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Local Economies and General Elections

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Mikael Elinder*

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Abstract

This paper estimates voters' response to municipality and regional level unemployment and economic growth, in Swedish general elections from 1985 to 2002, using data on 284 municipalities and 9 regions. An increase in regional growth or a reduction in regional unemployment by one percentage point is associated with an increase in the support for the national government by about 0.8 and 1.1 percentage points. Changes in unemployment and growth at the municipality level seem to have much smaller effects on government support.

JEL Classifications: H11, R11, R12, R58

Keywords: elections, voting, local economic conditions

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1. Introduction

Numerous empirical studies have shown that voters respond to economic conditions. These studies typically focus on national or individual level economic conditions.[1] Very few studies have estimated responses to local economic conditions. This is surprising for two reasons. A large theoretical literature uses the assumption that voters are sensitive to local economic conditions and because estimates of responses to other levels may be misleading if the response to local level variables is substantial. This paper improves the understanding of voting behavior by analyzing responses to two different local levels of economic conditions. In particular, voters' response to municipality and regional level unemployment and economic growth are estimated, using data from six Swedish general elections between 1985 and 2002 covering 284 municipalities.

It is not a novel idea that voters consider local economic conditions when deciding whether to support the government or to vote for the opposition. Models by e.g. Lindbeck and Weibull (1993) and Dixit and Londregan (1996) suggest that governments tactically redistribute resources to regions with many swing voters. Cox and McCubbins (1986) argue that politicians redistribute to regions where they have many supporters and Weingast et. al. (1981), discuss how political effort and spending may be geographically uneven (and inefficient) if politicians favor their own constituencies. All these models assume that voters are sensitive to the amount of resources spent in their area and that resources are geographically unevenly redistributed.

A few empirical studies have found that voters respond to regional spending. Levitt and Snyder (1997) show that the outcomes of U.S. House elections are influenced by federal spending and Jordahl (2002) shows that voters respond to specific grants to Swedish municipalities from the national government. These tests have focused on spending rather than measures of economic outcomes. Funds come in a variety of forms and may have very different effects on unemployment and economic growth. Therefore, I take a more general approach to this problem by estimating the impact of improved economic growth and reduced unemployment at local levels on the support for the national government.

Knowing if voters respond in systematic ways to economic conditions at local levels is important for understanding how voters respond to national or individual level economic

[1] For surveys of the economic voting literature, see Lewis-Beck and Stegmaier (2000) and Nannestad and Paldam (1994).

conditions as well. Omitting local level variables may result in misspecified models and therefore to misleading estimates and conclusions. Earlier studies, including only national and individual level economic indicators, may therefore be missing important aspects of voting behavior.

Johnston and Pattie (2001), address this issue by including a local level in their analysis of the British general election of 1997, arguing that such an intermediate level is necessary for understanding voting behavior. They estimate the effect of individual, local, and national level economic conditions on individual voting behavior. Their paper uses survey data on individuals' perceptions of economic conditions, and find that voters are less influenced by perceptions of changes in national level economic prosperity than by perceptions of changes in their local area's prosperity. They also find that the prosperity of the local area influences the voting behavior more than changes in the private economy.

In a related study, Auberger and Dubois (2005) find that local economic circumstances play an important role in forecasting election outcomes in French legislative elections, using a measure of labor market performance as an indicator of local economic conditions. The objective of their study is mainly to make accurate predictions of election outcomes, while the objective of this paper is to understand at which levels voters respond to real changes in objective economic conditions. Leigh (2005) investigates among other things how neighborhood characteristics influence citizens' partisan choice in Australian elections and finds that living in a richer neighborhood increases the probability of voting for the right-wing party. While that study focuses on a left − right choice this paper focuses on a government − opposition choice.

Johnston and Pattie (2001), Auberger and Dubois (2005), and Leigh (2005), all indicate that economic conditions between the national and the individual level influence how citizens vote.

Although the objective of Johnston and Pattie's (2001) study and that of this paper are similar, a few differences are worth pointing out. First, Johnston and Pattie analyze only one election, whereas I use data from six elections with much more variation in government performance. This also allows me to use a difference approach which effectively reduces bias stemming from omitted variables.

While Johnston and Pattie use subjective perceptions of economic conditions and survey responses of how the respondents have voted, I use objective measures of economic conditions and real voting data. This avoids problems associated with measurement error and non-response in

survey data. The possible advantage of their approach is that they use individual level data and perceptions of economic conditions. This, however, also has some drawbacks. Since their respondents are asked to answer how their part of the country has developed, two problems arise.[2] First, the respondents may differ in how large the area they think of is. Second, even if the respondents have concordant perceptions of what is meant by 'this part of Britain', the researcher does not know if most people are referring to the village they live in or if they think of regions with many millions of people. I avoid these problems by using economic variables at well defined levels of aggregation. The levels of aggregation I use are municipalities and regions based on the area covered by the regional news, as broadcasted by the Swedish public television.

Another well known problem of using subjective perceptions of economic changes as explanatory variables is that a large proportion of the variation may be unrelated to variation in their objective counterparts. As a consequence estimates based on subjective perceptions may suffer from severe attenuation bias, making it difficult to know if real changes in the objective variables influence voting decisions (Kramer, 1983). Subjective perceptions of economic conditions have also been shown to be related to many confounding factors such as political attitudes, education and media exposure (Duch et al., 2000) making it even more difficult to know how real economic changes affect the support of the incumbent government. For further discussions on these questions, see e.g. Kramer (1983), Nannestad and Paldam (1997), and Duch et al. (2000). Although voters must base their decisions on their perceptions of economic conditions, it may be more interesting to know how they respond to real economic conditions.

