

Recapturing the Falklands: Models of Conservative Popularity, 1979-83

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Recently, Sanders *et al.* have made the intriguing and counter-intuitive argument that the impact of the Falklands war on Conservative popularity was inconsequential. Their analyses raise important theoretical and methodological issues concerning the time-series analysis of party support. This present article contends that the stepwise regression procedures employed by Sanders *et al.* are misleading, particularly when predictor variables are highly intercorrelated. Box-Jenkins analyses demonstrate that the Falklands strongly influenced Conservative support, net of the effects of macroeconomic conditions and personal economic expectations. The significance of the latter variable in the models confirms Sanders *et al.*'s argument about the role of subjective economic variables in party popularity functions. Non-economic variables are also relevant, however, and popularity functions that model them correctly will enhance our understanding of both the economics and the politics of party support.

In a thought-provoking article, David Sanders, Hugh Ward and David Marsh (henceforward SWM)¹ appear to refute what has become a conventional wisdom in British politics, namely that victory in the Falklands war played an important, perhaps decisive role, in rebuilding support for the Conservatives in 1982 and paving the way for Mrs Thatcher's landslide re-election in 1983.² Criticizing previous studies for failing to employ properly specified controls, SWM contend that the 'Falklands effect' observed in those studies is largely spurious. Instead, they attribute the dramatic increase in public support for Mrs Thatcher and her government in the year preceding the 1983 election almost entirely to the rapidly improving state of the British economy in the winter of 1982 which, in combination with the tax cuts contained in the March 1982 budget, fuelled a

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¹ See David Sanders, Hugh Ward and David Marsh, 'Government Popularity and the Falklands War', *British Journal of Political Science*, 17 (1987), 281-313.

² See Ivor Crewe, 'How to Win a Landslide Without Really Trying: Why the Conservatives Won in 1983', in Austin Ranney, ed., *Britain at the Polls 1983* (Durham, NC: Duke University Press, 1985), 155-96; Harold D. Clarke, Marianne C. Stewart and Gary Zuk, 'Politics, Economics and Party Popularity in Britain, 1979-83', *Electoral Studies*, 6 (1987), 3-16; Helmut Norpoth, 'Guns and Butter and Government Popularity in Britain', *American Political Science Review*, 81 (1987), 949-59; Helmut Norpoth, 'The Falklands War and Government Popularity in Britain: Rally without Consequences or Surge without Decline', *Electoral Studies*, 6 (1987), 3-16; William Mishler, Marilyn Hoskin and Roy Fitzgerald, 'Hunting the Shark; or Searching for Evidence of the Widely Touted But Highly Elusive Resurgence of Public Support for Conservative Parties in Britain, Canada, and the United States', in Barry Cooper, Allan Kornberg and William Mishler, eds, *The Resurgence of Conservatism in Anglo-American Democracies* (Durham, NC: Duke University Press, 1988).

surge in voter confidence in the economy. Using a relatively simple model in which the objective performance of the economy together with personal economic expectations predict government popularity in the polls, SWM concluded that 'over and above the effects of the various macroeconomic variables we have identified, the Falklands factor does not help us explain the overall variations in the popularity of Mrs Thatcher's first administration.'³

SWM are correct in asserting the importance of a properly specified model. They also make a compelling case for the inclusion of subjective economic variables (i.e. public perceptions and expectations of the economy's performance) in models of government popularity. However, their analysis suffers from a variety of theoretical and methodological problems, namely the use of misspecified models and inadequate estimation procedures, which undermine confidence in their conclusions. This article outlines these problems and demonstrates that when theoretically attractive models are estimated with suitable statistical techniques the 'Falklands effect' appears highly significant. The war certainly affected public opinion about the Conservative party and Prime Minister, and arguably played an important role in determining the outcome of the 1983 election.

THE THEORETICAL AND METHODOLOGICAL PROBLEMS OF THE SWM MODELS

Our central theoretical criticism of the SWM models is the same as their criticism of the previous literature on the Falklands. Their models are not properly specified. As is well known, properly specified models are essential for accurate estimates of effects. SWM not only omit substantively important variables which influenced government popularity during the 1979–83 period, but include variables at variance with existing theoretical work on popularity functions. In addition, they specify improperly the form and timing of the relationships between popularity and key independent variables, particularly the Falklands war variable. SWM recognize that the omission of potentially relevant variables from a model raises the possibility that an included variable would prove spurious had appropriate controls been applied.⁴ It is equally the case, however, that including an inappropriate variable in a model can mask or suppress the effect of relevant variables – especially when there is substantial multicollinearity among the predictors. Moreover, adequate model specification requires that the nature and timing of the relationships among variables also be consistent with theory and available evidence. Failure to lag an independent variable when evidence suggests that its effects occur after some interval, or to specify a linear relationship where one might expect a non-linear one, has much the same effect as excluding relevant variables. In short, a properly specified model is one in which the variables included, the lag structures and the forms of their relationships are as consistent with available theory as data and statistical procedures allow.

SWM acknowledge the importance of theory to model specification when

³ Sanders *et al.*, 'Government Popularity', p. 312.

they advocate the inclusion of economic expectations and perceptions, in addition to standard aggregate economic indicators, in their models. However, in identifying the specific variables to be incorporated, and in specifying the lag structure, they ignore theory and rely instead on statistical technique. Having collected twenty aggregate economic indicators which are assumed to be predictors of government popularity, they enter these into a stepwise regression analysis along with four measures of public perceptions/expectations of economic performance and two dummy variables reflecting the Falklands war and the formation of the Liberal-SDP alliance. They also included lagged measures of each of the twenty economic variables from times $t - 1$ up to $t - 12$. This means, in effect, that the stepwise regression included a total of 266 variables, many of which were very highly correlated with each other.⁴

Following standard stepwise procedures, these variables were entered into the model of government popularity one at a time depending on their contribution to the variance explained (R^2), controlling for the other variables in the model. The analysis ended when none of the excluded variables added significantly to the variance explained. This procedure yielded the model (SWM's Figure 3) in which government popularity is predicted by the unemployment rate at time t , personal expectations also at t , the exchange rate at $t - 12$, and the Public Sector Borrowing Requirement at $t - 6$. The Falklands variable was not statistically significant, and thus does not appear in this model. Moreover, SWM report (see their Table 3) that forcing the unlagged Falklands variable into the regression equation did not add significantly to the variance explained by the four economic and expectations variables ($R^2 = 0.87$).

