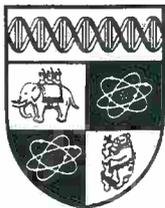THE UK POLL TAX AND THE DECLINING ELECTORAL ROLL:
UNINTENDED CONSEQUENCES?

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The UK Poll Tax and the Declining Electoral Roll:

Unintended Consequences?

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Abstract

The introduction of the poll tax in Britain in April 1990 was one of the most controversial policies of the prime ministership of Margaret Thatcher between 1979 and 1991. Despite the unpopularity of the tax the Conservatives comfortably held onto office in the 1992 General Election, although with a substantially reduced majority. This paper investigates whether the poll tax might have indirectly benefitted the Conservative party by discouraging people from registering on the electoral roll, and thus preventing them casting their vote in the 1992 General Election. The results suggest a central estimate of eight seats could have been gained by the Labour and Liberal Democrat parties from the Conservatives, leaving the Conservatives vulnerable to losing its majority in by-election defeats before the next scheduled General Election.

1. Introduction

The introduction of the poll tax (community charge) in Britain on the 1st April 1990 was regarded as one of the most controversial policies of the Conservative government. It was seen to be politically damaging, and upon Margaret Thatcher's resignation in November 1990 all three of the contenders for her job (John Major, Douglas Hurd and Michael Heseltine) indicated their intention to replace the unpopular tax. The poll tax is to be replaced by a property-based tax from April 1993. Despite the unpopularity of the poll tax the Conservatives comfortably held on to office in the 1992 General Election, although with a substantially reduced majority.

In July 1991 the preliminary 1991 Census population head-count figures were released and, as Wormald (1991) explains, a great deal of press attention focused on the suspected one million under-estimation of the population (see The Guardian 23 July 1991, p.1, 5), and of the electoral register. The amount of this shortfall is disputed, but the estimate of one million is derived from the Office of Population Census and Surveys, part of the Government Statistical Service: Population Trends (Summer 1991, p.2)).[1] The poll tax is offered as one of a number of possible explanations for this shortfall.

This paper investigates whether the poll tax might have indirectly benefitted the Conservative party by discouraging people from registering on the electoral roll, and hence from voting in the 1992 General Election. The paper uses pooled time

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[1]The lead story in The Independent on Sunday (13 September 1992), partly based on OPCS sources, claimed that as many as 1.8 million people were missing from the Population Census in England and Wales.

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series cross sectional analysis to investigate the effect the introduction of the poll tax has had on the electoral roll.

The paper is subdivided into a number of different sections. Section 2 discusses public opposition to the poll tax, and looks at behaviour of the electoral roll since its inception. Section 3 introduces the model used to investigate the problem. Section 4 presents the results from estimating the model. A counterfactual analysis investigating the size of the electorate and the likely 1992 General Election outcome in the absence of the poll tax is presented in Section 5. Section 6 offers some concluding remarks.

2. Poll Tax and the Electoral Roll

2a. Poll Tax

The poll tax came into operation in England and Wales on 1st April 1990. It replaced domestic rates, which were evaluated on the rateable value of domestic property, as the household tax levied by the local authority. This new tax reflected a shift in the liability to pay from the occupier of premises to all adult residents of a local authority. The Local Government Finance Bill, which introduced the poll tax, had its second reading on the 15 December 1987 and was introduced by the then Secretary for State Nicholas Ridley, who claimed

> *If the full system had been in place this year, authorities everywhere would have needed to charge £178 per head to provide a standard level of service. In some areas, that figure might have been as low as £130. In others, it might have been substantially higher.* (House of Commons

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Parliamentary Debate, Sixth Series, vol 124, col.1118).
The bill was passed on the 17 December 1988 with a majority of
341 to 269, although 17 Conservatives voted against the bill and
a number of Conservatives abstained. The controversial bill
generated intense discussions during its passage even though this
was not reflected in the final number of Conservative rebels.

Opposition to the poll tax amongst the general population
was strong. The Conservatives' loss of the Mid-Staffordshire by-
election to Labour on 23 March 1990 was partly blamed on the poll
tax (The Times 24th March 1990). A protest march by 35,000
people[2] (and subsequent riots) took place in London on the 30th
March 1990 (The Times, 1st April 1990). Margaret Thatcher's loss
of the Conservative leadership in November 1990 was also widely
ascribed to the poll tax (The Times, 20-24 November 1990). The
Gallup Political Index poll of April 1991 found that 64% of
people selected Margaret Thatcher as mainly to blame over the
government's difficulties over the poll tax from a list of
Hesetine, Major, Thatcher and high spending Labour local
authorities. Mrs Thatcher's association with the poll tax was all
the more damaging for the Conservatives as the July 1990 NOP
Political Social Economic Review poll (for the Local Government
Chronicle), claimed that 37% regarded the poll tax as a major
issue influencing their voting intentions.

Table 1 reports results from the Gallup and NOP opinion
polls prior to and just after the introduction of the poll tax.

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[2]Figures differ markedly on the number of people protesting about the
introduction of the poll tax Poll Tax Riot: 10 hours that shook Trafalgar
Square claims the figure was 200,000.

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Table 1: Percentage of Voters Opposed to the Poll Tax[3]

Gallup Poll Results		NOP Poll Results	
Date of Poll	%	Date of Poll	%
January 1988	61	June 1988	54
April 1988	62	September 1989	63
September 1989	61	April 1990	73
June 1990	68	July 1990	71
September 1990	74		
December 1990	73		

A substantial part of the opposition to the poll tax was caused by the apparent unfairness of the tax across income groups. The poll tax and domestic rates (which preceded it) are regressive taxes. However, Ridge and Smith (1991, p.48) show that while most households are neither better nor worse off "at the top end ... the proportion of income paid in rates [was] substantially above the proportion paid in poll tax". In other words, the wealthy stood to gain and the poor to lose, giving the poor much greater incentive to disenrol. As the Labour party draws its support disproportionately from those on lower incomes, it would be likely to suffer more than the other parties. Ridge

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[3]The Gallup Poll question prior to the introduction of the poll tax asks whether individuals thought the introduction of the poll tax a "good or a bad idea". After the introduction the question was phrased as to whether they were in favour or opposed to the tax, the figures reported sum those slightly and strongly opposed to the tax. The NOP question refers to whether individuals approve or disapprove of the poll tax.

and Smith's finding is supported by Hale (1987) who calculates the rateable value of one-, two- and three-adult houses necessary for households to break-even when compared to the poll tax bill facing that household. She shows that for 356 out of the 364 local authorities in England, the break-even point for one-adult houses is below the average rateable value, for two-adult houses the figure falls to 196 local authorities, and for three-adult houses it is as low as 18 local authorities.[4] However, this distribution is not uniform across the country with inner London faring worst, followed by outer London and the Metropolitan districts.

The apparent "unfairness" of the poll tax is also reflected in the surveys. In the Gallup polls from January and April 1988 and September 1989 roughly 60% thought domestic rates unfair, yet between 50% and 60% thought the poll tax was likely to be less fair. The figure describing the poll tax as unfair rose to 76% by November 1991. NOP's question consistently elicited slightly smaller percentages describing the poll tax as unfair.

The opposition to the poll tax led to campaigns for the non-payment of the poll tax bill. In Scotland, Ridge (1990) argues that for seven out of ten Scottish regional councils the average shortfall for poll tax payment was around 20%, and based on this Smith and Ridge (1991, p.46) anticipated a 5% shortfall for many local authorities in England and Wales in 1990/1. This belief is confirmed in the June 1990 Gallup poll which found 25% of people had not paid their poll tax bill and 50% of those claimed they

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[4]For two-adult houses the average poll tax bill would only be £23 per annum more.

had no intention of paying the bill. In actual fact Department of Environment (DoE) figures calculate that by March 1991 the receipts of 1990/91 charges as a percentage of budgeted yield for England was 90%, although this had risen to 97% with collections up to March 1992 (the figure for 1991/92 was 89% at March 1992).[5] However, such non-payment could result in prosecution by the local authority if the individual was caught. There is therefore a natural incentive to avoid the poll tax register.

While the poll tax register is formed differently in different areas, in a number of areas use the electoral roll as the basis of a register. While there is a widespread impression that the Government promised that the poll tax register would not be based on the electoral register, this is not the case. The 1986 Green Paper introducing the proposal specified that the poll tax registration officer "would be able to draw on local authority records, and the electoral register, in compiling the community charge register".[6] This intention was reiterated by Ministers during the passage of the bill,[7] and the powers to do so are enshrined in Schedule 2 paragraph 6, where "the electoral registration officer for any area in England and Wales" is one of the people who may be required to supply information for the

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[5]Budgeted yield is each local authority's estimate of Community Charge receipts adjusted for Community Charge Reduction Scheme, Community Charge Benefits, the £140 transfer from Community Charge to VAT and a provision for non-payment, which the DoE estimates to be around 5-6% for almost all authorities. As all these adjustments are centrally determined they do not affect the rank ordering of local authorities by proportion of poll tax collected.

[6]Department of the Environment, Paying for Local Government, Cmnd 9714, 1986, p. 108

[7]See especially Christopher Chope, MP in House of Commons, Standing Committee E, 1987-8 vol. VI, col. 486.

community charge register. Wadsworth and Morley (1989), in discussing the formation of the Rotherham register note that "Creating a detailed draft register by computer merging from the existing rates, housing rents and electoral registration files and printing all the information on the canvass form" was the most effective solution to forming the register. Even though every authority may not have used the electoral register it would be reasonable to expect that it might have been used. As the Fabian Society Taxation Review Committee (1990) speculate, "Evasion is clearly an option which will be tried by those prepared to disappear from electoral rolls, library registers and so on".

Indeed it is hard to see why any rational and well-informed elector should wish to stay on the electoral roll after the passage of the Local Government (Finance) Act 1988. The expected value of staying on the roll may be expressed as $p_1 V_1$, where V_1 is the net present value of getting a preferred government over a less-preferred, and p_1 is the probability that one's own vote is the crucial one which brings that result about. The expected value of coming off the electoral roll may be expressed as $(p_2 V_2 - C)$, where V_2 is the net present value of evading the poll tax, p_2 is the probability that coming off the electoral roll achieves that aim, and C is the combined legal and psychological cost of evading the requirement to register.[8] A rational elector

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[8] It might be better to express the expected value of deregistering from the electoral roll as $p_2 V_2 + p_3 V_3 - C$, where V_3 is the net present value of evading jury service (jurors are selected from the electoral roll), and p_3 is the probability that disenrolement achieves that aim. This would bias the case in favour of deregistration even more heavily.

Furthermore, an objective estimate of the legal element of C must be very low. In the five years prior to 1982, only 3% of the 400-odd electoral

would therefore disenrol when $p_2V_2 - c > p_1V_1$. The infinitesimal size of p_1 dominates all the other numbers in this comparison. On any realistic estimate, p_1 for an elector in British national elections is less than one in ten million, 10^{-7} (although greater than 10^{-8}). So only an elector whose value for C was exceptionally high would rationally remain on the register. It is very easy to disenrol; all that is required is to fail to return the annual Form A (see below) and any reminders, and not to respond to any canvass by the local authority.

2b. The Electoral Roll

Population Trends (Summer 1991, p.2) estimate an under-enrolment of 1 million people and claim the decline started in 1984 and became more marked after 1987. In a subsequent article Wormald (1991) notes a disparity between the metropolitan areas and shire counties, with larger falls in the metropolitan areas. Figures 1.1 to 1.8 plot the proportion of the electorate to the whole population for 1984 - 1990 for each local authority type in England (that is: London borough, metropolitan borough, or non-metropolitan district. Appendix A names the authorities corresponding to these figures).[9] The interesting point to observe is that the electorate as a proportion of the population has fallen for London (figure 1.1) and the Metropolitan districts

registration authorities in the UK had prosecuted anybody for non-return of the form on which details for the electoral register are requested (Todd and Dodd (1982), p.9). Therefore, anybody who stays on the electoral roll either has a mistaken belief about the probability of being prosecuted for non-return of the form, or would incur high psychological costs from deregistering, or both.

[9]The local authorities in each of the categories London, Metropolitan and Non-metropolitan districts are ranked in descending order of decline in the ratio of the electorate to population over the period 1984-1990.

(figure 1.2) over the period since 1988, which pre-dates the introduction of the poll tax. However, in the non-metropolitan districts the electorate has continued to remain a roughly stable function of the population (figures 1.3-1.8). In looking at these figures it is important to look at the variation within each local authority across time rather than at the variation in the ratio across the different local authorities. This is particularly true in the non-metropolitan areas where the ratio of the electoral roll numbers to the population estimates can vary considerably.

The 1992 General Election results gave the Labour party 47.6% of its total seats from the London and Metropolitan districts compared with 24.4% for the Conservative party. The concentration of the decline observed in the electorate to these broadly Labour regions may then provide one explanation for the poor performance of the 1992 General Election opinion polls in over-estimating the Labour vote compared to that of the Conservative vote, as many people were no longer eligible to vote in the election despite expressing an opinion to the pollsters.

A plot of the ratio of the electorate to the population including the 1991 population estimates from the Preliminary Census Report, shows the 1991 ratio increasing above the values of 1984 and 1985. The explanation for this is not an increase in the electorate, but rather a decline in the census population compared with the mid-year estimate for 1990 (see Wormald (1991)). This is partly because the 1991 census figures, taken after the poll tax was introduced, are probably themselves too low for the same reason as is hypothesized for the electoral

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register. Consequently, these 1991 figures are not used in this study.

As has been noted earlier the fall in the electorate occurred primarily between 1988 and 1990, a year before the poll tax was introduced. However, the introduction of the poll tax was widely advertised and opposition to the tax built up considerably before it was actually introduced in 1990. According to the Gallup polls in July 1987 (prior to the Local Government Finance Bill having been passed) 79% of people had heard about the poll tax and by April 1989 this figure was as high as 93%. Figures reflecting opposition to the tax have already been reported.

Figures calculating the amount of poll tax households would have to pay were also widely publicised in newspapers prior to the introduction of the poll tax. The Chartered Institute of Public Finance and Accountancy (CIPFA), the organisation of local authority finance staff which is regarded as the most authoritative source, published a number of articles on the expected level of poll tax in their publication "Paying for Local Government", which calculated the level of the poll tax for each local authority. Hale (1987, 1988a, 1988b, 1989) estimates the 1989/90 average poll tax bill at £247 per adult.

The combination of: a high degree of awareness about the poll tax, knowledge of the approximate level of the poll tax bill facing individual households, general and widespread opposition to the poll tax, knowledge that the electoral register might be used to form the poll tax register; and all some considerable time before the poll tax bills were received:- all this could easily account for the fall in the electoral roll prior to 1990.

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4. Model

This paper uses the fixed effects panel regression model (see, for example, Hsiao (1986)) to analyse the electoral consequences of the introduction of the poll tax in England in 1990. The most general model can written as

$$y_{i,t} = \alpha_i + \gamma_t + \beta' x_{i,t} + u_{i,t}, \quad i = 1, \ldots, N, \quad t = 1, \ldots, T$$
$$\sum_{t=1}^{T} \gamma_t = 0 \tag{1}$$

$$u_t \sim NID(0, \Sigma),$$

where, i = 1, .., N refers to the N = 364 local authorities, t = 1, .., T refers to the period of analysis 1984–1990, and u_t is a random disturbance term assumed to be independently and normally distributed across local authority districts with mean zero and diagonal covariance matrix, Σ. In this model for given $x_{i,t}$ the influence of the individual authorities can vary through α_i (fixed group effects) and over time through γ_t (fixed time effects).

