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Anderson, Christopher

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Modeling Mass Support for German Chancellors and their Parties: some Problems and some Results

Christopher Anderson*

Abstract: This paper examines the link between chancellor approval and chancellor party support in Germany from 1950-1990 in the context of economic popularity functions. It demonstrates some of the modeling and estimation problems that can occur in simultaneous equation systems and it suggests an alternative to the standard single equation approach commonly used in models of government popularity. Substantively, the results confirm that the state of the economy drives government support. Moreover, chancellor approval is shown to be an important predictor of support for the chancellor's party and vice versa.

Models of economic conditions and government popularity typically seek to explain either (1) the dynamics of support for governing parties or (2) the ups and downs in public approval of the executive office holder's performance. However, while it is well established that macro-economic conditions drive (at least to some extent) public support for governments,¹ relatively little is known about the link between the support for an individual executive and support for his/her political party. In fact, very few scholars have chosen to examine the relationship between party and executive support in the context of economic popularity functions (cf. Marsh and Harrison 1993).

* Address all communications to Christopher Anderson, Department of Political Science, Rice University, P.O.Box 1892, Houston, TX 77251, USA. Bitnet: CJA@RI-CEVM1.RICE.EDU.

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¹ For reviews of the literature, see e.g. Lewis-Beck 1988; Nannestad and Paldam 1993.

Executives are normally the most visible and widely known proponents of their parties. Popular executives can thus, for example, help their parties gain support with the mass electorate; similarly, representing an unpopular party or a party that is in decline for socio-structural reasons may, for example, make it more difficult for a Prime Minister to generate public support for his/her performance. Even though the Prime Minister or chancellor is the main and most visible proponent of his/her party, there have been few systematic attempts to explore the consequences of this interrelationship for the study of government popularity.

Typically, economic variables have been used to explain fluctuations in government support while political variables have less frequently been part of popularity models. This paper argues, first, that we need to understand both the economic *and* the political determinants of mass support for governments and that, second, one of the main reasons for the relative neglect of political variables lies in the difficulties associated with modeling the phenomenon. In the case of executive approval and party support, the difficulty lies in modeling a simultaneous relationship. While the modeling obstacles are significant and need to be carefully considered, there are ways to develop more fully specified models of government popularity which incorporate information about the crucial relationship between a politician's approval and his/her party's support together with exogenous information about the state of the economy.

Classic Assumptions and Findings

The classic hypothesis that has been employed to relate citizens' behavior/attitudes to economic performance is the reward-punishment hypothesis. According to this hypothesis, one would expect inferior economic performance to lead to loss of support for the incumbent government. The relationship between economic indicators (e.g., unemployment and inflation) and support for the government is thus expected to be negative. Variants of this hypothesis have been tested most extensively in the literature on government popularity functions and economic voting, where they have been found to be of considerable explanatory value.²

In a review of the literature on economic voting, Lewis-Beck finds a general consensus among scholars that »when economic conditions are bad, citizens vote against the ruling party« (1991:2). However, the evidence for aggregate level economic effects on government popularity or vote choice is not always conclusive or straightforward, as Paldam points out (1991). *Why* is the relationship between economic conditions and government popularity conditional?

² Other hypotheses that have been tested include the issue-priority and the stability hypotheses (cf. Hibbs 1977, 1987; Budge and Farlie 1983; Clarke et al. 1992; Paldam and Schneider 1980).

Different researchers analyzing slightly different time periods, different indicators of economic performance, different measures of these indicators, using different estimation methods, or examining different countries to test their hypotheses, have frequently disagreed about the magnitude of the economic effects and even about whether the economy is an important predictor of government support at all (see e.g. Nannestad and Paldam, 1993; and Lewis-Beck 1991 for good overviews). Research on the effects of economic conditions on public opinion has for a long time focused on the inconsistent estimates obtained for the economic coefficients. As a consequence, it has often been assumed that the economy-mass opinion relationship has been modeled or estimated imperfectly because the economic side of the relationship was not properly understood. This has led to an emphasis on economic effects and a relative neglect of the political side of government popularity functions.

Modeling Government Support

As the above discussion indicates, the economic part of the popularity models has traditionally been much better explored than the political components (Paldam 1991; Nannestad and Paldam 1993; Lewis-Beck and Mitchell 1993). In fact, models that sought to demonstrate significant effects of economic conditions on popular support for the government were frequently biased toward finding such effects by including several economic variables, but severely misspecifying the political variables. Typically, these models have included economic and political variables in an additive formulation, where great care was taken to model the economic effects while political variables took the form of controls to be included in order to show significant economic effects. The models that I test here seek to redress part of this imbalance with formulations which allow the drawing of inferences about economic effects without neglecting the political factors that play important roles for the dynamics of government support in one European democracy, the Federal Republic of Germany.

Typically, models of government popularity have taken the form of single equation models that included party/executive support as the dependent variable and a number of economic and political variables as the independent variables in an additive formulation. A typical example for such a strategy is the following model estimated by Kirchgäßner (1986) who estimates support for the SPD and the CDU in Germany between 1971 and 1982 with the help of monthly support data. In this case, Kirchgäßner explains fluctuations in governing party support with the help of changing economic conditions, expressed in levels of inflation and unemployment:

$$\begin{aligned} \text{CDU}_t &= 10.83 + 0.73 \times \text{CDU}_{t-1} + 0.34 \times U_t + 0.16 \times I_t + \varepsilon \\ \text{SPD}_t &= 15.15 + 0.73 \times \text{SPD}_{t-1} - 0.61 \times U_t - 0.40 \times I_t + \varepsilon \end{aligned}$$

where CDU and SPD is the support for the CDU and SPD, U is the seasonally adjusted unemployment rate, and I is the rate of inflation. Note that the incumbent party during this period (SPD) loses support with increases in unemployment and inflation while the opposition party (CDU) gains in support under the same circumstances.

