The Economic and Social Review, Vol. 17, No. 2, January, 1986, pp. 107-131

Ireland: Politics with Some Social Bases an Interpretation based on Aggregate Data

MICHAEL LAVER*
University College, Galway

Abstract: Social scientists are currently forced to rely on aggregate data and commercial opinion polls when they analyse the social bases of party choice in Ireland. The first of a pair of articles, this paper deals with a re-analysis of the relevant aggregate data. It uses a principal component analysis to reduce a large number of aggregate variables from a range of sources to a small number of indices. It then uses a series of multiple regressions to explore the patterns of partisanship exhibited at county level. The conclusion is that the Fianna Fail vote, at least, is more clearly patterned than has been found in early aggregate analyses. This patterning appears in terms, not of census variables, but of variables describing structures of land-holding and land use. In common with earlier analyses, the Fine Gael vote remains very hard to explain at aggregate level. A subsequent paper will deal with a re-analysis of the most recent ten year series of commercial opinion poll results, and will attempt to reconcile the results of aggregate and survey analyses.

I INTRODUCTION

A full-scale academic election study has never been conducted in Ireland. This leaves a major gap in the basic infrastructural information needed to develop our understanding of party choice in a system labelled in one influential account as having "politics without social bases" (Whyte, 1974). Until a full election study has been mounted, we will not really know whether the politics without social bases thesis is actually accurate or whether we simply lack the raw material at the moment from which to build a more effective sociological explanation of voting choice in Ireland. As Gallagher points out towards the end of his recent book on Irish parties, however, a lot of information on the relationship between the social structure and voting choice is now available (Gallagher, 1985, p. 131). Indeed quite a few attempts have been made to plug the gap left by the absence of an election study, using both commercial polling data and aggregate data.

*Thanks are due for the many helpful comments on an earlier version of this paper by Michael Gallagher, Tom Garvin, Peter Mair and John Whyte.

Since commercial opinion polls are a relatively recent phenomenon in Ireland[1], analyses of the development of the party system before the early 1970s must rely entirely on aggregate data, typically voting figures and census returns at a constituency or regional level. Garvin, for example, gets considerable mileage out of such figures for the 1923-48 period, and comes to a conclusion that supports the "politics without social bases" thesis: "Each side was a cross-class, cross-region and cross-tradition coalition ..." (Garvin, 1981, p. 176). Gallagher provides a more detailed study of the 1927-65 period, concluding that "support for Irish political parties has rested upon clearer social and economic bases than some observers have suggested, although these have generally been less distinct than those underlying the support of parties in most Western democracies". (Gallagher, 1976, p. 69).

While there have been many commercial public opinion polls conducted over the past ten years or so, a basic problem with these from the point of view of the social scientist has been their small sample size. This, at around 1,000-1,200, has been quite adequate for estimating broad population characteristics, such as vote shares for the two main parties or support for the party leaders, but does not allow the detailed exploration of the behaviour of subsections of the sample (such as middle class voters or Labour voters) that would be necessary for proper causal analysis. Even when analysing *recent* voting patterns, therefore, there are good reasons to rely on aggregate data.

The basic problem with ecological studies of voting choice in Ireland is one of selecting a decent unit of analysis. The multi-member STV constituencies for which aggregate vote totals are available are quite large, and the population of the country is quite small. The extraordinarily high concentration of this small population in and around the greater Dublin area produces wide disparities of population density. The consequence is that a number of Dail constituencies span two administrative counties, while county Dublin itself is divided into several (currently eleven) constituencies. In general, something of the order of the administrative county can be used as the basic unit of analysis, giving about 25-26 data points for the country as a whole, a number that allows rather few degrees of freedom in multivariate regression. A consequence of this is that results are unreliable when more than a couple of independent variables are used at one time, a matter that greatly restricts the potential scope of ecological analysis, since arbitrary selections of variables must inevitably be made.

Taking Gallagher's 1976 study as a starting point, we anticipate two overall trends. The first is a weak linking of socio-economic variables with voting patterns at county level. The second is an almost perfect non-relationship between Fine Gael voting at county level and *any* socio-economic variable. Gallagher found that only the Labour vote was consistently well-predicted by

1. See Meagher (1983) for a history of opinion polling in Ireland.

the aggregate variables he selected, with r^2 values in the range .45 to .65 for the post-1945 period (Gallagher, 1976, p. 43). Vote shares for the two main parties are very poorly explained by aggregate variables, generating r^2 values that as often as not are insignificant, and lie within the .00 to .40 range. In particular, the Fine Gael vote share is almost completely unexplainable on the basis of any of the selected ecological variables. These conclusions are based on a set of regression models that use at most three independent variables, selected from a set of about ten. This is one response to the very small number of available cases. Gallagher works with 24 or 25 units, each more or less a county, and consequently feels that he cannot include more than three variables in order to retain sufficient degrees of freedom in his regressions.

A quite different aggregate analysis approach is adopted by Parker (1982, 1983, 1984). He works *within a single constituency* (Galway West) using voting data from tallymen and census data at the level of the District Electoral Division. This gives him 62 data points within the Galway West constituency alone. While Parker's earlier work on these data was mainly concerned to explore local "friends and neighbours" effects, a more recent analysis looks at the social bases of party choice in Galway West. Obviously, such an analysis cannot possibly tap the impact of socio-economic characteristics that vary at a constituency or a regional level. It does, on the other hand, provide a good method of holding such variables constant while looking at the effect of very local variations in other socio-economic variables. Broadly, Parker confirms Gallagher's findings that the Labour vote is the easiest to explain and the Fine Gael vote the most difficult. Discussing Fine Gael voting, Parker comments on "the almost random nature of patterns of support from areas characterised by different ecological variables" (Parker, 1984, p. 62). Unfortunately, while Parker does conduct a multivariate regression analysis, his concentration on the proportion of variance explained and on raw regression coefficients does not allow for effective causal modelling. Interpreted carefully, however, this data set does provide considerable potential insight into the social bases of politics in Galway West. Extrapolated carefully, we may even form some conclusions about the State as a whole, although we cannot, of course, take account of regional patterning in socio-economic relationships.

The approach adopted in this paper offers an alternative solution to the problem, following the method used by Laver (1984) to analyse local voting in Liverpool. It uses a series of principal components analyses to reduce a large set (66 in this instance) of census and other aggregate variables to a manageable set of inputs for a series of second stage regressions. This removes the need to make arbitrary decisions in the selection of independent variables and instead allows, as we shall see, quite complex sets of variables to be parsimoniously input into the voting models. At the same time, a small enough number of independent variables can be used in the regression anayses to permit sensible causal modell-

ing. Furthermore, since Gallagher's earlier work, the Boundary Commissioners have been kind to political scientists, and have redrawn Dail constituency boundaries in a way that much more closely corresponds to the set of administrative counties. This in itself makes an ecological analysis more meaningful.

