

# Accountability and Political Competition: Theory and Evidence\*

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## 1 Introduction

One of the central issues in political economy concerns how to create a form of government that responds to voters needs. The preconditions for achieving this are widely debated. Recent interest has focused on various institutions such as the media or citizens' initiatives in calling the government to account.

The traditional Public Choice view is that government rarely serves the public interest and that a variety of checks and balances are necessary to have a well-functioning polity. This view reached its apotheosis in the Leviathan formulation of government motives in Brennan and Buchanan (1980). However, more modern incarnations of this view place agency problems at centre stage following on from the seminal contributions of Barro (1970) and Ferejohn (1986). The standard setting is a model where an incumbent can commit effort to produce better performance on a valence issue. Voters cannot observe the actions and must infer the amount of effort put in and/or the incumbent's type from the observable outcomes.

This paper focuses on the role of political competition as a device for enhancing accountability. The standard model of political agency pays little attention to some of the structural factors that shape the effort making

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decisions of incumbents. The typical set up is one of single voter whose action decisively can change the control of government between an incumbent and a challenger. For many theoretical purposes, this formulation is fine. Moreover, the model has a certain amount of plausibility when applied to Gubernatorial elections in the U.S. where the framework fits the institutional setting quite well.

However, in many contexts, the executive is either not directly elected and/or legislatures play an important role in policy making. In legislative elections, it is well-known that a uniform swing of votes to the ruling coalition may translate rather differently into seats depending on the way in which districts are drawn. Indeed, the mapping that relates votes to seats has been the subject of a voluminous empirical in Political Science — see, for example, King and Browning (1987). A key notion that can be formalized in this literature is that of “incumbency bias”. We illustrate how such bias blunts incumbents incentives to put in effort. Moreover, we argue that such bias is a good way of thinking about how competitive the jurisdiction in question is.

There is a view, perhaps most famously articulated by Key (1949) that parties are likely to be most effective as a representative mechanism when they are in a truly competitive environment. There is no unanimously agreed method of measuring this. Authors have variously used differences in seat or vote shares at the last election as a means of quantifying the extent of competition between the parties. The important link, in Key’s accounts, is between the degree of competition and the probability that certain groups turn out to vote. The general consequence is that parties will redistribute more to the poor in more competitive states. He writes: “In the two-party states the anxiety over the next election pushes political leaders into serving the interests of the have-less elements of society,” (Key (1949), page 307.)

The most common measure of competition used in the U.S. political science literature is the Ranney index. This is generated by averaging together the proportion of seats won by Democrats in the state House and Senate elections along with the Democratic percentage in the gubernatorial election and the percentage of time that the Governorship and the state legislature were controlled by the Democratic party. This is readily computed using state level data. The measure that we use here is more limited, being based only on the share of seats held by each party in the upper and lower houses of the state legislature. Other measures can be based on more disaggregated data such as that used by Holbrook and van Dunk (1993) which uses dis-

trict level data, in particular the percentage of the vote won by the winning candidate and the winning candidate's margin of victory in each district.<sup>1</sup>

The empirical application that we use is to English local government. This are three main reasons. First, the theory applies most clearly to valence issues rather than those that are transfers to particular groups. Since 1992, the Audit Commission has set up a system of comparable measures of performance of English local authorities, many of which are arguably essentially efficiency measures and hence qualify as valence issues. Second, the theory applies well when the effort in question cannot be targeted to a particular sub-set of districts within the jurisdictions and the measures that we have are of that kind. Third, the model requires district-by-district data on each jurisdiction and we have an extremely detailed data set for all 364 local authorities in England that gives votes cast for every candidate in every seat which can be used to estimate detailed measures of the state of political competition within each authority.

The general intellectual context for this paper is a growing recognition of the relevance of political agency models in explaining incumbent behavior. Besley and Case (1995a,b) use this approach to explain taxing and spending decisions of incumbent governors in the United States. Besley and Burgess (2002) uses this approach to study how politicians respond to shocks in India under the spotlight of the media. They observe that state governments where the difference in the seats held by the two major parties is smallest also appear to have more responsive governments.

The remainder of the paper is organized as follows. The next section outlines the empirical context of the paper and the policy experiment that is being studied. In section three, we lay out a model which motivates the empirical analysis that follows. Section four introduces the data and the empirical methods. Section five presents the results and section six concludes.

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<sup>1</sup>Rogers and Rogers (1999) find that political competition measured by the distance between the parties in the legislature exercises an influence on the growth of government. Besley and Case (2002) show that party competition measured in this way is correlated with a variety of outcome measures in the United States.

## 2 Background

Our data come from the 364 District Councils in England for the period 1973-98.<sup>2</sup> These are charged with responsibility for provision of a variety of local public services. In all parts of England, they deal with public housing, local planning and development applications, leisure and recreation facilities, waste collection, environmental health and revenue collection. Councillors are elected to serve on District Councils on a geographical basis. The basic geographical unit is a *ward*, generally returning between one and three council members, and usually three. Ward boundaries are determined by a politically independent commission which carries out electoral reviews in each local government area at periodic intervals.<sup>3</sup> In all types of authority, elections are on a first-past-the-post basis, returning the candidates with most votes, irrespective of whether or not any gain an absolute majority.

The taxing authority of District Councils is limited with only around 25% of finance being raised locally. Until 1990, locally-raised revenue consisted of property taxes on residents and businesses known as “rates”. In 1990, the local tax on domestic property was abolished and replaced with a flat payment known as the community charge (informally known as the “poll tax”). This reform lasted only for three years after which a revised form of domestic property taxation was reintroduced under the name of “council

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<sup>2</sup>The system is somewhat complex involving a mixture of single and two tier authorities. There is a single tier of government in London and other metropolitan areas since 1988. Since 1995, there has been a move towards a single tier system throughout England via the creation of shire authorities. However, London and metropolitan areas before 1988 and all shire (rural) areas before 1995 and most of them since responsibilities are split between two levels - a higher level county council and a lower level district council. Where such a split exists the current allocation of functions is roughly as follows. District councils deal with public housing, local planning and development applications, leisure and recreation facilities, waste collection, environmental health and revenue collection. County councils deal with education, strategic planning, transport, highways, fire services, social services, public libraries and waste disposal. Where there is a single tier it typically covers all of these functions (although in London and metropolitan areas transport, fire and waste disposal are handled by joint bodies). In 1990, the break down is 12 inner London boroughs, 20 outer London boroughs, 26 metropolitan districts and 296 shire districts.

<sup>3</sup>Electoral cycles vary depending on type of authority. County councils and London boroughs elect all members at a single election every four years. Metropolitan districts elect by thirds, returning a third of their members on a rotating basis in each of three out of four years. Shire districts, whether unitary or not, have a choice to opt for either system and changes between the two systems are permitted.

tax.”. Taxation of local business property was retained but responsibility for setting the rate of tax was assumed by central government in 1990. Responsibility for the finance of local government became increasingly centralized over the period with a diminishing share of income being met from local revenue sources. Currently only about a quarter of income is covered by taxes on local residents and a further quarter by the nationally set tax on local businesses. The remainder is covered by grants from central government. At the margin however spending is financed entirely from council tax with the consequence that there is a high gearing ratio with a spending increase of 1% leading to about a 4% increase in local taxes.

