The Invisible Hand of Politics

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Abstract

This paper models the entire political process in reduced form, as a generalized tug of war between citizens of many competing interests. Political competition roots out inefficient policies, just as market competition roots out inefficient production or distribution of goods. However, policy efficiency comes inefficiently, as efforts to pull policy in opposite directions cancel and are wasted. In fact, technologies that make political involvement easier can reduce welfare. This model gives insights into policy compromise, gridlock, extremism, policy resilience, and inequity, with application to democracy, non-democratic governments, organizations and committees, bargaining, marketing, temptation, and decision fatigue. The paper also has pedagogical value, as principles that operate elsewhere in existing literature can be seen here more simply, clearly, and generally, with close parallels to the analysis of markets.

1 Introduction

Models of politics often focus on a single step in the political process, such as elections, lobbying, or legislative voting. However, analyzing any of these political elements in isolation risks premature conclusions that would be overturned if later steps in the political process were also taken into account. Even an omnibus model of policy formation that threads together several of these discrete stages together would miss the rich expanse of less structured activities that affect policy. Even after candidates have adopted platforms, voters have cast their ballots, legislative votes have been tallied, and a bill has been signed or vetoed and overriden, for example, unenthusiastic bureaucrats may delay or modify its implementation or funding; opponents of the law may challenge it in court or lobby the legislature to issue superceding legislation; individuals or groups may refuse to comply with the new law or, in extreme cases, resort to political violence such as riots and intimidation or even terrorism and assassination; police and judges may unevenly enforce compliance.

To capture the entirety of such a varied political process, this paper takes a reduced form approach, inspired by a children's game of tug of war, with every citizen exerting costly effort to pull the policy outcome in his desired direction. The form of citizens' effort is not specified, but could include any of the examples mentioned above.[1] A policy function that transforms these various modes of effort into a policy outcome is analogous to a production function that summarizes the intricate inner workings of a firm. Because the model below captures a broad political process that has been modeled in part by existing work, many of its insights are familiar from existing literature; the contribution of this paper is to identify which theoretical forces from narrower contexts apply when a holistic political process is taken into account.

The first result of the analysis below is that not all citizens have the same incentive to exert political effort. Clearly, a citizen lucky enough to inherit a status quo policy at his preferred policy location has no desire to pull in any direction. With concave utility, this generalizes continuously so that the citizens who find the status quo most distasteful are the ones motivated to exert the greatest political influence.

The second main result is that competition between citizens drives policy outcomes to the political center, just as in canonical median voter models. If the initial policy in one dimension were far left of center, for example, some citizens would expend some effort trying to pull the policy further left, but more citizens would pull right, and these would exert greater effort. Excess rightward pressure would move the policy to the right. As it does so, the desire to pull to the left would increase while the desire to pull right decreases; in fact, centrist citizens who at first pulled to the right might stop pulling or even start pulling left. This would continue until the policy reaches a centrist equilibrium, illustrated in Figure 1, where leftward and rightward pressure exactly balance. This resembles the tatonnement process by which excess supply or demand pushes markets toward equilibrium.

The location of the equilibrium policy depends almost entirely on citizens' preferences. Starting from a *steady state* policy location determined solely by preferences, policy will not adjust at all. Out of steady state, equilibrium depends on the initial policy location, but the distance from any equilibrium to the steady state policy is negligible.

Citizens' willingness to pull left or right is proportional to their policy disutility, so in general, a greater willingness to pull left than right indicates greater societal benefit from moving left than moving right, and vice versa. In fact, citizens increase effort until the marginal benefit of exerting political influence equals its marginal cost; in the baseline specification of the model below, where all citizens face the same cost structure, a "first welfare theorem" for politics guarantees that the equilibrium policy outcome exactly maximizes social welfare. As in marekts, then, citizens pursue only their idiosyncratic selfish policy

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[1]The examples above are of citizens' efforts to obstruct policies they dislike. Of course, citizens can also promote, reward, or celebrate political outcomes they favor, such as with letters of gratitude, complimentary op-eds or social media posts, cheering at parades or campaign rallies, or erecting monuments.
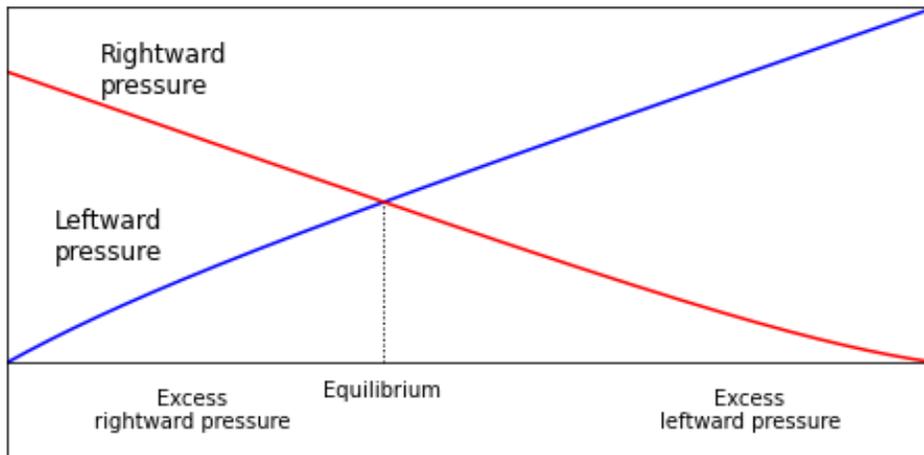
Figure 1: Leftward and rightward pressure, balanced in equilibrium.

interests, but an "invisible hand" leads them to promote collective welfare.[2] Note that this is despite the earlier result that extremists exert greater equilibrium effort than moderates.

Once leftward and rightward pressure equalize, citizens on both sides continue to exert effort but their efforts cancel, with no net impact on the policy outcome. Because efforts to pull policy to the left and right negate each other, they are wasted: if citizens could agree to cease exerting political effort, all would be better off. However, such an agreement lacks credibility; in that sense, policy efficiency is achieved *inefficiently*. In fact, a citizen may exert more effort in equilibrium than she would if she had full control over the policy outcome, not moving it at all but merely preventing it from being pulled in the opposite direction. Naturally, the collective cost of influence is greatest when citizens' policy preferences are most highly polarized. Departing from equilibrium would increase this cost further.