II SELECTING A UNIT OF ANALYSIS

One of the main decisions to be taken before beginning an ecological analysis of Irish voting patterns is the selection of a unit of analysis. The ideal unit would doubtless be a Dail constituency, a solution that would yield 41 units of broadly equal size. Unfortunately, 1981 census data have yet to be aggregated to this level. The unit that was selected was thus the county. In 11 cases, administrative county and Dail constituency more or less overlap, so that no great problem is generated.[2]

In 7 other cases, Dail constituencies are parts of counties, so that the results from two or more constituencies may be aggregated to county level. Of these, only Dublin presents a problem in that it is such a large unit, relative to the others, that a distorted and potentially invalid set of data points would be generated by including Dublin on equal terms with other counties. It was thus excluded from the aggregate analysis, *which hereinafter applies to the 25 counties outside Dublin.* (This exclusion has a number of implications, which will be noted throughout the discussion).

Five Dail constituencies combine 2 administrative counties. In such a situation a number of possible solutions are available:

(i) The 2 counties may be combined into a single data point for all variables. This is Gallagher's solution, (Gallagher, 1976, p. 147).
(ii) The counties concerned may be excluded from the analysis.
(iii) The same vote share may be allocated to each component county. This amounts to assuming no intra-constituency variation in voting patterns.
(iv) Some method may be used to apportion votes *within* the constituency.

The first two solutions were rejected in order to preserve the already limited number of data points. Excluding those counties in combined Dail constituencies results in the loss of 10 counties. Aggregating each pair into a single unit still loses 5 data points. The relevant *information*, however, is also lost by allocating votes to each component part of a constituency in the same

2. The most recent set of boundary changes did (thankfully from the point of view of the aggregate data analyst) restore a close link between the boundaries of Dail constituencies and those of administrative counties. There are, alas, still some exceptions. These include the ceding of limited numbers of voters from Galway to Roscommon, from Longford-Westmeath to Meath and from Waterford to Tipperary South. As we shall see shortly, variations in voting patterns between entire adjacent counties are rather limited. Thus the misplacement of one or two small districts is not likely to do serious violence to the pattern of vote shares.

proportion as they were recorded in the constituency as a whole. Dail votes were therefore *apportioned* within joint constituencies. This was done by using the 1979 local election results to provide estimates of the *relative proportions* of each party's vote to be found in the two parts of a joint constituency. This technique amounts to making the assumption that the *swing* from election to election is constant across the two counties of a joint constituency, although overall *proportions* of the vote for each party may vary considerably. The apportionments of vote shares for each party between all joint constituencies are given in the Appendix.

The socio-economic data comprise a set of 66 variables taken from the county tables of the 1981 Census of Population, the 1981 Statistical Abstract of Ireland, and Vital Statistics, 1980. The variables, discussed in more detail in the following section, relate to six broad aspects of the socio-economic structure. These are the age structure, the level of health, education and welfare, the housing structure, the agricultural structure, and a range of variables relating to the general cultural environment.

The problem of reducing a set of 66 variables to a more manageable set of socio-economic indicators is solved by using a principal components analysis. This technique identifies correlations between sets of variables and hypothetical underlying indicators (factors or components). In a sense, it treats the actual variables as imperfect indicators of the underlying factors, and extracts the best set of factors to fit the data. Provided that the factors which emerge are amenable to sensible interpretation in terms of their relationship to the original variables, then we are justified in using the much smaller set of factors rather than the original variables. The factors provide a more parsimonious representation of *most* of the information in the original variables. Orthogonal principal components extracted from the same set of variables have the additional advantage of being uncorrelated to each other, greatly reducing potential problems with the regression analyses that follow.

An unrotated principal components analysis was applied separately to each cluster of variables listed above. The variables were analysed in these groupings both because there were many more variables than cases and also because this technique ensures that the resulting factors are both coherent and relatively easy to interpret.[3] This enhances both the methodological validity and the intuitive plausibility of using the factor scores generated by these components as input to a second stage regression analysis. The first principal component was always extracted from each group of variables. The second component was also taken if it explained a significant proportion of the variance involved, and/or if it were readily interpretable.

3. For a full discussion of the role of two stage factor analysis strategies to overcome a problem of degrees of freedom, see Budge *et al.* (1986).

III THE PRINCIPAL COMPONENTS ANALYSES

(i) *Age Structure.* The input variables were proportions of the population in each county in each of six age bands. A single principal component emerged strongly from the analysis, contrasting the under fives and those in their thirties, on the one hand, with those over forty on the other. This dimension is readily interpretable as a "young families versus over forties" factor and was used as such as an input to the regression analysis. Factor loadings of the input variables on this component are given in Table 1.

Table 1: *Principal component extracted from age structure (Young Families vs. Over 40s)*

Variable Per Mil County Population Aged:	*Factor Loading*
0-4	0.86
5-19	0.29
20-29	0.14
30-39	0.89
40-64	-0.97
65+	-0.89
% of Total Variance Explained	56%
Eigenvalue	3.37

(ii) *Occupational Structure.* The input variables were the proportions of the population in each of eight occupational categories. Once more, a single principal component emerged strongly ahead of all others. This contrasted the proportion of the workforce engaged in agriculture with that found in almost all other types of occupation. The most important underlying pattern in the data is quite clearly related to agricultural employment levels.

In this instance, however, the second principal component was also used because it was so eminently interpretable. It contrasted professional occupations with those in manufacturing and those that are unskilled. It was included in the second stage analysis because it closely mirrors the manual/non-manual dichotomy that is central to aggregate voting analyses in Britain and elsewhere. Almost all of the original variation in the data is captured between the first two principal components in this domain.

(iii) *Health, Education and Welfare.* This larger and more heterogeneous set of variables (see Table 3) produced a less clear-cut analysis. A moderately one-dimensional solution emerged. This linked the proportions of the workforce retired or sick, with the proportions of both men and women finishing school at

Table 2: *Principal components extracted from occupational structure (1. Agriculture vs. Rest) (2. Professional vs. Manual)*

Variable Per Mil County Work-force engaged in:	*Factor Loadings*	
	Factor 1	*Factor 2*
Agriculture	-0.95	-0.25
Manufacturing	0.21	0.85
Unskilled Labour	-0.36	0.73
Transport	0.82	0.43
Clerical Work	0.92	-0.12
Commerce	0.90	-0.08
Service Sector	0.90	0.08
Professions	0.78	-0.51
% of Total Variance Explained	62%	22%
Eigenvalue	4.84	1.79

first level, with high levels of infant and neo-natal mortality. These variables were contrasted with proportions of men and women having second- and third-level education, together with high illegitimacy and foetal death rates and high levels receiving supplementary welfare.

