Ethical Voting and Political Competition

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ABSTRACT

We study political outcomes in a party competition model in which voters attach some weight to their ethically preferred outcome as long as party platforms do not deviate too much from that outcome. In our basic model in which the value of voting for each party depends on the ethical value of the party platform, multiple stable equilibria in party policies can occur. Which outcome occurs depends on whether parties take as given the number of ethical voters or whether they behave strategically and choose to influence that number. These findings carry over to the case where ethical voting depends on the expected ethical value of the voting outcome given the probability attached by voters to each party winning. In a final case where political parties choose their platforms sequentially, vote cycling can occur with outcomes alternating between those in which some voters vote ethically and those in which they do not.

Key Words: ethical voting, political competition

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1. Introduction

The issue of what motivates voting behavior is an open question. Standard political economy models typically assume that voters vote for the candidate or party whose policy choices will yield the highest utility for the voter. This is true, for example, in Downsian party competition models where parties can commit to announced platforms (Lindbeck and Weibull 1987, Dixit and Londregan 1998, Hettich and Winer 1999), in citizen candidate models where candidates for office cannot commit to implement policies that are not in their own best interest (Besley and Coate 1997, Osborne and Slivinski 1996), and in retrospective voting models where voting is based on the past performance of politicians (Ferejohn 1986). But, the rationality of such voting behavior can be called into question. Given that a single voter is almost never decisive, voting in one's own self-interest is hard to justify. Indeed, voting at all is hard to justify.

Brennan and Hamlin (1998) proposed that in the absence of a rationale for selfish voting, voting behavior might reflect some higher social behavior. They used the term 'expressive voting' to refer to voting according to social preferences, and explored some of the consequences of it. Of course, this still begs the question as to why they should vote at all, an issue that might be resolved by a notion such as civic duty (or, in some countries, compulsory voting). In this paper, we explore some of the consequences of voting according to social preferences in the context of a Downsian party competition model.

In our model, voters give some weight to private utility and some to their social preferences in their voting decisions, following Dixit and Londregan (1998). Their social preferences reflect their view as to optimal government policy from a social welfare perspective. The weight they put on social preferences depends on how close the policies of the two political parties are to the social optimum. For policies far enough from the social optimum, only private utility counts in voting. For simplicity, we assume that all voters share the same social preferences, but that they differ in their tolerance for deviation from the social optimum. Political parties also have social preferences (ideologies) that may differ from those of the voters, and they care about these as well as votes. Their policy platforms will trade off their own social preferences against the private and social preferences of voters.

Policies consist of expenditures on a public good financed by a set of taxes that vary by income class. In our basic model, voters choose the party whose policies maximize the aggregate of their private and social preferences. We show that in this case, there can be multiple equilibria in policy platforms for each political party. In one stable equilibrium, there are no ethical voters, while in another policies are designed in part to cater to voters' ethical preferences. The two political parties may be in different equilibria: one may offer policies to attract ethical voters, while the other may not.

In the basic model, there is no direct interaction between the platforms of political parties. We extend the analysis in two directions to allow for interaction. In the first case, voters decide whether or not to vote ethically based on the expected policy **outcome based on their expectations about the chances of each party being elected**. Thus, the same weight is given to ethical preferences whichever party a voter prefers. This case also gives rise to multiple voting equilibria. In the second extension, political platforms are offered sequentially by the two parties, an approach first proposed by Downs (1957). This can lead to vote cycling **given the possibility of self-fulfilling expectations by the voters**, with political parties alternating between platforms that cater to ethical preferences and those that do not. This is reminiscent of a form of vote cycling obtained by Downs — his coalition of minorities — but for a different reason. It is different than the standard form of vote cycling that arises from the absence of single-peaked preferences.

2. Basic Setting

The economy consists of a population of households with given incomes. There are m income groups indexed by subscripts $i = 1, \cdots, m$ with income y_i for all households in group i. The proportion of the population with income y_i is n_i, where naturally $\sum_i n_i = 1$, and the total population is normalized to one. The government can observe income, and imposes a tax per person of t_i on all persons with income y_i, leaving consumption of $c_i = y_i - t_i$. Average variables are denoted by a 'bar', so $\overline{y} = \sum_i n_i y_i$, $\bar{t} = \sum_i n_i t_i$, and $\overline{c} = \sum_i n_i c_i$ are average income, taxes and consumption, respectively.

Government spending on a public good is given by G, which is assumed to benefit all households equally. The producer price is unity so G represents both the quantity of the public good and the revenue needed to finance it. The taxes t_i $(i = 1, \cdots, m)$ used to raise revenues are distortionary, with the deadweight loss imposed on each household assumed to be proportional to the square of the relevant tax rate for simplicity. Specifically, the deadweight loss per unit of revenue obtained from a household with income y_i is given by $\delta t_i^2/2$, with $\delta > 0$. Given this, the government budget constraint can be written:

$$G = \sum_i n_i \Big(t_i - \frac{\delta}{2} t_i^2 \Big) = \bar{t} - \sum_i n_i \frac{\delta}{2} t_i^2 \tag{1}$$

where the far righthand side is per capita tax revenue less pure waste. The marginal cost of public funds associated with taxes raised on type-i persons to fund an increment of the public good is:

$$\frac{\partial G}{\partial t_i} = n_i(1 - \delta t_i), \qquad i = 1, \cdots, m \tag{2}$$

so δt_i is the marginal deadweight loss applying to a voter from income group i.

Individuals are assumed to have social, or ethical, preferences over tax-transfer policies and to take those preferences into account in deciding how to vote. These ethical preferences reflect the trade-off between equity on the one hand and a distaste for government on the other. Following Dixit and Londregan (1998), equity is captured by the variance of consumption across all households, denoted σ^2, where

$$\sigma^2 = \sum_i \frac{n_i}{2}(c_i - \bar{c})^2 = \sum_i \frac{n_i}{2}(y_i - t_i - \bar{y} + \bar{t})^2 \tag{3}$$

Differentiating with respect to t_i, we obtain:

$$\frac{\partial \sigma^2}{\partial t_i} = -n_i(y_i - t_i - \bar{y} + \bar{t}) \gtreqless 0 \text{ as } \bar{c} \gtreqless c_i \tag{4}$$

Distaste for government is reflected in the average tax rate, $\bar{t}$, needed to raise the required amount of government revenue G. Note from (1) that $\bar{t}$ captures both the level of government expenditures G and the deadweight loss of raising revenues to finance G. Since the deadweight loss of taxes is increasing in the square of the tax rate, deadweight loss for any given revenue requirement G will be minimized when taxes are equal per capita so no redistribution is achieved. And, as (1) indicates, deadweight loss is increasing in $\bar{t}$. Given these indices of equity and distaste for government, we define the *ethical index* of a given tax policy stance by S, such that

$$S = -x\sigma^2 - (1 - x)\bar{t}$$

where $0 < x < 1$ is the weight put on equity relative to distaste for government, and reflects ethical preferences.

In what follows, we assume for simplicity that ethical preferences, reflected in the value of x, are the same for all voters, denoted by x^V. This consensus on ethical values might reflect the fact that all households form their ethical preferences independently of their own self-interest, that is, behind the veil of ignorance in the Harsanyi (1955) sense. It would be straightforward to incorporate heterogeneity in ethical preferences into our setting. Given this assumption, the voters' ethical index for a given tax policy, summarized in a vector of tax rates by income group $\boldsymbol{t} = (t_1, \cdots, t_m)$, is given by:

$$S = -x^V \sigma^2(\boldsymbol{t}) - (1 - x^V)\bar{t}(\boldsymbol{t}) < 0, \quad \text{with} \quad \frac{\partial S}{\partial t_i} = x^V n_i(y_i - t_i - \overline{y} + \bar{t}) - (1 - x^V)n_i \quad (5)$$

Voters have preferences over both private utility and social outcomes. Private utility for persons in income group i depends linearly on their consumption $c_i = y_i - t_i$ and on the public good G according to $y_i - t_i + \lambda G$, with $\lambda > 1$, while their social preferences are given by the ethical index S in (5). Voters may or may not take their ethical preferences into account when voting. We assume that they will give some weight to the ethical index of a political party's platform as long as the index does not deviate too far from the preferred value of their ethical index S^*, which we define next.

Let social welfare be the sum of individual utilities including ethical preferences, and assume that households agree with this utilitarian formulation. Thus, social welfare is defined as:[1]

$$SW = \sum_i n_i \Big(y_i - t_i + \lambda G + S \Big) = \overline{y} - \bar{t} + \lambda G + S \quad (6)$$

[1] We could put a weight on the ethical index S in the social welfare function, but it will not have any qualitative effect on the analysis.

where G is given by (1) and S by (5). Let $\boldsymbol{t}^*$ be the vector of taxes that maximizes (6). It solves $\partial SW/\partial t_i = 0$ for all i, or, using (2) and (5):

$$-1 + \lambda(1 - \delta t_i^*) + x^V(y_i - \overline{y} - t_i^* + \overline{t}^*) - (1 - x^V) = 0, \quad \forall i \tag{7}$$

Summing this over all income groups, we obtain the optimal average tax rate:

$$\overline{t}^* = \frac{(\lambda - 1) - (1 - x^V)}{\delta\lambda} \tag{8}$$

Then, using this in (7), we obtain:

$$t_i^* = \overline{t}^* + \frac{x^V(y_i - \overline{y})}{\delta\lambda + x^V} \tag{9}$$

Thus, the optimal average tax rate increases with the value of the public good λ,[2] and decreases with $(1-x^V)$, the weight on $\overline{t}$ in ethical preferences. As well, and not surprisingly, individual optimal tax rates are proportional to incomes y_i, where the marginal tax rate increases with the weight x^V households put on the variance of consumption and decreases in the deadweight cost of taxation δ.