Although the use of stepwise regression is a great temptation when theory is scarce, it is not a sufficient substitute. It is particularly inappropriate when the number of cases is relatively small ($N = 42$) and the number of independent variables large and highly correlated. As Cohen and Cohen explain:

Since the significance test of [an independent variable's] contribution to R^2 proceeds in ignorance of the large number of other tests being performed at the same time, there can be a very large capitalization on chance. The result is that neither the statistical significance tests for each variable nor the tests of the multiple R^2 at each step are valid... When among the variables competing for entry at any given step, there are trivial differences among the partial relationships with Y (the dependent variable), the computer dutifully will choose the largest for addition at that step.⁵

Not surprisingly, the model resulting from the stepwise regression procedure contradicts existing findings in several important respects.

Research on the short-term dynamics of party popularity in both Britain and elsewhere has shown, in common with work on voting behaviour, that a properly specified model of government popularity requires four broad classes of

⁴ That is, twenty economic variables times thirteen different lags plus four expectation/perception variables and two event variables.

⁵ Jacob Cohen and Patricia Cohen, *Applied Multiple Regression Correlation Analysis for the Behavioral Sciences* (Hillsdale, NY: Lawrence Erlbaum Associates, 1975), p. 103.

explanatory variables.⁶ Firstly, there are the long-term predispositions of voters, which in the Michigan tradition of electoral analysis are summarized by the variable party identification; secondly, there are issue perceptions which include retrospective and prospective thinking about economic and non-economic issues; thirdly, there are leadership images, which relate both to the government and opposition parties; and finally there are various systematic and random 'shocks' to the system, which can influence party popularity over varying periods of time. The Falklands war was only the most salient of these exogenous shocks to occur during Mrs Thatcher's first term.

Of course, empirical estimation of a theoretical model inevitably entails compromise, since we must work with available data and imperfect indicators of underlying theoretical concepts. In modelling the Falklands effect, SWM were limited by the absence of time series data on party identification in Britain.⁷ They also argue the case for excluding leader images on the grounds that these are highly correlated with, and thus statistically indistinguishable from, party popularity. Even accepting these limitations, however, the SWM model is misspecified in several critical respects.

Firstly, the aggregate economic variables included in the SWM model are difficult to justify by any reasonable ideas about how macroeconomic trends might influence individual political behaviour. To influence individual political attitudes or behaviour, aggregate indicators of economic performance should be both visible and salient to the everyday lives of the electorate. It is now well established that inflation and unemployment are both visible, in the sense of being highlighted by the media, and salient to the voters.⁸ In contrast, there is no evidence of which we are aware that these conditions are met in the case of the Public Sector Borrowing Requirement, the exchange rate or even tax rates which SWM include in their final model. Indeed, SWM had to resort to a relatively complicated statistical transformation to calculate their tax-rate measure (see SWM, Table 1), because there is no publicly accessible series which

⁶ See Paul F. Whiteley, 'Inflation, Unemployment and Government Popularity - Dynamic Models for the United States, Britain and West Germany', *Electoral Studies*, 3 (1984), 3-24; Clarke et al., 'Politics, Economics and Party Popularity in Britain'; William Mishler, Marilyn Hoskin and Roy Fitzgerald, 'British Parties in the Balance: A Time-Series Analysis of Long-Term Trends in Labour and Conservative Support', *British Journal of Political Science*, 19 (1989), 211-36.

⁷ According to the traditional 'Michigan' conception, party identification constitutes a stable attitudinal predisposition for most voters and therefore does not manifest significant short-term aggregate change. See Angus Campbell et al., *The American Voter* (New York: Wiley, 1960), p. 127. In the Box-Jenkins models estimated below, government popularity and the economic variables are differenced, so the fact that we are measuring short-term changes in these variables makes it legitimate to exclude party identification from these models. See Whiteley, 'Inflation and Unemployment', pp. 10-11. Similarly, alternative 'rational choice' conceptions of party identification such as that proposed by Fiorina imply that voters' partisan predispositions may be omitted from models of party support if party performance evaluations are included in such models. See Morris Fiorina, *Retro-spective Voting in American National Elections* (New Haven, Conn.: Yale University Press, 1981).

⁸ See Paul Mosley, '"Popularity Functions" and the Role of the Media: A Pilot Study of the Popular Press', *British Journal of Political Science*, 14 (1984), 117-28; Bo Särlvik and Ivor Crewe, *Decade of Dealignment* (Cambridge: Cambridge University Press, 1983), pp. 150-9.

measures tax burdens over time. SWM do not explain how individual voters make or attempt to make this calculation on their own. Furthermore, individual-level survey evidence suggests that a majority of the electorate oppose the devaluation of the pound and reductions in the PSBR by means of cuts in public expenditure.⁹ This is, of course, inconsistent with SWM's findings that voters reward the government for devaluing the pound and reducing the PSBR.

Secondly, even if a theoretical justification can be provided for including the PSBR and exchange rates as predictors of government popularity, the particular lags SWM specify for these variables pose additional problems. In general, there are good reasons to believe that the effects of economic conditions on political behaviour will be lagged since economic conditions may take some time to be perceived by a generally inattentive public. Moreover, attitudes may have to diffuse through the electorate before they register in aggregate data.¹⁰

Nevertheless, it is not obvious why the current level of popularity should be influenced by changes in the PSBR that occurred six months previously or the exchange rate twelve months previously (and not one, two, three or some other number of months). The exchange rate lag is especially curious since the pound was falling in 1982 in relation to the dollar, whereas by 1983 it had stabilized and, for a time, rose slightly. The SWM formulation suggests that voters rewarded the government in 1983 for a devaluation of the currency a year earlier, ignoring the fact that the pound was already increasing in value – bizarre behaviour by any standards.