Care needs to be taken in interpreting this factor, and there is clearly a danger of falling prey to an ecological fallacy. Broadly, it can be seen as a dimension contrasting high and low socio-economic well-being. The apparent incongruities are the illegitimacy, foetal death and supplementary welfare rates, which load on the "high well-being" side of the factor. It must be remembered, of course, that the units of analysis here are whole counties. Those, such as Limerick and Cork, with major urban areas obviously generate high scores on heterogeneous clusters of variables relating to urbanisation, with high levels of recorded foetal deaths, illegitimacy and third-level education being good examples. There is, of course, no implication that the *same people* are receiving university education, producing illegitimate children and suffering foetal deaths. Rather, it is likely that the same environment is causing these variables to rise and fall together. In this context, the factor is best interpreted as relating to socio-economic well-being very much in the context of the rural/urban distinction.

The second, weaker, component falls so deeply foul of this particular syndrome as to be almost uninterpretable. It links unemployment with high infant death rates *and* high levels of male second- and third-level education. This is almost certainly another camoflagued "urban" factor, but it is one that will

Table 3: *Principal components extracted from health, education and welfare variables (1. Low vs High Socio-Economic Well-being)*

Variable	*Factor Loading*	
Proportion of Population Over 15:	*Factor 1*	*Factor 2*
Unemployed	0.14	0.53
Retired	0.86	0.12
Unable to work through Illness	0.70	0.06
Receiving Supplementary Welfare	-0.43	-0.04
Proportion of Live Births Illegitimate	0.43	0.23
Proportion of Households with at least one car	0.34	0.39
Proportion of Men Educated to:		
1st level only	0.68	0.61
2nd level only	-0.63	0.55
3rd level	-0.64	0.60
Proportion of Women Educated to:		
1st level only	0.84	0.23
2nd level only	-0.76	-0.28
3rd level	-0.62	0.16
Death Rates:		
Overall Standardised	0.16	-0.26
Cancer	-0.25	-0.24
Infant	0.47	0.46
Neo-natal	0.64	0.46
Foetal	-0.41	0.43
Perinatal	0.30	0.76
% of Total Variance Explained	31%	17%
Eigenvalue	5.57	3.00

not be used. The first contains a very respectable 31 per cent of the variance in a total of 18 input variables (reflected in an eigenvalue of 5.6) and will be used as cautiously interpreted above.

(iv) *Housing Structure.* Housing tenure and quality, in contrast, is captured in a tightly-structured set of twelve variables that generates a dominant first principal component. This links all of the indicators of low amenity very strongly with the level of outright ownership. It contrasts all of these variables with the level of all other forms of tenure and with the proportion of houses with central heating. This is a striking result. The component dominates the twelve housing variables, with an eigenvalue of 6.7, and illustrates a stark distinction in patterns

of housing tenure that was previously obscured by the aggregation of both mortgaged and outright ownership as forms of owner occupation.

This is likely to be a component with a strong urban-rural undertones, since outright ownership in Ireland is much more associated with rural farm holdings, and mortgaged ownership with urban and suburban life. Furthermore, low levels of household amenity are tied closely to the availability of a mains water supply, the incidence of which is still far lower in rural than in urban areas.

While the first component dominates the analysis, the second component is also highly interpretable. It links mortgaged owner-occupation with the incidence of central heating, and contrasts these with rented tenancies of all forms, and with overcrowding. This is such a clear and obvious pattern that it has been retained as another input to the voting regression.

(v) *Agricultural Structure.* The fifteen agricultural variables that were used emerge very clearly as having a two dimensional structure. Each component, as can be seen from Table 5, is readily interpretable. The first links the largest farm sizes with smallholdings, combines these with both tillage and horticulture, and contrasts all of these with holdings in the 15-50 acre bracket and the use of land

Table 4: *Principal components extracted from housing structure*
(1. Outright Ownership, Poor Facilities vs. Rest)
(2. Mortgaged vs. Rented)

Variable	*Factor Loadings*	
Proportion of Households in Following Tenure Categories:	*Factor 1*	*Factor 2*
Renting From Local Authority	-0.75	0.46
Renting Privately, Unfurnished	-0.66	0.63
Renting Privately, Furnished	-0.64	0.46
Buying from Local Authority	-0.24	0.05
Owner Occupied, Mortgaged	-0.80	-0.55
Owner Occupied, Owned Outright	0.97	-0.01
Proportion of Households living in Housing with the following features:		
Central Heating	-0.50	-0.82
Occupancy Rates over 1.5/room	0.39	0.50
Outside Tap only	0.79	0.03
No Running Water	0.92	-0.09
No Fixed Bath or Shower	0.95	0.17
No Flush Toilet	0.96	-0.08
% of Total Variance	56%	18%
Eigenvalue	6.73	2.10

Table 5: *Principal components extracted from agricultural structure (1. Tillage/Horticulture vs. Livestock) (2. Prosperous vs. Marginal (Dairy vs. Dry))*

Variable *Proportion of Land Area Devoted to:*	*Factor Loadings* *Factor 1*	*Factor 2*
Corn and Other Cereals	0.85	-0.05
Root Crops	0.77	-0.19
Fruit and Horticulture	0.61	-0.38
Hay	-0.15	0.85
Pasture	-0.43	0.75
Rough Grazing	-0.21	-0.50
Other/Non-Econ Use	-0.04	-0.87
Proportion of Cattle Dairy Cows	0.22	0.46
Proportion of Households in the following categories:		
0-5 acres	0.79	-0.49
5-15	-0.20	-0.81
15-30	-0.89	-0.31
30-50	-0.89	0.27
50-100	0.42	0.75
100-200	0.82	0.47
200+	0.87	0.13
% of Total Variance	39%	30%
Eigenvalue	5.83	4.56

for pasture. This would clearly seem to be a "tillage/horticulture vs. livestock" dimension.

The second dimension links small farm sizes, non-economic land and rough grazing and contrasts these with largish (though not the largest) farm sizes and the relative preponderance of dairy cattle. This would seem clearly to be a "prosperous vs. marginal" or a "dairy vs. dry" farming dimension. The overall result is a crisp and interpretable two component representation of the fifteen agricultural variables.

