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The VP-function: A survey of the literature on vote and popularity functions after 25 years*

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Abstract. VP-functions explain the support for the government at votes and polls by economic and political variables. Most studies analyze macro time series. We also cover studies of individual voters, socio-economic groups and regional cross-sections. The theory starts from the Responsibility Hypothesis: voters hold the government responsible for economic conditions. It works in two party/block systems, but not else. Voters in most countries are found to be sociotropic. Egotropic voting also occurs. Voters' myopia is well established. Voting is retrospective as expectations are static. It costs the average government almost 2% of the vote to rule.

1. Introduction

The VP-function explains the support for the government as a function of economic and political outcomes. It is defined in Table 1. It is a function that provides an empirical approximation to the social welfare function. The literature on the VP-function began only twenty-five years ago; but it has now reached close to two hundred titles including two dozen books. The sheer bulk of material will force us to be highly selective in the present survey – we shall mention about hundred studies only.

The VP-literature has progressed in a wavelike fashion which allows us to impose some order upon the material.[1] We shall speak of three waves: (i) the wave of the pioneers, of the early 1970s, (ii) the second wave around 1980, and (iii) the third wave of the late 1980s. The present survey is a sequel to Paldam (1981), which covered the first 1½ waves. As the second wave was in full upswing then, the old survey was termed preliminary. Now, with the third and

* This is an invited article. We are responsible for the assessments and all the difficult choices about what should be included and what should be left out. However, several people have helped us notably Douglas Hibbs, Gebhard Kirchgässner and Friedrich Schneider. We are grateful also to the referee and to Lovell Jarvis for helping us weeding out unclear language and thoughts.

Table 1. Defining the VP-function and its parts

V-function,	where V is Vote, explains the Vote (or the change in the vote) for the government at elections, by (the change in) economic and political variables. The function hence has an e-part and a p-part.
P-function,	where P stands for Popularity Poll, is defined identically.
VP-function.	In most of the discussion we need not distinguish between the V-function and the P-function (see however 3.6). We hence speak of VP-functions.

weaker wave apparently over and a new wave so far not in sight, it appears a better time to take stock. Three general points should be made right from the start:

(M1) Nearly all studies made have found highly significant VP-functions, and a clear pattern appears in the results. Only a few studies such as Dinkel (1982) and Norpoth and Yantek (1983a and 1983b) have denied the very existence of the VP-function.[2]

(M2) However, the VP-function has shown a disappointing lack of stability both over time and across countries.

(M3) The e-part of the VP-function remains much better explored than the p-part.

As long as the VP-function suffers from the predicament of instability, we know that we are missing something, so there will probably soon start a fourth wave.

In the present survey, we shall proceed as follows: Section 2 covers the first two waves. Nearly everything in that literature was macro. Section 3 discusses the microfoundations, based on the limited literature on the VP-decisions of the individual voter. Section 4 deals with studies/hypotheses linking the micro and the macro level. Section 5 covers some new macro results. Finally, Section 6 contains a few concluding remarks. Some of the leading researchers, notably D.A. Hibbs and G. Kirchgässner, have used state-of-the-art econometrics. However, to keep the survey within bonds, we shall largely disregard questions of econometric technique.

2. The first two waves

The wave of the pioneers lasted from the late 1960s to the mid 1970s. The second wave lasted from the late 1970s to the early 1980s. We shall be relatively brief, as we are dealing with material that is well known; but it would be unfair to survey a field without paying homage to those who planted the first seeds. Also, many of the key results and ideas in the subsequent literature can be traced back to the work of the pioneers.

2.1. The pioneers and Wave I: Six key results (K1) to (K6)

The literature started around 1969/71 with the publication of three grand papers:[3]

Kramer (1971) introduced the V-Function in an analysis of the 31 elections for the U.S. Congress between 1896 and 1964. The study is famous for its tight elegance and (overly) good empirical fit.

Mueller (1970) introduced the P-Function by analyzing 292 monthly polls for the popularity of the U.S. president between 1945 and 1969. The paper appears loose and talkative, but contains a surprising number of the ideas which have continued to dominate research ever since.

Goodhart and Bhansali (1970) simultaneously introduced the P-Function by analyzing monthly popularity polls for the U.K. Prime Minister and Government, 1947 to 1968. The paper is long, thorough, and full of qualifications. The estimates show considerable instability, but some explanation of the instability is provided. The paper is so thorough that it almost killed the VP-research in the U.K. for a decade.

The Pioneers created a minor wave of about twenty papers surveyed elsewhere.[4] All three referred, vaguely, to Downs (1957) as the theoretical starting point;[5] but Downs' theories of rationality in politics were quickly boiled down to the following operational idea, known as *the responsibility hypothesis*:

[K1] The voters hold the government responsible for the development in the economy.

The hypothesis predicts that if the economy goes well, so will the popularity of the government. In Section 3 we shall show that this idea is consistent with several micro-interpretations. Two problems should be mentioned: (i) The responsibility pattern only appears to make sense for governments that can actually rule – as governments normally can in the U.S. and the U.K.. Many governments in other countries are minority governments which are likely to be seen as having little control over the economy. Therefore, we shall discuss, especially in Section 5, how general the VP-function is. (ii) It is often a problem whether a behavior relation is symmetric. Mueller finds that the VP-function is asymmetric:

[K2] A good economic development increases the popularity of the government less than a bad one decreases the popularity.

Mueller terms this the "Kick-the-Rascals-Out-Asymmetry". For reasons to be

discussed, we prefer the less colorful name of *the grievance asymmetry*. [K2] has fared badly in subsequent research. Mueller's result is probably due to a fluke in some U.S. data, but the point keeps reappearing in one form or another, see Section 3.

The very formulation of the responsibility hypothesis suggests a research program like the one followed by the pioneers already: Try to explain the readily available P- or V-time series by the likewise available economic time series. If something comes out of this research, it will surely be interesting both in a Machiavellian perspective and as regards welfare theory. The responsibility hypothesis is framed in terms of economic outcomes, not of economic policies as such. The VP-function may, therefore, be seen as a demand function for economic outcomes. With some little handwaving it can even be understood as an empirically estimated social welfare function.

The school of social choice theorists has, since it was started by K.J. Arrow, mainly proved many theorems about the impossibility of the social welfare function. Sen (1986) gives a readable, but depressing, survey. The theory of the social welfare function is, therefore, known as the most dismal part of the dismal science of economics. No doubt the school is right in stating that a *perfect* aggregation of individual preferences into a social welfare function is impossible. However, this is nothing special. We all know that the aggregating of all individual price movements into the perfect price index is impossible, too. Therefore, there can be no perfect measure of the real product. In applied macroeconomics nothing exists if it has to be perfect. This does not worry most economists who have learned that imperfect measures can be very *useful* in practice. So why not try to find an imperfect social welfare function?

The main findings have remained that a few macro variables often do work in the way postulated by the responsibility hypothesis:

[K3] The *big two* are: The unemployment rate, u, and the inflation rate, p. They normally give significant coefficients in VP-functions – the typical orders of magnitudes found are between -0.4 and -0.8 to both variables in developed low-inflation countries.[6]

Sometimes, the real growth rate works better than the unemployment rate, and sometimes one or another variable becomes significant in addition to the big two.

We have defined the responsibility hypothesis only with respect to economic variables. Whether it generalizes to political variables, is not immediately clear. Many political variables are defined qualitatively and in an asymmetrical way. They must consequently be entered differently into these functions as is further discussed in 2.3. Therefore, they are often left out. Right from the beginning, a tradition developed for concentrating the efforts on modeling the effect of the economic variables.

[K4] Political variables are either included in the form of more or less systematic dummy-variables (see 2.2), or in a way that is ad hoc to an unusual degree.[7]

We shall refer to [K4] as the *e/p-asymmetry* problem of the VP-function. Only one genuine political variable has been frequently used. It is the *Rally-Around-the-Flag* variable (named by Mueller). It formalizes the observation, going back to antique Athens, that many opponents of a government rally to its support if there is a foreign policy crisis. To turn this observation into a variable, one goes through a foreign policy almanac and identifies the foreign policy crises. Each crisis then has to be graded according to seriousness. The grading can be done subjectively or, e.g., by counting the amount of newspaper space given to the crisis. Finally, one has to find a profile for the speed with which the effect of the crisis decays. The speed is normally found to be remarkably high. The high-speed decay is part of another key result of the pioneers known as *voters' myopia*:

[K5] In VP-functions all effects decay very fast – often within one year.