To calculate the variance in the optimum, note that, using (9),

$$c_i^* - \overline{c}^* = y_i - \overline{y} - t_i^* + \overline{t}^* = \frac{(y_i - \overline{y})\delta\lambda}{\delta\lambda + x^V}$$

Therefore,

$$\sigma^{*2} = \sum_i \frac{n_i}{2}(c_i^* - \overline{c}^*)^2 = \left(\frac{\delta\lambda}{\delta\lambda + x^V}\right)^2 \sigma_y^2 \tag{10}$$

Using (8) and (10), the optimal value of ethical preferences is then:

$$S^* = -x^V\sigma^{*2} - (1 - x^V)\overline{t}^* = -x^V\left(\frac{\delta\lambda}{\delta\lambda + x^V}\right)^2 \sigma_y^2 - (1 - x^V)\frac{(\lambda - 1) - (1 - x^V)}{\delta\lambda} \tag{11}$$

The optimal policies $\boldsymbol{t}^*$ and the optimal value of ethical preferences S^* are used by voters to judge the policies in the platforms of political parties.

3. Voting Behavior

[2] Differentiating (8), we obtain $\partial\overline{t}^*/\partial\lambda = (\lambda - \overline{t}^*)/\lambda > 0$ since we assume $\lambda > 1$.

As mentioned, voters give weight to the ethical value of a political party's platform if it does not deviate too much from the optimal value S^*. In particular, given the ethical index of a particular political platform, $S(\boldsymbol{t})$, voters' preferences for policies are captured in the following utility function:

$$u_i(y_i, t_i, G, S, W) = y_i - t_i + \lambda G + \max[W + S, 0], \qquad i = 1, \cdots, m \tag{12}$$

where $W > 0$ is a measure of a voter's tolerance for the deviation of the policy $\boldsymbol{t}$ from their ethically most preferred one $\boldsymbol{t}^*$: more tolerant voters have larger values of W. We assume that the tolerance level W is distributed according to $\Phi_i(W)$, where $\Phi_i(W)$ can differ by income group. The voter votes ethically if $W + S \geqslant 0$ (recalling that $S < 0$), though the weight attached to the ethical index S falls as it deviates from the optimal ethical index S^*.[3] The value of S will differ according to the political platform of the two parties. In deciding how to vote, the voter may take ethical values into account for one party but not the other depending on their platforms.

The ethical weight given to policy outcomes in (12) can be given the following interpretation. Suppose the tolerance level W is defined with reference to the optimal ethical value S^* according to $W = -\omega S^* > 0$, where $\omega \geqslant 1$ (since S^* is minimized at $-S^*$). Then, the ethical weight in (12) becomes:

$$W + S = -\omega S^* + S \geqslant 0 \qquad \text{if} \qquad S \geqslant \omega S^*$$

The assumption is that ω varies across voters, so W does as well. If the optimal policy is adopted, $W + S^* = -(\omega - 1)S^*$ is maximized. The ethical weight $W + S$ then falls linearly as $-S$ increases, so policies deviate increasingly from the optimum. Note that while S is defined as a weighted average of $\bar{t}$ and σ^2, the definition S^* takes into account the optimal level of the public good G.[4]

[3] **It is important to note that we assume that while voters give positive weight to ethical preferences when they lie within their toleration range, they do not give negative weight when S deviates too far from S^*. The qualitative nature of our results depends on this. DO WE NEED TO JUSTIFY THIS ASSUMPTION?**

[4] This interpretation of $W = -\omega S^*$ suggests that rather than allowing the parameter ω to vary across voters, we could have allowed S^* to vary by, say, letting the weight x^V in (5) vary as in Dixit and Londregan (1998).

There are two political parties, Left (L) and Right (R), denoted by the superscript $k \in \{L, R\}$. The platform of party k consists of a vector of taxes $\boldsymbol{t}^k = (t_1^k, \cdots, t_i^k, \cdots, t_m^k)$, leading to an ethical value of $S^k = -x^V \sigma^k(\boldsymbol{t}^k)^2 - (1 - x^V)\bar{t}^k(\boldsymbol{t}^k)$ by (5). A voter with tolerance level W takes party k's ethical value into account if $W \geqslant -S^k$. Let $\widehat{W}^k$ be the tolerance level of the marginal ethical voter, defined as follows:

$$\widehat{W}^k \equiv \min[-S^k, \overline{W}] \tag{13}$$

where $\overline{W}$ is the upper bound of the distribution of W. All voters with $W > \widehat{W}^k$, if any, will take ethical values into account when judging party k, but those with $W < \widehat{W}^k$ will not. Note that $\widehat{W}^k$ is independent of income group i, but $\widehat{W}^L \neq \widehat{W}^R$ if the parties offer different platforms.

By (12), the utility that a voter with income y_i and tolerance level W gets from party k's platform is $u_i^k(\cdot) = y_i - t_i^k + \lambda G^k + \max[W + S^k, 0]$, for $k = L, R$. Let the probability of a person of income y_i with tolerance level W voting for party L be given by π_i^W, where

$$\pi_i^W = \pi_i(u_i^L - u_i^R) = \pi_i\big(t_i^R - t_i^L + \lambda(G^L - G^R) + \max[W + S^L, 0] - \max[W + S^R, 0]\big) \tag{14}$$

with $\pi_i' > 0$. The function $\pi_i(\cdot)$ reflects some underlying distribution of preferences for party L by voters in income group y_i, following the probabilistic voting model of Lindbeck and Weibull (1987). Note that $\pi_i(\cdot)$ can vary across income groups, perhaps reflecting differences in ideological attachment to political parties by income class. Within income group i, the argument of $\pi_i(\cdot)$ will vary with the value of W for the various voters. Unlike in the Lindbeck-Weibull model where parties offer the same platforms in equilibrium so $u_i^L = u_i^R$, in our model $u_i^L \neq u_i^R$ because $\boldsymbol{t}^L \neq \boldsymbol{t}^R$ and because of differences in W within each income group. This makes our equilibrium and its characterization much more complicated, as in Dixit and Londregan (1998) who find the full voting equilibrium generally difficult to characterize. To simplify matters, we assume later that π_i' is constant (but different across income groups). Thus, the distribution function underlying the probability function $\pi_i(u_i^L - u_i^R)$ is linear.[5]

[5] In the probabilistic voting model, where $u_i^L - u_i^R$ is the same for all households within an

Differentiating (14) for a voter with income i and tolerance W with respect to own and other voters' tax rates, we obtain, using (1) and (5):

$$\frac{1}{\pi_i'}\frac{\partial \pi_i^W}{\partial t_i^L} = \lambda n_i(1-\delta t_i^L) - 1 + \begin{cases} 0 & \text{if } W < \widehat{W}^L \\ x^V n_i(y_i - t_i^L - \overline{y} + \overline{t}^L) - (1-x^V)n_i & \text{if } W \geqslant \widehat{W}^L \end{cases} \tag{15}$$

$$\frac{1}{\pi_i'}\frac{\partial \pi_i^W}{\partial t_j^L} = \lambda n_j(1-\delta t_j^L) + \begin{cases} 0 & \text{if } W < \widehat{W}^L \\ x^V n_j(y_j - t_j^L - \overline{y} + \overline{t}^L) - (1-x^V)n_j & \text{if } W \geqslant \widehat{W}^L \end{cases}$$

The first terms on the righthand side of (15) represent the gain in expected votes as a result of private benefits ($\lambda\partial G/\partial t_i$ less any tax increase for the voter), while the second is the influence of ethical benefits ($\partial S/\partial t_i$ or $\partial S/\partial t_j$ for ethical voters).

Aggregating (14) over all W, the probability of a voter with income y_i voting for party L is:

$$\pi_i^L = \int^{\widehat{W}^L} \pi_i^W d\Phi_i(W) + \int_{\widehat{W}^L} \pi_i^W d\Phi_i(W) \tag{16}$$

where the first integral refers to purely selfish voters, and the second to those who take ethical preferences into account, the so-called ethical voters. Note that $\partial\pi_i^L/\partial\widehat{W}^L = 0$, so an incremental change in $\widehat{W}^L$, or equivalently in $-S^L$, has no first-order effect on π_i^L. Given (16), the total number of expected votes for party L is:

$$V^L = \sum_i n_i \pi_i^L \tag{17}$$

with

$$\frac{1}{n_i}\frac{\partial V^L}{\partial t_i^L} = \overline{\pi}'\lambda(1-\delta t_i^L) - E[\pi_i'] + z^L\left(x^V(y_i - t_i^L - \overline{y} + \overline{t}^L) - (1-x^V)\right) \tag{18}$$

income class, one has to assume a probability distribution for preferences for political parties underlying the function $\pi_i(u_i^L - u_i^R)$. There is a technical difficulty with distribution functions of typical forms. For example, suppose the distribution is uniform and is truncated on both sides. This leads to potential problems with an interior Nash voting equilibrium because of a failure of the second-order conditions for the political party's vote maximization problem. As the simple examples in Usher (1994) show, there will generally not be an interior voting equilibrium in the probabilistic voting model in this case, and vote cycling will apply. To rule out vote cycling, one must assume that the distribution is widely enough dispersed that it does not pay political parties to fully exploit a minority of income groups in order to get a majority of the vote. We assume this problem away in our analysis, although it could certainly arise.

where

$$z^L \equiv \sum_j n_j \int_{\widehat{W}^L} \pi_j' d\Phi_j(W) = \sum_j n_j \big(1 - \Phi_j(\widehat{W}^L)\big) E[\pi_j' | W \geqslant \widehat{W}^L] \tag{19}$$

$$E[\pi_j'] = \int^{\widehat{W}^L} \pi_j' d\Phi_j(W) + \int_{\widehat{W}^L} \pi_j' d\Phi_j(W), \quad \overline{\pi}' = \sum_j n_j E[\pi_j'] \tag{20}$$

Note that, since within each income group the argument of $\pi_i(\cdot)$ varies only with W, the expectations over π_i' and π_j' in (18), (19) and (20) are taken with respect to the tolerance level W. The variable z^L defined in (19) plays an important role in what follows. It is the weighted sum of the political influence or 'clout' of the ethical voters in each income group, where the weights are the sizes of the populations of ethical voters in each group i. Following Dixit and Londregan (1998), the clout per voter in group i is the change in their probability of voting for party L when the difference in utility of the two parties changes. The first two terms in (18) reflect the effect of the tax change on private utilities. The last term captures the influence on votes of a change in the value of S^L to ethical voters.