(vi) *Culture.* The seven "cultural" variables yield a rather weak though highly interpretable two component solution. The first component links the proportion of the population that is Catholic with the proportion that can speak Irish, and contrasts these with those in Protestant denominations and those professing no religion. The second component links the proportions born in another county

and those living in another county the previous year, and relates these to those professing no religion. The contrast, incidentally, is with the proportion Presbyterian, reflecting no doubt, the low levels of in-migration to the border counties.

Overall, it can be seen that the principle components' analyses yielded a set of convincing and interpretable dimensions. The interpretations of these are summarised in Table 7.

Table 6: *Principal components extracted from cultural variables*
(1. Catholic/Irish vs. Protestants)
(2. No Religion/High Turnover vs. Rest)

Variable	*Factor Loadings*	
Proportion of Population:	*Factor 1*	*Factor 2*
Catholic	-0.95	0.22
Church of Ireland	0.90	-0.16
Presbyterian	0.53	-0.67
No Religion	0.45	0.61
Irish Speaking	-0.68	-0.07
Born in Another County	0.29	0.72
Living in Another County Previous year	0.22	0.84
% of Total Variance	40%	30%
Eigenvalue	2.78	2.12

Table 7: *List of first stage principal components used as input to second stage regression analysis*

	Interpretation (Loading Direction)
Factor 1	(+) Young Families vs. Over 40s (-)
Factor 2	(-) Agriculture vs. Other Occupations (+)
Factor 3	(-) Professional vs. Manual Occupations (+)
Factor 4	(+) Low Soc-Econ Well-being vs. High (-)
Factor 5	(+) Outright Ownership, Poor Facilities vs. Rest (-)
Factor 6	(-) Mortgaged vs. Rented (+)
Factor 7	(+) Tillage/Horticulture vs. Livestock (-)
Factor 8	(+) Prosperous vs. Marginal Farming (-)
Factor 9	(-) Catholic/Irish vs. Protestant (+)
Factor 10	(+) No religion/High Turnover vs. Rest (-)

Factor scores on the ten factors that were extracted were calculated for each of the 25 counties. Further interpretations of the factors can be made on the basis of these scores. Factor 2, for example, relating to agricultural employment contrasts Leitrim, Roscommon, Longford, Cavan and Mayo, on the one hand, with Wicklow and Louth on the other. Factor 4, relating to well-being, shows up clearly in this light. At the low well-being end we find Leitrim, then Roscommon and Mayo, followed by Donegal and Monaghan. At the high well-being end are Waterford, Kildare, Meath and Limerick. Factor 7, relating to the division between tillage and livestock, distinguishes Wexford, Waterford, Carlow and Kilkenny, on the one hand, with Leitrim, Roscommon, Cavan, Galway, Mayo, Longford and Monaghan, on the other. Factor 8 contrasting marginal (dry) and prosperous (dairy) farming contrasts Donegal and Mayo on the one hand, with Limerick, Tipperary, Kilkenny and Cork, on the other. Factor 9, contrasting Catholic/Irish with Protestant, places Clare, Galway, Mayo and Roscommon, at one end, and Wicklow, Cavan, Monaghan and Donegal, at the other.

This stage in the analysis, of course, is no more than an exercise in data reduction. The purpose is to reduce a mass of inter-related variables into a much smaller number of indicators, which between them capture most of the richness of the original data. This enables the more systematic application of regression techniques which, sampling from a set of 66 input variables, could otherwise be no more than a hit and miss affair.

IV THE REGRESSION ANALYSIS

Having reduced a large range of aggregate variables to a manageable set of indicators, the next step is to relate these to party voting, in this case voting in the three elections held in 1981 and 1982 Dail. Table 8 shows the matrix of simple correlations between scores on the socio-economic factors and party vote shares at county level. A number of patterns emerge.

In the first place, we can see that there is clearly some instability in the coefficients, even over the short-time period involved, and this must be taken as a limited piece of evidence in favour of the politics without social bases thesis. The extent of this instability should not be overstated, however. The same factors are picked out as being related to party voting, having an effect in the same direction, for each election, even if the strength of this effect does vary somewhat.

In the second place, county-by-county variations in the Fine Gael vote share are clearly the hardest to explain. As we shall shortly see, no coefficients for Fine Gael passed significance tests, and the patterning of the vote on the basis of the socio-economic factors is clearly weaker. To the extent that Fine Gael voting is related to anything, it is related to Factors 3 and 4, reflecting the proportion in the professions and those at the "rural" end of the well-being factors respectively. In general, however, the finding of both Parker and Gallagher that

Table 8: *Simple correlations between social economic factors and party voting*

	Factors									
Party	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Fianna Fail										
1981	—	-.47	+.18	+.34	+.43	+.17	-.31	-.13	-.25	-.26
1982 (Feb.)	—	-.65	+.20	+.52	+.62	—	-.58	-.30	-.48	-.32
1982 (Nov.)	-.15	-.76	+.13	+.65	+.75	—	-.77	-.14	-.25	-.50
Fine Gael										
1981	-.20	—	-.21	+.17	—	—	—	—	+.22	-.25
1982 (Feb.)	-.34	—	-.37	+.37	—	—	-.27	—	+.23	-.18
1982 (Nov.)	-.39	—	-.45	+.42	—	—	-.34	—	+.20	-.24
Labour										
1981	+.39	+.45	—	-.63	-.56	—	+.64	+.31	—	+.49
1982 (Feb.)	+.29	+.43	—	-.53	-.50	—	+.61	+.17	—	+.39
1982 (Nov.)	+.39	+.38	+.18	-.55	-.50	—	+.57	+.15	—	+.44

Fine Gael voting cannot really be explained using aggregate data is clearly confirmed, (Gallagher, 1976, p. 311; Parker 1984, p. 57).

In the third place the Labour vote share is more clearly patterned than that of Fine Gael, being higher in counties at the "urban" end of the well-being scale, in those with better housing quality, and in those with tillage and horticulture rather than livestock. (The ecological fallacy should be remembered at all stages of this analysis. These results do not, of course, imply that market gardeners vote Labour!). Gallagher used two variables to explain Labour vote shares, each related to agriculture (Gallagher, 1976, p. 43). This analysis confirms that county-wide variations in Labour *votes*, (as opposed to *seats*), vary on an urban-rural dimension.

