

# Is there a threshold effect in the party popularities with respect to the changes in unemployment?\*

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## Abstract

In 1987-2001 unemployment and inflation have the opposite influences on the popularities of Finnish and Swedish leftist and rightist parties. The popularities of the Finnish right-wing (left-wing) parties decrease (increase) when unemployment and inflation increase but in Sweden the opposite happens although the countries experience simultaneously an economic crisis. Fitting a threshold model in the popularity functions further widens the differences. Popularity of the Finnish left-wing parties increases when unemployment is high ( $>10.7\%$ ). The right-wing parties lose support when unemployment is between 12.2% and 15.1%, otherwise their popularities go to different directions with respect to the economy. For the Swedish parties no meaningful thresholds are found.

Keywords: popularity function, threshold model

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# 1 Introduction

It is an undeniable empirical fact that the economy affects election outcomes as well as parties's monthly popularity ratings. Party fortunes alternate with economic up- and downturns. Incumbent parties are found especially vulnerable to changes in unemployment although the changes would be of the volume of a normal business cycle. Aim of this study is to examine how dramatic changes in the economy, especially in unemployment, influence the party popularities. The depression of the 1990's in Finland and Sweden was not only an economic phenomena, but it also transformed the society as a whole. The change is most visible in the permanent increase of the unemployment level. After the immediate crisis, it was structural unemployment that was left. Besides the influence of unemployment on the popularities, our aim is to find a threshold point for unemployment in which the effect of unemployment changes its direction.

The idea of election outcome being a result of incumbent's performance originates in Downs (1957). In the Downsian world voter and government maximize their utilities. The government tries to please the voter to get reelected and the voter holds the government responsible for its economic policy. The voter shows his/her trust (distrust) by voting for the incumbent (voting against it). Elections are like referendums on the incumbent's economic performance. Downs called this pattern responsibility hypothesis. Hibbs (1977) complemented the responsibility hypothesis by adding different issue-priorities to the left-wing and the right-wing parties. The issue-priority (or partisan) hypothesis holds that the left-wing parties are more concerned for the unemployment and the right-wing parties for the inflation.

There are some institutional requirements for the Downsian voting: clear patterns of accountability and the voters have to be able to get the under-achievers out of office with their vote. The incumbents have to have incentives for reelection and the opposition has to have a credible role (and it must

exist). The Downsian thinking still has some unanswered questions when it comes to unexpected changes in the economy and unintended consequences of policy actions. How should the voter react when the incumbent's deviation from the promised policy increases the voter's welfare? Is it reasonable to punish the incumbent for the deviation if the reason for the deviation is an exogenous shock? Some kind of an answer to this question is given in Alesina, Roubini and Cohen (1997, p.35) where they write "a naive voter would punish an unlucky incumbent, whereas a rational voter would, at least in part, take bad luck into consideration". These questions are relevant for this study as it is unsure if the politicians were aware of the true shape of the economy before the Finnish parliamentary elections in 1991 (Vartia and Kiander p. 65, 1998). There are also features in the political structures of Finland and Sweden that weaken the Downsian theory. In Finland, in 1991-95 we have had two multi-party governments consisting two left-wing parties, a green party, a right-wing party and a liberal party. In Sweden, the incumbency of the social democratic one-party minority government has continued since 1994. One-party minority government is forced to rely on the help of the opposition parties when passing legislation. Thus, it is not only the incumbent that is responsible for the results.

In addition, this study approaches another weakness of the Downsian theory - the assumption of two party system. We try to shed light on the question of how the incumbent parties are treated in a coalition government. Do the cabinet positions held by the party count or is it something else that leads to fame and blame? Whom to punish when almost all the relevant parties are included in the government coalition? In that case, is it issue-priorities of the parties that decide the approval?

The first studies (Kramer, 1971, Mueller, 1970, Goodhart and Bhansali, 1970) empirically connecting party, presidential or congressional popularities to the economic development applied data of two-party systems. Since

the beginning of the 1970's, the research has widened to cover almost all relevant countries and party systems. In addition, the questions posed have changed from the existence of the connection to more delicate ones. The latest Finnish and Swedish studies on vote (Sweden: Jordahl, 2001) and popularity function (Finland: Nyberg, 1999, Mattila, 1994) provide support for the responsibility hypothesis. Before that the Swedish government popularity has been found to be influenced by inflation and unemployment (Jonung and Wadensjö, 1979) or just by unemployment (Lybeck, 1985, Hibbs and Madsen, 1981). In a multi-country study (Denmark, Finland, Norway, Sweden) on the government popularity, it is concluded that the economy has the stronger influence the fewer incumbent parties there are (Mattila, 1996). Using the same country set it is also concluded that especially the vote for the leftist parties depends on the success of the economy (Pacek and Radcliff, 1999).

This study essentially differs from the previous studies as the focus here is on the effect of the depression on the party popularities. It is interesting to see whether this extraordinary period makes visible difference to the party popularities. More specifically the following hypotheses are set:

1. In the beginning of the 1990's Finland and Sweden experienced the deepest peacetime depression. Economy gained attention in the media and it is assumed that the influence of the economy on the party popularity varies in 1987-2001. It is assumed that the economic crisis changes the punishment pattern. We wish to find out whether all the government parties are treated similarly what comes to economy.
2. During the deepest phase of the depression both countries were governed by the right-wing governments. Nevertheless, the economic policies to handle the crisis were different in these countries. Most clearly it is reflected in the development of unemployment. In Sweden unemployment never rose above 10%, whereas in Finland unemployment

rate increased to around 18%. In Finland unemployment has stayed high since the depression years. Unemployment rate is assumed to reflect the differences in economic policies in these countries. Thus, the question is whether the incumbents of 1991-95 are treated differently in the two countries?

3. If the regression coefficients vary from subperiod to another, as hypothesis 1 suggests, we try catch this variation by fitting a threshold model to each popularity regression. Further, we assume that the threshold, which divides the data into two regimes, is a result of large changes in unemployment. In the threshold point the influence of unemployment on the party popularity alternates its sign and/or significance. This gives us an opportunity to test how high unemployment has to rise to change the way poll respondents view a certain party.

In the following, the political structures in Finland and Sweden are shortly described. After that an outline of the depression is sketched. The popularity function and the test hypothesis are presented next and the rest of the paper explains the results.

## 2 Similarities in Political Structure and Economic Development

### 2.1 Political Structure

The Finnish and Swedish politico-economic structures are quite alike. Both countries are Nordic welfare states and the maintenance of the welfare state means high tax rates and thus small income differences. Characteristic is also consensual procedures in the political system, a high-level of social security, a high organization rate in the labor market, a high share of government in GDP and a stable political system. Party structure consists of five party

types: leftist, social democratic, agrarian, liberal and rightist. In addition, typical is the high the vote share and the popularity of the Social Democratic parties. The popularities of the four biggest parties are shown in Figures 1 and 2.

