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Gebhard Kirchgässner

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# Voting and Popularity

## Abstract

For about 45 years, vote and popularity functions have been estimated for many countries indicating that voting intentions as well as actual votes are influenced by economic development. The economy is, of course, not the only and probably not always the most important factor, but there is no doubt anymore that it is an important factor. The most relevant variables are still unemployment, and/or real growth, and inflation. The estimated coefficients vary considerably between countries and time periods. In papers, retrospective sociotropic voting dominates. However, the evidence is not so univocal; it rather tells that voting has egotropic as well as sociotropic aspects, and it is prospective as well as retrospective. It is still open what roles self-interest and altruism play in voting.

JEL-Codes: H390.

Keywords: vote and popularity function, egotropic and sociotropic voting, retrospective and prospective voting, rational voters' behavior.

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## 1 Introduction

[1] What determines voting intentions and actual voting behavior? This is an old question in electoral research. Before and, in particular, after World War II, when surveys became increasingly available, (mainly) sociologists asked for the determinants of individual voting behavior.<sup>1)</sup> The main candidates were socio-economic factors such as, among others, social class, religion, profession, and income. If these factors are known, the individual decision can be predicted with high probability. In particular in two party systems, it was possible to classify voters into “straight-party voters” (of the right or the left party) and into “floating voters”, i.e. voters who sometimes vote for the one and sometimes for the other party.

[2] The problem with this approach is that these socio-economic factors change over time only very slowly. Thus, it is possible to describe the basic structure of the electorate, but given enough floating voters, hardly possible to predict who will win the (next) election. For this, we have to look for short-run impacts on voting behavior. Moreover, the traditional (sociological) approach can hardly tell us anything about the impact of the actual policy of the government on its re-election prospects.

[3] Around 1970, three important papers changed the picture. J.E. MUELLER (1970) was the first to present a ‘popularity function’ for the United States. He undertook to explain the popularity of the U.S. presidents from the beginning of the Truman administration in April 1945 to the end of the Johnson administration in January 1969. He had 300 observations. Besides dummy variables for the different administrations, he used four basic variables: rally around the flag, coalition of minorities, economic slump, and war. His indicator for the economic slump was the unemployment rate. He showed that unemployment has a highly significant and important impact on the president’s popularity.

[4] In the same year, C.A.E. GOODHART and R.J. BHANSALI (1970) presented the first popularity function for the United Kingdom. They used Gallup data from January 1947 to June 1968 (252 observations) and National Opinion Poll data from February 1961 to June 1968 (88 observations). They used two sets of factors: an inter-election swing in party popularity and economic conditions, the latter represented by unemployment and inflation. Both proved to have a significant negative impact on the popularity of the party in government. Reverse effects resulted for the party in opposition, but they were less pronounced and not always significant.

[5] One year later, G.H. KRAMER (1971) presented the first voting function for the American Congress. From 1896 to 1964, he used 31 observations. He employed nominal and real income growth, the inflation and unemployment rates as economic variables. The only significant variable was real income growth.

[6] The progress of these three papers was not only that they included economic variables in their analyses but also that they used multivariate regression analyses. Earlier papers that considered the impact of economic variables on congressional elections restricted their analyses to

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1. See, for example, the path breaking work by P.F. LAZARSFELD, B. BERELSON and H. GAUDET (1944).

correlations.<sup>2)</sup> Thus, there was also methodological progress.<sup>3)</sup> Further progress resulted in the application of modern time series techniques when Granger causality, unit root, and cointegration tests were applied and error correction models estimated.<sup>4)</sup> However, such methods have only been used in a minority of cases; most papers still use (traditional) multivariate regression analysis.

[7] To analyze the impact of economic conditions on voting behavior, not only vote or popularity data can be employed, but also survey data. M.P. FIORINA (1978) started with such microanalyses.<sup>5)</sup> At this time, (pure) cross-sections were analyzed, and there seemed to be a contradiction between the results of micro- and macro-analyses. Ultimately, this contradiction could be overcome by the use of panel data. G.B. MARKUS (1988) was one of the first to use such data and in this way overcame the shortcomings of pure cross-sections and the differences that can arise between the results of time series and (pure) cross-section analyses.<sup>6)</sup>

[8] Since W.D. NORDHAUS (1975) and B.S. FREY and F. SCHNEIDER (1978, 1978a), vote and popularity functions are integral parts of models of the political business cycle or ‘politico-economic models’. Moreover, as will be shown below, the vote function is today an integral part of models of monetary policy as well.

[9] Though many papers dispense with an explicit theoretical foundation, we first present a short sketch of such a foundation (*Section 2*). We then turn to the empirical results, where we give special weight to the impact of the economic variables, the stability of the vote, and political variables and the costs of ruling (*Section 3*). We continue with extensions, in particular partisan effects, subnational elections, and how different groups of voters react differently to economic developments (*Section 4*). We conclude with a summary and some remarks on the rationality of voters.

## 2 Theory behind the Vote and Popularity Functions

[10] In most cases, without explicit further consideration, a linear relation is assumed between several political and, in particular, economic variables and the vote or popularity result

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2. See, for example, W.A. KERR (1944) and the other precursor papers cited in G.H. KRAMER (1971) and D.A. HIBBS (2006).

3. For the first time, C.A.E. GOODHART and R.J. BHANSALI (1970) also used spectral analysis. Since then it has, however, rarely been applied to analyzing popularity functions.

4. See, for example, G. KIRCHGÄSSNER (1985, 1985a), J. HUDSON (1994), J.E.H. DAVIDSON (2005), J.E.H. DAVIDSON, D.A. PEEL and J. D. BYERS (2006), C.-P. CHANG and C.-C. LEE (2010) or C. BOYA and J. MALIZARD (2015).