For party R, the expected vote is simply $1-V^L$, where V^L is given by (17). Expressions analogous to (14)–(16) and (18)–(20) could be derived for changes in t_i^R and t_j^R.

4. Political Party Objectives and Behavior

Political parties care about both expected votes and their own ethical value. Let P^k be the ethical value of party k, $k = L, R$, where P^k is defined analogously to S for the voters:

$$P^k = -x^k {\sigma^k}^2 - (1 - x^k)\overline{t}^k, \quad \text{where} \quad x^L > x^V > x^R \tag{21}$$

with

$$\frac{1}{n_i}\frac{\partial P^k}{\partial t_i^k} = x^k(y_i - t_i - \overline{y} + \overline{t}) - (1 - x^k), \quad k = L, R \tag{22}$$

The objective function of party k is a weighted average of expected votes given by (17) and its ethical value P^k in (21):

$$R^k = (1 - \beta^k)V^k + \beta^k P^k, \quad k = L, R \tag{23}$$

where the exogenous weight β^k can vary by party.[6] Differentiating (23) with respect to its

[6] Note that, unlike in Dixit and Londregan (1998), a party does not care about the ethical value of the other party's policies. This simplifies the analysis.

own policies and using (18) and (22), we have:

$$\frac{1}{n_i}\frac{\partial R^k}{\partial t_i^k} = (1-\beta^k)\Big(\overline{\pi}'\lambda(1-\delta t_i^k) - E[\pi_i'] + z^k\left(x^V(y_i - t_i^k - \overline{y} + \overline{t}^k) - (1-x^V)\right)\Big)$$

$$+\beta^k\left(x^k(y_i - t_i^k - \overline{y} + \overline{t}^k) - (1-x^k)\right), \quad k = L, R \tag{24}$$

In what follows, we distinguish between the case where a political party takes account of the effects of its policies $\boldsymbol{t}^k$ on $\widehat{W}^k$ and that where it does not. However, that does not affect (24) because, as mentioned, a small change in $\widehat{W}^k$ does not affect π_i^k in (16).

The first-order conditions for, say, party L's policies, $t_i^L,\ i = 1,\cdots,m$ (given policies of the other party), are obtained by setting the expression in (24) to zero for $k = L$. Summing over i and recalling that $\sum n_i = 1$, we obtain:

$$\overline{t}^L = \frac{1}{\delta\lambda}\left((\lambda-1) - z^L\frac{1-x^V}{\overline{\pi}'} - \frac{\beta^L}{1-\beta^L}\frac{1-x^L}{\overline{\pi}'}\right) \tag{25}$$

Thus, $\overline{t}^L$ is decreasing in z^L, which will be of interest to us in what follows. **The greater the political clout of ethical voters, the lower will be $\overline{t}^L$, with the weight of this effect depending on $1-x^V$, the distaste the ethical voter has for $\overline{t}$.** It is also decreasing in the deadweight loss parameter δ and the weight party L puts on its own ethical value β^L, and increasing in the value of the public good to voters λ, all of which are intuitive. We assume in what follows that $0 < \overline{t}^L < 1$ (and the same for party R).

To characterize individual tax rates t_i^L, (24) can be rewritten in the optimum as follows, using (25):

$$t_i^L = \overline{t}^L + \left(\delta\lambda\overline{\pi}' + z^L x^V + \frac{\beta^L x^L}{1-\beta^L}\right)^{-1}\left(\overline{\pi}' - E[\pi_i'] + \left(z^L x^V + \frac{\beta^L x^L}{1-\beta^L}\right)(y_i - \overline{y})\right) \tag{26}$$

This is a linear progressive income tax as in Dixit and Londregan (1998). The lump-sum portion involving $\overline{\pi}' - E[\pi_i]$ varies by income group according to some version of 'clout', that is, it is smaller for groups with higher values of $E[\pi_i']$. The common marginal tax rate depends on the ethical preferences of party L, x^L, and of the voters, x^V, where the weight on the latter is z^L, the weighted average of the clout of the ethical voters. The marginal tax rate is positive if $z^L x^V + \beta^L/(1-\beta^L)x^L > 0$, which will be the case if $0 < x^V, x^L, \beta^L < 1$.

We assume that these inequalities apply. Note that t_i^L does not depend on the ethical preferences of the other party, but it does depend on the policies promised by the other party, which enter into $\pi_i(\cdot)$ by (14). Finally, the tax t_i^L is decreasing in the deadweight loss parameter δ as expected. If there is no deadweight loss of taxation, so $\delta = 0$, then the marginal tax rate is 100 percent.

To obtain the variance of consumption implied by party L's policy, subtract (26) from $y_i - \overline{y}$:

$$y_i - \overline{y} - t_i^L + \overline{t}^L = c_i - \overline{c} = \left(\delta\lambda\overline{\pi}' + z^L x^V + \frac{\beta^L}{1-\beta^L} x^L\right)^{-1} \left(E[\pi_i'] - \overline{\pi}' + \delta\lambda\overline{\pi}'(y_i - \overline{y})\right)$$

Converting this to a variance, we obtain:

$$\sigma^{L^2} = \left(\delta\lambda\overline{\pi}' + z^L x^V + \frac{\beta^L}{1-\beta^L} x^L\right)^{-2} \left((\delta\lambda\overline{\pi}')^2 \sigma_y^2 + \sigma_{\pi'}^2 + 2\sigma\lambda\overline{\pi}' \mathrm{Cov}(y_i, E[\overline{\pi}'])\right) \quad (27)$$

which is decreasing in z^L if $\mathrm{Cov}(y_i, E[\pi_i']) \geqslant 0$, which we shall assume in what follows.

We can summarize some key results for the policies of party L in the following lemma.

Lemma 1:

i) $\overline{t}^L$ is decreasing in z^L,

ii) t_i^L is decreasing in $E[\pi_i']$, and increasing in y_i if $z^L x^V + \beta^L/(1-\beta^L)x^L > 0$,

iii) σ^{L^2} is decreasing in z^L if $\mathrm{Cov}(y_i, E[\pi_i']) \geqslant 0$.

5. Characterizing Party Platforms in Equilibrium

Party L chooses tax rates t_i^L such that $\partial R^L/\partial t_i^L = 0$ in (24) leading to an average tax rate $\overline{t}^L$ given by (25) and a variance σ^{L^2} given by (27). To simplify the characterization of the party's choice of platform and to obtain clear results, we make the following assumption.

Assumption:

i) π_i' is constant for all income groups i.

This assumption means that the distribution of pure party preferences is uniform over W within each income group, but π_i' can vary with income. Since constant π_i' implies that $\overline{\pi}'$, $\mathrm{Cov}\big(y_i, E[\pi_i']\big)$ and $\sigma_{\pi'}^2$ are constant, the variance σ^{L^2} depends only on z^L by (27). The average tax rate $\bar{t}^L$ varies only with z^L by (25). We can then use (5) to write the ethical value of party L's platform from the point of view of the voters as:

$$-S^L = x^V {\sigma^L}^2 + (1 - x^V)\bar{t}^L \equiv \Psi^L(z^L), \quad {\Psi^L}'(z^L) < 0 \tag{28}$$

where, from (19), $z^L = \sum_i n_i\big(1 - \Phi_i(\widehat{W}^L)\big)\pi_i'$. Using (13), this can be written:

$$z^L = \sum_i n_i\big(1 - \Phi_i(\widehat{W}^L)\big)\pi_i' \equiv \Omega(\widehat{W}^L) = \Omega\big(\min[-S^L, \overline{W}]\big) \tag{29}$$

Since π_i' is constant, we have for $\widehat{W}^L < \overline{W}$:

$$\frac{dz^L}{d\widehat{W}^L} = \Omega'(\widehat{W}^L) = -\sum_i n_i \pi_i' \Phi'(\widehat{W}^L) < 0$$

Thus, in the special case where $\Phi_i(W)$ is uniform, $dz^L/d\widehat{W}^L$ is a constant.

The equilibrium party policy is characterized by the solution to (28) and (29), giving equilibrium values of $-S^L$ and z^L. (Analogous expressions apply for party R.) These may have multiple solutions as we now show.

Consider $-S^L$ first. From (28) and using (25) and (27), we obtain:

Lemma 2: ${\Psi^L}'(z^L) < 0 < {\Psi^L}''(z^L)$.

Figure 1 depicts $-S^L = \Psi^L(z^L)$. The vertical intercept is given by $\Psi^L(0)$, where by (25) and (27), **WE COULD DROP THIS EQUATION SINCE WE DO NOT USE IT.**

$$\Psi^L(0) = x^V \left(\delta\lambda\overline{\pi}' + \frac{\beta^L x^L}{1-\beta^L}\right)^{-2} \left((\delta\lambda\overline{\pi}')^2\sigma_y^2 + \sigma_{\pi'}^2 + 2\sigma\lambda\overline{\pi}'\mathrm{Cov}(y_i, \pi')\right)$$
$$+(1 - x^V)\frac{1}{\delta\lambda}\left((\lambda - 1) - \frac{\beta^L}{1-\beta^L}\frac{1-x^k}{\overline{\pi}'}\right)$$

The value of z^L goes from 0 to $\overline{\pi}'$ as the number of ethical voters goes from 0 to 1 (i.e., to all voters).

Figure 2 depicts $z^L = \Omega\big(\min[-S^L, \overline{W}]\big)$ by (29), where the horizontal intercept is given by $\Omega(0) = \overline{\pi}'$, which applies for $\Phi_i(0) = 0$. The curve is drawn for the special case of uniform distributions for $\Phi_i(W)$ so it is linear, though the general results only depend on the curve being downward sloping.

From these two figures, the following lemma is apparent.

Lemma 3: If $\Psi^L(0) > \overline{W}$, then (28) and (29) may give multiple solutions one of which is $z^L = 0$ and $-S^L = \Psi^L(0)$ (no ethical voters).