Thirdly, although SWM experiment with numerous lags for the economic variables, they do not appear to consider the possibility that the Falklands effect was similarly delayed. Yet there are good reasons to believe that it was. Norpeth, whose analysis is the central focus of the SWM critique, argues explicitly that the Falklands effect was lagged. He demonstrates that the effect was strongest when modelled as a gradual-temporary phenomenon which increased government popularity by less than 1 per cent in April, but by 8 to 9 per cent in May before declining gradually in the ensuing year.¹¹

Moreover, a brief review of the key events in the Falklands war supports Norpeth's findings. Although the British government responded to the Argentinian invasion of the Falklands on 2 April 1982 by dispatching a naval task force, initial sentiment in Britain was in favour of a diplomatic solution.¹² The naval task force did not reach the Falklands until 22 April, and British troops were not committed to action until 25 April when they recaptured South Georgia.

⁹ See Roger Jowell and Colin Airey, *British Social Attitudes: The 1984 Report* (Aldershot, Hants: Gower, 1985), p. 174.

¹⁰ Whiteley, 'Inflation and Unemployment', pp. 3–24; Roy Fitzgerald and William Mishler, 'Through A Glass Darkly: The Dynamics of Public Economic Perceptions in Britain, 1978–87' (paper presented at the Annual Meeting of the Southern Political Science Association, Atlanta, Georgia, November 1988).

¹¹ Norpeth, 'Guns and Butter', p. 956.

¹² See Max Hastings and Simon Jenkins, *The Battle for the Falklands* (New York: W. W. Norton, 1983), p. 136.

over, the first significant combat over the Falklands did not occur until 2 May when the submarine *HMS Conqueror* sank the Argentinian cruiser the *General Belgrano*. This was followed by the loss of *HMS Sheffield* to an Exocet missile on 4 May.

Given that the most dramatic events of the war did not occur until late April or early May and given also that Gallup's monthly polls report the aggregated responses to interviews conducted at several different times across a month, it is reasonable to suppose that the full effect of the Falklands crisis would not register in public opinion surveys until May – the month after the crisis began. The SWM model does not allow for this possibility.

Nor does the SWM model consider the possibility that the Falklands effect was non-linear as Norpoth also suggests. Instead, by treating the war as an unlagged variable in a linear model, the implicit assumption is that the full effect of the crisis on government popularity occurred instantaneously in April 1982 and persisted undiminished until June 1983 – assumptions clearly contrary to both the historical record and to previous research. An alternative possibility is that the Falklands effect was permanent during the estimation period, but was realized gradually rather than abruptly. Another alternative is that the effect was temporary, rather than permanent, but took some time to diminish. Indeed, such dynamic non-linear models are highly plausible given the timing of significant events in the Falklands conflict. However, these are not considered by SWM despite their plausibility, and their explicit use by Norpoth.

Fourthly, SWM assume that expressed satisfaction with the leadership of Margaret Thatcher is synonymous with satisfaction with the performance of the Conservative government.¹³ However, recent research suggests that although related, leadership satisfaction and party popularity are conceptually distinct and empirically separable. Given also the evidence that leadership satisfaction bears significantly on government popularity,¹⁴ failure to consider the impact of the Falklands war on public evaluations of prime ministerial performance leaves open the possibility that the war may also have had indirect effects on government support. This possibility is reinforced by Norpoth's analyses indicating that the Falklands war enhanced public evaluations of Mrs Thatcher's performance by nearly 20 percentage points during May and June 1982. A significant portion of this effect persisted throughout the remaining months prior to the 1983 election.¹⁵

Fifthly, SWM argue persuasively for focusing attention on the economic expectations of the electorate, but they do so in a way which is inconsistent with a good deal of micro-level literature on the relationship between perceptions of economic performance and party popularity. A number of studies have argued

¹³ Sanders *et al.*, 'Government Popularity', pp. 283–4, notes 9 and 10.

¹⁴ Micro-level analyses show that evaluations of party leader performance in Britain have independent effects on party support. See, e.g., Clarke *et al.*, 'Politics, Economics and Party Popularity', pp. 133–5. The estimated effects of the Falklands war on evaluations of the Prime Minister's popularity appear in Norpoth, 'Guns and Butter', p. 954; and Norpoth, 'The Falklands War', p. 11.

¹⁵ See Helmut Norpoth, 'Guns and Butter', p. 954; and 'The Falklands War', p. 11.

that national (sociotropic) rather than personal (egocentric) economic judgments are important in influencing political support.¹⁶ In contrast, SWM focuses exclusively on personal economic expectations, because they allow the stepwise regression procedure to determine which variables are included in the equation. Thus additional work on the influence of general as well as personal economic expectations is required.

Finally, difficulties with SWM's analyses are not confined to questions of model specification. We show below that their estimates are suspect because of severe multicollinearity. In addition, their OLS and pseudo-GLS regressions and accompanying diagnostics are inherently unable to detect and control for time-series dependencies in the model residuals other than simple first-order autocorrelation. If such dependencies are unattended, they can produce biased and misleading inferences and cause a model to appear to have a much more impressive fit than is actually the case.¹⁷

THE SWM MODEL: A REANALYSIS

Taken together, these several theoretical and methodological problems raise serious questions about the validity and reliability of SWM's estimates, and undermine confidence in their conclusions about the importance of the Falklands war. To demonstrate that these problems are not simply hypothetical, we replicated SWM's analysis using data graciously provided by the authors via the ESRC archive. We begin by replicating their basic model, which includes unemployment, personal economic expectations, the PSBR ($t - 6$), the exchange rate ($t - 12$), and of course the Falklands variable. As reported by SWM, the Falklands effect was not statistically significant when forced to enter a stepwise regression model that includes the other predictors.

