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An international element in the vote?
A comparative study of 17 OECD countries 1948–85

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Abstract. The paper tests the 'folk' hypothesis that the vote at elections in different countries is affected by international opinion swings which are sometimes to the right and sometimes to the left. An hypothesis that, if it had been true, would have allowed us to predict the election outcome in one country by considering the outcome in recent elections in other countries. In order to test this hypothesis all (governmental) elections between 1948 and 1985 in 17 main democracies are considered. A set of series S(i,t), where i is a country and t time, showing the left/right-swing at the election is constructed. We next delete the i-index and reach the S(t)-swing series. The hypothesis is then operationalized as saying that S(t) contains positive autocorrelation. The S(t)-series is shown to behave as perfect white noise, so the hypothesis is rejected.

I. The problem

Sometimes we observe that elections in two countries at about the same time give a swing in the votes to the same side. This frequently leads to comments about the existence of an international element in voting. The purpose of this paper is to examine whether there are, in fact, systematic international movements in voting outcomes across countries, as measured on a left/right scale. Section II gives a brief comment as to the nature of the left/right scale. It is perhaps possible to define an international element in the vote in several ways. Our definition is:

There is an international element in the vote if swings to the left/right, relatively to the party system in each country, take place at elections at around the same time in different countries.

An international element in the vote consequently means that when a swing to either the left or the right is observed in one country, this is an indication that the next election(s) in the other countries will move in the same way. Hence, the hypothesis that there is an international element in the vote is simply a claim that: *there is a significant cross-country correlation of election results when they are measured on a comparable left/right scale.*

In order to make the test we have collected a set of election outcome data, C(i,t), for all 'governmental' elections between 1948 and 1985 in the following 17 developed democracies: Australia, Austria, Belgium, Canada, Denmark, Ireland, Finland, France, Germany, the Netherlands, Italy, Japan, New Zealand, Norway, Sweden, U.K. and the U.S.A. The data are defined and discussed in Section III.1. In Sections III.2 and 3 we further analyze the distributions of the C(i,t)'s for the different countries and demonstrate that it makes sense to analyze across countries.

Section IV presents the test techniques: a key point in the tests is that instead of testing for cross-country correlation we merge the series across countries and test for autocorrelation. The way we test for the international element has therefore three steps:

1. Convert the set of election outcomes C(i,t) into a set of comparable left/right swing observations S(i,t).
2. Delete the i-country index to obtain the swing series S(t).
3. Analyze the swing-series S(t) for autocorrelation.

In step (3) the autocorrelation tests are made using both the normal autocorrelation coefficient and a new non-parametric coefficient, briefly presented in Section IV.4. From the analysis of the distributions of the S(i,t)'s in Section III, we know, that it is dubious, if the conditions for using the normal coefficient of correlation are fulfilled. Therefore, it is important that the results from the two sets of tests are the same.

Section V gives the test results. In other studies (such as Paldam 1980, 1983a, 1983b) very significant international elements[1] have been found in quite different economic and socio/political time series. So it appeared very likely to the authors that an international element would have appeared in the vote too. However, this is proved not to be the case. According to our test there are no signs of an international element in the vote! It is always different to prove that something does not exist, so the reader should note the character of the test. However, the article is written so that reader with no interest in statistics can skip Sections III.2 and 3 as well as Sections IV and V.

II. A note on the LR-scale, i.e. the left/right-scale

It is remarkably easy in nearly all countries to place the political parties on a scale from left to right relative to each other. If we question people, politicians and politologists, there is rarely much doubt as to the way the parties should be placed on the LR-scale of the country. When people change party they normally change to a neighbouring party on that scale. The literature on this point is surveyed and a careful analysis as regards the relevance of the LR-scale in one of the most complex party systems, Denmark, is found in Nannestad (1989).

We shall therefore take it as uncontroversial, seen in the perspective of any one country, which governments are left and which are right. In fact, we did

not have much trouble collecting the data necessary for the (very simple) left/right-variable used below. Before we turn to the definitions, two items (II.1) and (II.2) are worth a few words:

II.1. Why does such a scale come into being in all countries?

One of the classical puzzles in Public Choice is the one known as the (first) paradox of voting. It is easy to show that a voter has an infinitesimal influence on the election outcome and hence little to gain by voting. Voting takes time and has other costs. Nevertheless, a large majority of the voters vote in most democracies.

Many studies have been made of the voters' knowledge of issues and candidates. The result inevitably is that great ignorance is revealed, especially as regards macroeconomic questions. This is in accordance with the paradox of voting. Given the influence of the individual voter, it would be irrational indeed if he was well informed. Actually, politics deals with a great many issues where even the greatest specialists just do not know the answers. How do we expect the voters to know and decide? Clearly everybody needs simplification – a basic dimension that can come in and make choices cheap in time and effort. That is where the LR-scale comes in. According to Nannestad (1989) the typical voter has a rough opinion about (1) his own position on the LR-scale and (2) about the location of the parties on the scale. Furthermore, the parties have the same opinions as the voters about their own position on the LR-scale. Hence, the information problem is solved – it becomes simple to vote.