Note that $\Psi^L(0) > \overline{W}$ is more likely the larger are σ_y^2 and $\sigma_{\pi'}^2$, and the smaller is the weight β^L put on ethical values by party L. Figure 3 depicts a possible case of multiple solutions. The solutions are at the points E_1, E_2 and E_3. Which of them constitutes a political equilibrium depends on what we assume about political party behavior. Recall that $-S^L = \Psi^L(z^L)$ is the outcome of political choice of $\boldsymbol{t}^L$, while $z^L = \Omega\big(\min[-S^L, \overline{W}]\big)$ determines the number of ethical voters as chosen by the voters themselves. In maximizing its objective function R^L, party L may take $z^L = \sum_i n_i\big(1 - \Phi_i(\widehat{W}^L)\big)\pi_i'$ as given, which we refer to as *Nash Behavior*, or it may take into account the dependency of z^L on tax policy, which we call *Strategic Behavior*. Consider each in turn.

Case 1: Nash Behavior

In this case, party L reacts passively to the value of z^L, simply taking it as given and choosing its policies to optimize its objective R^L in (23). The following outcome is apparent.

Proposition 1: Assume Nash behavior by party L. If $\Psi^L(0) > \overline{W}$, then the political equilibrium may be multiple with $z^L = 0$ (no ethical voters) and $-S^L = \Psi^L(0)$ emerging as one of them.

In Figure 3, there are three equilibria in $-S_L$ and z^L: E_1, E_2, and E_3. Of these, only E_1 and E_3 are stable, and we might expect a priori one of them to occur. In the case of E_1, there are no ethical voters so we are in the equivalent of the standard probabilistic voting equilibrium of Lindbeck and Weibull (1987). In the case, of E_3, the party caters to the ethical voters by offering platforms that have a higher ethical index S^L. Note that, given out assumption that π_i' is constant, party L's choices are not affected by party R's platform, and vice versa. In particular, one party could be at an equilibrium like E_1 with no ethical voters, while the other might be at one like E_3.

Case 2: Strategic Behavior

Suppose now that party L takes into account how its policies can affect the number of ethical voters. Like a Stackelberg leader, it can effectively choose any point along the voters' 'reaction curve': $z^L = \Omega\big(\min[-S^L, \overline{W}]\big)$ in Figure 3. Equivalently, it can choose any value of W^L that it wishes. Consider then the effect on the value of party L's objective function R^L of different values of W^L. Denote by $\widetilde{W}^L$ the values of W^L artificially chosen by party L, where $\widetilde{W}^L < \overline{W}$. Using the analog of (16), we have:

$$\tilde{\pi}_i^L = \int^{\widetilde{W}^L} \pi_i^L d\Phi_i(W) + \int_{\widetilde{W}^L} \pi_i^L d\Phi_i(W) \tag{30}$$

where

$$\begin{aligned}\frac{\partial \tilde{\pi}_i^L}{\partial \widetilde{W}^L} &= \Phi_i(\widetilde{W}^L)\left(\pi_i' \cdot (y_i - t_i^L + \lambda G^L) - \pi_i' \cdot (y_i - t_i^L + \lambda G^L + \widetilde{W}^L + S^L)\right) \\ &= -\pi_i' \Phi_i(\widetilde{W}^L)(\widetilde{W}^L + S^L) > 0 \ \text{ iff } \ \widetilde{W}^L + S^L < 0, \ \text{ or } \ \widetilde{W}^L < \widehat{W}^L\end{aligned}$$

Given $\widetilde{W}^L$, party L maximizes R^L in (23) with respect to $\boldsymbol{t}^L$. Write the maximized payoff to party L conditional on $\widetilde{W}^L$ as $\widetilde{R}^L$. By the envelope theorem, we obtain, using (30),

$$\frac{\partial \widetilde{R}^L}{\partial \widetilde{W}^L} = (1 - \beta^L)\frac{\partial V^L}{\partial \widetilde{W}^L} = (1 - \beta^L)\sum_i n_i \frac{\partial \pi_i^L}{\partial \widetilde{W}^L}$$

$$= -(1 - \beta^L)\sum_i n_i \pi_i' \Phi_i(\widetilde{W}^L)(\widetilde{W}^L + S^L) > 0 \text{ iff } \widetilde{W}^L < \widehat{W}^L = \min[-S^L, \overline{W}]$$

Given the choice of $\widetilde{W}^L$, the cutoff value of W determining the number of ethical voters, the value of z^L will satisfy $z^L = \Omega(\widetilde{W}^L)$ for $\widetilde{W}^L < \overline{W}$, and zero otherwise. Therefore, $d\widetilde{W}^L/dz^L = 1/\Omega' < 0$. Then,

$$\frac{d\widetilde{R}^L}{dz^L} = \frac{\partial \widetilde{R}^L}{\partial \widetilde{W}^L}\frac{d\widetilde{W}^L}{dz^L} = -\frac{1 - \beta^L}{\Omega'}\sum_i n_i \pi_i' \Phi_i(\widetilde{W}^L)(\widetilde{W}^L + S^L)$$

So $\widetilde{R}^L$ is increasing in z^L if $\widetilde{W}^L > -S^L$, and vice versa.

The effect of $\widetilde{W}^L$ on $\widetilde{R}^L$ can be shown geometrically as follows. In Figure 3, the straight line can be interpreted as the function $z^L = \Omega(\widetilde{W}^L)$, while the curved line shows, as before, $-S^L = \Psi^L(z^L)$. Therefore, for z^l in the range $z_1^L < z^L < z_2^L$, $-S^L > \widetilde{W}^L$, while for $z_2^L < z^L < z_3^L$, we have $-S^L > \widetilde{W}^L$. Figure 4 illustrates how $\widetilde{R}^L$ changes with z^L. At

$z_1^L = 0$, $\widetilde{W}^L = \overline{W} = \widehat{W}^L$. At z_3^L, $\widetilde{W}^L = \widehat{W}^L$. Thus, $R_1^L = \widetilde{R}^L(z_1^L = 0)$ and $R_3^L = \widetilde{R}^L(z_3^L)$ are respectively the levels of R^L when $-S^L$ and z^L are the stable solutions to (28) and (29). These are locally optimal values of $\widetilde{R}^L$, while R_2^L is the minimum value of $\widetilde{R}^L$, which occurs at the unstable solution of (28) and (29). This can be summarized in the following proposition.

Proposition 2: Assume strategic behavior by party L, and let E_1, E_2 and E_3 solve (28) and (29). Then, party L chooses either E_1 or E_3, depending on $R_1^L \gtrless R_3^L$.

Note that party L acting strategically may prefer the equilibrium E_1 where all voters are selfish (i.e., $R_1^L > R_3^L$) even if $\beta^L > 0$ so that the party puts some weight on ethical values.

Note also that party R, also behaving strategically, could prefer the platform $\boldsymbol{t}^R$ that attracts ethical voters (the analog of R_3^L) even if party L chooses R_1^L, and vice versa. This is because there is no explicit interaction between the two parties when π_i' is constant. In the following section, we extend the model to take political party interdependence into account.

6. Modeling the Interdependence of Political Parties

There are various ways of introducing some interdependency into the behavior of political parties. The method we choose is to suppose that voters decide whether to vote ethically independently of deciding which party to vote for. In particular, their ethical voting behavior is affected by the expectation of the policies in place after the election, based on the platforms offered by the two parties and the voters' expectation of which party will win. The timing is otherwise similar to the basic model. The two parties announce their platforms (to which they can commit as in the probabilistic voting model). The voter form expectations about who will win, and therefore on the expected ethical value of the voting outcome. Their vote is then based on this expected ethical value as well as the private utility obtained from the two parties. Of course, it must be assumed, as in the basic model, that the two parties can anticipate the proportion of the voters that will vote ethically. Consider first the voters' decision about whether to vote ethically before turning to their party preference.

Let q be the probability of party L winning the election. Then, the expected ethical value of party platforms is given by:

$$E[S] = qS^L + (1-q)S^R \tag{31}$$

where S^L and S^R are the ethical values of the two parties' platforms. Voter i decides to vote ethically if and only if:

$$E[y_i - t_i + \lambda G] + E[S] + W \geqslant E[y_i - t_i + \lambda G], \text{ or } W \geqslant -E[S] = \widehat{W} \tag{32}$$

assuming $\widehat{W} < \overline{W}$, where $E[y_i - t_i + \lambda G]$ is the expected value of their selfish utility. Both parties face the same value of $\widehat{W}$, so $\widehat{W}^L = \widehat{W}^R$, and and we assume they both adopt Nash behavior, taking $\widehat{W}$ as given. The weighted political influence of the ethical voters now becomes:

$$z = \sum_i n_i \pi_i' \big(1 - \Phi_i(\widehat{W})\big) \tag{33}$$

where $z^L = z^R = z$ now, and $\widehat{W} = \max[-E[S], \overline{W}]$. Thus, z is the analog of z^k in the basic model.

Having decided whether to take ethical preferences into account on voting, the voting choice is similar to the basic model except that now $\widehat{W}^L = \widehat{W}^R = \widehat{W}$ and $z^L = z^R = z$. Proceeding as above, policies chosen by the parties $k = L, R$ are simply the analogs of (25), (26) and (27) with z^L replaced by z. These lead to ethical values of

$$S^k = -x^V {\sigma^k}^2(z) - (1 - x^V)\bar{t}^k(z), \qquad k = L, R \tag{34}$$

and an expected ethical value of

$$-E[S] = -qS^L(z) - (1-q)S^R(z) = \Psi(z, q) \tag{35}$$

where $\Psi(z, q)$ is decreasing in z as in the case of (28) in the basic model.

The discussion so far takes q, the probability of party L winning the election, and z, the political influence of the ethical voters, as given. We now turn to how these are determined.

The Equilibrium Value of z

For now, take q as given, although it too will emerge as an equilibrium variable. To simplify matters and obtain clearcut results, we make the following further assumptions in addition to assumption i) earlier:

Assumptions:

ii) $\sigma_{\pi' y} = 0$

iii) $\beta^R = 0, \beta^L > 0$

iv) $x^L = 1$

By Assumption ii), the value of π_i' is the same for all income groups. Assumption iii) implies that party R, unlike party L, is a Downsian vote-maximizer that puts no weight on ethical preferences. Assumption iv) implies that $P^L = -{\sigma^L}^2$, so party L's ethical preferences put weight only on inequality. Using (25) and (27), these assumptions lead immediately to $\bar{t}^L = \bar{t}^R = \bar{t}$ and ${\sigma^L}^2 < {\sigma^R}^2$. Therefore,

$$\frac{dE[S]}{dq} = S^L - S^R = x^V \left({\sigma^R}^2 - {\sigma^L}^2\right) > 0 \tag{36}$$

Therefore, $-E[S] = \Psi(z, q)$ in (35) is decreasing in both z and q.