The empirical results of this paper indicate substantial response to both economic growth and unemployment at the regional level. A reduction of regional unemployment or increase in growth by one percentage point is associated with an increase in the support for the government by about 1.1 and 0.8 and percentage points. Exposing the model to robustness tests does not change the conclusion that voters respond to economic conditions at the regional level. At the municipality level the effects of unemployment or economic growth are much smaller than at the regional level in all specifications.

[2] The question Johnston and Pattie (2001) use to measure perceptions of local economic development is: "Compared with other parts of Britain since the last general election in April 1992, would you say that (this part of Britain/Scotland/Wales) has been getting more prosperous than average, stayed about the average, or been getting less prosperous than average?".

2. Institutional background and geographical setting

The Swedish political system is organized into three levels −municipalities, counties and the national level. All levels set and collect taxes as well as supply services to the citizens. The municipalities supply services such as primary and secondary education, child care, and social assistance, while the counties' main task is to supply medical service. Elections at all levels were held on the same day every three years from 1970 until 1994, and every four years since 1994.

The focus of this study is on the general election, i.e. the election to the Swedish Parliament.[3] A proportional system is used to allocate seats in parliament, which then appoints a Prime Minister to form a government. The government can consist of a single party or of a coalition of parties and the parties are usually divided into a left- and a right-wing bloc. During the time period for this analysis, the right-wing bloc formed a coalition government between 1991 and 1994 and The Social Democratic Party (Socialdemokraterna) ruled as a minority government during five terms (1982-1991 and 1994-2002). The Social Democratic Party has generally been supported by The Left Party (Vänsterpartiet). For extended periods, The Green Party (Miljöpartiet) also cooperated with The Social Democratic Party and other parties have at times lent The Social Democratic Party pivotal support on specific issues.

The regions used in this study are defined as the coverage areas of 'the regional news' (Regionala nyheter). The Swedish public television (Sveriges Television AB) broadcasts regional news on a daily basis and has done so during the entire period covered in this paper. The regional news are an important source of information about the regional economy. Every day, about ten percent of the population watches the regional news. During the period of study nine different programs were broadcasted, each covering a geographically connected area consisting of a specified set of municipalities. This makes the coverage areas of the regional news natural areas to use as regions in this investigation.[4] For further details about the regions see appendix B.

[3] Several studies have shown that economic voting plays an important role in Sweden, for a brief survey of these studies see Jordahl (2006).
[4] The nine regions used encompass on average about 32 municipalities and 2.5 counties.

3. Data

This paper uses a dataset consisting of a panel of 284 out of 290 Swedish municipalities[5], covering six general elections from 1985 to 2002.[6] The time period is constrained backwards because of lack of unemployment data for municipalities. The fundamental variables needed for the regression analysis are election results at the municipality level for the general election and measures of economic conditions at the municipality and regional level.

The dependent variable is defined as the change in the vote share (since the preceding election expressed in percentage units) of the governing party or parties. As mentioned above, The Social Democratic Party has been ruling as a minority government but has been collaborating with other parties. This makes it difficult to fully ascertain which parties that bear the responsibility for the economic policy. I will therefore also, as most studies of economic voting in Sweden, use the change in the vote share of the governing bloc as dependent variable.[7]

Although there are different ways to measure economic conditions I will follow most researchers in the economic voting literature, who generally use measures of income growth and unemployment. The variables measured at the municipality level are real growth in the per capita tax base[8] and the unemployment rate[9]. The measures of unemployment and economic growth at the regional level are aggregated from data at the municipality level and calculated as the averages of their counterparts in all municipalities in the region, weighted by population. For detailed descriptions of all variables and descriptive statistics see Appendix A.

[5] The six newly founded municipalities that have been left out are (year founded in parentheses): Bollebygd (1995), Gnesta (1992), Knivsta (2003), Lekeberg (1995), Nykvarn (1999) and Trosa (1992).
[6] The elections occurred in 1985, 1988, 1991, 1994, 1998 and 2002.
[7] See e.g. Alesina et al. (1997) and Jordahl (2006). The left wing bloc consists of The Social Democratic Party (Socialdemokraterna), The Left Party (Vänsterpartiet) and The Green Party (Miljöpartiet). The right wing bloc consists of The Moderate Party (Moderaterna), The Centre Party (Centerpartiet), The Liberals (Folkpartiet), The Christian Democrats (Kristdemokraterna) and The New Democrats (Ny demokrati).
[8] Change in tax base is the most commonly used measure of economic growth in Swedish municipalities. However it should be noted that there was as change in the definition of the tax base in conjunction with the tax reform of 1991. After the reform only labor income is included in the tax base measure, while before both capital and labor incomes were included. It is still nevertheless the best measure available and in section 4.5 I show that the estimates are not sensitive to excluding the election in 1994.
[9] This measure is the best available measure of unemployment at the municipality level, since it is measured in the same way both across municipalities and time. It is calculated as the number of unemployed divided by the population aged 16-64, and does therefore not correspond to the unemployment rate traditionally used by labor economists, but is closer connected to the inverse of the employment rate.