Until 1991, Finland was governed by the Social Democratic Party and the National Coalition, Sweden by the Social Democratic Party. After that both countries were governed for 3-4 years by the right-wing governments. The right-wing governments coincided with the deepest phase of the crisis and the incumbent coalitions changed in both countries after the crisis. Sweden returned to the Social Democratic one-party minority government. After the crisis Finland was governed by the so-called rainbow coalition including parties from the left to the right and also the Greens and missing only one big party, namely the Centre Party. The incumbent parties are listed in Table 1.

Table 1. Government parties<sup>1</sup> in Finland and Sweden.

Finland		Sweden	
1987-91	NC, SDP, SSPP, FRP	1987-90	SDP
1991-95	NC, CENT, SSPP, CD	1991-94	MP, CENT, LP, CD
1995-99	NC, SDP, LA, GL, SSPP	1994-98	SDP
1999->	NC, SDP, LA, GL, SSPP	1998- >	SDP

To be able to compare the effects of the economic variables on the party popularities in two countries, the parties must be ideologically close to each other. As is seen in Table 2. the biggest parties in Finland and Sweden rank close to each other on the left-right scale in 1970-1990 (Gilljam and Oscarsson, 1996). These ratings suggest that the popularity changes of also

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<sup>1</sup>NC (National Coalition), SSPP (Swedish Speaking People's Party), SDP (Social Democratic Party), FRP (Finnish Rural Party), CP (Finnish Centre Party/Centre Party), LA (Left Alliance), GL (Green League), MP (Moderate Party), LP (Liberal Party), CD (Christian Democratic Party/Christian Democrats).

other parties than the Social Democratic Parties can be compared.

Table 2. Party positions on the left-right scale<sup>2</sup>.

Party	Finland	Sweden
Left Alliance/Left Party	1.8	2.6
Social Democratic Party	3.7	3.9
Centre Party	5.4	6.1
National Coalition/Moderate Party	7.5	7.5

## 2.2 Economic Crisis of the 1990's<sup>3</sup>

The cyclical behavior in Finland and Sweden has always been highly correlated due to the similar production structure. The economic crisis was by far deeper in Finland than it was in Sweden but the following crisis outline fits to both countries. Typical of the crisis was that nobody could forecast the huge decline in the economic growth. Further, it was a combination of bad luck and bad policies (Honkapohja and Koskela, 1999). The depression had its roots in the overheated economy of the end of the 1980's. Deregulation of capital and credit markets began in the mid-1980's. New regulation allowed foreign debt also for households and non-exporting firms. Saving rate approached zero and consumer expectations were optimistic, fiscal policy was not particularly restrictive. Tax deductible interest payments for households and companies favored debt financing of consumption and investment. For the above mentioned reasons and also because the export demand decreased as a consequence of the world-wide economic downturn and the collapse of the former Soviet Union, the current account deficit grew and after a while it became a problem. The maintenance of the fixed exchange rates while

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<sup>2</sup>On the scale 1 denotes the farthest position on the left and 10 the farthest position on the right.

<sup>3</sup>This chapter is based on Holmlund (2002), Honkapohja and Koskela (1999), Lindbeck (1997) and Vartia and Kiander (1998).

experiencing current account deficits and devaluation expectations, lead the central banks to increase interest rates.

The interest rate increase and the later inevident devaluation lead many debtors to sell their properties, which yielded to deflation, especially on the real estate market. Unsound company financing produced bankruptcies and credit losses. Unemployment increased, economic growth decreased and the banking crisis realized. In welfare states, the balancing effect of automatic stabilizers accumulated public sector debt.

At the same time as the crisis took its first steps, Finland and Sweden aimed at abandoning the Nordic inflation model and competing devaluations<sup>4</sup>. Following Sweden, Finland pegged markka on ecu in June 1991 at the prevailing exchange rate. Because of the current account deficits, high foreign debt, rising unemployment and fixed exchange rate, the financial markets lost its confidence in the countries' ability to cope with the crisis. The currencies pegged on ecu were attacked in Autumn 1991. Next time markka was under a serious attack in the EMS crisis in September 1992. Then markka was allowed to float and Sweden devalued krona two months later. These devaluations helped the export industries to lead the economies from the crisis.

Despite the similar causes of the crisis, stabilization policy and recovery have been different in Finland and Sweden. In both countries tight fiscal policy was part of the new economic policy paradigm which aimed at reaching the EU membership convergence criteria. In Finland, the government downsized its financing of municipals, which led to cuts in the public services.

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<sup>4</sup>In the 1960-90's, both countries exploited the opportunity to devalue their currencies when the competitiveness of the export industries decreased. This is the so-called Nordic inflation model. If interested, see Jacobsson, 2003.



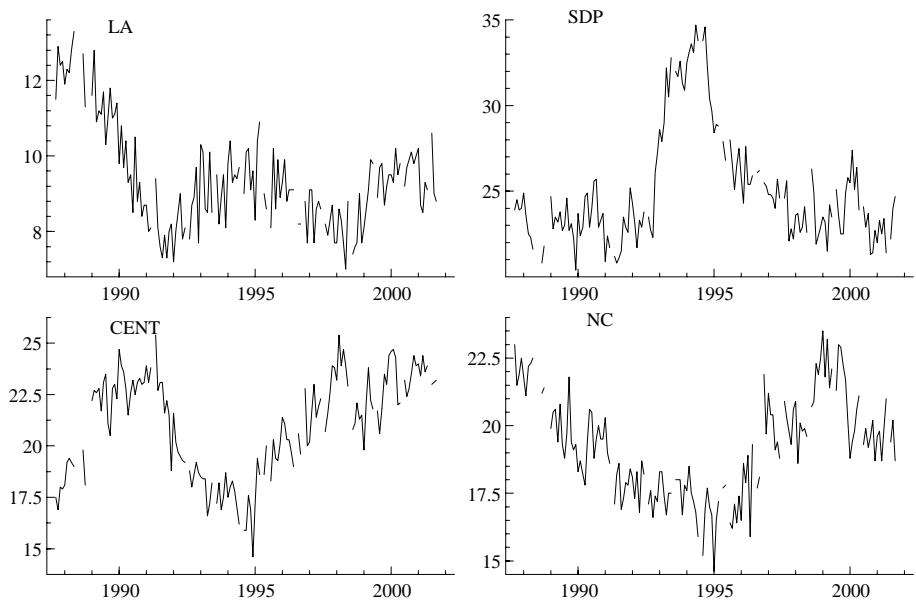


Figure 1. The Finnish party popularities.