The dependent variable ($y_{i,t}$) is the number of electors in each of the 364 local authority districts in England over the period 1984 to 1990. The explanatory variables, denoted by the vector $x_{i,t}$, include combinations of variables from the list of the mid-year population estimate (Pop), annual unemployment (Unemp), number of attainers (Attain: that is, people aged 16 and 17 who come on to the electoral register for a district during its lifetime when they turn 18), density of population (Dens) and the proportion of local election seats in each of the districts which were Labour, Conservative and Liberal Democrat,

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respectively.[10] The final variables are dummy variables to capture the influence of the poll tax being introduced.

$$Poll90_{i,t} = 0, \qquad i=1,..,364, \; t=1984\text{-}1989$$
$$= Polltax_{i,t}, \quad i=1,..,364, \; t=1990$$

where $Polltax_{i,1990}$ is the poll tax bill for each local authority for the financial year 1990/91. The anticipated role of the poll tax is captured by the variable $E_{89}Poll90$,

$$E_{89}Poll90_{i,t} = 0, \qquad i=1,..,364, \; t=1984\text{-}1988$$
$$= ExpPoll_{i,t}, \quad i=1,..,364, \; t=1989$$
$$= 0, \qquad i=1,..,364, \; t=1990$$

where $ExpPoll_{i,1989}$ is the expected poll tax numbers for 1990 formed in 1989 using the CIPFA figures.[11] In some areas there will have been a real decline in the electoral roll due to population declines, increased mobility or a decrease in the proportion of the population eligible to vote due to for example an increase in immigration from non-Commonwealth countries or a more youthful population. Our task is to distinguish the proportion of the decline in the recorded electorate which is due not to such 'genuine' factors but to the poll tax.

It could be argued that a significant factor in the fluctuations in the ratio of electorate to estimated population could be changes in the practices and assiduity of Electoral Registration Officers (EROs), who are employees, usually in the

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[10]The Liberal democrat vote is made up of the Liberal plus the Social Democrat vote for the period from 1984 to 1988.

[11]This variable performed markedly better than a simple dummy variable taking the value of 247.00 in 1989 (the average expected poll tax bill as reported by Hale (1989)) and zero elsewhere.

Chief Executive's Department, of each district council. A number of forces could be at work here. An assiduous ERO might weed the register of names which appeared last year but for which no information has been received this year; a lazy or hard-pressed one might leave them on. On the other hand, an assiduous ERO would seek out people who should be on the register but have not been, while a lazy or hard-pressed one might not. The key question is whether there should be any systematic differences between authorities on these points, either over time, or between urban and rural authorities or authorities controlled by different political parties.

At the request of the Home Office, OPCS has done a substantial amount of research on the accuracy of the electoral register, conducting an annual survey of all the EROs in the UK, the results of which are reported in Todd and Dodd (1982), Todd and Eldridge (1987a, b), Young and Todd (1990) and Hickman (1992). A semi-official study (Pinto-Duschinsky and Pinto-Duschinsky (1987)) is also relevant. This series confirms that the register was inaccurate even before the poll tax became a factor. The practice of carrying over names from one register to the next when no information has been received was studied in five wards, three of them in London and two of them in urban areas elsewhere in England. It was found that 37/93 (40%) of the names carried over should not have been on the register; on the other hand, a check of addresses for which there was no entry in the electoral roll against a list compiled for domestic rates found that 39/86 (45%) of the people living there should have been on the register (Todd and Dodd (1982), p.1 and Appendix B).

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Although this was a small sample, which Todd and Dodd stress was not representative, it implies that the false-positive rate for an electoral register with carry-over and the false-negative rate for one with limited chasing-up are similar. Todd and Eldridge (1987b, Tables 2.2 and 5.1), in another small inner-city study, found the false-negative rate to be more than double the false-positive rate. If one judges that a false-negative is worse than a false-positive, then one is led, as was the Home Office by circular in 1984, to recommend carry-over for one year and intensive personal canvassing of people who do not return Form A, the form on which each household is asked to list eligible electors at the beginning of the process each year. The Home Office also redesigned Form A, but a sample survey (Todd and Eldridge (1987a)) found that the redesigned form actually produced a lower and less accurate response than the old one in their matched pairs of districts. They conclude, 'Habitual non-returners would seem to need more than a change of colour and a modernisation of the form to affect their behaviour' (p.4).[12]

There is ample evidence from these surveys that the register is less accurate in urban areas than in non-metropolitan districts, and least accurate in London. But is there any reason to expect this to vary by authority within our period? There are some straws of evidence, although the nature of the OPCS data

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[12]Among the ambiguities and unhelpfulnesses of Form A are:
  i)   it does not define Commonwealth citizen, although Commonwealth citizens are one category of those entitled to vote;
  ii) it requests names in the form 'Surname and title' followed by 'Christian name or forename'.
Both of these may be expected to depress the number of electors originating from the Indian subcontinent, including particularly Moslems who do not use European patterns of naming and for whom 'Christian name' may be insulting and 'forename' meaningless. These matters were not addressed in the redesign of Form A.

makes it impossible to be conclusive.[13] Authorities need not follow the Home Office's guidelines about carrying over and canvassing. In 1983-5 a number of Labour-controlled authorities in London ran registration drives - Wandsworth, Haringey, Ealing and Brent are mentioned by Pinto-Duschinsky and Pinto-Duschinsky (1987). However, by 1990 it was reported that London boroughs attempted less canvassing than the median authority, and four of them did none at all (Hickman (1991), p.12). Drops in the electoral roll in Wandsworth - by this time Conservative-controlled - and Westminster have been anecdotally ascribed to this, but we have no hard evidence. Ceteris paribus, the interest of each authority lies in having as large a recorded electorate as possible, and the incentives towards this do not differ between type or party control of authorities, nor over time within our period. The only exceptions hinted at by the data are that a combative Labour-controlled authority might carry over names indefinitely and also canvass vigorously, in the hope of maximising the proportion of its potential sympathisers on the register, while a combative Conservative-controlled authority might be content to let the numbers on the electoral roll decline by not canvassing and not carrying names over. But note that if this effect is real it will accentuate our findings on the political consequences of the poll-tax effect. Suppose, at the extreme, that Labour authorities were consistently inflating the register and Conservative authorities were consistently trimming

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[13]The OPCS surveys were conducted under their usual convention according to which no information which could lead to the identification of a particular respondent - in this case, the ERO for a particular local authority - may be revealed.

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it. Then the recorded electorate in the first will be too high and in the second too low. But it is still, on the whole, in Labour-controlled inner city boroughs that our model finds the largest decline, and the largest proportion of the decline attributable to the poll tax. If there has been partisan manipulation of the electoral roll, the conclusion must be that the gross effect of deregistration is greater than in our model. Overall, there is no basis on which to assume anything other than that changes in electoral registration practice have no <u>systematic</u> effect on the ratio we are examining.

The influence of the poll tax is anticipated to have differing effects across the London, metropolitan and non-metropolitan (as suggested by the figures 1.1-1.8 discussed in section 2b). Consequently, the poll tax and the expected poll tax variables are interacted with three dummy variables; Inner London (Inn); Outer London (Out); and the metropolitan districts (Met), as well as the density variable which allows the influence of poll tax to vary within these broad regional classifications.

Importantly, in specifying this equation we are careful to distinguish between the influence of the expected poll tax ($E_{ss}Poll90$) and the actual poll tax ($Poll90$), which for the majority of areas was substantially greater than that predicted by the number from CIPFA. In actual fact of the 364 local authority areas in this study only ten had an expected poll tax greater than the final poll tax bill even allowing an inflationary adjustment. Of these ten, eight occurred in inner London (Camden, Greenwich, Hammersmith and Fulham, Lewisham, Southwark, Tower Hamlets, Wandsworth and the City of

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Westminster),[14] none in outer London, one in a metropolitan district (Kirklees) and one in a non-metropolitan district (Brentwood).[15] As a result one might anticipate two effects. The first is the response of the electorate in anticipation of the tax bill and a conscious policy of dis-enroling prior to the bill being received. The second response is in reaction to the unanticipated size of the bill individuals actually had to pay. In determining the response to the size of the bill we distinguish between Poll90 and the excess over that predicted in 1989, $\Delta Poll90_{i,t} = Poll90_{i,t} - E_{89}Poll90_{i,t-1}$.

4. Estimates of the Fall in the Electoral Register

A more appropriate specification of equation (1) is as a model in first differences as this enables a measurement of the movement of the electorate in each year relative to the previous year and removes the influence of the fixed group effects, for example, α_i. The equation is now estimated as

$$\Delta y_{i,t} = \delta_t + \beta' \Delta x_{i,t} + \varepsilon_{i,t} \tag{2}$$

where $\delta_t = \gamma_t - \gamma_{t-1}$. Heteroscedasticity is likely to be a problem if the absolute change in the electorate is used as the dependent variable, in that the error in areas with large population movements is likely to be greater than that in areas with little or no population movement. Consequently, the change in the

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[14]We stress that these are not necessarily authorities with lower poll tax bills; rather it is just that the actual bill is less than that predicted by CIPFA.

[15]The average underprediction of the poll tax was by £46.80 in outer London, -£70.40 in inner London (an overprediction), £102.54 in metropolitan districts and by £119.68 in non-metropolitan districts.

logarithm of the electorate (approximately equal to the percentage change in the electorate) is used as the dependent variable. Only the population, unemployment and attainers are similarly transformed into approximate percentage change.

The results from estimating the model for the growth in the electoral register across regions are reported in Table 2.[16] This is a restricted equation, in which the coefficients on the variables $Poll90$, $E_{89}Poll90$, $Met*Poll90$, $Dens*Poll90$, $Out*\Delta Poll90$, $Met*\Delta Poll90$ and $Dens*\Delta Poll90$ are restricted to be zero. A test of this joint null hypothesis is easily accepted at the 5% significance level.

Ignoring the role of the density variable interacted with the poll tax variables for the moment, the model shows that the electorate responded differently in the metropolitan, inner and outer London districts in response to the anticipated poll tax bill and the actual poll tax which came into force the following year. In the outer London districts the electorate fell in 1989 by about 2.5% for every £1000.00 increase in the expected poll tax bill ($Out*E_{89}Poll90$), by 1.6% in 1990 for every £1000.00 on the 1990 poll tax bill ($Out*Poll90$) and by a further 1.6% in 1990 for every £1000.00 increase in the actual poll tax bill above that anticipated ($\Delta Poll90$). In the metropolitan districts the electorate fell in 1989 by about 2.4% for every £1000.00 expected poll tax, and by a further 1.6% in 1990 for every £1000.00 increase in the actual poll tax bill above that anticipated.

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[16]Estimates of equation (1) using the logarithm of the number of electors as the dependent variable is reported in Appendix B (Table B1) and are similar in nature to those in Table 2. This model easily rejected the random effects panel regression model, and for this reason the random effects model is not used in this paper.

Table 2: Determining Electoral Variations

(Dependent Variable $\Delta\ln(elect)$)

Variable	Coefficient	Standard Error	t-ratio
Intercept	0.7902	0.1114	7.089
$\Delta\ln(pop)$	0.4772	0.0412	11.59
$\Delta\ln(Inn*Pop)$	0.5215	0.3106	1.679
$\Delta\ln(Out*Pop)$	−0.3263	0.1870	−1.745
$\Delta\ln(Met*Pop)$	0.7297	0.1608	4.537
$\Delta\ln(attain)$	0.0031	0.0018	1.698
$Inn*E_{89}Poll90$	5.2089	2.5614	2.034
$Out*E_{89}Poll90$	−2.4938	1.7392	−1.434
$Met*E_{89}Poll90$	−2.3685	1.0727	−2.208
$Inn*Poll90$	−1.8506	0.8394	−2.205
$Out*Poll90$	−1.6146	0.9076	−1.780
$\Delta Poll90$	−1.5684	1.5181	−1.032
$Inn*\Delta Poll90$	9.2889	4.2473	2.187
$Dens*E_{89}Poll90$	−0.1088	0.0336	−3.238
$\Delta\ln(Unemp)$	−0.0026	0.0014	−1.860
$\Delta Dens$	−0.6188	0.2804	−2.207
$Labour$	−0.7608	0.1461	−5.207
$Conservative$	−0.2239	0.1307	−1.713
$Liberal$	−0.5608	0.2520	−2.226
1986	0.2172	0.0582	3.729
1987	0.2495	0.0672	3.714
1988	−0.1377	0.0793	−1.737
1989	−0.0979	0.1084	−0.903
1990	−0.0715	0.2002	−0.357

Note: The standard errors are robust to heteroscedasticity. A null hypothesis of no serial correlation is accepted at the 5% significance level.

In the inner London districts there is a perverse rise of 5.2%

in 1989, a negative response to *Poll90*, but a further perverse positive response to $\Delta Poll90$. In the non-metropolitan areas the only impact on the electorate of either the expected or actual poll tax is a fall of 1.6% in response to $\Delta Poll90$.

However, on to these figures one must add the influence of the density variable interacted with the poll tax variables. The coefficient on $Dens*E_{89}Poll90$ is significantly negative, implying that in more densely populated areas the poll tax had the effect of reducing the electorate by a larger amount than in a less densely populated area. The coefficient on the other poll tax variables interacted with density are insignificantly different from zero at the five per cent significance level implying that there was no further response over and above that in 1989 to the actual introduction of the poll tax.

In each area to calculate the effect of the poll tax on the electorate of that area one must partially differentiate the equation, in Table 2, with respect to $E_{89}Poll90$ and *Poll90*, respectively

$$\frac{\partial(\Delta \ln(elect))}{\partial(E_{89}Poll90)} = 5.209\,Inn - 2.494\,Out - 2.369\,Met - 0.109\,Dens \qquad (3)$$

$$\frac{\partial(\Delta \ln(elect))}{\partial(Poll90)} = -1.851\,Inn - 1.615\,Out + (-1.569 + \\ 9.289\,Inn)\frac{\partial \Delta Poll90}{\partial Poll90} \qquad (4)$$

This is best clarified as an example, taking Barking and Dagenham as our representative local authority. This authority is in outer London, so that Inn = 0, Met = 0 and Out = 1, the density of the district is 43.14 thousand people per hectare, the

expected poll tax figure for 1990 was £234.00 and the actual poll tax figure for 1990 was £280.00. Using these numbers in equation (3) the percentage fall in the electorate in 1989 from the introduction of the poll tax is

$$\Delta \ln(elect) = (-2.494 - 0.109*43.141)*0.234 = -1.682 \qquad (5)$$

Now applying these numbers in equation (4) the percentage change in the electorate is -0.52, yielding a total fall in the electorate of 2.202% over two years, or approximately 2,500 electors from the 1988 figure of 113,574.

Across all London districts the total calculated fall in the electoral roll for 1989 and 1990 together is 130,144 at an average per local authority of 4,067.[17] For the metropolitan districts this figure is 117,090, at an average of 3,253 and 105,391 across the non-metropolitan districts, at an average of only 356. The total estimated shortfall in the electorate due to the influence of the poll tax is estimated as 352,625, although this is still markedly short of the reported 1 million under estimation calculated by Population Trends.[18] We conclude that the rest of the shortfall is due to 'real' demographic factors.

A ranking of all of the authorities by the percent of electors lost through poll tax effects is shown in Table 3A. All of the top fifteen districts are in London, Tower Hamlets is top, with an estimated fall between 1988 and 1990 of 4.1%,

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[17]The figures for inner London are 49,674, at an average on 4,140, and are similar to those of outer London at 80,470, with an average of 4,024.