Figure 5 depicts possible equilibria for z for a given value of q, assuming that $\Psi(0, q) > \overline{W}$. The figure shows the case, analogous to Figure 3 for the basic case, where there are three equilibria, two stable (E_1, E_3) and one unstable (E_2). Note that as q increases, the curve $-E[S] = \Psi(z, q)$ shifts down, causing z_2 to fall and z_3 to rise. We can use this property to depict possible equilibria for various values of q.

Let $\underline{q}$ be the value of q such that the curve $-E[S] = \Psi(z, q)$ is just tangential to the straight line determining z, i.e., the curve $z = \sum_i n_i \pi_i' \big(1 - \Phi_i(-E[S])\big)$. Then, since, the curve $-E[S] = \Psi(z, q)$ moves down as q increases, we can define $\overline{q}$ as the value of q when the vertical intercept of the curve $-E[S] = \Psi(z, q)$ just equals $\overline{W}$. Formally, we have

$$z_2(\underline{q}) = z_3(\underline{q}), \qquad \Psi(0, \overline{q}) = \overline{W} \tag{37}$$

Then, the stable equilibrium values of z — and therefore the equilibrium number of ethical voters — for various values of q satisfy:

Case 1: If $q < \underline{q}$, $z = z_1 = 0$

Case 2: If $\underline{q} \leqslant q \leqslant \overline{q}$, $z \in \{0, z_3\}$

Case 3: If $q > \overline{q}$, $z = z_3$

The implication is that the number of ethical voters in the stable interior equilibrium is increasing in q, the probability of party L winning. This is not because ethical voters share the same ideological value as party L: x^V may be less than unity $(= x^L)$. Rather, given that party R is purely populist, as q falls so party R is more likely to win, more voters vote selfishly and favor such a populist platform.

In what follows, we make one further assumption:

Assumption:

v) $0 < \underline{q} < \overline{q} < 1$

Figure 6 summarizes the relationship between z and q for stable equilibrium outcomes. As indicated above, multiple equilibria will occur in the range $[\underline{q}, \overline{q}]$, and single equilibria otherwise.

Expected Votes per Party

Given that π_i' is constant (assumption i)), we can write the probability of a person with income y_i voting for party L as

$$\pi_i(u_i^L - u_i^R) = \pi_i(0) + \pi_i' \cdot (u_i^L - u_i^R) \tag{38}$$

Assume that voters have no innate preference for one party over the other, so that $\pi(0) = 0.5$. Expected votes for party L is $V^L = \sum n_i \pi_i$, which may be written, using $\sum n_i = 1$:

$$V^L = 0.5 + \sum n_i \pi_i' \left(\Phi_i(\widehat{W})(\lambda G^L - t_i^L) + (1 - \Phi_i(\widehat{W}))(\lambda G^L - t_i^L + S^L) + \int_{\widehat{W}} W d\Phi_i \right)$$

$$- \sum n_i \pi_i' \left(\Phi_i(\widehat{W})(\lambda G^R - t_i^R) + (1 - \Phi_i(\widehat{W}))(\lambda G^R - t_i^R + S^R) + \int_{\widehat{W}} W d\Phi_i \right)$$

or, using (33),

$$V^L = 0.5 + \sum n_i \pi_i' \left((\lambda G^L - t_i^L) - (\lambda G^R - t_i^R) \right) + z(S^L - S^R) \tag{39}$$

where, using (5) with $\bar{t}^L = \bar{t}^R = \bar{t}$,

$$S^L - S^R = x^V \left({\sigma^R}^2 - {\sigma^L}^2 \right) > 0 \tag{40}$$

From the government's budget constraint (1), G^k may be written:

$$G^k = \bar{t}^k - \sum_i n_i \frac{\delta}{2}(t_i^k)^2 = \bar{t}^k - \sum_i n_i \frac{\delta}{2}\left((\bar{t}^k)^2 + \mathrm{Var}(t_i^k)\right) = \bar{t}^k - \frac{\delta}{2}(\bar{t}^k)^2$$

$$-\frac{\delta}{2}(H^k)^{-2}\left(\sigma_{\pi'}^2 + 2\left(zx^V + \frac{\beta^k x^k}{1-\beta^k}\right)\sigma_{\pi' y} + \left(zx^V + \frac{\beta^k x^k}{1-\beta^k}\right)^2 \sigma_y^2\right)$$

where

$$H^k = \delta\lambda\bar{\pi}' + zx^V + \frac{\beta^k}{1-\beta^k}x^k$$

Using this expression with (26), we obtain:

$$\sum n_i \pi_i'(\lambda G^k - t_i^k) = \lambda\bar{\pi}'\left(\bar{t} - \frac{\delta}{2}\bar{t}^2 - \frac{\delta}{2}(H^k)^{-2}\left(\sigma_{\pi'}^2 + \left(zx^V + \frac{\beta^k x^k}{1-\beta^k}\right)^2\sigma_y^2\right)\right)$$
$$-\bar{\pi}'\bar{t} - \mathrm{Cov}(\pi' t_i) \tag{41}$$

where $\mathrm{Cov}(\pi' t_i) = \sigma_{\pi'}^2/H^k$ We can then use (40) and (41) with $x^L = 1$ by Assumption iv) to rewrite (39) as:

$$V^L = 0.5 + zx^V\left({\sigma^R}^2 - {\sigma^L}^2\right) + \sigma_{\pi'}^2\left((H^R)^{-1} - (H^L)^{-1}\right)$$
$$-\frac{\delta\lambda\bar{\pi}'}{2}\left((H^L)^{-2}\left(\sigma_{\pi'}^2 + \left(zx^V + \frac{\beta^L}{1-\beta^L}\right)^2\sigma_y^2\right) - (H^R)^{-2}\left(\sigma_{\pi'}^2 + (zx^V)^2\sigma_y^2\right)\right) \tag{42}$$

with ${\sigma^R}^2 - {\sigma^L}^2 = \left((H^R)^{-2} - (H^L)^{-2}\right)\left(\sigma_{\pi'}^2 + (\delta\lambda\bar{\pi}')^2\sigma_y^2\right) > 0$.

The expected number of votes for party R is simply $V^R = 1 - V^L$. Given our assumption that party R is a vote maximizer, while L is not, the former will always get at least half the votes. Party R can always attract half of the expected votes simply by mimicking the policy platform of L. On the other hand, party L sacrifices a certain number of votes for ideological purposes. Note also that V^L is a function of z by (42). As can be seen, since ${\sigma^R}^2 - {\sigma^L}^2 > 0$, an increase in z will increase V^L given the proposed platforms. But, the platforms of the two parties will change, which will have an indirect effect on V^L. It is straightforward to show that the direct effect dominates the indirect effect, so $dV^L/dz > 0$: an increase in the number of ethical voters helps party L.

Equilibrium Value of q

The value of V^L reflects only the probability of party L winning. There remains some uncertainty about the actual number of votes, say, because of some aggregate shock or political scandal that affects all voters. Moreover, the underlying distribution of voter preferences $\pi_i(\cdot)$ is itself non-deterministic. So, the party with the largest expected votes (party R here) does not necessarily always win.

Let q, the probability of party L winning, be an increasing function of V^L, which as we have seen is itself a function of z. Then q is defined as follows:

$$q \equiv \Theta(V^L(z)) = \widehat{\Theta}(z), \quad \widehat{\Theta}'(z) > 0 \tag{43}$$

Let $\Theta(0.5) = 0.5$. Then, $q < 0.5$ since as we have seen, $V^L < 0.5$. Figure 7 depicts a possible relationship between q and z based on the function $q = \widehat{\Theta}(z)$.

Interaction between q and z

Figures 6 and 7 indicate the interdependency between the probability of party L being elected, q, and the size of political influence of ethical voters, z. In Figure 6, z is determined as a function of q, while in Figure 7, q depends on z (via V^L). In a political equilibrium, q and z will be simultaneously determined to satisfy these relationships.

Various possibilities exist depending on the relationships between the curves in Figures 6 and 7. Recall the definition of $\overline{q}$, given by the solution to $\Psi(0, \overline{q}) = \overline{W}$. Suppose that $\widehat{\Theta}(0) < \overline{q}$. Then, one possible equilibrium is $z = 0$ and $q = \widehat{\Theta}(0)$, so there are no ethical voters. Next, recall that $\underline{q}$ is defined by $z_2(\underline{q}) = z_3(\underline{q})$. Suppose that $\widehat{\Theta}(0) > \underline{q}$ and $z_3(1) \leqslant \overline{\pi}'$. Then, the simultaneous solution to $z = z_3(q)$ and $q = \widehat{\Theta}(z)$ is a political equilibrium.

One case satisfying these properties is shown in Figure 8. In this figure, one equilibrium is the case with no ethical voters, labeled q_0^* where $q_0^* = \widehat{\Theta}(0)$ and $z_0^* = 0$. An interior equilibrium is shown as q_I^* refers to the interior equilibrium with $z_I^* = z_3(q_I^*)$.

7. The Possibility of Vote Cycling

In this section, we modify the model to allow for the possibility of vote cycling. In this case, the vote cycling arises from the possibility of multiple equilibrium platforms for the parties, where the platforms differ, as we have seen, in the extent to which they cater to ethical voting. The model we use is similar to that of the previous section except that we now assume that both parties are pure vote maximizers, so $\beta^L = \beta^R = 0$. The number of ethical voters is determined by the voters' expectation of S which, using (31) is given by:

$$\widehat{W} = -E[S] = -qS^L - (1-q)S^R \tag{44}$$

where q is the voters' perceived probability of party L being elected. All voters for whom $W > \widehat{W}$ will vote ethically. Therefore, z is again determined by (33), $z = \sum n_i \pi_i' \big(1 - \Phi_i(\widehat{W})\big)$.