Significantly, however, an examination of the correlations among the five independent variables clearly hints that multicollinearity may be a problem (see Table 1). Although the unemployment rate is not strongly correlated with the other economic variables, several of the other variables are highly correlated. Indeed the average inter-item correlation among all variables (excluding unemployment) is nearly 0.70. Since bivariate correlations are imperfect indicators of multicollinearity in a multivariate model, we utilize the procedure for detecting multicollinearity suggested by Klein, i.e. the computation of the multiple correlation of each independent variable with all the others.¹⁸ The right-most column in Table 1 reports the R^2 -coefficient for each independent variable when the other five independent variables are regressed against it. It demonstrates that several of the variables, particularly the Falklands variable and the

¹⁶ See, for example, Donald R. Kinder and D. Roderick Kiewiet, 'Sociotropic Politics: The American Case', *British Journal of Political Science*, 11 (1981), 129-61; D. Roderick Kiewiet, *Macroeconomics and Micropolitics* (Chicago: Chicago University Press, 1983); Kristen Monroe, *Presidential Popularity and the Economy* (New York: Praeger, 1984), Chap. 1.

¹⁷ Gwilym Jenkins, *Practical Experiences with Modelling and Forecasting Time Series* (St. Helier, Jersey: G.J.P. Publications, 1979), p. 191.

¹⁸ See Lawrence R. Klein, *An Introduction to Econometrics* (Englewood Cliffs, NJ: Prentice-Hall, 1962), p. 101.

TABLE 1 *Matrix of Zero-Order Correlations (r) Among Independent Variables in SWM Model*

Variable (lag)	2	3	4	5	R^2
1 Personal expectations (t)	-0.74	-0.61	0.46	0.74	0.91
2 Exchange rate ($t - 12$)		0.56	-0.28	-0.81	0.96
3 PSBR ($t - 6$)			-0.27	-0.63	0.84
4 Unemployment (t)				0.70	0.94
5 Falklands (t)					0.97

 $N = 42$ R = Multiple correlation of independent variable with other independent variables.

exchange rate, are almost perfectly collinear with the rest. In practical terms this means that there is virtually no independent variation in several of the predictors in the model which can be used to estimate their separate effects on government popularity. In the presence of such severe multicollinearity, even small sampling or measurement errors can produce large changes in the coefficients.¹⁹

This problem is underscored by an examination of the step-by-step results of the regression analysis of the SWM model. Because it has the highest zero-order correlation with government popularity, the first variable entered into the stepwise model is the exchange rate. The relationship between personal economic expectations and popularity, controlling for the exchange rate, is the strongest (i.e. has the lowest probability p -value) among the variables not entered on the first step, and this enters the equation on the second step. Unemployment enters third by the same criterion. At this point the partial correlation between popularity and the Falklands variable (0.375) controlling for the exchange rate, personal expectations and unemployment is only very slightly smaller than the partial correlation between popularity and the PSBR (-0.384) with the same controls. Since the latter coefficient has a p value (0.0157) which is slightly smaller than the former (0.0184), the stepwise algorithm selects the PSBR for entry at step four, rather than the Falklands variable. Once entered, the PSBR together with the other variables in the equation reduce both the Falklands and Alliance effects to insignificance and the stepwise procedure stops. If the Falklands variable had had a slightly stronger partial correlation with popularity, and thus a smaller p value (0.004 or less) it would have entered the equation before the PSBR, and been statistically significant in the SWM model. This means that the key result of the SWM article depends upon a completely trivial difference between the strength of relationships in a model where the relationships are suspect anyway because of multicollinearity. Far from proving the Falklands and Alliance effects to be spurious, all this analysis shows is that they are collinear with a handful of economic variables whose theoretical relevance to government popularity is suspect in the first place.

In an effort to assess the robustness of the SWM model we repeated their ana-

¹⁹ See G. S. Maddala, *Econometrics* (New York: McGraw-Hill, 1979), pp. 183-90.

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lysis with the Falklands variable lagged one month (i.e. $t - 1$). This specification is more consonant with our hypothesis that the war's impact became significant in May 1982, although it does not address the possibility that the effect was non-linear, a point we consider later. The OLS estimates of this model are as follows:

$$\begin{aligned} GP_t = & 46.59 + 0.36 PE_t - 1.84 UN_t + 10.91 FK_{t-1} \\ (25.84) & (4.74) \quad (8.33) \quad (7.73) \end{aligned}$$

Adj. $R^2 = 0.88 \quad F = 106.67$ (df 3/38) DWS = 1.36 N = 42

(where GP = Government popularity; PE = personal expectations; UN = unemployment; FK = the Falklands variable; DWS = Durbin-Watson Statistic; and t statistics are in parentheses).

As expected, when the Falklands variable is lagged one month, it proves highly significant. In this revised model the exchange rate, the PSBR and the Alliance variable are not significant and thus do not enter the equation. This three-predictor model (hereafter, the CMW model) has a slightly better fit than the original SWM model (R^2 of 0.88 rather than 0.87), and because it requires one less degree of freedom it achieves a higher significance level. The CMW model is also preferable because the only macro-economic variable included (unemployment) clearly meets the criteria of visibility and salience discussed previously. Finally, the lag structures are also more reasonable than in the SWM model.

The Falklands coefficient in the revised model indicates that the war increased government popularity by an average of nearly 11 per cent from the period beginning in May 1982, and this continued through to the June 1983 election. This is rather higher than the long-term effect reported by Norpoth (5–6 per cent), but it conforms more closely with existing literature than the estimates provided by SWM.²⁰

Although preferable to the SWM model, the alternative CMW model shares several important shortcomings with the SWM model. Principal among these are the problem of multicollinearity, the possible non-linearity of the Falklands variable, the omission of some theoretically interesting variables, and the problem of autocorrelation in the residuals. Regarding the latter, the Durbin-Watson statistic for the CMW model falls within the inconclusive region, which means that we can neither rule out nor confirm that the residuals follow a first-order autoregressive process. Moreover, as noted previously, the Durbin-Watson statistic does not test for other possible residual time-series dependencies.