There is a long history of suspicion about the lack of accountability of local government, a factor that probably explains the degree of centralization in the system that prevails. Over much of the period, particularly through the middle of the 1990s, central government adopted and used powers to cap expenditure of high spending local authorities, the view being that profligate local authorities were inclined to spend excessively on projects of little value to their residents.

As part of an effort to improve local government accountability, central government has also established a monitoring and evaluation scheme that tries to provide information about performance to voters. Prior to 1982 local authorities were required to audit accounts but were free to do so through private accountants or the District Auditor. In 1982 the government established a single independent body, known as the Audit Commission, with responsibility for appointing auditors for local accounts and examining the overall management of local government. The Audit Commission is self-financing, deriving its income largely from fees charged for its audit work.

The scope of the audit commissions activities was significant expanded under the Local Government Act of 1992 (later updated by the Audit Commission Act of 1998) since when the Audit Commission has been required to direct local authorities to publish comparative indicators of performance annually. Between 1993/4 and 1999/2000 these indicators were specified by the Audit Commission itself but are now set by government statute.

### **3 Theoretical Preliminaries**

We are interested in understanding the incentives for an incumbent politician to put in effort that is valuable to votes and how this depends on the

votes/seats relationship. We have in mind in a multi-period model in which each period an incumbent (best thought of as a ruling party) is elected. During its period of incumbency, it can choose how much effort to expend on a variety of activities which voters value. It then faces a fresh electoral contest after which power may switch to an opposition.

The model applies to only a single sub-period of this process. Hence, we begin with an incumbent in office who must choose how much effort to expend. A key feature of the model is the observation that the incumbent cares about seats in the legislature rather than votes per se. This is clearly a simplification, but a reasonable place to start. Thus, we have in mind a jurisdiction that is carved up into sub-units each of which returns a representative to a legislature which then makes policy.

The kind of efforts that we are interested in modeling are those that cannot be targeted to specific sub-unit.<sup>4</sup> These can however generate a general level of support for the incumbent which then maps into control of seats. It is well known (see, for example, King and Browning (1987)) that, in first pass the post systems, the relationship between seats and votes may be non-linear. Moreover, the pattern of districting and the distribution of a party's support across districts can greatly affect the pattern of control. It is clear, for example, that a party need (in theory) win only 25% of the vote (half the vote in half the seats) in order to control a legislature completely. To the extent that support for a party is not uniform, there is the possibility of bias in the mapping from votes into seats. Below, we will show that this has an effect on incentives of incumbents to put in effort. Specifically, an incumbent who faces a large bias in his favor will face a lower marginal value of effort.

There are two key relationships that need to be studied to understand incumbent effort. The first is the mapping from effort into vote share. For reasons that will become apparent below we work throughout with  $v = \log(\text{vote share of incumbent}/\text{vote share for opposition})$  as our variable of interest. This is distributed on  $(-\infty, \infty)$ . Let  $e$  denote incumbent effort (possibly a vector) and let the distribution function of  $v$  be:

$$F(v : e).$$

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<sup>4</sup>See Perrson and Tabellini (2000) for discussion of models where local public goods and transfers can be focused on particular jurisdictions.

We suppose that  $F_e(v; e) \leq 0$  for all kinds of effort. Thus, effort is (weakly) productive of vote share. There are, however, reasons why this may only be weak. For example, ideological disagreements between the parties may be so strong that incumbent effort is not really an issue when votes cast their votes.

The second relationship is that between seats and votes. Again, it is convenient to work in terms of  $s = \log(\text{seat share of incumbent} / \text{seat share of opposition})$ . We represent the distribution function of this relationship by:

$$G(s : v).$$

Again, it is natural to suppose that  $G_v(s : v) \leq 0$ . The fact that this relationship is stochastic represents the possibility that the exact distribution of his/her support across the districts is not certain, say due to changes in electoral roles and even redistricting.

Throughout, we assume a specific form for the vote/seats relationship motivated by the empirical approach of King and Browning (1987). This is represented by:

$$s = \alpha + \beta v + \varepsilon.$$

They observe that the parameter  $\alpha$  is a measure of bias towards the incumbent with  $\alpha > 0$  being a case where the incumbent is advantaged. The parameter  $\beta$  is a measure of how close to proportionality the system is. Pure proportional representation is where  $\beta = 1$ . In general, the value of  $\beta$  depends on the distribution of votes across seats within districts, in particular the pattern of marginality. If  $\beta > 1$ , then seats are more than responsive to votes which is like a case where there are lots of marginal districts and vice versa if  $\beta < 1$ .

Let  $h(\cdot)$  be the density of  $\varepsilon$ , then

$$g(s : v) = h(s - (\alpha + \beta v)).$$

We make:

**Assumption 1:** *The function  $h(\cdot)$  is symmetric around 0 and unimodal with  $h(\infty) = h(-\infty) = 0$ .*

We assume that the incumbent who choose effort cares about their seat share and represent their payoff function by  $W(s)$ . We actually work with a particular structure on this which represents the fact that if  $s > 0$ , then the incumbent holds a majority and can implement his preferred outcome. If  $s < 0$ , we suppose that there is some declining influence and that below a threshold of  $\underline{s}$ , we suppose that he has no influence and hence gains a payoff normalized at zero. Thus,

**Assumption 2:** *The payoff function over seats is given by*

$$W(s) = \begin{cases} \Delta & \text{if } s \geq 0 \\ 0 \leq \phi(s) \leq \Delta & \text{if } s \in (\underline{s}, 0) \\ 0 & \text{if } s \leq \underline{s}, \end{cases}$$

where  $\phi(\cdot)$  is increasing and concave. Using this, it is now straightforward to write down the payoff function for a given log vote ratio  $v$ . Let

$$w(\alpha + \beta v) = \int_{\underline{s}}^0 \phi(s) h(s - (\alpha + \beta v)) ds + [1 - H(-(\alpha + \beta v))] \Delta$$

be the expected payoff for a given level of  $v$ . It is easy to check that this is an increasing and concave function of  $v$  for all  $\alpha \geq 0$  under assumption 1.

### 3.1 Deterministic Votes

To fix ideas, let us begin by assuming that there is a cost of delivering votes  $C(v)$  which is twice differentiable, increasing and convex – this is equivalent to a model where effort maps non-stochastically into vote share. This model will allow us to see the role of vote/seat bias in inducing effort. The next section will generalize this to allow for bias in the vote share and model with multiple efforts that map stochastically into higher votes.