4. Empirical investigation

4.1 Model and empirical strategy

Most estimations in the economic voting literature are based on linear equations specified either in levels or in changes.[10] Two particular features of this study make a model specified in changes preferable. First, the different governments in Sweden have been of different sizes because The Social Democratic Party has been ruling as a minority government, while the right-wing bloc has formed coalition governments consisting of three or four parties. By focusing on the changes in the vote share of the incumbent government, instead of the level of the support, the problem that the support for left-wing and the right-wing governments have fluctuated around different levels becomes less problematic. Second, an advantage of estimating a first difference equation is that covariates that are time invariant cancel out and hence reduce potential bias stemming from unobserved time-invariant characteristics.

Because national level variables per definition are constant across municipalities it is only possible to include at maximum one macro variable per election in the specification. This is troublesome since many factors at the macro level such as inflation, evolution of government debt, election specific issues, candidate effects etc. affect election outcomes. I argue that the best way to control for these factors is to add year dummies as explanatory variables. Year dummies capture the average effect of omitted macro variables and since the macro variables by definition take the same values for all cross-sectional units the effect of them is uniform and hence coincides with the average effect. Adding year dummies instead of specific macro variables will therefore not bias the estimates of the effects at the municipality and regional level. Unfortunately this comes at the cost that it is no longer possible to include the macro variables of interest, i.e. unemployment and growth. While a comparison with the effect of national level variables will not be possible, the effects of municipality and regional level variables will not be biased due to omission of variables at the macro level.

[10] See, Nannestad and Paldam 1994

Specifying the model in first difference and adding year dummies yields the following regression equation:

$$\Delta V_{i,t} = \beta^M \Delta G_{i,t}{}^M + \gamma^M \Delta U_{i,t}{}^M + \beta^R \Delta G_{i,t}{}^R + \gamma^R \Delta U_{i,t}{}^R + YD_t + \Phi Z_{i,t} + \varepsilon_{i,t},$$

where subscript i refers to municipality i, and t to the election at year t. $\Delta V_{i,t}$ hence denotes the change in the vote share of the incumbent government from municipality i at election t, since last election. ΔG refers to change in economic growth and ΔU to change in unemployment. Superscript *M* and *R* refer to the municipality and regional level. YD_t are election specific dummies, Z is a vector of time variant covariates, and ε an error term.

The municipalities differ in the number of voters. Therefore, if each municipality is given the same weight in the estimations, voters in large municipalities are implicitly treated as less important in the regressions. Since each citizen's vote is given equal weight in the election and we are equally interested in voting behavior of people in all municipalities it is natural to give each vote equal weight in the regressions as well. To solve this problem I estimate the model by applying different weights to the municipalities. The weights are calculated as each municipality's share of the number of votes in the election. By doing so, larger municipalities will be given higher weights than small ones and hence serve as a correction for the lack of individual level data. It should be noted that if voting behavior is homogeneous across municipalities of different sizes, which is implicitly proposed by the empirical specification, the weighted and the unweighted regressions should produce similar results.

4.2 Main results

This section presents estimates of the effects of unemployment and growth at the regional and municipality level, based on the model described in the previous section. The results are based on regressions with the change in the governing parties' vote share as dependent variable. The change in economic growth is measured as the difference between the average growth rate over the two years preceding the election and the same period for the previous election. The change in unemployment is calculated in the same way.

Since the measures of economic conditions at the regional level by construction are correlated with their counterparts at the municipality level, multicollinearity may potentially cause problems in the estimations. Table 1 shows a matrix of correlation coefficients for changes in unemployment and growth at the regional and municipality level.

Table 1: Correlation coefficients

	ΔG_R	ΔU_R	ΔG_M	ΔU_M
ΔG_R	1.000			
ΔU_R	-0.384	1.000		
ΔG_M	0.904	-0.345	1.000	
ΔU_M	-0.384	0.961	-0.359	1.000

As can be seen, the correlations between corresponding measures at the different levels are very high, while the correlation between changes in unemployment and growth within each level is more modest. I therefore compare the results obtained when only municipality level measures and when only regional level measures are included with results when measures at both levels are included in the regressions. If multicollinearity causes severe problems I expect the estimates to vary excessively between the regressions and to be imprecisely estimated.

Table 2 shows the results from four different specifications. Column 1 shows the estimates when the model is estimated with only regional level measures and year dummies. In column 2, municipality level measures are used instead. In column 3 both the regional and municipality level are included and in column 4 three demographic control variables are added: the change in the fraction of citizens of age 18 or younger (**Δ**young), the change in the fraction of people age 65 or older (Δold), and the change in the fraction of foreign citizens (Δforeign). Demographic control variables are included to make sure that the estimates of unemployment and growth neither at the municipality level nor at the regional level are biased due to different trends in the demographical structure of the municipalities.