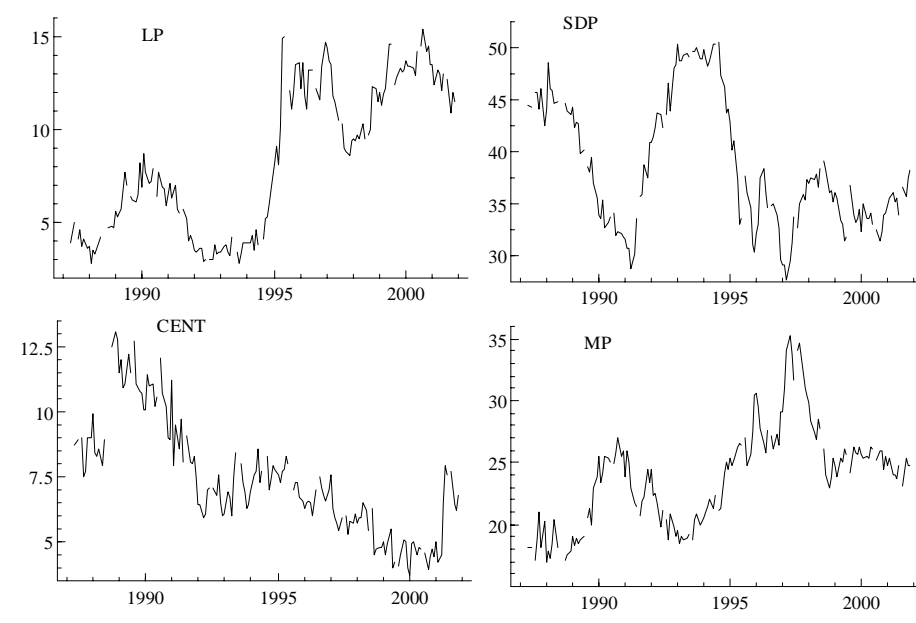


Figure 2. The Swedish party popularities.

In Sweden, they had a policy decision to avoid cuts in the public services. In Finland, cutbacks in the public expenditures had higher weight than tax increases in the consolidation policy. In Sweden, the two policies had fifty-fifty shares in the stabilization policy. In Finland, the cutbacks and the public saving decisions were mostly made in the early 1990's by the right-wing government, but in Sweden in 1994-95 by the Social Democratic government. (Kautto, 2001) In Sweden, the government indebted more to finance the welfare services. Thus, the average-Swede did not suffer so much of the economic crisis. Unemployment started to decline faster in Finland than in Sweden. Nevertheless, open unemployment never rose above 10% in Sweden, whereas in Finland it reached almost 20%. The Finnish and Swedish unemployment rates are plotted in Figure 3.

The nature of unemployment changed over the years as the production technology experienced a structural change. The leading role of paper, pulp and metal industries was gradually taken over by electronic industry. The latter needs different kind of abilities and schooling than the metal and paper industry and that has led to a high level of structural unemployment. Service industry has also played a big part in the creation of new jobs. (Koskela and Uusitalo, 2003) The depression brought the economy into the public focus at least for a decade.

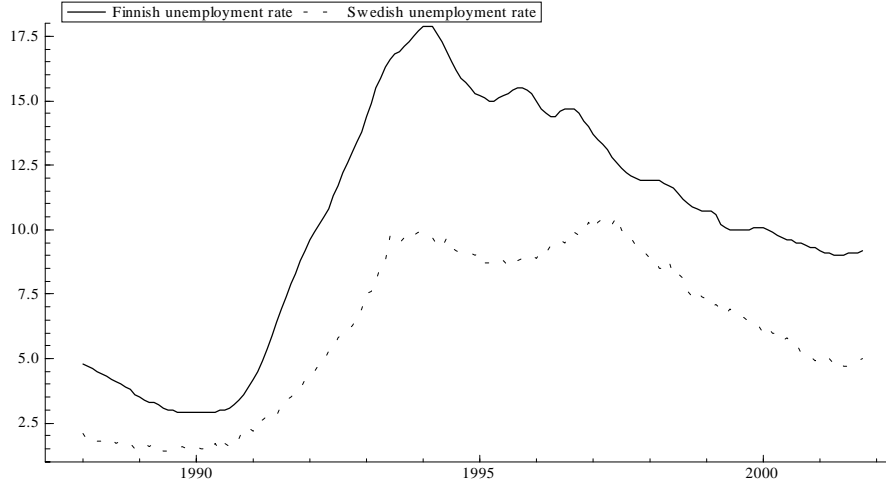


Figure 3. Seasonally adjusted Finnish and Swedish unemployment rates.

### 3 Estimation of the Popularity Equation

#### 3.1 Linear Model

We begin by estimating a linear regression model for the whole period and then divide the data into three subperiods, namely before-the-crisis, the crisis and after-the-crisis periods. Due to the large changes in the unemployment rate, we assume that the influence of economic variables on the popularity ratings differs from period to period. The popularity function has the standard linear autoregressive formulation as follows

$$(1) \quad P_t = \beta_0 + \beta_1 P_{t-1} + \beta_2 I_t + \beta_3 U_t + \sum_{i=1}^P \beta_{4i} Pol_{it} + \sum_{i=1}^G \beta_{5i} GD_{it} + \sum_{i=1}^R \beta_{6i} T_{it} + \varepsilon_t.$$

On the left hand side there is the popularity ( $P_t$ ) of the party in question ( Finnish: Left Alliance, Social Democratic Party, Centre Party, National Coalition Party, Swedish: Left Party, Social Democratic Party, Centre Party, Moderate Party) and on the right hand side is its first lag ( $P_{t-1}$ ) with other explanatory economic and political variables<sup>5</sup>.

<sup>5</sup>The Finnish popularity ratings are from Taloustutkimus, the Swedish from SIFO. Economic data is from OECD Statistics for both countries.

Unemployment and economic growth are essential indicators of the deepness of the economic crisis but including both in the same regression equation may create correlation problems. Thus, only unemployment (U) is included. Both seasonally adjusted and non-seasonally adjusted unemployment rates are tested. Inflation (I) is a 12-month change in the cost of living index. Lags in the economic variables are chosen to give the best fit for every regression. The popularity regression is completed with political variables ( $Pol_{it}$ ) which highlight the significance of atypical, one-time political events like changes of party leader, referendums and municipal elections. Most political events are coded as dummies which creates asymmetry in the explanatory power between the economic and the political variables. The incumbency periods are denoted by dummies ( $GD_{it}$ ). Time-related variables ( $T_{it}$ ) expose trends, cycles and abrupt changes in the popularity levels. A trend variable is created for the Left Alliance to detect the universal fall in the popularity of the leftist ideology. The popularity regressions for each party are estimated separately. All tested economic and political variables that did not reach any level significance are listed in Appendix in Tables 1 and 2. Below the tables is a list of tested economic variables that did not have significant influence on the party popularities.