The optimal level of effort is now characterized by:

$$v^* = \arg \max_{v \geq 0} \{w(\alpha + \beta v) - C(v)\}.$$

For cases where bias favors the incumbent, we have:



**Proposition 1** Suppose that  $\alpha > 0$ , then there are two possibilities:

- (i) If  $h(\underline{s} - \alpha) \phi(\underline{s}) \beta + \int_{\underline{s}}^0 \phi'(s) h(s - \alpha) ds - C'(0) < 0$ , then there is a corner solution with  $v = 0$ .
- (ii) If  $h(\underline{s} - \alpha) \phi(\underline{s}) \beta + \int_{\underline{s}}^0 \phi'(s) h(s - \alpha) ds - C'(0) > 0$ , then  $v^*$  satisfies

$$h(\underline{s} - \alpha - \beta v^*) \phi(\underline{s}) \beta + \int_{\underline{s}}^0 \phi'(s) h(s - \alpha - \beta v^*) ds = C'(v^*).$$

Moreover, at an interior solution, incumbent effort is decreasing in pro-incumbent bias as measured by  $\alpha$ .

**Proof.** It is easy to check that the condition in (i) is for the function to be decreasing at  $v = 0$ . At an interior solution, it is easy to check that

$$\frac{\partial v}{\partial \alpha} = \frac{-\beta \left[ h'(\underline{s} - \alpha - \beta v^*) \phi(\underline{s}) + \int_{\underline{s}}^0 \phi'(s) h'(s - \alpha - \beta v^*) ds \right]}{\beta^2 \left[ h'(\underline{s} - \alpha - \beta v^*) \phi(\underline{s}) + \int_{\underline{s}}^0 \phi'(s) h'(s - \alpha - \beta v^*) ds \right] + C''(v)} < 0.$$

using the fact that  $h'(x) > 0$  for all  $x \geq 0$ . ■

If there is too much pro-incumbent bias, then he puts no effort into securing extra votes. However, if bias is sufficiently small, then earning votes is worthwhile.

It is easy to check that there is no clear-cut theoretical prediction of the effect of changing  $\beta$  on  $v$ . There are two competing effects going in different directions. First, a higher  $\beta$  raises the marginal return to committing effort suggesting that a majoritarian system should enhance effort. However, since  $h(\cdot)$  is increasing in the range in which the payoff function is well behaved, the marginal effect may also fall as  $\beta$  rises since density is lower for fixed  $v$ .

### 3.2 A Stochastic Model with Multiple Efforts

Suppose now that there are  $m$  types of effort which can affect the log ratio of votes received. This will be important for our empirical application which has a number of dimensions in which governments can put in effort. We suppose that each kind of effort can affect votes received. However, different types of effort may have different marginal productivities in attracting votes. The reasons for effort mapping into vote are not modeled and could

potentially be quite complex. We view this approach as a rather reduced form model.

Let the (stochastic) votes production function be

$$v = \mu + \sum_{i=1}^m \gamma_i e_i + \eta$$

The parameter  $\gamma_i$  can be thought of as the marginal productivity of effort put into activity  $i$ . The parameter  $\mu$  captures any bias towards the incumbent in vote shares. A value of  $\mu > 0$ , denotes the case of pro-incumbent bias. We make a key assumption on the density of the shocks  $\eta$ .

**Assumption 3:** *The function  $g(\cdot)$  is log concave with  $g(\infty) = g(-\infty) = 0$ .*

This kind of log concavity assumption is now fairly standard in a variety of agency models and is quite weak. Here it is equivalent to the Monotone Likelihood Ratio Property (MLRP). This guarantees that observing higher levels of  $v$  make it more likely that they were due to effort than to noise (high  $\eta$ ).

The cost of effort function is  $c(e_1, \dots, e_m)$  which is assumed to be strictly convex. Then the payoff of the incumbent is now:

$$\int_{-\infty}^{\infty} w(\alpha + \beta v) g\left(v - \mu - \sum_{i=1}^m \gamma_i e_i\right) dv - c(e_1, \dots, e_m).$$

There is an intuitive solution to this problem in two stages. At stage one the incumbent chooses how much composite effort  $E = \sum_{i=1}^m \gamma_i e_i$  to put in and at stage two this is allocated across the different vote producing activities to minimize the cost of effort. To model this, consider the following function:

$$\psi(\gamma_1, \dots, \gamma_m, E) = \text{Min}_e \left\{ c(e_1, \dots, e_m) : \sum_{i=1}^m \gamma_i e_i = E \right\}.$$

It is easy to check using standard arguments that  $\psi(\gamma_1, \dots, \gamma_m, E)$  is increasing and homogeneous of degree zero in  $(\gamma, E)$ , quasi concave in  $\gamma$  and convex in  $E$ . Moreover, from the envelope theorem:

$$e_i^*(\gamma, E) = -\frac{\psi_i(\gamma_1, \dots, \gamma_m, E)}{\psi_E(\gamma_1, \dots, \gamma_m, E)}$$

We can interpret  $E$  as a kind of composite aggregate effort and reformulate the incumbent's problem as:<sup>5</sup>

$$\int_{-\infty}^{\infty} w(\alpha + \beta v) g(v - \mu - E) dv - \psi(\gamma_1, \dots, \gamma_m, E).$$

The “composite” effort choice satisfies:

$$\beta \int_{-\infty}^{\infty} w'(\alpha + \beta v) g(v - \mu - E) dv = \psi_E(\gamma_1, \dots, \gamma_m, E)$$

It is now straightforward to prove the following.

**Proposition 2** *Suppose that Assumptions 1-3 hold and that there is an interior solution for  $E$ . Then composite effort  $E$  is decreasing in vote/seats bias  $\alpha$  and voting bias  $\mu$  for all  $\alpha \geq 0$ . A sufficient condition for effort to be decreasing in every dimension when composite effort falls is that  $\partial^2 \psi / \partial \gamma_i \partial E \geq 0$ .*

**Proof.** First observe that  $w(\cdot)$  is concave for all  $\alpha \geq 0$ . Observe also that

$$-\beta \int_{-\infty}^{\infty} w'(\alpha + \beta v) g'(v - \mu - E) dv = \text{cov} \left( w'(\alpha + \beta v), \frac{g'(v - \mu - E)}{g(v - \mu - E)} \right) > 0$$

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<sup>5</sup>To see this, observe that the first term is equivalent to:

$$\int_{-\infty}^{\infty} w(\alpha + \beta v) g'(v - \mu - E) dv$$

after integrating by parts and using the end point conditions  $g'(\infty) = g'(-\infty) = 0$ .

using the fact that  $\int_{-\infty}^{\infty} \frac{g'(v-\mu-E)}{g(v-\mu-E)} dv = 0$ ,  $\frac{g'(x)}{g(x)}$  is decreasing in  $x$  (by log concavity of  $g(\cdot)$ ), and the fact that  $w'(\cdot)$  is concave on the relevant domain. The result now follows by differentiating the first order conditions. ■

This result says that both bias towards the incumbent in voting ( $\mu > 0$ ) and bias in the votes/seats relationship  $\alpha \geq 0$  lead to reduced effort. The intuition is again clear, the incumbent can look forward to a higher share of the vote by sitting on his hands so his incentive to put in effort is muted.