This generates a demand from the voters for 'stands' on the issues from the parties, and it is one of the reasons why parties have to formulate political stands on all issues coming up. Consequently, the political process rationalizes most issues into the LR-scale. An issue sometimes comes up that a voter cares more about than he does about the LR-scale. If, furthermore, it happens that his view on that issue differs from the one of his party, he may change party. So there are always movements of voters between parties, and people also change positions along the scale for many reasons. But the LR-scale helps people to form opinions on all questions where they do not know what to think.

The reason for a person to feel that he 'belongs' to a certain section on the LR-scale is in many cases his class/income group. Therefore, it is common for left parties to make the claim that they fight for the labour class/low income people, while the right parties fight for the rich. Contrarily, the right parties typically claim that they work for the longer term common interests of the whole society, while the left parties only look at the short term gains of narrow groups of their clients, etc. Some political issues can be organized on the

LR-scale according to the demands of the groups supporting the various parties, but it is often very difficult to explain the stands of parties by the 'interests' of the groups 'behind' the parties.

II.2. Is there a deeper logic behind left and right?

When a typical political issue is considered, it follows that the political process often come to generate a left and right wing position on the issue. It is often interesting, and quite disturbing, to pose some simple questions. How is it that this stand on the issue is the left and that stand is the right? Is the distribution of stands on the LR-scale the same in different countries and over time?

We think anyone posing such questions will inevitably reach the conclusion that there is a large path dependent element in the way these positions are reached. For our purpose such historical chance means that the positions have a large random element. At any point of time it is therefore hard to understand why one set of beliefs has been lumped together to form the typical left-wing ideology and another set to form the right-wing ideology. It is easy to find inconsistencies, changes over time and across countries. Why is (in most countries) the left for free abortion, and against the death penalty? And why has the right the reverse opinions? It was, till a dozen years ago, right to be for the protection of nature and left to be for new technologies, such as nuclear power. Now the roles are reversed, etc. In the USA it is left to favour price/wage controls, while in many European countries left parties fight against intervention in the free negotiations between unions and firms, etc.

Sometimes historical explanations can be given why it is right to have a certain opinion. A certain law was enacted by a left government, and it is consequently right to be against it. In the neighbouring country it may be the other way round. In Sweden it was the Social Democrats who built nuclear power stations, and it became a right party [Centerpartiet] which gained votes from being against nuclear power. However, now the Swedes have learned that it is left to be against power in most other countries. This has given the Social Democrats a problem.

We shall not, however, pursue all these puzzling matters at the present. All we are concerned with is the existence and relevance of the LR-scale.

III. Data for 197 election results and their distributions[2]

The data build upon two assumptions[3]. First we take each election to be an election for/against the government, i.e. the government ruling before the election. This government is referred to as G(i,t) or just G. We further assume

that voters are myopic, so that we only need consider the government just before the election. If it has ruled for the full election period or only a part of the period is taken to be irrelevant[4]. Most countries have different elections. We are considering the election which is relevant for the formation of the Government. In most countries this is the election for the main chamber of the Parliament. In the US it is, however, the presidential election.

III.1 The data C(i,t), L(i,t), $L_2(i,t)$ and the estimates A(i) or A

The analysis uses a set of data covering all 197 elections from 17 democracies from 1948 to 85. The data are defined as:

i	the country index.
t	time of the election in year, month and day.
C(i,t)	gain/*loss from ruling*. The increase, since last election, in the vote, measured in percent of all votes cast, for all the parties of the G.
A(i) & A	= Avr[C(i,t)], the *average* gain/*loss from ruling:* If the average is with respect to t, we obtain the 17 country averages: A(i). If it is with respect to both i and t, we get the grand average A.
L(i,t)	= {− 1, 0, +1}, *basic LR-variable.* L(i,t) = − 1 if G(i,t) is left relative to (the center of) the political spectrum of the country. L(i,t) = 0 if G(i,t) is a 'mixed' coalition of right and left parties. L(i,t) = + 1 if G(i,t) is right.
$L_2(i,t)$	= {− 1, 0, + 1} *additional LR variable* for mixed coalitions. $L_2(i,t) = 0$, if L(i,t) is not 0. $L_2(i,t) = -1$, if the vote for the coalition moves left, and $L_2(i,t) = +1$, if the vote moves right[10].

The data cover altogether 202 elections in the 17 countries from 1948 to 1985. We cannot calculate the C(i,t) for all 202 elections as the G-parties have to have been represented at the previous election, so some of the first elections give no C's. The 202 elections therefore provide us with only 197 observations of C(i,t). A further reduction is due to the coalition governments across the centre where the LR-variable is set at zero. There are 33 such mixed coalitions. Hence, *we have 164 non zero observations of L(i,t).* To discuss the distribution of the C(i,t)-observations we can, however, use all the 197 C(i,t)'s.