The focus is to examine how the atypical economic circumstances change the relationship between the economy and the party approval rates. Overall, it is assumed that unemployment has a more decisive role in the popularity changes than inflation and this should hold for all the parties. It is assumed that the effect of unemployment is larger for the Finnish parties than for the Swedish parties simply because unemployment increased in Finland faster and to a higher level than it did in Sweden. This larger influence should be more pronounced in the crisis period, especially the incumbent parties should be punished. Another expected difference in the results between the countries is that the incumbents should not be so severely punished in

Sweden as in Finland. To examine the changes in the economy-popularity relationship we apply the subperiods, which roughly coincide with the incumbency periods. The exact periods and numbers of observations in each period are shown in Table 3. As the depression was deeper than any downturn experienced in peacetime, there is a possibility that the results do not support any traditional hypothesis.

Table 3. The exact subperiods and numbers of observations in each period.

Period	N, Finland	N, Sweden
9/1987-9/1990	32	36
10/1990-9/1995	53	55
10/1995-10/2001	63	67
Total	148	158

## 3.2 Results on the Linear Model

### 3.2.1 Finnish Results

Our estimation method for the linear model is OLS. In reporting the results we move from Finland to Sweden and from whole period to subperiods. Several well-known hypothesis get support in these estimations. The main result is that both unemployment and inflation influence negatively the popularities of the right-wing parties and positively the popularities of the left-wing parties. Unemployment has a statistically significant coefficient at the level of 0.01 in all the estimations except in the Centre Party's regression. Inflation has significant effect on the National Coalition's and the Left Alliance's popularity, the level of significance are 0.01 and 0.1, respectively. Unemployment has stronger influence than inflation on the Left Alliance's and the Social Democratic Party's popularity, the opposite situation emerges in the National Coalition's regression. Thus, the influence of unemployment on party popularities follows the issue-priority hypothesis. The National

Coalition suffers from the general cost of ruling and, maybe, from holding the post of financial minister since 1991.

A closer look at the periodwise results shows that the signs and significances of economic variables vary from period to period. Between 1. (1987-90) and 2. (1990-95) periods the signs of unemployment and inflation coefficients changed in 7 cases of 8. The only significant variable, which does not change its negative sign and level of significance (0.05) every period, is the unemployment in the Centre Party's popularity function. As we recall, in the results for the whole period the Centre Party's popularity is not significantly influenced by the economic variables. The negative influence is surely due to the incumbency of 1991-95 and holding of the Prime Minister's post. It has been found in several studies that the Prime Minister's party gets the most blame of the incumbency and that is seen in these results, too. In the period of the right-wing government, the Centre Party is stronger punished for the rise in unemployment than is its coalition partner, the National Coalition. An interesting feature in these results is that the National Coalition has been incumbent continuously, but until the third period is punished for the unemployment to a lesser degree than its main coalition partner, either the Social Democratic Party or the Centre Party. After the crisis period the Social Democratic Party held the Prime Minister's post but is not significantly punished for governing. Reason for that may lie in the remarkable and fast recovery from the crisis that started after 1994.

Most political variables tested (listed in Appendix in Tables 1 and 2) were not significant. One variable having significance in two estimation equations is 10/96 -variable. In October 1996, we had several one-time events that may have shifted party approvals: 1. Markka joined the ERM system with fixed exchange rate. 2. The Social Democratic Party's minister was suspected on information leaks in the ERM negotiations weakening Finland's position. 3.

There was municipal elections where the usual winner is the Centre Party. The results show that after all these events the right-wing parties' popularities increased. Other political and event dummies reaching significance were trend variable (Left Alliance), change of the party leader ( positive influence on the Social Democratic Party), the membership application for the European Union (negative influence on the Social Democratic Party) and the Centre Party's labor market reform proposal (a suggestion to increase flexibility in labor market had negative influence on the popularity).

In general, incumbency decreases significantly party's popularity despite the politics carried on. In two cases the influence was in contrast with the usual hypothesis. In 1987-91, the Social Democratic Party's incumbency increases its support and the Left Alliance is favored by being incumbent since 1999.

### 3.2.2 Swedish Results

In the results for the whole period remarkable is that there are only two statistically significant coefficients. Namely, inflation decreases significantly (at level 0.1) the Social Democratic Party's popularity and unemployment significantly (at level 0.01) increases the Moderate Party's popularity. The results are in contrast with the standard issue-priority hypothesis. The results do not change much when the same equations are estimated on the subdivided data: most of the time the Social Democratic Party is punished for unemployment and inflation and the Moderate Party is rewarded. The economic variables have positive effect on the right-wing parties' popularity, except for the negative coefficient for unemployment in the first period in the Centre Party's results. When the economic variables have significant coefficients in the regression of the left-wing parties, the signs are negative and levels of significance relatively low (0.1). Reason may be in the Social Democratic Party's long incumbency, which was interrupted only in 1991-94

by the right-wing government.

Political and economic dummy variables influenced significantly only the popularity of the Social Democratic Party. The change of the Prime Minister increased the Social Democratic Party's popularity. The party popularities were hurt by incumbency without exceptions. The Moderate Party holding the Prime Minister's post in 1991-94 is punished stronger than its coalition partner, the Centre Party. In several regressions the most significant explanatory variable is the lagged popularity. These results for Sweden are in line with the results in Lybeck (1985). The party popularities are changed by something else than the economy. Thus, we can conclude that in Sweden it is no use for the incumbents to create political business cycles since the poll respondents (and thus, the voters) are not affected by the economy.

### 3.2.3 Comparison of the Results

All in all, there are five significant economic variable coefficients in the Finnish results for the whole period and 2 in the Swedish results. The same relation in the subperiod coefficients is 9 to 7. When we compare the sister-parties, we find that the Left Alliance and the National Coalition are more strongly influenced by the economy than the Left Party and the Moderate Party. The Social Democratic Parties are both affected by the economy but in different ways. The popularity of the Finnish SDP increases along with unemployment and is not significantly influenced by inflation, whereas the popularity of the Swedish sister-party is negatively influenced by both but only inflation has significant coefficient. The Centre Parties in neither countries are influenced by the economy when the whole data set used in the estimations.

