2*, the financial consequences of the initiatives are on the average 2.5 times and in the maximum two times the amounts which are relevant for the referenda. Correspondingly, the maximum difference is of the same order: Turnout of referenda increases at the most by nearly 9 percentage points and turnout of initiatives by about 7 percentage points. This stems in both cases from a significant increase of the No-votes, while the reductions of Yes-votes, which are important only for initiatives, are not significant. For the result of the ballot this implies that the margin of Yes- over No-Votes may be reduced up to 9 percentage points for referenda and even up to 15 percentage points for initiatives.

The third important factor is the complexity of the decision. If the citizens judge themselves as not being competent to decide about a proposal, they are less willing to support it, while the No-votes do not seem to be influenced. If, on the other hand, people abstain because the most important decision of the weekend seems to be very complex, these are rather those who would have voted No. The quantitative impact of this factor is also considerable: The higher complexity leads at the maximum to 7.5 percentage points less Yes-votes, 14 percent less No-votes, a turnout which is reduced by 21.5 percentage points but a margin raised by 6.5 percentage points.

The result with respect to the turnout can also be interpreted differently. If the share of those who have difficulties with a decision rises by about 10 percentage points, turnout is – ceteris

paribus – reduced by about 4 percentage points. Because on the average only 40 percent participate, this implies that every second person who has difficulties with the decision abstains.

Finally, the kind of the proposal is important. Let us compare the optional referendum, which can be undertaken when new laws or changes of laws have to be decided on, with the mandatory referendum, which is undertaken in the case of constitutional changes. For the mandatory referendum there are about 5 percentage points less No-votes, about 3 percentage points less participation but a result which is about 6 percentage points ‘better’. The initiative has, on the other hand, much lower chances to be accepted. Compared with the optional referendum there are about 9 percentage points less Yes-votes, 5.5 percentage points more No-votes, a 3.5 percentage points decrease in turnout and a 14.5 percentage points increase in the margin of the No- over the Yes-votes.

If we take into account the huge difference in the mobilisation effort between the EEA- and all remaining decisions, which can be seen in *Figure 2*, the question immediately comes up how far this single observation determines the regression results. In order to check this, we have dropped this observation from the sample and re-estimated all four equations.<sup>47)</sup> This leads only to small changes of the estimated parameters and their significances. Moreover, according to the results of the Jarque-Bera statistic the hypothesis that the residuals of all four equations are normally distributed holds as well. Insofar the inclusion of this observation leads to a significant increase of the multiple correlation coefficient especially in the turnout equation, but this observation has hardly any impact on the results regarding the different explanatory variables.

## 5 Summary and Concluding Remarks

Judged by the previous discussion about the determination of turnout at elections and referenda, our most important result is that the (expected) closeness of the result does not have an independent, statistically significant effect on turnout. If such an influence ever has been shown by previous work (and also in our equation (10)) this is a reflection of the mobilisation efforts: the closer the expected result, the more the interested individuals and groups will try to mobilise those sections of the voters of whom they expect that they will cast a vote in their direction. This results in an indirect effect, which allows a significant effect of the closeness-indicator only for those cases, where no other more satisfactory indicators for the mobilisation-hypothesis are at hand. This clearly contradicts the decision hypothesis and supports the mobilisation hypothesis, and it might be the most definite clear evidence which has been produced to discriminate between these two hypotheses so far. Moreover, mobilisation is the most important indicator for the explanation of varying turnout also in quantitative terms.<sup>48)</sup>

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47. See the results in *Table A1* in the Appendix.

48. Our results support those of G. COX and M.C. MUNGER (1989) for the United States; they are even more pronounced, because after the inclusion of the mobilisation variable the closeness variable loses all of its significance. R. SHACHAR and B. NALEBUFF (1998) present similar evidence. However, since they do not capture the mobilisation efforts explicitly but only as a latent variable in their structural model, they can show that mobili-

Besides mobilisation, at least as far as optional referenda are concerned, the expected consequences are important: turnout is all the stronger the more money is at stake. This is more evident for referenda than for initiatives. Moreover, as already explained above, the chances of an initiative to be accepted are very small; its possible impact is first of all an indirect one: An issue is brought to the agenda of the parliament (and the established parties) which otherwise hardly would have been considered in the (official) political discourse. As can be shown with examples, this can lead to significant changes, even if the initiative is rejected by the people.<sup>49)</sup>

That the influence of the expected financial consequences is more important for referenda than for initiatives might be seen as an indicator that voters are trying to follow more their own interest rather than behaving expressively. After all, because initiatives mostly affect fundamental questions, they should be most suitable for expressive voting. This is in particular the case when – which happens quite often – lots of money are at stake which should ease ‘identification’ with one of the options.