The myopia-result often looks a little excessive. Researchers have often reported that only one or two months appear to work, or in quarterly models that only one quarter is needed. However, these results are reached in a way giving a bias towards finding short lags as shall be discussed in 2.4 and 2.5. In addition to the quick decay of the effect of specific events, there is a slow general depreciation in the popularity of the average government. It is known as the *cost of ruling* – further discussed in 5.3:

[K6] A government ruling for one election period loses an average of about 1.7 percent of the vote during that period.

This is clearly a paradoxical result for the economist,[8] for the average government must rule exactly as the rational voter expects. Therefore, it should be neither rewarded nor punished. However, [K6] is one result that has survived all later testing.

2.2. The form of the VP-function

The pioneers worked with linear models, as have most later researchers. The VP-functions used have looked basically as given in Table 2. The model can, as shown, be formulated either in levels or in first differences. Whether it should be the one or the other, is much discussed. Normally it makes little difference,[9] except that the constants (Bs) and the trend (T) change.

Table 2. A linear formulation of the VP-function

Level version

$$VP_t = [\alpha_1 \cdot Lp_t + \alpha_2 \cdot Lu_t + \ldots]_e + [\beta_{1i} \cdot B_i + \beta_2 \cdot T_t + \{\beta_3 \cdot Lv_t + \ldots\}]_p + r_t \quad (1)$$

Change version (in first differences)[a]

$$\Delta VP_t = [\alpha_1 \cdot L\Delta p_t + \alpha_2 \cdot L\Delta u_t + \ldots]_e + [\beta_{1i} \cdot B'_i + \beta_2 \cdot T'_t + \{\beta_3 \cdot L\Delta v_t + \ldots\}]_p + e_t \quad (2)$$

General features/Conventions

VP	the Vote or the Poll series used. VP_t is expressed in percent of all voters.
α, β	coefficients to be estimated.
e_t, r_t	residuals.
Δ	first difference operator. The next variable is in change form: $\Delta z_t = z_t - z_{t-1}$.
L	backshift/lag operator. The next variable may be lagged, often by less than a year.
...	indicate that there may be more variables.

Economic variables. The e-part in the $[]_e$-brackets

p_t	first economic series. Taken to be inflation.
u_t	second economic series. Taken to be the rate of unemployment.

Political variables. The p-part in the $[]_p$-brackets[b]

B_i	constant(s). Typically broken up to be government specific.[c]
T_t	the trend. It is normally constrained to be the same under all governments,[d] but it may be government specific like the constant.
v_t	political variable. It may be another dummy variable to take care of a special event, or it may be a *genuine* variable like the Rally-Around-the-Flag-variable.

a All variables are the same in (1) and (2) except the constant and the trend.

b The { }-bracket is often empty. Note the odd terminology: A government-specific constant and a trend are called *political* variables. This is clearly misleading, but the terminology is used even by political scientists: They hereby obtain a good-sized fraction of the explanatory power for "their" variables.

c If the VP-series covers i = 1, ..., n governments, there and n B_i-series and n β_{1i}'s are estimated. Each B_i is defined to be 1 during it's government, i, and zero else.

d If the variable is the same under all governments, it starts at 1,2,3, ... at the start of each government (i.e., after each election. Then only one β_2 results, to provide an estimate of the cost of ruling.

The formulation reflects the e/p-asymmetry of [K4] above. Each government starts with a stock of popularity of its own, $\beta_i \cdot B_i$. This stock of popularity is due to events that have taken place before the government acquired power. In principle, this must be political events, since only the government is held responsible for the economy. The government's popularity deteriorates, as other capital stocks, at the rate $\beta_2 \cdot T_t$. It increases or decreases as per the economic events in the e-bracket. Most models are formulated to be influenced by genuine political factors only through the { }-bracket. It is often missing. We, therefore, conclude that economic factors change the government's stock of popularity, while political factors change the popularity of parties in the opposition.

However, to be consistent, the model needs a mechanism to secure that gains and losses for the government and all opposition parties will add up to zero as they should. It is common to hide this problem by having no equation for the opposition. However, funny results tend to occur when models with hidden inconsistencies are used. A better solution is to include an explicit *adding-up constraint*, requiring all parties added together to receive 100% of the valid vote, in order to determine the opposition popularity. This was already done by Kramer (1971); but further mechanisms are needed if the system is not a two-party system with a constant proportion of abstaining voters.[10]

The explanatory power of the VP-function is often quite high. It is easy to obtain R^2-scores in the range from 0.4 to 0.6 for the change-version (2) to 0.7 to 0.9 for the level version (1), using the artificial p-variables *only*. Hence, the fit is already quite impressive if the constant and the trend are made government specific, and a few event-dummies are thrown in, to account for particularly large residuals. If the e-part adds something, the fit becomes excellent; but it should not be overlooked that the economic variables only explain the *increase* in the R^2. This increase normally corresponds to an explanatory power of the e-part of 20–30% of the variation in the popularity.

2.3. A digression on the time-series/co-integration aspects of the VP-function

It is interesting to consider the formulations of Table 2 in the light of modern econometric theory. The key question we have learned to ask is whether our knowledge about the VP_t-, the u_t- and p_t-series is consistent with the way the model is specified.

VP-series measure the popularity of governments, in percent of all votes. Governments change, but it is likely that the percentage of votes necessary to rule stays much the same (see 5.1). We can, therefore, take the VP-series to be trendless in the long run. The distribution of VP-data is further discussed in 5.3.

It is also reasonable to consider unemployment rates as fairly trendless in the long run. The rate of unemployment is, by definition, censored downward at 0% and, less relevantly, upwards at 100%. It also contains a seasonal component, known to be hard to model, and much autocorrelation. Most readers will probably also agree that it is hard to imagine that the inflation rate has a long run trend, though there are occasional dramatic middle-term movements in the inflation rate. The p_t-series are practically unbounded upwards and the series contain much autocorrelation. The long run necessary to observe trendlesness in the inflation rate is long indeed.

It, therefore, appears *reasonable* to assume that the popularity of the (changing) government, the rate of unemployment, and the inflation rate could be co-

integrated in the long run. However, it is *unlikely* that the dynamics of the three series can add up as modeled.[11] Hence, simple linear models as (1) and (2) can only be a crude first approximation. To obtain a satisfactory model, something must be done to obtain series that have the same dynamic properties on both sides of the equality sign.

Given that we estimate relations between series with much autocorrelation, how are we going to estimate the lags? If we have one or a few lags as suggested by (1) and (2), everything will look too good. It will make little difference to include more lags. Our choice of technique will have forced us to conclude that these functions are extremely myopic.

These points are easily recognized in the light of the developments in econometric theory during the last five years. However, in the VP-field the same conclusions were reached before, as we shall see in the section on the Hibbs model. Since the arguments were ahead of time, by about five years, it was not clear to most researchers how compelling they were.

2.4. Wave II – made in Zurich

The second wave was started by a group of researchers in Zurich: B.S. Frey, G. Kirchgässner, F. Schneider, W. Pommerehne and H. Weck-Hannemann. In various combinations they produced about 30 papers and a couple of books dealing with most aspects of the VP-function for Germany, Switzerland, the U.K., the U.S., Sweden and Australia. It tells a lot about the sociology of economics and political science that the main impact of the group stems from the two 1978 Frey and Schneider papers dealing with the U.S.A. and U.K. that appeared in leading Anglo-Saxon journals. The group had produced work on Germany which was published earlier and contained most of the same ideas. Frey's first work in the field (with H. Garbers) was published already in 1972. It hence belonged to the first wave. Kirchgässner was next in 1974 and 1976. Then Schneider joined, and production got into high gear.