[18]The numbers for the model presented in Appendix B (Table B1) are a total fall of 368,441 split as 77,834 to inner London, 108,658 outer London, 181,836 metropolitan districts and only 110 for non-metropolitan districts. As this last number is unreasonably low this gives further evidence for preferring our primary model over that presented in Appendix B.

approximately equal to 4,648 electors. Brent is ranked fourth, which is consistent with The Guardian report of July 23 1991; although while The Guardian reports a 10% fall in the electoral roll in Brent, only 3.7% can be attributable to the influence of the poll tax. The newspaper also claims a similar fall in Lambeth. However, this model calculates a much smaller fall in this authority of around 2.4%, which is ranked 17th.

Table 3A: Local Authorities Ranked by % Electoral Fall

L.A.	1990 Rank	Elector % Fall	Elector Fall	Receipts Rank
Tower Hamlets	1	4.088	4,648	114
Haringey	2	3.992	6,191	5
Islington	3	3.879	4,365	3
Brent	4	3.678	6,771	34
Hackney	5	3.628	5,003	1
Camden	6	3.519	4,638	14
Newham	7	3.286	5,273	6
Waltham Forest	8	3.212	5,245	12
Wandsworth	9	3.152	6,182	337
Hammersmith	10	3.085	3,116	21
Lewisham	11	3.072	5,526	8
Ealing	12	2.955	6,189	25
Southwark	13	2.728	4,683	10
Sutton	14	2.450	3,140	296
Hounslow	15	2.425	3,707	33

Note: Receipts Rank ranks the local authorities in a reverse order according to community charge received as a percentage of budgeted yield for the period April 1990 – March 1991.[19]

Also reported in our table is a reverse ranking across all local authorities in terms of the percentage of poll tax paid for the year 1990/91, so that, for example, Hackney (ranked 1 in column 5 of Table 3A) received the smallest percentage of its Community

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[19]These figures do not include Community Charge receipts for 1990/91 received after March 1991.

Charge relative to the budgeted yield. There is a statistically significant negative correlation (= -0.4020) between the fall in the electorate and the percent of poll tax paid compared to that budgeted. Naively, one might expect the association to be positive on the grounds that the higher the proportion of disenrollers the more willing to pay would be the remainder of the population. The direction of association shows rather that where the population is relatively compliant both disenrolment and refusal to pay are relatively low; where the population is relatively non-compliant both disenrolment and refusal to pay are relatively high.

Table 3B: Metropolitan Districts Ranked by % Electoral Fall

L.A.	1990 Rank	Elector % Fall	Elector Fall	Receipts Rank
Liverpool	1	2.180	7,883	4
Manchester	2	2.018	6,590	-
Sandwell	3	1.884	4,359	20
Wolverhampton	4	1.744	3,259	37
Birmingham	5	1.662	12,424	9
Coventry	6	1.662	3,961	88
Dudley	7	1.625	3,900	192
Walsall	8	1.619	3,235	208
Newcastle	9	1.575	3,484	63
Salford	10	1.559	2,760	100
N. Tyneside	11	1.521	2,327	123
S. Tyneside	12	1.438	1,787	336
Tameside	13	1.384	2,306	29
Stockport	14	1.375	3,134	84
Wirral	15	1.371	3,565	24

Note: Manchester does not have figures for receipts for 1990/91.

Table 3B reports the ranking of the metropolitan districts outside London. Liverpool, which is ranked first with a 2.2% fall, is only ranked 25th overall. Table 3C reports the ranking

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of the non-metropolitan authorities of which Bristol, ranked first, is ranked only 50th overall.

Table 3C: Non-Metropolitan Districts Ranked by % Electoral Fall

L.A.	1990 Rank	Elector % Fall	Elector Fall	Receipts Rank
Bristol	1	1.363	4,010	13
Oxford	2	1.350	1,137	-
Luton	3	1.307	1,626	41
Southend	4	1.294	1,653	139
Blackpool	5	1.279	1,487	178
Nottingham	6	1.234	2,617	18
Leicester	7	1.231	2,558	-
Harlow	8	1.228	723	72
Watford	9	1.224	706	244
Portsmouth	10	1.165	1,665	46
Stevenage	11	1.143	654	144
Great Grimsby	12	1.123	777	193
Derby	13	1.113	1,867	102
Reading	14	1.075	1,089	36
Kingston-u-Hull	15	1.072	2,117	32

Note: Oxford and Leicester do not have figures for receipts for 1990/91.

Returning to the equations calculating the fall in the electorate in each authority, equations (3) and (4), the variance estimates for these equations are written as

$$Var[\Delta\ln(elect)] = [\ 6.560\ Inn^2 + 3.025\ Out^2 + 1.151\ Met^2$$
$$+ 0.0011\ Dens^2 - (2*0.079*Inn + 2*0.040*Out \qquad (6)$$
$$- 2*0.003*Met)*Dens]*E_{89}Poll90^2$$

$$Var[\Delta\ln(elect)] = [0.705\ Inn^2 + 0.823\ Out^2]*Poll90^2$$
$$+ [\ 2.314 + 18.04*Inn]*\Delta Poll90^2$$
$$+ 2*(0.021\ Inn^2 + 0.509\ Inn \qquad (7)$$
$$- 0.287\ Out)*Poll90*\Delta Poll90$$

Using the estimated electoral derived falls from equations (3)

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and (4) and the variance estimates of these falls from equations (6) and (7) it is possible to calculate whether there was a significant fall in the electoral roll in any of the local authority areas for the years 1989 or 1990. For all London districts, except the inner London areas of Greenwich, Islington, Kensington and Chelsea, Lambeth and Lewisham, there is a significant fall in the electorate in both 1989 and 1990. In the metropolitan areas there is a fall in all electorates in 1989, although none experienced a significant fall in 1990. In the non-metropolitan districts there is again a significant fall in 1989 in all authorities, although none in 1990 had a significant fall. Figures 2.1-2.8 show the estimated fall in the electorate in the different regions over the period from 1989-1990 (the local authorities corresponding to these numbers are found in Appendix A).

It should be noted that these falls in electorate have an effect beyond the 1992 General Election (which is considered in the next section). The Fourth General Review of the Boundary Commission for England, now in progress, will determine constituency boundaries between (probably) 1996 and 2011. It must by statute take the 1991 electoral registers as its baseline. Rule 4 of its statutory rules requires it to take the county or London borough as the basic unit whose boundaries must not normally be crossed in deciding how many seats to allocate to each area (McLean and Mortimore (1992)). Where a county's or borough's exact proportionate share of seats ends in a fraction close to 1/2, the Commission faces a delicate task of deciding whether to round up or down. This will be particularly delicate

for Waltham Forest, Hammersmith, and Avon, where adding our estimate of the number of poll-tax disenrollers to the 1991 electorate would probably bring them into the range where they should be awarded one more seat each.

5. 1992 General Election Results: With No Poll Tax

Given a significant fall in the electorate in London and the Metropolitan areas, the question arises as to whether this could have had an impact on the 1992 election outcome, bearing in mind the concentration of Labour voters in these areas. However, an explicit analysis of this form is made awkward by not knowing how those people who did not register would have voted. In this counter factual scenario we will assume that the majority of those who did not vote have opposition sympathies, since the Conservative party actually introduced the poll tax which they are protesting against.

Columns 1 and 4 of Table 4 report the Conservatives' most marginal seats in England, the local authority in which the seat is located, and the vote difference between the two leading parties in the 1992 General Election.[20] As the analysis undertaken in this paper is at the Local Authority level and parliamentary constituency boundaries do not always coincide with local authority boundaries, column 2 reports the approximate percent of the local authority living in the particular

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[20]There are no marginal seats held by the Liberal Democratic party over the Labour party in England. Portsmouth South is held by the Conservatives over the Liberal Democrat, therefore the figures for this constituency refer to the number or percentage of votes required by the Liberal Democrats to overturn the Conservative majority. There are no other Conservative marginals over the Liberal Democrats in England where the margin of victory could bring them into the scope of Table 4.

parliamentary constituency assuming that the fall in the electorate at the parliamentary level is directly proportional to the number in the parliamentary constituency relative to the local authority. (Note that this is a conservative estimate which will underestimate the decline in constituencies which straddle local authority boundaries). The estimated fall in the parliamentary electorate is reported in column 4 estimated as the electorate fall in the local authority (figures 2.1-2.8) multiplied by column 2. The 95th percentile estimate of this number is also reported in the column in parentheses. Finally, the column 5 reports the net percentage of those electors (in column 4) who would have needed to have voted Labour to make the seat Labour. Assuming a split in the electors who disenrolled between the groups Labour: Abstain or other party: Conservatives as 50: 40: 10, then where the ratio in column 5 is less than, say, 40% we award the seat to Labour. For Portsmouth South it is assumed the split is similar but now in favour of the Liberal Democrats rather than Labour who received only 13.0% of the vote.

The implication of Table 4 is that, had those people whom the poll tax encouraged to dis-enrol actually voted, then the Labour party could have won as many as three seats from the Conservative party in the metropolitan and London districts (Edmonton, Hayes and Hillingdon and Bolton North East), and one non-metropolitan district (Bristol North West), with the Liberal Democrats picking up Portsmouth South. The figures in parentheses presented in Table 4 calculate the fall in the electorate such that we are 95% confident that the fall would have been no greater.

Table 4: Marginal Seats and the Electoral Shortfall 1989-1990

Seat (L.A.)	% of L.A.	Cons. Majority	Fall in Elector	% Labour
Edmonton (Enfield)	0.32	593	1425 (1991)	41.6 (29.8)
Eltham (Greenwich)	0.33	1666	860 (1902)	- (87.6)
Hayes (Hillingdon)	0.33	53	1148 (1699)	4.61 (3.12)
Brentford (Hounslow)	0.47	2086	1727 (2437)	- (85.6)
Mitcham (Merton)	0.50	1734	1191 (1623)	- (-)
Bolton W. (Bolton)	0.37	1079	844 (1303)	- (82.8)
Bolton N.E. (Bolton)	0.30	185	696 (1026)	26.6 (18.0)
Bury S. (Bury)	0.49	788	832 (1284)	- (61.4)
Tynemouth (N.Tyneside)	0.49	597	1142 (1723)	52.3 (34.6)
Cov'try S.W. (Coventry)	0.28	1436	1109 (1663)	- (86.3)
Batley (Kirklees)	0.26	1408	745 (1219)	- (-)
Bristol N.W. (Bristol)	0.27	45	1083 (1799)	4.16 (2.50)
Slough (Slough)	1.00	514	739 (1252)	69.6 (41.1)
Portsmouth S (Portmouth)	0.49	242	813 (1291)	29.7 (18.7)
Norwich N. (Norwich)	0.50	266	439 (729)	60.6 (36.5)
Corby (Corby)	1.00	342	141 (293)	- (-)

Taking these figures the Labour party could have won as many as seven seats from the Conservative party, the new seats being

Tynemouth, Norwich North and Slough, with the Liberal Democrats still winning Portsmouth South.

Table B2 in Appendix B recalculates this table using the results of Table B1. For all seats, except Corby, the Labour party could have won the seat with a smaller percentage of the votes than calculated in Table 4, although the results are largely similar to those of Table 4.

When analysing these results it ought to be remembered that we have data only for England. Similar, or perhaps stronger, results might be expected for Scotland where there was an active campaign of non-payment. This could have affected the outcome in Ayr (Conservative majority 85 - 0.2%), Aberdeen South (1517 - 3.6%), Edinburgh West (879 over Liberal Democrat - 1.8%), and Stirling (703 - 1.5%). In Wales, where the level of disenrolling might be expected to be equal to that in English non-metropolitan districts, the Conservatives held Vale of Glamorgan by 19 (0.03%) and Brecon & Radnor by 130 (0.3%) over the Liberal Democrats. (Their next most marginal seat was Conwy, held by 995 (2.4%) over the Liberal Democrats). By analogy with the English cases in Table 4, it seems safe to add Ayr, Vale of Glamorgan and Brecon & Radnor to the list of seats which the Conservatives would not have held but for poll tax disenrolments. If the disenrolment effect in Scotland was significantly stronger than in England, then some or all of the other three Scottish seats should be added to the list.

A problem with this analysis is that those people eligible to vote in the 1992 general election need only have registered by early 1992 and because of the lack of reliable population

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estimates our model has been estimated using data only up to 1990. However, it is possible, making the assumption of parameter constancy and given the 1991 poll tax data, to calculate the fall in the electorate in 1991 compared with 1988. An updated Table 4 based upon these estimates is presented in Table 5.

Table 5: Marginal Seats and the Electoral Shortfall 1989-1991

Seat	% of L.A.	Cons. Majority	Fall in Elector	% Labour
Edmonton	0.32	593	1602	37.0
Eltham	0.33	1666	1728	96.4
Hayes	0.33	53	1212	4.37
Brentford	0.47	2086	1934	-
Mitcham	0.50	1734	1458	-
Bolton W.	0.37	1079	754	-
Bolton N.E.	0.30	185	622	29.7
Bury S.	0.49	788	752	-
Tynemouth	0.49	597	1006	59.3
Cov'try S.W.	0.28	1436	1006	-
Batley	0.26	1408	683	-
Bristol N.W.	0.27	45	955	4.71
Slough	1.00	514	536	95.9
Portsmouth S	0.49	242	671	36.1
Norwich N.	0.50	266	385	69.1
Corby	1.00	342	78	-

In estimating the decline in the electorate for 1991 over that in 1990, the results show that only Camden, Croyden,

Greenwich, Hackney, Hammersmith and Fulham, Islington, Kensington and Chelsea, Lambeth, Lewisham, Southwark and Tower Hamlets experienced significant falls, while the metropolitan and non-metropolitan districts generally experienced small increases in the electoral register due in this model to the fall in the poll tax bill between 1990 and 1991, which occurred because of the £140.00 per head transfer from poll tax to VAT announced in the 1991 Budget, a transfer from the Department of the Environment known as the Community Charge Reduction Scheme[21] and to charge-capping. The overall fall in the electorate across England is now slightly less than that of 1990 at 335,506.[22]

The conclusions from Table 5 remain largely unchanged, that it would be possible for the Labour party to have won a maximum of four more seats from the Conservatives in the 1992 general election in England, and the Liberal Democrats one. The extrapolations for Scotland and Wales reported above remain unaffected.

6. Concluding Remarks

This paper has calculated the effects on the electoral roll from the introduction of the poll tax in local authority districts in England. There is evidence of a substantial degree of dis-enrolment prior to the introduction of the poll tax in

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[21]This item is listed on community charge bills as 'Your help from the Government'. This wording follows 'Government guidelines and instructions' (source: Oxford City Council, Community Charge collection department). Thus districts are being instructed to list a transfer from one tax heading to another as 'help'.

[22]Decomposing the fall into the different areas; inner London was 76,922 (average = 6,410), outer London 89,782 (average = 4,489), metropolitan area 103,435 (average = 2,873), and non-metropolitan area 65,366 (average = 221).

April 1990, especially in the London and metropolitan areas, although non-metropolitan areas also experienced small falls in their electoral register. Following the introduction of the poll tax there were further falls across most areas, possibly due to the under-estimation of the actual poll bill. In total the poll tax, it is estimated, can account for slightly more than one-third of the estimated one million people shortfall between the electoral register and the OPCS estimate of the qualified population.

Taking the fall in the electoral register for each local authority and assuming these lost votes are split proportionately across the parliamentary constituencies in the local authority the paper estimates that the Labour party could have theoretically won as many as seven more seats in England in the 1992 general election and the Liberal Democrats one. However, a total figure of five more seats, those being Bristol North West, Hayes and Harlington, Edmonton, Bolton North East and Portsmouth South, is more likely. With up to six extra seats from Scotland and Wales the upper bound estimate has the Conservatives turning their overall majority of 21 to a shortfall of 7 over all other parties combined. Our central estimate of an eight seat loss (five in England and three from Scotland and Wales) would have reduced the Conservative majority over all other parties to 5, which would have left the Government vulnerable to losing its majority in by-election defeats before the next scheduled General Election.