In the fourth place, some of the socio-economic factors clearly have no simple explanatory power, a significant finding in itself in the context of the politics without social bases thesis. In particular, Factors 6, 8, and 9, had little effect. (These relate respectively to the level of mortgaged owner-occupation, to the distinction between prosperous (dairy) and marginal (dry) farming and to the religious breakdown of the population.) Factor 3, contrasting professional with manual occupations also performs very weakly overall and we can conclude that, *to the extent that these factors vary between counties*, they do not pattern party shares of the vote. This may either be because they have no effect on voting at all, or because the crucial variation in these particular social factors operates *within, rather than between, counties.*

Finally, perhaps the most significant pattern in the simple correlations is that the predictability of the Fianna Fail vote share is much higher than that found by Gallagher, using his different set of variables on a different set of constituency boundaries for the 1948-65 period, (Gallagher 1976, p. 18). Indeed the

November 1982 Fianna Fail vote in particular is very well explained by each of Factors 2, 4, 5 and 7 with correlation as coefficients reflecting r^2 values of the order of .55 to .60. These compare with much lower levels of explained variance found by Gallagher in his series of *three variable* regressions on Fianna Fail voting, which had r^2 values ranging from .19 to .38. A high level of Fianna Fail voting is thus related to there being a high proportion of the workforce employed in agriculture, to the rural end of the well-being scale, to low levels of basic household amenities and to livestock farming as oposed to tillage and horticulture. *Each* of these factors, of course, is connected one way or another to the agricultural structure or to the rural/urban divide.

The exclusion of Dublin may, of course, have had some effect on those results. The Dublin vote share of each of the parties does differ from that in the rest of the country, so some of the patterning in the data might have been lost, particularly given the importance of the urban-rural dimension. This is likely to particularly affect the Labour Party, with its strength in Dublin. Even excluding Dublin, Labour voting is clearly associated with the urban end of various dimensions. This means, therefore, that the *direction* of the relationships involved would not be changed by including Dublin, though their *strength* might well be increased. In the same way, Fianna Fail voting, lower in Dublin than in the rest of the country, is linked to the rural end of the various socio-economic factors, so that little net distortion has probably been introduced by excluding it.

Simple correlations, of course, are very poor indicators of the potential causal structure underlying voting patterns. In order to get an idea of this, we need to be able to control for the simultaneous effects of different variables. This is achieved most straightforwardly by using the standardised coefficients (beta weights) from a set of multiple regressions of the socio-economic factors on voting patterns. Each of the parties is considered seperately.

Multiple Regressions on Fianna Fail Voting

In order to simplify matters, Factors 2, 4, 5 and 7 were selected, on the basis of the results of the bivariate correlation analysis reported in Table 8. These factors contain information from 52 of the original 66 variables. A wide range of regression models using each of the other factors were checked, lest low bivariate correlations were the result of more complex but masked independent effects, but these were found to contribute nothing to the explanatory power of the model. Table 9 shows the beta weights and r^2 values for each of the two-variable regressions that can be constructed from the four selected explanatory factors. This illustrates quite clearly that, while the relevant factors are interrelated, it seems to be Factor 7 that retains a strong link with Fianna Fail voting once the effect of each of the other factors is held constant. Thus, Factors 2, 4 and 5 each generate rather similar beta weights, when pitched against each other in the multiple regressions. Factor 7, however, dominates each of the other factors in

Table 9: *Beta weights from second stage multiple regressions on Fianna Fail voting, November, 1982*

Model	*Variable*	*Beta Weight*[(a)]	r^2†
1.	Factor 2	-.36	.50
	Factor 4	.41	
2.	Factor 2	-.39	.60
	Factor 5	.40	
3.	Factor 2	-.26	.63
	Factor 7	-.61***	
4.	Factor 4	.40	.46
	Factor 5	.32	
5.	Factor 4	.19	.60
	Factor 7	-.62**	
6.	Factor 5	.14	.59
	Factor 7	-.66**	

(a)Only marked coefficients significant at 0.05 level or better.
***significantly differs from zero at the 0.001 level.
**significantly differs from zero at the 0.005 level.
†all r^2 values significant at better than 0.0001 level.

the pairwise comparisons, as well as generating the regression with the highest proportions of explained variance.

In this context, it is noteworthy that Factor 4 is clearly the weakest predictor, both in simple and multiple regressions. The addition of either Factor 2 or Factor 5 to Factor 4 in a multiple regression still yields a weaker predictive model. However, the addition of Factor 7 to Factor 4 yields a considerable improvement. Finally, we should note that the standardised regression coefficients for Factor 7 are the only ones that pass significance tests. While such tests have no strict role in the analysis of a population (as opposed to that of samples), they do provide an *ad hoc* indicator of the strength of the effects being measured, and it is certainly conventional to give them some weight.

All of the indications are thus consistent with a causal structure that has Factor 7 (tillage vs. livestock) as the variable with the main independent effect on Fianna Fail voting. The simple relationships between the other factors and Fianna Fail voting appear to be a product of their correlation with Factor 7. The apparent causal structure is summarised in Figure 1. In other words, the relationship that appears to exist between the proportion of the workforce engaged in agriculture, and the proportion of voters supporting Fanna Fail seems, on closer inspection, to be spurious. The other factors relate to Fianna Fail voting because they also relate to the tillage/livestock factor. But it is the tillage/livestock factor that seems to have the main independent effect.