The main innovation of the Zurich group was the combination of the VP-function and the policy reaction functions. The group aimed at creating the *closed politico-economic model* where (almost) everything was endogenized.[12] The most ambitious closed model is Frey and Schneider (1979). This endogenization combined with the very good econometric fits often obtained by the group drew a crowd of followers and critics.[13]

The most interesting of the Zurich VP-functions has been largely overlooked. It stems from the attempt by the group to analyze the direct-democracy institution of the Swiss referenda (see Schneider, Pommerehne and Frey, 1981). The Swiss government is always a coalition of all parties in the Parliament. Therefore, all parties are "proportionally" responsible for economic

outcomes, so there is no government popularity to analyze. Instead, the group constructed a series giving the approval rate for the government recommendation in the frequent referenda. Using data from several hundred referenda, it is shown that the approval rate follows the VP-function, even if the series is purged for the referenda having a clearly economic content.[14] We shall return to this *Swiss result* in 3.4 below.

2.5. Wave II – the main competitor

At the same time as the Zurich-Group got into the high gear, D.A. Hibbs, Jr. opened a competing shop at Harvard. A seminal paper appeared in 1979. It took a few more years, before Hibbs had developed his full model. The papers have been republished in Hibbs (1987a). It can be seen that Hibbs arrived at a fairly general model which could be applied to the U.S., U.K., Germany and France.

Hibbs' first paper (1979) does not analyze the VP-function as such, but studies the relation between the actual unemployment and inflation rates and the mass political reactions to these rates at polls measuring how serious people think that these problems are. Hereby Hibbs reached estimates of the welfare trade-off function for unemployment and inflation. He also got a strong indication that the VP-function could not be a simple linear one.

The full Hibbs model, as published in 1982,[15] constitutes a technical breakthrough in several ways. It is formulated as a capital adjustment model, where the capital is the stock of government popularity. The stock depreciates over time, and it increases by good and decreases by bad economic and political events (changes in outcomes). Everything is modelled using complex adjustment processes, where the coefficients include adjustment parameters. The estimates use probit/logit ML-methods. These methods give other tests (or, in the beginning, no tests) than the usual ones. However, if Hibbs' results are converted so as to be comparable with results from applying models (1) and (2), two points are important:

(H1) The coefficients are significantly different across the realistic ranges for the explanatory variables. The non-linearities are, therefore, important. This is particularly relevant for the volatile inflation rate, p_t. The coefficient on p_t does not matter if there is little inflation, but for high p_t's (such as $p_t > 10\%$) the coefficient dominates the relation.

(H2) The adjustment parameters show that only 60% of the effects of an economic event disappear within a year. This is still myopia; but not quite as extreme (and unlikely) myopia as in most other studies.

The impact of Hibbs' work has been less noticeable (or slower in coming) than

it deserved to be, for several reasons. For once, it was too far ahead of its time. Another is that it is technically much more demanding to replicate than work based on simple linear models such as (1) and (2). It is clear, nevertheless, that the fierce competition between the Zurich-Group and Hibbs kept the field very lively for a time.

2.6. The rest of the second wave

The rest of the second wave covered more countries and longer time periods. A great deal of the literature is to be found in two volumes: Whiteley (1980) and Hibbs and Fassbender (1981). They contain papers on Japan (Inogushi), the Scandinavian countries (Madsen), Germany (the Zurich group and Rattinger), the U.S. (Hibbs and Kernell) and France (Rosa and Amson and Lafay). Other papers in the wave were Jonung and Wadensjö (1979) and Lybeck (1985) on Sweden, Paldam and Schneider (1980) on Denmark, Pissarides (1980) on the U.K., Lewis-Beck (1980) on France. Furthermore, a great many studies appeared on the U.S., such as Monroe (1978), Kernell (1978), Fair (1978) and Chappell and Keech (1985). Later another volume (Eulau and Lewis-Beck, 1985) appeared, and more countries were covered, e.g., Belluchi (1984) on Italy and Amor Bravo (1987) on Spain, and most recently Rius (1993) on Uruguay.

A main aim of these studies usually was to reproduce the *right signs* for still another country and/or time period. As certain coefficients and signs had been found in the U.S. and U.K., they were widely believed to be (somehow) generally true. Now, all one had to do was to tailor the standard model so that it fitted well with all other countries also and produced the right signs. Most researchers were successful in this search. However, a few studies met with limited success as regards finding the "one and only" VP-function for the data set examined: Both Pissarides and Lybeck report that the data have to be broken up into sub-periods in order to produce interpretable results.[16] A similar instability appears in the Paldam and Schneider study.[17] See further 5.1.

Clearly, the coefficients were found to be less than perfectly stable and robust; but before we return to subsequent results, in Section 5, we shall look at the micro level.

3. Microfoundations: Grievances and expectations

In order to build the microfoundations for the VP-function on a solid base, let us pose the obvious question: *How would/should the rational person vote?* Some observations immediately come to mind:

3.1. Four observations

Ob.1 Voting is a *mass decision*, involving a large number, N, of voters. The individual has an *infinitesimal influence*. The probability for casting the decisive vote is $1/N \approx 0$.[18]

Ob.2 Voting influences election outcomes, and polls influence politicians. The voter and the respondent at polls should, therefore, try to influence *outcomes in his interest*.

Ob.3 Votes and polls send *signals* to the politicians.

Ob.4 Voting as all other decisions should be based upon *expected* future events, not the past. In other words, voting should be forward oriented and *not retrospective*.

The infinitesimal influence observation (ob.1) – also known as the 1/N-problem – is the reason for the *paradox of voting*. To vote has some costs and gives infinitesimal benefits. So why do most people vote? Answers of two types have been given. Both can be formalized to look perfectly respectable: (a1) People like to vote.[19] (a2) As non-voting is to free ride on the democratic system, it applies pressure on people to make it their duty to vote.

Ob.1 may be reformulated as follows: All mass decisions take place through a *filter of insignificance*. Compared with a decision about investing your own fortune, a mass decision is at the other end of the decision-spectrum. The difference should show up in the way the relevant expectations are formed in the two cases. It is clearly irrational if voters spend a large amount of time and effort to be well informed on all matters relevant for making the best voting decisions. If they nevertheless spend time and effort, it must be for the same reasons as they vote: (a1) They like being informed. (a2) They feel they have a duty to do so.

As compensation for the problems it gives, the filter of insignificance explains several seemingly illogical and contradictory observations. The cheapest ways to decide is either to stick to some old decision or to follow the latest impulse. And indeed, many voters are known to always vote for the same party, the party preferred in their social environment or class.[20] Other voters appear to follow the latest impulse, as advertisement efforts often seem to indicate. With these reflections on observation (ob.1) in mind, let us turn to (ob.2).

3.2. Theory: From the egotropic to the sociotropic hypothesis: Adding a layer of averaging

The literature discusses two hypotheses about the motives of the individual voter. The first hypothesis follows from the whole economic paradigm of

individual or household rationality also known as methodological individualism. The voter consults his pocketbook before voting. The second hypothesis follows from the observation that economic policies try to steer the whole economy, not the economy of anyone. Therefore, the rational voter should hold the government responsible for the way he perceives it steers the *whole economy*, and not be much influenced by his personal economy. Hence, it is unclear whether the economic element in the VP-function of the individual voter is:

Egotropic, that is based on the voter's own (or households) economic experiences, or Sociotropic, that is based on the voter's perception of the behavior of the macroeconomy.

As indicated, it is already a problem to choose the best unit to consider in the egotropic theory. Is it the person, the family/household or a still wider social environment of the person? These are empirical questions, and it appears that the best division line goes at the household (see Nannestad and Paldam, 1993a). In the following we shall use "individual" and "household" as synonyms.

The macroeconomy is, of course, the average or aggregate of the corresponding micro economies of the individuals. The macro VP-function aggregates the micro VP-functions of all individual voters. However, the two hypotheses give very different aggregation processes.