Another strategy that is frequently employed in studies of the American and French cases involves explaining changes in presidential popularity with the help of similar economic variables. The model used by Lafay (1985) to estimate the effects of economic conditions on the popularity of the French President from 1974 to 1983 is a good example for such a strategy:

$$P_t = 1.839 - 0.028 \times I_{t-1/6} - 0.103 \times U_{t-1} + 0.029 \times G_{t-1/15} - 0.253 \times E_{t-1} - 0.310 \times DB + 0.707 \times DL + \varepsilon$$

where P_t is the percentage of respondents satisfied with the president of the Republic, $I_{t-1/6}$ is the inflation rate on six months (lagged by one month), annualized, U is the unemployment rate, $G_{t-1/15}$ is the real disposable income growth on fifteen months (lagged by one month), annualized, E is the exchange rate of francs per dollar, and DB and DL are dummy variables for the Plan Barre and a leftist administration. In this case, the Lafay showed that rising unemployment and inflation rates and a weakening of the franc leads to loss of support for the French president, while growth in disposable income results in increased mass support for the executive.

Political parties play important roles in parliamentary democracies, and the executive's standing with the mass publics is crucial for our understanding of democratic politics. In fact, experts of German politics have, e.g., frequently referred to the German political process as »chancellor-democracy« and have consistently pointed to an advantage enjoyed by the chancellor's party on election day as a »chancellor bonus.« What are the implications of the relationship between executive and party support? Fortunately, it is possible to examine both the support for the governing party as well as the executive's policies with the help of systematically collected public opinion data.

The Problem of Modeling Chancellor and Party Support

The analyses performed below are based on aggregate monthly polling results for the chancellor's party and the chancellor himself for the period between 1950 and 1990. The data were originally collected by the Institut für Demoskopie, Allensbach, integrated into a data set by the Zentralarchiv für Empirische Sozialforschung (ZA), and updated for this analysis. All monthly surveys are based on random national samples of about 1,000 to 1,500 respondents each. There is no reason to assume that the samples are biased in any systematic fashion. The question wording for party support is »If there were a

Bundestag election next Sunday, which party would you vote for?«, while approval for the chancellor's handling of his job is gauged by »Do you — by and large — agree with the policies of chancellor XY?«.³

Figures 1 and 2 plot the two series. Note that the question formats of the party and chancellor support questions force respondents to choose between different parties while voters of different parties can all express support for the way the chancellor is handling his job.

The plots reveal that there appear to be distinct phases of chancellor and party support over time. Immediately after the war, few citizens apparently approved of Adenauer's (1949-1963) handling of the chancellorship. There also seems to have been a systematic decline in the public's support for any chancellor's policies. Starting with the high of support for chancellor Kiesinger (1966-1969) — according to this measure the most popular German chancellor since the founding of the Federal Republic — chancellors have lost support the longer they have been in office. The most striking examples of this trend are chancellors Schmidt (1974-1982) and Kohl (1982-). Similarly, support scores for Schmidt's and Kohl's parties (the SPD and CDU, respectively) show systematically declining trajectories while in office.

If — as is assumed here — economic conditions drive support for both chancellors and their parties, a single equation approach is problematic because of the interrelationship of chancellor and party support. In this case, reciprocal effects create problems of estimation because the simultaneity of effects cannot be accommodated by a single equation approach.

The capacity of single equation models to represent social and political phenomena is limited as causality is often reciprocal, i.e., not unidirectional, or extends to several different levels. Therefore, researchers often resort to estimating the phenomenon under investigation with the help of systems of models (multiequation models) that can be used to explain complex phenomena which involve simultaneous and unidirectional causation. These systems of models include, e.g., recursive hierarchical models and simultaneous equation systems; they all consist of more than one single equation. In simultaneous equations systems, causality is assumed to be reciprocal while hierarchical models are systems of equations where causality flows in one direction. Take the following examples:

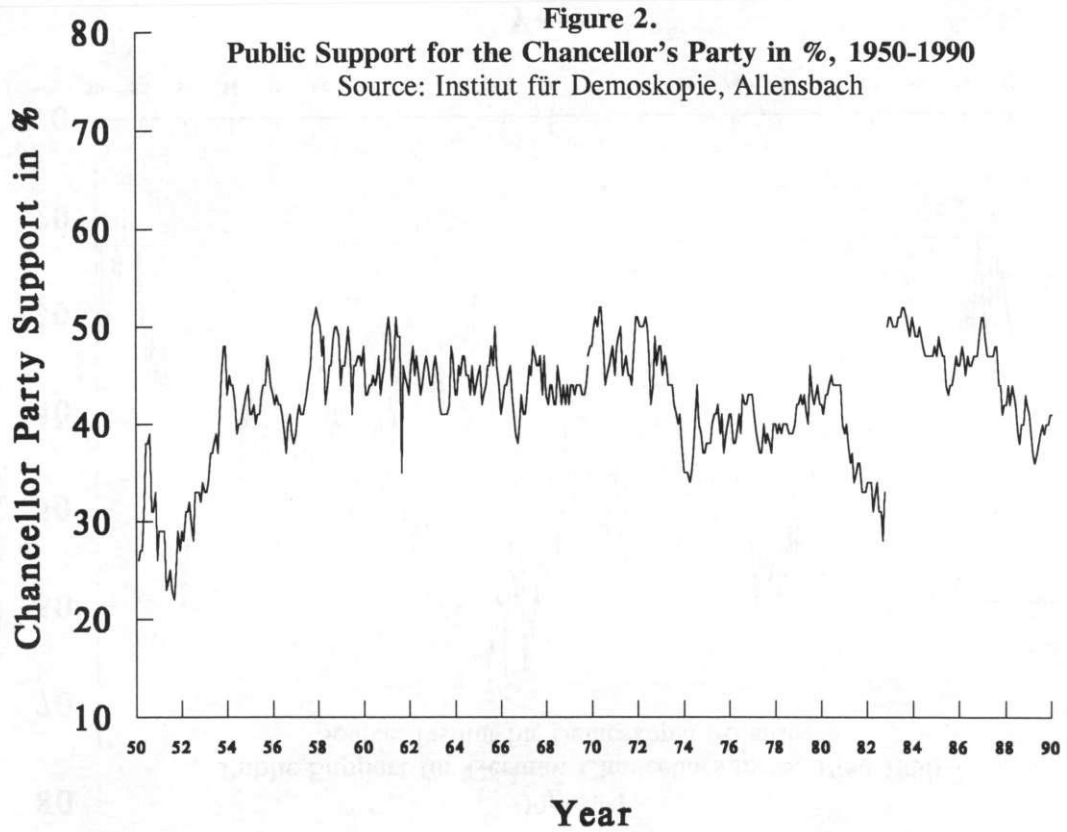
$$\begin{array}{ll}
 Y_1 = \alpha + Y_2 + X_1 + \varepsilon & \text{and } Y_2 = \alpha + Y_1 + X_2 + \varepsilon & (1) \\
 Y_1 = \alpha + X_1 + \varepsilon & \text{and } Y_2 = \alpha + Y_1 + X_2 + \varepsilon & (2)
 \end{array}$$