The periodwise examination shows that in the Finnish results unemployment has significant influence in 7 regressions and in the Swedish results in 4 regression (in most cases only barely significant). A closer look shows that



not only the unemployment coefficients for the Finnish parties are larger but they are also statistically more significant. Inflation affects significantly in two whole period regressions of the Finnish parties and in one Swedish party regression. Periodwise the situation is similar.

After all, the most striking result is that when we look at the statistically significant influence of the economic variables during and after the depression their influence is negative on the Finnish right-wing parties, but positive on the Swedish ones. A similar pattern is found for the left-wing parties, too. The Finnish left-wing parties are positively influenced by the economic variables when they are statistically significant, whereas Swedish parties are not. It looks like that the incumbents of the depression period are in Finland severely punished for the policies, but in Sweden that is not the case. The reason may lie in the size of the depression, the contents and the success of the practiced policies.

The results are displayed in detail in the Appendix in Tables 4-11. Of the regression results we report the coefficients with their significances, standard errors and some test statistics. The results between seasonally adjusted unemployment and non-seasonally adjusted unemployment did not crucially differ from each other. The results reported here are obtained using seasonally adjusted unemployment rate.

### 3.3 Threshold Model

The results above show, as was expected, that the respondents evaluate the parties with respect to the economy differently in different periods. Another interpretation of those results is that there is instability in the estimated economic coefficients. In the empirical popularity function literature, the coefficient instability has been raised to a central issue (e.g. Paldam, 1991, Nannestad and Paldam, 1994). On one hand, it is the desired result, on the other, it is a problem. How to connect these two sides of the coin?

Above the subsamples were selected to match the electoral periods, which is quite natural a choice in this context. Another aspect is to let the data tell the subsample selection criteria. The unemployment rate seems to be the most influential variable and its influence varies from period to period. An obvious question is whether there exists a level of unemployment that splits the observations into two regimes between which the influence of unemployment alternates from positive to negative or from significant to non-significant. In the search for the split point, we employ a threshold method originally proposed by Tong (1983, 1990). This one threshold, one threshold variable -model provides a simple nonlinear alternative<sup>6</sup>. Another advantage is that the threshold is endogenous, i.e., it is estimated along with the other parameters of the model. The general presentation of the threshold regression model is as follows

$$(2) \quad y_t = \sum_{i=1}^k \beta_{1i} x_{it} + e_t, \quad q_{t-d} \leq \gamma,$$

$$(3) \quad y_t = \sum_{i=1}^k \beta_{2i} x_{it} + e_t, \quad q_{t-d} > \gamma.$$

The relationship between dependent ( $y_t$ ) and explanatory ( $x_{it}$ ) variables is supposed to change according to the value ( $\gamma$ ) of the threshold variable ( $q_t$ , here included in  $x_{it}$ ),  $e_t$  is the usual error term.  $H_0$  hypothesis is that the threshold is not significant and all the  $\beta_{1i}$ 's equal all the  $\beta_{2i}$ 's, which linearizes the model. In the estimation of the threshold model we apply a Gauss procedure coded by Hansen<sup>7</sup>. It begins with the estimation of the

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<sup>6</sup>In Asikainen (2000) we have tested the fit of another nonlinear alternative, namely Logistic Smooth Transition Regression (LSTR) (Granger and Teräsvirta, 1994). LSTR was chosen because it assumes that small values of unemployment have different kind of effect than large values. Also slow and smooth transition was considered as an advantage. The applied LM-test (Lin and Teräsvirta, 1994) does not reject the assumption of linearity mostly likely due to the small number of observations in the data set.

<sup>7</sup>Hansen's Gauss code is available on his www-page. The code has been used at least in Hansen (1996).

whole data by OLS. After that the data is sorted in descending order according to the threshold variable. This rearrangement transforms the threshold model estimation into a change point model estimation. The threshold is found by minimizing the sum of squared residuals (more precisely sample variance). The OLS results include a test for residual heteroskedasticity and according to the result of that test, the significance of the threshold is tested either by F-test (homoskedastic errors) or the LM-test (heteroskedastic errors). An essential part of the code is the calculation of bootstrap probability values for the LM- and F-tests. Bootstrapped values are needed since the threshold is not identified under the null hypothesis and thus, the usual probability distributions are not applicable. After the threshold point is found, the data is divided into two regimes. The two regimes are separately estimated by OLS. In the interpretation of the results, attention is paid to the p-values and the threshold coefficients in the two regimes. The threshold model has previously been applied to e.g. the models of separating and multiple equilibria.

As said, we apply unemployment as the threshold variable. This popularity equation differs from the popularity function above (1) by excluding the political, incumbency and trend variables as their influence on the popularity is not assumed to be affected by the threshold. The exact threshold model is specified as follows,

$$(4) \quad P_t = (\alpha_0 + \alpha_1 P_{t-1} + \alpha_2 I_{t-1} + \alpha_3 U_{t-1}) I(U_{t-d} \leq \bar{U}) \\ + (\beta_0 + \beta_1 P_{t-1} + \beta_2 I_{t-1} + \beta_3 U_{t-1}) I(U_{t-d} > \bar{U}) + \varepsilon_t$$

where  $I(\cdot)$  is an indicator function, which gets value 1 when the condition in the parentheses is true.  $d$  is the threshold lag, but other symbols are the same as before. The basic hypotheses are that there is a threshold for each party, it differs from party to party and there are differences between the countries in the results. If we specify further these hypotheses, we can

reformulate the previously found results on the partisan divide. It is assumed that in the regime of high unemployment the left-wing parties are positively influenced by the unemployment and the right-wing parties are negatively affected. These assumptions follow the classic partisan hypothesis. What comes to the differences between the countries, it is already quite obvious that the popularities of the Swedish parties are not so "expectedly-behaved" with respect to the economy as the Finnish parties' popularities.

### 3.4 Results on the Threshold Model

The estimated thresholds are significant for the Social Democratic Party and the Left Alliance, for the other two, the Centre Party and the National Coalition, they are very close to significance with levels 0.1 and 0.12, respectively (see Table 4.). The results are also otherwise similar for the left-wing parties: in the presence of high unemployment (above 10.7 % for LA, 12.8 % for SDP), the popularity of the left-wing parties increases. The results of the National Coalition and the Centre Party seem to be more mixed. The results of the Centre Party, the National Coalition and the Social Democratic Party have one feature in common: when unemployment has negative (positive) sign, so has inflation. The economic variables have either negative or positive influence, but the influence of inflation and unemployment goes to the same direction.