## 4 Empirical Implementation

We use data on the 374 local authorities or “councils” in the U.K. We have electoral data going back to 1973 which gives ward by ward data by party. There are three main parties – Conservative, Labour and Liberal Democrats. The remainder of seats are denoted by a catch all category “others” which mainly comprises independents. For each ward, we know how many votes were cast for each candidate and who won the seat on the council. The average number of wards per council is 52 ranging from 16 to 126. This gives us around 83,000 observations at a ward level in election years going back to 1973.

As we detail in the next section, we use these data to construct various measures of competition with each local authority. The year on which we focus is for 1995 – the year of our performance data. For that year, we use the ward level data to construct patterns of political control for each authority. There are three main parties: Conservative, Labour and Liberal Democrats. We classify a party as being in control if it holds more than 50% of the seats on the council. A small number of local authorities are in the hands of independents in which case we classify them as “other” control. Finally, there are councils that are not controlled outright by anyone. Looking at Table 1, it is apparent that the Conservative party controlled very few councils in the year that we are looking at. Given the landslide general election victory of the Labour in 1995, this marked a low point in their popularity. The Liberal Democrats, a relative minor party in Central government, actually control more local councils than the Conservatives in 1995 (14% as compared to 4%). A large number of local authorities are not controlled by anyone in 1995. In the analysis that follows, these political control variables are used as controls.

For each local authority, we have finance data and expenditure. We

also have some background socio-economic data constructed from the Census and other sources. Our main economic controls that we use are (log of) household income in each district, the level of unemployment and the (log of) population. Their means are also given in Table 1.

Since 1994, we have data available from the Audit Commission collected to monitor local government performance. In this analysis, we focus on data from 1995. In future, we hope to exploit the panel element in the data. There are a whole host of performance measures produced and we focus on a limited subset of these – total spending, efficiency in tax collection, complaints to the council, costs of managing public housing, the amount of revenue raised through user charges, the amount spent on leisure facilities and the cost of provision. From the general finance data, we also get employment in each local authority administration for full time and part time workers. The means and standard deviations of all the variables used in the analysis are detailed in Table 1.

## 4.1 Measuring Political Competitiveness

Our main interest is in measuring the variable  $\alpha$  from the theory above and this will be the measure that we use in the empirical analysis of the next section. To estimate, we run a series of regressions which exploit the time series variation in the data prior to the year of interest (1995). These are panel data regressions of the form:

$$s_{at} = \alpha_a + \beta v_{at} \quad (1)$$

where  $s_{at}$  is the log seats ratio in the authority  $a$  at the election at date  $t$  for the winning party and  $v_{at}$  is the log votes ratio of the winning party in authority  $a$  at time  $t$  where  $t$  is an electoral year in authority  $a$ . The local authority fixed effect  $\alpha_a$  is then used as our measure of political bias when we look at the performance of the local authorities in 1995.

Some idea of the underlying data is available in Figure 3 which plots the share of the seats of the incumbent party against their share of the votes from local authority means from 1973-95. Consistent with the presence of considerable bias, some incumbents obtained majority seat holdings with as little as 28% of the vote. This is best interpreted as being rooted in the pattern of ward districting within an authority leading to some advantage for a particular party.

There are a number of issues and options involved in estimating equation (1). First, there is the question of who counts at the “winning” party in the local authority. We experimented with two approaches. For most of the empirical analysis, we use the bias coefficient of the largest single party grouping the council. We also look only at the bias toward incumbents that controlled the council in question (with more than 50% of the seats).<sup>6</sup>

The surprising result from estimating (1) is how low the estimated  $\beta$ ’s are — with a value of 0.9 for the incumbent party estimates and 0.14 for the largest party estimates. The results are given in Table 2. We attribute this to the fact that almost all the identification is coming from the cross-sectional rather time series differences in  $v_{at}$ . However, clearly this requires further investigation.

To give an idea of the bias estimates that come out of these exercises, Figures 1 and 2 plot histograms of the estimated parameters  $\alpha_a$ .<sup>7</sup> Observe that some of the largest party estimates are negative (showing that they did not experience bias in their favor). However, predictably, the estimates for the incumbent parties are all positive and show a wide dispersion of estimated pro-incumbent bias.

It is interesting to compare bias measured by this method, with outcome based measures of political competition. We discuss two of these. The first is the commonly used measure of the difference between the seats held by largest party and the seats held by next largest party divided by the total seats on council. There is a strong positive correlation between this measure of party competition and our two measures of bias.

Another possible approach is to measure how many of the seats on the council are marginal (in the sense of being closely contested). We say that a seat is marginal if the incumbent could be defeated by the sum of all votes against it. We then measure competition as the number of marginal seats in local authority  $a$  at date  $t$  divided by the total number of seats in local authority  $a$ . As we might expect This is negatively correlated with the bias measures and with the party difference measure.

The different measures of competitiveness are lined up against in each other in Figure 4.

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<sup>6</sup> The measures that we used, had a common  $\beta$ . Allowing for heterogeneity in the  $\beta$  across authorities did not lead to any appreciable difference in the measures.

<sup>7</sup>In the empirical analysis below, we set bias to zero for local authorities that have never had overall political control in our period and hence no incumbent.

## 4.2 Outcomes and Bias

Our next task is to look at how bias impacts performance measures of local authorities. The theory predicts that incumbents should exercise greater effort if there is less bias. We test this for the 1995 cross section. The hypothesis to be tested is that this bias parameter should be related to amount of incumbent effort put into satisfying the audit commissions standards. For this, we get the performance measure in each district for 1995 and run a regression of the form:

$$x_a = \gamma p_a + \beta y_a + \varepsilon_a$$

where  $p_a$  is our bias measure,  $x_a$  is some measure of incumbent “effort” and  $y_a$  are other “exogenous” variables that we expect to influence incumbent effort. Our main hypothesis is that  $\gamma > 0$ .

Tables 3 through 7 look at this for a variety of performance measures. We use the bias for the largest party as our main measure of bias for the basis of these regressions. We also allow a variety of political and economic controls.

We begin with total local authority spending in Table 3. Arguably, this is not a great measure of effort. However, it helps to set the scene for what follows and could be viewed as indicative of inefficiency once the economic controls are included to proxy for different demands for public spending. The results are very strong. Whether we control for other political or economic categories, greater political bias is associated with higher levels of public spending. This result continues to hold up if the incumbency measure of bias is used or the party difference. However, the number of marginals does not appear to be correlated with higher local authority spending. These results on spending are a useful backdrop for what follows as the remaining results suggest that they may indeed be indicative of greater inefficiency rather delivering more services that citizens demand.

In Table 4, we look at efficiency in tax collection. These taxes are local property taxes (termed Council taxes). We use two efficiency measures. The first is the administrative cost of tax collection and the second is the extent of arrears in tax collection. We believe that both can be influenced by purposeful government action. The evidence here confirms the importance of bias in reducing government performance – the pattern of coefficients is

robust to including our controls. There is also some evidence in this Table that Labour controlled authorities are less efficient in tax collection.