³ The question wording in German is as follows:

Chancellor: »Sind Sie im großen und ganzen mit der Politik von Kanzler Name einverstanden oder nicht einverstanden?«

Party: »Wenn am nächsten Sonntag Bundestagswahl wäre, welche Partei würden Sie dann wählen?«





In example 1, Y_1 and Y_2 are thought to simultaneously cause one another. Example 2 is called a hierarchical system of equations because Y_1 is used as a variable to explain variation in Y_2 , but Y_2 is not a predictor for Y_1 . Hierarchical models can also be combined with simultaneous equation models.

Generally speaking, simultaneous equations belong to the general class of »structural equation models.« Which of the models is appropriate depends on the researcher's understanding of the behavior to be modeled. Thus, a relatively great amount of a priori information about the behavior of the variables is generally required to develop well-specified models. In the case of chancellor and party support, there are also strong indications of a simultaneous relationship. For illustrative purposes, consider Figure 3 which shows the simple Pearson correlation coefficient of chancellor approval and support for the chancellor's party for all German chancellors between 1950 and 1990. The graph shows that there is — depending on the chancellor — a quite considerable positive relationship between chancellor approval and party support. The correlation is strongest for Kohl ($r=0.91$) and Adenauer ($r=0.78$) and the CDU, respectively, and Brandt ($r=0.75$) and Schmidt ($r=0.75$) and the SPD, respectively, while the correlations between Erhard's and Kiesinger's popularity and mass support for the CDU are more moderate ($r=0.68$ and $r=0.34$, respectively).

In a system where chancellor approval (C) and chancellor party support (CP) are interrelated, i.e., used to explain one another, and both driven by economic conditions (E), we have a system of two simultaneous equations with two endogenous variables (C, CP) and one exogenous variable (E):

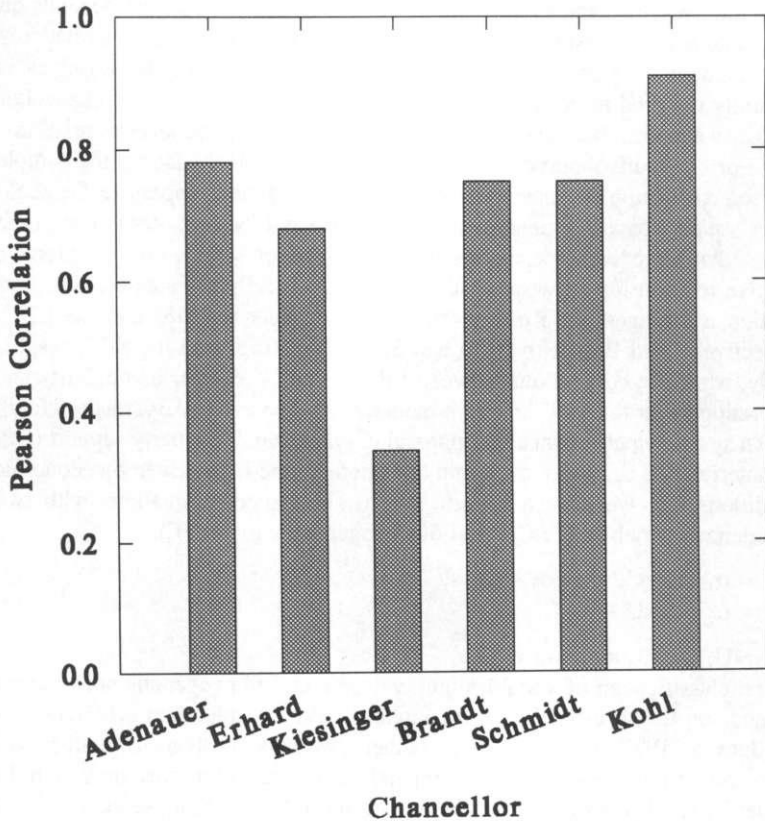
$$C = \alpha_1 + \gamma_1 \times CP + \beta_1 \times E + U_1 \quad (3)$$

$$CP = \alpha_2 + \gamma_2 \times C + \beta_2 \times E + U_2 \quad (4)$$

where U_1 and U_2 are error terms.

The classification of variables into endogenous and exogenous ones always depends on the specification of the models under consideration (cf. Hanushek and Jackson 1977). That is to say, whether a variable is categorized either way is determined by the question at hand and the theoretical notions on which the model is based. *Endogenous variables* are those factors that are explained by the regression model at hand. If endogenous variables are *not* simultaneously related, we speak of recursive causal models. However, if necessitated by the theory, they can be specified to explain one another as well. In that case, we speak of nonrecursive causal models. *Exogenous variables* are not explained by the regression model at hand; instead, they are completely determined outside of the model. The exogenous variables explain the endogenous variables, but they are not themselves influenced by the endogenous variables. Thus, the relationship between exogenous and endogenous variables is one of unidirectional causality. Exogenous and endogenous variables can also appear as *lagged variables*. A lagged variable is one whose values are determined prior to the current observation. Each lagged exogenous and endogenous variable is treated as an independent variable.

