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THE EFFECT OF UNEMPLOYMENT, INFLATION AND REAL INCOME GROWTH ON GOVERNMENT POPULARITY IN SWEDEN

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Abstract

This paper investigates empirically the effects of unemployment, inflation and real income growth on the popularity of the Swedish government by testing various vote functions for the period 1967–1978. Government popularity is measured on the basis of data obtained from monthly opinion polls. The results suggest that unemployment, in particular among workers in manufacturing industry, and inflation exerted a strong influence on the popularity of the Social Democratic Party, which was the ruling party during the period 1967–1976. The effects of real income growth are considerably smaller. The estimations are sensitive to the empirical specifications of the explanatory variables, although the basic conclusions remain unchanged.

I. Introduction

The interaction between macroeconomic events and political developments has been the subject of a large number of econometric studies in the 1970s. One group of studies has considered the effects of economic fluctuations on election outcomes; see *inter alia* Arcelus & Meltzer (1975), Bloom & Price (1975), Fair (1978), Kramer (1971), Meltzer & Vellrath (1975), and Stigler (1973). Other investigations have examined the influence of economic events on party popularity as measured by opinion polls; see e.g. Goodhart & Bhansali (1970), Frey & Garbers (1971), Frey & Schneider (1978a) and (1978b). Another group of studies has constructed and empirically tested models of the mutual relationships between the economic and political spheres. These politico-economic models consist of two equations. The first, the

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evaluation function, describes the effects of macroeconomic developments on government popularity; the second, the policy function, depicts the policy measures taken by the government to influence its popularity standing and thus its re-election prospects; see *inter alia* Frey (1978), Frey & Schneider (1978*a*) and (1978*b*).

Most of the empirical work on the interdependence of economic and political events has dealt with the American record. A few studies of the experience in various European countries have also been published. As yet, Swedish economists have not developed and tested models of this kind for Sweden, although they have discussed the interaction between the economy and the polity, in particular Johan Åkerman and some of his students, as well as Assar Lindbeck.

The purpose of this paper is to construct a small model for examining the relationship between macroeconomic changes and the popularity standing of the Swedish government in power, as measured by opinion poll data. The effect of unemployment, the rate of inflation and changes in real disposable income on government popularity is empirically measured for the period 1967–1978.

II. Earlier Swedish Studies

Johan Åkerman has examined the interaction between economic and political developments in a number of books and articles. His great interest in this field—a field he regarded as the “synthesis of economics, statistics, history and political science”¹—grew out of his work on business cycle fluctuations. His major contribution dealt with the experience of the United Kingdom, the United States, Germany and Sweden during the period 1850–1940; see Åkerman (1946).² Here he adopted a rather impressionistic approach, comparing cabinet changes with business cycle fluctuations. Several time series were used as measures of the influence of economic changes such as data on unemployment, stock prices, construction activity, emigration and railroad construction.

In his analysis of the Swedish record, he suggested three conclusions: (1) one-third of the 33 cabinet changes between 1866 and 1940 were due to downturns in the business cycle, (2) booms had a tendency to improve political support for conservative parties, while depressions strengthened the political power of the Social Democrats, and (3) structural changes in the political system were caused by long-term economic changes, that is, various stages of industrialism eventually gave rise to political democracy. Later, when considering the experiences of the United States and the United Kingdom in greater detail, Åkerman (1947*b*) and (1948) argued that as a rule, economic

¹ Åkerman (1946, p. 2).

² A good summary in English of Åkerman's views on political business cycles is found in Åkerman (1947*a*).

events had significantly stronger effects on political outcomes in these countries than in Sweden.

Kurt Rydé (1950), one of Åkerman's students, investigated the relationship between short-term economic conditions and the election outcomes in Sweden during the period 1896–1948 using Åkerman's approach. He applied three indices: one describing the economic status of Swedish industry, a second measuring the business situation in the agricultural sector and third, an index of political outcomes. His method was based on tabular comparisons, although he also made some computations of correlation coefficients. He found the correlation between the industry index and that of election outcomes to be 0.73, while the corresponding value for the index of the agricultural business situation and election outcomes was 0.06.¹ Rydé presented three conclusions; (1) a causal effect originating from the economic situation in Swedish industry had affected the outcomes of all elections except the election of 1928, when "ideological" events predominated, (2) all elections during wars were influenced by non-business cycle developments, and (3) effects stemming from the economic situation of the farming community and influencing the elections were either weak or completely absent.