In arguing in this way, we suppose that expressive voting means more than just the negation of the decision hypothesis: Not any behaviour which is not in accordance with the instrumental voting approach supports the hypothesis of expressive voting; it depends on the individuals’ motives.<sup>50)</sup> If somebody participates only because he considers it to be his duty to do this voluntary contribution for the community, then this has nothing to do with expressive voting. And he still may decide as he would have done in the role of the decisive voter. On the other hand it is still possible that expressive voting may occasionally play a role, as the votes concerning ‘important’ propositions on military affairs show. On November 26, 1989, e.g., many Swiss who voted in favour of the abolition of the Swiss army did not really want to abolish it but rather protested against lacking reforms. Such a behaviour can most plausibly be explained by the theory of expressive voting.<sup>51)</sup>

Interesting are also the high significance and the high quantitative contribution of the complexity variables. On average, approximately one third of the voters have difficulties in taking decisions. In the first place this may speak against direct democracy and seems to support the argument, that in a pure representative system decisions can be made with more expertise than in (half-)direct democracies. But this is not compelling. On the one hand – e.g. because of the uncertainty over the real consequences – difficulties may arise even for competent vot-

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sation does play a role but they cannot conclude that expected closeness does not have an influence of its own. Insofar, our results are less ambiguous.

49. See for this, e.g., G. KIRCHGÄSSNER, L.P. FELD and M.R. SAVIOZ (1999, p. 22f.). – Thus, the financial distance might be a less useful indicator for the importance (the factor ‘B’) of an initiative in the eyes of the electorate.

50. See for this also K.V. GREENE and PH.J. NELSON (2002, p. 425).

51. In any case, our results are in line with the suggestion of G. BRENNAN and L. LOMASKY (1993) that expressive behaviour depends on the concrete situation. To derive a testable hypothesis, one must, however, develop theoretical ideas about when and under what circumstances situations may occur that support expressive behaviour. The situation of a vote on an initiative does not seem to be a situation which is especially suited for this, at least according to our results.

ers. This holds for parliamentarians (and for experts) no less than for ordinary citizens. If, on the other hand, about one half of those who have difficulties in deciding abstain from voting, this means that decisions are essentially made by those voters who see themselves as being competent. Such a self-selection does not speak against direct democracy; at least it strongly relativises the argument on information deficits.

A final problem may be the ‘specification error’ that may be caused by the recourse on the ex-post closeness measure. The effect of such a specification error remains open because no simple hypothesis about the bias caused by it seems possible. Furthermore, the influence of the closeness variable has only been highly significant when the mobilisation hypothesis has been omitted. We are fairly confident that this qualitative result does not change with the employment of instruments and that, therefore, the most important result of this paper cannot be questioned for this reason: Expected closeness of the result per se does not have an impact on turnout.