Figure 3.
Simple Pearson Correlations between Chancellor Support
and Chancellor Party Support during each
Chancellor's Tenure, 1950-1990



Exogenous variables thus affect the behavior of interest, but are not themselves affected by it. Endogenous variables may thus both a cause and a consequence of the behavior under investigation. In this case, chancellor approval and chancellor party support are the endogenous variables, while economic conditions are determined outside of the system. Simultaneous equations hence allow the estimation of structures of interdependent relationships since each of the endogenous variables can have reciprocal relationships with some or all of the other endogenous variables. Simultaneous equations are often considered useful because of the mostly cross-sectional nature of social-science data that do not allow the assignment of a causal ordering of variables. Reciprocal ef-

fects will thus appear simultaneous because the data did not observe a time ordering. Even though time series data sometimes allow the researcher to determine a time-dependent causal ordering of effects, a similar problem can occur in the context of time-series as well when the reciprocal effects (in nature) take place before a second measurement is possible; even though one can try to use lagged variables, the time intervals may sometimes be too long for a useful specification.

However, there is a serious estimation problem: The structural equations cannot be estimated directly and straightforwardly in a simple single equation because the researcher can no longer assume that the error terms are distributed independently of the explanatory variables. Note that this does not mean that there is something wrong with the data; the reason for using simultaneous equation models lies in the way social and political phenomena behave and can be measured. A simple example demonstrate why a simple OLS estimation procedure is problematic in this case:

$$Y_1 = \alpha_1 + \gamma_1 \times Y_2 + U_1 \quad (5)$$

$$Y_2 = \alpha_2 + \gamma_2 \times Y_1 + U_2 \quad (6)$$

There are two potential problems if we were to estimate these equations using simple OLS procedures. First, the OLS assumption that the independent variables can be considered fixed in repeated samples is violated. For example, the endogenous variable Y_2 cannot be considered fixed. According to the standard OLS assumptions, Y_2 is assumed to be distributed independently of the disturbance term (U_1) in equation (1). However, as the error term U_2 in equation (2) changes, so will Y_2 , and so will Y_1 accordingly, as well as U_1 , as a result. Thus the endogenous variables Y_1 and Y_2 are correlated with the disturbance terms. The results are biased OLS estimates. In other words, the assumption that the errors are pairwise uncorrelated is violated. The error terms play a large role for the consistency and unbiasedness of OLS estimates; they are, however, often interrelated, leading to undesirable OLS estimation properties. In this example Y_1 and Y_2 cannot vary while holding Y_1 or Y_2 constant. Thus, more variables are needed than the ones that are simultaneously interrelated in order to see the variation in the dependent variables. Note that this is a problem inherent to the phenomenon under study, and not one created by the researcher.

There are two main ways to solve the estimation problems: (a) the introduction of null restrictions, and (b) the introduction of additional variables into the system. However, it is important to note that both are only advisable if they are sensible from a substantive/theoretical point of view. First, one can assume one or more of the correlation coefficients to be equal to zero, i.e., that causation is unidirectional instead of simultaneous, or that some variables are simply not related. In that case, one can rearrange the equations and estimate the relationships with a single equation model. The second possible solution involves introducing information into the system whereby exogenous variables can be

used to identify an endogenous variable that is not correlated with any other endogenous variable. Take the following example:

$$Y_1 = \alpha_1 + \gamma_1 \times Y_2 + \beta_1 \times X_1 + U_1 \quad (7)$$

$$Y_2 = \alpha_2 + \gamma_2 \times Y_1 + \beta_2 \times X_2 + U_2 \quad (8)$$

In this case, X_1 can be used to estimate the variation of Y_1 , and X_2 can be used to estimate the variation of Y_2 . Thus, if Y_1 is chancellor approval and Y_2 is party support, we can rewrite equations 5 and 6 as

$$C = \alpha_1 + \gamma_1 \times CP + \beta_1 \times X_1 + U_1 \quad (9)$$

$$CP = \alpha_2 + \gamma_2 \times C + \beta_2 \times X_2 + U_2 \quad (10)$$

Equations 7 and 8 can be estimated reliably using a standard two-stage least squares approach. 2SLS is a single equation instrumental variable estimation method that can be used to estimate a system of simultaneous equations by estimating each equation separately. It involves regressing each endogenous variable used as a regressor on all exogenous variables and using the estimated values of these endogenous variables from this regression as the instrumental variable. Kennedy (1985: 134) gives a simple description of the steps involved in the 2SLS procedure:

»Stage 1: regress each endogenous variable acting as a regressor in the equation being estimated on all the exogenous variables in the system of simultaneous equations and calculate the estimated values of these endogenous variables

Stage 2: use these estimated values as instrumental variables for these endogenous variables or simply use these estimated values and the included exogenous variables as regressors in an OLS equations«

The end result would be the estimation of two single equation models that include instrumental variables for both endogenous variables (in the case analyzed here: chancellor approval and chancellor party support).

It should be pointed out that there are other procedures that can be employed to estimate systems of structural equations. The best known alternatives to two- and three-stage least squares models are LISREL and Full Information Maximum Likelihood (FIML). This is not the place to discuss the advantages and disadvantages of each estimation procedure. Good discussions of these approaches and their advantages can be found in Hanushek and Jackson (1977: 312-324) Jöreskog and Sörbom (1978, 1979), and Pedhazur (1982). For this analysis I relied exclusively on the standard 2SLS estimation procedure.⁴

⁴ Suffice it to say that »the choice of procedure ultimately comes down to questions of availability, computational ease, and a belief in one method or another in particular circumstances« (Hanushek and Jackson 1977: 321).