For the National Coalition, unemployment has to climb high (15.1%) in order to lose its significant negative influence on the party's popularity, below that it has negative influence. Comparison of the plots of the unemployment and the National Coalition's popularity ratings reveals, that when unemployment is above 15.1%, the popularity of the National Coalition is at its so far lowest levels. Thus, it might be reasonable to assume that at that time there are only the core supporters left - those who believe in the values of the party and are not shaken by the bad economy. For the Cen-

tre Party, unemployment's influence on the popularity turns negative above 12.2%. When unemployment rate lies between 12.2% and 15.1%, both unemployment and inflation have negative influence on the right-wing parties. During most of their shared incumbency period, the unemployment rate was on that level.

In general, when the economic variables have significant coefficient, their level of significance is always high (0.01). One feature in these results that fits all parties except the National Coalition, is that when unemployment is below the thresholds, it has not significant influence and the coefficients are close to zero. In Table 4. are the threshold values and their significances for the Finnish parties.

Table 4. Values of the threshold points for different parties, LM-test for heteroskedastic errors, F-test for homoskedastic errors and their bootstrap p-values.

Party	Threshold	LM/F-test	p-value
NC	15.1	15.35 (F)	0.10
CENT	12.2	14.92 (F)	0.12
SDP	12.8	34.98 (F)	0.00
LA	10.7	48.87 (F)	0.00

The first look at the Swedish results tells that the thresholds have lower value than the corresponding Finnish ones. The second look shows the next contrast: the thresholds are not on any conventional level significant for the left-wing parties. Further comparison tells that the threshold points in the Finnish results are higher than the Swedish unemployment ever was in this period. In addition, the large autoregressive term may absorb the influence of any other variables. Else that can meaningfully be concluded is that be it low or high unemployment seems not to be the driving factor behind party fortunes in Sweden. The threshold values for each party and their significances are found in Table 5. Detailed results on the threshold estimations are listed in the Appendix in Tables 12-21.

Table 5. Values of the threshold points for different parties, LM-test for heteroskedastic errors, F-test for homoskedastic errors and their bootstrap p-values.

Party	Threshold	LM/F-test	p-value
MP	8.3	17.07 (F)	0.06
CENT	2.0	16.97 (LM)	0.00
SDP	3.4	9.41 (LM)	0.27
LP	7.6	15.02 (F)	0.11

## 4 Conclusions

In this study we have searched an answer to the question: What happens to the party popularities when changes in unemployment are exceptionally large? Our data set provides excellent material for shedding some light on this question. As expected the results differ between Finland and Sweden. The Finnish and Swedish sister-parties are influenced in opposite ways by the economy. The Swedish left-wing parties (the Social Democratic Party, the Left Party) are negatively affected by unemployment and inflation but the Finnish equivalents (the Social Democratic Party, the Left Alliance) are positively influenced by the same variables. The popularity of the Finnish right-wing parties (the Centre Party, the National Coalition) decreases when unemployment and inflation increases, but in Sweden the Moderate Party's popularity increases along with unemployment. It is tempting to conclude that governing during the deepest phase of the depression characterizes the results. The Finnish incumbents of 1991-95 are still not believed to be able to take care of the economy, but in Sweden trust in the incumbents of 1991-94 is stronger. Reasons for the differences may lie in the differences in the deepness of the depression, differences in the contents and timing of the economic policy decisions. In Sweden, most of the public sector saving decisions and cuts in transfers were made in 1994-95 by the Social Democratic government, whereas in Finland most of the cuts and public

sector saving decisions were made earlier by the right-wing government.

A threshold model is fitted to the Finnish and Swedish popularity functions to see if there are split points in the influence of the unemployment on the party popularities. Popularities of the Finnish left-wing parties behave similarly with respect to unemployment, whereas the popularities of the right-wing parties act similarly only when they are government coalition partners. Overall, unemployment needs to be high (11-15%) to influence significantly the Finnish party popularities, except the popularity of the National Coalition whose popularity suffers from unemployment all the time. When unemployment is high (above 11-13%), it increases the left-wing parties' popularities. Indeed, the Swedish results are much more difficult to interpret and conclude. Either the threshold are not significant (the Left Party, the Social Democratic Party) or the number of observations in the regimes is very low (the Centre Party, the Moderate Party). Maybe the large autoregressive term in the Swedish popularity function estimations absorbs the influence of the other variables. Maybe the unemployment never rose high enough to reveal the thresholds in the Swedish popularity functions.

## Appendix

Table 1. Political variables, acronyms and definitions for Finnish data.

Acronym	Definitions of Dummy Variables	Timing	Obs.
CPLCENT	Change of party leader, Cent	6/1990	29
ECUFIX	Markka fixed to Ecu	6/1991	41
CSU	Attempted coup in Soviet Union	8/1991	42
EUAPPL	Application of membership in EU	3/1992	49
FIMFLO	Markka to float	9/1992	54
MEL	Municipal elections, SDP won	10/1992	56
CPLSDP	Change of party leader, SDP	6/1993	63
CPLNC	Change of party leader, NC	8/1994	76
REFEU	Referendum on EU membership	10/1994	77
10/96	Municipal elections	10/1996	98
10/96	Markka fixed to ERM	10/1996	98
10/96	SDP Minister suspected on info leaks on ERM decision	10/1996	98
LAD	LA disunion on EMU	12/1997	110
CPLLA	Change of party leader, LA	5/1998	116
LREF	Labour market reform, Cent	11/1998	122
HU	Party leader's sabbatical, Cent	4/2000	136

Table 2. Political variables, acronyms and definitions for Swedish data.

Acronym	Definitions of Dummy Variables	Timing	Obs.
CPLCENT	Change of party leader, Cent	6/1987	2
GCRISIS	Government crisis	2/1990	32
ECUFIX	Krona fixed to Ecu	5/1991	44
EUAPPL	Membership application to EU	7/1991	46
KROFLO	Krona to float	11/1992	60
PLGCENT	Party leader left govt, Cent	8/1994	80
REFEU	Referendum on EU membership	11/1994	82
EUPEL	European Parliament election	9/1995	91
MONA	Minister has credit problems, SDP	10/1995	93
CPMSDP	Change of PM, SDP	3/1996	97
NEMUSDP	Govt says no to EMU, SDP	6/1997	111
CPLCENT98	Change of party leader, Cent	6/1998	122
CPLMP	Change of party leader, MP	8/1999	135

List of all tested economic variables which turned out to have nonsignificant influence: inflation measured as consumer price index and consumer price index for food, consumer confidence index, base rate, 3-month rate, share price index, government debt, employment rate.



Table 3. Acronyms and their definitions used in all the tables.

Acronym	Definition
cons	constant
(t-n)	identifies the lag
GD	government dummy
trend	declining trend variable
U(t-n)	unemployment
I(t-n)	inflation (cost of living index)
R <sup>2</sup>	rate of explanation
LM	residual autocorrelation
Normal	residual normality
White	residual heteroskedasticity
RESET	functional form (Ramsey)

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Table 4. Results of popularity function for the Left Alliance<sup>1</sup>.