## References

- P.R. ABRAHAMSON and J.H. ALDRICH (1982), The Decline of Electoral Participation in America, *American Political Science Review* 76 (1982), PP. 502 – 521.
- J.H. ALDRICH (1993), Rational Choice and Turnout, *American Journal of Political Science* 37 (1993), pp. 246 – 278.
- B. BARRY (1970), Sociological Study of Political Choice – Recent Developments in Study of Political Choice, *Advancement of Science* 26 (1970), pp. 394 – 399.
- G. BRENNAN and A. HAMLIN (1998), Expressive Voting and Electoral Equilibrium, *Public Choice* 95 (1998), pp. 149 – 175.
- G. BRENNAN and L. LOMASKY (1985), The impartial spectator goes to Washington: Toward a Smithian Theory of Electoral Behavior, *Economics and Philosophy* 1 (1985), pp. 189 – 211.
- G. BRENNAN and L. LOMASKY (1987), The Logic of Electoral Preference, *Economics and Philosophy* 3 (1985), pp. 131 – 138.
- G. BRENNAN and L. LOMASKY (1993), *Democracy and Decision: The Pure Theory of Electoral Preference*, Cambridge University Press, Cambridge 1993.
- J.M. BUCHANAN (1954), Individual Choice in Voting and the Market, *Journal of Political Economy* 62 (1954), pp. 334 – 343.
- A.G. CALDEIRA and S.C. PATTERSON (1982), Contextual Influences on Participation in U.S. State Legislative Election, *Legislative Studies Quarterly* 7 (1982), pp. 359 – 381.
- J.R. CARTER and S.D. GUERRETTE (1992), An Experimental Study of Expressive Voting, *Public Choice* 73 (1992), pp. 252 – 260.
- G. CHAMBERLAIN and M. ROTHCHILD (1981), A Note on the Probability of Casting a Decisive Vote, *Journal of Economic Theory* 25, 152 – 162.
- W.N. CHAMBERS and P.C. DAVIS (1978), Party Competition and Mass Participation: The Case of the Democratizing Party System, 1824 – 1852, in: J.H. SILBERY, A.G. BOGUE and W.H. FLANIGAN (eds.), *The History of American Electoral Behaviour*, Princeton University Press, Princeton (N.J.) 1978, pp. 174 – 197.
- D.P. CONRAD (1978), *The German Polity*, Longman, New York 1978.
- C. COPELAND and D.L. LABAND (2002), Expressiveness and Voting, *Public Choice* 110 (2002), pp. 351 – 363.
- G.W. COX (1988), Closeness and Turnout: A Methodological Note, *Journal of Politics* 50 (1988), 768 – 775.
- G.W. COX and M.C. MUNGER (1989), Closeness, expenditures, and turnout in the 1982 U.S. House elections, *American Political Science Review* 83 (1989), pp. 217 – 231.
- P.A. DAWNSON and J.E. ZINSER (1976), Political finance and Participation in Congressional Election, *Annals of the American Academy of Political and Social Science* 425 (1976), pp. 59 – 73,
- A. DOWNS (1957), *An Economic Theory of Democracy*, Harper and Row, New York 1957.
- E. FEHR and S. GÄCHTER (2000), Fairness and Retaliation: The Economics of Reciprocity, *Journal of Economic Perspectives* 14 (issue 3/2000), pp. 159 – 181.
- S. FEIGENBAUM, L. KAROLY and D. LEVY (1988), When Votes are Words not Deeds: Some Evidence from the Nuclear Freeze Referendum, *Public Choice* 58 (1988), pp. 201 – 216.
- L.P. FELD and G. KIRCHGÄSSNER (2001), Erwartete Knappheit und die Höhe der Wahlbeteiligung: Empirische Ergebnisse für die neunziger Jahre, in: M. KAASE and H.-D. KLINGEMANN (eds.),