5. See also M. FIORINA (1981) and D.R. KIEWIT (1983).

6. See *Section 3.4* below.

of the government. Sometimes, however, as for example in R.C. FAIR (1978) or D.A. HIBBS (2006), an explicit model is derived. In most cases, a two party system is supposed.<sup>7)</sup>

[11] Basically, voter  $i$  votes at election time  $T$  for the party in government ( $V_{i,T} = 1$ ) whenever her expected utility from a continuation of the current policy,  $U_{i,G}$ , is larger than the expected utility from the future policy of the current opposition,  $U_{i,O}$ ,

$$V_{i,T} = \begin{cases} 1 & \text{if } U_{i,G} > U_{i,O} \\ 0 & \text{if } U_{i,G} < U_{i,O} \end{cases} \quad (1)$$

[12] The problem is that neither the expected utility of the future policy of the current government nor that of the current opposition is known. Aside from electoral promises, expectations can only be based on recent experiences. Nevertheless, it is an open question how relevant recent economic development is for the expectation about future policies: are voters forward or backward looking, and how rational is it for a forward-looking individual to base her expectations on past developments.<sup>9)</sup> Usually a backward-looking approach is followed, i.e. it is assumed that the possible future policy of the current government is related to its success (or failure) in the preceding electoral period,

$$U_{i,G} = U_G(x_T^1, x_{T-1}^1, x_{T-2}^1, \dots, x_T^2, x_{T-1}^2, x_{T-2}^2, \dots, x_T^k, x_{T-1}^k, x_{T-2}^k, \dots), \quad (2)$$

where  $x_{T-j}^i$  are the political and economic determinants in the election and pre-election years. The electoral period goes from  $t = t_0$  to  $t = T$ . If we assume a linear structure as a first order approximation and that the individual weights events less the further back in the past they happened, (2) can be written as

$$U_{i,G} = f_i \left[ \sum_{t=t_0}^T \left( \sum_{j=1}^k \alpha_{i,j} x_{j,t} \right) \lambda^{T-t} \right], \quad (3)$$

where  $\alpha_{i,j}$  are the weights voter  $i$  uses for variable  $x_j$ ,  $\lambda = 1/(1 + \mu)$ , and  $\mu$  is the political discount rate,  $0 \leq \mu \leq \infty$ . This discount rate works exactly like the (traditional) economic discount rate  $\rho$  except that it is backward and not forward-looking.<sup>10)</sup> If  $\mu = 0$ , all periods get the same weight, if  $\mu = \infty$ , only the current period is considered.

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7. It becomes much more complicated whenever, due to the existence of more than two (relevant) parties, a system of equations has to be estimated. See, for example, P.S.A. RENAUD and F.A.A.M. VAN WINDEN (1987) or L.P. FELD and G. KIRCHGÄSSNER (2000).

8. This implies that voters vote sincerely, i.e. that they vote for the party from which they expect higher (personal) utility. This excludes other voting motives as, for example, expressive voting as described in G. BRENNAN and L. LOMASKY (1993, pp. 19ff.). Other motives than (pure) self-interest can play an important role because voting decisions are behind a veil of insignificance, i.e. the individual decision has typically no impact at all on the collective outcome. Thus, aside from psychological reasons, the voter cannot increase her utility by a ‘correct’ decision. See for this H. KLIEMT (1986) or G. KIRCHGÄSSNER (1992).

9. For a detailed discussion of this problem see D.A. HIBBS (2006, pp. 569ff.).

10. This political discount rate has been introduced by W.D. NORDHAUS (1975, p. 182f.).

[13] The problem is how to aggregate the individual decisions to derive a collective voting function. In most cases, this problem is neglected; the papers start with the aggregate function. One exception is R.C. FAIR (1978, pp. 161ff.) who derives a sufficient set of assumptions. The most important ones are: (i) the coefficients  $\alpha_{ij} = \beta_j$ , i.e. all voters use the same weights and the same discount rate; differences between the voters are purely random. (ii)  $f_i$  is equally distributed within a certain (relevant) range.<sup>11)</sup> Thus, the vote share of the government,  $V_{G,T}$ , can be written as a linear function of the relevant variables,

$$V_{G,T} = \left[ \sum_{t=t_0}^T \left( \beta_0 + \sum_{j=1}^k \beta_j x_{j,k} \right) \lambda^{T-t} \right] + \varepsilon_T, \quad (3)$$

where  $\varepsilon_T$  is a stochastic term, for which the classical assumptions hold.

[14] If we switch from voting to (regularly collected) popularity data we can reformulate (3) and derive for the popularity of the government at time  $t$ ,  $P_{G,t}$ ,

$$P_{G,t} = (1 - \lambda) P_{G,t-1} + \beta_0 + \sum_{j=1}^k \beta_j x_{j,k} + \varepsilon_t. \quad (4)$$

This is the most often used formulation to estimate popularity functions. However, the identical form should not hide the fact that evaluations of a government's record are not identical with an actual vote, even if both are influenced by the same factors. The results of both can, but do not necessarily have to be quite similar.<sup>12)</sup>

[15] As mentioned above, these functions are usually estimated using time series data. This is trivial for the popularity function (4), as only such data are usually available. It is somewhat different for the voting function because there is a notorious shortage of observations. The 31 observations G.H. KRAMER (1971) had to estimate his model for U.S. congressional elections or the 16 observations R.C. FAIR (1978) employed to estimate his model for the U.S. President are rare exceptions, even if these samples are – statistically speaking – extremely small. Moreover, to assume a constant structure over six or seven decades is quite heroic.<sup>13)</sup>

[16] As mentioned above, starting with M.P. FIORINA (1978), micro-data have increasingly been used, first pure cross-sections, later on panel analyses. There is, of course, no more problem of – too few – degrees of freedom. On the other hand, panels over a longer period are necessary to capture the time development. Today, macro- and micro-analyses complement each other.

### 3 Empirical Results

[17] Since the beginning of the seventies, quite a lot of voting functions and hundreds of popularity functions have been estimated. The bulk of the contributions appeared in the first 25

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11. See also D.A. HIBBS (2000, pp. 158ff.).

12. For the case of the United Kingdom see, for example, D. SANDERS (2004).

13. In his more recent papers, D.A. HIBBS (2000, 2008) employed only 12 or 14 observations.

years, in recent decades fewer papers have been published.<sup>14)</sup> Most papers use U.S., U.K. and German data, but with no guarantee of completeness, there are also papers for Austria, Australia, Canada, the Czech Republic, Chile, Denmark, France, India, Ireland, Israel, Italy, Japan, New Zealand, the Netherlands, Norway, Portugal, Sweden, Spain, and Turkey, and also studies regarding groups of countries such as, for example, Scandinavia, Latin America, EU-member countries, post-communist countries, or the member countries of the Economic Community of West African States (ECOWAS).<sup>15)</sup> After more than four decades of research, the main results are similar to what P. NANNESTAD and M. PALDAM (1994, p. 214) concluded more than twenty years ago:

- (i) Most studies found a significant impact of economic and/or political variables in the vote or plurality functions. Not very many papers deny the existence of such influences.<sup>16)</sup>
- (ii) The results are extremely unstable, over time as well as across countries.
- (iii) The economic part of these functions is better explored than the political one.

