Voter Turnout in Norway: Time, Space, and Causality

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from 1945 to 1991. The model contains aggregate data divided into two-year intervals with
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term and long-term effects, as well as between national versus local factors. In contrast to
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with grand analysis.

Voter turnout is none the less a phenomenon worth closer examination. First, and from a methodological viewpoint, it may be that certain variables affect voters' *party-choice* only through their effect on turnout. The question of *whether* to vote is probably related to the question of *how* to vote. Indeed, as the empirical analysis to follow will show, the relationship between party support and turnout is a complicated one.

Second, there is the question of *democratic accountability*. If economic adversity causes more alienation and thus lower turnout, then a recession due either to deliberate deflationary policies or mismanagement would not necessarily reduce government support. This may be so because those having reason to punish the government (the poor, the unemployed, etc.) could be among those who do not exercise their right to vote (Rosenstone 1982).

To take the argument a step further, this phenomenon might even explain some of the electoral success of conservative (-minded) governments during the past decade. Deflationary polices tend to create unemployment which could again increase the number of abstainers. Although the unemployed probably would prefer the more unemployment-averse opposition, they still favour non-voting to voting. If the "exit" option ranks higher than the "voice" option expressed through the ballot paper, then a recession may in fact do the government more good than harm.

Third, and related to the second argument, if the act of voting does not make much of a difference for the individual voter, it certainly makes almost all the difference for the individual politician. Verba et al. (1978, 53) characterize voting as "a blunt but powerful instrument". It is blunt because it does not reveal much about voters' policy preferences, but it is powerful because it decides the rise and fall of political leaders and parties. So we have here a phenomenon of micro-insignificance with quite significant macro-implications.

Viewed against this background, it is not surprising that the pioneers of Norwegian electoral research were preoccupied with questions related to electoral participation. In fact, the analytical perspective we are about to present is very much the same as that adopted by Rokkan and Valen more than 30 years ago. To quote from their first two pages: "Our approach is essentially *ecological* . . . Our concern is not only with a process in *time* but also with a process in *space*" (original emphasis. Rokkan & Valen 1962, 111–112).

This sums up our approach and our concern as well. However, in contrast to the two pioneers, we (1) draw on both the sociological and the economic approach to voting behaviour, (2) look more closely into the theory of economic (non)voting, and (3) employ an econometric model that deals explicitly with variation over time as well as through space. The analysis encompasses Norwegian municipal and parliamentary elections from 1945 to 1991 and a time series with a two-year interval.

Theoretical Background

Broadly speaking, we can distinguish between three main approaches to voting behaviour; the social psychological, the economic, and the sociological (Listhaug 1989). This distinction can be used not only to explain voting, but also to systematize the phenomenon of non-voting. The social-psychological approach focuses on attitudinal correlates of participation. Variation in turnout is thus seen as a result of certain *attitudes* such as political interest, the feeling of political efficacy, sense of citizen duty, and so on. Within this tradition the distinction between the decision *whether* to vote and *how* to vote is somewhat blurred, and apparently both questions relate to the strength of party identification (Aldrich & Simon 1986).

Since our analysis focuses on *changes* in turnout rather than turnout levels, and on aggregate data which do not reflect attitudinal factors particularly well, social-psychological theories are not discussed here. However, by studying, first differenced turnout series, we control for factors that have long-term and stable effects on turnout. Thus, one could say that by looking at percentage changes in turnout we in fact control for voting as an habitual act.

The economic models – which can be considered as a subgroup of rational choice theory – may be divided into Downsian theories (see Downs 1957) and theories of economic voting. Both traditions are discussed in the coming analysis. In addition, we use elements from the sociological approach. Here, the focus is on differences in turnout between particular groups (see Asher et al. 1984). In this perspective stratification, demography and geography – be they class, sex, age, education, urban–rural residence, etc. – are seen as important determinants of turnout. Indeed, as the empirical analysis will show, social cleavages do make a difference for turnout patterns in the Norwegian post-war era.

Rationality, Economy and Turnout

From the perspective of rational choice theory the decision to vote or not is simple: "A citizen votes if the benefits exceed the costs" (Arcelus & Meltzer 1975, 1233). According to Riker & Ordeshook (1968) this cost-benefit calculus will assume the following form:

$$R = PB - C + D$$

where **R** is expected utility of voting minus the expected utility of abstaining; **PB** is the benefit (**B**) of having the preferred party win the election weighted by the probability (**P**) of casting the decisive vote that causes such a victory. The **B** term can in part be defined as a "party

differential", viz. the extent to which the voter prefers one party to the other (McLean 1987). C, which is the cost of voting, can be divided into three categories; *shoeleather costs* such as petrol or bus fares, *opportunity costs* which consist of all those pleasant or useful activities to engage in instead of voting (McLean 1982), and costs related to the gathering of *information* about policies offered by the political parties (Downs 1957). D represents attitudinal and psychological factors, including the voter's sense of duty.

This equation is as popular as it is simple, and it has been used in several studies as a point of departure to solve the puzzle of voting as irrationality (for some of the latest rejoinders, see Hansen 1994; Kirchgässner & zu Himmern 1994). As far as we can see, the attempts have as yet not been successful. None the less, since the puzzle has implications for the relationship between the economy and voting as well as for the strength of the expected empirical results themselves, we prefer to reiterate briefly some of the main features of the puzzle.