Note, finally, that we have concentrated on the (possibly unintended) benefits of the poll tax to the Conservatives. The

opinion poll data discussed above make it probable that there were net costs to the Conservatives among those who remained on the electoral roll. If the July 1990 figure from NOP, that 37% of the electorate regarded the poll tax as a major influence on their vote, were carried through to April 1992, then it may have cost the Conservatives votes. If, on the other hand, the resignation of Mrs Thatcher, the disavowal of the poll tax by all her challengers, and the promise to replace it in the Conservatives' 1992 campaign, defused the poll tax factor, the cost of the tax to the Conservatives' vote may have been much smaller. This awaits further analysis, which may become easier when data from the 1992 British Election Study become available. It will then be possible to evaluate the net cost, or net benefit, of the poll tax to the Conservatives in 1992.

But 1992 does not mark the end of the story. It is unlikely that those who have come off the electoral register will willingly flock back on; the 1991 electorates must by law determine parliamentary boundaries from 1996 to (probably) 2011; and it seems that other data sources, such as the Census, have been compromised by people being unwilling to admit to their existence. The poll tax may turn out to have had more unintended effects than any other piece of taxation for a long time.

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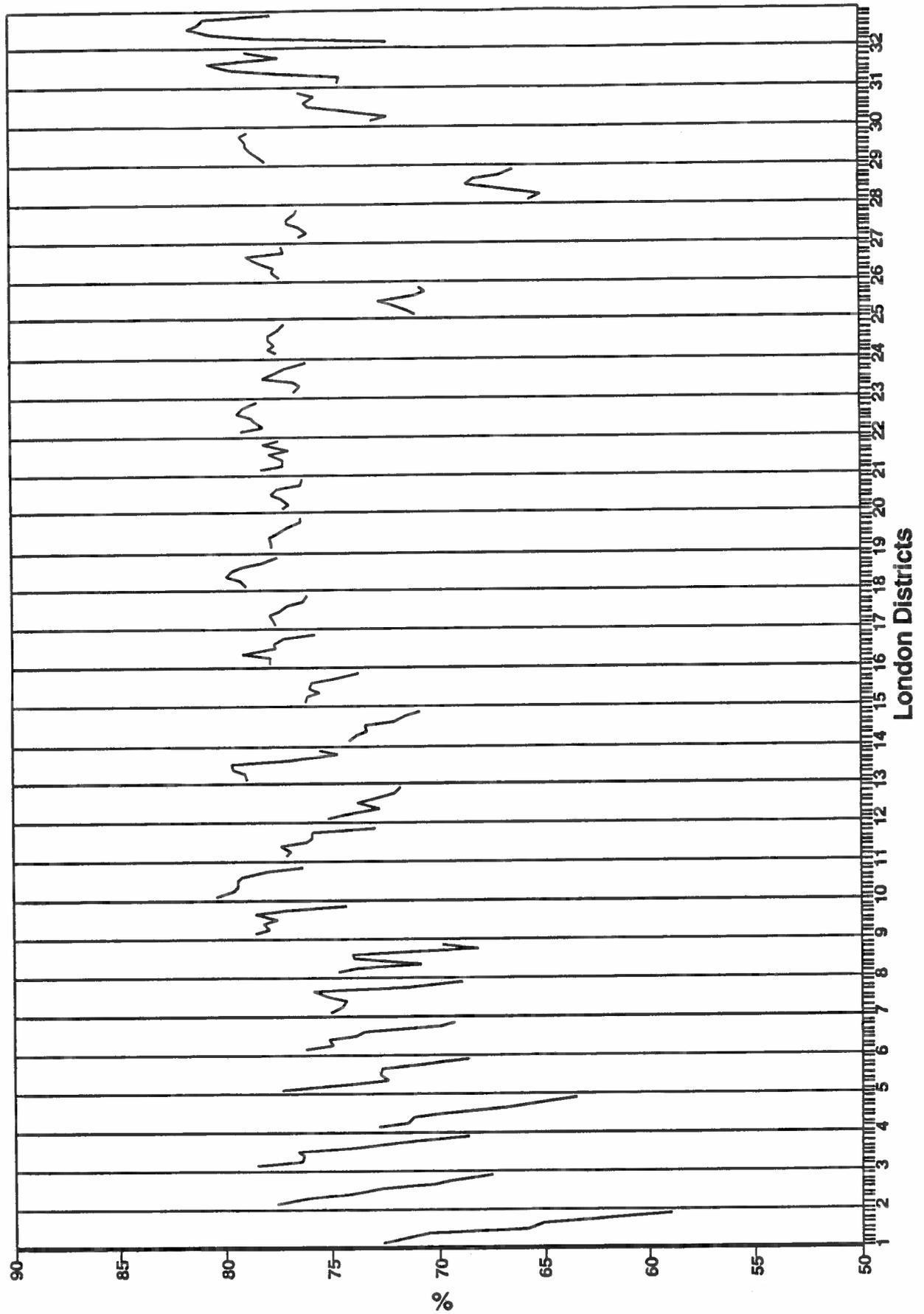Figure 1.1: Proportion of Electorate
to Population 1984-1990

London Districts

%

Figure 1.2: Proportion of Electorate to Population 1984-1990

Figure 1.3: Ratio of Electorate to Population 1984-1990
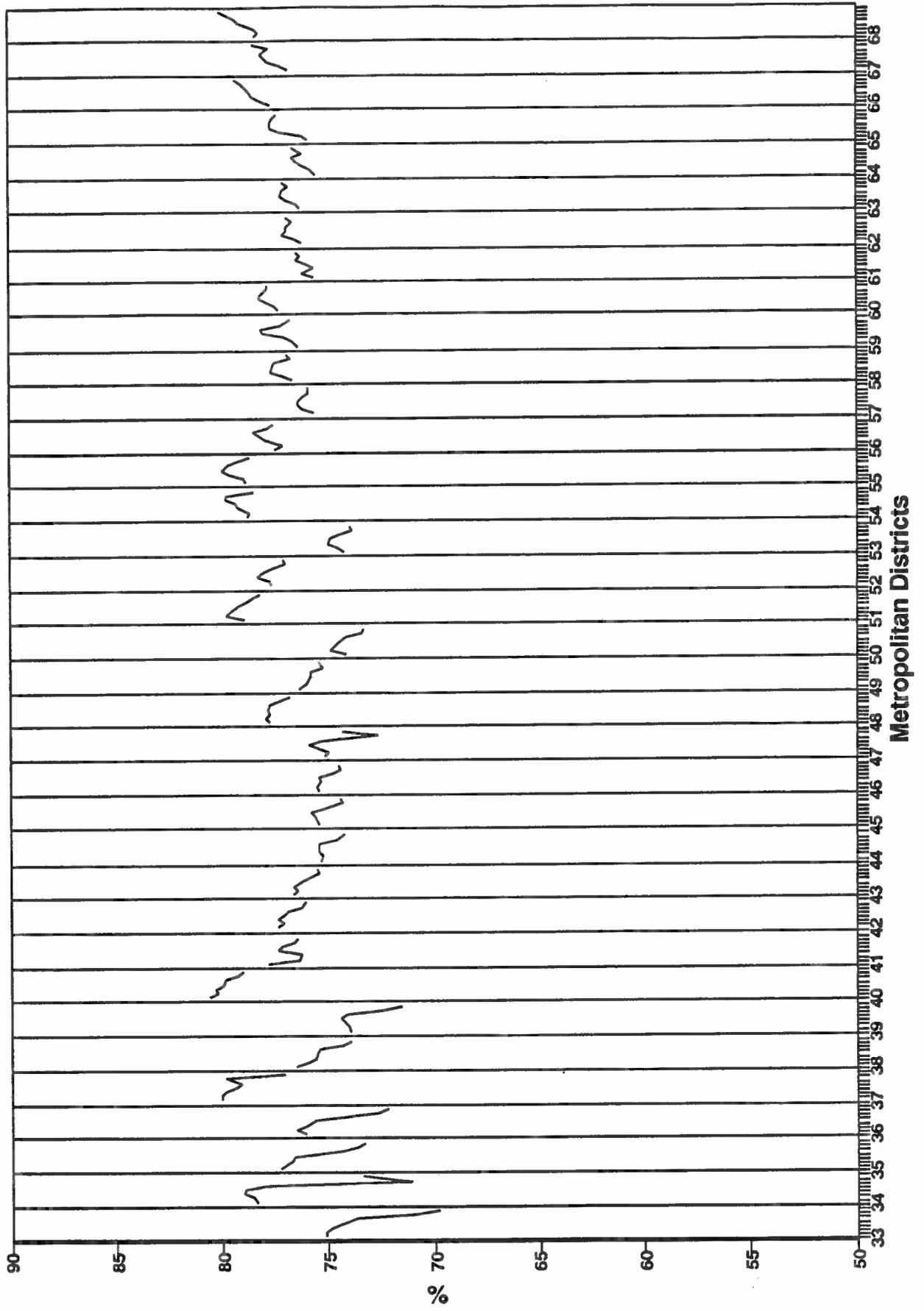
Non-Metropolitan Districts
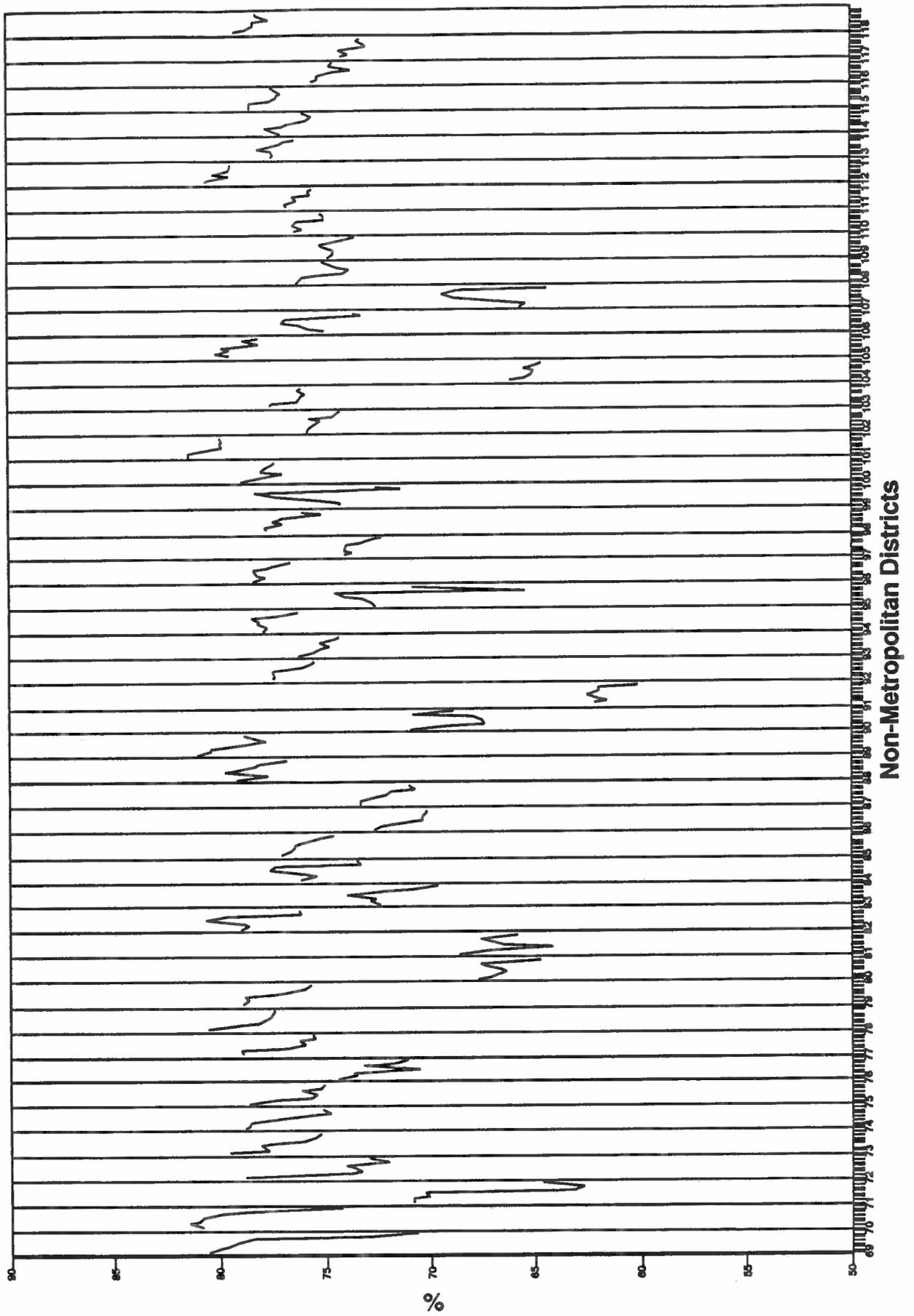
%

Figure 1.4: Ratio of Electorate to Population 1984-1990
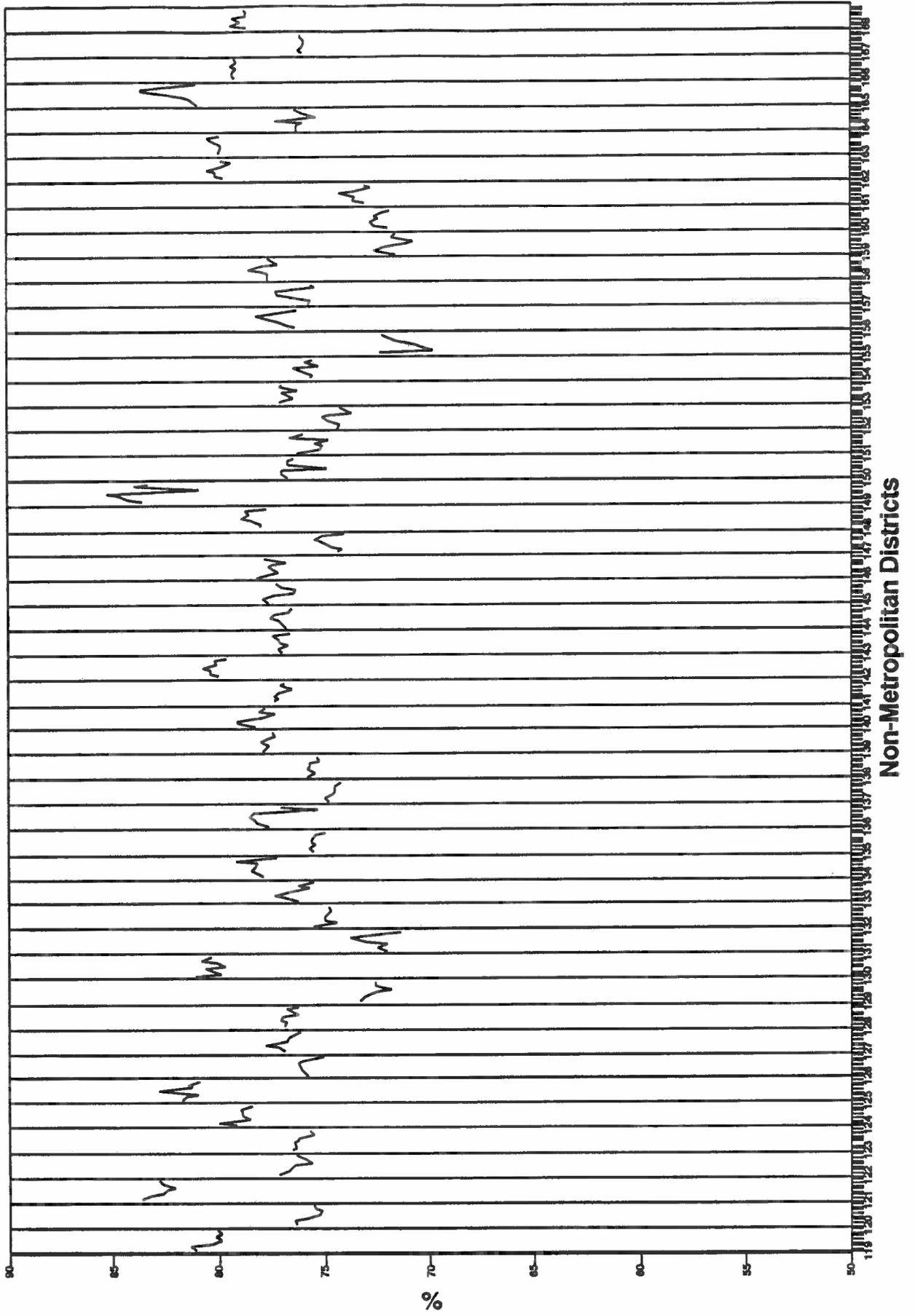
Figure 1.5: Ratio of Electorate to Population 1984-1990