### 3.1 The Impact of Economic Variables

[18] That most studies find a significant impact of economic variables might partly be due to the publication bias; here it also holds that it is difficult to publish a paper without significant results. However, that so many papers from so many countries and so many different time periods find significant results can hardly only be due to this bias. It can be taken as a stylized fact that – on average – economic development has an impact on voting intentions as well as the actual decisions of voters.

[19] Without testing, the majority of studies assume that voters are backward looking. They find significant results for (current and past) economic variables but with a high discount rate. Whether this behavior is really (only) retrospective remains open. As long as no other information is available, voters have to base their expectations on current and past developments. (This also holds for the estimation of vote and popularity functions.) It can be tested as soon as indicators of future expectations are available. M.B. MACKUEN, R.S. ERIKSON and J. STIMSON (1992), for example, estimate a popularity function for the U.S. president with quarterly data from 1954 to 1988. A perception for the long-run economic development outperforms all other

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14. For surveys of the earlier contributions see M. PALDAM (1981), P. NANNESTAD and M. PALDAM (1994), or M.S. LEWIS-BECK and M. STEGMAIER (2013).

15. See, for example, the contributions in P. WHITLEY (1980), H. EULAU and M.S. LEWIS-BECK (1985), H. NORPOTH, M.S. LEWIS-BECK and J.-D. LAFAY (1991), *Electoral Studies* 19 (2000), issue 2/3, but also R. NECK and S. KARBUZ (1997), J. PANZER and R.D. PAREDES (1991), M. PALDAM and F. SCHNEIDER (1980), J.M. GUTTMAN and Y. SHACHMUROVE (1990), M. VAISHNAV and R. SWANSON (2015), M.J. HARRISON and M. MARSH (1998), D.J. SMYTH and A.E. WOODFIELD (1993), P. RENAUD and F. V. WINDEN (1987), J.F. VEIGA and L.G. VEIGA (2004), H. JORDAHL (2006), A.T. AKARCA and A. TANSEL (2006), H.J. MADSEN (1980), M.S. LEWIS-BECK and M.C. RATTO (2013), L.G. VEIGA (2013) or C.-P. CHANG, Y.-H. YING, and M.-C. HSIEH (2009).

16. Some early papers deny this impact. See, for example, G.J. STIGLER (1973), F. ARCELUS and A.H. MELTZER (1975) (see, however, also the comment of S. GOODMAN and G.H. KRAMER (1975) on this paper), or H. NORPOTH and T. YANTEK (1983).



variables; be it perceptions or real variables. This seems to be clear evidence for forward-looking behavior. D.H. CLARKE and M.C. STEWARD (1994) criticize this study with statistical reasons and conclude that not only prospections but also retrospections are important.<sup>17)</sup> However, they do not deny that prospections are important.

[20] In analyzing the presidential election of 1984, M.S. LEWIS-BECK (1988, p.133) concludes, “prospective economic evaluations have an effect at least as strong as that of retrospective evaluations.” S. PRICE and D. SANDERS (1995, p. 451) show with data from 1979 to 1987 “that, in the UK at least, voters’ prospective economic perceptions are far more important than either their retrospective economic judgements or the objective condition of the economy itself.” Whether economic voting is rather prospective or retrospective seems to depend on the actual situation. R. NADEAU and M.S. LEWIS-BECK (2001) as well as J.E. CAMPBELL, B.J. DETTREY and H. YIN (2010) show for U.S. presidential elections that retrospective voting is important whenever a president is running for re-election. It is much less important if a current Vice-President is running for election, and it has hardly any role if a new candidate (of the same party) is running for election. In this case, voting is necessarily prospective: “in open seat contests, assessment of the candidates’ leadership qualities and their issue positions are the considerations that are of increased importance to the voter’s choice.”<sup>18)</sup> Thus, while retrospective voting itself has a role and is, in addition, a reasonable proxy whenever expectation variables are unavailable, prospective arguments also play an important role.

[21] The high discount rate is often interpreted (but not tested) as an indication of the myopia of voters.<sup>19)</sup> This is not necessarily correct. The (political) discount rate of rational voters will be higher the less past events can be taken as being representative of what the government will do in the future. Changed political and economic circumstances as well as deliberate shifts of government policy can make past experiences nearly worthless.

[22] The economic variables that are frequently significant are the growth rate of real income,<sup>20)</sup> the unemployment and – less frequently – the inflation rate. D.A. HIBBS (2000, 2008), for example, states that the only economic variable relevant for the (re-)election chances of the U.S. President is the growth rate of real income. In most cases, other economic variables besides these three ‘classical’ ones hardly showed any impact. This already holds for the path-breaking paper by C.A.E. GOODHART and R.J. BHANSALI (1970). That other variables usually do not have an impact is hardly surprising. To have an impact on the government’s performance in the eyes of voters, economic variables have to meet two conditions: (i) Voters hold the government responsible for these variables. This is easier in a two party system and/or if a clear alternative is available than in a multi-party system with coalitions.<sup>21)</sup> As R.C. HAYES, M. IMAI and C.A.

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17. See also the discussion between H. NORPOTH (1996, 1996a) and M.B. MACKUEN, R.S. ERIKSON and J. STIMSON (1996).

18. J.E. CAMPBELL, B.J. DETTREY and H. YIN (2010, p. 1094).

19. See, for example the conclusion of P. NANNESTAD and M. PALDAM (1994, p. 238): “Voters are myopic.”

20. J.T. LIND (2007) shows for Norway that permanent rather than current income is relevant.

21. See, for example, C.J. ANDERSON (2000). R. NADEAU, R.G. NIEMI and A. YOSHINAKA (2002) develop an index for the clarity of government responsibility for eight European countries. According to this index, this

SHELTON (2015) show, voters do not distinguish whether an economic downturn is homemade or ‘imported’ due to international developments.<sup>22)</sup> (ii) The average voter has to have at least a somewhat correct idea of the development of these variables. Unemployment, income growth, and inflation directly affect many if not all voters. Moreover, they are regularly and prominently discussed in the media. Thus, voters might have an approximate idea about their development.<sup>23)</sup> The budget deficit or the exchange rate, for example, hardly have a direct impact on the average voter, and the indirect effect is usually too small to be recognized.

[23] That real income growth is more relevant for voting functions (in particular of the U.S. President) and unemployment usually the main real variable in popularity functions, is mainly due to the fact that unemployment data is available on a monthly basis but real income growth (at best) only on a quarterly basis. To have as many degrees of freedom, popularity functions mainly use monthly data. Thus, whether unemployment or income growth is more relevant cannot be tested with these data.