Under the egotropic hypothesis all individual VP-functions are aggregated to the macro VP-function *in the same way* as the macro variables are aggregated from the individual experiences. Under the sociotropic hypothesis the macro VP-function is an average of people's *perceptions of the average*, i.e., the macroeconomy. The difference between the two hypotheses is, therefore, that an *extra layer of averaging and perceptions* enters into the sociotropic hypothesis. If the perceptions are rational, the result must be qualitatively the same. However, two questions Q1 and Q2 remain:

Q1: Is the egotropic or the sociotropic micro behavior most likely to produce a significant and stable macro VP-function? A set of perceptions enters into the sociotropic behavior, but there is also an extra layer of averaging. The two differences point in opposite directions. It is hard to imagine that the perceptions of the same macroeconomic development can be more different than the actual experiences. Hence, we should get (much) *stronger VP-functions under the sociotropic than under the egotropic hypothesis.*

Q2: Are the coefficients likely to be quantitatively the same under the two hypotheses? This point is most easily analyzed if we take voting to be retrospective. Let us, therefore, for a moment assume that the relevant

expectations are retrospective as suggested by the available evidence (to be discussed). The point we are going to make is different for different variables. Let us look at the big two: inflation and unemployment.

The inflation the individual faces is *already an average* of many individual price increases. From calculations of group specific price indices, we know that people face rather similar inflation rates. If the CPI measures price increases of 4%, only a few percent of all households will experience inflation rates outside the interval from 3 to 5%. The egotropic hypothesis thus leads to *two* layers of averaging, while the sociotropic hypothesis leads to *three* such layers between the micro and the macro VP-function. The difference about the coefficient, α_1, to inflation in the VP-function is, therefore, likely to be small. There is no logical reason that we should not find a big α_1, as is often the case, under both the egotropic and the sociotropic hypothesis.

The unemployment experiences of the individuals, on the other hand, are in *no way an average*, and they are very different. Most are employed throughout, a few are full time unemployed, while a good many experience some spells of unemployment. Here the egotropic and the sociotropic hypothesis lead to one and two layers of averages, respectively. To see what this means, let us imagine that unemployment rises by 1% of the labor force. We can now calculate the maximum size of the coefficient, α_2, to unemployment in a macro VP-function given the egotropic hypothesis. The calculations have three steps:

(1) One unemployed person in the statistics means that about three persons have a spell of unemployment. The average household has almost 2 voters. A change in the unemployment by one percentage point, therefore, affects about 6 times as many voters. (2) Many of the 6 voters cannot change their vote in the direction predicted by the responsibility hypothesis. They become unemployed, but they voted against the government in the last election already, and vice versa. Given that the government has about half of the votes, then half the voters cannot change their vote away from (to) the government if they become unemployed (employed). Assume that everybody, who can, actually changes. (3) Altogether, we have:

$$\alpha_2 \approx -0.5 \cdot 6 \cdot 0.01 = -0.03.$$

This calculated maximum size of α_2 is about 5% of the coefficient one typically finds when estimating the macro VP-function. It is obvious that the same arguments do not hold if voting is assumed to be sociotropic instead. Given that expectations are retrospective, and the size of the coefficient to unemployment found in most studies of the macro VP-function, we have to conclude that voting is sociotropic.[21]

These arguments change if we give up the assumption that the relevant expectations are retrospective and assume that voting is based on forward looking

expectations. Past events then only count as indicators of the future. People do not vote against the government because they have been hit by unemployment in the past, but because they see their experiences as an *indication* of the likelihood of future unemployment. Then, surely, they also consider employment prospects in their place of work, their city, their trade, etc. In the terminology used above, some averaging enters. Once we move from past experiences to expectations, the dividing line between sociotropic and egotropic voting becomes blurred. It becomes less easy to predict the size of coefficients – one has to estimate.

3.3. Literature: The Kinder and Kiewiet result

The discussion of the two micro hypotheses in the literature has progressed somewhat awkwardly, and only about twenty papers have been published so far. It was initiated by Fiorina (1978, 1981), and, in particular, by the very convincing work of Kinder and Kiewiet (1979). The pioneering work analyzes U.S. cross section data sets.

Fiorina found strong evidence that *past events* are the relevant ones to use in micro VP-functions. Also he obtained coefficients with the signs predicted by the responsibility hypothesis. Kinder and Kiewit analyzed whether their respondents were more likely to vote against the government if (A) they perceived that unemployment in the country was going up, or if (B) they personally experienced more unemployment. Here (A) is the sociotropic hypothesis while (B) is the egotropic hypothesis which they termed a "personal grievance".[22] The Kinder and Kiewiet result was very clear: it is *only* (A), the *sociotropic* hypothesis, that works – and it works quite well.

The Kinder and Kiewiet result goes against the beliefs of the economist and many political scientists as well. Therefore, it has been thoroughly scrutinized. The main critique is the one of Kramer (1983), who raised two main points: (i) Kinder and Kiewiet used pure cross section data and their results therefore may or may not generalize to time series. (ii) The perceptions of the true sociotropic variable are very likely to be influenced by two of the variables in the model: (i) The voters sympathy for the government for other reasons, i.e., the dependent variable. (b) The personal experiences of the voter, i.e., the egotropic variable. Both (a) and (b) biases the coefficient to the sociotropic variable upward and (b) do so at the expense of the egotropic variable. Markus (1988) presents a model that takes these problems into account. It uses mixed time series/cross section data, and it uses official statistics for the sociotropic variable. Nevertheless, Markus still reaches the Kinder and Kiewiet result, even if the coefficient and to the sociotropic variable falls a little and the egotropic variable becomes significant too.

Two additional weaknesses are apparent in the work of Kinder and Kiewiet. First, they work on level data, VP, u, p etc., and not on data expressing

Table 3. The logic of the Kinder and Kiewiet test

H: Hit by unemployment				N: Not hit by unemployment			
HAA / HFA	HsA	HAF / HFF	HsF	NAA / NFA	NsA	NAF / NFF	NsF

Note. F means voting For government, A means voting Against government. We have two such "votes in each cell as we consider the last period and the present: The cell named HFA thus counts those hit by unemployment, who "voted" for the government the last time and against at the present, etc. The letter s is a sum-sign. If we don't have the observation about last period HAA and HFA join to form the sum HsA. HsA and NsA sum to ssA, etc.

changes, ΔVP, Δu, Δp etc. (see note 22). Second, they do not test if the effects of the economic variables are asymmetrical (see note 22). Table 3 shows why these problems occur. The data used by Kinder and Kiewiet are the four entries termed: {HsA, HsF, NsA, NsF}. These four observations allow *one* test for skewness. One can make either of two tests. (a) Are there too many voting against the government among those who are unemployed? (b) Are there too many voting for the government among those who are employed? The two tests (a) and (b) are identical: if (a) is significant, so is (b) by definition.

In order to test for asymmetry, and to see whether the effects work with first differences too, one has to use the richer data set {HAA, HFA, HAF, HFF, NAA, NFA, NAF, NFF}. However, most people "vote" the same from one poll to the next, the interval may be a year, or just a quarter. The richer data set is, therefore, dominated by {HAA, HFF, NAA, NFF}. The observations in the change groups {HFA, HAF, NFA, NAF} usually constitute only a couple of percent of the total sample. A sample of a couple of thousand observations is, therefore barely enough for a thorough test.

Consequently, the literature is built on *symmetrical tests using level data* even when it uses a terminology that suggests otherwise.

3.4. Newer micro results – not so clear?

Several more recent studies have reproduced the *Kinder and Kiewiet result*. This in particular applies to Kinder and Kiewiet (1981). The second article is based on a larger questionnaire, but reaches the same results as the 1979-article. Also, the large scale comparative results for Britain, France, Germany, Italy and U.S.A., reported by Lewis-Beck (1988), largely confirm the Kinder and Kiewiet sociotropic result. Lewis-Beck finds significant differences between coefficients across countries. Often the egotropic effects are significant besides the sociotropic ones, but they are always smaller.

Lewis-Beck also introduces the logically intermediate item by asking people if they perceive that changes in the macroeconomic conditions affect their personal economy. However, it turns out that the respondents understand this

item as a normal egotropic variable. Nannestad and Paldam (1993a) confirm this result.