%

Non-Metropolitan Districts
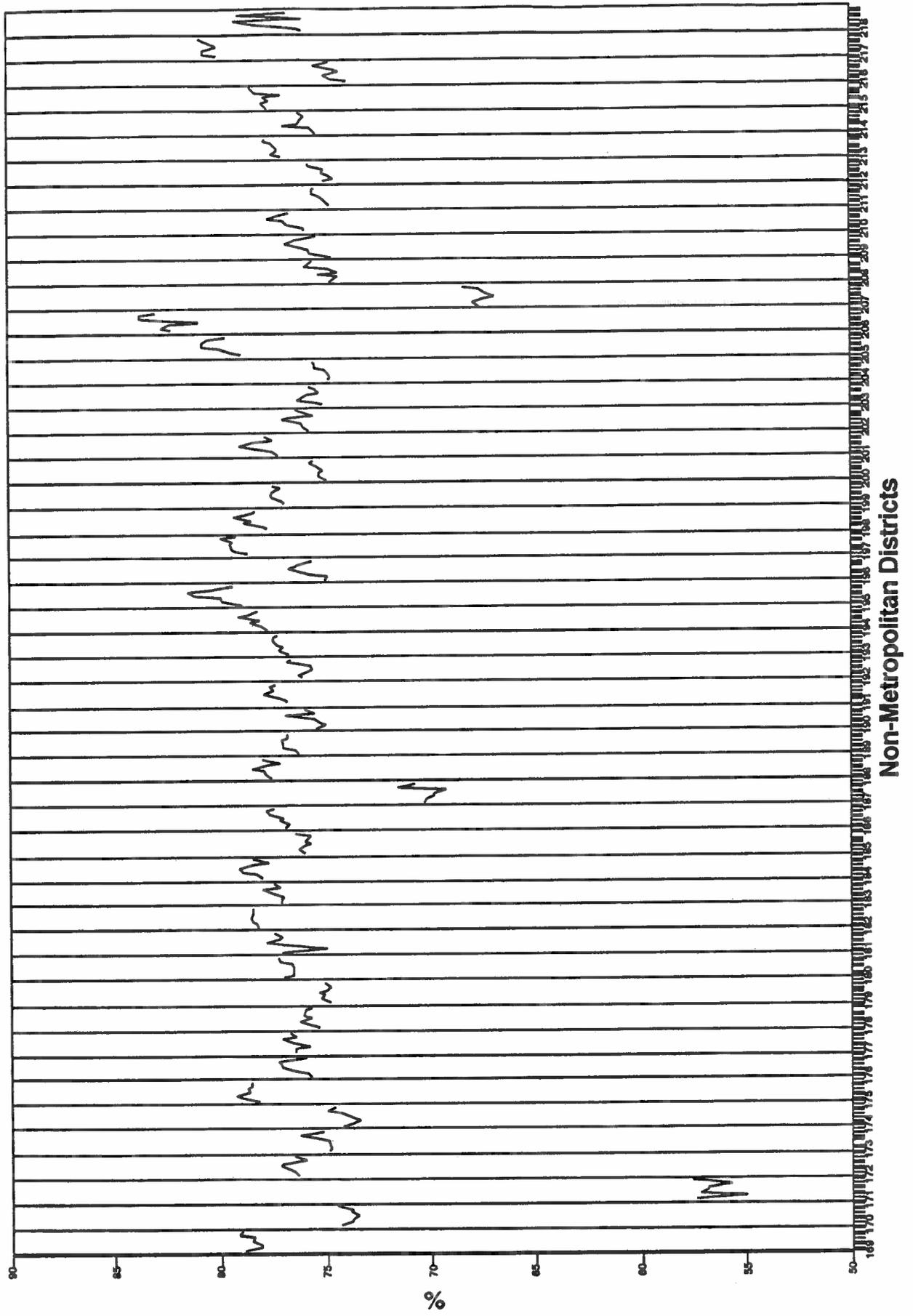
Figure 1.6: Ratio of Electorate to Population 1984-1990

%

Non-Metropolitan Districts
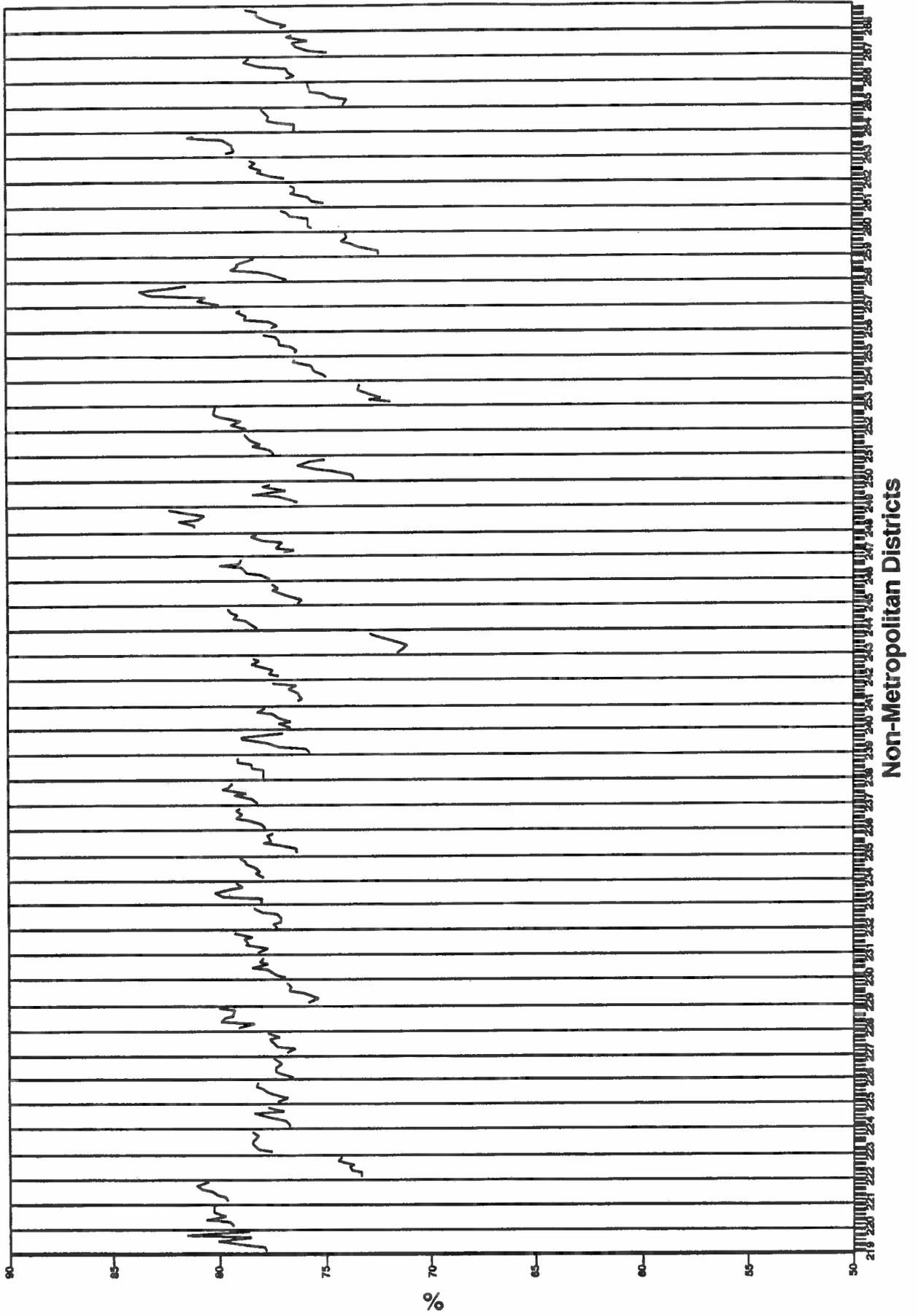
Figure 1.7: Ratio of Electorate
to Population 1984-1990

Non-Metropolitan Districts

%
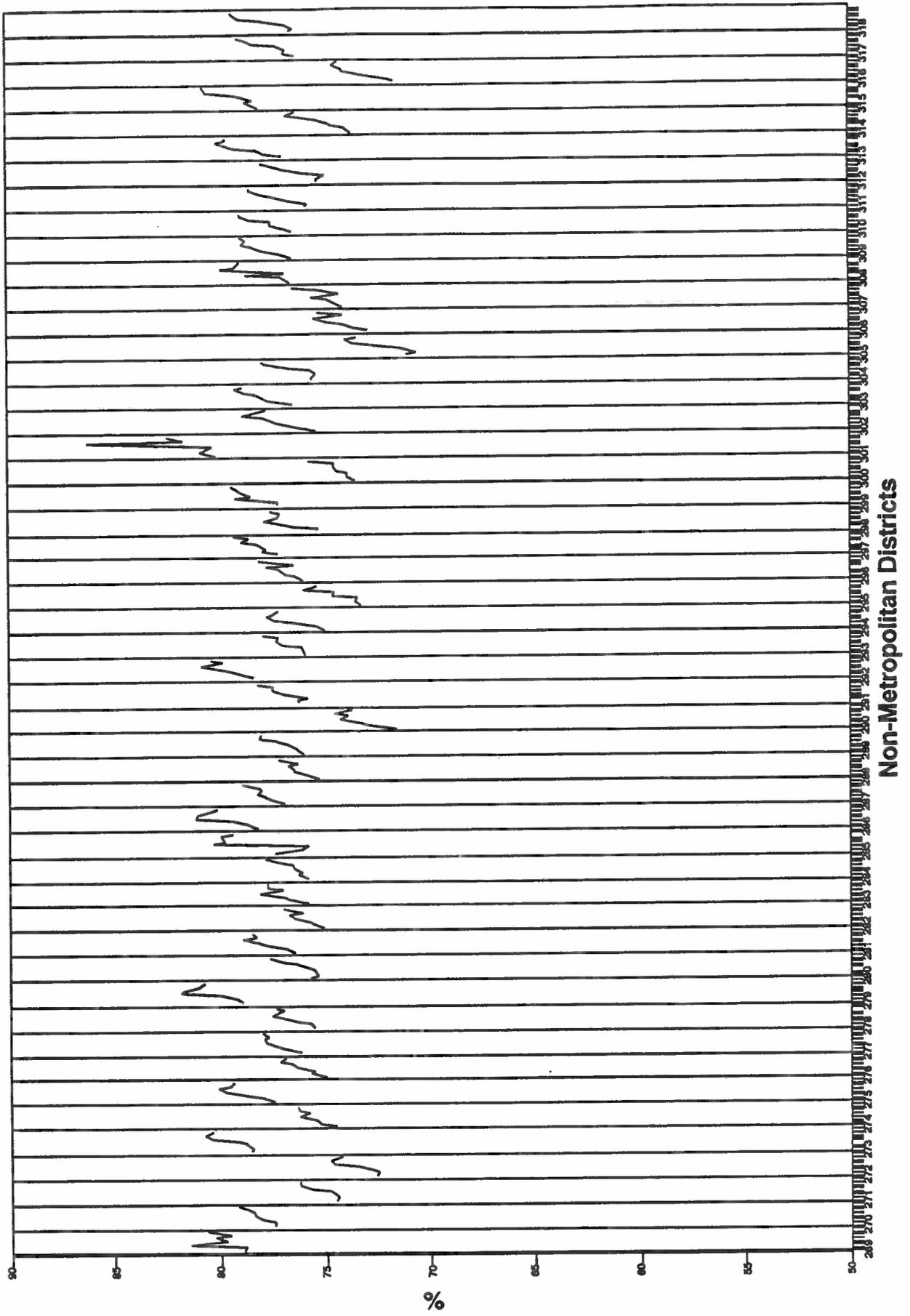
Figure 1.8: Ratio of Electorate
to Population 1984-1990