The discreteness of standard voting models makes them difficult to extend to multiple dimensions (e.g., Plott, 1967). In contrast, the model below extends immediately to an arbitrary number of dimensions, with citizens exerting effort in each. The analysis below is also equivalent whether the policy outcome is modeled as an inanimate object that citizens manipulate directly, or as the choice variable of a bureaucrat for whom citizens' political pressure generates disutility.

If some citizens can exert greater political influence at lower cost, then policy outcomes will skew in their favor, validating popular concerns of unfair political influence. If all citizens become more efficient at political influence, all exert greater political effort with no net change in the policy outcome, merely

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[2]As shown below, minimizing policy disutility also minimizes the costs that citizens expend trying to improve policy.

exacerbating deadweight loss.

Welfare results are difficult to establish empirically, but behavioral predictions of the model below are consistent with a wide array of empirical evidence. For example, citizens with extreme policy preferences are more likely to engage in a wide variety of political activities. Total one-sided policy victories are rare, and gridlock notoriously renders political effort fruitless.

An important advantage of a reduced form model of politics is that it can apply to a wide variety of settings, including autocracies along with democracies, as well as non-political organizations such as firms and committees. As discussed below, It can also be applied to bargaining or marketing settings, or even to the competing incentives within a single decision maker, with implications for temptation and decision fatigue. Existing research affirms that, empirically, public sentiment affects policy even in authoritarian regimes.

Some of the results presented in this paper have been highlighted (or are present without being highlighted) in existing literature. As noted above, the central contribution of this paper is to identify which theoretical forces from narrower contexts apply when a holistic political process is taken into account. The model below is also very simple, so these results arise more simply and clearly here than in other settings. This has pedagogical value, especially since the analysis below so closely parallels the standard analysis of markets.

The rest of this paper is organized as follows. Section 2 begins by reviewing related literature. Section 3 introduces the basic model and Section 4.2 analyzes equilibrium behavior and welfare. Section 5 extends the analysis in several ways, and Section 6 discusses applications. Section 8 then concludes.

2   Literature

In a seminal paper, Becker (1983, 1985) introduces a model where a tax on group A to fund a subsidy for group B is affected by political pressure from both groups. This paper is very much in the same spirit as those, but considers any spatial policy, not just subsidies.[3] Becker focuses on marginal shifts in political influence. This paper confirms those results for the more general policy environment, but focuses on efficiency and deadweight loss, which Becker does not formalize. This formalization brings useful clarity: for example, Becker refers to the "tyranny of the status quo", but the analysis below shows initial conditions to be unimportant. As noted above, the formulation also connects to other literature in more illuminating ways.

Duggan and Gao (2020) introduce a reduced form model of political influence similar to the one analyzed below, even invoking the same metaphor of a playground tug of war. In the model below, however, citizens' political efforts act as perfect substitutes in the policy production process, while that paper instead adopts a standard contest function, adapted to accommodate continuous

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[3]Even in the domain of subsidy negotiation, a continuum of benefits from the tax/subsidy scheme is more realistic than the two monolithic pro- and anti-subsidy groups posited in those papers.

outcomes. This has the effect of creating congestion which dilutes citizens' influence, producing different results. For example, the equilibrium policy outcome in that paper maximizes a sum of utilities, but not the utilities that describe citizens' preferences.[4] Improving citizens' ability to exert political effort has opposite welfare impact in the two models: there, it decreases deadweight loss as citizens exert the same effort at lower cost; here, it increases deadwieght loss by motivating greater effort. Both models predict that general improvements in citizens' policy influence have no net impact on the equilibrium policy location, while heterogeneous political influence skews policy outcomes toward the ideal points of those with greatest influence.

3   Model

A society consists of n citizens, whose efforts together determine a policy $x \in X = \mathbb{R}$.[5] Each citizen has a preferred policy $\hat{x}_i \in X = \mathbb{R}$, and policy utility $u_i(x) = -(x - \hat{x}_i)^2$ is quadratic in x.[6] An initial policy $x_0 \in X$ is given exogenously. Each citizen has the opportunity to alter this status quo by expending effort $e_i \in \mathbb{R}$ at quadratic cost $c(e_i) = e_i^2$ to exert policy pressure $\pi_i = e_i \in \mathbb{R}$.[7] For a vector $e \in \mathbb{R}^n$, aggregate effort costs are given by $C(e) = \sum_i c_i(e_i)$. Positive pressure pulls the policy outcome to the right while negative pressure pulls it left. Efforts of citizens pulling in the same direction are perfect substitutes while efforts in opposite directions exactly offset each other. Letting $\Pi^-(x) = \sum_{i;\pi_i \le 0} \pi_i(e_i)$ denote the aggregate pressure pulling x to the left and $\Pi^+(x) = \sum_{i;\pi_i \ge 0} \pi_i(e_i(x))$ denote the total pressure exerted pulling x to the right, net aggregate pressure is given by $\Pi = \Pi^- + \Pi^+$, and the final policy outcome is simply $x = x_0 + \Pi$.

Citizens choose effort levels simultaneously. e_i^{br} is a best response to the vector $e_{-i} \in R^{n-1}$ of opponent effort levels if it maximizes $U_i = u_i(x) - c(e_i)$. A vector $e^* \in \mathbb{R}^n$ is a (Nash) equilibrium if each component is a best response to e_{-i}^*. In general, the equilibrium policy outcome x^* will depend on the status quo x_0. An equilibrium is a *steady state* if $x^* = x_0$. Equivalently, $\Pi^* = 0$ in a steady state, meaning that collective efforts to pull the policy outcome left or right exactly cancel each other out.

4   Equilibrium Analysis

4.1   Best responses

For any vector $e_{-i} \in R^{n-1}$ of opponent effort levels, Proposition 1 now states the optimal effort level for an individual citizen.

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[4]Specifically, citizens with a certain tolerance for policy disutility push policy to what would be socially optimal if they were more tolerant than they are.

[5]Section 5.1 extends the analysis below to multiple dimensions.

[6]Section 9.3 generalizes to any single-peaked $u_i(x)$ that decreases in $|x - \hat{x}_i|$.