We can summarize the policy platforms offered by the two parties by their realized ethical values, $S^k = -x^V \sigma^2(\boldsymbol{t}^k) - (1-x^V)\bar{t}^k$, $k = L, R$. If the two parties offer the same platform, $q = 1/2$ and $S^L = S^R = S$.

Consider now the possible political outcomes. As Figure 5 indicates, there are two equilibrium policy outcomes, S_1 and S_3 corresponding to the points E_1 and E_3. Let us focus on those two policy platforms. Platform S_1 maximizes a party's objective, which we assume here is expected votes V^k, given $z = z_1$, and similarly for S_3 given $z = z_3$. Equivalently, given $z = z_1$, platform S_1 gives higher votes that S_3, and vice versa. Voting outcomes under various combinations of S_1 and S_3 for the two parties is summarized in Table 1.

Suppose now that party L is strategic in the sense that it accounts for the dependence of z on S^k, while party R is myopic with respect to z to use our earlier approach. Suppose further that voters know that party L is the strategic one and they react to party L's behavior in choosing q. To take the extreme case for illustration, suppose voters believe that $q = 1$ whenever $S^L \neq S^R$. This is plausible since party L will manipulate z so that $V^L > 1/2 > V^R$. Using (43), we suppose that $\Theta = 1$ if $V^L > 1/2$, $\Theta = 1/2$ if $V^L = V^R = 1/2$, and $\Theta = 0$ if $V^L < 1/2$. (The same argument goes through in the more general case where q is sufficiently higher than 1/2 when $S^L \neq S^R$.) Then, we have that $z = 0$ when party L proposes $S^L = S_1$, while $z = z_3$ when party L proposes $S^L = S_3$. In this case, Table 1 simplifies to Table 2.

Given this, the platforms offered by the two parties will cycle as follows. Following Downs (1957), suppose that the incumbent party announces its policy first. If party R

chooses S_1, party L will choose S_3 and wins. Party R then changes to policy S_3 and wins with a probability of 50 percent. Party L then changes to policy platform S_1 and wins, and this is followed by party R choosing the same platform. The cycle of platform changes continues with party L always opting to differentiate platforms and party R preferring to mimic party L.

This argument relies on only one party being the strategic one, and voters conditioning their beliefs on that. Obviously this does no more than illustrate the possibility of cycling. In a more general context, the belief about q could be affected by either party opting to adopt a different policy than the other. As long as parties must announce their policies sequentially, for example the incumbent announcing before the challenger as in Downs, vote cycles can occur. In our model, the vote cycling takes the form of the proportion of ethical voters fluctuating between zero and some positive amount.

8. Concluding Remarks

We have explored some implications of ethical voting for political equilibrium in a simple model of government redistributive taxation and public goods. The model we used assumed that voters give some weight to their ethical preferences — that is, preferences for social welfare-maximizing outcomes — but only if political platforms are not too far away from their socially preferred one. Given that, political parties must decide whether to condition their platforms to cater to ethical preferences, or to forgo ethical voters and choose platforms that appeal to voters' private utility. In such a setting, we show that multiple stable equilibria in political platforms can occur. Moreover, if parties offer their platforms in sequence, for example with the incumbent moving first as in Downs (1957), vote cycling can occur.

These results are only suggestive since we have made a number of assumptions to generate them. Relaxing these assumptions would complicate the model considerably and could presumably lead to more instances of multiple stable equilibria as well as instability. Prime candidates for extensions would be to allow voters to abstain if policy platforms deviate from their socially and privately preferred ones by enough, and to allow for heterogeneity of social preferences among voters.

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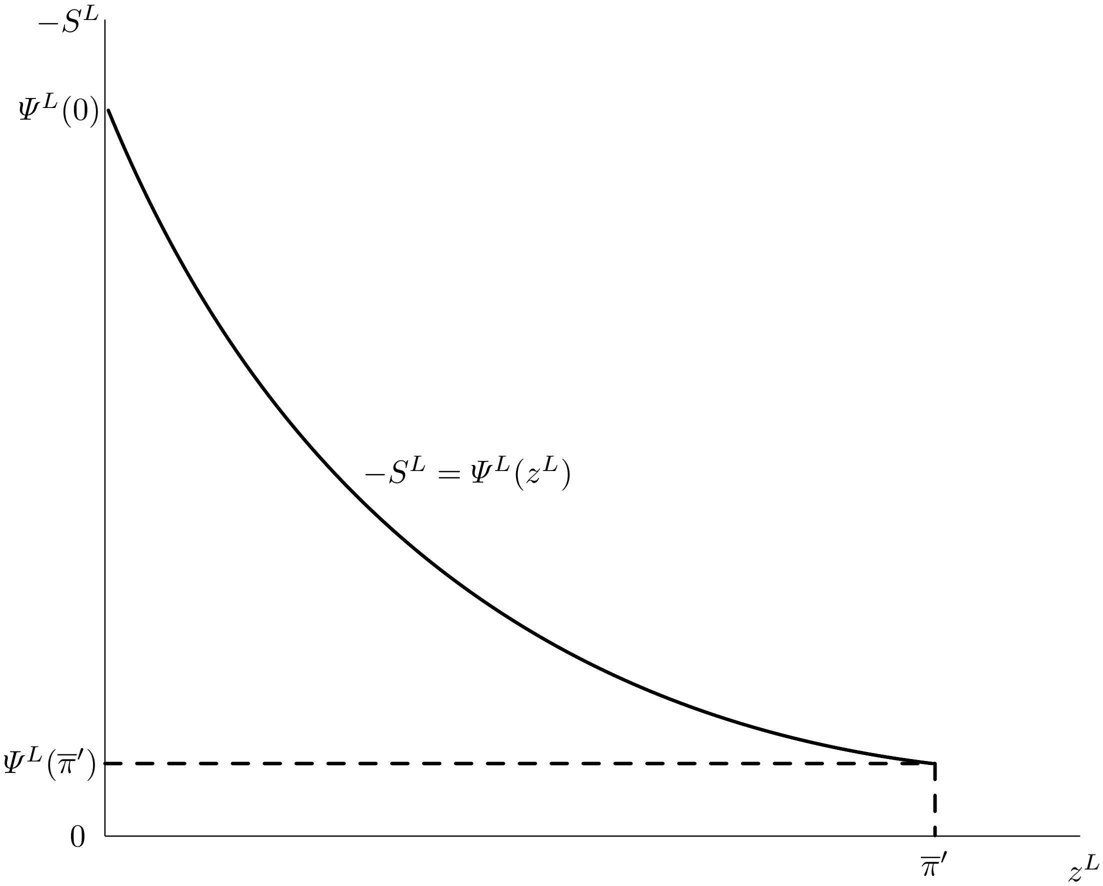
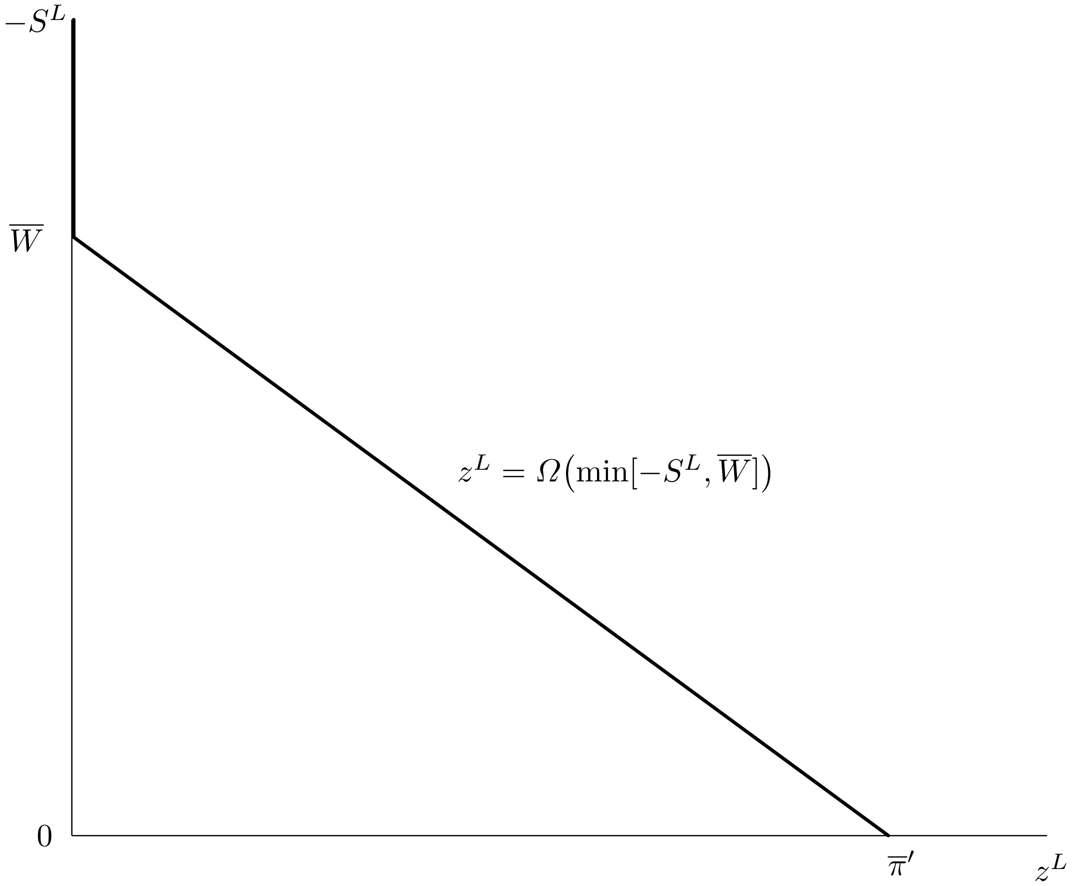


Figure 1



$-S^L$
$\overline{W}$
$z^L = \Omega\big(\min[-S^L, \overline{W}]\big)$
0
$\overline{\pi}'$
z^L