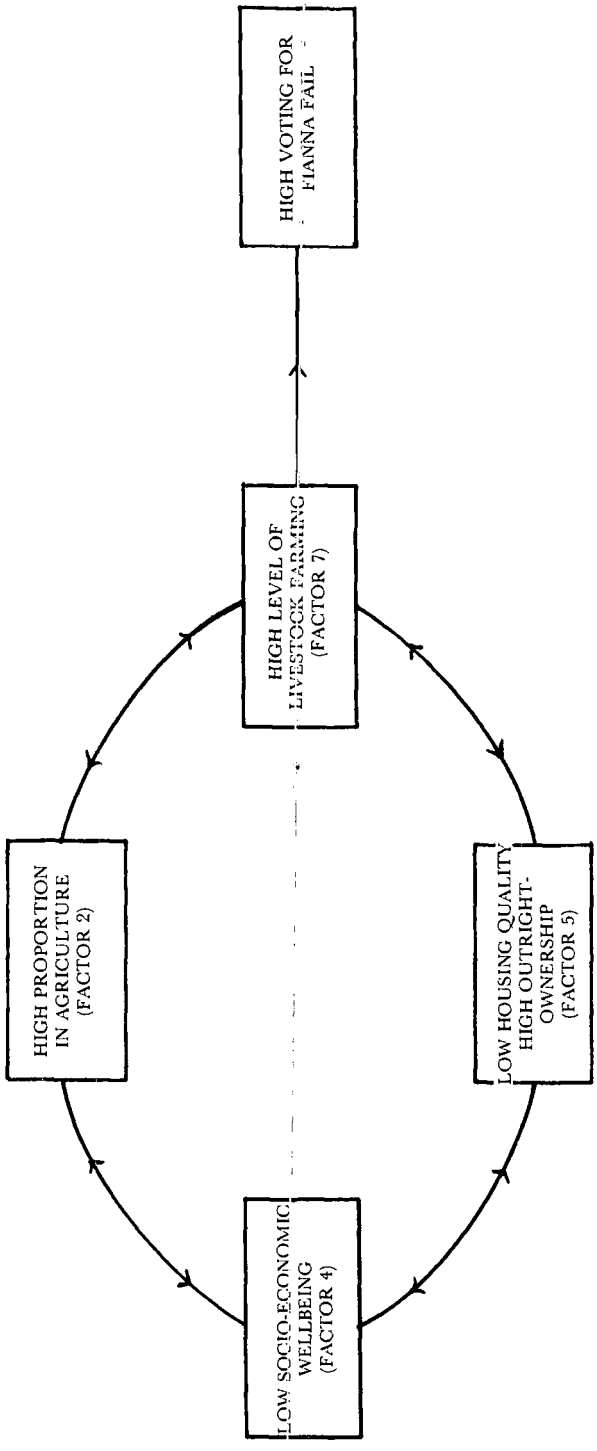

Figure 1: *Apparent causal structure of Fianna Fail voting: November 1982.*

Having uncovered one potential set of spurious correlations, we must be aware of the possibility that we simply replace them with another. Most of the factors extracted have strong East/West overtones, a matter reflected most clearly in the factor scores discussed above. Particularly in the light of Garvin (1981) and others' emphasis on the importance of regional variations of party voting, an attempt was made to check the possibility that the socio-economic factors used here, and particularly Factor 7, were simply acting as surrogates for an East/West dimension that was "really" structuring the voting patterns.

Clearly an independent definition of the "West" is needed, since to take one from previous voting analyses would be either self-defeating or self-fulfilling. Thus the classification of eleven western counties used by Scully (1971) in a completely different context was adopted.[4] This East/West dichotomy was run against Factor 7 as a dummy variable in a multiple regression. The results can be found in Table 10 and show, for this definition in the West at least, that Fianna Fail voting is higher in the West *because* the level of livestock farming is higher. It does not seem to be the case, therefore, that the explanatory power of Factor 7 derives solely from the fact that this factor varies between East and West while the "westness" of a county determines the level of Fianna Fail voting. If anything, the analysis so far is consistent with the reverse interpretation. In other words, it appears that the link between "The West" and Fianna Fail voting is a product of aspects of the agricultural structure, at least partially captured by Factor 7.

Table 10: *Beta weights in multiple regression of east/west dummy and Factor 7*

Variable	*Beta Weight*	r^2
East (0) West (1)	.19	.60
Factor 7	-.60	

If we are prepared to settle for this simple model, based on the tillage/livestock dimension, as the most parsimonious representation of Fianna Fail voting patterns, then it is a useful exercise to examine the residuals of the regression for evidence of systematic distortion or misprediction. Overall, the level of misprediction is low: nearly all predicted values lie within 3 per cent of actual Fianna Fail voting. Those cases that lay outside this range are listed in Table 11. From this we can see that there is no clear pattern in the mispredicted cases, although Donegal is an obvious exception. (The inclusion of the Blaney vote

4. The western counties, as defined by Scully, are Cavan, Clare, Donegal, Galway, Kerry, Leitrim, Longford, Mayo, Monaghan, Roscommon, Sligo and West Cork. For these purposes all of Cork was taken. This region is more or less congruent with that of the "designated areas" eligible for special grants in the Industrial Development Act, 1969.

Table 11: *Mispredictions of Fianna Fail voting by tillage/livestock factor*

Over-predictions (% Fianna Fail vote)		*Under-predictions (% Fianna Fail vote)*	
Wicklow	9.1	Donegal*	8.5
Cork	5.0	Laois	4.6
Waterford	4.8	Clare	4.4
Louth	3.6	Wexford	3.8

*NB: Donegal Fianna Fail vote includes votes for Neil Blaney (Independent Fianna Fail).

with that of Fianna Fail produces an observed vote significantly higher than that which is predicted. To exclude these votes would result in an even more serious over-prediction). On the other side, Wicklow is predicted to have a much larger Fianna Fail vote than that which actually emerges. This could well result from a concentration of *population* in a commuter belt near Dublin. This population would share many of the characteristics of the suburban Dublin electorate, yet these features would not be captured by Factor 7 at all, since all of the input variables deal with landholdings over the whole county rather than with people, concentrated in only a part of it. Beyond this we can be relatively confident, from the analysis of residuals, that no systematic distortions exist in the model.

To summarise this part of the discussion, three main conclusions can be drawn from the ecological analysis of Fianna Fail voting patterns in November 1982. In the first place, there *is* a much clearer link between Fianna Fail voting and the socio-economic factors than was captured by earlier analyses of single variables. This may be for several reasons. The use of principal components extracted from the aggregate input variables enables a much wider range of variables to be "swept" for efficient predictors. In this context it is worth noting that the composite indicators represented by the factor scores perform rather better than *any* of the individual variables from which these are constructed. (A set of regression models using each of the Factor 7 input variables in turn, for example, yielded weaker coefficients). In this sense, the principal components are doing an efficient job of parsimonious data capture.

It is possible, of course, that the relationship between Fianna Fail voting and the ecological variables has *changed* since 1965, the date of Gallagher's last full analysis. If this is the case, the crisper results may reflect changing reality rather than differences of method. To test this, Gallagher's analysis was reproduced for the November 1982 Fianna Fail voting patterns and, in Table 12, is compared both with the 1965 Gallagher result and with a model including the agricultural structure factor.