Table 2: Effects of regional and municipality level economic conditions on government support

	(1)	(2)	(3)	(4)
Dep. Var.	**ΔGov**	**ΔGov**	**ΔGov**	**ΔGov**
ΔG_R	0.662		0.768	0.733
	(0.115)***		(0.114)***	(0.107)***
ΔU_R	-1.301		-1.068	-1.132
	(0.238)***		(0.247)***	(0.251)***
ΔG_M		-0.020	-0.124	-0.111
		(0.042)	(0.043)***	(0.046)**
ΔU_M		-0.325	-0.203	-0.191
		(0.065)***	(0.076)***	(0.071)***
Δyoung				12.283
				(7.584)
Δold				-52.321
				(22.097)**
Δforeign				11.484
				(10.436)
y85	-2.658	-0.460	-2.606	-2.034
	(0.379)***	(0.136)***	(0.360)***	(0.347)***
y88	-3.704	-1.156	-3.682	-3.326
	(0.355)***	(0.155)***	(0.337)***	(0.356)***
y91	-3.011	-5.634	-3.022	-3.198
	(0.503)***	(0.233)***	(0.474)***	(0.477)***
y94	3.110	-4.070	2.828	3.082
	(1.464)**	(0.524)***	(1.417)**	(1.390)**
y98	-14.920	-9.871	-14.780	-14.453
	(0.745)***	(0.344)***	(0.717)***	(0.681)***
y02	0.281	2.488	0.351	0.391
	(0.782)	(0.413)***	(0.758)	(0.787)
Constant	No	No	No	No
Elections	6	6	6	6
Observations	1685	1681	1681	1681
R-squared	0.90	0.89	0.90	0.90

-Estimates based on weighted least squares estimations.[11]
-Standard errors clustered on municipalities in parentheses.
-One, two and three stars denote statistical significance at the 10, 5 and 1 percent level.
-U and G refer to unemployment and growth, subscript M and R to municipality and region.

[11] Giving all municipalities the same weight yields qualitatively similar results.

The estimates in column 1 indicate a rather large and statistically significant effect of both economic growth and unemployment at the regional level. A one percentage point increase in growth or decrease in unemployment is associated with a 0.7 and 1.3 percentage points increase in the support for the incumbent government. Column 2 shows the corresponding results for the municipality level. The estimate for the effect of growth is virtually zero but the effect of changes in unemployment is statistically significant but rather small, only -0.3. When all measures are included at the same time, in column 3, the effect of growth at the regional level increases to 0.8 and the effect of unemployment decreases to -1.1. At the municipality level the effect of unemployment decreases somewhat but the effect of growth becomes negative and statistically significant. The impression of including all measures at the same time is that most of the estimates are rather stable and precisely estimated indicating that multicollinearity may not be too big a problem. Three of the coefficients take expected signs, implying that improving economic conditions is beneficial for the incumbent government. The only estimate that is somewhat surprising is the effect of growth at the municipality level that is negative and statistically significant when all four measures are included. The data contain five elections in which left wing governments have been evaluated and only one election in which a right wing government has been evaluated. A possible explanation of why this estimate is negative could therefore be that voters in municipalities that experience high growth tend to vote for right wing parties with less redistributive policies or conversely that voters in municipalities with relatively low growth favor left wing parties with more generous redistribution schemes. This issue will be examined further in section 4.4.

The year dummies, capturing the effects of changes at the macro level, explain a lot of the variation in the change of government support indicating that we cannot rule out important effects of national level economic conditions. The largest estimate is found at the election in 1998, an election in which The Social Democratic Party received the lowest support since the unicameral system was introduced in 1970.

Column 4 shows the results from a regression in which three demographic control variables are included. Adding these variables do not lead to any significant change in any of the estimates from column 3 and only the change in the fraction of old people is statistically significant. One interpretation of this result is that even though demographic factors may be

important for understanding voting behavior, they may be rather stable over the two decade period that is covered in this study. Since all covariates that are time-invariant cancel out in a first difference model, I believe that the estimates of unemployment and growth are not severely biased as a result of potentially omitted variables. Demographic controls will therefore be omitted in the remainder of the analysis.

What do these results say about the importance of local economic circumstances for voting behavior? Clearly, effects at the municipality level are small, but what about at the regional level? A one percentage point increase in the growth rate or decrease in unemployment is associated with 0.8 and 1.1 percentage point higher support for the incumbent government. As can be seen in Table A1, the mean change (over regions and between elections) in regional growth varies between -4.0 and 4.3 percentage points and for unemployment the corresponding numbers are -2.5 and 6.2. The standard deviation of change in regional growth is 2.5 percentage points and for unemployment 2.9 percentage points. A one percentage point change in either growth or unemployment can therefore not be considered an unusually large change in these variables.

Although this dataset is not suited for estimating effects of national level economic variables it is anyway interesting to relate the effects of local economic conditions to effects of macroeconomic variables. The year dummies in Table 2 suggest that changes in national level variables play an important role in explaining voting behavior. These dummies, however, capture not only effects of economic variables but all effects at the national level. This makes it difficult to infer that growth and unemployment at the national level are important from the estimates of the dummy variables. Many studies have, however, estimated effects of national level economic variables. In their survey of the economic voting literature Nannestad and Paldam (1994) conclude that the effect of changes in unemployment is found to be between -0.4 and -0.8 in most studies and that growth measures sometimes are more and sometimes less important than unemployment. Markus (1988) finds an unusually large effect of real disposable income per capita. A one percentage point increase is associated with 2.3 percentage points increase in the vote share of incumbent American presidents. He does, however not control for changes in unemployment which may explain why the effect of growth was unusually high. Jordahl (2006) analyzes Swedish data between 1985 and 1994 and finds that a one standard

deviation decrease in unemployment is associated with 17 percentage points increase in the probability to vote for the governing bloc, but no or small effects of growth. The overall impression is, although with some exceptions, that effects of national level economic variables are of the same magnitude as the effects found at the regional level here. It is difficult to say if the effects of national level economic variables would change if measures of regional level variables would be included in such analyses, but it is plausible to believe that the effects of national level variables are biased upwards when regional level measures are excluded. Together this indicates that regional level economic conditions may be at least equally important for voting behavior as national level economic variables.