Figure 2

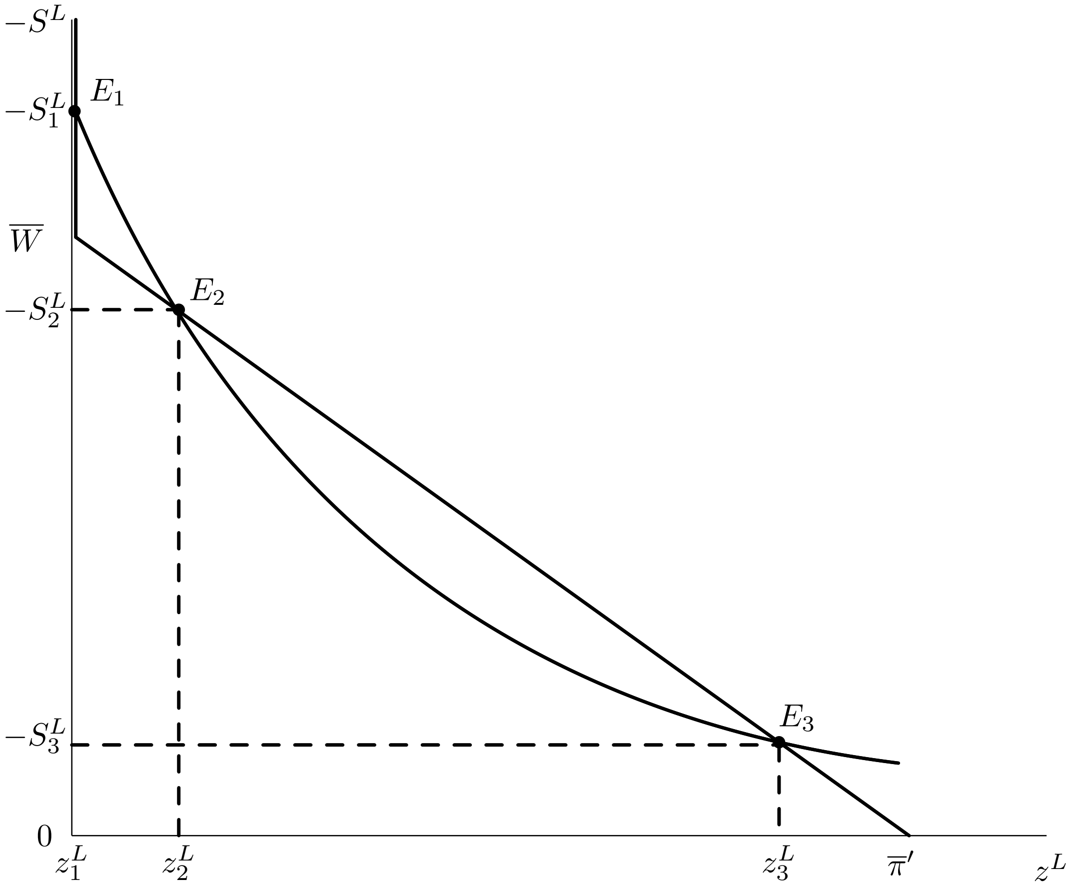
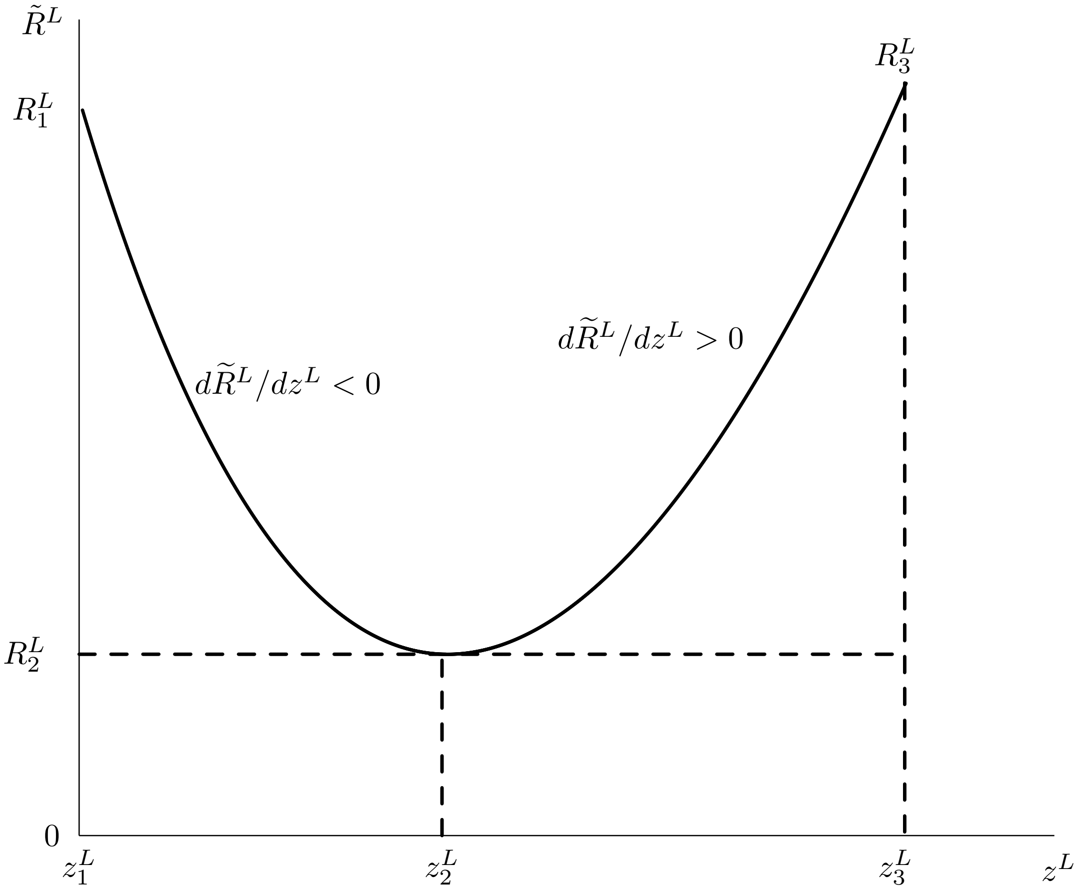
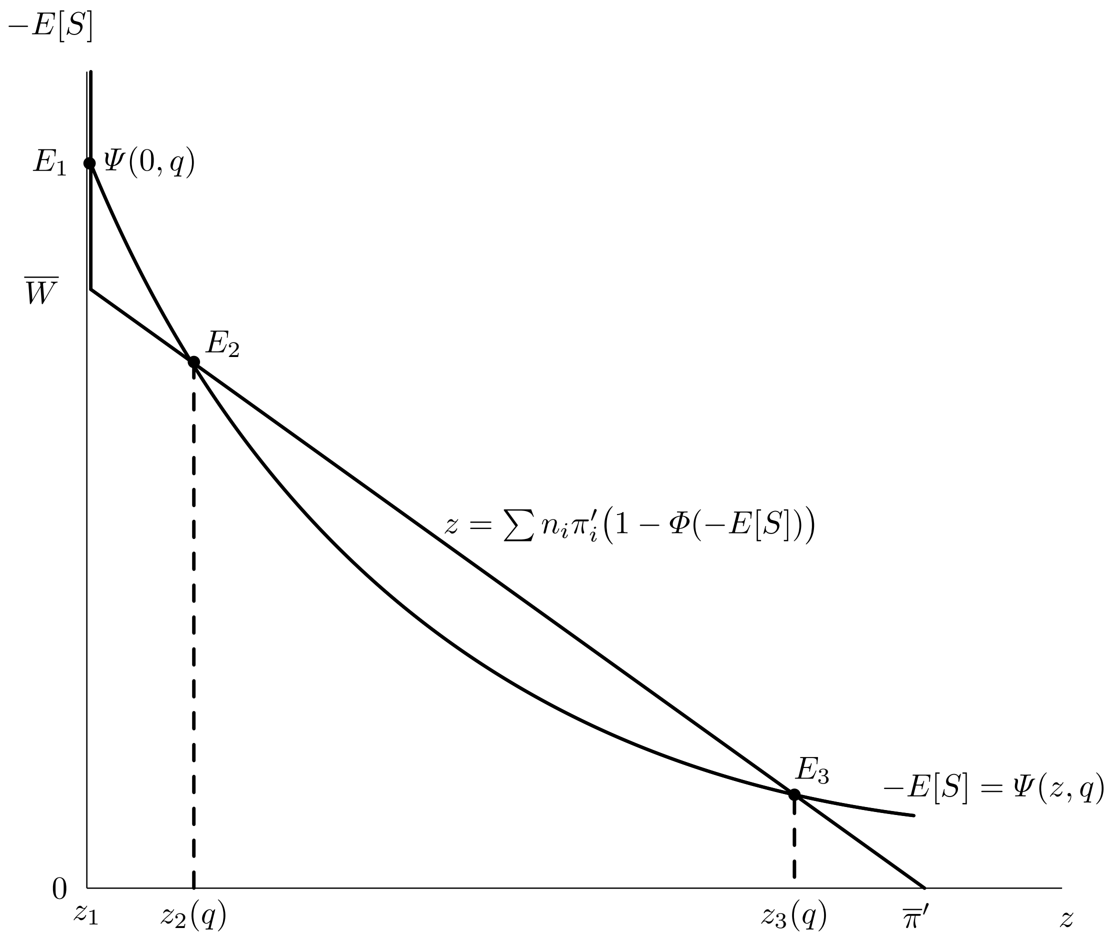


Figure 3



$\tilde{R}^L$
R_1^L
R_3^L
$d\widetilde{R}^L/dz^L > 0$
$d\widetilde{R}^L/dz^L < 0$
R_2^L
0
z_1^L
z_2^L
z_3^L
z^L

Figure 4



$-E[S]$
E_1
$\Psi(0,q)$
$\overline{W}$
E_2
$z = \sum n_i \pi_i' \big(1 - \Phi(-E[S])\big)$
E_3
$-E[S] = \Psi(z,q)$
0
z_1
$z_2(q)$
$z_3(q)$
$\overline{\pi}'$
z