Table 12: *Comparison of Gallagher and Laver Fianna Fail voting regressions 1965 and November 1982*

Analysis	*Gallagher 1965 (semi-standardised coefficients)*	*"Gallagher" November 1982 (standardised coefficients)*	*Factor 7: November 1982 (standardised coefficients)*
Variables			
Proportion Irish Speakers	2.41	0.30	0.16
Proportion Farmers	-2.02	0.55**	0.19
Proportion Non-Catholics	-0.19	0.17	0.09
Factor 7 Score	N/A	N/A	-0.56**
r^2	0.23	0.37	0.51

**Significant at 0.01 level.

From this it can easily be seen that the pattern of Fianna Fail voting *has* changed since the mid 1960s. The relationship between voting and Gallagher's three independent variables has sharpened somewhat, and the rather puzzling *inverse* relationship between the proportion of farmers and Fianna Fail voting has disappeared. (Direct comparisons between the 1965 and 1982 coefficients are complicated by Gallagher's use of "semi-standardised" coefficients in 1965. The relative strength and direction of the three coefficients can, however, be compared.) By 1982 the proportion of farmers is certainly the most important independent predictor in the Gallagher model, with Fianna Fail voting higher in counties with more farmers. The proportion of variance explained by the "Gallagher" model in November 1982 is, however, quite a bit lower than that explained by the models including Factor 7. This situation is highlighted by the final model reported in Table 12, which adds the agricultural structure factor to the Gallagher model. The proportion of variance explained moves up sharply with the inclusion of Factor 7, while the coefficients of Gallagher's independent variables fall effectively to zero. This provides clear evidence of the independent explanatory power of the composite factors.

Table 12 also highlights the second general conclusion, which relates to the potentially spurious correlations that appear to have been uncovered between various socio-economic factors and Fianna Fail voting. The most significant of these relate to the link between the Fianna Fail vote share and the proportion engaged in agriculture. On close inspection this turns out quite possibly to be an artefact of a situation in which the counties with more livestock farming and small or medium farms, also have higher proportions of the population engaged in agriculture. Overall, none of the "non-agricultural" factors (such as the age structure or the manual/non-manual distinction) survives the multiple or regression analyses. Whether this is seen as confirmation of the "politics without

social basis" thesis depends, I suppose, on what you take a social basis of politics to be. Certainly we have evidence for a "politics with an agricultural basis" thesis.

Finally, one rather rudimentary check, at least, did confirm that the link between the tillage/livestock dimension and Fianna Fail voting was *not* an artefact of the coincidence of this and the East/West divide. Rather the regional basis of voting appears to be a product of the link between voting and agricultural tenure and land use patterns. The link between Fianna Fail and the agricultural structure is, without doubt, the main conclusion from this part of the analysis.

Multiple Regressions on Fine Gael Voting

The very low levels of relationship between Fine Gael voting and the various socio-economic factors does not allow more detailed analysis. None of the multiple regressions used to predict the Fine Gael vote yielded coefficients that were statistically significant. When each of the original 66 input variables is correlated with the Fine Gael vote, nothing of much significance emerges. In short, variations in the level of the Fine Gael vote are impossible to predict using aggregate data. This very much reproduces both Gallagher's and Parker's findings, which yielded no significant results for Fine Gael in the post-1945 period.

Such a robust non-relationship must clearly be regarded as a significant finding in its own right, though care must, as always, be taken when generalising aggregate results to individual behaviour. The non-relationship of Fine Gael voting and the socio-economic factors, at aggregate level, does not mean that there is no social basis for the Fine Gael vote. It does mean, however, that there is no social basis for the Fine Gael vote that is patterned at the level of the constituency. This is in contrast with the Fianna Fail vote, which does vary on this scale. Since it is clear from the analysis of survey data that appears in the next *Review* that Fine Gael voting clearly *is* related to socio-economic variables, it must be the case that these tend to vary more *within* constituencies than between them. The fact remains, however, that Fine Gael voting can *not* be predicted from the aggregate data.

Multiple Regressions on Labour Voting

Using the composite factors, the predictability of Labour voting lies somewhere between that of Fine Gael and that of Fianna Fail. Although it is in this context, of course, that the exclusion of Dublin probably has its most serious effect. Table 13 shows the coefficients for the same regression models as were used to predict Fianna Fail voting, and the results can hardly be claimed as significant. While the multiple regressions as a whole yielded r^2 values significant at the 1 per cent level or better, only one individual regression coefficient passed

Table 13: *Beta weights from second stage multiple regressions on Labour voting, November 1982*

Model	*Variable*	*Beta weight*	r^2†
1.	Factor 2	.38	.39
	Factor 4	-.30	
2.	Factor 2	-.38	.27
	Factor 5	-.84*	
3.	Factor 2	.33	.35
	Factor 7	.37	
4.	Factor 4	-.26	.30
	Factor 5	-.38	
5.	Factor 4	-.39	.36
	Factor 7	-.35	
6.	Factor 5	-.31	.37
	Factor 7	.34	

*Significantly differs from zero at 0.05 level.
†All r^2 values significant at 0.01 level or better.

the most lenient significance test. Given that a lot of the national variation in the Labour vote is taking place between specific Dublin constituencies and those in the rest of the country, it is not surprising that the r^2 figures are lower than those found by Gallagher. Not too much, therefore, can be made of the coefficients, though we should note that, in virtually every case, the signs run in the opposite direction from those for Fianna Fail. In a three cornered contest in which one party's vote has no apparent pattern, it is not surprising that the other two parties vote shares should run in opposite directions.

Taking the tillage/horticulture factor as the best predictor of Labour voting outside Dublin, the analysis of *mis-predictions* given in Tables 14 and 15 are most revealing. It is clear that the most categorical statement that we can make is that the Labour vote is vastly underpredicted where Labour won seats! This "finding" throws considerable light on the analysis of the Labour vote. Of course, it also shows how unreliable a regression analysis of Labour voting is likely to be, since the voting seems to be concentrated quite disproportionately on certain candidates, who generate wild outliers in the regressions. Votes for these candidates can be seen not to fit in at all with the general variation of the Labour vote across the county, but to pop up instead in statistically "unexpected" places like Kerry and Tipperary. This shows a very strong

Table 14: *Mispredictions of Labour vote by tillage/livestock factor*

Over-predictions (% Labour vote)		*Under-predictions (% Labour vote)*	
Waterford	9.9	Kerry	18.2
Laois	7.5	Tipperary N	12.0
Donegal	7.3	Tipperary S	9.2
Offaly	5.5	Meath	6.5
Wexford	5.5	Wicklow	5.5

Table 15: *Predicted and actual vote shares for Labour, November 1982 (top ten predicted constituencies)*

County	*Predicted vote share (%)*	*Actual vote share (%)*
Wexford	15.3	9.8
Carlow	14.5	11.6
Waterford	14.0	4.1
Kilkenny	13.3	12.2
Kildare	13.0	15.2
Wicklow	12.8	18.3
Cork	11.3	7.7
Laois	11.2	3.7
Louth	10.8	14.7
Tipperary S	10.8	20.0

"incumbency" or "candidate" effect (or at least a strong unexplained local effect) for Labour, to an extent quite unlike anything to be found for Fianna Fail.