At this point we have carried the analysis as far as ordinary least squares procedures can take us. Further exploration of the Falklands effect requires that we

²⁰ Clarke, Stewart and Zuk, for example, report that the Falklands war (modelled as an abrupt-permanent effect) increased Conservative popularity by approximately 7 points net of controls for inflation, unemployment and several other predictor variables; see Clarke *et al.*, 'Politics, Economics and Party Popularity', pp. 131–3. Dunleavy and Husbands estimate an abrupt-permanent effect of nearly 17 points; see Patrick Dunleavy and Christopher Husbands, *British Democracy at the Cross-roads* (London: Allen and Unwin, 1983), p. 153.

respecify the model in the light of our earlier discussion and re-estimate it using more sophisticated time-series methods.

ALTERNATIVE MODELS AND ESTIMATES

The use of time-series data, although vital for understanding the effects of the Falklands war on government popularity, introduces special problems of analysis which ordinary least squares procedures are poorly suited to handle. In particular, time-series analyses are confounded by the tendency of time-related observations to be correlated such that the value of a series at one time is dependent, at least partly, upon one or more earlier values of the same series. When this occurs, the series is said to be serially or auto-correlated. Ordinary least squares procedures assume, however, that the error terms associated with different observations in a series are independent. When this assumption is violated, and the error terms in a series are correlated, the *t* ratios used to estimate the statistical significance of parameter estimates in regression equations can be substantially deflated, thus leading to false inferences about relationships in the model.²¹ Obviously, the bias in *t* ratios also undermines the utility of the step-wise regression procedures used by SWM that rely on significance tests to select variables for inclusion in the analysis.

A variety of procedures have been developed to address these problems. The pseudo-GLS (Generalized Least Squares) procedures alluded to at one point by SWM are a popular option, although one with limited utility. Essentially, GLS procedures assume that autocorrelation in the model residuals conforms to a first-order autoregressive process in which a disturbance at one point in a series is echoed in the error term of the next observation, which gradually diminishes over successive observations (i.e. $e(t) = e(t - 1) + v(t)$). The identification of first-order autoregressive processes is relatively simple and involves the use of the Durbin-Watson statistic among other diagnostics. If a first-order autoregressive process is indicated, simple correctives are available. Unfortunately, the world does not always conform neatly to this model. Nor do we usually have much by way of theory to guide us in making reasonable assumptions about the nature of the underlying processes producing autocorrelation in a series. However, although higher order autoregressive disturbances or moving average processes can seriously bias OLS estimates, neither OLS nor GLS procedures test or control for alternative forms of autocorrelation.

To circumvent these difficulties, we rely on Box-Jenkins transfer function modelling procedures to re-estimate our revised model of government popularity.²² Instead of making assumptions about the form of the error terms in the

²¹ Charles W. Ostrom Jr, *Time Series Analysis: Regression Techniques*, Sage University Paper Series on Quantitative Applications in the Social Sciences (Beverly Hills, Calif.: Sage Publications, 1978), pp. 25-31.

²² See George E. Box and Gwilym M. Jenkins, *Time Series Analysis: Forecasting and Control*, revd. edn. (San Francisco: Holden-Day, 1976); George E. Box and Gregory C. Tiao, 'Intervention Analysis with Applications to Economic and Environmental Problems', *Journal of the American Statistical Association*, 70 (1975), 70-9. For an introduction to these methods see Richard McCleary and Richard A. Hay, *Applied Time Series Analysis* (Beverly Hills, Calif.: Sage, 1980).

popularity function models, Box-Jenkins procedures allow us to identify and estimate empirically the nature and extent of autocorrelation in a series prior to the analysis. The procedure involves several steps designed to utilize all of the information in the data. The first step involves the identification and estimation of a univariate Autoregressive, Integrated, Moving Average (ARIMA) 'noise' model of the input series (or independent variable) over extended lags. This is a model that when fitted to the input series extracts all the systemic information in the series, leaving only 'white noise' residuals (i.e. a random, uncorrelated set of observations). Similar noise models are developed for all independent variables in the analysis except for the dummy intervention variables.

At the next step of the analysis, the noise models for the independent variables are used, in turn, to filter or 'pre-whiten' the output series so that the residuals from this exercise can be cross-correlated separately with the residuals of each independent variable noise model. This ensures that the bivariate cross-correlations between dependent and independent variables are uncontaminated by autocorrelation within each series, and permits the lag structures and reciprocal relationships between the series to be explored empirically. Based on the bivariate results a multivariate model of the output series is then specified. The impact coefficients in the multivariate model are roughly equivalent to non-linear regression coefficients, and are calculated for all independent variables at the specified lags. A noise model is also included in the multivariate model, which may or may not be refined by various diagnostic procedures. The diagnostics produced in this analysis are also used, if necessary, to redefine the multivariate model – non-significant variables are eliminated, alternative specifications are explored (including different lag structures and plausible dynamic specifications), and the model re-estimated. This continues until the best fitting model is obtained.

Box-Jenkins procedures require that all the variables in the analysis have stationary means and variances. Visual inspection of the Conservative support series (see Figure 1) suggests the presence of both types of non-stationarity – the level of the series varied greatly as did the magnitude and rate of change. Diagnostics confirm this and, accordingly, the series was differenced and log-(natural)-transformed. The autocorrelation and partial autocorrelation functions for the transformed series revealed 'spikes' at lags of four and five months, suggesting that the series followed a moving average process of orders 4 and 5. Both MA(4) (-0.33) and MA(5) (0.27) coefficients were significant ($p < 0.05$) in a univariate ARIMA model, and the diagnostic tests for the model were satisfactory.²³

The set of potential predictor variables in the models includes not only macroeconomic conditions, but also subjective economic evaluations and perceptions, public feelings about party leaders and various salient political events.

²³ The main diagnostic test is the Ljung-Box Q statistic, which measures whether or not there is any significant information in the model's residual autocorrelation function over a specified period of lags. See Greta Ljung and George E. P. Box, 'On a Measure of Lack of Fit in Time Series Models', *Biometrika*, 64 (1978), 297–304.