- Wahlen und Wähler: Analysen aus Anlass der Bundestagswahl 1998*, Westdeutscher Verlag, Wiesbaden 2001, pp. 415 – 441.
- J.A. FEREJOHN and M.P. FIORINA (1974), The Paradox of Non-Voting: A Decision Theoretic Analysis, *American Political Science Review* 68 (1974), pp. 525 – 536.
- J.E. FILER and L.W. KENNY (1980), Voter Turn-Out and the Benefits of Voting, *Public Choice* 35 (1980), pp. 575 – 585.
- A.J. FISHER (1996), A Further Experimental Study of Expressive Voting, *Public Choice* 88 (1996), pp. 171 – 184.
- E. GERBER (1999), *The Populist Paradox: Interest Group Influence and the Prominence of Direct Legislation*, Princeton University Press, Princeton 1999.
- F. DI GIACOMO (1993), La décision des abstentionnistes, in: H. KRIESI (ed.), *Citoyenneté et démocratie directe: Compétence, participation et décision des citoyens et citoyennes suisses*, Seismo, Zürich, pp. 261 – 274.
- K.V. GREENE and PH.J. NELSON (2002), If Extremists Vote How Do They Express Themselves? An Empirical test of an Expressive Theory of Voting, *Public Choice* 113 (2002), pp. 425 – 436.
- E. GRUNER and H.P. HERTIG (1983), *Der Stimmbürger und die ‚neue‘ Politik*, Haupt, Bern 1983.
- D.F. HENDRY (1995), *Dynamic Econometrics*, Oxford University Press, Oxford 1995.
- H.P. HERTIG (1982), Sind Abstimmungen käuflich?, *Schweizerisches Jahrbuch für Politische Wissenschaft* 22 (1982), pp. 35 – 58.
- K. KAN and C.C. YANG (2001): On Expressive Voting. Evidence from the 1988 U.S. Presidential Election, *Public Choice* 108, pp. 295 – 312.
- V.O. KEY (1950), *Southern Politics in State and Nation*, Alfred A. Knopf, New York 1950.
- G. KIRCHGÄSSNER (1980), Können Ökonomie und Soziologie voneinander lernen?, Zum Verhältnis zwischen beiden Wissenschaften, mit besonderem Bezug auf die Theorie des Wählerverhaltens, *Kyklos* 33 (1980), pp. 420 – 448.
- G. KIRCHGÄSSNER (1990), Hebt ein 'knapper' Wahlausgang die Wahlbeteiligung?, Eine Überprüfung der ökonomischen Theorie der Wahlbeteiligung anhand der Bundestagswahl 1987, in: M. KAASE and H.-D. KLINGEMANN (eds.), *Wahlen und Wähler, Analysen aus Anlass der Bundestagswahl 1987*, Westdeutscher Verlag, Opladen 1990, pp. 445 – 477.
- G. KIRCHGÄSSNER (1992), Towards a Theory of Low-Cost Decisions, *European Journal of Political Economy* 8 (1992), pp. 305 – 320.
- G. KIRCHGÄSSNER (1996), Bemerkungen zur Minimalmoral, *Zeitschrift für Wirtschafts- und Sozialwissenschaften* 116 (1996), pp. 223 – 251.
- G. KIRCHGÄSSNER (2000), *Homo oeconomicus, Das ökonomische Modell individuellen Verhaltens und seine Anwendung in den Wirtschafts- und Sozialwissenschaften*, J.B.C. Mohr (Paul Siebeck), Tübingen, 2<sup>nd</sup> edition 2000.
- G. KIRCHGÄSSNER (2003), Abstention Because of Indifference and Alienation, and Its Consequences for Party Competition: A Simple Psychological Model, University of St. Gallen, Department of Economics, Discussion Paper No. 2003-12, April 2003.
- G. KIRCHGÄSSNER and A. MEYER ZU HIMMERN (1997), Expected Closeness and Turnout: An Empirical Analysis for the German General Elections, 1983 – 1994, *Public Choice* 91 (1997), pp. 3 – 25.
- G. KIRCHGÄSSNER and W.W. POMMERHNE (1993), Low-Cost Decisions as a Challenge to Public Choice, *Public Choice* 77 (1993), pp. 107 – 115.



- G. KIRCHGÄSSNER and J. SCHIMMELPFENNIG (1992), Closeness Counts if it Matters for Electoral Victory: Some Empirical Results for the United Kingdom and the Federal Republic of Germany, *Public Choice* 73 (1992), pp. 283 – 299.
- G. KIRCHGÄSSNER, LARS P. FELD and MARCEL R. SAVIOZ (1999), *Die direkte Demokratie: Modern, erfolgreich, entwicklungs- und exportfähig*, Helbing und Lichtenhahn/Vahlen, Basel/München 1999.
- H. KLIEMT (1986), The Veil of Insignificance, *European Journal of Political Economy* 2 (1986), pp. 333 – 344.
- G.H. KRAMER (1971), The Effect of Precinct-Level Canvassing on Voter Behavior, *Public Opinion Quarterly* 34 (1970/71), pp. 560 – 572.
- E. LANGER (1975), The Illusion of Control, *Journal of Personality and Social Psychology* 32 (1975), pp. 311 – 328.
- J.O. LEDYARD (1981), The Paradox of Non-Voting and Candidate Competition: A General Equilibrium Analysis, in: G. HORWICH and J. QUIRK (eds.), *Essays in Contemporary Fields of Economics*, Purdue Research Foundation (1981), pp. 54 – 80.
- J.O. LEDYARD (1984), The Pure Theory of Large Two –Candidate Elections, *Public Choice* 44 (1984), pp. 7 – 41.
- C. LONGCHAMP (1991), Herausgeforderte demokratische Öffentlichkeit: Zu den Möglichkeiten und Grenzen des politischen Marketings bei Abstimmungen und Wahlen in der Schweiz, *Schweizerisches Jahrbuch für Politische Wissenschaft* 31 (1991), pp. 303 – 326.
- J.G. MATSUSAKA (1993), Election Closeness and Voter Turnout: Evidence from California Ballot Propositions, *Public Choice* 76 (1993), pp. 313 – 334.
- J.G. MATSUSAKA (1995), Explaining Voter Turnout Patterns: An Information Theory, *Public Choice* 84 (1995), pp. 91 – 117.
- J.G. MATSUSAKA and F. PALDA (1993), The Downsian Voter Meets the Ecological Fallacy, *Public Choice* 77 (1993), pp. 855 – 878.
- J.G. MATSUSAKA and F. PALDA (1999), Voter Turnout. How much can we explain?, *Public Choice* 98 (1999), pp. 431 – 446.
- G.E. MIZON (1984), The Encompassing Approach in Econometrics, in: D.F. HENDRY and K.F. WALLIS (eds.), *Econometrics and Quantitative Economics*, Basil Blackwell, Oxford 1984, pp. 135 – 172.
- D.C. MUELLER (2003), *Public Choice III*, Cambridge University Press, Cambridge et al. 2003.
- J. NAGLER and J. LEIGHLEY (1992), Presidential Campaign Expenditures: Evidence on Allocations and Effects, *Public Choice* 73 (1992), pp. 319 – 333.
- L. NEIDHARDT and J.-P. HOBY (1977), *Ursachen der gegenwärtigen Stimmabstinenz in der Schweiz*, Eidgenössisches Justiz- und Polizeidepartement, Bern 1977.
- E. OVERBYE (1995), Making a Case for the Rational, Self-Regarding, ‘Ethical’ Voter and Solving the ‘Paradox of Not Voting’ in the Process, *European Journal of Political Research* 27 (1995), pp. 369 – 396.
- A. PAGAN (1987), Three Econometric Methodologies: A Critical Appraisal, *Journal of Economic Surveys* 1 (1987), pp. 3 – 24.
- K.S. PALDA (1975), Effect of Expenditure On Political Success, *Journal of Law and Economics* 18 (1975), pp. 745 – 771.
- T.R. PALFREY and H. ROSENTHAL (1983), A Strategic Calculus of Voting, *Public Choice* 41 (1983), pp. 11 – 30.