4.3 Voters time-horizon

In the previous section the explanatory variables were based on two-year averages of growth and unemployment. The literature on political business cycles suggest that voters respond more to economic outcomes closer to an election than to outcomes in the beginning of a term of office. Is it appropriate to measure economic conditions as two-year averages or what time-horizon do voters have? Table 3 presents estimates based on changes in election-year outcomes (column 1), two-year averages (column 2), as in Table 1, and full period averages (column 3).

Table 3: Voters' time horizon

	(1)	(2)	(3)
	One year avg.	**Two-year avg.**	**Full period avg.**
Dep. Var.	**Δgov**	**Δgov**	**Δgov**
ΔG_R	0.437	0.768	0.640
	(0.090)***	(0.114)***	(0.234)***
ΔU_R	-0.965	-1.068	-0.983
	(0.264)***	(0.247)***	(0.196)***
ΔG_M	-0.052	-0.124	-0.147
	(0.035)	(0.043)***	(0.066)**
ΔU_M	-0.158	-0.203	-0.377
	(0.084)*	(0.076)***	(0.066)***
Year dummies	Yes	Yes	Yes
Constant	No	No	No
Elections	6	6	6
Observations	1681	1681	1675
R-squared	0.89	0.90	0.90

-Estimates based on weighted least squares estimations.
-Standard errors clustered on municipalities in parentheses.
-One, two and three stars denote statistical significance at the 10, 5 and 1 percent level.
-U and G refer to unemployment and growth, subscript M and R to municipality and region.

The results from Table 2 show that the estimates at the regional level are largest in the model in which two-year averages are used, but the differences are not very big. At the municipality level the estimates are still much smaller than the estimates at the regional level, although the largest estimates are obtained using full-period averages. Even though the size of the estimates do not differ too much between the columns it should noted that a comparison of the effect of decreased unemployment at the regional level indicates that it doesn't matter if unemployment is low only at the election year or during the whole term of office. This result is not as clear for growth where a one percentage point yearly increase in growth during the last two years is better for the government than growth only in the last year. Overall it seems as if voters respond more strongly to economic outcomes at the end of a term of office but they also care about earlier outcomes. The choice of measure of growth and unemployment seems to matter more for the interpretation of the estimates than for the qualitative results. Since using two-year averages gives a slightly higher fit of the model use two-year averages will be used in the remainder of the analysis.

4.4 Support for government or political bloc?

An implicit assumption in the empirical investigation so far has been that voters hold the parties actually represented in the government responsible for the economic conditions. Typically, studies of economic voting in Sweden analyze how the support for the governing bloc depends on the economic conditions. The reason for treating the Swedish system as a two party system is that the parties within the two blocs tend to cooperate to a large extent. The right-wing bloc has formed coalition governments in which almost the entire bloc have been included.[12] The Social Democratic Party on the other hand has ruled as a minority government and therefore been forced to seek support from other parties. During the period covered in this study The Social Democratic Party has cooperated intensively with The Left Party and for extended periods also with The Green Party and The Centre Party (Centerpartiet). This makes it possible that voters hold not only The Social Democratic Party responsible for the economic conditions but also the cooperating parties. As a consequence it may be motivated to treat the Swedish system as a two

[12] In the period 1979 to 1982 The Christian Democrats (Kristdemokraterna) were not part of the government. The party was too small to be represented in the parliament at time. In 1991 to 1994 The New Democrats (Ny Demokrati) was represented in the parliament and gave their support to the right-wing bloc, but was not included in the government.

party system and look at changes in the governing bloc's support. To know how the results from this study depend on whether the governing parties or the entire bloc are used as dependent variable, estimates with the change in the governing bloc as dependent variable is presented as well. Column 1 in Table 4 displays the estimates obtained with the change in the governing bloc as dependent variable. Column 2 is reproduced from Table 2, column 3 to facilitate the comparison. The effect of growth at the regional level disappears completely when the whole bloc is used as dependent variable while the effect of unemployment is roughly unchanged. At the municipality level both estimates are close to zero and not statistically significant. The results indicate that voters do not punish or reward the whole bloc for high or low economic growth at the regional level, but only the parties represented in the government.

Table 4: Effects of Unemployment and Economic Growth on the Governing Bloc.

	(1)	(2)
Dep. Var.	**ΔBloc**	**ΔGov**
ΔG_R	0.022	0.768
	(0.119)	(0.114)***
ΔU_R	-1.177	-1.068
	(0.272)***	(0.247)***
ΔG_M	-0.008	-0.124
	(0.053)	(0.043)***
ΔU_M	0.050	-0.203
	(0.096)	(0.076)***
Year Dummies	Yes	Yes
Constant	No	No
Elections	6	6
Observations	1681	1681
R-squared	0.89	0.90

-Estimates based on weighted least squares estimations.
-Standard errors clustered on municipalities in parentheses.
-One, two and three stars denote statistical significance at the 10, 5 and 1 percent level.
-U and G refer to unemployment and growth, subscript M and R to municipality and region.