Another student of Åkerman's, Sven Grönhagen (1951), studied the relationship between parliamentary elections and economic events in Great Britain during the period 1850–1950. He used several economic indicators such as changes in wholesale prices, in imports, in industrial production, in employment, in stock prices and in total employment during various time periods before the election dates. Grönhagen concluded that a considerable number of the elections between 1852 and 1950 were influenced by economic developments. He employed roughly the same approach as Åkerman and Rydé.

The work of Åkerman and his students was not continued by either economists or political scientists in Sweden. Recently, however, Assar Lindbeck has studied the incorporation of political behavior into macroeconomic models. Lindbeck (1976) discussed the problem of endogenous politicians in general terms. He also made an attempt to bring the discussion to bear on the Swedish record. Employing a Phillips curve framework, Lindbeck (1975) considered the relationship between the dating of election years, the rate

¹ Rydé calculated simple correlation coefficients for the independent variables and the dependent variable in his study. An estimation, using his data, with regression analysis gives the following result:

$$P = 27.528 + 0.395I + 0.237A$$

$$(24.950) (0.188) (0.166)$$

Standard errors in parentheses

$$R^2 = 0.312 \quad DW = 1.871 \quad N = 18$$

where P = index of political outcomes, I = industry index, A = index of the agricultural business situation. Both coefficients have the expected signs but only the coefficient of the industry index differs significantly from zero, when tested at the five per cent level using a t -test.

of inflation and the level of unemployment in postwar Sweden in reference to a number of charts. He stressed the policy option of manipulating the temporal allocation of inflation and unemployment through stabilization policy in such a way as to enhance re-election chances. Considering the work by Åkerman and his students, and that of Lindbeck, as well as the policy-oriented research carried out by Swedish economists, it may seem surprising that Swedish economists have not carried the empirical study of politico-economic interdependence further.¹

III. The Model

Recent work on the interaction between the political and economic spheres revolves around two functions. The first, the evaluation function, depicts the effects of economic events on the political situation as measured either by election outcomes (the vote function) or by opinion polls (the popularity function). The second basic function, the policy function, describes the effects of changes in the political market on the use of various economic policy instruments and/or economic aggregates.

This paper focuses on the first type of relationship. The empirical study of evaluation functions has been based on two sets of data, either time series on election outcomes or data from public opinion polls. Poll data are used in this study for a number of reasons. Such data have been available for Sweden on a monthly basis since March 1967. Consequently, a large number of observations exist for a fairly short period of time. Due to considerable changes in the Swedish constitutional system, it is difficult to utilize data on elections in studies covering long time spans. Furthermore, consistent data on several economic indicators are available for 1967–1978, facilitating an investigation of various relationships during this period.

Several macroeconomic indicators may be assumed to influence the popularity standing of the party in power. Econometric studies generally indicate that the rate of unemployment, changes in the price level and changes in the growth of real disposable income are important determinants of government popularity; see e.g. Frey (1978) for the evidence from the United States, Great Britain and West Germany. These three variables will thus be included in the popularity function to be examined for Sweden.

The model to be tested can now be expressed in the following way:²

$$S = a + b \cdot U + c \cdot P + d \cdot Y + \varepsilon \quad (I)$$

¹ Outside of Sweden, Kirchgässner (1976), Madsen (1978) and Paldam (1977) have considered the Swedish politico-economic experience in comparative studies.

² The vote function postulated here may be regarded as a reduced form equation. The derivation of this function from a microeconomic to a macroeconomic level is a problem hardly touched upon in the politico-econometric literature. The vote function is as a rule tested in a linear form in empirical work.

where S represents the popularity of the Social Democratic Party in Sweden, the ruling party prior to October 1976, as measured by opinion surveys; U , the rate of unemployment; P , the rate of inflation; Y , the rate of growth in real disposable income; ε is an error term that is assumed to be normally distributed. The coefficients of the unemployment and inflation terms are expected to be negative.¹ Real income growth, however, is expected to influence government popularity positively, producing a positive coefficient for income changes. The choice of the proper empirical measures of the explanatory variables in eq. (I) will be discussed in connection with the empirical results.