[7]Sections 9.1 and 9.2 generalize the pressure and cost functions $\pi_i(e_i)$ and $c_i(e_i)$.

Proposition 1. *If $e_i^{br} \in \mathbb{R}$ is a best response to e_{-i} then $e_i^{br} = \hat{x}_i - x$.*

Proof. U_i is concave in a citizen's own effort level, so a citizen's best response to other citizens' effort levels can be obtained by differentiating U_i and equating $U_i'(e_i) = -2(x - \hat{x}_i) - 2e_i = 0$. ∎ An immediate consequence is Corollary 1, which states that a citizen whose ideal policy is farther from the prevailing policy exerts greater effort trying to influence the policy outcome. When the policy outcome lies at a citizen's favored policy position, for example, the citizen exerts no effort to change it.

Corollary 1. $\left| e_i^{br} \right|$ *increases in* $|\hat{x}_i - x|$.

According to Proposition 1, a citizen's best response effort level depends on peer effort levels only through the policy outcome x. Thus, e_i^{br} can be expressed as a function of x. Aggregating best response effort for any policy x allows us to write individual and aggregate costs c_i and C and aggregate leftward, rightward, and net pressure Π^-, Π^+, and Π, as functions of x as well. Corollary 2 now points out that net aggregate pressure $\Pi(x)$ and aggregate pressure costs $C(x)$ relate to citizens' ideal points $\hat{x}_i$ only through the average ideal point $\bar{x} = \frac{1}{n} \sum_{i=1}^{n} \hat{x}_i$, and that Π^-, Π^+, and Π decrease in x. The latter means that, as the policy outcome moves further to the right, citizens try harder to pull it left and try less hard to pull it further right, as discussed above.

Corollary 2. *Aggregate pressure and pressure costs are given by* $\Pi(x) = n(\bar{x} - x)$ *and* $C(x) = nV(\hat{x}_i) + n(x - \bar{x})^2$, *respectively.* $\Pi^-(x)$, $\Pi^+(x)$, *and* $\Pi(x)$ *decrease continuously in* x.

Proof. $\Pi = \sum_i (\hat{x}_i - x) = n(\bar{x} - x)$ follows from simple algebra, substituting $e_i = \hat{x}_i - x$. Similarly, $C(x) = \sum_i e_i^2 = \sum_i (x - \hat{x}_i)^2$ reduces to and $C(x) = \sum_i (x^2 - 2x\hat{x}_i + \hat{x}_i^2) = nx^2 - 2nx\bar{x} + nV(\hat{x}_i) + n\bar{x}^2 = nV(\hat{x}_i) + n(x - \bar{x})^2$. Clearly, $\Pi(x)$ decreases in x. For values of x that do not coincide with any citizen ideal point $\hat{x}_i$, $\Pi^-(x) = \sum_{i;\pi_i < 0} \pi_i(e_i(x))$ is continuous in x, with derivative $\frac{d}{dx}\Pi^-(x) = \sum_{i;\pi_i \leq 0} \frac{d}{dx}(\hat{x}_i - x) = \sum_{i;\pi_i \leq 0}(-1) < 0$. When $x = \hat{x}_i$ for some i so that $\pi_i = 0$, the sum $\Pi^-(x)$ suddenly gets an extra term, but the value of this term is zero. That $\Pi^-(x)$ decreases in x follows analogously. ∎

4.2 Equilibrium

Corollary 2 relates citizens' efforts to the policy outcome, which is defined in relation to citizens' efforts. This then sets the stage for equilibrium: as Proposition 2 now states, the unique equilibrium policy outcome is a weighted average of the initial policy x_0 and the mean $\bar{x}$ of citizens' ideal points.

Proposition 2. *There is a unique equilibrum e^*, producing policy outcome* $x^* = \frac{1}{n+1}x_0 + \frac{n}{n+1}\bar{x}$.

Proof. In any equilibrium, all citizens must play best responses. According to Corollary 2, this implies that $x^* = x_0 + n(\bar{x} - x^*)$, which has a unique solution

at $x^* = \frac{1}{n+1}x_0 + \frac{n}{n+1}\bar{x}$. ∎ Proposition 2 makes clear that if x_0 happens to be the mean $\bar{x}$ of citizens' ideal points, then x^* coincides with the status quo. Thus, as Corollary 3 now states, $x^* = \bar{x}$ is the unique steady state of the model.

Corollary 3. *There is a unique steady state $x^* = \bar{x}$.*

The steady state policy outcome coincides exactly with the mean $\bar{x}$ of the distribution of citizen ideal points, but Proposition 2 makes clear that equilibrium policy outcome *out* of steady state lie close to $\bar{x}$, as well. In general, the equilibrium policy outcome $x^*(x_0)$ is a weighted average of the initial policy x_0 and $\bar{x}$, but nearly all the weight is on the latter: the status quo only receives weight $\frac{1}{n}$. In a large population, this weight vanishes, as Corollary 4 now states.

Corollary 4. $\lim_{n\to\infty} x_n^*(x_0) = \bar{x}$ *for any x_0.*

4.3   Welfare

This section analyzes the choice of a social planner who can direct citizens' effort to maximize citizens' aggregate policy utility $\sum_i u_i(x)$ or aggregate (utilitarian) welfare $W(e,x) = \sum_i U_i(e,x) = \sum_i u_i(x) - C(e)$. Proposition 3 gives the effort level $e_i = \frac{n}{n^2+1}(\bar{x} - x_0)$ that each citizen optimally gives, and states the the optimal status quo policy is $x_0 = \bar{x}$.