Of the 33 coalition elections for mixed Gs, where L(i,t) = 0, we found 28 clear cases of a shift to one side, as per the definition in note 5. In the last 5 cases it was a matter of judgment if the shift was to either side. The *additional* 33 − 5 = 28 *cases,* are the ones where $L_2(i,t)$ is non-zero. Altogether, we have 164 + 28 = 192 cases, where a sign occurs for the joint LR-variable: L(i,t) + $L_2(i,t)$.

A few more countries have become democracies within the last decade (Spain, Portugal and Greece). We could have added a few small democracies such as Luxembourg and Iceland, the permanent coalition of Switzerland, a few LDCs as India, and some middle income countries such as Costa Rica; but by and large our samples contain the sets of governmental elections in established democracies since 1948. All results are given as a gain in per cent of the (valid) votes cast, for the government ruling before the election, even if it has ruled very briefly only. The gain is measured relatively to the voting result for the same parties at the last election. The average gain for all 197 elections is:

A = − 1.6%, where the average is over all i and t[6] (Table 1).

The negativity of the average result means that *it costs votes to rule*. There are

Table 1. Countries, type of elections and some basic averages 1948–85.

Country/type of election	Elections Statistics			Average result Cost of ruling (C(i,t))	
	Number a)	Period Max b)	Avr c)	A(i)	(s.d.)
1. Australia/House of rep.	16	3	2.5	− 1.92	(3.12)
2. Belgium/Ch.des Rep.	13	4	3.1	− 3.24	(5.02)
3. Canada/House of Comm.	13	5	3.1	− 2.09	(8.96)
4. Denmark/Folketinget	15	4	2.7	− 0.95	(5.56)
5. Ireland/Dáil	12	4	3.3	− 3.27	(3.65)
6. Finland/Eduskunta	11	4	3.6	− 1.73	(3.65)
7. France/Assemblé Nat.	9	6	4.5	− 0.53	(13.90)
8. Germany/Bundestag	8(2)	4	3.8	+ 0.80	(4.93)
9. Netherlands/Tweede Kam.	11	4	3.6	− 2.00	(5.38)
10. Italy/Camera dei Dep.	8(1)	5	4.5	− 1.96	(3.59)
11. Japan/House of Rep.	14(1)	4	2.7	− 3.74	(7.54)
12. New Zealand/H. of Rep.	13	3	2.9	− 3.32	(3.75)
13. Norway/Storting	10	4nd	4	+ 0.59	(3.91)
14. Austria/Nationalrat	10(1)	4	3.5	+ 0.29	(2.55)
15. Sweden/Andra Kam.	13	4–3	3.1	− 1.18	(2.68)
16. U.K./House of Commons	11	5	3.6	− 1.36	(3.91)
17. U.S.A./President	10	4nd	4	− 1.81	(11.32)
Averages	197(5)			A = − 1.61[d]	(5.50)

a. The two first elections in Germany and the first election in Italy, Japan and Austria are excluded for reasons discussed in the text.
b. Maximum period between elections. 'nd' means no dissolution possible. Dissolution is difficult in Germany and Italy too; but it has happened. Note further that the constitution has been changed dramatically in France and less so in Sweden, where election periods are 3 years now.
c. Average period between elections. If 'nd' we get: Max = Avr.
[d]. The result 1.61 excludes a couple of extreme elections, where a government party broke up. However, if they are included the average change only to − 1 75.

three exceptions only in the table to the minus sign. The 'wrong signs' occur in Norway, Austria and West-Germany. However, as we shall discuss in a moment, the variance V[C(i,t)] is so large relative to the average E[C(i,t)] that a couple of positive averages should occur if 17 small samples are drawn randomly[7].

III.2. The distribution of the C(i)-sets

One condition has to be fulfilled before it makes sense to calculate cross-country results. It is that the election results can be shown to be generated by the same distribution, either before or after some transformation.

This is actually the case, to a remarkable extent, as we shall demonstrate. For each of the countries we have a C(i)-set of 8 to 16 elections. Each C(i)-set is first drawn as a probit-diagram. Figure 1 shows 2 specimens of these diagrams[8]. We have chosen to compare really extreme cases. The figure compares the C(i)-sets from the Netherlands and New Zealand. The Netherlands is the country in our sample with the highest number of parties throughout, and one of the most perfect proportional systems of representation. New Zealand is the only perfect two-party system in our sample, and it uses the 'Westminster-