IV. The Empirical Results

The estimation period is limited by the availability of data. In March 1967, the Swedish Sifo Institute began continuous opinion polls among a representative group of Swedish voters. In these polls, which have generally been made on a monthly basis, the following question was asked: "Which party do you think is the best one today?" In parliamentary election months, the question was: "Which party are you going to vote for in the election?" The Sifo polls are regarded as a reliable estimate of the popularity standing of the various parties as well as of the election outcomes. The divergence of the Sifo Gallup poll results from the actual election outcomes may be regarded as small.²

The Social Democratic Party was in power in 1967—when the first poll was taken—until October 1976. Since then the Social Democrats have remained in the opposition. For this reason, two estimation periods are used: 1967:03–1976:09 and 1976:10–1978:08. The latter period covers the rule of the non-socialist three-party government before this coalition was dissolved. The estimates covering the opposition period of the Social Democrats are expected to give rise to a change in the signs of the coefficients of unemployment and inflation.

A number of empirical measures of the explanatory variables in eq. (I) may be suggested. The consumer price index, P^c , is used as one measure of the behavior of prices. Considering the political weight given to the behavior of food prices and the attempts made by the government to influence food prices, the food price index, P^f , is also adopted as an indicator of the rate of inflation.

¹ This model suggests that unemployment and inflation reduce the re-election chances for the party in power. However, voters may have a greater dislike for unemployment than for inflation. In that case, the government may try to choose a combination of unemployment and inflation that maximizes its re-election chances, by reducing unemployment prior to the election at the expense of a higher rate of inflation, which—given time-lags—may not be noticeable until after the election. As analyzed in the literature on political business cycles, such short-run vote-maximizing behavior may induce election cycles or political business cycles. See Lindbeck (1975) for a discussion of the Swedish record.

² The difference between the Sifo polls and the election outcomes declined from 2.1 percentage points in the 1950s (as an average for three elections), to 1.4 percentage points in the 1960s (as an average for five elections) and to 0.7 percentage points in the 1970s (as an average for three elections).

Regarding the rate of unemployment, a time series is used including all categories of insured unemployed, U . As workers in manufacturing and industry are regarded as the core of the Social Democratic Party, the rate of unemployment among this labor group, U^m , may be expected to exert an influence on the party's popularity standing which differs from the general measure U . U^m is also less influenced by changes in the coverage of the unemployment insurance system and less affected by seasonal variations than U . Changes in disposable real income, Y , are adopted here as the measure of income growth.

It is reasonable to assume that unemployment, inflation and changes in real income do not immediately influence the popularity standing of the government. It takes time for voters to collect information about the behavior of various macroeconomic indicators and to change their political attitudes. Furthermore, data on various macroeconomic time series are not calculated and reported until at least one month after the data have been collected. For this reason a lag of one month is used in the regressions.

A number of regression estimates of the popularity function are reported in Table 1. The first three regressions in the table cover the period 1967–1976 when the Social Democrats were in power. The first and second estimates show that the effect of unemployment among industrial workers on the polls was larger than the effect of unemployment including all categories. The difference is considerable; a one-percentage point increase in U^m reduced government popularity by 4.1 percentage points while the corresponding decline is only 2.4 percentage points for U .

The influence of inflation as measured by the consumer price index is significant. The third regression in Table 1 shows that changes in food prices also exerted a significant influence on the popularity standing of the government, although much smaller than that exerted by the consumer price index. The sign of the coefficient of the growth in disposable real income in the first three equations reported in Table 1 is positive as expected. A one per cent rise in the growth rate increased the popularity of the Social Democratic government by about 0.3–0.4 percentage points.¹

¹ Two measures of the relative importance of the different explanatory variables have been employed, beta-coefficients and elasticities at the point of means. See e.g. Hanushek & Jackson (1977), pp. 78–79.

Variable	Beta-coefficient	Elasticity at the point of means
U_{-1}^m	0.430	-0.167
P_{-1}^c	0.443	-0.083
Y_{-1}	0.237	0.020

According to both measures, the influence of growth in real disposable income is much less than the influence of the other variables.

The equations in Table 1 display a high positive autocorrelation judging from the Durbin-Watson statistic. One explanation for the high autocorrelation may be that economic events as well as other events occurring in a given month influence government popularity not only in the month immediately following, but also in subsequent months. A Koyck-lag is introduced in Table 2 to capture a lagged influence on the popularity of the government. Eq. (5) including the lagged dependent variable shows that the coefficients of both unemployment (U_{-1}^m) and the rate of inflation (P_{-1}^c) still have the expected signs and that they differ significantly from zero when tested at the five per cent level using a *t*-test. The coefficient of the growth in disposable real income (Y_{-1}) does not, however, have a predicted positive sign and does not differ significantly from zero. Excluding real income growth, as done in eq. (6), the coefficients of the remaining explanatory variables are practically unchanged. The autocorrelation is reduced in comparison with eq. (1) and is negative instead of positive.