- T.R. PALFREY and H. ROSENTHAL (1985), Voter Participation and Strategic Uncertainty, *American Political Science Review* 79 (1985), pp. 62 – 78.
- I. PAPADOPOULOS (1996), Les mécanismes du vote référendaire en Suisse: l'impact de l'offre politique, *Revue française de sociologie* 37 (1996), pp. 5 – 35.
- S.C. PATTERSON and G.A. CALDEIRA (1983), Getting Out the Vote: Participation in Gubernatorial Elections, *American Political Science Review* 77, 675 – 689.
- A. RIKLIN and R. KLEY (1981), *Stimmabstinenz und Direkte Demokratie: Ursachen, Bewertungen, Konsequenzen*, Haupt, Bern 1981.
- W.H. RIKER and P.C. ORDESHOOK (1968), A Theory of the Calculus of Voting, *American Political Science Review* 62 (1968), pp. 25 – 42.
- F. SCHNEIDER, W.W. POMMEREHNE and B.S. FREY (1981), Politico-Economic Interdependence in a Democracy: The Case of Switzerland, in: D.A. HIBBS and H. FASSBENDER (eds.), *Contemporary Political Economy*, North-Holland, Amsterdam 1981, pp. 231 – 248.
- TH. SCHWARTZ (1987), Your Vote Counts on Account of the Way it is Counted: An Institutional Solution of the Paradox of Not Voting, *Public Choice* 54 (1987), pp. 101 – 121.
- R.F. SETTLE and B. A. ABRAMS (1976), The Determinations of Voter Participation: A More General Model, *Public Choice* 27 (1976), pp. 81 – 89.
- R. SHACHAR and B. NALEBUFF (1999), Follow the Leader: Theory and Evidence on Political Participation, *American Economic Review* 89 (1999), pp. 525 – 547.
- M. SØBERG and TH.P. TANGERÅS (2003), Voter Turnout in Direct Democracy: Theory and Evidence, Research Institute of Industrial Economics, Working Paper No. 696, Stockholm, June 2003.
- G.S. STROM (1975), On the Apparent Paradox of Participation, A New Proposal, *American Political Science Review* 69 (1975), pp. 909 – 913.
- J. STRUTHERS and A. YOUNG (1989), Economics of Voting: Theories and Evidence, *Journal of Economic Studies* 16 (1989), pp. 1 – 42.
- G. TULLOCK (1971), The Charity of the Uncharitable, *Economic Inquiry* 9 (1971), pp. 379 – 392.
- J.-R. TYRAN (2004), Voting When Money and Morals Conflict: An Empirical Test of Expressive Voting, forthcoming in: *Journal of Public Economics* 88.
- P.W. WIELHOUWER and B. LOCKERBIE (1994), Party Contracting and Political Participation, 1952-90, *American Journal of Political Science* 38 (1994), pp. 211 – 229.
- R. ZINTL (1986), Ökonomisches Rationalitätskonzept und normorientiertes Verhalten, *Jahrbuch für Neue Politische Ökonomie* 5 (1986), pp. 227 – 239.