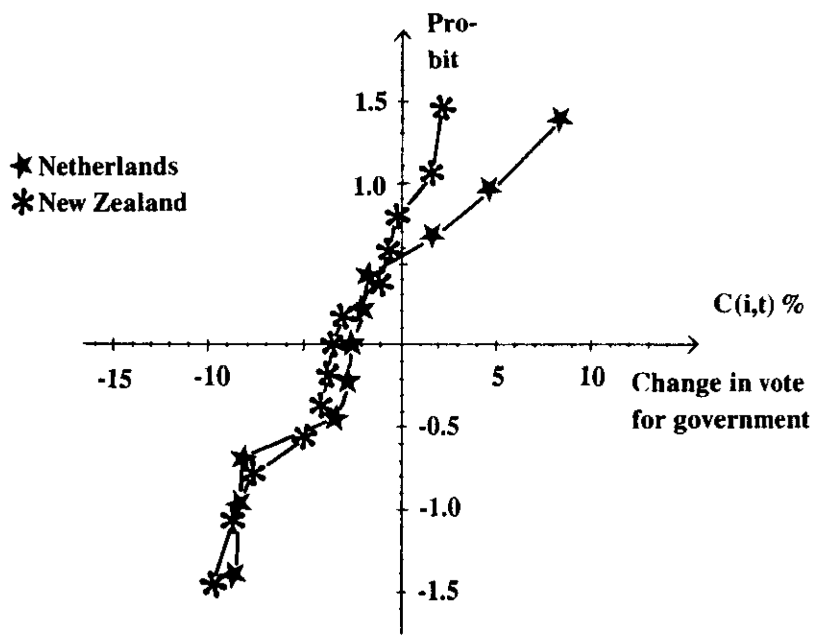

Figure 1. The C-distributions of t' Netherlands ar ew Zealand.

type' constituency system of representation. Nevertheless, the two distributions are indistinguishable. In fact, we get the same distribution in Denmark, with proportional representation and a party-system that has changed drastically during the period, and in Italy which has the nearest we come to a one-party-state. Ireland and Japan are two more countries where one would not have expected to find exactly the same C(i)-distribution, but nevertheless . . .

However, Japan has two elections with extreme results – the two results surrounding the only socialist government (1947/49).

If the probit diagrams for all 17 countries are compared and the appropriate tests made (see Paldam, 1986) it appears that the C-distributions for 15 of the 17 countries are the same – the one shown in Figure 1. These countries are: the U.K., Eire, New Zealand (Fig. 1), Italy, Finland, Norway, Belgium, Australia, Germany, the Netherlands (Fig. 1), Denmark, Japan, Sweden and, at the borderline, Canada and Austria. For these countries the variance is about 14, and when we apply the Lilliefors test for normality of the observations all countries pass, even when there are a few elections with a large shift in some countries such as Japan and Canada. In these 15 cases nothing has been found to indicate that we can reject that the results are generated from the same 'almost-normal' distribution with the average – 1.6 and the s.d. 3.75. We shall return to the small deviations from normality in a moment.

These 15 countries are very different in many seemingly relevant ways: their election laws are very different, their party systems are very different too, and the countries are different in size, in economic development, etc. However, when we look at the distributions of the percentage change in the vote for the government, there is no difference.

The country in the main group which is closest to the borderline is Austria, with a very small variation. However, it is interesting to note that the Austrian case is due to the period of the 'grand/coalition' where (almost per definition) there was no swing in the support for the G. Two more countries, Finland and Sweden, have a number of elections with a small variation, i.e. with steep sections on the probit diagram. In Sweden the extreme stability occurred during the 24 years of rule by Tage Erlander. Swedish election results have looked normal since he retired. The Finnish case is probably due to the unique conditions in Finnish political life during the political domination of President Kekkonen.

But the last two countries are different as they have significantly higher variance in their elections. These are the USA and France. Here the distributions are significantly different. The difference is that the variation in the two 'wild' countries is twice as large as that of the other countries, while the averages appear not to differ. It is only too easy to explain away these two cases. The U.S.A. has a presidential system of government; we therefore used

the presidential elections, which has twice the variability of the congressional elections. It is obvious that France has had the most dramatic political history of our 17 countries[9]. The largest French C(i,t)s correspond to well-known dramatic events in French history. However, the game of 'explaining away' strange cases is easy. It is therefore a game with a low explanatory power.

III.3 A general distribution of election outcomes

From looking at all the probit diagrams, the impressions from Figure 1 gain further strength. It emerges that the deviations from normality are just a few cases, and as we can present good arguments for the U.S.A. and France to have had an unusual number of extreme elections, we have experimented with a general distribution (see Paldam, 1986 for the estimates) that is normal over most of its range, but quadratically normal at the tails. Such a distribution can be made to give a perfect fit.

Theorists, in discussing how the social welfare function is most likely to look, have often used quadratic formulations for many reasons. Perhaps the main reason is that linear formulations lead to unrealistic corner solutions in problems where the welfare function is optimized. Somehow, these functions cannot be linear and still appear reasonable. If we take the extreme elections to be the ones dominated by one issue then it is perhaps reasonable to get a quadratic normal result. However, even if the welfare function is quadratic normal in each issue the election result becomes normal as per the central limit theorem (in statistics) if the election is an 'ordinary' election, where a number of issues enter. Therefore, it does appear that some theoretical argument can be presented to argue that the C's should look normally distributed over the middle range of the 'ordinary' elections, but quadratically normal in the ranges (to both sides) of the extreme elections.

III.4. How much do we need for the analysis of the S(t)-series?