Kinder and Kiewiet (1979: 522–524) propose that their result points to the working of a special American individualism. In this *culture hypothesis*, the absence of voting from egotropic grievances in the U.S. reflects the predominance of individualistic values and of the ethos of self-reliance in American society. Americans will be reluctant to lay the blame for personal economic misfortunes on others in general and on the government in particular. They will blame themselves or just unfortunate circumstances. As the government is not seen as the main culprit, it is not punished in elections or polls if things are not going well for the individual. But the government *is* kept responsible for the state of the nation's economy.

Several authors have discussed the culture hypothesis. Miller and Listhaug (1985) provides contrary evidence, but in a context that differs from the one discussed in the present survey. The coefficients in Lewis-Beck's (1988) study do point to the U.S. as being at one end of the scale, but the difference is not large.

So far, the only result that really contradicts the Kinder and Kiewiet result are Nannestad and Paldam (1993a, 1993b), analyzing 3000 and 15000 Danish respondents, using a relatively rich questionnaire. The factor influencing the pro/anti government stance most is found to be an *egotropic* one. Items with a clear reference to the economic situation of the country give much weaker results. It also appears that the only significant factor in the corresponding *change model* is the egotropic one. This result for the Danish Welfare State with its emphasis on collective values and large-scale reliance on state services appears to bring the culture hypothesis back as a serious possibility.

Both Lewis-Beck (1988) and Nannestad and Paldam (1993a) test whether there is a grievance asymmetry on the individual level. No sign of an asymmetry appears – if anything, the data point the other way. People who experience a positive change in their economy are equally (or more) likely to change to support the government than people experiencing a turn to the worse are to desert it.[23]

Further, both studies confirm the result from Fiorina (1978) that past experiences work well explaining individual voters' support/non-support of the government. In fact, it appears that past events work almost the same as expected future ones in explaining voting decisions. As concerns the voting decision, expectations are static. Chappell and Keech (1985) discuss this result. They claim to find a small difference to the advantage of the expectations model, but this is hard to see. Their main result is that it makes no difference due to the static nature of expectations. This result is further analyzed in a dozen papers of which the latest is Suzuki (1991), which contains a good survey and reaches the usual conclusion by an ingenious new testing procedure.

3.5. Summary on: Sociotropic/egotropic, asymmetry and retrospective/ forward looking

There is little research yet into the micro-basis of the VP-function, but such literature as exists is reasonably clear:

(i) In all but one studies, the sociotropic hypothesis works better than the egotropic one, and the culture hypothesis explains the sole exception.
(ii) No signs of a grievance asymmetry have been found.
(iii) Voting is retrospective; but the relevant expectations are very static. Forward looking expectations consequently work equally well.

Taken together, these results establish a strong micro-basis for the VP-function,[24] but the results are somewhat puzzling to the economist in two senses: First, the sociotropic hypothesis does not tally well with the belief in individual rationality defined as self-interested utility maximization. Second, and more embarrassing, the whole theory of forward looking, rational expectations turns out to be irrelevant to the VP-function.[25] However, it is important to consider that we are dealing with mass decisions that take place through the filter of insignificance.

3.6. A note on signalling and the difference between voting and polling

Above we have pointed out that a vote and a poll both have an aspect of signalling. Policy-makers have their career determined by votes, and they are known to be very interested in polls. So signals sent via votes and polls are likely to be received. Also, the *Swiss result* (from 2.4) points to the relevance of treating votes and polls as means of signalling. Why should there be a responsibility-pattern in referenda-results if the voters did not want to send signals to the decision makers?

Polls cover much fewer persons than elections, so the 1/N-problem is less relevant for polls than for voting. Further, a vote is "the real thing" that may topple the government, while a poll is a riskless simulated election. There is a difference between kicking out the rascals and just kicking them. We have thus argued that it is (i) more easy and (ii) less risky to send signals via polls than votes.[26] The signalling aspect is, therefore, likely to be stronger in polls than in votes. Finally, a vote takes place after a campaign, where much effort and expenses are spent trying to point to things the voter should consider before voting. A poll hits people without advance notice. The vote has, therefore, more the character of a *deliberate choice*, while a poll reflects *gut feelings*. In short: Poll results are probably more myopic and more volatile than election results.

This all suggests that P-Functions are likely to have better fits than V-

Functions. This is indeed the case: much higher R^2-scores have been published for the P-Function than for the V-Function, even when qualitatively the results are the same.

However, there is one further, less palatable, reason that P-Functions tend to have better fits. The P-Functions are calculated on such short time intervals (often less than 10 years) that everything stays reasonably stable, or rather, all changes appear as trends, with a few kinks only. The fewer kinks, the easier it is to find enough confluence among variables so that they track the movements of each other as desired. See here further 5.2.

4. Some links to the macro level

Quite a lot of research has tried, in different ways, to fill the gap between the micro level of the individual voter and the macro level of all voters. We shall consider four aspects. (1) Disaggregation to socioeconomic groups. (2) Regional cross-section studies. (3) Studies of the information aspects. (4) Studies of popularity interactions between political agents. Since we are here touching upon research that easily branches off into large separate literatures, we shall be very restrictive in the choice of work to be included.

4.1. Socioeconomic groups

A dozen papers have estimated macro VP-functions on grouped data, see e.g., Schneider (1978, ch. 3), Hibbs (1982 and 1987b) and Jonung and Wadensjö (1987). By and large, the findings of these papers are as could be expected. The VP-function becomes almost as significant in the grouped data as in the fully aggregated data. Moreover, a pattern appears in the coefficients. Rich people worry most about inflation and poor people worry most about unemployment.

Hibbs uses these findings in his theory of the Partisan Cycle (most carefully worked out in Hibbs, 1987b). In the same way the original findings of the pioneers were used by Nordhaus (1975) to develop the theory of the Election Cycle.

4.2. Regional cross-sections studies

Elections produce very exact and detailed popularity data. They are always available on a regional basis, where interesting differences often appear. Also a few economic series, notably unemployment, exist on a regional basis. It is, therefore, a promising possibility to study how the regional pattern of government popularity relates to the regional pattern in unemployment. This produces a regional cross-section VP-function to compare with the standard times-series VP-function. It is well known that it is problematic, but important, to compare cross-section and time series results.

The leading researcher in this sub-branch is Hans Rattinger. He has produced a series of regional cross-sectional studies of the relationship between the labor market situation and the vote in Germany (Rattinger, 1980, 1981 and 1991), based on constituency data. In certain respects his data are less rich than the data used in time series studies. The main problem is the lack of dynamics in cross-section data. Furthermore, the only economic variable is unemployment. In other respects, his data are richer. There are many observations. The data include important socio-structural variables like the degree of urbanization, the religious composition and the educational structure of the constituencies. Another distinguishing feature of the Rattinger analyses is the attempt to differentiate between the effects of different types of unemployment. He gives special attention to structural versus cyclical unemployment.

Rattinger's results for the 1970s differ from the ones in other studies in one main way. He finds that unemployment did not hurt the ruling Social Democratic-Liberal government. Instead of the responsibility hypothesis, he advances a *clientele hypothesis*. It says that, when hit by an economic grievance, people will rally around the party which seems to care most about that grievance. Thus, unemployment may strengthen a left wing (SPD) government. Inflation may be to the advantage of a right wing (CDU/CSU) government. Using survey data, Rattinger has also been able to produce supporting evidence for his clientele hypothesis for the period 1961–84. He concludes (1980, p. 413), that "electorally, the Social Democrats can live with unemployment", but not with inflation. At present, it appears hard to integrate the time-series and the cross section results.

A twig on this branch of the VP-literature deals with the important historical case of the German election results from 1932/33. How much did unemployment contribute to bringing Hitler into power? The results presented by Frey and Weck-Hannemann (1981) show that unemployment contributed significantly. Zimmerman and Saalfeld (1988) arrive at the opposite conclusion. This disagreement may, however, reflect the difference in analytical approach. Frey and Weck-Hannemann use the regional variations in the relationship between unemployment and Nazi votes in Germany. Zimmermann and Saalfeld focus on the fact that despite the existence of comparable employment problems, democracy broke down in Germany and Austria, but not in Britain, France, Holland and Belgium. The most recent, and voluminous, study by Falter (1991) reports a weakly negative relationship between unemployment and electoral support of the Nazi Party at the county and municipality level.