Proposition 3 (Inefficient efficiency). *$\bar{x}$ maximizes aggregate policy utility $\sum_i u_i(x)$. For any status quo x_0, the effort vector e^{**} maximizes $W(e)$ if and only if $e_i^{**} = \frac{n}{n^2+1}(\bar{x} - x_0)$ for all i, producing policy outcome $x^{**} = \frac{n^2\bar{x}+x_0}{n^2+1}$. The welfare-maximizing status quo is $x_0 = \bar{x}$; with this status quo, the optimal effort vector is $e = 0$.*

Proof. $u_i(x)$ is concave in x, so $\sum_i u_i(x)$ is as well, with maximum solving $0 = \frac{\partial \sum_i u_i(x)}{\partial x} = -2\sum_i(x - \hat{x}_i)$, or $x = \bar{x}$. W is concave in e_i, so the optimal effort level for citizen i is given by $0 = \frac{\partial W}{\partial e_i} = -n(2x - 2\bar{x}) - 2e_i$, or $e_i = n(\bar{x} - x)$. This is the same for all i, so $\Pi = ne_i$ and optimal effort reduces to $e_i^{**} = n(\bar{x} - x_0 - ne_i)$, or $e_i^{**} = \frac{n}{n^2+1}(\bar{x} - x_0)$. W is also concave in x_0, so the optimal status quo solves $0 = \frac{\partial W}{\partial x_0} = -2\sum_i(x - \hat{x}_i) = -2n(x - \bar{x})$. ∎
In connection with Section 4.2, Proposition 3 implies that the policy that a social planner would implement is the very outcome that emerges in a steady-state equilibrium.[8] Actually, this policy maximizes utility not just net of costs $\sum_i(u_i - c_i)$ but even not net of costs, $\sum_i u_i$. If policy could be moved for free, then, this is the policy the planner would implement. As in markets, this result is remarkable in that efficiency is not the goal of any of the citizens in the model, but arises as by an "invisible hand".

In showing that policy efficiency emerges in a steady state equilibrium, Proposition 3 also shows that this efficiency comes *inefficiently*: starting from initial policy $x_0 = \bar{x}$, citizens would ideally expend *zero* effort trying to change

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[8]Out of steady state, the planner chooses a policy *even* closer to $\bar{x}$ than citizens choose for themselves.

the status quo. In equilibrium, citizens instead expend effort at aggregate cost $C(\bar{x}) = \sum_i (\bar{x} - \hat{x}_i)^2 = nV(\hat{x}_i)$, each trying to improve on the status quo but making no progress, thwarted by those pulling in the opposite direction. Clearly, the amount of this inefficiency increases in the variance of citizens' ideal points: that is, when citizens' objectives are more in conflict, they waste greater effort competing for influence.[9] Thus, greater differences in voters' policy interests exacerbate deadweight loss.

5 Extensions

5.1 Multiple Dimensions

The model above is one dimensional, but readily extends to multiple dimensions. To that end, generalize x, x_0, π_i, and $\Pi = \sum_i \pi_{i,d}$ to be elements of $\mathbb{R}^d$, where $d \geq 1$, and let $u_i(x) = -\|x - \hat{x}_i\|^2 = -\sum_d (x_{i,d} - \hat{x}_{i,d})^2$. Citizens can still exert pressure $\pi_{i,d} = e_{i,d}$ on issue d at cost $c(e_{i,d}) = e_{i,d}^2$, but can exert pressure on every issue, at cumulative cost $c(e_i) = \|e_i\|^2 = \sum_d e_{i,d}^2$. If voters maximize $U_i = u_i(x) - c(e_i) = \sum_d U_{i,d}(e_{i,d})$ then the model is completely separable, and the analysis above determines equilibrium effort levels for every issue.

5.2 Variation: Bureaucrat

In the model above, citizens manipulate the policy outcome x directly. This section considers another possibility, which is that policy is chosen by one individual, say a government bureaucrat, and that citizens manipulate x by pressuring this individual. Suppose that the bureaucrat has an increasing distaste for pressure from any individaul i, captured by the utility function $u_B = -\sum_i \pi_i^2$.

If the bureacurat chooses policy x, then by Proposition 1, citizens will respond with pressure levels $\pi_i = e_i = \hat{x}_i - x$. Total policy disutility $\sum_i \pi_i^2 = \sum_i e_i^2 = C(x)$ then coincides with the aggregate effort cost exerted by voters, which Corollary 2writes as $C(x) = nV(\hat{x}_i) + n(x - \bar{x})^2$, and is therefore minimized at $x = \bar{x}$. Thus, as Proposition 4 now states, the bureaucrat implements the same welfare-maximizing policy that voters choose for themselves.

Proposition 4. *If policy is chosen by a pressure-averse bureaucrat with utility $u_B = -\sum_i \pi_i^2$ then, in equilibrium, $x = \bar{x}$.*

5.3 Universal pressure ability

This section slightly generalizes the pressure function $\pi(e) = \pi e$ and cost function $c(e) = ce^2$ of Section 3 (where $c = \pi = 1$), to explore how equilibruim

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[9]Outside of steady state, the optimal policy x^{**} is distinct from the status quo x_0, so some effort is required. Equilibrium effort achieves virtually the same policy, but still does so inefficiently: the planner recommends that *all* citizens pull in the same direction from x_0 to x^{**}; working together, none needs pull very hard. In equilibrium, some citizens pull this direction but others pull in the *opposite* direction, wasting their own effort and leading the first group to inefficiently raise their efforts, as well.

behavior and welfare change when citizens become more adept at exerting political pressure, whether because effort is less costly (lower c) or translates at a higher rate into political pressure (higher π).

This generalization barely changes the analysis above: best response effort levels are now given by $e_i^{br} = \frac{\pi}{c}(\hat{x}_i - x)$ and the equilibrium policy outcome is now given by $x^* = \frac{1}{\frac{n\pi}{c}+1}x_0 + \frac{\frac{n\pi}{c}}{\frac{n\pi}{c}+1}\bar{x}$. Clearly, it doesn't matter whether citizens more efficiently produce effort because they produce twice as much effort for the same cost: all that matters for determining equilibrium is the ratio $\frac{\pi}{c}$. Increasing $\frac{\pi}{c}$ does not impact the steady state policy. Away from the steady state, increasing $\frac{\pi}{c}$ pulls the policy outcome *even* closer than before to its steady state.

Though increasing $\frac{\pi}{c}$ does not change the steady state policy outcome, it does increase a citizen's willingness to exert effort. Thus, inducing greater effort without changing the policy outcome merely exacerbates deadweight loss: total effort costs can now be derived as $C(x) = \frac{\pi^2}{c}\sum_i (\hat{x}_i - x)^2 = \frac{n\pi^2}{c}V(\hat{x}_i).$[10]

5.4 Idiosyncratic pressure ability

The model of Section 3 assumes that all citizens are equally adept at exerting political pressure. More generally, there may be some who are inherently better at this than others whether because of wealth, skill or charisma, or being better connected within a social network. This section generalizes the analysis of Section 5.3 to allow idiosyncratic cost c_i and efficacy π_i parameters.