The Problem with Economic Conditions as Independent Variables

Standard two-stage least squares regression techniques can be used to estimate equations 7 and 8 only if X_1 and X_2 are dissimilar, so they can be used to derive estimates for the first stage of the 2SLS process. However, in most standard formulations of popularity functions driven by economic conditions, X_1 and X_2 would *not* be dissimilar. Instead, we would normally use the *same* economic indicators (such as unemployment and inflation) as independent variables in equations 7 and 8. Hence, there would not be any variables that are exogenous in the sense that they are — theoretically — correlated with either C or CP but not with both simultaneously. This presents a serious multicollinearity problem, again making it impossible to estimate the variation in chancellor approval and party support given variable economic conditions; 2SLS would simply break down after the first stage (Berry 1984). The following system of simultaneous equations explains why:

$$C = \alpha_1 + \beta_1 \times CP + \beta_2 \times E + U_1 \quad (11)$$

$$CP = \alpha_2 + \beta_3 \times C + \beta_4 \times E + U_2 \quad (12)$$

where C is chancellor approval, CP stands for chancellor party support, E are economic variables typically used in models of government support, and U_1 and U_2 are the respective error terms. Applying 2SLS to estimate this system, we would first use the predetermined exogenous variables (E) to create an instrumental variable (\hat{C}) for C (or CP) by regressing C on E. In the second stage we would then substitute the values of the instrumental variable \hat{C} in equation 12:

$$CP = \alpha_2 + \beta_3 \times \hat{C} + \beta_4 \times E + U_2 \quad (12.a)$$

And this is where 2SLS would break down. Since \hat{C} is a linear combination of E, equation 11 would be perfectly multicollinear. If we were to regress \hat{C} on E we would obtain an R^2 of exactly 1.00 (cf. Berry 1984: 70). For the estimation of OLS parameters this means that there would be an infinite set of estimates that would be consistent with the data. As mentioned above, possible strategies for dealing with this problem include eliminating the variables creating the multicollinearity problem. For the problem at hand this would mean that we would have to eliminate the instrumental variable (\hat{C}). And this would be equal to not taking the simultaneous relationship of chancellor approval and chancellor party support into account. Naturally, such a strategy would be inconsistent with the underlying theoretical model, i.e., our understanding of how the world works. What can be done to remedy this situation?

Another possible strategy is to find additional exogenous variables that are relatively highly correlated with one of the endogenous variables. In the case of models of government popularity as those considered here, this is no easy feat because it means that we have to find variables that we can *a priori* specify to

be related to chancellor approval but *not* party support and vice versa. Two variables — both of which we can call »political« variables — are suggested here and the results of the analysis are presented below. They are neither the only possible ones, nor are they perfect. But they allow us to get a handle at the tricky statistical issues involved. A variable that should be positively related to chancellor approval but *not* chancellor party support is the size of the governing coalition (S) expressed in the percentage of seats the coalition has in the Bundestag. The greater this coalition, the greater the number of citizens whose parties are part of the government led by the chancellor. All else being equal, it is assumed that chancellor support will be higher when the government has a greater base of electoral support. As a check on this proposition one need only consider Figure 1 that plots chancellor approval, especially during the early years of the Federal Republic and during the Grand Coalition (1966-1969). Over the 1950-1990 period the pearson correlation between chancellor approval (C) and coalition size (S) is 0.48. On the other hand, a variable that should be negatively related to chancellor party support but not chancellor approval is fragmentation of the party system (N). As Pedersen (1979, 1983) and Bartolini and Mair (1990) have shown on the basis of aggregate electoral data, the degree of party system fragmentation is linked to levels of electoral volatility. A greater effective number of parties in a system is associated with greater interelection electoral swings: »... from a purely statistical point of view, the probability that each individual voter will vote for the same party in two consecutive elections will decline as the number of different available options increases« (Bartolini and Mair 1990: 38). Translated into the research on government popularity, this would mean that chancellor party support is influenced by the effective number of parties in a system. It is assumed that — everything else being equal — a greater number of effective parties leads to an increased probability that citizens (in the aggregate) desert the governing party (cf. Anderson 1993c).

Using the formula suggested by Laakso and Taagepera (1979), I calculate the effective number of parties as follows:⁵

$$N = \frac{1}{\sum_{i=1}^n p_i^2}$$

⁵ Instead of using the more widely known Rae/Taylor index of party system fractionalization, I measure party system change by changes in the effective number of parliamentary and electoral parties in a system. Note, however, that the formula for the effective number of parties carries the same information as Rae's index of party system fractionalization, only expressed in a different metric. The reader can obtain Rae's fractionalization index (F) by substituting the value for the effective number of parties (N) in the following formula: $F = 1 - (1/N)$.

where p_i is the proportion of parliamentary seats for the i -th party (Lijphart 1984: 120). This formula contains information about the number and relative size of the parties in the system. It thus helps to differentiate not only between two- and multi-party systems, but it is also a more subtle measure than simply counting the number of parties that gain representation or receive votes. The proposed measure takes the relative strength and (parliamentary) viability of parties into account Or as Taagepera and Shugart have put it

»The advantage of using the effective, rather than the actual, number of parties is that it establishes a nonarbitrary way to distinguish 'significant' parties from less significant ones. The construction of the index is such that each party weights itself by being squared. Tiny parties contribute little to the index, while large parties contribute relatively more.« (Taagepera and Shugart 1993: 455).«

The pearson correlation between chancellor party support (CP) and the effective number of parliamentary parties (N) for the period between 1950 and 1990 is - 0.61.

When we incorporate these variables into the system of equations, we obtain

$$C = \alpha_1 + \gamma_1 \times CP + \beta_1 \times E + \beta_2 \times S + U_1 \quad (13)$$

$$CP = \alpha_2 + \gamma_2 \times C + \beta_3 \times E + \beta_4 \times N + U_2 \quad (14)$$

This system of equations can then be estimated consistently and reliably using the 2SLS technique.