Table 5 looks at sundry other measures of efficiency. The first registers the number of complaints lodged about the behavior of the local authority. While it is something of a “catch-all” category is indicative of public satisfaction with the operation of the council. With and with controls, bias is positively correlated with poorer performance. In columns (3) and (4), we see that the efficiency of management of public housing is also lower in authorities with greater bias. This is interesting as management of public housing is one of the main functions that local authorities undertake. Tables (5) and (6) turn to user charges. The efficiency implications here are perhaps not clear cut. However, to the extent that these are functions where social returns exceed private returns, user charges may not be an efficient method of finance compared to general taxation. We find that local authorities that are subject to greater bias turn more to user charges.

Table 6 considers levels of public employment – both full time and part time. Higher staffing levels in local government could, of course, be indicative of better service (although this is somewhat contradicted by the Tables so far). However, it could also be indicative of over-manning and the use of public employment as a transfer program. We find that there are higher levels of public employment of both full time workers are correlated with greater bias. It is interesting to observe that there is no significant effect of Labour control in columns (2) and (4). However, when we introduce an interaction between Labour control and bias, we find that there is a strong positive effect of Labour control. This suggests that public employment is being used as political instrument by Labour only when they feel less politically vulnerable. This interaction term is the entry “Labour Bias” in columns (3) and (6) Note that public employment is also positively correlated with local unemployment.

In Table 7, we look at the local authorities’ performance on Leisure and Recreation one of their significant functions being to provide municipal sports facilities such as sports pitches and swimming pools. Here, we observe that spending on these services is higher when there is a greater degree of bias. This could be interpreted as being indicative of a higher level of service. Columns (3) and (4) show that it is accompanied by a greater level of subsidy which implies either less cost recovery or higher costs. The final two columns look at the cost of providing public swimming facilities which are significantly higher for higher levels of bias. Again this indicative of



lower levels of efficiency.

## 5 Concluding Comments

The idea that attenuating electoral competition can result in less responsive government is an intuitively appealing one. We began by formalising the notion that a pattern of districting that favors a particular party will tend to tend to reduce incumbent effort. A feature of the theory is that its comparative statics relate to an empirically estimable parameter. We therefore estimated the patterns of bias in English local authorities and related to them to a set of nationally collected and comparable performance measures.

Taken together, the results suggest that the theoretical notion that the biasedness in the seats/votes relationship does appear to have some correlation with efficiency measures perhaps adding credence to the mechanism identified by the theory. It is certainly an interesting point of departure for further investigation and refinement.

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**Table 1: Means of Key Variables**

Variable	Obs	Mean	Std. Dev.
Log population	333	11.65431	.5492104
Log Income	333	9.000795	.0923175
Unemployment	333	5268.033	5914.762
Electoral bias largest party	312	.5894386	.5462501
Electoral bias of incumbents	363	.48217	.625461
No. of marginals	317	.2314093	.112993
Party difference	317	.3457584	.2636849
Cons control	317	.0410095	.1986256
Labour control	317	.4132492	.4931953
Lib Dem control	317	.1324921	.339561
No overall control	317	.3596215	.4806481
Total expenditure	361	239.0206	312.6034
% Collected	363	.9531612	.0363495
Collection cost	362	17.1115	6.194448
Complaints	363	39.25069	56.00804
Public Housing management cost	318	9.033516	4.120013
User charges	315	-82.69369	89.04579
Part time staff	284	4.455089	6.532584
Full time staff	284	8.677018	8.057661
Leisure spending	353	8.905209	5.530166
Swim cost	353	1.431805	1.122004
Leisure subsidy	332	18.38122	9.712532

**Table 2: Estimating Bias**

	(1)	(2)
	Log (share of seats for incumbent/share of seats to other parties)	Log (share of seats for largest party/share of votes to other parties)
Log (share of votes for incumbent/share of votes to other parties)	0.093	
	(31.43)**	
Log (share of votes for largest party/share of votes to other parties)		0.162
		(67.46)**
Constant	0.878	0.595
	(366.85)**	(305.24)**
Observations	27261	69308
R-squared	0.73	0.56

Robust t statistics in parentheses  
significant at 5%; \*\* significant at 1%

**Table 3: Total Expenditure**

	(1)	(2)	(3)	(4)	(5)	(6)
Electoral bias	184.145	174.790	111.335			
	(4.90)**	(4.41)**	(3.91)**			
Cons control		262.579	-93.985	-119.152	-91.991	-95.203
		(2.24)*	(1.28)	(1.64)	(1.35)	(1.29)
Labour control		347.255	-30.653	-82.769	-96.769	-64.248
		(7.77)**	(0.74)	(2.03)*	(2.37)*	(1.60)
No overall control		239.767	-22.080	-17.837	-53.270	-103.557
		(4.85)**	(0.55)	(0.42)	(1.27)	(2.62)**
Lib Dem control		141.138	-122.982	-151.771	-179.417	-175.197
		(3.46)**	(2.85)**	(3.35)**	(3.79)**	(3.51)**
Log population			204.081	201.807	209.328	206.315
			(3.10)**	(3.13)**	(2.98)**	(2.88)**
Log average income			439.175	510.270	502.310	531.815
			(2.65)**	(2.97)**	(2.86)**	(3.11)**
Unemployment			0.025	0.025	0.025	0.026
			(2.43)*	(2.47)*	(2.37)*	(2.39)*
(mean) nummarg1						-108.725
						(1.02)
Constant	151.108	-102.168	-6,225.937	-6,816.420	-6,816.174	-6,954.119
	(6.86)**	(2.09)*	(3.86)**	(4.05)**	(3.86)**	(4.01)**
Party difference					198.489	
					(2.55)*	
Elect bias 1985 onwards				120.706		
				(4.21)**		
Observations	312	312	289	293	293	293
R-squared	0.09	0.17	0.68	0.68	0.66	0.65

Robust t statistics in parentheses

\* significant at 5%; \*\* significant at 1%

**Table 4: Tax Efficiency**

	(1)	(2)	(3)	(4)	(5)	(6)
	Collection cost	Collection cost	Collection cost	% Collected	% Collected	% Collected
Electoral bias	1.702	2.070	1.557	-0.019	-0.018	-0.013
	(2.90)**	(3.12)**	(2.72)**	(3.26)**	(2.75)**	(2.42)*
Cons control		0.241	-1.326		-0.011	0.008
		(0.13)	(0.62)		(1.26)	(1.06)
Labour control		1.393	2.444		-0.037	-0.021
		(1.16)	(1.97)*		(5.68)**	(3.45)**
No overall control		1.869	1.635		-0.022	-0.010
		(1.40)	(1.32)		(2.99)**	(1.64)
Lib Dem control		0.871	-0.002		-0.009	0.000
		(0.71)	(0.00)		(1.52)	(0.01)
Log population			-2.934			0.010
			(2.72)**			(1.02)
Log average income			25.706			-0.093
			(6.70)**			(3.43)**
Unemployment			0.000			0.000
			(1.97)*			(2.40)*
Constant	16.013	14.425	-184.482	0.966	0.989	1.721
	(43.26)**	(11.23)**	(5.58)**	(326.92)**	(124.33)**	(6.79)**
Observations	311	311	288	312	312	289
R-squared	0.03	0.04	0.26	0.08	0.18	0.46