As in Section 5.3, a citizen's best response effort level is $e_i = \frac{\pi_i}{c_i}(\hat{x}_i - x)$, so aggregate pressure is given by $\Pi = \sum_i \frac{\pi_i}{c_i}(\hat{x}_i - x) = nE\left(\frac{\pi}{c}\right)(\bar{x}_{\pi/c} - x)$, where $E\left(\frac{\pi_i}{c_i}\right) = \frac{1}{n}\sum_i \frac{\pi_i}{c_i}$ is the average efficacy in the population and $\bar{x}_{\pi/c} = \frac{\sum_i \frac{\pi_i}{c_i}\hat{x}_i}{\sum_i \frac{\pi_i}{c_i}}$ is a weighted average of citizens' bliss points, with greater weight given to those with higher political efficacy $\frac{\pi_i}{c_i}$. The final policy outcome $x^* = \frac{1}{nE\left(\frac{\pi}{c}\right)+1}x_0 + \frac{nE\left(\frac{\pi}{c}\right)}{nE\left(\frac{\pi}{c}\right)+1}\bar{x}_{\pi/c}$ is a weighted average of x_0 and $\bar{x}_{\pi/c}$, with weight on the latter increasing in $E\left(\frac{\pi}{c}\right)$.

The steady state of this modified model is the weighted average $\bar{x}_{\pi/c}$ of citizens' bliss points. Generalizing Section 4.3, this is socially optimal from the perspective of a weighted utilitarian welfare function $W = \sum_i \omega_i u_i$ with weight $\omega_i = \frac{\pi_i}{c_i}$. From the perspective of an equally weighted utilitarian welfare function, however, this skews too much in the direction of those who are able to generate the greatest political influence at the lowest cost.

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[10]Note that here, c and π have different impact: halving the cost of effort doubles deadweight loss, while doubling the political efficacy of effort *quadruples* deadweight loss. An intuition for this discrepancy is that doubling π or halving c both lead a citizen to climb higher up the marginal cost curve, but lowering c provides a cost savings on the effort that is already being spent.

5.5 Discrete policy space

Section 3 assumes a continuous policy space $X = \mathbb{R}$, but this is not essential: if instead $X \subset \mathbb{R}$ is finite, redefine the equilibrium policy outcome to be the policy x that minimizes the absolute value of Π. Since $\Pi(x)$ decreases in x (by Corollary 2), this will either be the rightmost policy with $\Pi(x) > 0$ or the leftmost policy with $\Pi(x) < 0$. Between these two, the pressure differential moving from the equilibrum policy to the non-equilibrium policy will then exceed the pressure differential moving in reverse, thus providing stability. Since $\Pi(x) = n(\bar{x} - x)$, the policy that minimizes $|\Pi(x)|$ is simply the policy in X that is closest to $\bar{x}$.

6 Applications

The elegance of the model above is that, despite its simplicity, it can apply to a wide range of political and even non-political situations. This section discusses several such applications.

6.1 Compromise, gridlock

The central prediction of the equilibrium analysis above is policy compromise: policies at the far left or far right of the policy space cannot be sustained because pressure to move toward the center invariably exceeds pressure to move to the extremes. Empirically, this seems to be the plain reality: no one gets everything they want. For example, every country has citizens who want the government to provide more services (even if it means raising taxes) and citizens who want the government to tax less (even if it means providing fewer services); many find foreign policy to be too hawkish while many find it too restrained; many think it is too hard to get abortions while many think it is too easy.

Political compromise is to be celebrated, of course, as it minimizes the aggregate policy disutility that citizens experience. However, it comes with the more frustrating consequence of gridlock: ambitious citizens often exert extensive effort with hopes of moving policy in a direction they find attractive, finding to their dismay that others are pulling just as hard in the opposite direction.

The analysis above helps clarify why gridlock feels so frustrating. If a citizen had full control over policy, she would exert effort $\frac{|x_0 - \hat{x}_i|}{2}$ to pull it halfway from x_0 to her ideal policy position, but would then stop pulling because of diminishing marginal utility and increasing marginal costs. In a steady state with n citizens, however, the analysis above finds that she pulls exactly *twice* this hard, exerting $|x_0 - \hat{x}_i|$. For all this effort, the policy doesn't budget at all: her efforts merely prevent others from pulling policy in the opposite direction. It is easy to feel frustration toward other citizens when their presence in the model lead an individual to work harder for less policy benefit.

6.2   Extremist effort

Corollary 1 predicts that citizens whose preferred policies are extremely liberal or extremely conservative will exert greater effort and generate more political pressure than citizens with more centrist preferences. Empirically, available evidence seems universally consistent with this. For example, I show in McMurray (2017b) that in the US, citizens with extreme viewpoints are the most likely to vote in general elections, Congressional elections, and presidential primaries; to display yard signs or bumper stickers in support of political candidates; to persuade other citizens how to vote; and to donate to campaigns. Extreme citizens are the most prone to feeling frustrated by political gridlock as described in Section 6.1: already experiencing policy disutility because of their outlier preferences, they exert greater effort than other citizens do, but are just as ineffectual.

6.3   Policy responsiveness, resilience

The model above abstracts from institutional details but predicts a unique policy outcome, suggesting that at some level, institutional details are unimportant, and that policy outcomes will be shaped entirely by the underlying distribution of citizen preferences. As preferences evolve over time, policy should evolve in tandem. Consistent with this, Page and Shapiro (1983) find empirically that US public policy does tend, more often than not, to follow public opinion.

One institutional detail that the model of Section 3 does include is the initial policy x_0, but Corollary 4 ultimately concludes that this doesn't matter, either: whatever the initial policy, equilibrium settles near the mean $\bar{x}$ of citizen ideal points when n is large. Specifically, the equilibrium policy outcome is a weighted average of x_0 and $\bar{x}$, but the weight on $\bar{x}$ is n times as large as the weight on x_0. In other words, starting from the steady state and then perturbing the status quo by a large amount is equivalent to remaining at the steady state but adding one extra citizen with extreme policy preferences. Clearly, the impact of this is negligible when n is large.