4.5 Do voters treat left and right wing governments differently?

Is the negative effect of growth at the municipality level, from Table 2, column 3, a result of heterogeneity in how voters reward and punish left and right wing governments? Table 5 shows results from two regressions. In column one the five periods with left wing governments are used and in column two only the election in 1994, when a right wing government was evaluated,

is used. This makes the number of observations differ much between the two regressions and as a consequence the results are not perfectly comparable but do anyway illustrate if some heterogeneity may be present in how citizens vote when left and a right wing government are evaluated. At the regional level there are almost no differences in the estimates between left and right wing governments and the sizes of the coefficients for both growth and unemployment are roughly equal to the coefficients when the all elections are used at the same time. At the municipality level the effect of growth is negative in column 1 but positive in column 2. This result is in line with Leigh (2005) that citizens living in richer neighborhoods are more likely to support right wing parties. The effect of unemployment at the municipality level is more than doubled for right wing governments (-0.48 instead of -0.20 in Table 2, column3) but close to zero for left wing governments. Together these results indicate that voters may treat left and right wing governments differently, especially when it comes to growth in their own municipality.

Table 5: Heterogeneity between left and right wing governments

	(1)	(2)
Dep.var.	**ΔGov (left wing)**	**ΔGov (right wing)**
ΔG_R	0.762	0.746
	(0.139)***	(0.214)***
ΔU_R	-1.148	-1.116
	(0.302)***	(0.434)**
ΔG_M	-0.180	0.094
	(0.050)***	(0.097)
ΔU_M	-0.018	-0.483
	(0.147)	(0.119)***
Year Dummies	Yes	Yes
Constant	No	No
Elections	5	1
Observations	1399	282
R-squared	0.89	0.93

-Estimates based on weighted least squares estimations.
-Standard errors clustered on municipalities in parentheses.
-One, two and three stars denote statistical significance at the 10, 5 and 1 percent level.
-U and G refer to unemployment and growth, subscript M, C and R to municipality, county and region.

4.6 Parameter heterogeneity in time and space

In their survey of the empirical voting literature, Nannestad and Paldam (1994) find that parameters in voting equations generally are not very stable over time and space. A similar point was put forward by Stigler (1973) in his critique of Kramer (1971). Stigler showed that the results of Kramer's study were sensitive to small changes in the studied time period. Relationships between variables may naturally change over time. What was important for voting in the 80s need not be what voters care about in the 90s. Table 6 shows results when the first three and the last three elections are analyzed separately. At the regional level the effects of unemployment is much larger in the earlier period as compared to the later period (-1.41 vs. -0.55), while the effect of growth is much larger in the later period (1.79 vs. 0.38). At the municipality level the coefficients are rather stable across the two periods and still much smaller than at the regional level. This points to a change in voting behavior at the regional level from responding more to regional unemployment to responding more to regional growth.

Table 6: Separate time periods

	(1)	(2)
Dep. Var.	**ΔGov**	**ΔGov**
Period	**1985-1991**	**1994-2002**
ΔG_R	0.380	1.788
	(0.143)***	(0.261)***
ΔU_R	-1.408	-0.549
	(0.418)***	(0.408)
ΔG_M	-0.121	-0.085
	(0.046)***	(0.046)**
ΔU_m	-0.216	-0.227
	(0.082)***	(0.081)***
Year dummies	Yes	Yes
Constant	No	No
Elections	3	3
Obs.	832	849
R-squared	0.87	0.91

-Estimates based on weighted least squares estimations.
-Standard errors clustered on municipalities in parentheses.
-One, two and three stars denote statistical significance at the 10, 5 and 1 percent level.
-U and G refer to unemployment and growth, subscript M, C and R to municipality, county and region

One could argue that citizens living in regions where a lot of people live in one municipality and work in another may care more about economic conditions at the regional level than citizens

living in area where most people work and live in the same municipality. This type of commuting is more common around the bigger cities; Stockholm, Göteborg, and Malmö. To see if voting behavior differs between the regions with the three biggest cities and the other regions the sample is divided into two parts; one with the three big cities (three regions) and one with the other six regions. Table 7 presents the results from this analysis.

Table 7: Heterogeneity across regions of different types

	(1)	(2)
Dep. Var.	**ΔGov**	**ΔGov**
Regions	Big-city regions (3)	Other regions (6)
ΔG_R	0.704	1.013
	(0.435)	(0.100)***
ΔU_R	-2.361	-0.222
	(0.400)***	(0.332)
ΔG_M	0.018	-0.210
	(0.073)	(0.049)***
ΔU_m	-0.230	-0.220
	(0.087)***	(0.087)**
Year Dummies	Yes	Yes
Constant	No	No
Elections	6	6
Obs.	727	954
R^2	0.90	0.91

-Estimates based on weighted least squares estimations.
-Standard errors clustered on municipalities in parentheses.
-One, two and three stars denote statistical significance at the 10, 5 and 1 percent level. -U and G refer to unemployment and growth, subscript M, C and R to municipality, county and region.