From III.2 we know that it makes sense to analyze election results across countries. There are some problems with the data for France and the US; but there are extreme elections in many countries, so it appears to be reasonable to merge results in cross-country calculations. When the results are merged, we can make a powerful analysis of the distribution of election results. This was done in III.3. We have here learnt that the general distribution of election results is normal over most of its range; but that it deviates (to become quadratically normal) for extreme elections.

By combining the results in III.2 and we know that a strong case can be made for considering all C(i,t) as generated from the same distribution. We therefore have to assume that all observations have the very same expected value E(C). To use the best estimator of this common E(C), we have to use the average A for all observations as a better estimate than the separate averages A's for each country.

IV. The three steps of the test

With these variables we are now able to make the tests. The testing procedure is a bit cumbersome:

IV.1. Step 1: making the swing index S(i,t) and the swing-sign index $S_2(i,t)$

The first step in the test is to develop an index for the left/right swing in the vote at an election. S(i,t) is our swing index. It is defined by the following equation, where L is the left/right-variable, C is the cost of ruling and A = Avr(C):

$$S(i,t) = L(i,t)\,[C(i,t) - A] \quad (1)$$

Consider the following five possibilities[10]:

(i) G is left wing and loses more than A. Here $S > 0$. The swing is right, as it should.
(ii) G is left wing and loses less than A. Here $S < 0$. The swing is left, as it should.
(iii) G is mixed. It always gives $L(i,t) = 0$. Whatever happens the result is $S = 0$, showing no swing.
(iv) G is right and loses less than A. Here $S > 0$. The swing is right, as it should.
(v) G is right and loses more than A. Here $S < 0$. The swing is left, as it should.

Corresponding to the swing-series S(i,t), we define the swing-sign series $S_s(i,t)$ as:

$$S_s(i,t) = +1, \text{ if } S(i,t) > 0, \text{ and } -1, \text{ if } S(i,t) < 0 \quad (2)$$

The reader will note that our definitions make sense. Even if other definitions of political swing could have been made, it is perhaps difficult to make a better definition. However, note that (iii) leaves out some information – the cases where $L(i,t) = 0$, i.e. where the government before the election is a coalition

of the right and the left. To include as many mixed coalitions as possible, we further define:

$$S_2(i,t) = S_s(i,t) + L_2(i,t) \quad (3)$$

IV.2. Step 2: Deleting the country index i, to obtain S(t) and $S_2(t)$

We then delete the i-index, and obtain S(t), $S_s(t)$ and $S_2(t)$, which are the one dimensional series of the swings and swing-signs, in the order in which the elections have taken place. The time axis has the normal ascending time order, but the distance between the observations is not the same time interval. Note further that because we have subtracted A from all C(i,t)'s we obtain the nice property of S(i,t), that[11]:

$$E[S(i,t)] = 0, \text{ hence } E[S(t)] = 0, \text{ so that } Avr[S(t)] = 0 \quad (4)$$

The merging of all S(i,t)'s into the S(t)-series builds on the rather strong assumption that all C(i)'s have the same distribution. From Section III.2 we know that this is almost true; but nevertheless something speaks for working with the corresponding non-parametric series $S_s(t)$, even when it, in principle, contains less information. However, when we turn to $S_2(t)$ we have a series that is more complete than $S_s(t)$ and S(t).

IV.3. Step 3: Testing the swing series S(t) and $S_2(t)$ for autocorrelation

An international element in the vote now means that there are periods where a significant fraction of the swings are in the same direction, relative to the LR-scale. Hence S(t), $S_s(t)$ or $S_2(t)$ should contain autocorrelation if there is an international element in the vote. To be exact:

The Null Hypothesis H_0 is: there is no autocorrelation in the series.
The Alternative Hypothesis H_A is: there is positive autocorrelation in the series[12].

Many tests exist for detecting autocorrelation in a series. However, the most popular tests assume that the distributions of S(t) is (approximately) normal. As demonstrated and discussed in Sections III.3 and 4, this is not the case for the full range of the variable. The deviations from normality are probably too small to invalidate the test, but this is hard to tell. Therefore we also run our tests on the sign series $S_s(t)$ and $S_2(t)$ using a non-parametric test of autocorrelation, which assumes less about the distributions of the C(i,t) and the S(t)-series and the time axis. The test used belongs to the 'family' of Geary-tests developed in Bunzel. Høst and Johansen (1986), where the proofs mentioned below are found.

IV.4. A note on the non parametric tests, using the two swing-sign series S_s & S_2

We here look at the sign series S_s corresponding to S, and S_2 which also includes the signs of the swings for the mixed coalitions, which are omitted in the S-series. The sign series S_2 contains T = 192 signs, or N = 191 pairs of successive pairs of signs, which may have any of the following combinations: ++, +−, −+ or −−. We now count the number of successive pairs having each combination, and reach the results given in Table 2.