Robust t statistics in parentheses

\* significant at 5%; \*\* significant at 1%

**Table 5: Selected Efficiency Measures**

	(1)	(2)	(3)	(4)	(5)	(6)
	Complaints	Complaints	Public Housing management cost	Public Housing management cost	User charges	User charges
Electoral bias	21.048	8.960	1.099	0.916	-38.027	-23.841
	(2.77)**	(1.83)	(2.34)*	(2.62)**	(3.30)**	(2.15)*
Cons control		-10.084		3.410		9.652
		(1.26)		(2.41)*		(0.35)
Labour control		-5.573		1.142		-32.602
		(0.77)		(1.63)		(2.54)*
No overall control		6.243		1.073		-12.298
		(1.21)		(1.51)		(0.97)
Lib Dem control		-2.832		0.661		5.062
		(0.47)		(0.87)		(0.39)
Log population		-8.771		-0.111		-38.598
		(0.78)		(0.16)		(2.42)*
Log average income		101.411		24.229		-88.544
		(3.04)**		(8.51)**		(1.38)
Unemployment		0.009		0.000		-0.003
		(4.92)**		(1.79)		(2.08)*
Constant	28.167	-821.873	8.430	-210.343	-61.807	1,212.736
	(5.55)**	(2.44)*	(31.33)**	(8.21)**	(9.81)**	(2.20)*
Observations	312	289	271	253	300	285
R-squared	0.04	0.73	0.02	0.46	0.05	0.35

Robust t statistics in parentheses

\* significant at 5%; \*\* significant at 1%



**Table 6:Public Employment**

	(1)	(2)	(3)	(4)	(5)	(6)
	Full time staff	Full time staff	Full time staff	Part time staff	Part time staff	Full time staff
Electoral bias	4.730	3.363	0.268	3.089	2.147	0.268
	(4.41)**	(4.74)**	(0.38)	(3.51)**	(3.57)**	(0.38)
Cons control		-2.139	-2.390		-3.177	-2.390
		(1.18)	(1.37)		(2.80)**	(1.37)
Labour control		1.044	-3.724		-0.866	-3.724
		(1.11)	(2.95)**		(1.01)	(2.95)**
No overall control		0.612	-1.907		-0.508	-1.907
		(0.65)	(1.92)		(0.56)	(1.92)
Lib Dem control		-1.135	-3.003		-1.852	-3.003
		(1.18)	(2.83)**		(2.01)*	(2.83)**
Log population		5.983	6.005		6.696	6.005
		(3.58)**	(3.80)**		(5.52)**	(3.80)**
Log average income		-7.864	-7.316		-9.347	-7.316
		(1.90)	(1.80)		(2.59)*	(1.80)
Unemployment		0.001	0.001		0.000	0.001
		(2.13)*	(2.20)*		(1.70)	(2.20)*
Labour bias			5.010			5.010
			(3.83)**			(3.83)**
Constant	6.082	5.033	3.271	2.932	9.339	3.271
	(9.43)**	(0.13)	(0.09)	(5.34)**	(0.29)	(0.09)
Observations	258	258	258	258	258	258
R-squared	0.10	0.70	0.72	0.06	0.65	0.72

Robust t statistics in parentheses  
significant at 5%; \*\* significant at 1%

**Table 7: Leisure and Recreation**

	(1)	(2)	(3)	(4)	(5)	(6)
	Leisure spending	Leisure spending	Leisure subsidy	Leisure subsidy	Swim cost	Swim cost
Electoral bias	2.602	1.475	5.943	3.845	0.424	0.425
	(4.44)**	(2.64)**	(5.43)**	(3.67)**	(4.08)**	(3.65)**
Cons control		4.932		5.741		-0.518
		(3.12)**		(2.57)*		(1.45)
Labour control		5.756		11.584		0.104
		(6.11)**		(6.63)**		(0.35)
No overall control		3.221		5.893		0.309
		(3.65)**		(3.78)**		(0.94)
Lib Dem control		2.941		7.206		-0.091
		(3.14)**		(4.22)**		(0.30)
Log population		1.164		-0.471		-0.454
		(1.31)		(0.26)		(1.02)
Log average income		9.356		4.652		-0.522
		(2.61)**		(0.73)		(0.67)
Unemployment		0.000		0.001		0.000
		(1.80)		(2.10)*		(1.89)
Constant	7.071	-95.406	14.233	-31.988	1.184	10.594
	(18.02)**	(3.00)**	(21.20)**	(0.55)	(13.27)**	(1.23)
Observations	303	280	288	288	302	280
R-squared	0.07	0.32	0.11	0.39	0.04	0.19