4.3. Studies of the information aspects

The explanatory power of the sociotropic hypothesis, as discussed in Section 3, raises several questions pertaining to the way people perceive the state of the macroeconomy. What do they actually know about the economy? Does the

press set the agenda? or is the press forced by popular demand to report on the data people want to know about?

Several studies have compared the way people perceive the economy with the way the economy actually develops and the popularity of the government (see Kirchgässner, 1991, for a recent study). It appears that there is a tendency for the pro government voters to view the economy in a more rosy light than opposition voters; but in the aggregate perceptions seem to track the actual behavior of the economy reasonably well. However, it might still be that a model of the way the press presents economic information could improve the fit.

A whole set of complex issues is at play here, and much literature exists dealing with the effects of the press upon peoples' political views, their perception of the economy etc. This literature is written by several non-overlapping groups of authors. We here have the unfortunate, but not uncommon, situation of independent literatures existing side by side even when they are relevant to each other. A few attempts have been made to improve the VP-function by tapping into these bodies of knowledge. See for example the papers by Feldman and Conley, Chappell and Keech and Beck in the recent volume by Norpoth, Lewis-Beck and Lafay (1991).

Generally speaking, we must see the VP-function literature as using an implicit assumption that the market for economic and political information is perfect. This assumption appears rather heroic, but it allows us to reduce all information/perception aspects out of the models.

4.4. Studies of popularity interactions between political agents

The interaction subject has been studied already from the beginning, as it is an unavoidable problem for studies of the U.S. system that the President and the two Houses of the Congress are all independently elected. Surely it matters, when you vote in one election, how you vote in each of the other elections. So, ever since Kramer (1971), a special *coat-tail variable* has been included in most VP-functions for the U.S. Congress and Senate. The idea of this variable is that representatives and senators may be elected "riding on the coat-tails" of a popular president.

An even more complex picture appears in the Constitution of the Fifth French Republic (from 1958). Under this constitution, France has a President as well as a Prime Minister. The delimitation of the powers vested in each of them has only been clarified gradually, especially during the first period of *co-habitation* (1986–88). Here the President (Mitterand) and the Prime Minister (Chirac) were of a different political color. The development is analyzed in the work of J.-D. Lafay (see his 1990 for references to the body of his work), which shows the popularity aspects of the complex power-interactions between the two centers.

5. The latest wave

The third wave appears to have been more fragmented; but maybe we are not sufficiently far from the literature, to see a pattern. A most active researcher has been M. Lewis-Beck, see his monograph (1988). The state of the art is well covered in the volume edited by Norpoth, Lewis-Beck and Lafay (1991), which we have already referred to.

It is clear from these volumes that most of the discussion still turns around the same issues as it has been doing all along. See for example the exchange between Norpoth, on the one side, and Sanders, Ward and March (1987), on the other (in the second volume mentioned). They discuss if the economy or the Falklands/Malvinas War were the decisive factor in the re-election of Margaret Thatcher in 1983 one year after that war. The key issues contended are (i) the degree of voter myopia it is reasonable to assume for the Rally-Around-the-Flag-variable, and (ii) the proper way to test that assumption.

5.1. Unstable governments

The Pioneers worked with data for the U.S. and U.K.. Later Germany became the most analyzed country (see the country-survey by Kirchgässner, 1986). These three countries have *unusually stable* governments, although for different institutional/historical reasons.[27] Most other democracies have much more complex multiparty-systems. Their governments are often minority governments, or they are coalitions which may break up. Define a stable government as one which has a parliamentary majority, and which is able to rule a normal/full election period. With this definition less than half of all governments in the major developed democracies have been stable (see note 29). In the U.S., U.K. and Germany more than 3/4 of the governments have been stable.

The basis for the VP-function is the responsibility hypothesis. It is an obvious problem, whether the voter should and will hold an unstable government responsible for the economic conditions, when such a government is not able to rule on its own. Minority governments are, per definition, unable to rule alone, so some of the credit/blame must go to the other parties in the parliament. Other parties normally manage to extract some price for supporting a minority government. It is, therefore, a well known game in such countries that everybody tries to shift the blame and claim the credit. In more subtle ways this is also, of course, done between the partners in coalition governments. Thus the obvious question becomes, whom one should expect the voter to lay the blame on, if the economy is not doing well. Two results have been reported concerning unstable governments:

(U1) the responsibility pattern breaks down.
(U2) the coefficients change sign.

Both results were originally found for Denmark by Paldam and Schneider (1980) and further analyzed by Nannestad (1991: Ch. 4). Denmark is a very neat case in having had two different party systems. The system till the early 1970s was almost a two block system. Here the responsibility pattern appears. Since 1973, Denmark has had a volatile multiparty system. During the later system some key coefficients changed sign. If the VP-function is estimated across the big change no significant coefficients appear.

By now it seems clear that (U1) the breakdown of the responsibility pattern generalizes. It has been found by Belluchi (1991), working with data from Italy, a country with unstable governments, though a lot of the instability is of the musical chairs type. Sørensen (1987) studied the VP-function for Norway and found a mixed and rather weak pattern. It has proved difficult to develop a VP-function for countries with complex multi-party systems, such as Finland and the Netherlands (see however Schram, 1989). A pattern with strange lags was found in the (almost) One-Man-One-Party-system of Israel by Guttman and Shachmurove (1990). Till now, only Belluchi has found support for (U2), that key coefficients change signs.

Thus, while it is clear that the responsibility pattern breaks down in more complex systems, it is not so clear if an alternative pattern appears. However, it is, as usual, only too easy to provide some argument for changes of signs (U2). The argument is related to Rattinger's clientele hypothesis (from 4.2). It says that voters see the big old parties as solid, but dull workhorses. If the economy is going well, they dare go for more exciting choices; but if times become hard, they return to the good old parties, who are known to deal with their main problem. It is clear that this type of hypothesis is rather soft and unlikely to produce very solid coefficients.

5.2. Generalizing the VP-function I: Cross country results

A small literature argues that there is a lot of *con* in econometrics. Econometrics is so flexible as to allow the hardworking researcher to find something if he mines the data hard enough by experimenting with the lags, the periodization, alternative series, special events dummies, etc. In short: those who seek shall find.[28]

Thus, there is a serious argument that one nice estimate found by many experiments does not really prove anything, its tests are not what they look. The model has to be reestimated on a different data set for the tests to be valid. Therefore, two estimates help, (and there are hundreds in our field); but if they

are allowed to be different in many small ways, the same critique applies. In order to be convincing, the functions should be exactly the same; but then countries are different, so there is a real dilemma. The only strict way to proceed in cross country studies is to model cross country differences explicitly and let everything else be exactly the same.

Several authors have provided cross-country results to support their version of the VP-function. This applies to the Zurich Group and to Hibbs, who has been particularly careful to keep the function as similar as possible across countries. Later Lewis-Beck (1988) and with Mitchell (1990) has provided impressive evidence that these functions generalize. However, the most ambitious attempt to generalize – across all 197 government elections in 17 countries between 1948 and 1985 (see Paldam, 1991) – reached very poor results.[29] In the total data-set nothing becomes significant. A pattern only emerges after the governments are divided according to stability. Then the responsibility pattern emerges for the most stable governments, while the reverse pattern emerges, though more weakly, from the data for the least stable countries, giving a bit more support to (U1) and even to (U2). These results are further developed in the latest research we are able to include.

Powell and Whitten (1993) first replicate the very poor cross country fits (for 100 elections in 19 countries). Then they show that the responsibility pattern turns up when two corrections are made: (i) Average "levels" of the variables are used to reduce the non-linearities in the economic data. (ii) A non-responsibility variable is defined and used to delete the cases where it is least reasonable to hold the government responsible. Finally, Powell and Whitten demonstrate a new asymmetry[30]: governments are held most responsible for the variable they care most about. This is a result that appears worth pursuing in future research.