Here N_{++} is the number of successive pairs of ++, N_{+-} is the number of successive pairs of +−, etc. Because $[N_{-+} - N_{+-}]$ is 0 or 1, then also $[N_{+t} - N_{+t-1}]$ is 0 or 1. $Max(N_{+t}, N_{+t-1})$ is the number of positive observations in the data set. A non-parametric coefficient of autocorrelation τ_a (of the Kendall's τ type) can be estimated from the classification table as:

$$\tau_a = [N_{++} + N_{--} - (N_{+-} + N_{-+})]/T \qquad (5)$$

If the variable S(t) is independently identically normally distributed, then it can be shown that the *n*umber of sign changes (NC), i.e. the following test statistic,

$$NC = N_{+-} + N_{-+}$$

is asymptotically normally distributed with mean T/2 and variance T/4 like a binomial variable with parameters (T, 1/2). But NC is not exactly binomial

Table 2. Classification table.

		Time t		Total
		+	−	
Time t-1	+	N_{++}	N_{+-}	N_{+t-1}
	−	N_{-+}	N_{--}	N_{-t-1}
Total		N_{+t}	N_{-t}	N = T-1

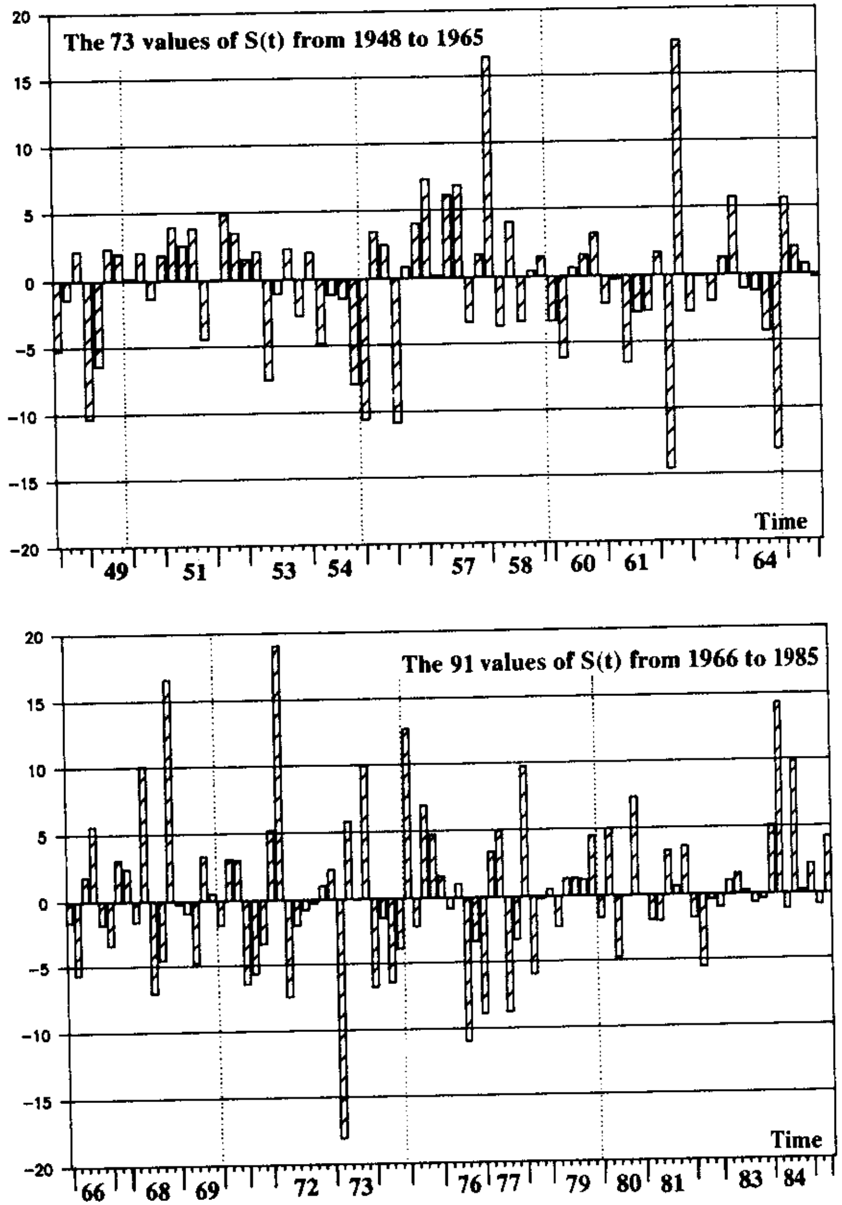

Figure 2. The S(t) series.

distributed (as Geary originally suggested) because N_{+-} and N_{-+} consist of *correlated* Bernouilli-distributed variables.

V. The test results

The final step in our analysis is to test the swing series S(t) and the two swing-sign series $S_s(t)$ & $S_2(t)$ for autocorrelation. If significant autocorrelation is found, there is an international element in the vote. If they contain no autocorrelation, there is no such element.

V.1. A look at the S(t)-series: Its distribution along the special time axis

Figure 2 shows the raw S(t)-series for the 164 elections where a quantitative swing has been calculated. By going through the 164 S(t)-observations themselves, it appears that the elections from the 17 countries are remarkably well mixed together. The elections in the same country do not cluster. They are just randomly mixed, except that there is a strong tendency not to call an election immediately after the latest one. The 164 elections are in average 4.3 elections per year, and as the reader can see, there is only a small variation around that average. The *S.D.* is only 1.34 and the minimum number of elections per year is 1 (in one year only: 1959), while the maximum is 7 (in one year only: 1972).