The crux of the matter is simply that the probability of casting the decisive vote is 1/N, which for all practical purposes equals zero. Since the cost is greater than zero, an equation without D yields a negative R. Hence the best solution is to abstain. This is, in essence, "The Paradox of Non-Voting". Voting is irrational as long as the voter has only an infinitesimal influence. Apparently, then, this "investment perspective" (an outcome in return for a vote) fails to explain why people bother to vote at all.[1]

Returning to the D-term, and as suggested by Riker & Ordeshook (1968), voting may alternatively be described as an act of "consumption", viz. as an end in itself. The argument is that various side-payments, or spin-off effects, are associated with voting. These effects are thought to be derived regardless of the instrumental intention of the activity (Rose 1976). However, this in turn leaves open the question of *how* the act of voting becomes an end. What is more, when people vote for different "expressive" reasons, such as class solidarity, party identification, or a sense of duty, this choice is not a rational one as defined in the theory of rational choice.[2]

One way out of this impasse may be to broaden the definition of rationality and, for instance, to include in the B-term not only the benefit accruing to oneself, but also the perceived benefit to everybody else. The underlying logic here is that what is good for me must also be good for the country. Consequently, although the P-term remains infinitely small, the B-term will be infinitely large. There is a snag here, however: What if everybody thinks like that (McLean 1982)? Which in turn spurs the question: What if everybody thinks like *that*? We are here confronted with a classical collective dilemma, and arguments like saving the democracy must thus be considered as failures.

It should not be forgotten, though, that the *cost* of voting, in terms of for example initiative and skill, is marginal as well (see e.g. Verba et al. 1978;

Crewe 1981; Dalton 1988, ch. 3). Not only does the **PB**-term approach zero, but so does the **C**-term. In addition, party loyalty and identification, which clearly are relevant for the **D**-term, seem to have declined dramatically in industrialized countries during recent decades (see e.g. Dalton et al. 1984). What this all adds up to, then, or more correctly does *not* add up to, is that the **R**-term also should approach zero.

Still, the paradox of non-voting does not leave us totally empty-handed. We do have a theoretical argument for explaining the volatility of voter turnout. The implication of the paradox is in fact that the ratio between the explained sum of squares and unexplained sum of squares should be relatively small. Thus, we have a somewhat peculiar situation in which a low R-square supports the theory!

As an additional implication we expect voter turnout to be characterized by large changes due to small causes. *While organizational theorists tell us that it is irrational to be strictly rational,*[3] *the paradox of non-voting says that it is rational to act apparently irrationally.* As Nannestad & Paldam (1994a, 223. Original emphasis.) put it: "All mass decisions take place through a *filter of insignificance.*" This filter is supposed to direct voters to sources of cheap information. Thus one inexpensive way to decide is to select the same party as last year, while another is to vote on impulse. Alternatively, the voter may act in accordance with the expectations and pressure from the social group she identifies with. For a more near-sighted voter, the decision to vote would instead be based on the personal financial situation in terms of income, the probability of losing/getting a job, real interests on savings, etc. The first type of decision may be relegated to the *sociological tradition* in electoral research (see the next section), while the latter decision is relevant for *the theory of economic voting*.

As for the theory of economic voting, Rosenstone (1982) argues that economic factors should be included in the category of opportunity costs mentioned above. Ignoring the zero-hypothesis of no effect, two quite contradictory hypotheses about the relationship between the economy and turnout have been suggested (see Rosenstone 1982; Radcliff 1992). The first view has it that economic hardship is perceived by the voters as the government's fault. The quest for punishment causes voter mobilization: if voters abhor the policies of the government, they will accept the small costs involved going to the polls.[4] The opposite view, which was adhered to in the introduction, is that economic duress fosters passivity and apathy, thus reducing turnout.[5] The assumption here is that as the economy deteriorates, the capacity to participate is reduced and more time and effort is devoted to the immediate "bread-and-butter" problems. In the empirical analysis we argue that although we are here presented with two hypotheses with opposite signs, they may not be as contradictory as they appear at first sight.

Sociological and Political Explanations of Turnout

As for the sociological tradition, a clear (albeit weakening) relationship between social structure and social action has been established. Different groups stimulate or depress participation either through direct (de-)mobilization of their members, or by encouraging adherence to group norms (Asher et al. 1984, 33). Turnout is thus influenced by the mobilizing capacities of parties and organizations such as the trade unions. In particular, the size of the working class and its capacity for political organization and mobilization should be related to turnout. According to Crewe (1981, 253) "there is clearly a connection between a country's overall turnout and the electoral strength of those of its parties established to represent the working class". Whereas Crewe's conclusion is based on a *narrow cross-national analysis*, in the sense that he concentrates on variation in cross-national support for Socialist parties only, the empirical analysis presented below is *broader and intra-national*: We concentrate on a single country, but add several indicators of working-class strength; not only party variables but also variables that capture variation in industrial employment and strike activity. The inclusion of the strike variable is premised on the analysis by Rokkan (1968) who not only distinguishes between a *numerical channel* (made up of voters and political parties) and a *corporative channel* (dominated by interest organizations and the bureaucracy), but also emphasizes the strong *inter-relationship* between the two. We expect that mobilization in the corporative channel fluctuates in tandem with mobilization in the numerical channel, or, more to the point, that strike activity is related to voter turnout.