Eq. (6a) shows the steady state solution of eq. (5). The coefficients of unemployment (U_{-1}^m) and inflation (P_{-1}^c) are somewhat higher than in eq. (1). An increase in the rate of unemployment by one per cent reduced government popularity by 5.8 percentage points as compared to 4.1 in eq. (1). The corresponding values for the coefficients of inflation are 0.8 and 0.6, respectively.¹

The size of the Koyck-lag suggests that the effects of changes in the explanatory variables on government popularity are concentrated to the first year. After 12 months the effect is about 20 per cent of the original impact, and after three years (the electoral period since 1970) it is only about one per cent.

Two residuals of eq. (5) are exceptionally large. For October 1968, the actual value for government popularity is 3.99 percentage points larger than the fitted value. The explanation is that the events in Czechoslovakia sharply increased political support for the Social Democrats.² In April 1976,

¹ The beta-coefficients and the elasticities at the point of means for unemployment and inflation in eq. (6a) are shown below.

Variable	Beta-coefficient	Elasticity at the point of means
U_{-1}^m	0.617	-0.236
P_{-1}^c	0.629	-0.117

The above numbers are in accordance with the results shown in the preceding footnote.

² If a dummy is introduced for the events in Czechoslovakia ($T=1$, October 1968; $T=0$, all other months), the estimates in eq. (6b) are obtained:

$$(6b) \quad S = 6.802 + 0.884S_{-1} + 4.168T - 0.643U_{-1}^m - 0.074P_{-1}^c$$

$$(2.036) \quad (0.035) \quad (1.129) \quad (0.305) \quad (0.040)$$

$$R^2 = 0.917 \quad h = -1.379 \quad N = 114$$

Durbin's *h*-statistic shows that the autocorrelation problem is less than in eq. (6). As the value of $|h|$ is less than 1.645, the hypothesis of zero autocorrelation cannot be rejected.

Table 1. *The effect of unemployment, inflation and real income growth on the popularity standing of the Social Democratic Party. Monthly data, 1967–1978*

S = popularity standing of the Social Democratic Party, U = rate of unemployment including all categories of insured unemployed, U^m = rate of unemployment among insured industrial workers, P^c = rate of inflation as measured by the consumer price index, P^f = rate of inflation as measured by the food price index, Y = rate of growth in disposable real income

The Social Democrats in power. 1967: 03–1976: 09.

$$(1) \quad S = 54.729 - 4.116U_{-1}^m - 0.565P_{-1}^c + 0.299Y_{-1}$$

$$(1.404) \quad (0.670) \quad (0.088) \quad (0.088)$$

Standard errors in parentheses

$$R^2 = 0.474 \quad DW = 0.389 \quad N = 115$$

$$(2) \quad S = 52.170 - 2.440U_{-1} - 0.713P_{-1}^c + 0.364Y_{-1}$$

$$(1.424) \quad (0.596) \quad (0.100) \quad (0.094)$$

Standard errors in parentheses

$$R^2 = 0.388 \quad DW = 0.357 \quad N = 115$$

$$(3) \quad S = 52.548 - 3.830U_{-1}^m - 0.265P_{-1}^f + 0.246Y_{-1}$$

$$(1.479) \quad (0.751) \quad (0.073) \quad (0.098)$$

Standard errors in parentheses

$$R^2 = 0.355 \quad DW = 0.269 \quad N = 115$$

The Social Democrats in opposition. 1976: 10–1978: 08.

$$(4) \quad S = 33.852 + 2.844U_{-1}^m + 0.294P_{-1}^c + 0.394Y_{-1}$$

$$(4.211) \quad (1.183) \quad (0.292) \quad (0.301)$$

Standard errors in parentheses

$$R^2 = 0.278 \quad DW = 0.554 \quad N = 23$$

$$(4a) \quad S = 43.559 + 1.985U_{-1}^m + 0.039P_{-1}^c$$

$$(2.242) \quad (1.003) \quad (0.022)$$

Standard errors in parentheses

$$R^2 = 0.212 \quad DW = 0.464 \quad N = 23$$

Comments: The rate of inflation and the rate of change in disposable real income are expressed as yearly percentage changes on a monthly basis as $100(X_t - X_{t-12})/(X_{t-12})$.

the actual value is 3.67 percentage points lower than the fitted value. This residual is probably due to some events in the spring of 1976 called *affärerna* (literally “the affairs”). These, including the fact that film director Ingmar Bergman was taken into custody and that a high-ranking trade union official made a trip to the Canary Islands during a tourist boycott of Spain, reduced the popularity of the Social Democrats.