When looking at the two graphs showing all the 164 S(t)'s, it is already clear that they show very little of the cyclical pattern expected. Perhaps there is some heteroscedasticity, i.e. variation in the variance over time, but S(t) looks suspiciously like white noise.

It is debatable if it is a problem for out tests that the time axis is not equidistant in time. Our stand is that we analyze whether the elections actually occurring have an international element. Therefore, we have used the time axis which is defined by the problem. However, we have found no signs that the elections which are closest in time have greater correlations than the general case.

V.2. Normal autocorrelations

Pearson's coefficient of correlation builds upon standard assumptions of normality; but it is not overly sensitive to such small deviations from normality as we have described above. Hence, we get a rather adequate analysis of the structure of autocorrelation in the S(t)-series simply by calculating the autocorrelation function in the series. The results are found in Figure 3. There are no signs of anything, but white noise, in Figure 3. It is rare indeed to see such low autocorrelation throughout all lags as displayed by Figure 3.[13]

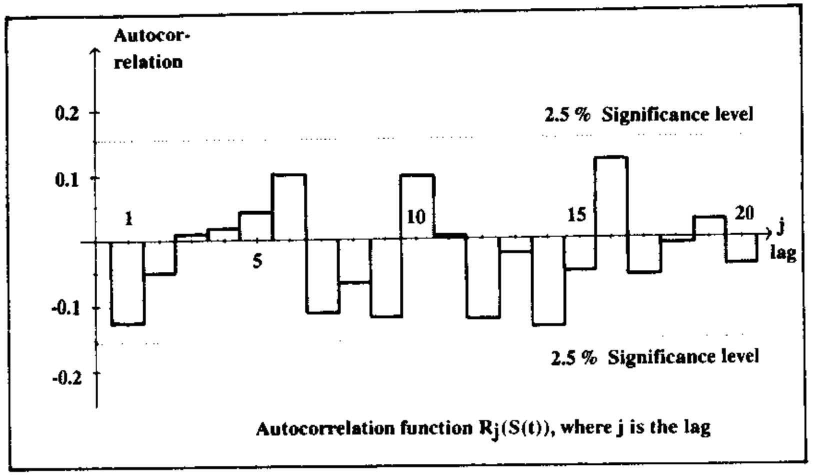

Figure 3. The autocorrelation in the S(t)-series.

V.3. The non-parametric tests

For the non-parametric tests we obtain table 3, showing the results for $S_s(t)$, checking the parametric test on S(t) for first order autocorrelation, and – more interesting – for the expanded data set $S_2(t)$.

The prob-values given are for one sided tests of H_0. We conclude that there are no signs of positive autocorrelation – contrary to what we expected from

Table 3. The results for the two swing sign series: S_s and S_2.

For S_s		Time t +	Time t −	Total
Time	+	43	39	82
t-1	−	40	41	81
Total		83	80	163

Autocorrelation $\tau_s = 0.03$
NC = 79, with E[NC] = 82
Prob-value one-sided 32%

For S_2		Time t +	Time t −	Total
Time	+	49	48	97
t-1	−	49	45	94
Total		98	93	191

Autocorrelation $\tau_s = -0.02$
NC = 97, with E[NC] = 96.5
Prob-value one-sided 53%

Table 4. The results for the two groups, using the S_2-series.

Northern/Germanic Group				
For S_2		Time t		Total
		+	–	
Time	+	13	17	30
t-1	–	16	29	45
Total		29	46	75

Autocorrelation $\tau_a = 0.12$,
NC = 33, with E[NC] = 38
Prob-value one-sided 32%

Anglo-Saxon Group				
For S_2		Time t		Total
		+	–	
Time	+	21	17	38
t-1	–	18	18	36
Total		39	35	74

Autocorrelation $\tau_a = 0.05$
NC = 35, with E[NC] = 37.5
Prob-value one-sided 28%

the hypothesis tested. Hence, we get the same result in the non-parametric tests as in the parametric tests. The S(t)-series behaves as perfect white noise.

V.4. Splitting the countries into groups

It is arguable that the lack of autocorrelation is due to the fact that we look at too many countries. We have therefore run the tests on the two sub-groups of countries, which are most likely to be related:

The first group consists of 7 countries in North/Central Europe with a 'Germanic culture': Austria, Denmark, Finland, Germany, the Netherlands, Norway and Sweden. The second group contains 6 Anglo-Saxon countries: Australia, Canada, Ireland, New Zealand, U.K. and U.S.A. (Table 4). There are 76 and 75 observations in the two sub-series. The results for the two sub-groups are as clear as all other results in this paper: there are no signs that an international element appears in the data, grouped or not grouped.