The other indicator of working-class strength, industrial employment, may be seen in relation to group-based inequalities in participation – as opposed to individual-based inequalities (Verba et al. 1978). The assumption is that the core of the working class, through consciousness of a common purpose (i.e. an ideology) and by means of organization, has a higher propensity for mobilization compared to other groups. This kind of political resource may compensate for political interest acquired, for example, through education. As Verba et al. (1978) argue, one would expect the impact of organizational mobilization to exert a stronger impact on the "easier" forms of political participation like voting. More demanding forms, such as political discussion, should be less susceptible to organizational mobilization and more dependent upon individual resources such as education.[6]

In the literature on economic voting (see Midtbø 1993, ch. 5 for a review) much effort has been invested in determining the relative importance of economic versus *political* factors. Among the political variables that are seen to mobilize or demobilize voters, *competitiveness*, *fragmentation* and *instability* are frequently mentioned (Shamir 1983). For example, there are analyses that seem to suggest a positive relationship between voter turnout

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and interparty competition, or so-called *closeness* (see e.g. Kirchgässner & zu Himmern 1994). According to Powell (1982) closeness can explain the increase in Norwegian turnout during the 1960s when the voters witnessed a disintegration of the Social Democratic hegemony.[7]

Another factor that obviously can be related to turnout is *party ideology*. In his study of American turnout, Rosenstone (1982) argues that given the relationship between social status and economic vulnerability, the Democrats are more likely to be punished during economic recessions than the Republicans. Note, first, that this tendency is partly detrimental to the "ideological hypothesis" in the theory of economic voting. This theory holds that a decrease in employment and/or economic growth increases the support for Social Democratic parties. Second, the implicit assumption in Rosenstone's argument is that political parties are affected by turnout levels, and not the other way around. However, as we will see in the next section, such an assumption can at times be fallacious.

Model and Analytical Approach

There are two different types of explanations of variation in turnout; micro and macro-explanations (Crewe 1981). The former focuses on the attributes of the individual voter such as economic and intellectual resources, interest in politics, the feeling of political efficacy, and so on. Macro-explanations, on the other hand, deal with the environment surrounding the potential voters, such as legal procedures, social cleavages, closeness of the election and changes in the economy. The present study is based on a macro-view, or rather a "meso-view" since the Norwegian counties constitute the basic level of analysis.

An ecological analysis such as this could be designed in at least three different ways (see Stimson 1985; Holbrook 1991). In political science the cross-sectional approach is the most common one. Given the available data in the present study, such a design would mean to choose (not at random!) a single point in time and compare the values for different counties:

$Y_{\text{Østfold}} \ X_{\text{Østfold}}$
$Y_{\text{Akershus}} \ X_{\text{Akershus}}$
.
.
.
$Y_{\text{Finnmark}} \ X_{\text{Finnmark}}$

Here Y represents turnout at time **t** and X some independent variable at time

t. The total number of units (counties) is 18, but one could, of course, move down a level to the municipalities, in which case the total number of units exceeds 400.

An alternative approach is to concentrate on particular counties and study the development over time. Let us say (again; based on some persuasive reasoning) that we would like to focus on the county of Østfold. Then we would adopt the following design:

$Y_{\text{Østfold-1945}}$ $X_{\text{Østfold-1945}}$
$Y_{\text{Østfold-1947}}$ $X_{\text{Østfold-1947}}$
.
.
.

$Y_{\text{Østfold-1991}}$ $X_{\text{Østfold-1991}}$

Here we assume a two-year interval and that municipal elections and parliamentary elections are (after an appropriate adjustment) comparable. The main problem with this approach is that in a country as geopolitically diverse as Norway, one cannot readily generalize from one county to the other.

As yet another alternative, one could, of course, aggregate the values of all the counties and estimate a "national" time series. By so doing, one would end up with a limited set of data – a set that due to geographical variation probably hides rather than reveals true relationships.

To surpass this either/or proposition one can "pool" the data. In the Norwegian case such an approach is particularly apt. In contrast to most other political systems in Western Europe, elections in Norway are set at regular intervals, with both parliamentary and municipal elections taking place every fourth year. If we multiply the number of counties with the number of time periods we get a total of more than 400 observations which are "stacked" like this:

$Y_{\text{Østfold-1945}}$ $X_{\text{Østfold-1945}}$
$Y_{\text{Østfold-1947}}$ $X_{\text{Østfold-1947}}$
.
.
.

$Y_{\text{Østfold-1991}}$ $X_{\text{Østfold-1991}}$
.
.
.

$Y_{\text{Finnmark-1945}}$ $X_{\text{Finnmark-1945}}$
$Y_{\text{Finnmark-1947}}$ $X_{\text{Finnmark-1947}}$

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$Y_{\text{Finnmark-1991}} \ X_{\text{Finnmark-1991}}$

Without going into too much technical detail, note that the analysis relies (due to a large T) on the "Kmenta-model" (Kmenta 1986), which is a cross-sectionally heteroscedastic, cross-sectionally correlated and time-wise autoregressive model (see e.g. Midtbø 1993, ch. 8 for a discussion).