Data and Measures

To test the theoretical model outlined in equations 11 and 12, I use the public opinion data described above, unemployment and inflation as economic variables, and coalition size and party system fragmentation variables based on electoral data collected by Mackie and Rose (1974, 1982, 1991).

Unemployment and inflation are what Nannestad and Paldam call the »Big Two« since they are by far the most widely used and most consistently significant indicators of economic conditions (Nannestad and Paldam 1993: 3). Unemployment and inflation are also those variables that constitute the chief targets of post-war economic management in Western Europe. Policymakers have sought to control these variables as part of Keynesian and monetarist efforts to steer the economy, and public discourse over successful economic performance has also consistently focused on unemployment and inflation for almost fifty years. Public opinion polls show time and again that inflation and unemployment are those economic issues of most concern to most people (Alt 1979; Hibbs 1987; Norpoth 1992; Anderson 1993). Given that citizens can devote only limited resources to gathering and digesting information about the economy and politics, unemployment and inflation are those variables that are easiest to understand and about which information is easily and most publicly available through the mass media.

Data on the economic indicators are taken from the German Statistical Office's »Wirtschaft und Statistik,« as well as the »Monthly Report of the Deutsche Bundesbank.« All series were adjusted for seasonal variation (Chatfield 1989). I include the values of the economic variables with a lag of one month in order to measure current effects of the economy.

It is sensible to include the absolute level of support for the chancellor's policies and his party during the previous month (C_{t-1} , CP_{t-1}) in the model as well. This approach allows me to gauge the effects of various explanatory variables on altering a relatively stable base of mass support for governments and political parties in Western Europe. On a more technical level, this approach is reasonable since autocorrelation is a persistent problem in estimating time-series functions. In order to control for lagged effects (public opinion from one month to the next typically tracks), the level of party support during the previous month is included as a control measure. This formulation is also convenient because it means that only current values of the independent economic variables need be included in the model instead of a more complex lagged model formulation. The lagged dependent variable serves to capture the lagged effects of the independent variables in the model which are expected to echo into the future. The smaller the coefficient for C_{t-1} and CP_{t-1} , the shorter the memory of the system (Beck 1991; King 1989; for an application see MacKuen, Erikson, and Stimson 1992). In addition, I included five control variables, coded 0,1, for the different administrations, using the Adenauer administration as a reference group. These variables — also called dummy variables — account for the variations in the levels of support across chancellorships. This is necessary because we are dealing with party support scores; the introduction of the dummies for different administrations helps avoid attributing changes in support levels to the independent variables when this is inappropriate. Naturally, we want to be able to account for the differentially high levels of support across different coalitions. The coefficients estimated for the dummy variables measure the difference in levels of support for different administrations relative to the Adenauer era whose value is represented by the intercept.

I estimate two models. One covers the full period between 1950 and 1990. The other one splits the sample by the ideological outlook of the chancellor and thus examines the periods of CDU and SPD chancellors separately. The full models are estimated in a linear and additive formulation:

$$C_t = \alpha_1 IC + \beta_1 C_{t-1} + \beta_2 CP_{t-1} + \beta_3 U_{t-1} + \beta_4 I_{t-1} + \beta_5 S_t + B_6 DA + \varepsilon_t \quad (15)$$

$$CP_t = \alpha_1 IC + \beta_1 CP_{t-1} + \beta_2 C_{t-1} + \beta_3 U_{t-1} + \beta_4 I_{t-1} + \beta_5 N_t + B_6 DA + \varepsilon_t \quad (16)$$

where C_t is the monthly approval of the chancellor's performance, CP denotes public support for the governing (chancellor's) party, IC is a constant term, C_{t-1} and CP_{t-1} are the previous month's levels of support, U_{t-1} is the country's unemployment rate, I_{t-1} is the country's rate of inflation, S_t stands for coalition

size, N_i denotes the effective number of parliamentary parties, DA is a set of dummy variables for the different administrations, and ϵ_i is an error term.

Since popularity usually tracks, β_1 is expected to be positive. Public support for chancellor and party support are expected to be correlated positively; hence β_2 is expected to be positive. If β_3 and β_4 are negative, support for the government declines when unemployment and/or inflation are up, and increases when economic conditions are good. This would correspond to the expectations of the reward-punishment hypothesis. If β_5 is positive, chancellor support increases with bigger coalitions (Eq.13), while chancellor party support shrinks with a greater number of effective parties if β_5 is negative (Eq.14).

Estimation and Results

The model was estimated using standard 2SLS estimation procedures. The results are shown below (Tables 1a and 1b). Table 1 shows the results for the entire 1950-1990 period. As expected, inflation and unemployment have significant and negative effects on public support for chancellors and their parties. For the entire 1950 through 1990 period, unemployment is not a significant predictor of chancellor approval while it is for party support. The effects of inflation are significant, negative for both, and similar in strength. Thus German chancellors and their parties have lost support over the postwar period during times of rising inflation. Moreover, chancellors' parties have lost significant support during times of rising unemployment and gained support when unemployment went down.

The R^2 is generally very high in these kinds of time-series models. The reason for this lies in the model specification which includes the lagged dependent variables as independent variables in the model. Thus, the bulk of the variance explained is due to the type of model employed. The reader may remember that we assume the effects of the other independent variables to echo into the future through the lagged dependent variables. The current effects of the economic (and the other independent) variables are measured by the variables themselves, while past effects are part of the model through the lagged dependent variable.

The Durbin-Watson d statistic is calculated from the residuals of the OLS model; it is used to assess the extent to which first-order autocorrelation is a problem. A good rule of thumb is that there is less autocorrelation in the model the closer the value of the Durbin-Watson statistic is to 2.0.