This result can be interpreted as a prediction of policy resilience: that is, if some force (not modeled here) somehow pushes society out of its steady state so that the status quo x_0 is extreme, citizens with ideal points in the direction of x_0 should reduce their influence expenditures while citizens who want opposite policies increase their efforts. The consequence of this should be that policy springs immediately back to a position very near $\bar{x}$, as if the perturbation had never happened. In other words, unless citizens' policy preferences change, policy movement to the left should be followed by movement to the right, and vice versa.

Consistent with the prediction of policy resilience, Erikson (1988) shows that the party of a US president typically loses congressional seats during midterm elections. Similarly, Menuet, Oriola, and Villieu (2024) find that conservative central bankers make conservative governments less likely to be (re)elected.[11]

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[11]This same logic also suggests that challengers should have an advantage over incumbents.

6.4 Elections

The model of Section 3 is designed to accommodate the political process in its entirety, not just an individual election. However, Section 5.5 shows that it the same model can also accommodate discrete policy outcomes; if a finite number of candidates each plan to implement different policies if elected, the model may apply to this smaller political episode, as well.

Standard game theoretic treatments of elections focus on the different incentives created by different voting rules or on the possibility of equilibrium multiplicity, as voters strategically ignore candidates that they expect not to be viable. However, this only allows citizens to influence election outcomes via the discrete formal mechanism of casting a vote; if they can also engage in continuous activities like persuading their friends and neighbors and making campaign donations, the analysis above should apply, predicting that the candidate whose policy position is closest to the social optimal will prevail.[12]

6.5 Inequity

Many observers of democracy worry that power skews toward individuals who are rich or well-connected. Alternatively, many worry that democracy might allow large numbers of poor voters to take unfair advantage of a wealthy minority, who lack the size to prevent redistribution. This paper lends structure and credibility to both concerns, but suggests the former may be more problematic.

In a pure election model, it is ambiguous whether wealthy voters or poor voters should have the greatest influence, because a voter's main resource is the time it takes to cast a vote. A substitution effect favors poor voters, as high-wage voters have a higher opportunity cost of time, but an income effect endows wealthy voters with the ability to allocate more time to all leisure activities, including voting. In recognizing that much political influence takes place separately from elections, this broader model of political influence gives scope for wealthy citizens to use their wealth for influence. Citizens with high labor income can, for the same amount of time, purchase say more units of time from professional lobbyists. Section 5.4 confirms that imbalance in the ability to produce political pressure translates into imbalance in policy outcomes: the steady state policy outcome is a *weighted* average of voter utilities, with greater weight on citizens with the greatest efficiency $\frac{\pi_i}{c_i}$ of producing political pressure.

On the flip side, if utility is concave in wealth then poor citizens should be more motivated to accumulate wealth from rich citizens than rich citizens are to defend themselves against redistribution. Thus, this paper also corroborates the

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Empirically, incumbents tend to win more than challengers, but this seems to reflect "valence" advantages such as experience, predictability, access to additional resources, and the selection effect of having won previously (Kawai and Sunada, 2025).

[12]A less obvious continuous margin on which voters can adjust is the threshold of costs that a voter is willing to pay to turnout and cast a vote. Thus, for example, Krishna and Morgan (2011) find that mandatory elections can produce non-utilitarian outcomes but voluntary elections ensure efficiency, as the side who benefit more from winning are willing to incur the greatest cost to cast votes.

concern that democracy may favor redistribution. This seems to be of secondary concern, however, in that redistribution will only occur in equilibrium if it is efficient, in the sense that the gains to those who exerted energy to increase redistribution outweigh the costs to those exerting energy to reduce it.

6.6   Non-democracies

Many of the applications listed above describe democratic policy processes. The model above is general enough to accommodate both democratic and non-democratic institutions, however, so this section applies the model to other settings: non-democratic political settings, non-political organizations, bargaining environments, marketing, contests, and even intrapersonal conflicts such as temptation and decision fatigue.

Autocracies

Democratic institutions such as elections that are often the focus of study often do not exist (or function poorly) in autocracies. Because of this, most canonical political economic research has little to say about political processes in many of the most densely populated regions of the world. Even if the institutions are entirely different, however, it seems intuitive that processes similar to the above should take place even in these settings: citizens are impacted by policies, and should influence these policies using whatever means are available to them. Efforts to reshape policy might range from hiding resources so that the government doesn't confiscate them, to bribing enforcers of government edicts, to militant guerilla resistence.[13]

Recent empirical research confirms that non-democratic governments respond to citizens' political activity, just as democracies do. For example, field experiments by Chen et al. (2016) and Buntaine et al. (2024) show that citizen complaints influence municipal governments and environmental regulation in authoritarian China. Chapman (2021) and Shirikov (2024) present evidence that the Russian government seeks to curry public favor both in communicating to citizens and in inviting their feedback. Fisman et al. (2021) present evidence that Chinese municipalities relaxed COVID-19 restrictions with timing that reacted to citizen discontent.

Organizations, committees

If a pressure model applies to non-democracies, it may also apply to non-political organizations. Traditionally, for example, executives are looked at as dictators within a firm. Like the pressure-averse bureacurat of Section 4, however, an executive is likely to take employees' preferences into account when deciding rules about remote work or company culture. Employees can convey these preferences via complaint emails (or emails of gratitude), reluctance (or enthusiasm)

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[13]As noted above, it could also take the form of positive reinforcements, such as singing more jubilantly in honor of leaders who exert their dominance more humanely.

to complete assignments, and so on. These activities can bring negative (or positive) utility to the executive if he feels altruism toward the employees or finds complaints to be a nuisance (or loves praise). It could also be driven by a profit motive, as content employees are willing to work at lower wages.

Often, disputes may arise between departments (such as when engineering and marketing disagree over the appropriate level of investment in artificial intelligence), and an executive may need to broker a compromise. When it is not possible to satisfy everyone, all sides are likely to feel frustrated that they exert so much effort with so little affect on company policy.[14] Executive disutility is proportional to the *combined* disutility of all sides, so an executive may feel pulled hopelessly between factions, like the rope in a game of tug of war.