Non-Metropolitan Districts

%

Figure 2.1
Change in the Electorate

Figure 2.2
Change in Electorate

Figure 2.3
Change in the Electorate

Figure 2.4
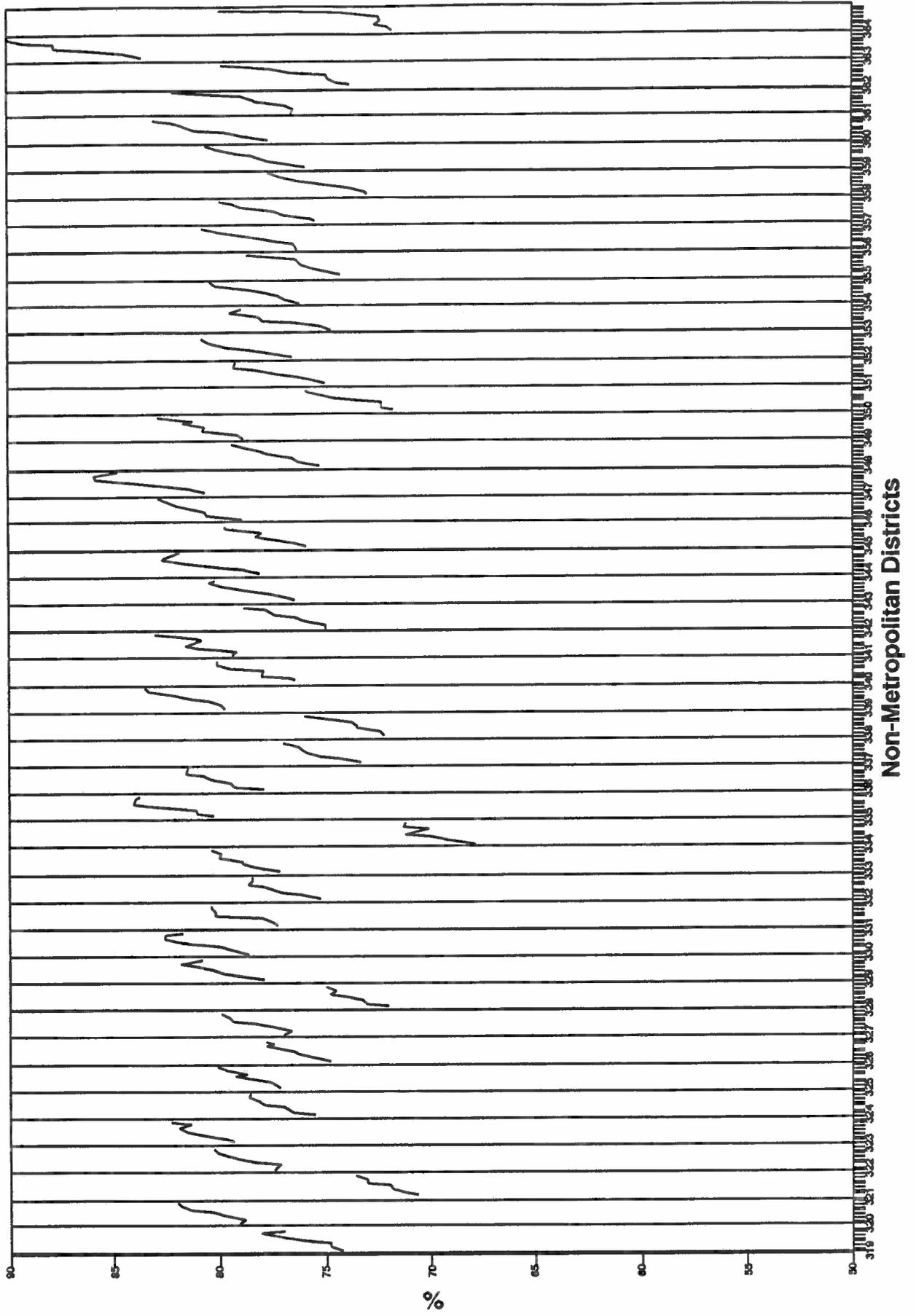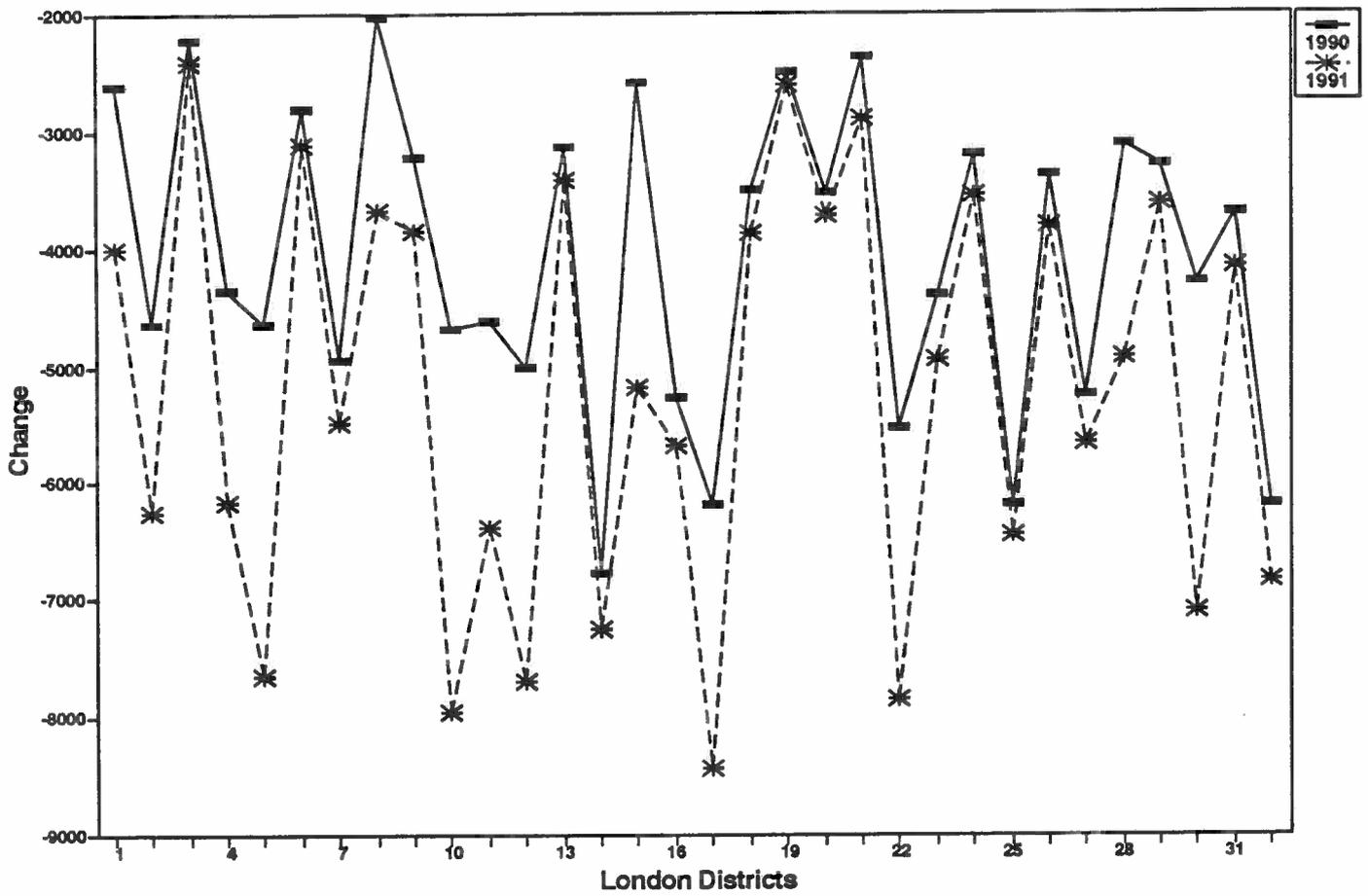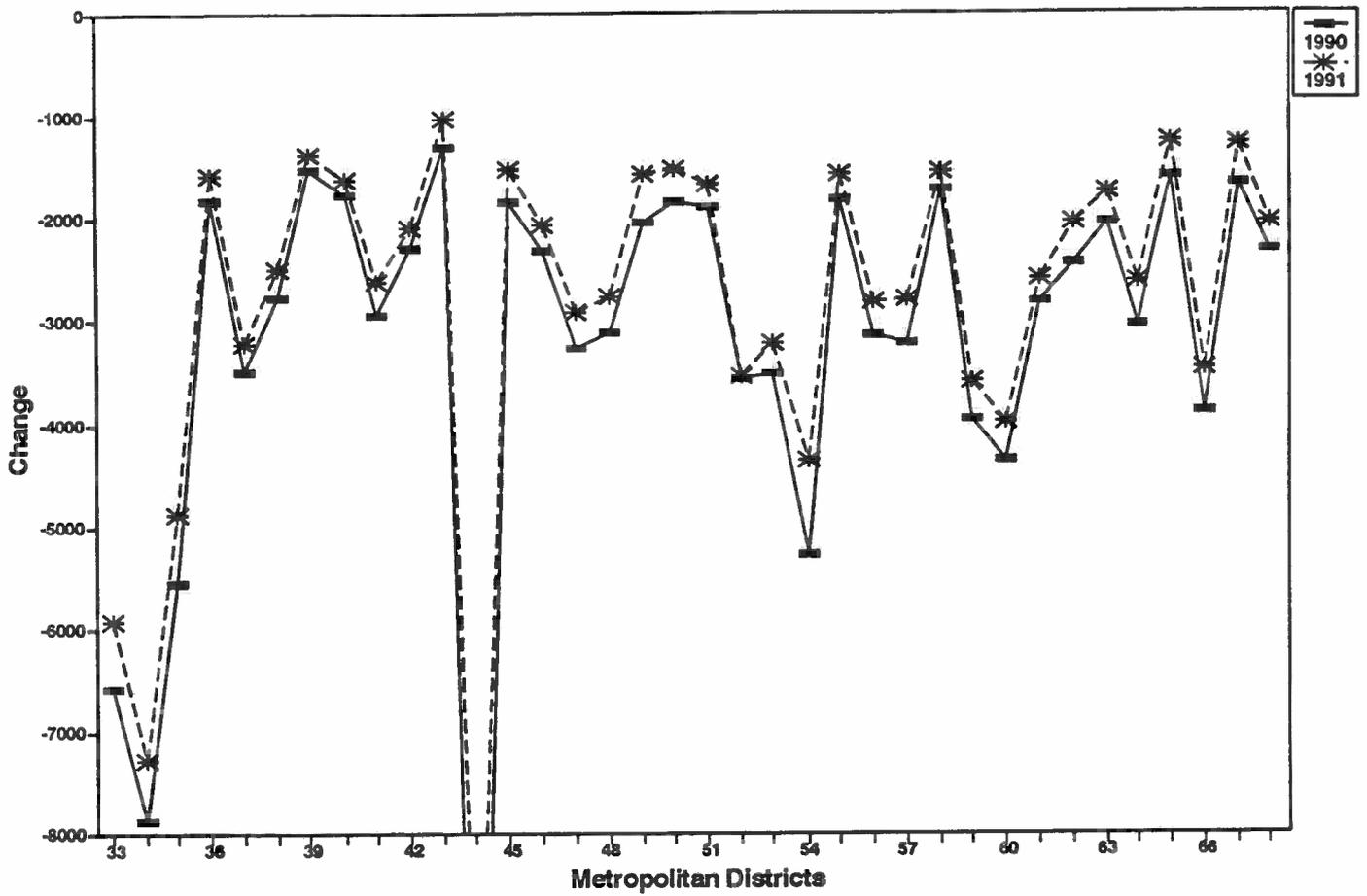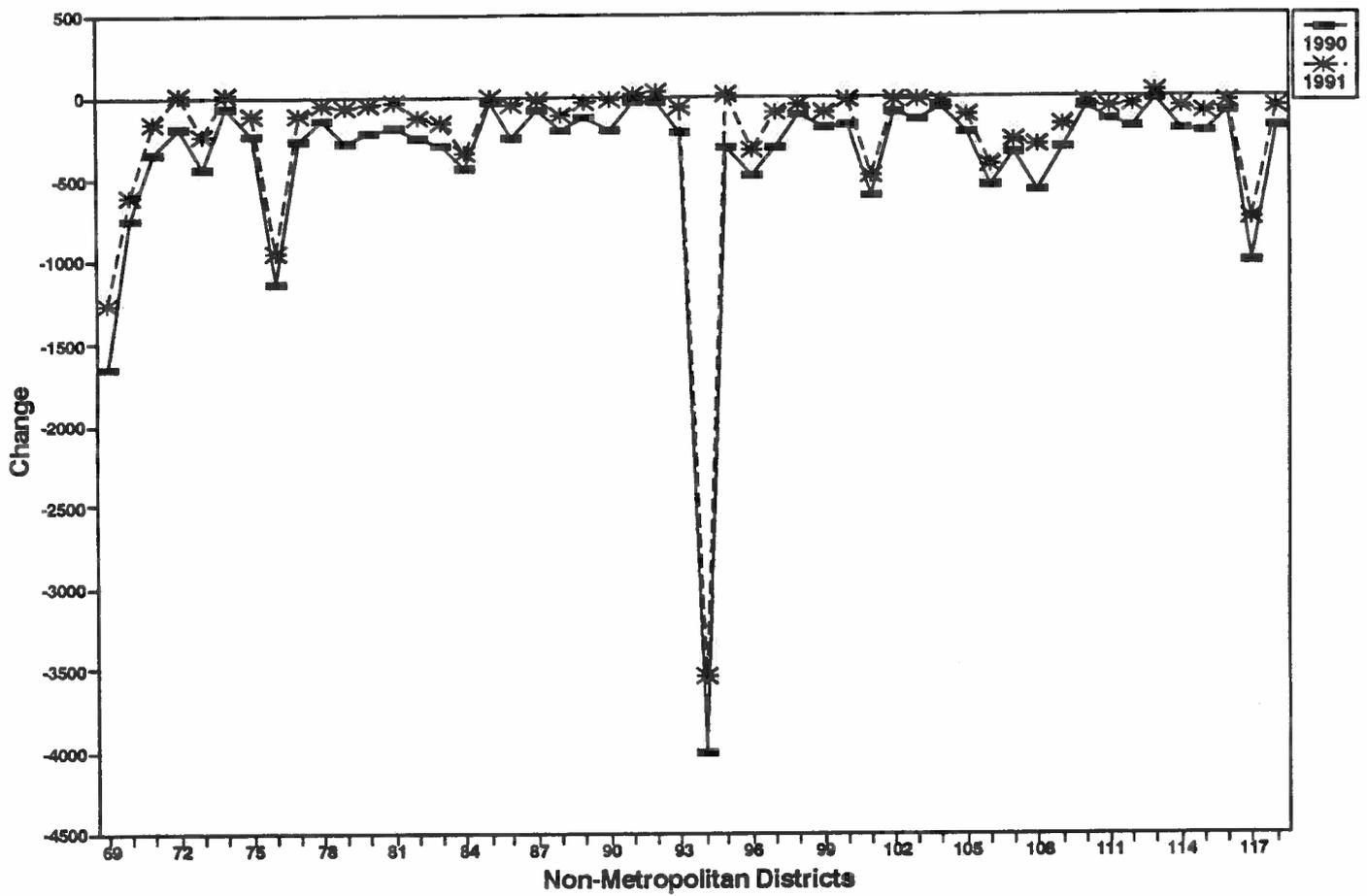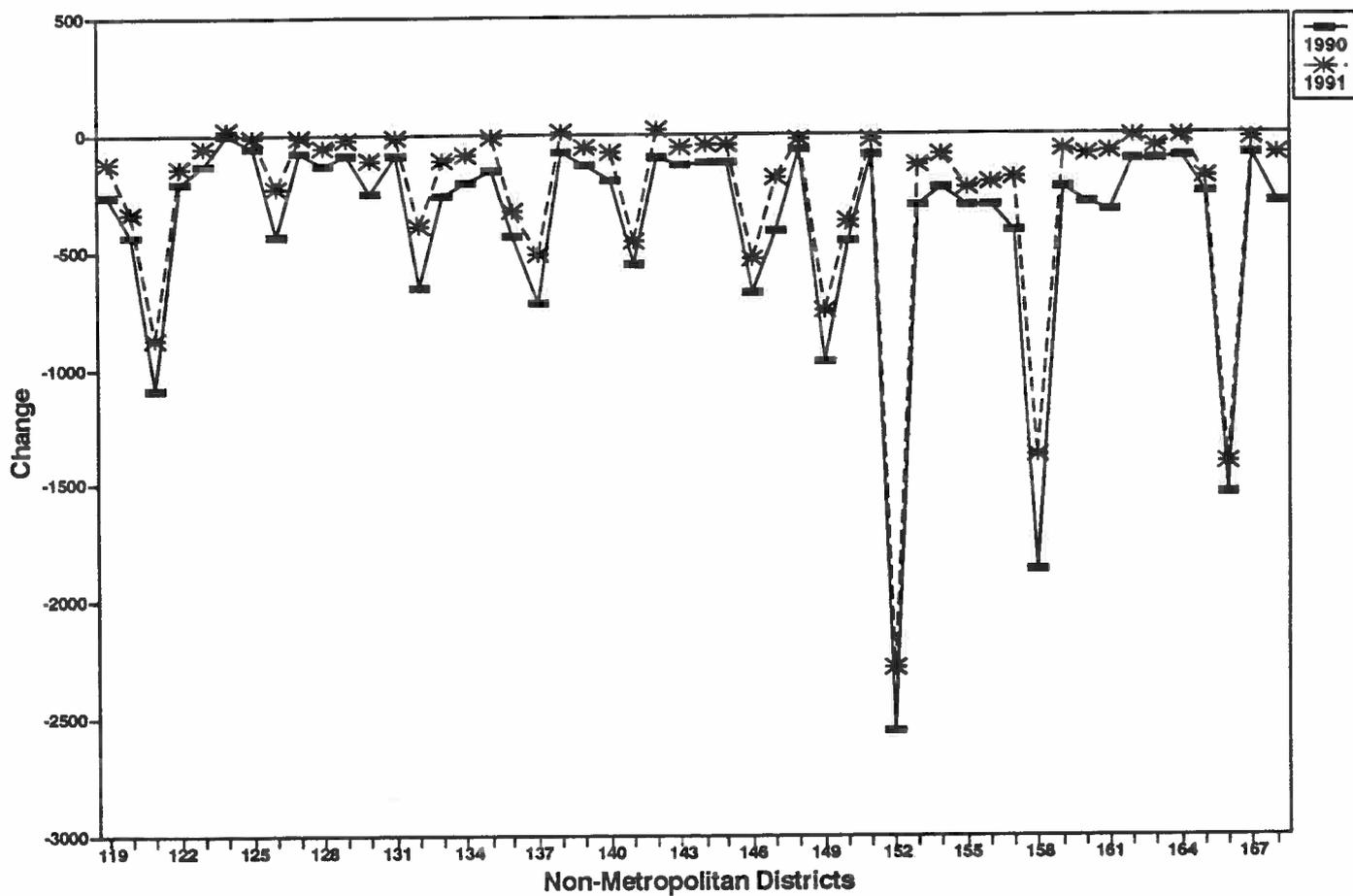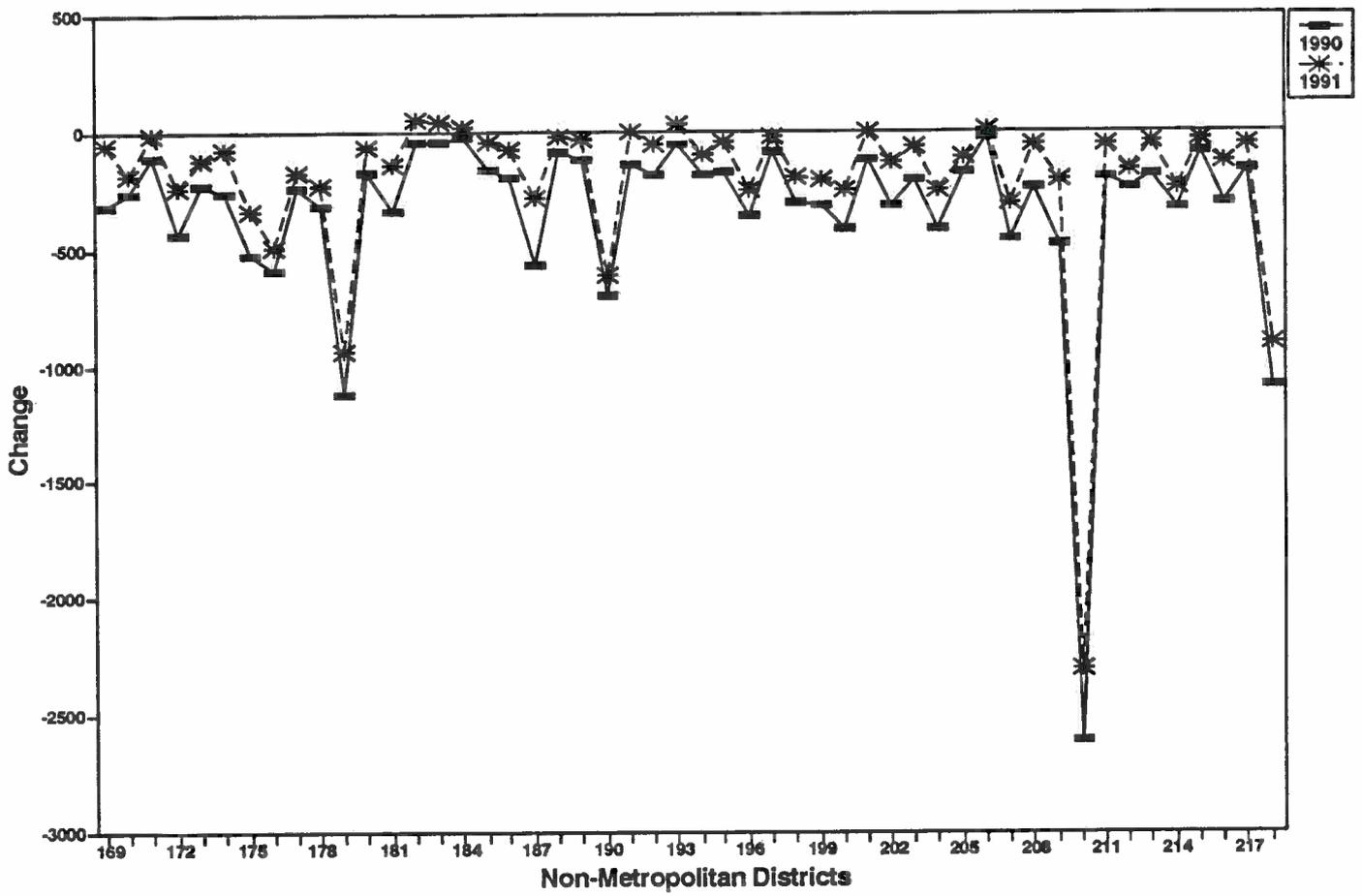## Change in the Electorate