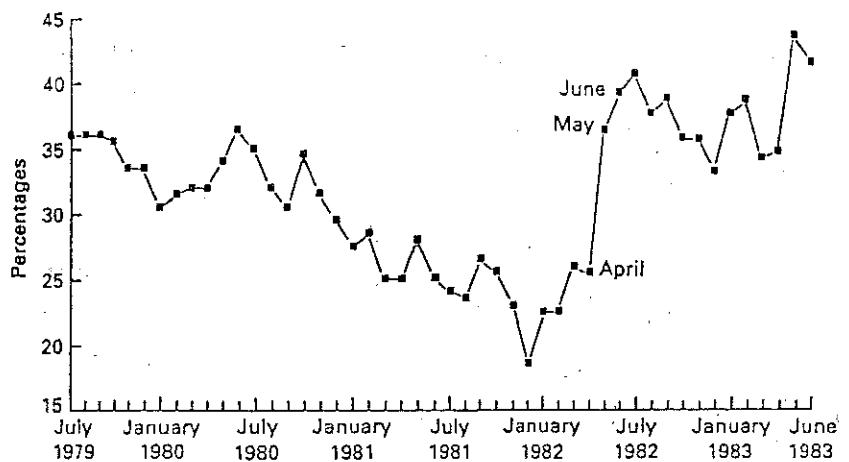


Fig. 1. Conservative support, July 1979-June 1983.

Source: Gallup Political Index.

Although construction of a fully specified model would entail investigating all these possibilities, doing so is beyond the scope of the present inquiry. Here we shall focus on variables that are particularly relevant for extending our analysis of the SWM and CMW models. These include inflation, unemployment, personal economic expectations and three alternative specifications of the Falklands effect.²⁴

Inflation and unemployment rates are, of course, staples in the theoretical and empirical literature on party popularity functions, and unemployment and personal economic expectations have significant effects in the SWM and CMW models. The putative importance of the economic variables suggests that the impact of the Falklands war should be assessed by using controls for various combinations of them. The three Falklands specifications include the one-month lag abrupt-permanent effect model, and gradual-permanent and gradual-temporary models with initial and secondary effects occurring in May and June 1982 – these effects continuing in subsequent months. The latter two dynamic specifications are plausible in the light of both the unfolding of events associated with the war and the empirical support provided in Norpoth's analyses.

There is little theoretical guidance for specifying the precise lags at which

²⁴ The economic variables are the seasonally adjusted percentage unemployed, corrected for government changes in the series to ensure validity over time, and the retail price index, seasonally adjusted. Personal and general economic expectations are measured the same way as in SWM, i.e. the percentage thinking economic conditions will improve minus the percentage thinking they will deteriorate. However, the data are not exactly the same as those employed by SWM. SWM's economic expectations series was constructed by splicing together responses from two different Gallup series; for the sake of consistency we use one series for the entire period. The two series are very highly correlated ($r = 0.93$), and show the same trends of increasing voter optimism in the spring of 1982.

these variables affect Conservative support. As noted, lags of several months or longer such as those in the SWM model seem unlikely, according to any plausible account of the transmission process. A variety of short-lag effects are possible, however, and the bivariate cross-correlations indicate that unemployment and personal expectations operate contemporaneously, whereas inflation does so with a one-month delay.²⁵ Accordingly the models were specified with those lags.

Table 2 presents the estimates for models incorporating three different specifications for the Falklands variable. The first three models treat the Falklands effect as an abrupt-permanent impact starting in May, this being estimated in conjunction with different combinations of inflation, unemployment and personal economic expectations. The results (panel I) are unequivocal and massive – the Falklands coefficient is always strongly significant ($p < 0.01$). If we recall that Conservative support has been logged and differenced, the impact (ω) coefficients indicate that the war produced an average increase in government popularity of between 34 and 42 per cent during the period prior to the 1983 election.²⁶ Expressed in absolute terms, since Conservative popularity averaged 29.3 per cent before the Falklands war, these increases would produce postwar popularity levels averaging between 39.3 and 41.6 per cent.

The estimates for the economic variables are also worth noting. Model I.A, which omits personal expectations, is a traditional specification of the type found in many popularity function models. Here, unemployment, but not inflation, had a significant impact, with the negative sign indicating that an increase in joblessness eroded government support. Model I.B shows that personal economic expectations were positively associated with Conservative support, which accords with SWM's findings. In Model I.C, which includes all three economic variables, inflation and unemployment both have negative influences on government popularity. This model, in which personal expectations remain significant, suggests that previous analyses which have neglected subjective economic variables may be misleading; a theoretically attractive variable like inflation acquires significance only when public expectations of future economic conditions are controlled. The negative signs for unemployment and inflation can be interpreted in terms of a 'reward-punishment' hypothesis, i.e. the electorate rewards the government (whether Labour or Conservative) during periods

²⁵ Preliminary diagnostics indicated that the three economic variables needed to be logged and differenced to ensure variance and mean stationarity. Cross-correlation functions for the economic series showed that they did not suffer from multicollinearity. At the lags at which the variables were employed in the models the correlation (r) between inflation and unemployment was -0.14 , whereas those for inflation and personal expectations, and unemployment and personal expectations were 0.05 and -0.01 respectively. Relatedly, the correlations of the estimates for the effects of the economic variables are quite modest (maximum values = 0.33).

²⁶ The calculation is:

$$\text{percentage change} = (e^{\omega} - 1)100.$$

See McCleary and Hay, *Applied Time Series Analysis*, p. 174.