5.3. Generalizing II: The uniform distribution of election results and the cost of ruling

Even if it has proved hard to generalize VP-functions across countries, there are, nevertheless, a couple of aspects that generalize. If the ΔV-data for different countries are compared, they turn up to have very much the same distribution (see Paldam, 1986, 1991).

The distribution of election results has an average of -1.7% (a number known as the cost of ruling), and a s.d. of 4.5%. For presidential elections it turns up that the s.d. is about twice as high. This is no doubt because a larger personal factor enters. However, for parliamentary elections the two numbers (-1.7, 4.5) appear remarkably general in spite of all differences between countries as regards size, election system, party system etc.

The general distribution of the ΔV-data is normal over most of its range; but it becomes quadratic normal at the two ends, containing about 10% of the elections.[31] This distribution allows an interesting interpretation: The distribution itself points to the existence of two types of elections: *normal elections and extreme elections.*

The extreme elections are well known to observers of the said country as elections where the outcome is attributed to *one* particular issue, event or crisis, i.e., they are the mono-issue elections. The normal elections are the ones attributed to many issues, i.e., they are the multi-issue elections. Our argument leads to the conclusion that each issue has a quadratic impact on the voters. We know from the central limit theorem in statistics that the sum of n variables goes towards the normal distribution for n going to infinity irrespective of the distribution of each individual variable. If the individual variables are quadratically normal, the convergence is fast, so for n's such as 3 or 4 we expect a close fit to normality.

This would all seem to suggest that it is reasonable to try to find general VP-functions. Also, it provides an argument for treating extreme elections as special cases.

5.4. A note on dictators and regime shifts – the concept of an indirect VP-function

A few studies have applied the findings of the VP-function literature to the subject of dictatorships or mixed systems. Most governments of the world have been, and still are, non-democratic. Such countries rarely publish reliable series for the popularity of the government, but often it may itself have some measures of its popularity. If one can find a systematic government reaction to the development in its popularity, one can estimate an *indirect VP-function.* It is joint estimate of this reaction and the underlying, but (to us) unknown VP-function. This indirect VP-function in non-democratic countries is studied in a few papers. The pioneering one goes back to the second wave.

Lafay (1981) studies seven East European countries (Bulgaria, Czechoslovakia, G.D.R., Hungary, Poland, Romania, and U.S.S.R.) during the period 1961–1976, when they followed the Soviet Model. The government reaction used as an indicator is the turnover of ministers.[32] It turns out that the turnover frequency is nicely correlated with economic variables, as predicted by the responsibility hypothesis.

Another study of this type (Paldam, 1987) looks at the relationship between indicators for political stability and inflation in eight Latin American countries for the period 1945–85. A highly significant two-way relationship is found. There is strong impact of inflation (notably sudden rises in the inflation) on

all indicators used for political instability. Once inflation exceeds a certain threshold, it has a large negative impact on the popularity of governments, as Hibbs already found. This is also a key result in Remmer (1991). She considers the change in the vote for the government party(es), ΔV, for the 21 democratic elections in Latin America during the 1980s, where an incumbent government stands for reelection. It appears that the average and s.d. of the 21 elections were no less than $(-14.8, 9.4)$. So the loss from ruling is 8 times larger than the results from the stable developed democracies. The regression results find a very large coefficient to the rate of inflation as expected, while the other variables tried give unclear results.

This is further confirmed by studies of high-inflation countries where anti-inflation cures have been applied with (initial) success. In these cases, Brazil in 1986 and Argentina in 1985 and 1991 being the most relevant ones, large increases (exceeding 25%) in the popularity of the government (the president) have been observed. It is also well documented that such huge popularity gains decay rapidly, so also here we have the common voters' myopia.[33]

Finally, a few studies consider the effects of economic variables on voters in the rare case where they are deciding about a regime change, see Panzer and Paredes (1991), who study the transition to democracy in Chile, 1988/89. It appears that the standard myopia result breaks down when the voters are confronted with a decision having a longer run character. However, the economy is still prominent among the explanatory variables.

6. How far have we got?

The VP-function literature is now so large that is has started to fall into branches. The results are very interesting for people in the special Machiavellian/academic world of policy advisors and their clients. Much is, therefore, written in national languages. We have tried to cover the literature in German and give some introduction to the French, Italian and Spanish literatures.[34] However, there is also known to be work in Japanese. There is even a literature with loud headlines dealing with individual elections where competing VP-functions try to forecast the results better. Also, the U.S. literature has now been elaborated into considerable detail.

Many variants of the basic model from Table 2 have appeared. In spite of all diversity, a few conclusions stand out from the macro research:

(M1) There is an economic factor in election outcomes; but economics is surely not the only factor that counts. As a crude average, one should expect that 1/3 of the change in the vote for the government, ΔV, can be attributed to changes in economic conditions.

(M2) It costs the government 1.7% of the votes (with a s.d. of 4.5%) to rule a normal period.
(M3) It is hard to find VP-functions in complex multiparty systems with unstable minority coalitions.
(M4) Voters are myopic.

The main problems are: We are still far from having a satisfactory political part of the model. The linear formulation usually used is a crude approximation that only works within narrow bands of variation for the explanatory variables. Together, these conclusions suggest that the VP-function is a weak and unstable analytical tool. However, we may one day find a way to obtain really robust results. What we have is better than nothing, and a healthy tradition has developed where micro- and macro-research are used to support each other. We have already summed up the main micro findings in 3.5. They are:

(m1) In most studies, the sociotropic hypothesis works better than the egotropic one. Most people look at the economy, not in their pocketbooks before voting.
(m2) No signs of a grievance asymmetry has been found.
(m3) Voting is retrospective; but the relevant expectations are very static. Forward looking expectations consequently work equally well.

These micro-results appear to support the macro-results quite neatly, so in due time we might hope that the VP-function will become a solid tool.

Notes

1. Research often proceeds in waves: Somebody makes a breakthrough. If it is sufficiently well sold, many rush in to harvest all the insights made possible by the new idea. This creates a wave that goes on till the marginal insight, by each further article, is competed down to zero (or below). Then the wave dies out and the area waits for the next breakthrough.
2. Compare, however, Norpoth and Yantek (1983a, 1983b) with Norpoth (1987). Among the skeptics one must also count Lybeck (1985) and Lewin (1991). A few studies reach results showing the VP-function to be barely significant, see, e.g., Frey and Garbers (1972), Whiteley (1986) or Paldam (1991). In addition, some studies exist explaining the VP so well by other variables that it would appear that there is no room for the variables of the VP-function. One such effort is the one of K. Palda, who explains election results by models, where votes are bought by advertisement expenditures, see, e.g., Palda and Palda (1985).
3. From the cross-references and other evidence, it appears that Kramer's paper was around as a working paper before the other two, or, maybe it was the one that circulated the most. It therefore is a little misleading that it was published one year later than the other two. So the literature started in 1968–69, a quarter of a century ago, and the first papers were out 23 years ago.