Appendix

**Table A1: Results of Swiss Referenda and Initiatives  
1981 – 1999, 141 Observations**

	Yes-votes	No-votes	Turnout	Margin
Constant term	24.446*** (6.68)	18.884*** (5.17)	43.330*** (10.31)	5.562 (0.93)
Maximal distance at a referendum	0.634 (0.06)	32.495** (3.47)	33.130** (3.36)	-31.861(*) (1.85)
Maximal distance at an initiative	-6.908 (0.88)	20.052*** (3.62)	13.144 (1.62)	-26.961* (2.48)
Mobilisation for Yes-votes	1.844 (1.57)	-3.198* (2.23)	-1.354 (1.12)	5.042* (2.17)
Mobilisation for Yes-votes at the most important decision	1.450 (1.43)	1.828 (1.37)	3.278** (3.23)	-0.378 (0.18)
Mobilisation for No-votes	-2.947 (1.31)	8.207*** (3.59)	5.260* (2.67)	-11.154** (2.73)
Mobilisation for No-votes at the most important decision	2.360 (1.36)	0.209 (0.13)	2.569 (1.43)	2.151 (0.78)
Complexity	-22.745*** (3.86)	3.692 (0.72)	-19.053*** (4.90)	-26.437* (2.56)
Complexity of the most important decision	9.679 (1.10)	-27.878** (3.21)	-18.200* (2.06)	37.557* (2.49)
Mandatory referendum	1.655 (1.37)	-4.714*** (3.96)	-3.059* (2.45)	6.369** (3.11)
Initiative	-8.755*** (6.99)	5.399*** (4.15)	-3.356** (3.01)	-14.154*** (6.16)
Dummy variable for the maximal distance at a referendum	3.463* (2.04)	2.081 (0.82)	5.544* (2.18)	1.383 (0.40)
Dummy variable for the maximal distance at in initiative	1.108 (0.39)	5.356(*) (2.00)	6.464(*) (1.77)	-4.248 (1.02)
$\bar{R}^2$	0.410	0.603	0.531	0.528
Standard error	5.272	5.471	4.739	9.643
Schwarz-criterion	6.522	6.696	6.309	7.730
Jarque-Bera Statistic	0.204	1.901	3.953	0.430

The numbers in parentheses are the absolute values of the estimated t-statistics. ‘(\*)’, ‘\*’, ‘\*\*\*’ or ‘\*\*\*\*’ denote that the corresponding null hypothesis can be rejected at the 10 percent, 5 percent, 1 percent or 0.1 percent significance level, respectively.

***Table A2: Descriptive Statistics of the Variables  
1981 – 1999, 142 Observations***

	Mean	Minimum	Maximum	Standard deviation
Share of Yes-votes	20.7703	5.5274	38.7737	7.0054
Share of No-Votes	19.978	2.4809	44.0756	8.8014
Turnout	40.7485	39.8473	78.0716	7.5827
Margin	0.7921	-27.1466	28.4327	13.9850
Distance at a referendum (1000 CHF per citizen entitled to vote) <sup>1)</sup>	0.0496	0.0000	0.2634	0.0634
Distance at an initiative (1000 CHF per citizen entitled to vote) <sup>1)</sup>	0.2038	0.0000	0.5532	0.1600
Mobilisation	0.6810	0.0459	9.6372	1.0000
Mobilisation for Yes-votes	0.3165	0.0000	4.6886	0.5407
Mobilisation for No-votes	0.3645	0.0000	4.9486	0.5345
Entropy closeness measure	0.6268	0.2875	0.6931	0.0766
Complexity	0.3826	0.0815	0.6583	0.1273
<sup>1)</sup> Mean and standard deviation relate only to those 51 referenda and 11 initiatives for which the distance could be calculated.				

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