Robust t statistics in parentheses

\* significant at 5%; \*\* significant at 1%

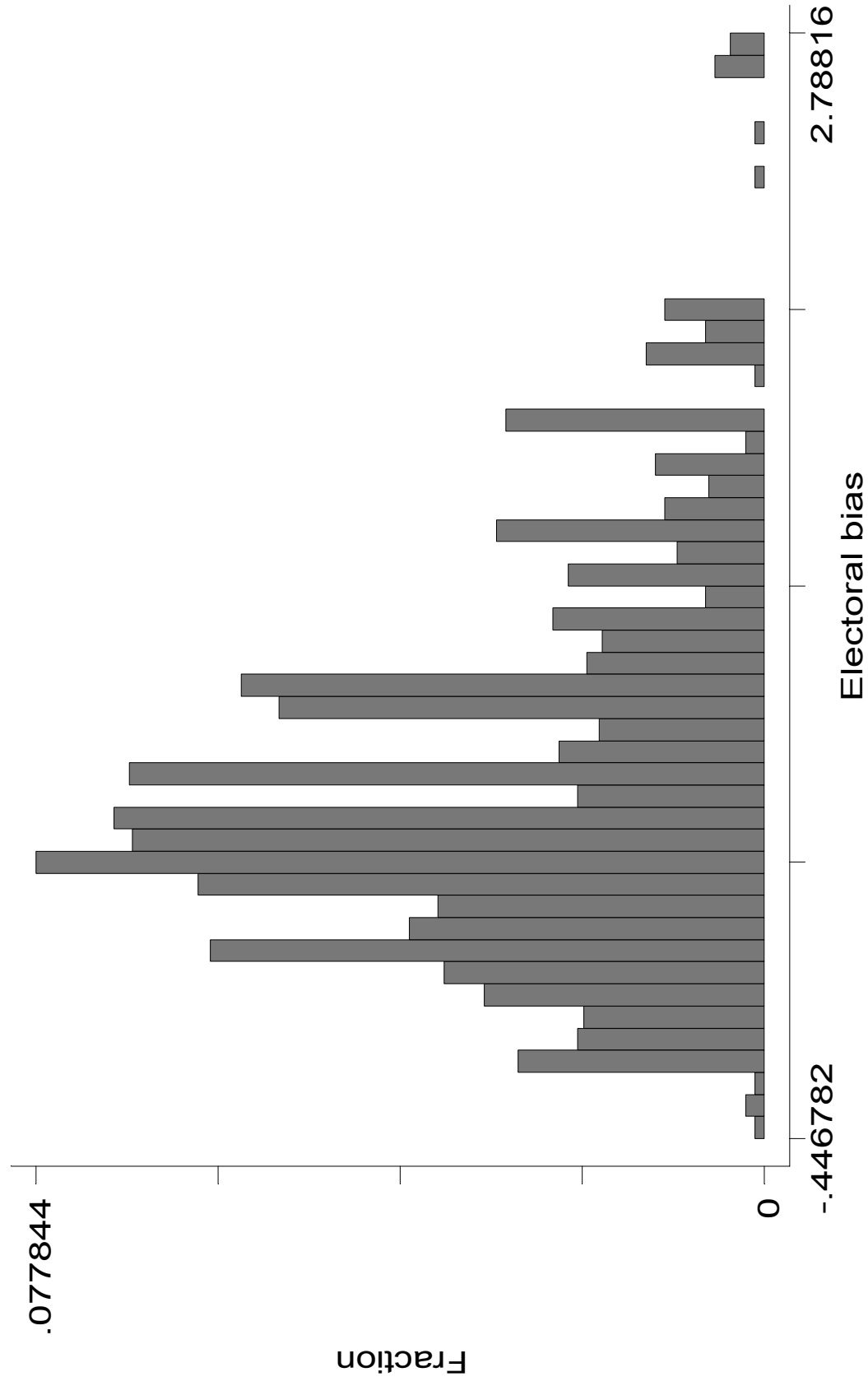


Figure 1: Electoral Bias (Largest Party)

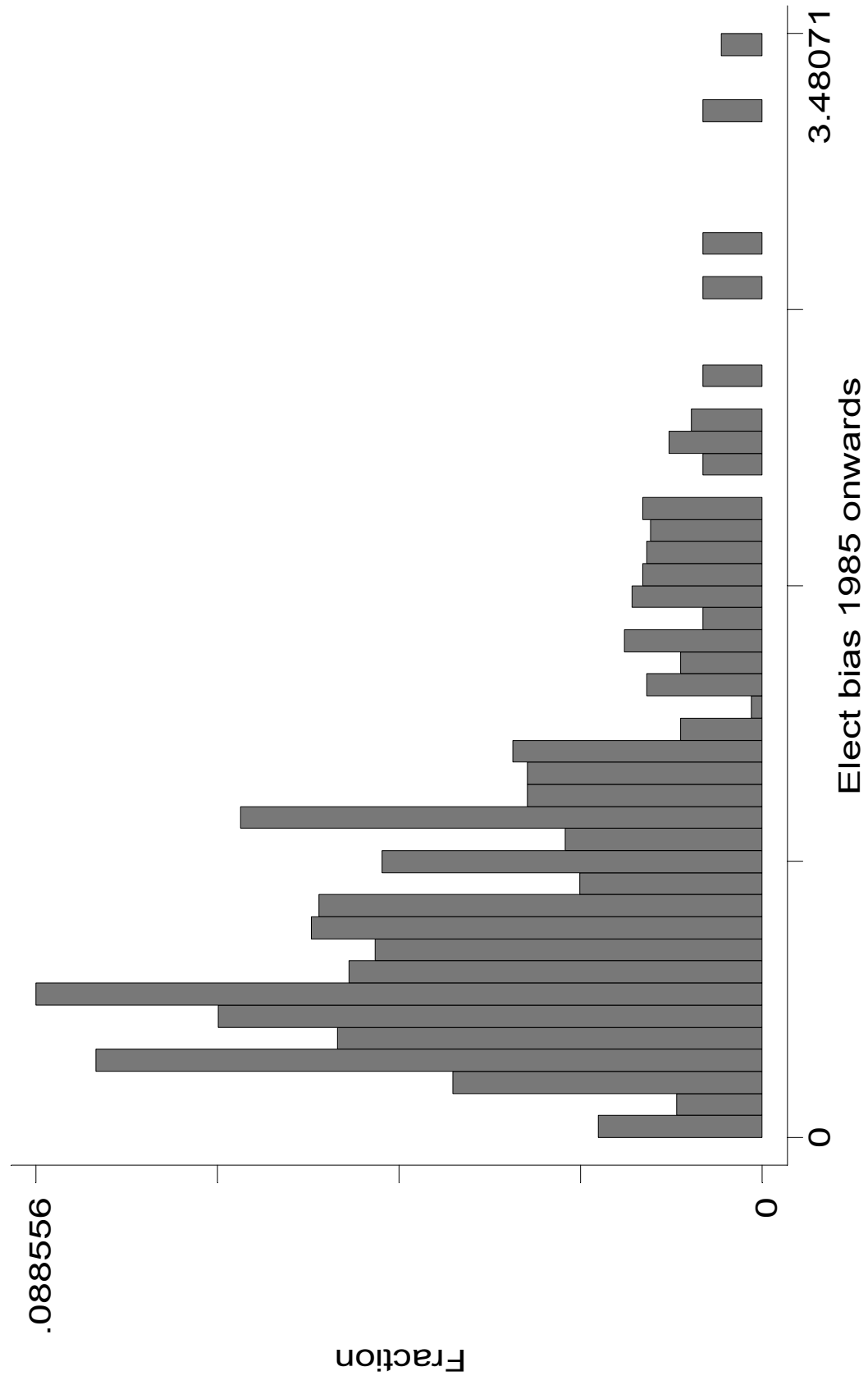


Figure 2: Electoral Bias (1985-95)