Chancellor approval and chancellor party support are significantly interrelated. The positive relationship of the two variables indicates that chancellors rise and fall with their parties, while their parties' fortunes are also tied to their chancellors' success in office. However, it is important to note that the effects of party support on chancellor support are greater than the effects that chan-

Table 1a.
The Effects of Economic Conditions, Coalition Size, and Party Support
on Chancellor Approval in Germany, 1950-1990
 Dependent Variable: Chancellor Approval
 (Two-Stage Least Squares Estimates; t-values in parentheses)

Independent Variable	Coefficient (unstandardized)	Coefficient (standardized)
Chancellor Approval _{t-1}	0.68*** (18.60)	0.68***
Chancellor-Party Support _t	0.28*** (3.87)	0.15***
Unemployment Rate _{t-1}	0.12 (0.89)	0.04
Inflation _{t-1}	- 0.19** (1.82)	- 0.05**
Coalition Size	0.04 (0.84)	0.05
Erhard	- 1.01 (1.28)	- 0.03
Kiesinger	3.75** (2.15)	0.11**
Brandt	0.64 (0.77)	0.02
Schmidt	2.12*** (3.10)	0.09***
Kohl	- 4.39*** (3.99)	- 0.18***
N:	466	
Durbin-Watson Statistic:	2.02	
R ² :	0.84	
Adj. R ² :	0.83	

***: significant at the 0.01 level -- one-tailed

**: significant at the 0.05 level -- one-tailed

*: significant at the 0.10 level -- one-tailed

Table 1b.

The Effects of Economic Conditions, Number of Parties, and Chancellor Approval on Chancellor-Party Support in Germany, 1950-1990

Dependent Variable: Party Support

(Two-Stage Least Squares Estimates; t-values in parentheses)

Independent Variable	Coefficient (unstandardized)	Coefficient (standardized)
Chancellor-Party Support _{t-1}	0.67*** (17.04)	0.67***
Chancellor Approval _t	0.08*** (3.43)	0.13***
Unemployment Rate _{t-1}	- 0.20** (2.10)	- 0.11**
Inflation _{t-1}	- 0.14*** (2.36)	- 0.06***
Eff. No. of Parliamentary Parties	- 1.47*** (2.74)	- 0.12***
Erhard	- 0.32 (0.70)	- 0.02
Kiesinger	- 1.90*** (3.38)	- 0.09***
Brandt	- 0.19 (0.45)	- 0.01
Schmidt	- 1.43*** (3.04)	- 0.11***
Kohl	2.44*** (3.45)	0.13***
N:	466	
Durbin-Watson Statistic:	1.88	
R ² :	0.85	
Adj. R ² :	0.84	

***: significant at the 0.01 level -- one-tailed

** : significant at the 0.05 level -- one-tailed

* : significant at the 0.10 level -- one-tailed

cellor support has on party support. What does this result mean? The results show that people's perceptions of the way the chancellor is handling his job is heavily influenced by their commitment/support for the chancellor's party while approval of the chancellor's policies has less of an effect on support for the chancellor's party. In Germany's party democracy (or any parliamentary system with strong and programmatic parties), chancellors and Prime Ministers are agents of their parties. However, the base of the parties' support is relatively stable and does not rise and fall as much with executive job performance as evaluations of job performance rise and fall with the parties' fortunes.

It is possible, though, that the strength of the chancellor-party link may vary by type of party because of different organizational and programmatic traditions (cf. Anderson 1992). Therefore, the sample was split into periods of CDU and SPD leadership. Tables 2 and 3 show the results of 2SLS regressions that were done separately for the two periods in order to see whether (a.) the effects of the economy were different for these parties, and (b.) whether the relationship of chancellor and party support differed for them.

The results point to some noteworthy differences in public perceptions and evaluations of SPD and CDU chancellors and their parties. First, inflation is the economic variable that is significantly and negatively related to chancellor and chancellor party support during times of CDU government, while unemployment is the economic variable that drives support for the SPD and SPD chancellors ($\beta = -0.54$, $\beta = -0.87$, respectively). Put differently: The CDU and its chancellors lost support with rising inflation rates, while the SPD and its chancellors lost support with rises in unemployment. It is interesting to note that CDU chancellors gained support during times of rising unemployment. This finding is contrary to the traditional reward-punishment thesis, but in line with the stability argument made by Paldam and Schneider (1980) who conjecture that some parties may actually gain support during hard economic times because of their perceived competence to deal with economic crises. In the case of postwar Germany, the CDU as the party of the economic miracle has had an undeniable competence to deal with economic problems; as a result, citizens have rallied around CDU chancellors during hard times.

Coalition size is a more significant predictor of mass support for CDU chancellors than the SPD chancellors Brandt and Schmidt, while changes in the party system are more significant predictors of SPD than CDU support. However, both are very significantly and negatively affected by a greater effective number of parliamentary parties in the system.

Maybe more important is the finding that one pattern of the chancellor and chancellor party support found for the entire 1950-1990 period is not replicated for both SPD and CDU administrations: While the impact of the chancellor's party's support on chancellor approval is approximately equal for periods of CDU and SPD government ($\beta = 0.29$ and 0.31 respectively), the coefficient for the effects of chancellor approval on chancellor party support is highly signi-

Table 2a.
The Effects of Economic Conditions, Coalition Size, and Party Support
on CDU Chancellor Approval in Germany
 Dependent Variable: Chancellor Approval
 (Two-Stage Least Squares Estimates; t-values in parentheses)

Independent Variable	Coefficient (unstandardized)	Coefficient (standardized)
Chancellor Approval _{t-1}	0.65*** (14.17)	0.65***
Chancellor-Party Support _t	0.29*** (3.42)	0.15***
Unemployment Rate _{t-1}	0.20* (1.40)	0.07*
Inflation _{t-1}	- 0.18* (1.48)	- 0.04*
Coalition Size	0.10* (1.42)	0.10*
Erhard	- 0.86 (1.03)	- 0.03
Kiesinger	2.79 (1.26)	0.09
Kohl	- 4.89*** (3.89)	- 0.22***
N:	310	
Durbin-Watson Statistic:	2.04	
R ² :	0.85	
Adj. R ² :	0.85	