Figure 2.5
Change in the Electorate

Figure 2.6
Change in the Electorate
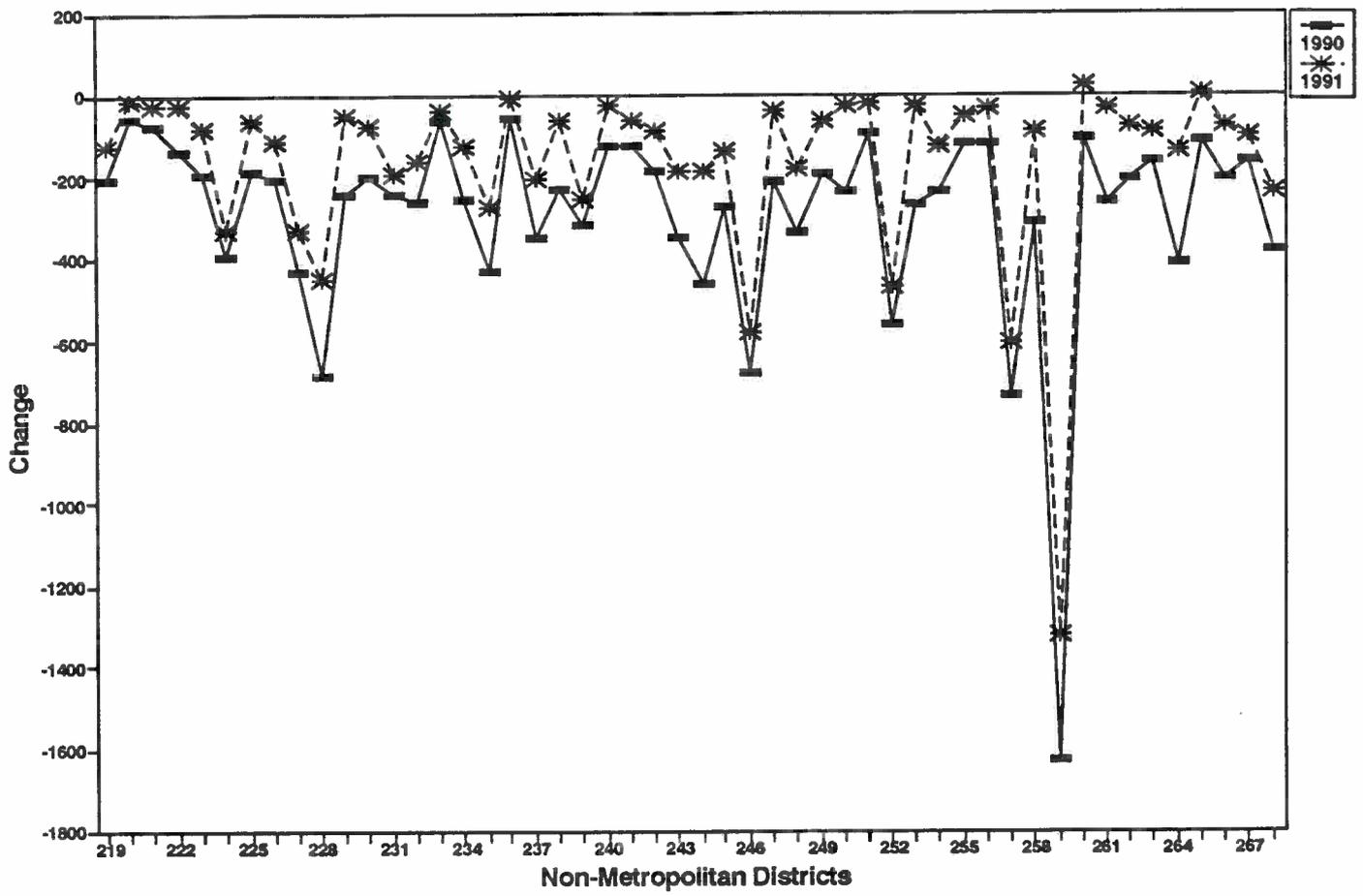
Figure 2.7
Change in the Electorate
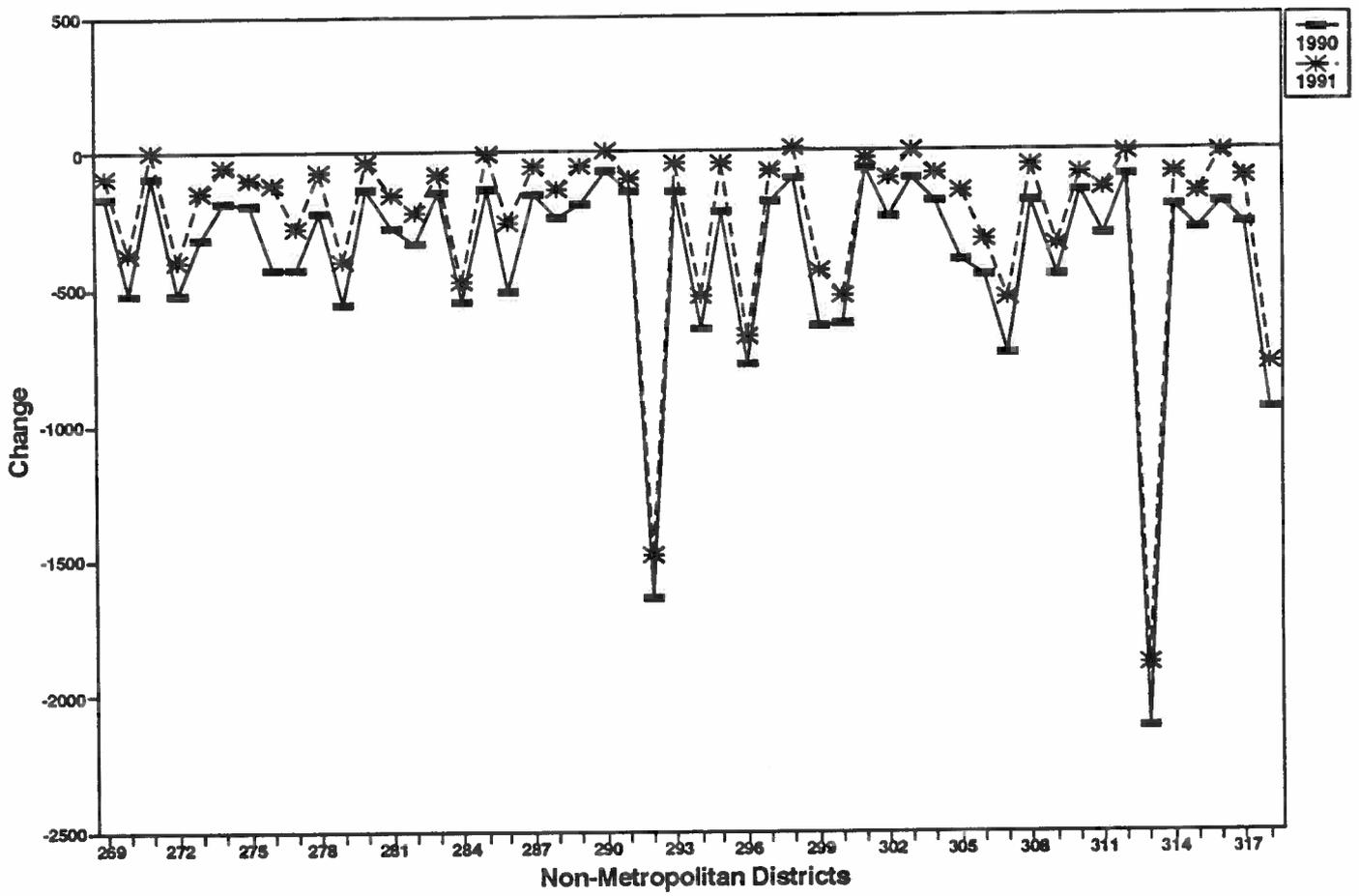
Figure 2.8
Change in the Electorate

Non-Metropolitan Districts
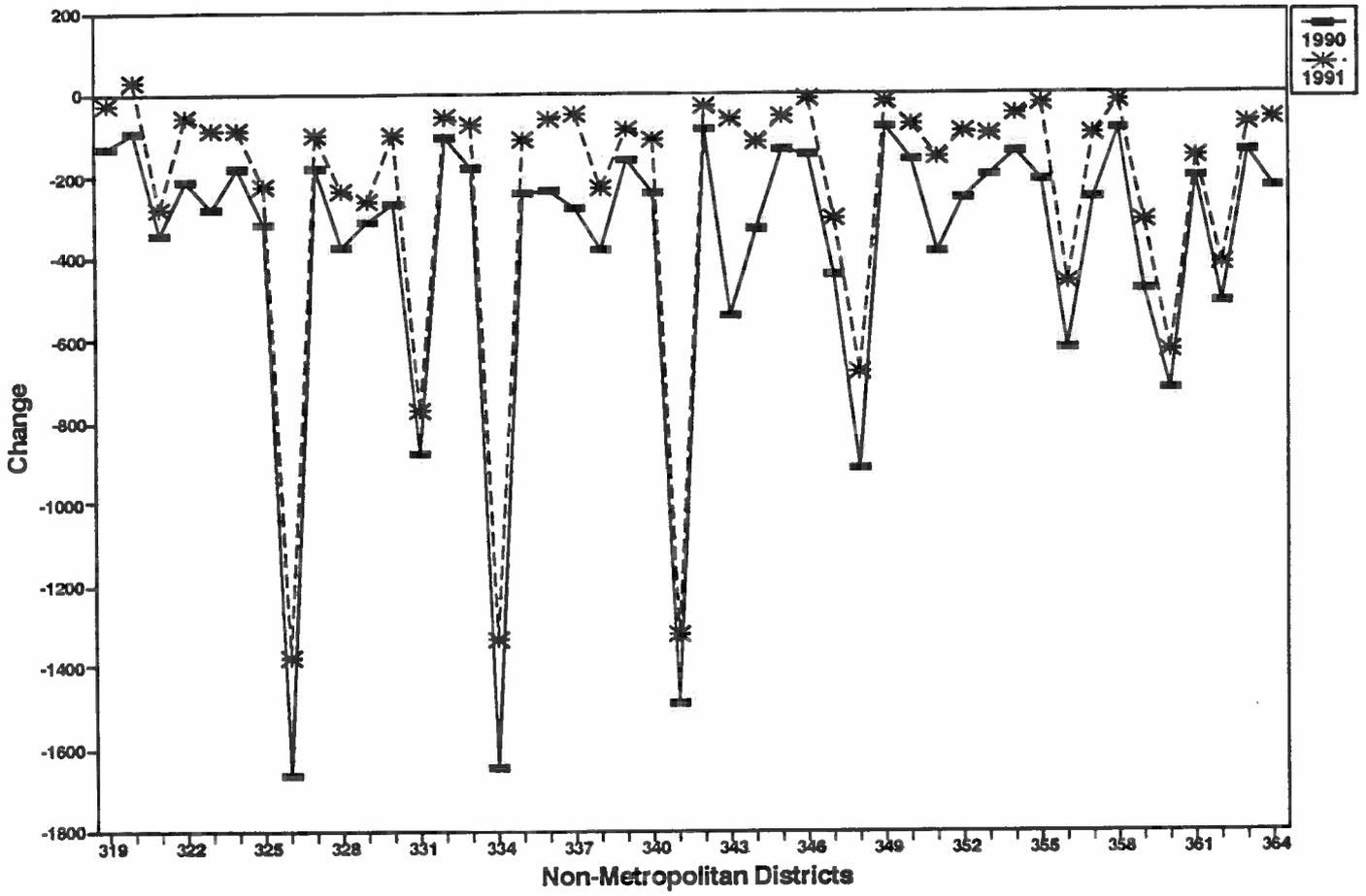
Data Appendix

The data comes from a variety of sources. The data is both cross sectional representing local authority districts of England and time series for the period 1984-1990. The districts in England comprise the 32 boroughs of Greater London,[23] the 36 metropolitan districts, and 298 non-metropolitan districts in the 39 'shire' counties, making 364 local authority districts in total.