A slightly different picture emerges when the popularity function is estimated for the period 1976–1978, when the Social Democrats were in opposition. As expected, the signs of the coefficients are reversed for inflation and unemployment. This does not hold, however, for the growth in disposable

Table 2. *The effect of unemployment, inflation and real income growth on the popularity standing of the Social Democratic Party. Monthly data 1967–1978. Estimations including a lagged dependent variable*

The Social Democrats in power. 1967: 04–1976: 09.

$$(5) \quad S = 7.479 + 0.877S_{-1} - 0.726U_{-1}^m - 0.099P_{-1}^c - 0.005Y_{-1}$$

$$(2.221) \quad (0.040) \quad (0.322) \quad (0.043) \quad (0.040)$$

Standard errors in parentheses

$$R^2 = 0.907 \quad h = -1.752 \quad N = 114$$

Excluding real disposable income

$$(6) \quad S = 7.550 + 0.875S_{-1} - 0.727U_{-1}^m - 0.100P_{-1}^c$$

$$(2.139) \quad (0.037) \quad (0.321) \quad (0.041)$$

Standard errors in parentheses

$$R^2 = 0.907 \quad h = -1.733 \quad N = 114$$

Steady state solution ($S = S_{-1}$)

$$(6a) \quad S = 60.400 - 5.808U_{-1}^m - 0.800P_{-1}^c$$

Comments: See Table 1. h denotes the Durbin h -statistic.

real income. Only unemployment differs significantly from zero at the five per cent level. One possible explanation is that in the months immediately following the change of power in October 1976, the public still judged economic conditions as a result of the policy of the former government. This view is confirmed by using eq. (1) and eq. (6) to calculate the popularity standing of the Social Democratic Party in the period 1976:10–1978:08 when the Social Democrats were in opposition. The actual and fitted values of both equations follow each other closely in the last quarter of 1977 and in January 1978. But from then on they differ substantially. The non-socialist government presented its first budget in January 1978. This was perhaps a decisive event that made the public regard macroeconomic developments from then on as the result of the policies of the new government, although the budget did not go into effect until July 1978.

The regressions in Tables 1 and 2 reveal that unemployment and inflation exerted a significant influence on the popularity standing of the Social Democrats. The estimations are, however, sensitive to the empirical specifications of the explanatory variables. The results are also sensitive to the estimation period used, although this choice does not change the basic results of the calculations. Estimations using concomitant changes, that is, without the one-month lag, do not improve the results.¹

¹ Kirchgässner (1976) used Sifo data in a number of estimations of popularity functions for Sweden covering the period March 1967 to March 1973, that is a shorter time period than in this study. His results are fairly similar to the regressions reported in Tables 1 and 2 for the period 1967–1976.

V. Conclusions

The rate of unemployment, and inflation exerted a significant influence on the popularity standing of the Swedish government during the period 1967–1978. Unemployment and inflation had a considerably larger effect on government popularity than real income growth during the time periods examined.

List of symbols, definitions and sources

- S* Popularity, in per cent, of the Social Democratic Party as measured by the opinion polls of the Sifo Institute. Monthly data. Data have been constructed through linear interpolation for months when no polls were made, generally 1–3 months a year. Source: *Väljarbarometern 1967–1978*. Sifo, 1978.
- U* The rate of insured unemployed. Monthly data. Source: The National Labor Market Board.
- U^m* The rate of insured unemployed in manufacturing industry. Monthly data. Source: The National Labor Market Board.
- P^c* Consumer price index. Monthly data. Source: *Allmän månadsstatistik* (Monthly Digest of Swedish Statistics).
- P^f* Food price index. Monthly data. Source: *Allmän månadsstatistik* (Monthly Digest of Swedish Statistics).
- Y* Real disposable income. Quarterly data. Monthly data constructed through linear interpolation. Source: National Central Bureau of Statistics.

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