Of course, this same process may occur at the level of a committee within an organization. At every committee meeting, individuals must choose how much effort to invest (both during the meeting and in preparation for it) in lobbying the group to adopt a different outcome. Meetings are notorious for going long but accomplishing little, consistent with the prediction that all sides will exert substantial effort without budging the policy outcome.

Bargaining, marketing, and contests

Applications to democracy, organizations, and even committees presuppose a sizeable number n of individuals. However, none of the analysis above requires this: the same results hold even for $n = 2$. In that sense, the model above can also capture instances of bilateral bargaining, such as when the buyer and seller of a good haggle over its price, or a married couple discuss whether to spend more of their shared wealth on home furnishings or on travel and recreation.

If a buyer and seller know each other's valuations of a good x_1 and x_2, for example, a natural "policy" outcome might be to agree on the midpoint price $\bar{x}$, neither side finding it worth the effort to push for a more favorable price. Alternatively, if differences in wealth or other circumstances make one side more desperate, they may be more willing to exert effort toward getting a good deal than the other side, resulting in a favorable price outcome. This mirrors the conclusion of the bilateral bargaining model of Rubinstein (1982), where a bargaining outcome favors the player with greater patience, but that result relies on a very specific bargaining protocol of alternative offers; bargaining is rarely constrained to follow such a rigid structure.

Baron and Ferejohn's (1989) canonical model of legislative bargaining assumes the very specific protocol of a random legislator chosen to propose policy for legislative vote. In equilibrium, this legislator exploits this opportunity to pull policy in her desired direction. However, such specific structure is rarely (if ever) imposed on a legislature. Rather, bargaining procedures may be very elaborate and very flexible. This lends itself to the reduced form approach above, which makes the more plausible prediction that the policy outcome will

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[14]Traditionally, office "politics" are known for being just as frustrating as political politics.

simply be a compromise between the various policies preferred by each of the legislators.

An application similar to bargaining is marketing. A consumer chooses what quantities of goods to buy from different firms (which could be selling the same product or selling different products that the consumer views as substitutes), while each firm tries to influence the consumer to purchase more from them. After experiencing marketing efforts from all sides, the consumer might ultimately choose the same consumption bundle she would have chosen if no marketing had taken place. In that case, all market efforts are revealed as deadweight loss. If one firm is especially motivated to make sales, it may be willing to exert extra effort in convincing the consumer to settle on a spending outcome that favors that firm over others.

Since the model also accommodates discrete outcomes, as described in Section 5.5, a rival marketing application is when a consumer purchases a single good, and rival firms vy for the sale. Alternatively, they could be vying to hire a job candidate who can only accept one position. In a similar vein, if the policy outcome is discrete then the pressure function Π can be interpreted as a contest function, where one side ultimately wins and one loses. Back to the context of democracy, a natural application of this is an election with candidates from two parties.

Temptation, decision fatigue

The tug of war model above can also be useful in understanding conflicts *within* an individual between "multiple selves", jockeying to dominate an upcoming decision. For example, a student says "part of me wants to work on homework, study hard, and get good grades; part of me wants to play video games and go to parties; part of me just wants to sleep in and do nothing". Like the bureaucrat of Section 4 feeling pressured by multiple factions, the student cannot satisfy all of these competing demands, and may settle on a compromise that accomplishes some of each goal.

Once the student settles on a "steady state", exogenous forces might intervene to shift the student's preferred balance, such as when a video game consol breaks. If nothing happens to alter the appetites underlying the student's choices, however, the status quo should exhibit the resilience highlighted in Section 6.3: as soon as the game consol is repaired, the unsatiated appetite for video games will pull more strongly, and the student will forego sleep and homework to binge on video games until the status quo balance has been restored. In a similar way, a new year's resolution to forego sugar might help a dieter succeed for a time, but unless underlying preferences can be altered, the pent up demand for cake and ice cream will continue to intensify until a binge restores the steady state (thus undoing much or all of the health progress achieved previously).

The contest between competing incentives is not limited to good habits that fight against bad habits, but could include any decisions involving trade offs. For example, one faction within a worker's psyche might favor consumption while

another favors leisure. In a moment of indecision between these competing desires, a decision maker might describe "feeling torn", just like a bureaucrat experiencing pressure from all sides. Agonizing between the two objectives leaves "decision fatigue", especially when a budget constraint is so tight that necessary compromise falls far short of either ideal. Such agony may also be unproductive, eventually bringing an individual to make the same decision they had favored initially.

7 Discussion

7.1 Continuous effort

A key ingredient for efficiency in the analysis above is that effort choice is continuous, so that citizens can exactly calibrate their marginal impact on the policy outcome to their marginal policy disutility. This echoes results from existing literature. For example, Krishna and Morgan (2010) show that elections can be inefficient when voting is compulsory, because majorities win even when minority preferences are more intense. Voluntary voting removes this inefficiency, as the side who collectively cares more about the election outcome is more willing to pay the cost of voting. When candidates compete for discrete votes, as in Downs (1957), they cater to the median voter. This can be efficient if voter utility is linear or the distribution of ideal points is symmetric, but is otherwise inefficient. In that case, efficiency can be restored if abstention is allowed, as in Ledyard (1984), or voting is probabilistic (see Coughlin, 1992).

Buchanan and Tullock (1962) propose vote buying as a way to allow voters with stronger preferences greater influence in elections. However, this need not yield efficiency, either with fixed alternatives (see Casella, Llorente-Saguer, and Palfrey, 2012) or within a game of candidate competition (see Xefteris and Ziros, 2024). Lalley and Weyl (2018) show that efficiency can be guaranteed if the cost of additional votes increases quadratically.

7.2 Efficiency

The literature cited in Section 7.1 suggest that if specific conditions are not satisfied exactly (e.g., if voting is compulsory, if vote buying devolves to an inferior equilibrium, or if the cost of votes is set to be some non-quadratic function) then efficiency may fail. Section 6.6 suggests that the efficiency result of Section 4.2 may apply even to elections, but if an inefficient election outcome occurs, the myriad political activities described in Section 1 should still allow citizens a continuous effort margin on which to optimize, restoring efficiency, as described in Section 6.3.