The pooled time series model has several advantages that make it suitable for this kind of analysis. As emphasized by Stimson (1985), the choice between comparative analysis across space or dynamic analysis over time should not be a question of either-or. Rather, what is needed is *dynamic comparison*. Comparative analysis in political science tends to be unidimensional (usually cross-sectional). The one-eyedness not only limits the analytical perspective but at times results in downright erroneous inferences. (See Midtbø's (1994) comments on Rasch (1993) and Rommetvedt (1991) for very conspicuous examples of the latter.)

The model also has some useful theoretical properties. A two-dimensional view on turnout variation makes it possible to distinguish between short-term versus long-term effects as well as between the impact of national versus local factors (Holbrook 1991). In fact, the regression models presented below may be classified according to the following two-by-two table:

Table 1. Classification of the Independent Variables in the Regression Models

| | | LEVEL | |
		Local	National
TIME	Short	Unemployment Income Party support Industrial employment	Inflation Political events Strikes Unemployment Income
PERSPECTIVE	Long	Geographical dummies	1. Differencing "Seasonal" adjustment

As for the distinction between national and local variables, we have here something that resembles the well-known dichotomy between sociotropic and egotropic variables in the theory of economic voting. The variable for county unemployment is thought to reflect the probability of experiencing

unemployment as a personal and direct phenomenon, that is, unemployment experienced by the voter herself, the voters' household, neighbours, colleagues, and so on. The political significance of national unemployment, on the other hand, has to be seen more as a source of information on how the macroeconomy is working – information which is procured mainly through the media. *Our hypothesis is that while an increase in the more direct local unemployment increases political passivity, an increase in the more indirect national unemployment causes more activity.* These two contradictory hypotheses can, respectively, be supported by the conflicting arguments on the relationship between the economy and turnout mentioned above: while unemployment at the national level induces solidarity (or dissatisfaction) from a distance, local unemployment drains time and resources that could be used for political activity.

The table distinguishes between long-term and short-term factors as well. As previously mentioned, we try to control for the long-term effects and concentrate on the short-term. This is done by first differencing (that is, one studies *changes* in X, ΔX, instead of X) so as to control for trends and drifts in the participation level.

Second, it is common knowledge that turnout in Norway is persistently higher in parliamentary elections than in municipal elections (Bjørklund & Sørensen 1990; and Rokkan & Valen 1962).[8] In our analysis, this long-term, cyclical pattern in the dependent variable has to be dealt with. This can be done in several ways, but we settled for a "seasonally adjusted" variable.[9]

Third, the model also contains "fixed effects", though not purely "mechanical" ones as in the standard LSDV (Least Squares Dummy Variable) model. Instead of adding a dummy for each county, five dummy variables are introduced so as to control for the distinct geopolitical cleavages apparent in Norwegian politics and voting behaviour (see, e.g. Rokkan 1967).[10] Of course, and as pointed out by Pettersen (1988), having one's domicile in one part of the country rather than in another cannot in itself be seen as an "explanatory variable" causing variation in turnout. Indeed, as suggested by Rokkan & Valen (1962) "geography" is a factor that must be replaced by more specific variables such as accessibility. This latter variable could in turn be operationalized in terms of road networks, the percentage of people living in "house clusters", distance from polling station, and so on. In this analysis, however, these factors are perceived as stable, long-term factors captured by the dummy variables. They are therefore relegated to the category Maddala (1977) labels as our "specific ignorance" (in contrast to our "general ignorance" which is being expressed in the error term).

If we turn to the other independent variables in the model, income and unemployment variables for both the county and national level are included to test the validity of the economic voting theory. A national inflation

variable is also added. This variable (which is not available on a county level) can be expected to affect turnout negatively particularly through its effect on savings. The potential impact of party-support variables is, in turn, divided into three categories; *ideology*, *polarization*, and *competition*. We expect a positive correlation between the support for socialist parties and turnout. In addition, we look for a relationship between polarization and turnout. In this case the direction of the relationship is difficult to predict: Does an increase in the support for "extremist" parties result in higher or lower turnout? Finally, we expect that the more uncertainty there is about the electoral outcome, the higher the turnout is likely to be. As previously mentioned, we expect political activity in the numerical channel to be related to the activity in the corporative channel. The Norwegian labour movement has always mobilized on both of these fronts (Rokkan 1968). Therefore, we include a variable that measures the amount of strike activity.