4. Previous reviews, covering the older literature better are: Schneider (1978), Monroe (1979), Paldam (1981), Schneider (1984). Lewis-Beck (1988) covers France, Germany, Italy, Spain, U.K. and U.S.A., while Kirchgässner (1986) covers the large literature on Germany.
5. For a more rigorous derivation of (linear) VP-functions from Downsian assumptions, see for example Fair (1978), Hibbs and Vasilatos (1981) and Kirchgässner (1986).
6. It means that a government reducing the rate of unemployment, u, or the rate of inflation, p, by one percentage point should be able to get a gain in votes of about two thirds of a percentage point, a gain that might well change the outcome from defeat to victory. Note that the big two variables (u and p) are also connected via the Phillips-Curve. VP-Function estimates are biased to the extent the data contains a significant Phillips-Curve.
7. For many economists it is a serious critique, almost a swearword, to say that a model is *ad hoc*. It means that it is not based on sound theory, but reached by a process of trial and error (see 5.2). This critique contains a lot of hypocrisy as the aggregation problems are rarely solvable, and surely never solved rigorously. All macro models are therefore more or less ad hoc. All, one can hope for, is that the aggregation problems are *assumed away* rigorously. In the case of the political variables in the VP-function it is, however, clear that we are dealing with variables that are ad hoc to an unusual degree.
8. Here, and a couple of times below, we shall speak of *the economist* – hereby we mean a true believer.
9. The choice between version (1) and (2) is one of these small questions that easily takes a lot of attention away from the real problems. Serious problems occur if the residuals r_t in (1) are perfect white noise as this causes (2) to become non-invertible. The estimates of model (2) will then be unreliable. The r_t-series are surely sufficiently far from perfection for these problems to be a serious worry. In most cases the best solution is simply to estimate both versions of the model and use the two estimates to check if the coefficients are the same.
10. It is handy property that the vote-shares of all parties add up to 100%. With a few more assumptions, this allows system estimates of the popularity of all parties – not only the government. With stronger assumptions added, it even allows estimates of the abstaining voters, see Galeotti and Forcina (1989).
11. A simple way to see the point made is to consider the distribution of the series by taking enough observations and disregard time and country: we then see that the VP-data are nearly normal (see 5.3), the p-data are almost log-normal (there are small deviations from log-normality around zero), while u-data have no simple well known distribution.
12. Some readers have found this research program undesirable: For example, it is not an interesting program for a government decision-making agency. But for the purpose of forecasting by a non-government agent clearly it is an interesting possibility, as it contains a refinement of the unreasonable concept of *unchanged policy*, which becomes *policies as usual*. Furthermore, it may throw a much desired empirical light on the whole of the theoretical discussion of *the Lucas' critique*, that has appeared as a major theoretical stumbling block against model building in modern economics. As the reader will know, the Lucas' critique argues that such closed models should change in discrete jumps called regime-changes.
13. As regards the followers, see 2.6. Possibly the most acrimonious attack on the whole idea behind the work of the Zurich-group, as well as on a wide range of substantive and technical points, is due to Dinkel (1982); but some of the individual articles have been attacked too, see e.g. Chrystal and Alt (1979).
14. In Schneider and Naumann (1982) the Swiss model is used in rare analysis of the importance of pressure groups, simply by adding the recommendations (i.e., "yes" or "no") of the four main pressure groups and the political parties as explanatory variables in the model. This does not change the predictive power of the economic variables.
15. Hibbs' work on the VP-function can be seen as a continuation of his earlier work with the

macro strike function, explaining the number of strikes by macroeconomic variables. How strong the connection is can be seen in his collected articles Hibbs (1987a), containing both sets of papers. It should also be mentioned that Hibbs (1979) has generated a small offshot from the VP-Function literature, estimating inflation/unemployment welfare trade offs from polling data. See e.g. Fischer and Huizinga (1982).

16. In one of the periods in Pissarides (1980) a balance-of-payments variable becomes significant – a rare event in the study of VP-functions.
17. In the study by Paldam and Schneider (1980) it turns out that the tax pressure becomes a significant determinant of the government's popularity. The same result was found in the study on Australia by Schneider and Pommerehne (1980).
18. Two unrelated points should be made here: (i) Polls cover fewer people, but then there are often different polls and people know they are uncertain, so also at polls there is a 1/N-problem, even if it is (much) smaller. (ii) The discussion around ob.1 owes much to Manfred Holler.
19. Methodologically this is a cheap explanation: if you have to explain why people do x, you can always say that this is because they have a taste for x. But even if it is a cheap explanation, it may still be true.
20. Unfortunately, some controversy has arisen, as the VP-literature is sometimes seen as contradicting the theories of the Michigan School on voting behavior. This has even been interpreted as an attempt by imperialist economists, and a few renegade political scientists, to take over the field of the Michigan School. The theory of voting behavior developed by the Michigan school is highly complex and adaptive; but it is probably fair to say that its main tenet is that people vote from a *party identification* developed through the process of political socialization. Two points should be kept in mind before one develops the disagreement theme too far: (1) There is nothing inherently irrational in voting for the same party for some time or to take advice from family, friends and colleagues. (2) The main interest of the VP-function research is to explain changes in the vote, while the main interest of the Michigan school is to explain the patterns in the level of the parties' electoral support. For an early attempt to resolve the conflict between the two paradigms, by incorporating the concept of party identification in a spatial model of rational voting behavior, see Robertson (1976).
21. The calculation of the maximum size of α_2 under the egotropic hypothesis goes back to Stigler (1973) who wanted to demonstrate that the coefficients to unemployment rate found by Kramer (1971) could not possibly be true. We have refined the argument, by going from the full year unemployed to spells, and from the individual to the family; but the reader will see that the argument doesn't really change.
22. The word *grievance* signifies a (justified) ill feeling toward somebody, due to something bad done to you by this somebody. There is no single word negating a grievance. It is therefore, by the very choice of terminology, implied that people have (1) *grievance asymmetry*. Further, the term *grievance* appears to refer to some concrete event. To one particular spell of unemployment rather than permanent unemployment. This suggests that grievances should be modeled using (2) *first differences*. We shall see that both (1) and (2) are something smuggled in by the language – and not analyzed in the literature.
23. On the other hand, it is easy to point to dramatic cases from LDCs where a regime has been very successful economically; but where this success failed to provide the regime with a popularity that could survive even small setbacks. Think, for example, of the Shah-regime of Iran, or the military regimes as the ones of South Korea, Chile etc. Such cases are sometimes quoted as providing support for the grievance asymmetry; but perhaps they rather show that it is hard for unpopular regimes to obtain a lasting support even if they are successful economically.
24. It is such a good basis that one should expect to find very significant and stable functions. The basis appears to be too good.

25. The authors think that future historians of economic thought will treat the central role of inflationary expectations in economics between 1970 and, say, 1995(?) as a major puzzle. Very much theory was developed aiming at explaining business fluctuations by the dynamics of inflationary expectations, at the same time as it became more and more clear from survey data that people do not normally form inflationary expectations. However, see also the arguments by Alesina, Cohen and Roubini (1991), trying to explain the evidence that voters are retrospective within a rational expectations theory.
26. In this respect a referendum is likely to be an intermediate case between a vote and a poll. The 1/N-problem applies. However, for those not interested in the issue – and it is often the majority – it is a riskless opportunity to send a signal to the politicians.
27. The reasons are hardly necessary to repeat, but here they are: The U.S. system is not a parliamentarian system, as the government is appointed by the independently elected president, whom it is very difficult to depose. The U.K. uses the single constituency election system, which generates an almost-two-party system, where the biggest party usually obtains a majority. In Germany, the 5% cut off clause in the election law up to now also has made for a near-two-party-system in the parliament.
28. The discussion was put in a sufficiently systematic form by Leamer (1983). But is has been known as the data mining discussion for a long time.
29. The results in Paldam (1986 and 1991) and Høst and Paldam (1990) are all based on an analysis of the same set of 197 elections, i.e., all election relevant for the formation of the government in 17 democracies 1948 to 85. In Høst and Paldam (1990) it is demonstrated that the election results, contrary to the popular belief, do not contain an international pattern of left/right-shifts.
30. The Powell and Whitten (1993) asymmetry is related to Rattinger's clientele hypothesis; but their concept is more general.
31. There are more elections in some countries than in others. France has many, the most extreme being the elections in 1958, 1968 and 1993. In other countries there has been none (as, e.g., in Norway) or one (as, e.g., in Denmark 1973).
32. In the Soviet-type regime, the government was an outwardly visible layer between the true power holders in the party top and the people. The government was hence well suited to take the blame if the economy did not work well. Furthermore, the number of ministers was usually rather large, so it is possible to construct meaningful time series for turnover frequencies.
33. The story of Argentina is documented in Aftalión, Mora y Araujo and Noguera (1985).
34. The German literature is surveyed by Kirchgässner (1986). The three Latin countries by Lewis-Beck (1988). It appears that the Japanese literature is covered in Inogushi (1983), see also his contribution in Whiteley (1980).

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