[24] More recently, some papers have documented the impact of other economic variables as well. J. DÖPKE and C. PIERDZIOCH (2006) show that stock market movements may have had an impact on the government’s popularity. A. BRENDER and A. DRAZEN (2008) show for developed countries that budget deficits reduce the re-election chances of the government. This holds in particular in the election year. It is remarkable in that it contradicts the traditional result of models of the political business cycle, which show that an expansionary policy in the election year improves the re-election chances of the government. With quarterly data from 1960 to 2011, C. FAUVELLE-AYMAR and M. STEGMAIER (2013) found a strong impact of the U.S. stock market on presidential approval. M. BERLEMANN and S. ENKELMANN (2014) found that besides unemployment and inflation the budget deficit had a significant impact on the performance of the U.S. President. J.B. JENSEN, D.P. QUINN and S. WEYMOUTH (2016) show that international trade influences U.S. presidential elections: increasing imports are associated with decreasing incumbent vote shares, increasing exports with increasing incumbent vote shares.<sup>24)</sup>

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clarity is highest in the United Kingdom and lowest in the Netherlands. They show that this clarity has a considerable impact on how strong the economic impact is on the government’s evaluation by voters.

22. See also A. LEIGH (2009) as well as A. LEIGH and M. MCLEISH (2009) according to which voters are unable to distinguish between “luck” and “competence”.
23. D. SANDERS (2000) shows this for unemployment and inflation in Britain. See also the evidence by R.M. DUCH and R. STEVENSON (2010) concerning macroeconomic shocks, or S. FELDMAN (1985, p. 163): “When government policies have a direct impact on them [the voters] *and* they attribute responsibility to the government, people do alter their evaluations accordingly.” M. PALDAM and P. NANNESSTAD (2000) show that Danish voters are well informed about unemployment, less well about inflation, and know little about the budget balance or the balance of payments. In addition, economic knowledge is higher around an election than at other times.
24. This is in contrast to the result of A. GUISENGER (2009) who found only low salience of trade policy even among highly affected groups in the 2006 U.S. congressional election.

### 3.2 The (In-)Stability of the Vote and Popularity Functions

[25] That the results are extremely unstable, over time as well as across countries, is also hardly surprising. The reasons are the two aggregation assumptions mentioned above. The assumption that all voters use the same weights is already quite heroic inside a country, but between countries becomes extremely implausible. After two periods of major inflations in the last century, German voters are, for example, considerably more inflation averse than voters of other countries, in particular in southern Europe with their different inflation experience after World War II. Even more important, vote and popularity functions are intrinsically non-linear functions. The assumption of linearity is a first order approximation that might hold around a certain point, but there is no reason at all that this point should be fixed over time and the estimated slopes should be constant. Just the contrary holds: this point changes with the means of the explanatory variables over the observation period and, correspondingly, the estimated slopes change as well. As M. BERLEMANN, S. ENKELMANN and T. KUHLENKASPER (2015) show, this problem can partly be mitigated by applying non-linear estimation procedures, but only partly.

[26] There is also the more general problem that neither the economic nor the political structure is constant over time. This problem is not negligible, but comparatively small in a pure 2-party system like the U.S. or other Anglo-Saxon countries. A change of the government might change the signs of the coefficients to be estimated, but not necessarily their size. The problem becomes much more serious in a country with coalition governments once a coalition changes and, for example, one of the former government parties goes into the opposition and one of the former opposition parties joins the government. In such systems, stable results can at best be expected for the same coalition. The more often a coalition changes, the fewer observations are available and, therefore, the less reliable are the estimated results.<sup>25)</sup> Moreover, the additional question arises which of the parties in government voters hold responsible for what part of the (economic) development.

[27] In their survey, M.S. LEWIS-BECK and M. STEGMAIER (2013, p. 380) deny the instability of the results and write: “VP functions tend to be rather stable, once relevant institutional features are incorporated into the specifications.” This is true insofar as it is often possible to increase the estimated t-statistics by including institutional and political factors. However, as their example of the French cohabitation (p. 379) shows, this does not change the extreme variability of the estimated coefficients. Hence, the conclusion cited above that “the results are extremely unstable, over time as well as across countries” still holds.

### 3.3 Political Variables and the Cost of Ruling

[28] There is a general problem with ‘political variables’. The war/peace indicator is important in the vote function for the U.S. President.<sup>26)</sup> D.A. HIBBS (2000) shows, for example,

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25. This problem becomes even more serious if the voters’ preferences change, as D.J. SMYTH, S.W. TAYLOR and P. DUA (1991) for the U.S. show.

26. See, once again, D.A. HIBBS (2000, 2008).

that the cumulative number of American military personnel killed-in-action in the Korean and Vietnamese wars during the presidential terms preceding the elections of 1952, 1964, 1968 and 1976, had a highly significant negative impact on the election outcome. However, not every war does have a negative impact. H. NORPOTH (1987) shows that MARGARET THATCHER benefited from the Falkland war of 1982. Her popularity improved during the war, and decayed geometrically. Nevertheless, “it was worth over five percentage points for the Conservative party a year later, in the 1983 election.” Given her bad poll results before the war, this may have secured her survival in this election.<sup>27)</sup> Scandals can have a similar role to wars with a time-limited effect. However, as D.J. SMYTH and S.W. TAYLOR (2003) show, their impact can be mitigated by economic development.

[29] The second set of variables is made up of those representing the electoral cycle.<sup>28)</sup> There is a ‘cost of ruling’; as time goes on, every government loses votes.<sup>29)</sup> This becomes apparent in the typical losses of mid-term elections in the United States, by-elections in the United Kingdom and state elections (between the general elections) in federations. A. ALESINA and H. ROSENTHAL (1989) note that “In the postwar United States the president’s party has always done worse in the midterm congressional elections than in the previous congressional elections.” (p. 373)<sup>30)</sup> As the data in the Appendix of C. COOK and J. RAMSDEN (1997, pp. 361ff.) show, after World War II, the British government lost votes in nearly all by-elections and, if a seat was contested, often lost it.<sup>31)</sup> H.L. KERN and J. HAINMUELLER (2006) show the same for Germany and the period from 1949 to 2004, but only when the same party or the same coalition controls both chambers of the federal legislature (Bundestag and Bundesrat). Then, the parties of the national government face systematic losses in midterm state elections.