Whereas the exogeneity assumption of economic variables in relation to turnout is a fair one, the causality relationship between strike activity and turnout is far from straightforward. One hypothesis is that conflicts over wage settlements may mobilize parts of the electorate. Alternatively, and quite the reverse, political dissatisfaction and low turnout may have a spillover effect on the labour market which consequently increases strike activity (Rokkan 1968). The problem of simultaneous equation bias is probably even more apparent when party variables are included in the model.[11] *A priori* we do not know whether an increase in voter turnout affects the support for a particular party, whether it is the other way around, if the relationship is reciprocal, or if there is no relationship at all. We know that simultaneity can cause OLS estimators to be biased and inconsistent. It is therefore not to be recommended simply to *assume* a unilateral causal effect from party support to turnout, as unfortunately has become standard practice in the literature.[12]

In this particular case it is also difficult to identify traditional simultaneous equations models. There is a lack of appropriate instruments because variables that influence *how* people vote and *if* they vote, respectively, are difficult to distinguish. Fortunately, however, a simple empirical technique is available which may help to determine the flow of causality (in a predictive and not a philosophical sense), namely the *Granger causality test*. This test is based on the assumption that "a variable X 'causes' another variable Y, if by incorporating the past history of X one can improve a prediction of Y over a prediction based solely on the history of Y alone" (Freeman 1983, 327–328). The underlying notion here is quite simple: if X causes Y, then changes in X should precede changes in Y. According to Sims (1972), if Y fails to Granger cause X, then X satisfies the necessary condition of being an exogenous variable.

There are basically two types of causality test; the Haugh-Pierce procedure and the Direct Granger procedure. Since the latter method appears to be superior to the former (see again Freeman 1983 for details) we settle for the direct procedure. The test is quite straightforward. First, we run a restricted regression where Y is regressed on lagged values of Y up to a certain time lag, **m**, which in the pooled version looks like this

$$Y_{it} = \sum_{k=1}^{m} \alpha_k Y_{it-k} + \epsilon_{it}$$

Then an unrestricted regression is estimated where Y is regressed on lagged values of Y and lagged values of X.

$$Y_{it} = \sum_{k=1}^{m} \alpha_k Y_{it-k} + \sum_{k=1}^{m} \beta_k X_{it-k} + \epsilon_{it}$$

The sum of squared residuals from the respective equations is then obtained, and an F-test is applied so as to determine whether the group of β-coefficients are different from zero. Finally, we repeat the procedure, but now with X as the endogenous variable.[13]

An Empirical Analysis[14]

The empirical analysis is divided into three parts.[15] First, we look at the relationship between turnout and the socio-economic variables. Then the Granger-causality test is applied in order to give a more accurate description of the relationship between turnout and political variables. Thirdly, a final model which includes both economic and political variables is estimated.

The regression equation describes how socio-economic factors explain changes in Norwegian electoral participation. As the discussion above would lead us to believe, the equation shows that a decrease in the number of industrial workers decreases the number of voters. The effect is quite large compared to the impact of the macroeconomic variables (see the β-values). Given a shrinking working class, this factor alone may contribute to an even further decline in turnout levels in the coming years.

While it appears that inflation measured at the national level has a negative effect on turnout, and an increase in unemployment at the local level depresses turnout, an increase in unemployment at the national level actually *increases* turnout. This squares well with our hypothesis. Yet, whereas the positive relationship between turnout and income at county level is also as expected, the positive relationship at the national level is not.[16] The residuals seem to be well-behaved. Surely, the overall fit of the model,

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Regression Equation 1. Change in Voter Turnout. Socioeconomic Explanatory Factors.

$$\Delta \text{TURNOUT} = a + \Delta \text{UNEM} + \Delta \text{INF} + \Delta \text{INCOME} + \Delta \text{INDEMP} + \text{OSLO} + \text{EAST} + \text{SOUTH} + \text{WEST} + \text{CENTRAL} + \Delta \text{UNEMN} + \Delta \text{INCOMEN}$$

a	UNEM	INF	INCOME	INDEMP	OSLO	EAST	SOUTH	WEST	CENTRAL	UNEMN	INCOMEN
-1.91	-0.006	-0.18	0.09	0.03	-0.15	-0.44	-0.10	-0.20	-0.02	0.05	0.29
—	-0.08	-0.12	0.14	0.19	-0.01	-0.03	-0.01	-0.01	-0.00	0.40	0.20
-2.73	-9.55	-3.27	9.83	13.34	-1.02	-2.88	-0.94	-1.36	-0.22	6.16	3.63

N*T = 18*23, Constant Rho = -0.60, Buse R-Square = 0.57,
Ljung-Box-Pierce Statistics, Lag 24 = 8.46 (None of the earlier lags are significant either)

Where
Δ TURNOUT = Two-year changes in voter turnout from 1947 to 1991 in 18 counties. The variable is seasonally adjusted. The values for the first two elections in Finnmark are considered outliers, and are replaced by interpolated values.
Δ UNEM = Two-year change in county unemployment.
Δ INF = Two-year change in the national consumer price index.
Δ INCOME = Two-year change in total assessed income in each county, deflated by the national consumer price index.
Δ INDEMP = Two-year change in industrial employment in each county.
OSLO = Dummy variable which equals 1 for the following counties: Oslo and Akershus, Østfold, Vestfold, and zero otherwise.
EAST = Dummy variable which equals 1 for the following counties: Oppland, Hedmark, Buskerud, Telemark, and zero otherwise.
SOUTH = Dummy variable which equals 1 for the following counties: Aust-Agder, Vest-Agder, and zero otherwise.
WEST = Dummy variable which equals 1 for the following counties: Rogaland, Hordaland and Bergen, Sogn og Fjordane, Møre og Romsdal, and zero otherwise.
CENTRAL = Dummy variable which equals 1 for the following counties: Sør-Trøndelag, Nord-Trøndelag, and zero otherwise.
(The three northern counties, Nordland, Troms and Finnmark are used as a reference group).
Δ UNEMN = Two-year change in national unemployment.
Δ INCOMEN = Two-year change in national disposable income.

although not impressive, is better than that suggested by the paradox of non-voting!