The population data refers to mid-year population estimates for each of the local authority areas and is published in the OPCS PP1 series (various issues). The population figures for 1991 are taken from the 1991 preliminary census report. The data for the number of electors, number of attainers and the acreage figures for each authority comes from various issues of the OPCS EL 1 series at local authority level. Data is also available at the parliamentary constituency level series 2.

Unemployment data is available since 1984 from various issues of the Employment Gazette, the figures relate to total unemployed in the second week of January in each year. Poll tax contribution levels come from the CIPFA Local Government Trends report for the financial years 1990/1 and 1991/2. The expected poll tax figures are taken from "Paying for Local Government", January 1989. Local election results are available in past issues of The Times or The Guardian newspapers. The 1992 General Election results come from The Guardian newspaper, the 1987 and 1983 General Election results are in Butler and Kavanagh (1983,

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[23]The City of London is added to Westminster for the purposes of these statistics.

1987). The data on the ratio of poll-tax receipts to amount budgeted for each authority were kindly supplied by the DoE.

Appendix A: Key to numbers of Local Authorities in Figs 1 and 2

BARKING & DAGENHAM	19	BOLTON	46
BARNET	7	BURY	58
BEXLEY	24	MANCHESTER	33
BRENT	14	OLDHAM	36
BROMLEY	18	ROCHDALE	50
CAMDEN	5	SALFORD	38
CROYDEN	11	STOCKPORT	56
EALING	25	TAMESIDE	42
ENFIELD	23	TRAFFORD	55
GREENWICH	15	WIGAN	64
HACKNEY	12	KNOWSLEY	39
HAMMERSMITH & FULHAM	28	LIVERPOOL	34
HARINGEY	32	ST HELENS	45
HARROW	26	SEFTON	41
HAVERING	29	WIRRAL	52
HILLINGDON	20	BARNSLEY	67
HOUNSLOW	31	DONCASTER	49
ISLINGTON	4	ROTHERHAM	63
KENSINGTON & CHELSEA	8	SHEFFIELD	54
KINGSTON UPON THAMES	3	GATESHEAD	51
LAMBETH	30	NEWCASTLE UPON TYNE	37
LEWISHAM	22	NORTH TYNESIDE	68
MERTON	21	SOUTH TYNESIDE	40
NEWHAM	16	SUNDERLAND	48
REDBRIDGE	9	BIRMINGHAM	44
RICHMOND UPON THAMES	6	COVENTRY	59
SOUTHWARK	10	DUDLEY	66
SUTTON	13	SANDWELL	60
TOWER HAMLETS	2	SOLIHULL	65
WALTHAM FOREST	27	WALSALL	57
WANDSWORTH	17	WOLVERHAMPTON	47
CITY OF WESTMINSTER	1	BRADFORD	53

Note: Districts are listed alphabetically by category. Non-London districts are listed alphabetically within county. London boroughs are in the range 1-32, metropolitan districts in the range 33-68, and non-metropolitan districts in the range 69-364. In each of these ranges, the lower the number for a district, the more its electorate contracted between 1984 and 1990.

CALDERDALE	43	CREWE & NANTWICH	82
KIRKLEES	61	ELLESMERE PORT & NESTON	325
LEEDS	35	HALTON	300
WAKEFIELD	62	MACCLESFIELD	244
BATH	146	VALE ROYAL	245
BRISTOL	94	WARRINGTON	137
KINGSWOOD	270	HARTLEPOOL	156
NORTHAVON	161	LANGBAURGH	277
WANSDYKE	140	MIDDLESBOROUGH	179
WOODSPRING	108	STOCKTON-ON-TEES	132
NORTH BEDFORDSHIRE	160	CARADON	345
LUTON	259	CARRICK	339
MID BEDFORDSHIRE	159	KERRIER	324
SOUTH BEDFORDSHIRE	216	NORTH CORNWALL	256
BRACKNELL	71	PENWITH	98
NEWBURY	305	RESTORMEL	180
READING	218	ALLERDALE	182
SLOUGH	307	BARROW-IN-FURNESS	361
WINDSOR & MAIDENHEAD	343	CARLISLE	144
WOKINGHAM	187	COPELAND	193
AYLESBURY VALE	253	EDEN	113
SOUTH BUCKS	195	SOUTH LAKELAND	162
CHILTERN	330	AMBER VALLEY	168
MILTON KEYNES	207	BOLSOVER	201
WYCOMBE	209	CHESTERFIELD	175
CAMBRIDGE	257	DERBY	158
EAST CAMBRIDGESHIRE	151	EREWASH	172
FENLAND	215	HIGH PEAK	191
HUNTINGDONSHIRE	81	NORTH EAST DERBYSHIRE	238
PETERBOROUGH	243	SOUTH DERBYSHIRE	274
SOUTH CAMBRIDGESHIRE	295	DERBYSHIRE DALES	346
CHESTER	315	EAST DEVON	130
CONGLETON	254	EXETER	106

NORTH DEVON	139	BRAINTREE	355
PLYMOUTH	334	BRENTWOOD	320
SOUTH HAMS	78	CASTLE POINT	359
TEIGNBRIDGE	75	CHELMSFORD	276
MID DEVON	255	COLCHESTER	97
TORBAY	228	EPPING FOREST	323
TORRIDGE	236	HARLOW	360
WEST DEVON	349	MALDON	271
BOURNEMOUTH	121	ROCHFORD	322
CHRISTCHURCH	363	SOUTHEND-ON-SEA	69
EAST DORSET	263	TENDRING	79
NORTH DORSET	116	THURROCK	157
POOLE	299	UTTLESFORD	265
PURBECK	87	CHELTENHAM	252
WEST DORSET	217	COTSWOLD	185
WEYMOUTH & PORTLAND	170	FOREST OF DEAN	111
CHESTER-LE-STREET	291	GLOUCESTER	176
DARLINGTON	226	STROUD	232
DERWENTSIDE	163	TEWKESBURY	230
DURHAM	194	BASINGSTOKE & DEANE	337
EASINGTON	269	EAST HAMPSHIRE	208
SEDGEFIELD	251	EASTLEIGH	235
TEESDALE	124	FAREHAM	200
WEAR VALLEY	183	GOSPORT	362
BRIGHTON	149	HART	364
EASTBOURNE	136	HAVANT	356
HASTINGS	141	NEW FOREST	169
HOVE	70	PORTSMOUTH	326
LEWES	115	RUSHMOOR	107
ROTHER	112	SOUTHAMPTON	292
WEALDEN	77	TEST VALLEY	316
BASILDON	348	WINCHESTER	247

BROMSGROVE	340	CANTEBURY	133
HEREFORD	231	DARTFORD	281
LEONMINSTER	220	DOVER	114
MALVERN HILLS	297	GILLINGHAM	272
REDDITCH	155	GRAVESHAM	352
SOUTH HEREFORDSHIRE	127	MAIDSTONE	202
WORCESTER	150	ROCHESTER-UPON-MEDWAY	95
WYCHAVON	249	SEVENOAKS	336
WYRE FOREST	288	SHEPWAY	72
BROXBOURNE	328	SWALE	203
DACORUM	264	THANET	73
EAST HERTFORDSHIRE	250	TONBRIDGE & MALLING	302
HERTSMERE	181	TUNBRIDGE WELLS	262
NORTH HERTFORDSHIRE	261	BLACKBURN	306
ST ALBANS	147	BLACKPOOL	341
STEVENAGE	294	BURNLEY	99
THREE RIVERS	109	CHORLEY	212
WATFORD	190	FYLDE	88
WELWYN HATFIELD	237	HYNDBURN	177
BEVERLEY	105	LANCASTER	153
BOOTHFERRY	92	PENDLE	123
CLEETHORPES	310	PRESTON	120
GLANFORD	164	RIBBLE VALLEY	342
GREAT GRIMSBY	296	ROSSENDALE	241
HOLDERNESS	110	SOUTH RIBBLE	214
KINGSTON UPON HULL	313	WEST LANCASHIRE	357
EAST YORKSHIRE	74	WYRE	119
SCUNTHORPE	239	BLABY	173
MEDINA	118	CHARNWOOD	126
SOUTH WIGHT	89	HARBOROUGH	128
ASHFORD	135	HINCKLEY & BOSWORTH	154

Appendix A (cont'd)

LEICESTER	152	CASTLE MORPETH	189
MELTON	148	TYNEDALE	188
NORTH WEST LEICESTER	242	WANSBECK	205
OADBY & WIGSTON	260	CRAVEN	184
RUTLAND	104	HAMBLETON	298
BOSTON	221	HARROGATE	229
EAST LINDSEY	145	RICHMONDSHIRE	91
LINCOLN	224	RYEDALE	303
NORTH KESTEVEN	131	SCARBOROUGH	142
SOUTH HOLLAND	197	SELBY	138
SOUTH KESTEVEN	240	YORK	246
WEST LINDSEY	312	ASHFIELD	199
BRECKLAND	304	BASSETLAW	293
BROADLAND	134	BROXETOW	96
GREAT YARMOUTH	122	GEDLING	268
NORTH NORFOLK	103	MANSFIELD	227
NORWICH	331	NEWARK & SHERWOOD	289
SOUTH NORFOLK	333	NOTTINGHAM	210
KINGS LYNN & WEST NORFOLK	192	RUSHCLIFFE	93
CORBY	283	CHERWELL	80
DAVENTRY	102	OXFORD	76
EAST NORTHAMPTONSHIRE	167	SOUTH OXFORDSHIRE	351
KETTERING	143	VALE OF WHITE HORSE	174
NORTHAMPTON	117	WEST OXFORDSHIRE	90
SOUTH NORTHAMPTONSHIRE	319	BRIDGNORTH	358
WELLINGBOROUGH	260	NORTH SHROPSHIRE	129
ALNWICK	85	OSWESTRY	233
BERWICK-UPON-TWEED	206	SHREWSBURY & ATCHAM	327
BLYTH VALLEY	282	SOUTH SHROPSHIRE	301

THE WREKIN	338	MOLE VALLEY	335
MENDIP	353	REIGATE & BANSTEAD	286
SEDGEMOOR	225	RUNNEYMEDE	219
TAUNTON DEANE	186	SPELTHORNE	347
WEST SOMERSET	125	SURREY HEATH	83
SOUTH SOMERSET	311	TANDRIDGE	275
CANNOCK CHASE	178	WAVERLEY	344
EAST STAFFORDSHIRE	223	WOKING	196
LICHFIELD	314	NORTH WARWICKSHIRE	332
NEWCASTLE-UNDER-LYME	198	NUNEATON & BEDWORTH	284
SOUTH STAFFORDSHIRE	211	RUGBY	267
STAFFORD	278	STRATFORD-UPON-AVON	266
STAFFORDSHIRE MOORLANDS	287	WARWICK	273
STOKE-ON-TRENT	166	ADUR	165
TAMWORTH	321	ARUN	248
BABERGH	354	CHICHESTER	100
FOREST HEATH	171	CRAWLEY	309
IPSWICH	318	HORSHAM	213
MID SUFFOLK	280	MID SUSSEX	317
ST EDUNDSBURY	350	WORTHING	101
SUFFOLK COASTAL	86	KENNET	290
WAVENEY	234	NORTH WILTSHIRE	222
ELMBRIDGE	279	SALISBURY	285
EPSOM AND EWELL	84	THAMESDOWN	204
GUILFORD	258	WEST WILTSHIRE	308

Table B2: Determining Electoral Variations
Dependent Variable: ln(*elect*)

Variable	Coefficient	Standard Error	t-ratio
ln(*pop*)	0.6175	0.0214	28.83
Inn∗ln(*Pop*)	0.3533	0.1518	2.327
Out∗ln(*Pop*)	−0.4352	0.1277	−3.409
Met∗ln(*Pop*)	0.7683	0.1060	7.249
ln(*attain*)	0.0024	0.0021	1.125
Inn∗E_{89}*Poll90*	5.9558	2.0101	2.963
Out∗E_{89}*Poll90*	−5.6339	1.4652	−3.845
Met∗E_{89}*Poll90*	−5.1411	0.9130	−5.631
Inn∗*Poll90*	4.1816	1.9532	2.141
Out∗*Poll90*	−12.328	3.6322	−3.395
Met∗*Poll90*	−3.7734	0.6756	−5.585
Δ*Poll90*	4.1850	1.5871	2.638
Inn∗Δ*Poll*	14.327	3.6052	3.975
Out∗Δ*Poll*	22.152	0.9609	2.305
Dens∗E_{89}*Poll90*	−0.1683	0.0239	−7.052
Dens∗*Poll90*	−0.1497	0.0182	−8.232
ln(*Unemp*)	−0.0055	0.0017	−3.198
Dens	−0.4220	0.1646	−2.564
Labour	1.3715	1.0224	1.342
Conservative	3.5055	0.8882	3.947
Liberal	2.9850	0.9773	3.054
1986	0.5895	0.0874	6.742
1987	1.0477	0.0956	10.96
1988	1.1441	0.1073	10.67
1989	1.5725	0.1669	9.421
1990	1.2368	0.2605	4.748

Appendix B (cont'd)

Table B2: Marginal Seats and the Electoral Shortfall 1989-1991

Seat	% of L.A.	Cons. Majority	Fall in Elector	% Labour
Edmonton	0.32	593	2428	24.4
Eltham	0.33	1666	1884	88.4
Hayes	0.33	53	1442	3.68
Brentford	0.47	2086	2298	90.8
Mitcham	0.50	1734	1579	-
Bolton W.	0.37	1079	1284	84.0
Bolton N.E.	0.30	185	1058	17.5
Bury S.	0.49	788	1252	62.9
Tynemouth	0.49	597	1760	33.9
Cov'try S.W.	0.28	1436	1779	80.7
Batley	0.26	1408	1141	-
Bristol N.W.	0.27	45	1250	3.60
Slough	1.00	514	909	56.5
Portsmouth S	0.49	242	1164	20.8
Norwich N.	0.50	266	471	56.5
Corby	1.00	342	-80	-

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