LA	W	I	II	III
cons	6.52*** [0.54]	11.86*** [3.76]	5.68*** [1.37]	4.98*** [1.3]
LA(t-1)		-0.13 [0.20]	0.07 [0.14]	0.43*** [0.11]
GD9599	-0.26 [0.17]			
GD99-	1.04*** [0.17]			
Trend	0.14*** [0.01]	0.19*** [0.05]		
U(t-3)	0.16*** [0.03]	-0.78 [0.80]	0.15** [0.06]	-0.01 [0.06]
I (t-1)	0.13* [0.07]	-0.15 [0.31]	0.29 [0.2]	0.15 [0.12]
R <sup>2</sup>	0.74	0.74	0.23	0.32
LM	0.04	0.01	2.35	0.89
Normal	3.94	2.31	0.41	0.69
White	0.98	1.15	0.89	0.85
RESET	6.27**	2.01	1.05	0.74

<sup>1</sup>Rejection levels are marked with stars as follows: \* 0.1 , \*\* 0.05, \*\*\* 0.01.

Table 5. Results of popularity function for the Social Democratic Party.

SDP	W	I	II	III
cons	7.4*** [1.39]	23.88*** [7.4]	0.24 [1.94]	12.63*** [2.73]
SDP(t-1)	0.49*** [0.07]	0.346* [0.18]	0.70*** [0.08]	0.38*** [0.12]
GD8791	1.86*** [0.60]			
GD9599	-1.63*** [0.38]			
GD99-	-0.51 [0.35]			
CPLSDP	2.18* [1.26]			
EUAPPL	-2.21* [1.26]			
U(t-2)	0.49*** [0.1]	-1.24* [0.69]	0.47*** [0.14]	0.21 [0.13]
I (t-1)	0.1 [0.15]	-0.75 [0.47]	0.84** [0.33]	-0.11 [0.22]
R <sup>2</sup>	0.87	0.26	0.92	0.41
LM	0.82	0.43	0.19	0.5
Normal	2.42	0.55	6.46**	1.48
White	0.28	0.28	0.09	0.90
RESET	10.42***	0.25	1.52	0.06

Table 6. Results of popularity function for the Centre Party.

CENT	W	I	II	III
cons	6.42*** [1.44]	22.44*** [6.27]	15.42*** [4.16]	13.28*** [2.88]
CENT(t-1)	0.74*** [0.05]	0.15 [0.19]	0.39*** [0.13]	0.51*** [0.11]
GD9195	-0.77*** [0.26]			
10/96	2.76** [1.10]			2.69*** [0.99]
WREF	-1.87* [1.10]			-2.16** [0.99]
U(t-2)	-0.06 [0.05]	-1.48** [0.65]	-0.29** [0.11]	-0.21** [0.01]
I (t-1)	-0.03 [0.11]	0.2 [0.42]	-0.09 [0.25]	0.16 [0.18]
R <sup>2</sup>	0.81	0.77	0.84	0.67
LM	4.99***	0.60	0.88	2.79*
Normal	0.53	0.98	3.14	0.71
White	0.49	1.41	0.30	1.09
RESET	0.23	0.71	1.4	0.18

Table 7. Results of popularity function for the National Coalition.

NC	W	I	II	III
cons	10.54*** [1.99]	18.69*** [5.30]	10.84*** [2.46]	22.77*** [4.77]
NC(t-1)	0.62*** [0.07]	0.13 [0.18]	0.34*** [0.12]	0.29** [0.13]
10/96	0.39 [0.49]			
U(t-1)	-0.21*** [0.05]	0.45 [0.58]	-0.002 [0.06]	-0.62*** [0.17]
I (t-1)	-0.4*** [0.11]	-0.48 [0.37]	0.28 [0.18]	-0.88*** [0.27]
R <sup>2</sup>	0.69	0.67	0.51	0.57
LM	6.87***	1.12	0.15	4.12**
Normal	1.40	3.66	4.18	4.26
White	1.70	0.27	0.35	1.75
RESET	1.38	1.1	0.08	0.02

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Table 8. Results of popularity function for the Left Party.

LP	W	I	II	III
cons	0.61 [0.43]	2.95** [1.34]	-0.19 [0.82]	2.99** [1.24]
LP(t-1)	0.95*** [0.02]	0.66*** [0.12]	0.98*** [0.05]	0.81*** [0.07]
U(t-2)	0.002 [0.04]	-1.04* [0.52]	0.08 [0.09]	-0.09 [0.09]
I (t-1)	-0.05 [0.04]	0.11 [0.10]	-0.02 [0.06]	-0.12 [0.11]
R <sup>2</sup>	0.94	0.78	0.89	0.71
LM	2.29	1.97	6.09***	0.21
Normal	26.68***	3.27	32.99***	2.82
White	1.85*	0.56	2.4**	0.62
RESET	8.67***	1.69	8.34***	3.02*

Table 9. Results of popularity function for the Social Democratic Party.

SDP	W	I	II	III
cons	8.13*** [1.73]	10.65* [5.55]	2.18 [2.45]	7.74*** [2.71]
SDP(t-1)	0.87*** [0.03]	0.77*** [0.10]	1.01*** [0.05]	0.79*** [0.07]
GD8791	-1.69** [0.68]			
GD9498	-2.20*** [0.61]			
GD98-	-2.61*** [0.65]			
CPMSDP	4.61*** [1.59]			4.39*** [1.47]
MONA	-3.26** [1.58]			-3.61** [1.49]
U(t-2)	-0.16 [0.13]	0.95 [0.98]	-0.34* [0.18]	-0.08 [0.13]
I (t-1)	-0.15* [0.08]	-0.49* [0.25]	-0.13 [0.12]	0.14 [0.17]
R <sup>2</sup>	0.94	0.91	0.94	0.70
LM	1.7	0.52	0.26	0.65
Normal	3.59	2.66	0.33	2.53
White	0.52	0.34	1.69	0.39
RESET	1.82	0.11	0.95	0.008

Table 10. Results of popularity function for the Centre Party.

CENT	W	I	II	III
cons	1.22*** [0.41]	6.42*** [2.29]	3.19*** [0.94]	0.98** [0.43]
CENT(t-1)	0.83*** [0.05]	0.61*** [0.13]	0.45*** [0.11]	0.72*** [0.10]
GD9194	-0.031 [0.18]			
U(t-2)	-0.04 [0.04]	-1.29* [0.67]	0.054 [0.07]	0.08 [0.07]
I (t-1)	0.06 [0.04]	-0.03 [0.10]	0.14** [0.05]	0.13 [0.09]
R <sup>2</sup>	0.86	0.61	0.58	0.69
LM	3.1**	0.04	1.32	0.37
Normal	45.43***	4.11	4.72	4.57
White	2.28**	0.74	1.12	1.85
RESET	1.79	0.24	0.41	0.00

Table 11. Results of popularity function for the Moderate Party.