[30] There are three different mechanisms to explain such midterm losses. They can occur together and so are not easily disentangled.<sup>32)</sup> First, there might be a pure cost of ruling effect. The government will necessarily frustrate some of its voters because it can hardly fulfill all expectations. This holds in particular when, to win an election, it made election pledges despite knowing that it will be unable to fulfill them. The government might simply be unable to get the necessary support in parliament for its policy. This holds in particular in systems like the U.S. where the government is elected independently from the parliament. Thus, the parliament is much more autonomous than in a party system like the U.K., where there is enormous pressure on the majority of the parliament to back up its government. In coalition governments, we

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27. See for this also H. NORPOTH (1991). This interpretation is, however, questioned by D. SANDERS, H. WARD and D. MARSH (1991).

28. For a review, see G. SOLDATOS (1994). However, he does not clearly distinguish between the electoral cycle and the political business cycle.

29. See, for example, P. NANNESTAD and M. PALDAM (2002).

30. See also J.A. STIMSON (1976) and J.E. CAMPBELL (1991) for the period from 1868 to 1988. For a detailed discussion of the midterm cycle see A. ALESINA and H. ROSENTHAL (1995, pp. 83ff.)

31. See for this also S. TAYLOR and C. PAYNE (1973) as well as D. BUTLER (1997).

32. See for this also P. NANNESTAD and M. PALDAM (2002) who propose different explanations that come, however, close to the ones presented here. A similar classification is presented by B.G. KNIGHT (2014) who claims that all three elements have an impact on U.S. midterm elections.

have a similar effect. Due to the compromise necessary to form a coalition, every party has to give up some of its election pledges. This will frustrate part of their voters. Thus, supporters of the government might participate less in midterm elections than supporters of the opposition.<sup>33)</sup>

[31] The second reason might (not only) be economic development. Aside of all its limitations, according to the theory of the political business cycle the government has less interest to please voters at midterm than around its own elections. Thus, a temporary worsening of the situation is not necessary, but can be deliberately produced by the government by taking unpopular measures in the hope that positive results will occur before the next election. This effect can be enforced if there is grievance asymmetry.<sup>34)</sup>

[32] The third reason is divided government.<sup>35)</sup> If voters have the chance to balance the political system, voters who voted at the last general election for their preferred candidate and his or her party might vote in midterm elections for the opposition party. This can bring the whole system closer to the median voter's position. The result of H.L. KERN and J. HAINMUELLER (2006), mentioned above, that the German government faces systematic midterm losses only if it can control both chambers of the German parliament is strong evidence for such an effect.

[33] Sometimes, a 'backswing effect' is observed: shortly before the election, the government re-gains votes.<sup>36)</sup> However, while the cost of ruling effect can be observed in vote functions, the back swing effect can only be observed in popularity functions. Thus, it is unclear whether this is a real effect or just reflects that voters take such questions more seriously the closer the next election is.

[34] Beside this, dummy variables representing different governments and or coalitions are often included. Sometimes the popularity of the President or the Prime Minister is also included.<sup>37)</sup> Then, however, a simultaneous equation approach should be applied because both popularities are commonly dependent variables in a larger system.<sup>38)</sup> Other political variables as, for example the scandal variable mentioned above, are more or less ad hoc. Occasionally, a political event has a major impact on the performance or vote of the government; it might even cause the losing or winning of the close forthcoming election.<sup>39)</sup> Sometimes such variables are included after an examination of the residuals that indicates that something important happened.

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33. See for this S. KERNELL (1977, p. 71). S.D. LEVITT (1994, p. 25) speaks in this respect of "systematic presidential punishment at the midterm".

34. See for this argument P. NANNESTAD and M. PALDAM (2002).

35. See, in particular, A. ALESINA and H. ROSENTHAL (1995, pp. 43ff.).

36. See, for example, C.A.E. GOODHART and R.J. BHANSALI (1970, pp. 61ff.)

37. Ibid, pp. 68ff.

38. C.A.E. GOODHART and R.J. BHANSALI (1970, pp. 69ff.) recognize this problem but nevertheless estimate a recursive model where the popularity of the Prime Minister influences the popularity of his party but not vice versa.

39. In Germany, for example, the building of the Berlin Wall in August 1961 and the disastrous reaction of the Chancellor KONRAD ADENAUER led to the loss of the absolute majority of his party in the Bundestag election in September 1961. Do to this loss, he had to resign in September 1963. On the contrary, the large-area flooding in East Germany in the summer of 2002 helped GERHARD SCHRÖDER to win the Bundestag election in September 2002 with a small majority. It is highly questionable whether this would have been possible without this flooding.

The representation of such events by dummy variables in order to improve the statistics is not inappropriate but from a methodological point of view purely ad hoc. Therefore, the third conclusion of P. NANNESTAD and M. PALDAM (1994, p. 214), that “the economic part of these functions is better explored than the political one”, still holds as well. However, it remains an open question how one could do better.

### 3.4 Egotropic or Sociotropic Voting?

[35] As far as no alternative exists, the traditional vote and popularity functions use macro-economic indicators. This leaves open whether voters are only interested in their own welfare, i.e. egotropic, or take into account social welfare as well, i.e. act sociotropically. As mentioned above, even if voters act sincerely, the latter is easily possible because voting is behind the veil of insignificance, i.e. in a ‘low cost-situation.’

[36] A first preliminary test is whether the voter’s own or the general economic situation matters. Such a test usually demands microdata, but G. KIRCHGÄSSNER (1977) uses aggregated survey data for Germany. His result is unambiguous: the perception of the general economic situation clearly outweighs the perception of the personal economic situation, if both are included, only the former becomes significant. This is hardly compatible with (pure) egotropic voting. The same result is derived by micro studies.<sup>40)</sup> As M.S. LEWIS-BECK and M. STEGMAIER (2013, pp. 369ff.) in their survey show, most studies find strong evidence for sociotropic and, at best, only weak evidence for egotropic voting. All these results are, however, compatible with self-interested voting whenever individuals judge the general economic situation being a better indicator of their own future situation than their current situation. Thus, given these results, the question of to what extent voters act out of self-interest and to what extent they take into account general welfare remains open.

[37] The first micro-studies such as, for example, D.R. KINDER and D.R. KIEWIET (1979), not only rejected egotropic voting but, in addition, were interpreted as rejecting the idea of economic voting, and, therefore, contradicted the results of time series analyses such as, in particular, G.H. KRAMER (1971). He responded in an influential paper (1983) pointing to the possibility of an ecological fallacy. Pure cross-sections might show no impact of economic conditions on voting behavior. For example, those who are hit by unemployment might support the government more strongly than those who are unaffected. However, if unemployment increases, the support for the government might decrease in both groups. This effect can be reflected in time series analyses, but not in single cross-sections. He saw his results as supporting not only the impact of economic conditions but also egotropic voting.

[38] This conflict has long been solved. G.H. KRAMER (1983) was right in that the development over time has to be taken into account, which is impossible by using pure cross-sections.