In the three big-city regions growth at the regional level seems to play a smaller role than in the other regions. Unemployment on the other hand seems to play a much bigger role in these three regions. At the municipality level the effect of growth is close to zero in the big city regions and is negative and small in the other regions. The effects of unemployment at the municipality level seem to be equal across the regions. This indicates substantial heterogeneity between the big-city regions and the other regions.

The effect of unemployment and growth at the regional level seems to be somewhat sensitive to two things. The results indicate that voters responded more to changes unemployment and less to growth in the first half than in the second half of the studied period. Furthermore, voters in the regions with the three biggest cities tend to respond much more to

unemployment and less to growth than voters in other regions. Taken together, effects at the regional level seem to be more important than effects at the municipality level. The estimates at the regional level are consistently larger than the estimates at the municipality level. There may, however, also be a small effect of changes in unemployment at the municipality level. Changes in economic growth at the municipality level seem if anything to have a small negative effect on the government's support.

5. Concluding Remarks

Empirical studies of economic voting have traditionally not included local economic conditions in their analyses. Johnston and Pattie (2001) questioned this methodology and showed that in the British General Election 1997 voters responded strongly to economic conditions in "their part" of Britain. Furthermore, empirical studies related to the literature on tactical redistribution have showed that citizens respond to central government spending in local districts and municipalities (Levitt and Snyder, 1997 and Jordahl, 2002).

Using data covering six elections this paper has improved the understanding of how voters respond to local economic conditions, by estimating responses to the most commonly used measures of economic conditions, namely economic growth and unemployment. The empirical investigation points to a substantial response to changes in both regional level growth and unemployment. Increasing regional growth or reducing unemployment by one percentage point is associated with an increase in the vote share for the government by about 0.8 and 1.1 percentage points from voters in that region. At the municipality level effects of growth and unemployment are much smaller. Exposing the results to various robustness tests does not change the overall picture that voters seem to respond to changes in economic conditions at the regional level but not nearly as strongly to conditions at the municipality level.

The relative responses to unemployment and growth at the regional level seem however to be varying between the first and the second half of studied time period and between big-city regions and other regions.

Together the results indicate that regional economic conditions matter for how citizens vote and need to be included in empirical voting equations. If measures of regional economic conditions are omitted, then estimates of other variables may be biased and misleading. This paper also shows that voters respond not only to central government spending, but also to

traditional measures of economic outcomes. This further justifies the assumption in models of political behavior that voters are sensitive to local levels of economic conditions.

Furthermore, that voters respond to economic conditions at the regional level indicate that voters both know how their own region is doing relative to the country overall, but also that they use this information to reward the government if the conditions have improved during its term in office. Important to note is also that voters' response to these general measures of economic conditions seem to be much smaller at the municipality level, than the responses at the regional level.

Although it is beyond the scope of this paper to answer why voters do or do not respond to economic conditions at the municipality and regional level, a possible explanation for why no substantial response to these municipality level economic conditions is found, could be that voters consider the local governments to be responsible for growth and unemployment in the municipalities.

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Appendix A: Description of Data

ΔGov: The change in the vote share of the parties forming the government. For example at the election 1994 it is calculated as the total vote share of the four right-wing parties forming the coalition government 1991 to 1994 at the election 1994 minus the total vote share of the same parties at the election 1991. At the election 1982 this variable consists of The Moderate Party (Moderaterna), The Centre Party (Centerpartiet) and The Liberals (Folkpartiet) and at the 1994 election of The Moderate Party, The Centre Party, The Liberals, and The Christian Democrats (Kristdemokraterna) and at all other elections of The Social Democratic Party (Socialdemokraterna). Unit: percentage points. Source: www.scb.se.

ΔBloc: The change in the governing bloc's vote share. For example at the election 1994 it is calculated as the total vote share of the five right-wing parties in 1994 minus the total vote share of the same parties at the election 1991. The left-wing bloc is defined as The Social Democratic Party, The Left Party, and The Green Party and is being used at the elections 1985, 1988, 1991, 1998 an 2002. The right-wing bloc is defined as consisting of The Moderate Party, The Centre Party, The Liberals, and The Christian Democrats, and The New Democrats (Ny demokrati) and is being used at the elections 1982 and 1994. Unit: percentage points. Source: www.scb.se.

ΔU_M: The change in the average (over the two years preceding the election except for in section 5.3) unemployment rate between two election. The unemployment rate is calculated as the number of unemployed divided by the population aged 16-64. Unit: Percentage points. Source: www.ams.se.

ΔG_M: The change in average (over the two years preceding the election except for in section 5.3) growth rate of the tax base in the municipality, between the last two elections. Deflated by CPI. Unit: Percentage points. Source: www.scb.se.

ΔU_C: The weighted mean of ΔU_M of all municipalities in each county. The weights are proportional to the municipalities' share of the population in the county. Unit: Percentage points.

ΔG_C: The weighted mean of ΔG_M of all municipalities in each county. The weights are proportional to the municipalities' share of the population in the county. Unit: Percentage points.

ΔU_R: The change in the weighted mean of ΔU_M of all municipalities in each region. The weights are proportional to the municipalities' share of the population in the region. Unit: Percentage points.

ΔG_R: The weighted mean of ΔU_M of all municipalities in each region. The weights are proportional to the municipalities' share of the population in the region. Unit: Percentage points.