***: significant at the 0.01 level -- one-tailed

**: significant at the 0.05 level -- one-tailed

*: significant at the 0.10 level -- one-tailed

Table 2b.
The Effects of Economic Conditions, Number of Parties, and Chancellor Approval
on CDU Party Support under CDU Chancellors in Germany
 Dependent Variable: Party Support
 (Two-Stage Least Squares Estimates; t-values in parentheses)

Independent Variable	Coefficient (unstandardized)	Coefficient (standardized)
Chancellor-Party Support_{t-1}	0.61*** (12.18)	0.62***
Chancellor Approval_t	0.09*** (3.05)	0.15***
Unemployment Rate_{t-1}	- 0.07 (0.66)	- 0.05
Inflation_{t-1}	- 0.10* (1.48)	- 0.04*
Eff. No. of Parliamentary Parties	- 2.45*** (3.60)	- 0.21***
Erhard	- 0.18 (0.38)	- 0.01
Kiesinger	- 2.13*** (3.29)	- 0.12
Kohl	1.91** (2.29)	0.16**
N:	310	
Durbin-Watson Statistic:	1.84	
R²:	0.84	
Adj. R²:	0.83	

***: significant at the 0.01 level -- one-tailed
 **: significant at the 0.05 level -- one-tailed
 *: significant at the 0.10 level -- one-tailed

Table 3a.
The Effects of Economic Conditions, Coalition Size, and Party Support
on SPD Chancellor Approval in Germany
 Dependent Variable: Chancellor Approval
 (Two-Stage Least Squares Estimates; t-values in parentheses)

Independent Variable	Coefficient (unstandardized)	Coefficient (standardized)
Chancellor Approval _{t-1}	0.59*** (11.05)	0.59***
Chancellor-Party Support _t	0.31** (2.24)	0.16**
Unemployment Rate _{t-1}	- 0.87** (1.95)	- 0.20**
Inflation _{t-1}	- 0.25 (1.14)	- 0.06
Coalition Size	0.03 (0.65)	0.04
Brandt	- 5.04*** (3.41)	- 0.29***
N:	190	
Durbin-Watson Statistic:	1.97	
R ² :	0.76	
Adj. R ² :	0.76	

***: significant at the 0.01 level -- one-tailed
 **: significant at the 0.05 level -- one-tailed
 *: significant at the 0.10 level -- one-tailed

Table 3b.
The Effects of Economic Conditions, Number of Parties, and Chancellor Approval
on SPD Party Support under SPD Chancellors in Germany
 Dependent Variable: Party Support
 (Two-Stage Least Squares Estimates; t-values in parentheses)

Independent Variable	Coefficient (unstandardized)	Coefficient (standardized)
Chancellor-Party Support _{t-1}	0.65*** (11.21)	0.64***
Chancellor Approval _t	0.02 (0.82)	0.04
Unemployment Rate _{t-1}	- 0.54 *** (3.52)	- 0.22***
Inflation _{t-1}	- 0.05 (0.46)	- 0.02
Eff. No. of Parliamentary Parties	- 16.09*** (4.30)	- 0.20***
Brandt	- 1.05** (1.67)	- 0.10**
N:	190	
Durbin-Watson Statistic:	1.98	
R ² :	0.85	
Adj. R ² :	0.85	

***: significant at the 0.01 level -- one-tailed
 **: significant at the 0.05 level -- one-tailed
 *: significant at the 0.10 level -- one-tailed

ficant for the CDU but virtually zero in the case of the SPD. This means that support for the CDU is systematically related to support for the CDU chancellor, while the opposite does not hold for the SPD. Put differently: Support for the CDU rises and falls with support for its chancellor, while support for the SPD is relatively independent of its chancellor's popularity. In the case of the SPD, approval for the chancellor is therefore a less significant predictor and factor in terms of support for the party. This finding is in line with the folklore that the CDU is a »Chancellor Election Club« (Kanzlerwahlverein), whereas the SPD is a more hierarchically organized, programmatically oriented party whose fortunes are less closely tied to the job performance of its chancellor(s) (cf. Anderson 1992; see also Marsh and Harrison 1993).

Overall, these results indicate that it is important to consider the relationship between chancellor approval and chancellor party support. However, this relationship is not automatic. It depends on the type of party under consideration. There is a significant impact of party support on chancellor support for both parties. But chancellor approval is a significant predictor of chancellor party support only in the case of the CDU.

Conclusion

The relationship of executive approval and governing party support is essential for understanding the dynamics of government popularity. However, this relationship has rarely been investigated systematically in the context of economically driven popularity functions. The reason for this may — at least partially — lie in the methodological problems researchers encounter. Since the relationship between executive popularity and mass support for the executive's party is simultaneous while both are driven by the same economic conditions, it is difficult to disentangle the relationship with ordinary least squares or other single equation approaches. Utilizing data on German chancellors and their parties, this paper has suggested one way out of the modeling dilemma by employing a two-stage least squares approach. I find that — while economic conditions are important for explaining the dynamics of mass support — there is a significant relationship between the support for the executive and the support for his/her party. However, as the German case indicates, the relationship is not equally strong in both directions for all parties. In fact, approval for the chancellor's policies is less important for chancellor party support than vice versa, in particular in the case of the SPD. Conversely, support for the CDU is much more driven by public support for a CDU chancellor than in the SPD's case. Support for the SPD drives mass support for SPD chancellors but is not heavily dependent on the public's approval of an SPD chancellor's record. Overall, the results presented here suggest that it is necessary to utilize a more complete array of political (as well as economic) variables if we seek to con-

struct more fully specified models of mass support for governments in western democracies.

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