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40. See, for example, R.M. DUCH and R.T. STEVENSON (2008) or R. NADEAU, M.S. LEWIS-BECK and É. BELANGER (2013).

Today, this problem is overcome, in particular, by using panel data.<sup>41)</sup> As nearly all microanalyses show, changing economic conditions change the evaluation of the government's record by voters. Thus, their results are compatible with the time series analyses.<sup>42)</sup> He was wrong, however, in assuming that the impact of economic conditions on voters' behavior is conditional on egotropic voting. As mentioned above, the impact of economic variables is compatible with sociotropic voting, but how far this is self-interested or altruistic is an open and hardly resolvable question.

### 3.5 Symmetric or Asymmetric Reactions?

[39] Another problem is whether voters react symmetrically or asymmetrically to changes in the economic situation. In his path-breaking work on the popularity of the American President, J.E. MUELLER (1970, p. 34) already wrote that the economic impact “could only be made to function if it was assumed that an economy in slump harms a President's popularity, but an economy in boom does not help his rating.”<sup>43)</sup> There are good reasons for such asymmetries. R.R. LAU (1985) shows that the evaluation of presidential candidates reacts much more strongly to negative than to positive information. This is quite rational if voters are risk averse. S.N. SOROKA (2006, p. 381) shows that “Public responses to negative economic information are much greater than are public responses to positive economic information. The same trend is evident in mass media content, and this serves to enhance the asymmetry in public responsiveness.” M.M. SINGER (2011, p. 301) concludes, “Economic issues gain widespread importance as the economic climate worsens.”

[40] This should be reflected in the micro-studies. Given the importance of this issue, there has been astonishingly little research. Moreover, the results are not univocal. D.R. KIEWIET (1983, p. 49), M. LEWIS-BECK (1988, p. 77ff.), H.B. HALLER and H. NORPOTH (1977, p. 563) for the United States as well as S. ENKELMANN (2014, p. 1012) for Germany did not find any support. On the other hand, P. NANNESTAD and M. PALDAM (1997) find strong support for Denmark. J.S. DESIMONE and C. LAFOUNTAIN (2007) detect asymmetric effects in the 2004 U.S. presidential election. A deterioration of the personal economic situation during his first term hurt GEORGE W. BUSH about twice as much as an improvement helped him. Using U.S. survey data from 1978 to 2006, J. EASHAW (2010) finds a different kind of asymmetry. In the short run, positive economic news has a stronger impact on the evaluation of voters than bad news. In the long run, however, only bad news persists. Thus, voters “tend to display pessimistic bias when forming perceptions about the incumbent government's competence.” (p. 253) And quite recently, using data from 400 general elections, J. MALONEY and A. PICKERING (2015)

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41. See also H. JORDAHL (2006, p. 251): “Since previous studies have used cross-sectional data only, it is also worth noting that panel estimates indicate a much greater impact of macroeconomic variables on the individual vote than cross-sectional estimates do.”

42. See also M. LEWIS-BECK, R. STUBAGER and R. NADEAU (2013), who demonstrate the consistency of individual-level data with the time series results employing a pooled data set of Danish election surveys.

43. For similar results, see H.S. BLOOM and H. D. PRICE (1975) or S. KERNELL (1977).

found strong evidence for grievance asymmetry. Thus, Denmark does not seem to be such a rare exception.

## **4 Extensions**

### **4.1 Partisan Effects**

[41] An alternative to the traditional vote and popularity function is the partisan approach, going back to D.A. HIBBS (1977). In analyzing the United Kingdom and the United States, he showed that unemployment was consistently lower and inflation higher during Democratic (Labour) than during Republican (Conservative) governments. This is in line with the interest of their core electorate. The problem concerning vote and popularity functions is whether economic development systematically favors certain parties, independent of whether they are in government or in opposition. If people believe that a Democratic or Labour government is better able to fight unemployment, these parties should benefit from higher unemployment. If, on the other side, voters believe that Republican or Conservative governments are better able to fight an economic crisis, the opposite should hold.

[42] The results are mixed. O.H. SWANK (1993) estimates a model for the U.S., which shows that the Democratic Party benefits from unemployment and the Republican from inflation. In O.H. SWANK (1998), he combines the partisan with the conventional retrospective model: Democratic presidents benefit less from economic booms but suffer more from inflation than Republican Presidents. J.R. WRIGHT (2012) also finds that higher unemployment supports the Democrats. This is based on 175 midterm gubernatorial and four presidential elections between 1994 and 2010.

[43] Other empirical results point in the other direction. R.H. DURR (1993) and R.T. STEVENSON (2001) show for the United States that, when the economy expands, policy preferences move to the left, while the opposite holds in contractions. S. MARKUSSEN (2008) has shown the same for the OECD countries.

[44] The German general election of 2009 can be seen as a case study in this respect. During the outbreak of the financial and economic crisis in 2008, Germany had a coalition of its two major parties, the Christian and the Social Democrats. Together, both managed the crisis so that its consequences were rather limited (in particular compared with other European countries). In the general election of 2009, the Christian Democrats lost only 1.4 percent votes, but the Social Democrats 11.2 percent votes, while the opposition parties won. As H. RATTINGER and M. STEINBRECHER (2011) show, economic voting played some role in this election. The economic crisis did not benefit the Left; on the contrary: the successful handling of the crisis allowed the Christian Democrats to limit their losses while the Social Democrats were punished for the deterioration of the economic situation.

[45] A minor variant of the partisan approach is whether right governments are more or less hurt by unemployment and/or inflation than left governments. With poll data for the United States, Canada, the United Kingdom, and Australia, F. CARLSEN (2000) shows that right wing governments are hurt by unemployment, but not by moderate inflation. For left governments



he finds mixed results. F.J. VEIGA and L.G. VEIGA (2004, p. 341) show similar results for Portugal: “right-wing governments are penalized for higher inflation while the left-wing ones are not”, and “left-wing governments are more penalized for increases in the unemployment rate.”<sup>44)</sup> Taking all these results together, there is no clear picture, which party benefits more or is more hurt by unemployment or inflation.

## 4.2 Subnational Elections

[46] The usual question is how national economic conditions affect national elections. One can, however, also ask whether national elections are influenced by regional economic developments and/or state or municipal elections by national economic conditions.