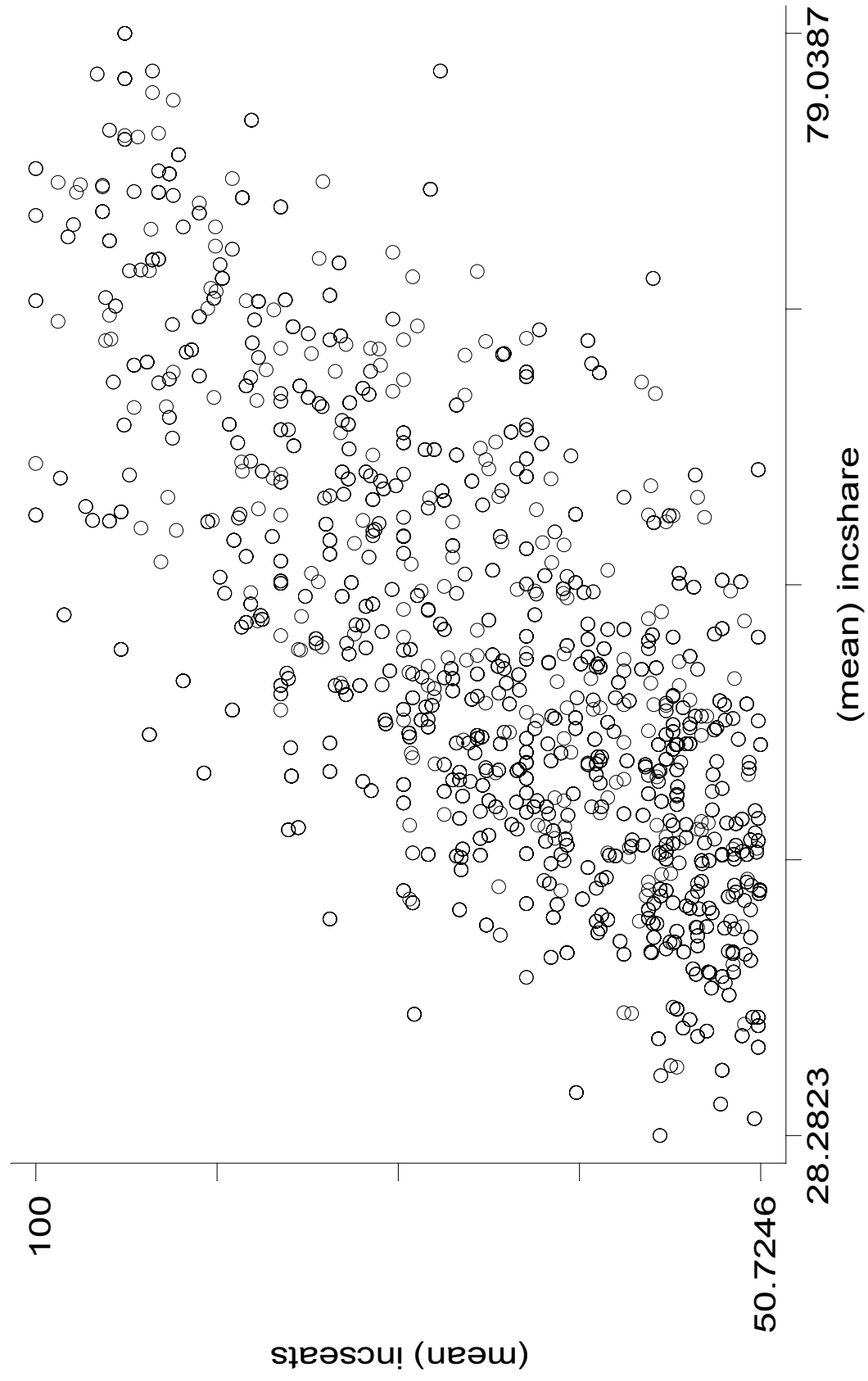


Figure 3: Share of Seats Against Share of Votes

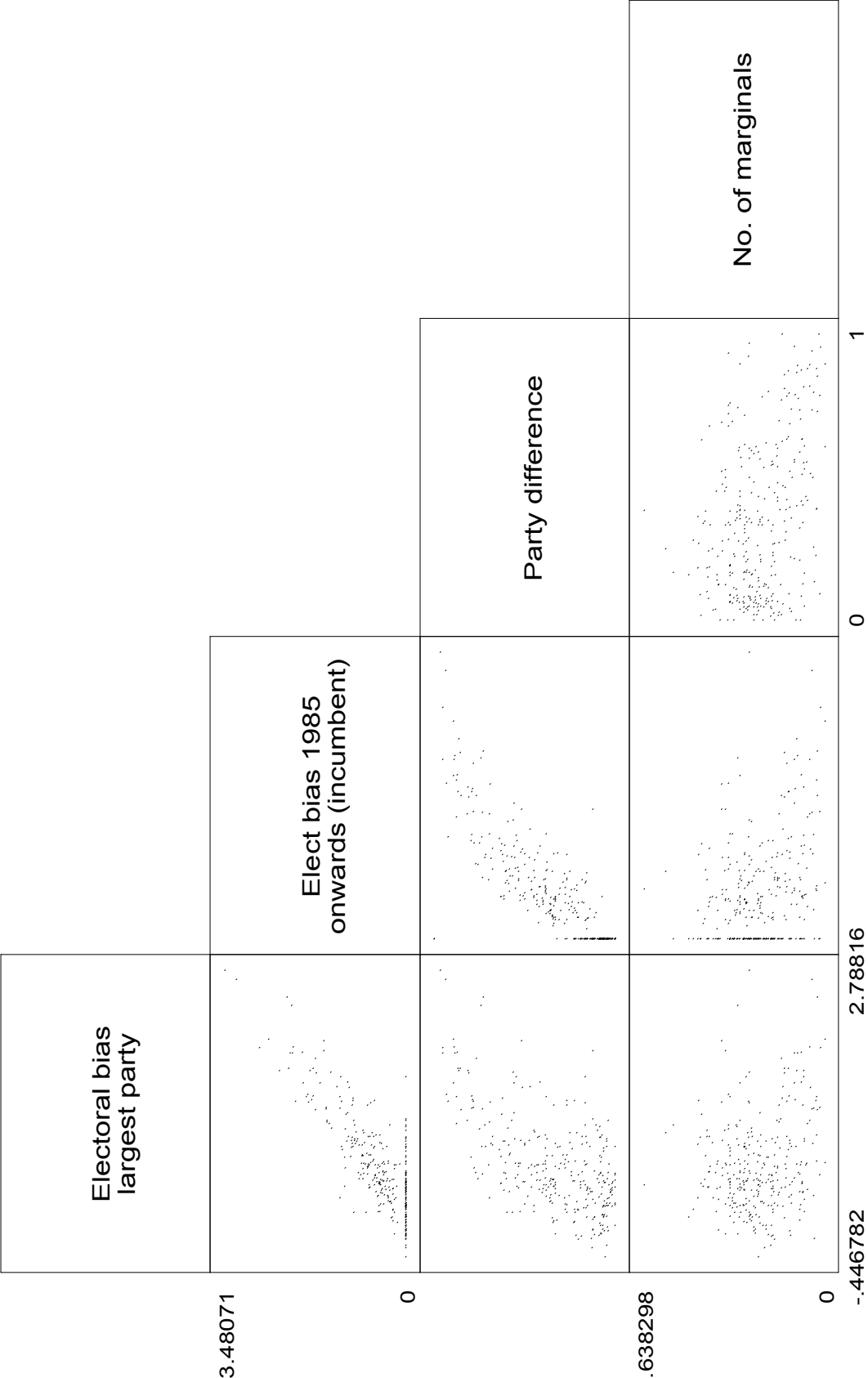


Figure 4: Alternative Measures of Political Bias