Turning to the question of how party politics is related to turnout, we expect the following three factors either to affect or be affected by voter participation; ideology, polarization and competition. As Table 2 reveals, we have experimented with several definitions within the three different groups. In addition, as can be seen at the bottom of the table, we also test the way in

Table 2. Direct Granger Causality-test. Voter Turnout and Party Support, and Voter Turnout and Strike Activity. Each Time Series is 1. Differenced. A Trend Variable as Well as Five Geographical Dummies are Included in Each Equation (Although Their Values are not Presented). Estimation Technique is Seemingly Unrelated Regression.

Null hypothesis:		$m = 1$, $N = 396$ $F(1.387)$	$m = 2$, $N = 378$ $F(2.367)$
IDEOLOGY:	DNA ↛ Turnout	8.95	7.57
	Turnout ↛ DNA	0.59	2.74
	DNASV ↛ Turnout	1.40	2.33
	Turnout ↛ DNASV	0.84	1.73
	SOCIAL ↛ Turnout	0.55	1.61
	Turnout ↛ SOCIAL	0.08	0.14
	H ↛ Turnout	1.02	1.71
	Turnout ↛ H	10.78	3.60
POLARIZATION:	DNA + H ↛ Turnout	4.16	9.11
	Turnout ↛ DNA + H	3.87	2.92
	DNA + H + Ce ↛ Turnout	3.08	4.84
	Turnout ↛ DNA + H + Ce	10.23	2.55
	DNA + H + Ce + SV + F ↛ Turnout	0.74	2.99
	Turnout ↛ DNA + H + Ce + SV + F	1.95	2.09
	Ce ↛ Turnout	4.82	6.87
	Turnout ↛ Ce	19.04	9.49
COMPETITION:	I DNA − H I ↛ Turnout	1.40	0.56
	Turnout ↛ I DNA − H I	0.22	0.54
	I DNA − H + Ce I ↛ Turnout	0.19	1.56
	Turnout ↛ I DNA − H + Ce I	1.44	2.06
	I DNA + SV − H + Ce + F I ↛ Turnout	0.31	1.95
	Turnout ↛ I DNA + SV − H + Ce + F I	0.70	2.69
MOBILIZATION:	Strikes ↛ Turnout	5.79	49.63
	Turnout ↛ Strikes	5.35	6.26

DNA = Labour Party
DNASV = DNA + Socialist Left (People's) Party
SOCIAL = DNASV + Communist Party and Red Electoral Alliance
H = Conservative Party
CE = Christian Democratic Party + Centre (Agrarian) Party + Liberal Party + Liberal People's Party
SV = Social Left (People's) Party
F = Party of Progress (Anders Lange's Party)
Strikes = Number of work days lost due to work stoppages
I I = absolute value.

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which mobilization in the corporative channel is related to mobilization in the numerical channel.

The causality test indicates that changes in the support for the established non-socialist parties at the centre of the left–right dimension, as well as the support for the Conservative Party, are to a large extent *determined by* changes in turnout, and not the other way around. Labour support, on the other hand, seems to *cause* turnout, while not itself being a result of turnout.

This latter relationship has been discussed by Rokkan & Valen (1962). Their message is that socialist parties in general, and the Labour Party in particular, are more concerned with mobilizing voters than their political competitors. However, to avoid any fallacies, it must be pointed out that the impact of Labour support on turnout does not necessarily imply that the Labour Party itself mobilizes voters. It could be that an increase in Labour support induces competing political parties to mobilize *their* voters so as to stall further Labour advances.

While the relationship between turnout and polarization is somewhat ambiguous and the relationship between turnout and competition, as here defined, is virtually non-existent, the relationship between turnout and strikes is, literally speaking, striking. Although the F-test indicates some measure of reciprocity, the two-period model in particular suggests that strikes cause turnout. This is indeed an intuitively satisfying result when we consider that strikes usually occur in the spring while elections are held in the autumn. It also underlines Norway's status as "a two-tier system", where the amount of activity in the two channels appears to be positively, and not negatively, correlated.

To reiterate, the purpose of this part of the analysis was to identify and exclude political variables that were either caused by turnout, independent of turnout or interrelated with turnout. The result of the causality tests suggests that only Labour support and strike activity are exogenous to turnout. Consequently, only these two variables are added to the economic and geographic variables in the equation presented above.

To make the model more complete – that is, more in accordance with results from the theory of economic voting – we have also included some simple event variables so as to capture the potential mobilizing and demobilizing effects of particular political issues and legal amendments. This leaves us, then, with the second, and final, equation (as in the previous equation, the unstandardized coefficients are presented in the first row, the standardized coefficients in the second and the T-values in the third).