MP	W	I	II	III
cons	2.5*** [0.82]	2.73 [2.76]	0.78 [1.71]	3.81** [1.49]
MP(t-1)	0.86*** [0.04]	0.72*** [0.15]	0.91*** [0.06]	0.76*** [0.07]
GD9194	-0.99*** [0.34]			
U(t-2)	0.20*** [0.07]	0.21 [0.89]	0.14 [0.10]	0.41*** [0.15]
I (t-1)	0.04 [0.04]	0.43* [0.24]	0.07 [0.07]	0.14 [0.14]
R <sup>2</sup>	0.90	0.80	0.81	0.83
LM	0.76	0.59	2.52*	0.67
Normal	0.51	0.99	2.47	2.79
White	1.199	1.39	1.08	3.59***
RESET	0.004	0.23	0.48	2.31

## THRESHOLD MODEL RESULTS

Table 12. P-values for threshold existence under different assumptions on residuals ( $H_0$  no threshold).

FIN	LM het. errors	F hom. errors
NC	0.17	0.1
CENT	0.18	0.12
SDP	0.00	0.00
LA	0.00	0.00

Table 13. P-values for threshold existence under different assumptions on residuals ( $H_0$  no threshold).

SWE	LM het. errors	F hom. errors
MP	0.29	0.06
CENT	0.00	0.00
SDP	0.27	0.42
LP	0.1	0.1

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Table 14. Results of the threshold model for the Left Alliance<sup>2</sup>.

LA	global	$U \leq 10.7$	$U > 10.7$
cons	2.79*** [0.75]	3.01*** [1.23]	5.57*** [0.99]
LA(t-1)	0.71*** [0.06]	0.82*** [0.06]	-0.07 [0.13]
U(t-1)	-0.01 [0.03]	-0.09 [0.07]	0.26*** [0.06]
I (t-1)	0.02 [0.07]	-0.14 [0.11]	0.08 [0.12]
R <sup>2</sup>	0.59	0.73	0.33
N	150	80	70
P	0.58		

<sup>2</sup>Rejection levels are marked with stars as follows: \* 0.1 , \*\* 0.05, \*\*\* 0.01.

Table 15. Results of the threshold model for the SDP.

SDP	global	$U \leq 12.8$	$U > 12.8$
cons	2.61*** [0.99]	13.51*** [2.39]	-1.89 [2.14]
SDP(t-1)	0.74*** [0.05]	0.44*** [0.09]	0.47*** [0.12]
U(t-1)	0.27*** [0.07]	-0.02 [0.09]	1.03*** [0.29]
I (t-1)	0.38*** [0.13]	-0.09 [0.15]	0.86*** [0.24]
R <sup>2</sup>	0.85	0.22	0.88
N	150	101	49
P	0.99		

Table 16. Results of the threshold model for the Centre Party.

CENT	global	$U \leq 12.2$	$U > 12.2$
cons	5.47*** [1.45]	3.9*** [1.48]	21.4*** [4.91]
CENT(t-1)	0.81*** [0.04]	0.79*** [0.06]	0.36 [0.14]
U(t-1)	-0.1*** [0.04]	0.05 [0.09]	-0.55*** [0.16]
I (t-1)	-0.12 [0.1]	0.11 [0.16]	-0.73*** [0.25]
R <sup>2</sup>	0.78	0.66	0.69
N	150	98	52
P	0.72		

Table 17. Results of the threshold model for the National Coalition.

NC	global	$U \leq 15.1$	$U > 15.1$
cons	10.57*** [1.98]	13.08*** [2.34]	7.34* [4.29]
NC(t-1)	0.61*** [0.06]	0.54*** [0.07]	0.25 [0.24]
U(t-1)	-0.21*** [0.05]	-0.26*** [0.07]	0.31 [0.22]
I (t-1)	-0.4*** [0.11]	-0.54*** [0.14]	0.24 [0.24]
R <sup>2</sup>	0.69	0.61	0.273
N	150	123	27
P	0.72		

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Table 18. Results of the threshold model for the Left Party.

LP	global	$U \leq 7.6$	$U > 7.6$
cons	0.81*	0.04	2.39***
	[0.41]	[0.44]	[3.55]
LP(t-1)	0.95***	0.97***	0.84***
	[0.02]	[0.02]	[0.05]
U(t-1)	-0.02	0.09***	-0.1
	[0.04]	[0.02]	[0.39]
I (t-1)	-0.06*	-0.01	-0.22
	[0.03]	[0.03]	[0.14]
R <sup>2</sup>	0.94	0.95	0.96
N	155	123	32
P	0.54		

Table 19. Results of the threshold model for the SDP.

SDP	global	$U \leq 3.4$	$U > 3.4$
cons	1.48	10.73**	2.28**
	[0.95]	[5.27]	[1.11]
SDP(t-1)	0.96***	0.77***	0.95***
	[0.02]	[0.09]	[0.03]
U(t-1)	0.003	0.74	-0.07
	[0.07]	[0.49]	[0.1]
I (t-1)	0.005	-0.48**	0.15
	[0.05]	[0.22]	[0.11]
R <sup>2</sup>	0.93	0.93	0.93
N	155	47	108
P	0.84		

Table 20. Results of the threshold model for the Center Party.

CENT	global	$U \leq 2.0$	$U > 2.0$
cons	1.33***	3.44*	1.35***
	[0.35]	[2.06]	[0.36]
CENT(t-1)	0.83***	0.66***	0.63***
	[0.045]	[0.12]	[0.07]
U(t-1)	-0.05	0.13	0.1***
	[0.03]	[0.77]	[0.04]
I (t-1)	0.05	0.006	0.13***
	[0.03]	[0.07]	[0.04]
R <sup>2</sup>	0.86	0.49	0.77
N	155	35	120
P	0.03		



Table 21. Results of the threshold model for the Moderate Party.

MP	global	$U \leq 8.3$	$U > 8.3$
cons	1.56** [0.75]	2.46*** [0.77]	-23.52* [12.66]
MP(t-1)	0.92*** [0.02]	0.87*** [0.03]	1.19*** [0.12]
U(t-1)	0.06 [0.06]	0.09 [0.07]	2.15* [1.27]
I (t-1)	-0.002 [0.04]	0.01 [0.04]	0.18 [0.31]
R <sup>2</sup>	0.89	0.88	0.98
N	155	139	16
P	0.93		

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