Figure 5

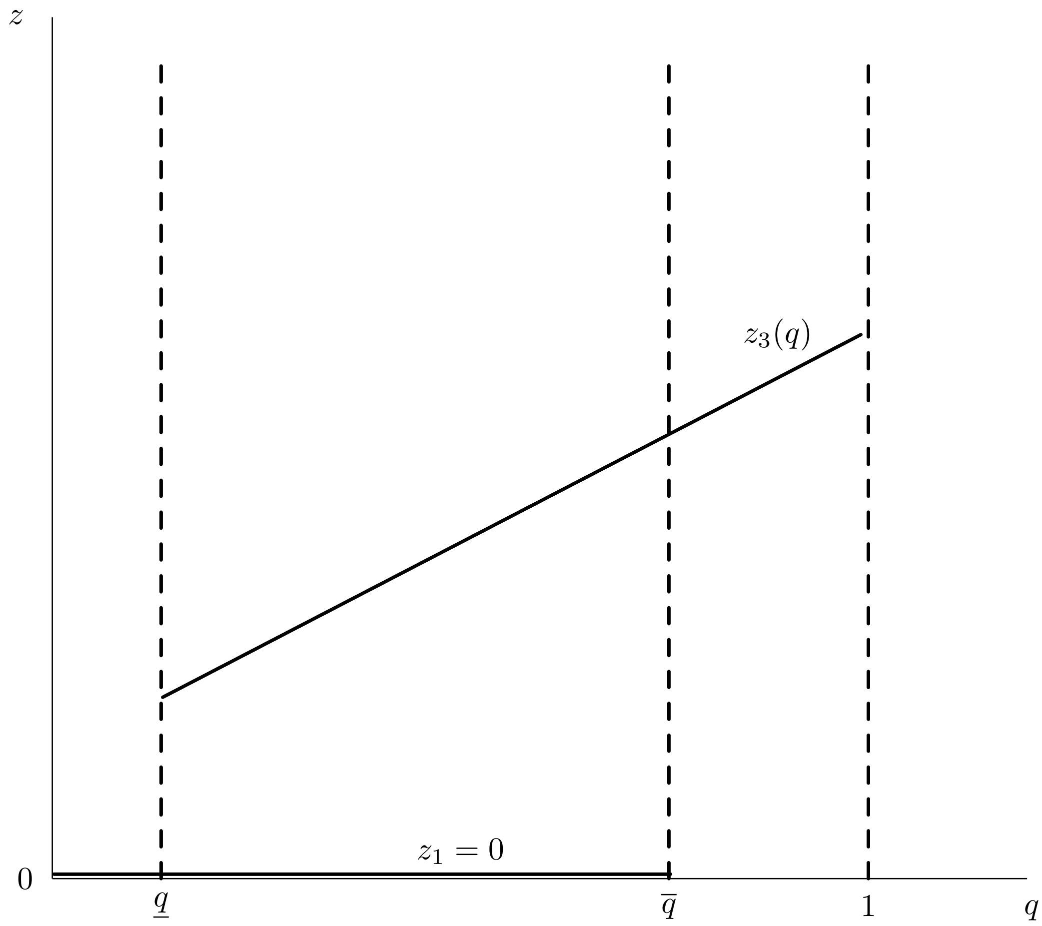


Figure 6

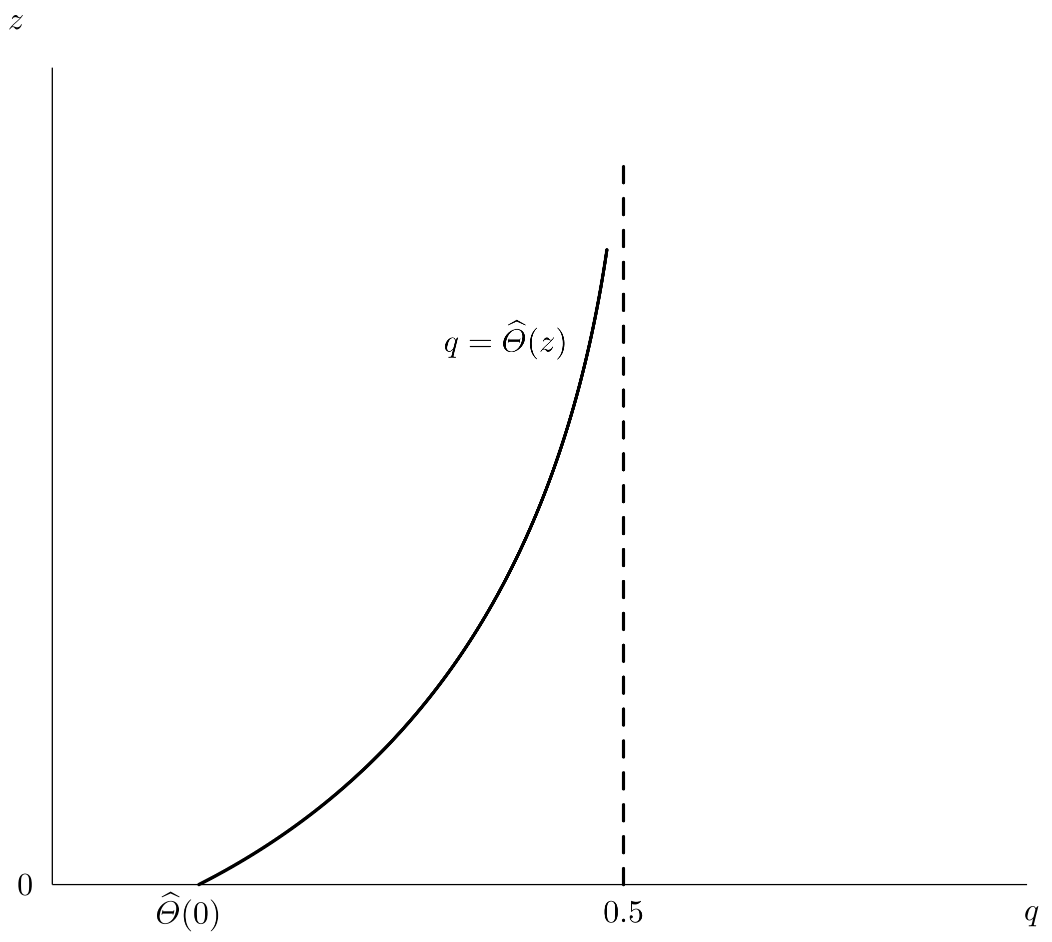


Figure 7

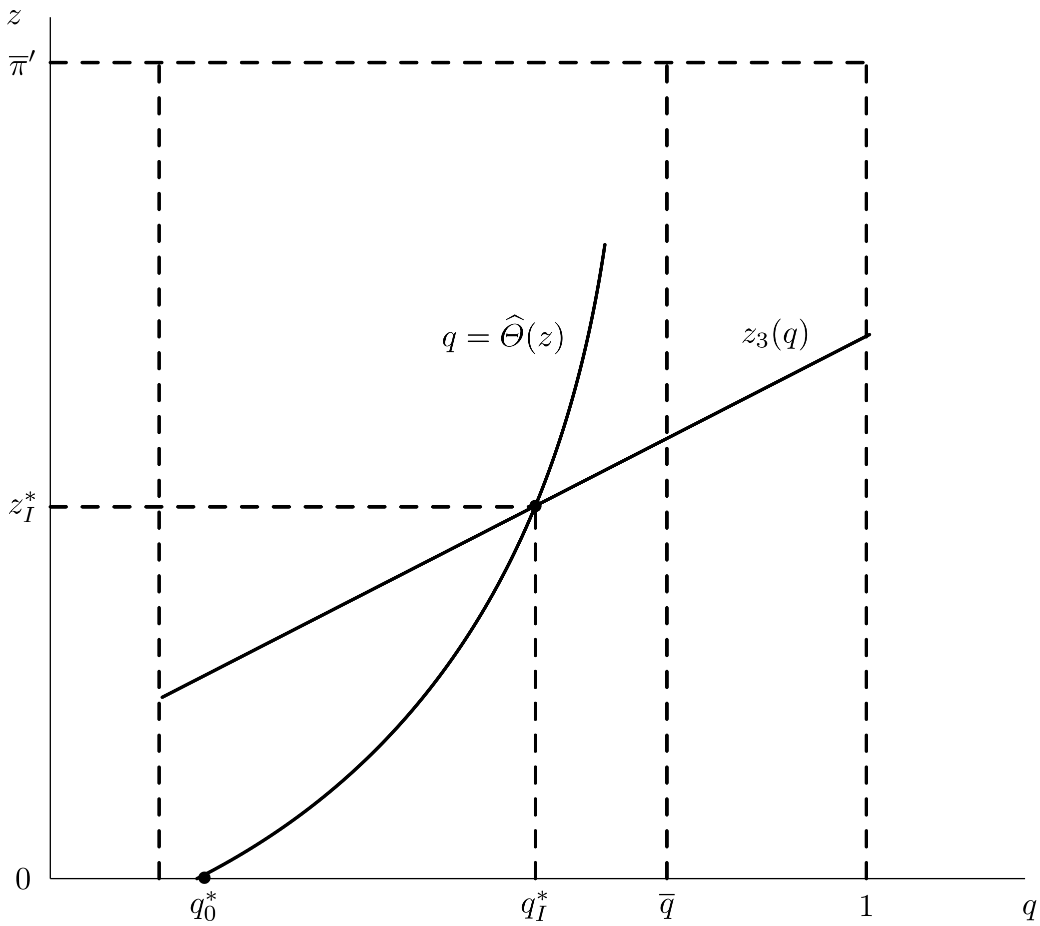


Figure 8

$L \backslash R$	S_1	S_3
S_1	$V^L = V^R = 1/2$	$V^L > V^R$ if $z = 0$ $V^L < V^R$ if $z = z_3$
S_3	$V^L < V^R$ if $z = 0$ $V^L > V^R$ if $z = z_3$	$V^L = V^R = 1/2$

Table 1

$L \backslash R$	S_1	S_3
S_1	$V^L = V^R = 1/2$	$V^L > V^R$ $(z = 0)$
S_3	$V^L > V^R$ $(z = z_3)$	$V^L = V^R = 1/2$

Table 2