One of the most interesting features of equation 2 is what it does not show. Among those variables that either fail to pass the (two-tailed, 5 percent level) test of significance or only affect turnout marginally, is a battery of event variables, (e.g. dummy variables for the lowering of the voting age, and the "post-EEC" election in 1973). The only event variable that remains

Regression Equation 2. Change in Voter Turnout, Final Model.

Δ TURNOUT = a	+ Δ UNEMN	+ Δ INCOME	+ Δ INDEMP	+ Δ KINGSBAY	+ Δ DNA	+ Δ DNA(-1)	+ Δ STRIKE	+ OSLO	+ EAST	+ SOUTH	+ WEST	+ CENTRAL
-2.12	0.03	0.15	0.03	11.33	0.05	0.06	0.003	-0.30	-0.66	-0.25	-0.58	-0.11
	0.27	0.23	0.17	0.39	0.12	0.13	0.12	-0.02	-0.05	-0.01	-0.04	-0.01
-6.82	8.98	15.78	10.75	15.36	6.40	6.54	4.14	-1.46	-3.06	-1.58	-3.28	-0.81

$N*T = 18*23$, Constant Rho = -0.59, Buse R-Square = 0.71,
Ljung-Box-Pierce Statistics, Lag 24 = 17.14 (None of the earlier lags are significant either)

Where, in addition to those variables defined in equation 1,
KINGSBAY = A dummy variable that equals 1 in 1963 and zero otherwise.
DNA = Two-year change in support for the Labour Party.
DNA (-1) = DNA lagged one period.
STRIKE = Two-year change in number of work days lost due to work stoppages.

significant in the full model is "KINGSBAY" which captures the effect of the non-socialist challenge to the hegemonic Labour government in 1963.[17] In the group of economic variables, neither national inflation nor local unemployment enters significantly in the model.

These negative findings notwithstanding, not only does the economy matter, but – as *inter alia* the increase in the R-square suggests – so does politics. If we use the β-values as a standard, exclude the qualitative variables and rearrange the remaining ones according to the size of their impact, a drop in turnout is caused by a *decrease* in any of the following variables: national unemployment, Labour support, local income, the number of industrial workers and strike activity, in that order.

It is worth noting that in a cross-sectional analysis of the 1985 Storting election, Pettersen (1988) finds no significant impact either of education or of income on Norwegian electoral participation. While the redundancy of the former variable is reassuring (since we have not included it in our analysis), the insignificance of the income variable is a little puzzling.[18] Our guess is that the different result is due to design. Even if the panel model captures variation both through space and over time, the interpretations may, admittedly, be criticized for "fallacy of ecological inference". However, in the context of economic voting, Kramer (1983) has argued persuasively in favour of aggregate-level analysis. Without going into too much detail (see e.g. Markus 1988 for further discussion), Kramer points out that the ecological fallacy is of minor importance compared to the presence of measurement error, response bias, etc., in individual-level data. Also, while results on the aggregate level may be compatible with several different individual-level hypotheses, the opposite is also true. Last but not least, Kramer (1983, 93) shows that the individual-level, cross-sectional estimate is "hopelessly contaminated. It depends only tenuously on the true parameter value". The reason is, in short, that in a cross-sectional analysis it is impossible to capture *shifts* in the relationship between the independent variables and turnout from one election to the next.

Concluding Remarks

In a review of the American literature, Aldrich & Simon (1986, 277) offer this unequivocal but depressing conclusion: "What the above adds up to, of course, is the conclusion that we really do not yet know why people turn out to vote." In a similar vein, Radcliff (1992, 444) holds that "The most striking aspect of the literature may be its inconsistency".

We find this view a bit too pessimistic. Crewe (1981, 253), for instance, has put forward as a cross-national generalization that turnout is affected by the mobilizing capacities of parties and affiliated organizations such as the

trade unions. As the result of this empirical analysis makes clear, the working-class movement in Norway appears as a pivotal factor in determining variation in turnout. There is a positive relationship not only between turnout and Labour support, but also between turnout and industrial employment and between strike activity and turnout. This last result also illustrates Norway's status as a two-tier system of decision-making.

As a matter of fact, in an internal paper on campaign strategy for the 1989 Storting election, the Labour Party expresses views similar to ours:

> The strategy is clear: . . . The abstainers are to be mobilized . . . The election campaign in the trade union movement must be given the highest priority so as to mobilize the bedrock of our electorate (Our translation. DNA: Planlegging, Valget 1989, p. 5)

Our analysis may also be considered as a minor piece in the larger puzzle presented by Radcliff (1992). His conclusion is that economic downturns reduce turnout in industrial countries (while having the opposite effect in developing countries). In accordance with Radcliff's result, this analysis suggests that income growth increases turnout in Norway.

However, we find, and this we believe to be our most interesting result, that the decision whether to vote is not only a question of *how*, but also *where*, the economy affects the voter. It is to be hoped that this in turn may add a small amount of nourishment to the debate concerning the relative importance of sociotropic versus pocket-book voting (see Nannestad & Paldam (1994b) for one of the latest and most vigorous expositions). On the one hand, we agree with Rosenstone (1982) that the reason why so many empirical analyses report "sociotropic" voting to be more predominant than "pocket-book" voting could be due to the positive relationship between potential "punishers" and abstainers. Yet our empirical analysis shows that not only does an increase in national unemployment yield higher turnout, but so does a rising local income. By implication, then, what we have here is a pocket-book-sociotropic dimension in the act of voting itself.