TABLE 2 *Economic Variables, the Falklands War and Conservative Party Support, July 1979-June 1983*I. *Falklands: abrupt-permanent impact*

Predictor variables	Models		
	A		
	Est	t	Est
Inflation	$\omega(B^1)$	-0.17	-0.85
Unemployment	$\omega(B^0)$	-0.71	-1.31*
Personal expectations	$\omega(B^0)$	*	*
Falklands	$\omega(B^1)$	0.29	3.28†
Noise model	$\omega(B^1)$	*	*
	ϕ_2	-0.30	-1.90†
	θ_4	0.0075	19
RMS		0.0049	20
Q (df = 20)		0.0047	21

Predictor variables	Models		
	A		
	Est	t	Est
Inflation	$\omega(B^1)$	-0.19	-0.94
Unemployment	$\omega(B^0)$	-0.77	-1.43*
Personal expectations	$\omega(B^0)$	*	*
Falklands	$\omega(B^1)$	0.29	3.40†
Noise model	δ_1	0.29	1.12
	ϕ_2	*	*
	θ_4	0.0032	-1.98†
RMS		0.0074	19
Q (df = 20)		0.0048	18

II. *Falklands: gradual-permanent impact*

Predictor variables	Models		
	B		
	Est	t	Est
Inflation	$\omega(B^1)$	-0.19	-0.94
Unemployment	$\omega(B^0)$	-0.77	-1.43*
Personal expectations	$\omega(B^0)$	*	*
Falklands	$\omega(B^1)$	0.29	3.40†
Noise model	δ_1	0.29	1.12
	ϕ_2	*	*
	θ_4	0.0032	-1.98†
RMS		0.0074	19
Q (df = 20)		0.0048	18

Predictor variables	Models		
	C		
	Est	t	Est
Inflation	$\omega(B^1)$	-0.19	-0.94
Unemployment	$\omega(B^0)$	-0.77	-1.43*
Personal expectations	$\omega(B^0)$	*	*
Falklands	$\omega(B^1)$	0.29	3.40†
Noise model	δ_1	0.29	1.12
	ϕ_2	*	*
	θ_4	0.0032	-1.98†
RMS		0.0074	19
Q (df = 20)		0.0048	18

TABLE 2 (cont.)
III. Falklands: gradual-temporary impact

Predictor variables	Models					
	A		B		C	
	Est	t	Est	t	Est	t
Inflation	$\omega(B^1)$	-0.21	-1.05	*	*	
Unemployment	$\omega(B^0)$	-0.73	-1.29	*	*	-0.38
Personal expectations	$\omega(B^0)$	*	*			-0.58
Falklands	$\omega(B^1)$	0.23	3.03†	0.08	5.96†	-1.55§
	$\omega(B^2)$	0.17	2.24†	0.23	6.20†	7.75†
	δ_1	0.77	3.41†	0.24	6.09†	7.73†
Noise model	ϕ_2	*	*	0.58	5.41†	5.26†
	θ_4	-0.47	-2.86†	*	0.75	7.82†
RMS		0.0073	-0.87	-0.87	-0.34	-2.19†
Q (df=2)		21	0.0041	-19.08†	-0.89	-12.06†
			19		0.0034	
				25		

* Variable not included in model.

† $p \leq 0.01$; ‡ $p \leq 0.05$; § $p \leq 0.10$ (one-tailed test).

of good economic performance and punishes the government for a poor economic performance.²⁷

The importance of personal expectations is also underlined by the residual mean square (RMS) statistics – the standard goodness of fit measure in time-series analysis. Comparisons of Models I.A and I.B show that personal expectations have more explanatory power than inflation and unemployment, the former model containing only the objective economic indicators, and the latter only the subjective indicator. Model I.A has a much poorer fit than Model I.B as indicated by the larger RMS statistic for I.A (0.0075) compared with I.B (0.0049).

The behaviour of the economic variables in three analyses which treat the Falklands as a gradual, permanent effect is essentially unchanged (Table 2, panel II). There is, however, only mixed support for this specification. Although the war's impact coefficient (ω) is highly significant in all three models, the adjustment coefficient (δ) is significant only in Model II.C. Moreover, the magnitude of this coefficient (0.26), indicates that, if the war did produce a gradual-permanent increase in Conservative support, its full effects were realized quickly.

Analyses in which the Falklands effect is hypothesized to influence government popularity in May and June and then to gradually disappear yield significant impact and adjustment parameters (Table 2, panel III). The value of the δ coefficient is quite large in these analyses, thereby implying that the war's effect endured long after hostilities had ended. In two cases (Models A and C), $\delta > 0.70$, indicating that the Falklands influence extended well into 1983. The behaviour of the economic variables in these models is similar to that in the previous models which treated the war's effect as permanent. Thus inflation, unemployment and personal expectations exerted significant effects on Tory popularity.

All three models of the Falklands effect employed in the Box-Jenkins analyses indicate that the war had a significant impact on Conservative popularity, net of any influences associated with inflation, unemployment and personal economic expectations. However, the permanent and temporary effects models tell very different stories about the war's influence in the post-Falklands period. As in the CMW model, the abrupt-permanent and gradual-permanent effects imply that the Conservatives enjoyed a large and lasting increment in support as a result of public reactions to the war. The former estimates this to be 10.6 points; the latter, 14.1 points.²⁸ Given that Conservative popularity averaged slightly over 29 per cent before the Falklands war and 38 per cent after, these models suggest that the war alone accounted for virtually all of the government's comfortable

²⁷ The assumption that macroeconomic variables influence political support according to a reward-punishment process is virtually ubiquitous in the popularity function literature. See e.g., Monroe, *Presidential Popularity*, Chaps 1 and 2. The possibility of alternative issue-priority effects in the British case is discussed in Clarke *et al.*, 'Politics, Economics and Party Popularity', pp. 127–30 and in Mishler and Fitzgerald, 'British Parties in the Balance'.