In short, regression models based on nationwide variations of the Labour vote provide at best a distorted and unfocused view of the situation. An analysis of the *failures* of these models, however, produces quite a clear picture of a very heavy concentration of the Labour vote on a limited number of candidates that has no obvious socio-economic interpretation.

V GENERAL CONCLUSIONS FROM AGGREGATE ANALYSES

Three features stand out from the analysis so far:

(i) Fianna Fail voting appears to be more consistently predictable from aggregate data than previous analyses suggest. In part this is an artefact of the

timescale, but it is quite clearly also a product of the inclusion of the composite factors incorporating information from a wide range of variables relating to the agricultural structure. These also indicate that the link between Fianna Fail voting and "the West" may not be to do with "the West" in itself, or with the level of employment in agriculture, but rather with differences in patterns of land holding and usage.

(ii) Fine Gael voting does not appear to be related to anything patterned at county level.

(iii) Overall patterns of Labour voting show some linkage with aggregate socio-economic factors. However, Dail seats appear to be won on the basis of local surges of support that are not at all easy to predict in aggregate terms. This furthermore suggests that all regression analyses of Labour voting are liable to be quite heavily distorted.

In general, many of the factors in which we might be interested (those relating to social class for example) vary more *within* counties than between them. Obviously, it is only those factors that pattern the social and economic structure at county level which can have even a chance to influence county level voting behaviour. For an insight into the effect of other socio-economic factors, we need to use survey data, a matter to which I will return in a paper to be published in the next issue.

REFERENCES

BUDGE, IAN, DAVID ROBERTSON and DEREK HEARL (eds.), 1986. *Party Strategy*, Cambridge: Cambridge University Press, forthcoming.

GALLAGHER, MICHAEL, 1976. *Electoral Support for Irish Political Parties, 1927-73*. London: Sage Professional Papers, Contemporary Political Sociology series.

GALLAGHER, MICHAEL, 1985. *Political Parties in the Republic of Ireland*, Dublin: Gill and Macmillan.

GARVIN, TOM, 1981. *The Evolution of Irish Nationalist Politics*, Dublin: Gill and Macmillan.

LAVER, MICHAEL, 1984. "Are the Liverpool Liberals Really Different? A Path Analytical Interpretation of Local Voting in Liverpool 1973-82", *British Journal of Political Science*, Vol. 14, pp. 243-249.

PARKER, A. J., 1982. "The 'friends and neighbours' voting effect in the Galway West Constituency", *Political Geography Quarterly*, Vol. 1, No. 3, pp. 243-262.

PARKER, A. J., 1983. "Localism and Bailiwicks: The Galway West Constituency in the 1977 General Election", *Proceedings of the Royal Irish Academy*, Vol. 83, No. 2, pp. 17-36.

PARKER, A. J., 1984. "An Ecological Analysis of Voting Patterns in Galway West, 1977", *Irish Geography*, XVII, pp. 42-64.

SCULLY, JOHN J., 1971. *Agriculture in the West of Ireland: A Study of the Low Farm Income Problems*, Dublin: Stationery Office, Prl. 2017.

WHYTE, JOHN, 1974. "Ireland: Politics without social basis", pp. 619-651 in Richard Rox, (ed), *Electoral Behaviour: A Comparative Handbook*, New York: Free Press.

APPENDIX

Votes were apportioned between combined constituencies as follows:

(i) Vote shares for each party in the 1979 local elections were calculated.

(ii) The *electorate* in the 1981-82 elections were apportioned to each county by taking the combined electorate for the election in question, and allocating it to each county in proportion to the 1979 electorate in each county.

(iii) The *apportioned* vote for a party in each county was calculated by apportioning actual votes cast in the combined county constituency to the component counties in the same relative proportions as they occurred in the 1979 local elections. Thus if the local vote for Fianna Fail was A in county A and B in county B, and if the combined Dail vote for Fianna Fail in the two counties was C, then the apportioned Dail *vote* in county A was CA/(A+B) and in county B was CB/(A+B).

(vi) Vote *shares* within counties were calculated from the apportioned votes.

(v) The vote proportions apportioned by this method are given (as per mil figures) below:

Apportionment of Votes in Dail Constituencies Combining Two Counties

		per mil share of two county vote 1979			*Apportionment of vote shares to party 1981-82 (per mil)*		
		Fianna Fail	*Fine Gael*	*Labour*	*Fianna Fail*	*Fine Gael*	*Labour*
A. *Carlow-Kilkenny*							
1. *Carlow*							
Actual local	1979	311	371	398	—	—	—
Apportioned Dail	1981				437	410	154
February - Dail	1982				446	394	156
November - Dail	1982	414	400	161			
2. *Kilkenny*	1979	689	629	602			
	1981				485	347	117
February	1982				496	335	118
November	1982				462	342	122
B. *Cavan-Monaghan*							
1. *Cavan*	1979	528	546		—	—	—
	1981				440	440	—
February	1982				489	440	—
November	1982				541	457	—

Apportionment of Votes in Dail Constituencies Combining Two Counties (contd.)

		per mil share of two county vote 1979			*Apportionment of vote shares to party 1981–82 (per mil)*		
		Fianna Fail	*Fine Gael*	*Labour*	*Fianna Fail*	*Fine Gael*	*Labour*
2. *Monaghan*	1979	472	454				
	1981				438	394	—
February	1982				489	409	—
November	1982				558	439	—
C. *Laois-Offaly*							
1. *Laois*	1979	506	496	497			
	1981				507	448	43
February	1982				510	441	48
November	1982				510	453	37
2. *Offaly*	1979	494	504	503			
	1981				491	454	43
February	1982				499	450	48
November	1982				497	460	37
D. *Longford-Westmeath*							
1. *Longford*	1979	358	351	000			
	1981				470	355	0
February	1982				520	395	0
November	1982				556	444	0
2. *Westmeath*	1979	642	649	100			
	1981				466	364	110
February	1982				525	442	34
November	1982				517	426	58
E. *Sligo-Leitrim*							
1. *Sligo*	1979	617	609	100			
	1981				496	350	13
February	1982				530	309	15
November	1982				528	408	19
2. *Leitrim*	1979	383	391	0			
	1981				444	323	0
February	1982				536	384	0
November	1982				534	425	0