VI. Conclusion

Our analysis has been decisive in demonstrating that there is no international element in the vote along the LR-scale. Hence, when one, once again, sees some journalist/philosopher suggest that there is an international left-wing or right-wing wave in election outcomes throughout the developed Western World, it is better to be skeptical.

Many researchers (following Inglehart, 1977) have demonstrated that there are international elements in various politically relevant opinions and attitudes, so in a sense we have reached a surprising result. One explanation might

be that the political parties manage to maneuver sufficiently along the LR-scale to catch the international swings in opinions. But even if this explanation is true, we nevertheless have to conclude that no international element emerges in the vote, contrary to the folk hypothesis we are analyzing.

Whenever a variable is at the same time important and white noise, it is likely to be surrounded with a lot of lore and strange stories. People 'see' patterns, almost as gamblers develop theories about the way they have to dress etc. in order to win at the roulette.

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Notes

1. An international element in an economic time series x(i,t) is defined similarly to the international element in the vote, as a co-variance in the x(i,t)s across countries, i.e. across i. By terming such a co-variance international we signify that the intercorrelation is robust to changes in the country sample. It is interesting to note that strong international elements appear in such diverse phenomena as consumer prices and industrial conflicts. Also, it is well known that many 'waves' of political attitudes have been very international: this eg. applies to the 'Youth Revolution', 'Women's Liberation', the 'Green Wave' etc.
2. This Section summarizes the results in Paldam (1986), which built on data up to 1980 only. We have more observations now so the results are even stronger. However, the detailed statistical analysis will not be repeated here.
3. The reader will note that these two assumptions are debatable; but they are the typical findings in the literature on Vote- and Popularity function, see eg. Paldam (1981) and the new collection of papers by Lafay, Lewis-Beck & Norpoth (1990).
4. The only Gs not counted are a few cases of Gs of civil servants formed with the sole purpose of ruling during the election after a crisis (mainly in Finland). We shall also, for the present, disregard how long time the G has ruled and hence the electoral cycle. It appears that there normally is a 'honeymoon' effect, so that a new government is more popular its first 6 to 12 month, then the popularity falls to reach the bottom about one year before election, where it turns upward once again.
5. Our LR-measures for Left/Right coalitions consider 4 groups of votes: V1 is the fraction of the voters voting for the party(ies) to the left of G, V2 is the fraction of the voters voting for the left party(ies) of G, V3 the fraction of the voters voting for the right party(ies) of G, and V4 the fraction of the voters voting for the party(ies) to the right of G. For all four fractions we calculate the change, in per cent of the valid vote cast since the last election. For an election to

be termed a left (a right) swing, we demand that: V2 > V3. This normally (but not always) means that: V1 + V2 > V3 + V4. Note that the definition of a swing for a Left/Right-coalition is defined differently from a swing for another government. Therefore it makes no sense to merge the quantitative series.

6. Using the analysis of Section III.2 we find that the expected gain/loss from ruling A of − 1.61% has a 95%-confidence interval of − 1.61% ± 0.55% if the 15 countries with homogeneous distributions are considered. The confidence interval increases to − 1.61% ± 0.81% if all 197 observations are included. In both cases the negativity of A is extremely significant.
7. In spite of the adequate 'statistical explanation', it is nevertheless interesting to note that two of these cases are in countries where it is impossible or difficult for the government to call an early election. Imagine a government ruling for 3 years, and then having to resign because of internal disagreement. If the parliament cannot be dissolved, a new government – presumably without a majority – will have to be formed. The election result, as we have defined it, will then be for the new government. For various reasons such a new government is likely to win votes.
8. The reader will probably remember the technique; but just in case: the probit curve for the n elections in a country is made in the following way. (1) The n election outcomes are first sorted with the smallest C-value first, then the second smallest as the second etc. so that the largest C-value in number n. (2) Then the sorted observations are depicted against the cumulated normal distribution, so that the smallest corresponds to the 100/(n + 1)% probability, the second to the 200/(n + 1)% probability. In case the C's are normally distributed the resulting curve looks straight – the largest deviation from straightness (roughly spoken) should be below a certain value given in the Lilliefors-test as given in Conover (1971).
9. France has had 'near revolutions' in 1958 and 1968. The 1958 events led to a change to a presidential system; but France still has a prime minister, so we have used the parliamentary election results.
10. We disregard the possibility of a tie, as no cases occurred where an election result was closer than 0.05 from A.
11. The derivation in formula (4) assumes that the size of C(i,t) is independent of the sign L(i,t). We have found that to be the case. Note further that E[.] is the expected value, while Avr[.] is the calculated average.
12. If the autocorrelation in any (or all) of the three series is negative this would also indicate that the voters in one country react to the outcome in other countries, so that would show some kind of an international element too. The reader can check for negative autocorrelation too, by using the two-sided tests corresponding to the one-sided tests given. As we are far from the significance limits, the two-sided tests give the same results as the one-sided.
13. Some readers may prefer to consider the von Neuman Ratio VNR instead of the full autocorrelation function, for the period: VNR is 2.247 so the first order autocorrelation is insignificant, as also appears on Fig. 3.

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