[47] To use regional data for national elections is one possibility to overcome the notorious shortage of observations in estimating vote functions. To estimate the impact of unemployment on the rise of the NSDAP at the end of the Weimar Republic, B.S. FREY and H. WECK (1983) estimate a voting function for the four Reichstag elections from 1930 to 1933. For this, they use pooled data for the 13 regions for which unemployment data are available. For all four elections, the simple correlation is negative: The higher unemployment is in a region, the lower is the share of the NSDAP. A pooled cross-section time series analysis (including other control variables) shows a quite different picture: Unemployment has a positive impact on the NSDAP and a negative one on the ‘Weimar parties’; both effects are sizable and highly significant. This result is a good illustration of the problem raised by G.H. KRAMER (1983) mentioned above. Due to the economic structure, the share of the NSDAP was always higher in those regions with lower unemployment (in particular in the east of Germany), but rising unemployment between 1930 and 1933 led in all regions to an increase of the NSDAP’s vote share.<sup>45)</sup>

[48] Analyzing data from the U.K. 1992 General Election study, C.J. PATTIE and R.J. JOHNSTON (1998) show that voters differentiate between their personal situation, the regional, and the national economic context. All three have an impact on their voting. In the 1997 General Election the local effect was even stronger. R.J. JOHNSTON and C.J. PATTIE (2001) show that the personal situation and the regional context matter much more than the evaluation of the national economic situation. For the U.S. Presidential Elections of 1992, B.A. ABRAMS and J.L. BUTKIEWICZ (1995) show that state-level economic conditions played a major role in the defeat of GEORGE W. BUSH. K.S. STRUMPF and J.R. PHILLIPPE (1999) got, however, the opposite result. They show that for the presidential elections from 1972 to 1992, the national economic indicators have a much stronger impact on the electoral outcome in the different states than state level variables. This is again different for Sweden. Using data from 1985 to 2002, M.

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44. See also F.J. VEIGA and L.G. VEIGA (2004a).

45. See the discussion with J.W. FALTER and R. ZINTL (1988) but also G. KING et al. (2008) who show, in investigating elections from 1924 to 1933, that “in process, but obviously not outcome, ... the national swing to the Nazis fits a standard retrospective voting explanation, explaining a retreat from the established parties and a shift to ever more extreme opposition parties resulting from the disastrous economic conditions (in addition to ideological shifts towards nationalism and anti-Semitism).” (p. 987) See also A. V. RIEL and A. SCHRAMM (1993).

ELINDER (2010) shows that regional and municipal unemployment has a strong impact on the results of general elections in these districts.

[49] The impact on regional elections is investigated by A. LEIGH and M. MCLEISH (2009) for Australia. The national unemployment rate is relevant even if a state does much better than its neighbors do; voters are unable to distinguish between ‘luck’ and ‘competence’. Their results “suggest that Australian voters either retain too many state government in economic booms, vote out too many state governments in recessions, or perhaps both.” (p. 210) And F.J. VEIGA and L.G. VEIGA (2010) show for municipal elections in Portugal that the performance of the national economy is important in addition to the municipal situation. R. MARTINS and F.J. VEIGA (2013) show that this holds in particular if local governments are of the same party as the national government.

### 4.3 Different Groups of the Electorate

[50] An alternative is to ask how different groups of the population differently evaluate the economic situation. F. SCHNEIDER (1978) shows for the presidential popularity from 1969 to 1976 that high-income classes use a considerably higher (lower) weight for inflation (unemployment) than low-income classes. G. KIRCHGÄSSNER (1991) shows for Germany from 1972 to 1982 that consistent voters of the (left-wing) government gave much stronger weight to unemployment compared to inflation than consistent voters of the (conservative) opposition.<sup>46)</sup> Moreover, consistent government voters always made a more positive evaluation than consistent opposition voters did. In contrast to this German result, for the U.S., D.J. SMYTH and S.W. TAYLOR (1992, p. 54f.) could “not reject the hypothesis that supporters of the Democratic and Republican parties and Independents have the same trade-offs between inflation and unemployment.”

[51] D.A. HIBBS and N. VASILATOS (1982) show for the British case that blue-collar workers weight unemployment more heavily than white-collar workers; the marginal rate of substitution between unemployment and a change of the inflation rate is 0.58 for non-manual, but 1.36 for skilled manual workers. This corresponds to the fact that the impact of unemployment is much stronger on the latter than on the former group. The resulting third group consists of semi-skilled and unskilled manual workers, widows, and state pensioners; it includes people strongly affected but also not at all affected. There the marginal rate of substitution is 0.97. Considering party affiliations, Republicans are more sensitive to inflation and less to real economic development than Democrats or Independents.<sup>47)</sup>

[52] Using happiness data for the U.S., D.G. BLANCHFLOWER (2007) shows that overall unemployment depresses well-being more than inflation. While the young and higher educated are more concerned about inflation, the old and less educated are more concerned about unemployment. Using data of 16 Western European countries over the period from 1976 to 2010, J.

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46. He distinguishes four groups of voters: consistent government voters, consistent opposition voters, indifferent voters, and abstainers.

47. See D.A. HIBBS, R. D. RIVERS and N. VASILATOS (1982).

FRIEDRICHSEN and P. ZAHN (2014) find the same for inflation: well-educated and working individuals put a higher weight on price stability than less educated or non-working individuals. They find, however, no difference with respect to unemployment and economic growth.

#### 4.4 Austerity Policy

[53] A. ALESINA, D. CARLONI and G. LECCE (2013) test whether large fiscal adjustments influence the re-election prospects of governments. They consider 60 years of large fiscal adjustments in 19 OECD countries over the period from 1975 to 2008 and, in addition, the ten largest adjustments during this period. They “define a year of ‘large fiscal adjustment’ one in which the cyclically adjusted deficit over potential GDP ratio fell by more than 1.5 percent of GDP” (p. 537). They “found no evidence that even large reductions of budget deficits are always associated (or most of the time) with electoral losses.” The problem with this paper is, however, that – published in 2013 when the European debt crisis was fully underway – the analysis stopped in 2008, just at the outbreak of the big financial and economic crisis. It would be interesting to see whether this really holds taking into account that in Greece (2012/2015), Ireland (2011), Iceland (2009), Portugal (2009/2011), and Spain (2011) the governments lost the election (and in some cases twice) due to the results of the financial, economic, and debt crisis and the executed austerity measures. This is a clear indication that really large adjustment processes strongly hurt the government.<sup>48)</sup>