NOTES
1. It has been argued, however, that the higher support in terms of votes, the more influence a political party may exert vis-à-vis other political actors (Stigler 1973). The argument of the importance of the margin of victory, makes the investment perspective somewhat less implausible (Merrifield 1993).
2. The inadequacies of this attempt spawned yet another alternative theory where voters were assumed to adopt a minimax regret strategy (Ferejohn & Fiorina 1974). This

model has in turn been criticized on both empirical and theoretical grounds (see Aldrich & Simon 1986).

3. This applies, for example, to the process of seeking optimal information (March & Simon 1958).

4. This argument is not very different from the asymmetrical voting hypothesis which says that governments are punished in times of economic adversity but not necessarily rewarded when there is an economic upturn (see Kernell 1978).

5. The positive relationship between the economy and electoral participation seems to hold at least at the cross-national level. Powell (1982), for example, finds that there is a relatively strong positive correlation (r = 0.35) between GNP per capita and turnout across the full set of democracies for the period between 1960 and 1970.

6. Cassel & Luskin (1988) have demonstrated some disturbing results of misspecified turnout models. And, admittedly, due to data shortages the variable most conspicuous by its absence is education. However, there is really no obvious reason to expect that a positive relationship between education and turnout on the micro level automatically should appear at a higher level. At least at the cross-national level countries with very low electoral participation rates, such as the USA and Switzerland, would rank high on any type of educational score.

7. In fact, it is possible to compare the situation in Norway in the 1960s with that of India during the same period (Powell 1982). In both countries, the hegemony of the ruling parties (the Labour Party and the Congress Party, respectively) was challenged, and subsequently there was a surge in turnout.

8. In addition, Rokkan & Valen (1962) found that this "discrepancy level" was more pronounced in the countryside than in the cities. Our data indicate that the gap between the two types of elections has increased somewhat over time.

9. This was achieved by using SPSS-TRENDS and a multiplicative model. This model is appropriate whenever seasonal variation increases with the level of the series, as with the turnout variable. The main reason for choosing seasonal adjustment was to maintain a reasonably clear view on the causality structure in the model. The apparent problem with this approach is that it induces negative autocorrelation in the residuals, which in turn *deflates* the *t*-values and the R-squares.

10. The main advantage with this approach compared to the LSDV model, is that it does not waste as many degrees of freedom. F-tests showed this simplification to be justifiable.

11. Another problem is that in a multiparty system like that of Norway, there is an incredible number of combinations of political parties that may be relevant for voter participation. Below we experiment with quite a few, but other options are possible.

12. One of the latest examples is Merrifield (1993).

13. There may be contemporaneous correlations between the residuals in the equations. Hence, instead of OLS, the Seemingly Unrelated Regression technique is called for. To reduce the problem of autocorrelation the series are first differenced and we experiment with both a one-period and a two-period lag length.

14. The data are collected from the following resources: (1) "The Commune Database", Norwegian Social Science Data Services. (2) "Norway's Official Statistics", Storting elections 1945–89 and Municipal elections 1947–91, Central Bureau of Statistics of Norway. (3) "Labour Market Statistics", Central Bureau of Statistics of Norway. (4) "Industrial Statistics", Central Bureau of Statistics of Norway. (5) "Statistical Yearbook", Central Bureau of Statistics of Norway. (6) "Arbeidsmarkedet: Tidsskrift for sysselsetting og utbygging", 1945–65, Directory of Labour, Oslo. None of the above-mentioned institutions are responsible for the results and interpretations presented in this article.

15. It is perhaps worth pointing out that the accuracy of the turnout data should be better in Norway than in many other countries (Crewe 1981). In contrast to countries like Britain and France, the electoral register is continuously revised. Since poverty is not a particular dominant problem in Norway, the possibility of underregistration (which bias turnout figure upwards) is relatively small. This is not to say that the accuracy of these figures may change over time (as well as between counties). If, for instance, the

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probability of not being registered increases with decreasing income levels (and more poverty), then a positive relationship between income and the number of voters as a proportion of eligible voters would be underestimated.

16. By including both a regional and a national variable (the latter represents, roughly speaking, the mean value of the former), a multicollinearity problem might of course come into being. The correlation between national and regional unemployment is 0.66, whereas the correlation between the two income variables is 0.57. Although we cannot place too much confidence in such a measure of multicollinearity, correlations of the magnitude above should not cause too much concern.

17. Even if labelled "KINGSBAY", the event variable captures more than the effect of the government crisis in 1963 due to the King's Bay accident. Valen & Torsvik (1967), hold that the introduction of television as well as the politicization on a municipality level contributed to the mobilization of the electorate in 1963.

18. Most cross-sectional studies of voter turnout report a positive relationship between income and turnout (and most time-series analyses find no relationship at all (Filer et al. 1993)). Pettersen's findings as well as the result of our analysis are, however, quite the reverse.

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