²⁸ The calculation of the month-to-month effects of the gradual-permanent intervention model is as follows: first month = ω_0 ; second month = $\omega_0(1 + \delta)$; third month = $\omega_0(1 + \delta + \delta\delta)$, and so

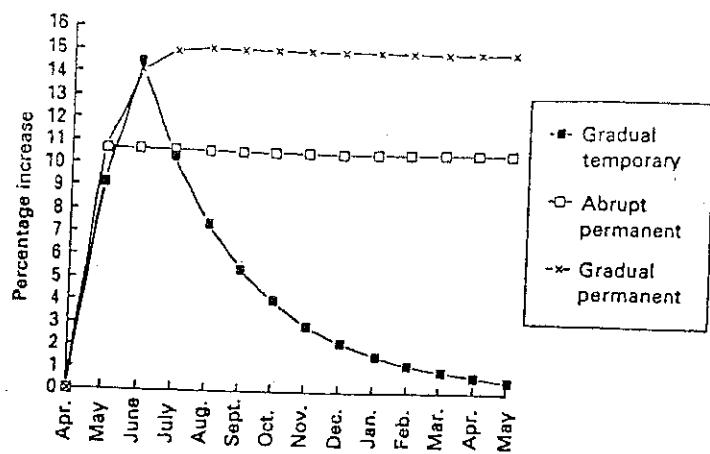


Fig. 2. Alternative models of the Falklands effect on Conservative popularity, April 1982-May 1983

lead in the polls in the year preceding the 1983 election. The gradual-temporary effect model indicates that the war quickly produced large increases in Conservative support, these reaching 14.5 percentage points by June 1982 (Figure 2). However, the impact subsequently eroded, such that it was worth less than 1 percentage point by May 1983.²⁹

The long-term significance of the war thus seems very different if one accepts the gradual-temporary instead of the abrupt-permanent model as the correct specification of the Falklands effect. However, it is important to note that all of the models consider only the direct effects of the war. In this regard, Norporth's analyses of prime ministerial approval reveal that Mrs Thatcher's performance ratings increased by nearly 20 percentage points during May and June 1982, and that a year later the war was still worth between 7 and 8 percentage points to her.³⁰

on. The long-term or asymptotic change is: $\omega_0/(1-\delta)$. Again, because the dependent variable is measured in the log metric, the percentage change in the expected value of the series in a given month is computed by taking the anti-logs of the values produced by these calculations. The predicted percentage increase in the level of the series for a given month is the pre-intervention expected value (i.e., the mean Conservative popularity for the period July 1979 to April 1982 = 29.3 per cent) times the computed percentage change minus 29.3 per cent. See McCleary and Hay, *Applied Time Series Analysis*, p. 184.

²⁹ The calculation of the month-to-month effects of the gradual-temporary intervention model is: $\delta(n-1)\omega_0 + \delta(n-1)\omega_1$, where n is the number of months since the interventions occurred. Conversions of the computed statistics into percentage changes in the expected value of the series and the predicted increase in the level of the series for a given month follows the procedure outlined in fn. 26 and fn. 28.

³⁰ Norporth, 'Guns and Butter', p. 954. Similarly, analyses of satisfaction with the Prime Minister, Mrs Thatcher, which includes inflation, unemployment, personal expectations and the three Falklands models discussed above, all show that the war had strong effects. As in Norporth's analyses, the adjustment parameter (δ) for the gradual-temporary model is very large (0.94), indicating that a substantial proportion of the war's impact on public evaluations of Mrs Thatcher's performance remained at the time of the 1983 election.

This is important because both individual and aggregate-level analyses show that party leader images have strong and significant effects on party support; thus the war may well have had important indirect effects that persisted well after its direct impact had dissipated. Relatedly, and contrary to SWM, Box-Jenkins analyses of subjective economic variables, including personal expectations, reveal that the war had a positive impact, net of macroeconomic trends and other factors. The significance of personal expectations in the Conservative popularity function again suggests that the Falklands war may have had important indirect influences on Conservative support. Mrs Thatcher's handling of the war seems to have dramatically altered public judgements about her competence as prime minister, and thereby prompted the development of more sanguine expectations about the future course of the nation's economy under her stewardship.³¹

CONCLUSIONS

We can see that the argument that the Falklands war was inconsequential, although intriguing, is quite simply incorrect. Whether the impact of the war is measured using permanent or temporary specifications, it had a major influence on Conservative popularity. Other plausible influences on Conservative support such as rates of inflation and unemployment, and economic expectations, fail to eliminate the Falklands effect when they are included in an estimating equation. The persistence of the Falklands effect in the face of controls for personal expectations is especially notable given SWM's claim that changes in expectations produced virtually all of the dramatic increase in Conservative popularity which occurred in the spring of 1982. Certainly, expectations did become more optimistic at this time and they did have a positive influence on government support, but the Falklands war mattered as well.

As for different models of the Falklands impact, the abrupt-permanent and gradual-permanent specifications indicate that the war had substantial direct effects on Conservative popularity at the time of the 1983 election. The gradual-temporary specification, in contrast, suggests that the war's direct impact had dissipated by that time. However, other analyses make a strong case that the war had important long-term indirect consequences for Conservative support via its influence on personal expectations and public evaluations of Mrs Thatcher's prime ministerial performance. More generally, the significance of the war's impact on Conservative popularity in the 1982-83 period illustrates the larger point that salient non-economic events in the domestic and international political arenas can have major consequences for party support.

Despite its limitations, SWM's study is important because it draws attention to the role of subjective economic variables in party popularity functions. More specifically, the significance of personal economic expectations in analyses of

³¹ The war had a positive impact on personal (and general) economic perceptions with controls for inflation, unemployment, interest rates, real income, economic shocks of various kinds, election campaigns, and budget debates. See Fitzgerald and Mishler, 'Through a Glass Darkly'.

Conservative support suggests that voters did not simply evaluate the retrospective performance of an incumbent government in making up their minds about which party to support. Voters also look to the future and make judgements about what to expect from the different parties with regard to economic management. Although many questions about the relationships among subjective economic variables and their impact on party support remain unanswered, it is clear that future work on the political economy of party popularity will have to consider carefully the place of expectations in model specifications.

We shall never know whether the Conservatives would have lost the 1983 general election in the absence of the South Atlantic war, since we cannot know what else might have changed had the war not occurred. But considering the low ebb to which their political fortunes fell in late 1981, there is a plausible case for the proposition that the Thatcher hegemony of contemporary British politics owes a lot to General Galtieri.

When Napoleon was being lobbied to appoint a new Marshal of France the candidate's friends waxed lyrically about his skills, bravery, and his popularity with the men. The emperor is alleged to have said 'Never mind all that, what I want to know is - is he lucky?'