#### 4.5 The Vote Function in Macroeconomics

[54] Whenever the government has an impact on economic development and voters hold the government responsible for it, it is obvious that the government has an incentive to use its fiscal and monetary policy to improve its re-election chances. Thus, the vote function becomes an integral part of macroeconomic models. W.D. NORDHAUS (1975) was the first to show this in his model of the political business cycle. He used the following vote function (pp. 182f.):

$$V_T = \int_0^T g(u_t, \pi_t) e^{\mu t} dt, \quad \mu \geq 0, \quad (5)$$

with

$$g(u, \pi) = -u^2 - \beta \pi, \quad \pi \geq 0, \quad \beta > 0. \quad (5a)$$

The election period goes from  $t = 0$  to  $t = T$ ;  $V_T$  is the election result.  $u$  is the unemployment,  $\pi$  the inflation rate, and  $\mu$  the political discount rate. The government is assumed to be able to influence the unemployment rate (its instrument). In his political model of the business cycle, which uses a discrete formulation, C.D. MACRAE (1977, p. 241) employs the same vote function with the small difference that both variables enter quadratic:

$$V_T = \sum_{t=1}^T w(u_t, \pi_t), \quad (6)$$

with

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48. A. BOJAR (2016) shows that the left has an “electoral advantage” in times of fiscal adjustments. This supports the existence of a partisan cycle.

$$w(\pi, u) = -\frac{1}{2}q\pi^2 - \frac{1}{2}ru^2. \quad (6a)$$

$q$  and  $r$  are positive weights. Moreover, he does not apply a political discount rate, i.e.  $\mu = 0$ .

[55] Since R.J. BARRO and D.B. GORDON (1983, p. 593), variants of (6a) are used as objective functions in the literature on monetary policy. Thus, no longer the government's but the central bank's objective function is considered. In most cases, not the unemployment and inflation rate themselves but deviations from their targets values  $\pi^*$  and  $u^*$  are applied:

$$w(\pi, u) = -\frac{1}{2}q(\pi - \pi^*)^2 - \frac{1}{2}r(u - u^*)^2. \quad (7)$$

According to A. BLINDER (1997, p. 4) “most academic economists begin and end their formal thinking about the goals of monetary policy with such a loss function.”<sup>49)</sup> Traditionally only price stability should count as its goal, i.e.  $\pi$  should be the only element in the central bank's objective function. In 1982, M. FRIEDMAN still wrote: “Experience and not theory has demonstrated ... that monetary policy is not an effective instrument for achieving directly either full employment or economic growth. As a result, there is today a worldwide consensus, not only among most academic economists but also among monetary practitioners, that the long-run objective of monetary policy must be price stability” (p. 100). Thus, the introduction of unemployment (or real growth) by R.J. BARRO and D.B. GORDON (1983) into the central bank objective function was a radical change.

## 5 Summary and Concluding Remarks

[56] For about 45 years, many vote and popularity functions have been estimated for many countries indicating that voting intentions as well as actual votes are influenced by economic development. The economy is, of course, not the only and probably not always the most important factor, but there is no doubt anymore that it is an important factor. The most relevant variables are still unemployment, and/or real growth, and inflation. The estimated coefficients vary considerably between countries and time periods. It would however be naïve to expect something else; the usually applied linear estimation is not more than a first order approximation to a highly non-linear function, and it is trivial that the estimated coefficients depend not necessarily in sign or statistical significance, but definitely in size on the point of approximation.

[57] Two questions dominated much of the discussions: Is voting egotropic or sociotropic, and is it prospective or retrospective? In papers, retrospective sociotropic voting dominates. However, the evidence is not so univocal; it rather tells that voting has egotropic as well as sociotropic aspects, and it is prospective as well as retrospective. Moreover, the different aspects are not easy to distinguish. There is, of course, more evidence for the impact of the general than the personal economic situation, but if voters consider the general economic situation to

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49. See, for example, the textbooks of A. CUKIERMAN (1992, p. 28), C.E. WALSH (2010, p. 271), or T. PERSSON and G. TABELLINI (2000, p. 399). For the difference between the traditional ‘social welfare’ and the political approach to central bank behavior see A. CUKIERMAN (1992, pp. 43ff.).

be more relevant for their own future situation apparently sociotropic behavior might really be egotropic. It is unclear what roles self-interest and altruism play in voting.

[58] It is similar with prospective versus retrospective voting. The main reason why the majority of papers assumes retrospective voting, might simply be the fact that prospective indicators are hardly available. This holds, in particular, for time series analyses. It is somewhat different for the microanalyses; they show considerable evidence for prospective behavior. Moreover, the difference between prospective and retrospective behavior vanishes if voters form their expectations of future government behavior on its record so far. As long as there is no information indicating that the government, if being re-elected, might behave quite differently than it has to date and how this might be, prospective behavior, based on recent experience, can be seemingly retrospective.

[59] The question remains whether this behavior is ‘rational’ or in what sense, respectively. A benchmark is the theory of rational expectations.<sup>50)</sup> According to this theory, people use all available information in a rational manner to make their forecasts and to act accordingly. M.B. MACKUEN, R.S. ERIKSON and J. STIMSON (1992), mentioned above, not only observe prospective behavior but also derive from this that “the qualitative result is a rational expectations outcome.” (p. 597) They clarify that not everybody has to be rational in this sense; it is sufficient if the outcome is “as if, collectively, the electorate” would behave in this way (p. 609). H.D. CLARKE and M.C. STEWART (1994) reject this claim with the argument that prospective behavior is not sufficient for a rational expectation solution and that they miss a test for this hypothesis. In their answer to a critique by H. NORPOTH (1996), M.B. MACKUEN, R.S. ERIKSON and J. STIMSON (1996) dilute their pretension and only claim “limited information rationality” (p. 795). This is different from rational expectations in the strong sense, but still a very strong assumption. On the other hand, hardly anybody would doubt that voters are boundedly rational in the sense of H.A. SIMON (1995).<sup>51)</sup>

[60] Using popularity data, there is a simple way to test whether voters behave according to the theory of rational expectations, in analogy to the theory of the consumption function by R. HALL (1978). Even with limited information, if voters are fully rational, all information they use should be embodied in their current decision. They change their opinion only if they receive new information that has not been available so far. Given this assumption, popularity series should have unit roots; and (monthly) changes should be random. The extreme high (political) discount rate strongly contradicts this assumption. Moreover, the popularity series are typically stationary, and if the random walk hypothesis is explicitly tested, it is rejected.<sup>52)</sup> Thus, there is hardly any doubt that voters are boundedly rational, but no evidence that they are rational in the sense of the rational expectations theory.

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50. For the concept of rational expectations, see for example S.M. SHEFRIN (1996).

51. See, for example, D. STADELMANN and B. TORGLER (2013).

52. See, for example, G. KIRCHGÄSSNER (1985a) or J.D. BYERS (1991).

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