Δyoung: The change in the fraction of people aged 18 or younger since the last election year in each municipality. Unit: 1/100 percentage points.

Δold: The change in the fraction of people aged 65 or older since the last election year in each municipality. Unit: 1/100 percentage points.

Δforeign: The change in the fraction of foreign citizens since the last election year in each municipality. Unit: 1/100 percentage points.

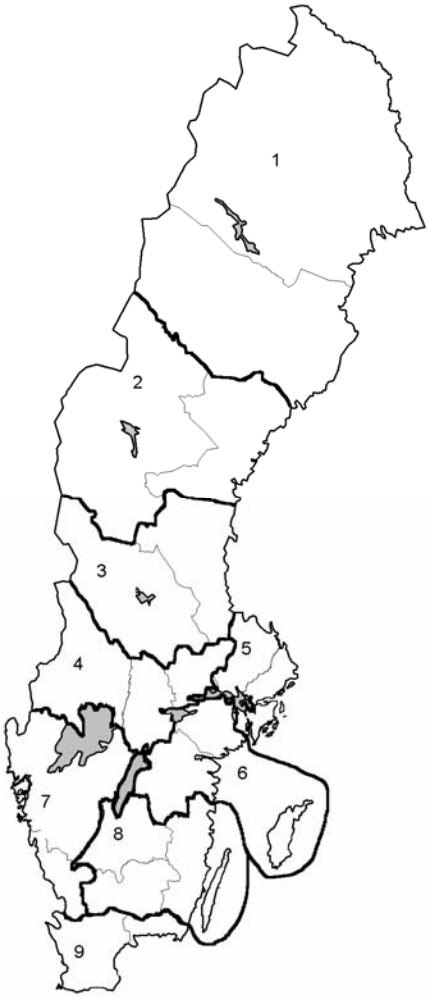
Table A1: Summary Statistics by Election

Variable	Year	Obs.	Mean	Std. Dev.	Min.	Max.
ΔGov	1985	284	-0.49	1.08	-4.09	2.77
ΔG_R	1985	284	3.48	0.27	2.71	3.93
ΔU_R	1985	284	0.09	0.22	-0.35	0.41
ΔG_M	1985	284	3.73	1.57	-0.39	15.34
ΔU_M	1985	279	-0.05	0.75	-6.48	2.39
ΔGov	1988	284	-0.66	1.43	-5.16	2.79
ΔG_R	1988	284	2.47	0.57	1.63	3.04
ΔU_R	1988	284	-0.94	0.21	-1.18	-0.43
ΔG_M	1988	284	2.05	1.49	-9.56	7.15
ΔU_M	1988	284	-1.00	0.59	-3.19	0.43
ΔGov	1991	284	-5.43	1.66	-10.68	0.01
ΔG_R	1991	284	-4.00	0.98	-5.09	-1.98
ΔU_R	1991	284	-0.06	0.27	-0.53	0.25
ΔG_M	1991	284	-3.75	1.76	-10.94	1.13
ΔU_M	1991	284	-0.07	0.57	-3.47	1.40
ΔGov	1994	284	-5.77	2.04	-11.28	8.10
ΔG_R	1994	284	-1.48	0.60	-2.90	-0.82
ΔU_R	1994	284	6.22	0.33	5.55	6.58
ΔG_M	1994	284	-1.52	1.57	-5.01	7.61
ΔU_M	1994	284	5.99	1.24	2.35	9.31
ΔGov	1998	284	-8.68	2.52	-17.73	-2.70
ΔG_R	1998	284	4.29	0.32	3.83	4.64
ΔU_R	1998	284	-2.20	0.26	-2.44	-1.49
ΔG_M	1998	284	4.25	1.02	0.87	8.57
ΔU_M	1998	284	-2.26	0.98	-6.05	0.95
ΔGov	2002	284	3.61	2.07	-8.22	8.78
ΔG_R	2002	284	-0.41	0.21	-0.81	0.14
ΔU_R	2002	284	-2.53	0.20	-3.06	-2.22
ΔG_M	2002	284	-0.54	1.00	-4.14	1.98
ΔU_M	2002	284	-2.47	0.89	-5.30	1.05

Changes in economic growth and unemployment measures are based on two-year averages.

Appendix B: Description of Regions

Table A2: Composition of regions	
1. Nordnytt	Norrbottens län Västerbottens län
2. Mittnytt	Jämtlands län Västernorrlands län
3. Gävledala	Dalarnas län Gävleborgs län
4. Tvärsnytt	Värmlands län Örebro län Västmanlands län
5. ABC	Stockholms län Uppsala län
6. Östnytt	Södermanlands län Östergötlands län Gotlands län
7. Västnytt	Göteborgs & Bohus län Älvsborgs län Skaraborgs län Hallands län
8. Smålandsnytt	Jönköpings län Kronobergs län Kalmar län
9. Sydnytt	Malmöhus län Kristianstad län Blekinge län
Note: Län is the Swedish word for county.	



Map of Regions

1. The ″Nordnytt″ region
2. The ″Mittnytt″ region
3. The ″Gävledala″ region
4. The ″Tvärsnytt″ region
5. The ″ABC″ region (The capital region)
6. The “Östnytt” region
7. The “Västnytt” region
8. The “Smålandsnytt” region
9. The “Sydnytt” region

Thick line denotes region border
Thin line denotes county border

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