If political pressure operates in China and Russia just as it does in democracies, as the references in Section 6.6 indicate, the logic above suggests that even autocracies should settle on efficient policies. At one level, this makes sense: dictator with no regard for his subjects' well being might have power to extract

resources from them, but if there is a way to do so that gives them less disutility, he can do so with less resistance or backlash, and can presumably then extract a greater quantity resources. In that case, it is important to keep in mind that efficiency is *weighted* utilitarian, with weights favoring those with greater political influence (e.g., the royal family or other elites). In that light, transitions to democracy might be viewed as an effort to shift to a more uniformly-weighted utilitarian outcomes.

8   Conclusion

Recognizing that political influence takes myriad forms that would be difficult to formalize, this paper adopts a "black box" model translating citizen effort into policy influence. Citizens exert effort in proportion to their marginal utilities, producing policies that are socially efficient. Steady state policy outcomes are achieved with lower effort costs than any other policy would prompt, but political effort is still inefficiently wasted, especially by citizens with extreme policy preferences.

The model above is attractively simple. Pedagogically, it would be easy to introduce to undergraduates in an introductory economics or political science course, where Figure 2 could easily be framed as a reinterpretation of the familiar model of supply and demand, with excess leftward and rightward pressure taking the place of excess supply and demand.[15] The visual image of a tug of war is accessible to lay audiences.

The model above is also flexible: it accommodates multiple dimensions, and citizens can directly influence policy or, equivalently, can influence a policy maker who provides efficient policies to minimize his exposure to pressure. Universal improvements in pressure production actually lower welfare, by prompting additional wasted effort. Heterogeneous efficiency in pressure production produces outcomes that favor the most effective citizens. Steady state policy outcomes are resilient to changes in the status quo. In addition to the above extensions, the appendix shows that the basic logic of equilibrium holds for large classes of utility and cost functions.

The analysis above explains why extremists exert greater political effort, empirically, and why policy changes not accompanied by underlying changes in citizens' interests may be short lived. The model explains why politics is so frustrating, and validates concerns that wealthy or well-connected voters might have undue influence (but still not be able to protect themselves from some redistribution). The model can apply to non-democratic governments, non-government organizations, and even bilateral bartering, marketing, or intrapersonal conflict. The analysis highlights a theme in existing literature, regarding the importance of continuity for efficiency.

It is not entirely clear what the normative implications of the above analysis should be. Certainly, the prediction that policy outcomes are efficient should be celebrated. One possible reaction to this could be political laissez-faire:

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[15]Advanced undergraduates could readily solve the parameterized model algebraically.

don't worry about the policy making process; if a policy too far left somehow prevails, citizens' desire to pull it right again will intensify until the mistake is corrected (and vice versa).[16] Similar logic might suggest that, in elections, common-interest considerations such as a candidate's experience or character should take precedence over policy congruence, since the latter cam be achieved later through other political activities. If political effectiveness is heterogeneous, however, utilitarian outcomes may overweight some citizens and underweight others. As Section 6.6 emphasizes, the same may be true in autocracies.

The deadweight loss and associated frustration of politics seem difficult to avoid. Disengaging is ill advised, however, because even when citizens see no policy movement, their political efforts matter, preventing policies from being pulled *farther* from a citizen's bliss point. Agreeing to reduce both sides' political efforts would enhance welfare, but be unstable, like a Prisoner's dilemma: citizens on either side would have incentive to renege and exert effort. Where possible, welfare might be enhanced by decentralization, so that policies can be tailored to smaller groups with less heterogeneous interests (especially if citizens can freely relocate, as in Tiebout (1956)).

An important direction for future work would be to add dynamics to the static model above.[17] It may be, for example, that political victories today provide additional political power for the future, making one side better able to muster additional policy pressure.

9   Appendix

9.1   Generalized pressure production

The basic pressure production function of Section 3 is generalized in Section 5.3 to $\pi_i(e) = \pi e$. This section generalizes further, by assuming simply that $\pi(e)$ is "S shaped". That is, π increases in e but $\pi''(e)$ has the opposite sign as e, so both positive pressure and negative pressure exhibit diminishing marginal returns.

The first-order condition for optimization is $0 = U_i'(e_i) = -2\pi'(e_i)(x - \hat{x}_i) - 2e_i$, implying that the best response effort level $e_i\pi'(e_i)(\hat{x}_i - x)$.[18] As before, this has the same sign as $(\hat{x}_i - x)$, so citizens with ideal points above and below x exert positive pressure and negative pressure, respectively, and extremists exert greater effort than centrists.[19] Aggregate pressure is then given by $\Pi = \sum_i \pi'(e_i)(\hat{x}_i - x) = n\sum_i \pi'(e_i)(\bar{x}_{\pi'} - x)$, implying that the policy outcome is $x^* = x_0 + n\sum_i \pi'(e_i)(\bar{x}_{\pi'} - x^*)$, or $x^* = \frac{1}{n\sum_i \pi'(e_i)+1}x_0 + \frac{1}{n\sum_i \pi'(e_i)+1}\bar{x}_{\pi'}$, where

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[16]On the flip side of this, celebrations of political victories should be tempered by the recognition that deviations from the steady state might be short lived.

[17]Acemoglu (2003) argues that commitment problems are likely to be a central obstacle to efficiency.

[18]At any such solution, U_i is locally concave in e_i, since $U_i'(e_i) = -2\pi''(e_i)(x - \hat{x}_i) - 2e_i$ and $\pi'(e_i)$ and $(x - \hat{x}_i)$ have the same sign.

[19]That is, $\left|e_i^{br}\right| = \pi'(e_i)|\hat{x}_i - x|$ increases in $|\hat{x}_i - x|$.

$\bar{x}_{\pi'} = \frac{\sum_i \pi'(e_i)\hat{x}_i}{\sum_i \pi'(e_i)}$ is a weighted average of citizens' bliss points, with weights proportional to the citizen's marginal ability to generate political pressure. This is also the policy outcome in a steady state. As before, this maximizes a weighted social welfare function $W = \sum_i \omega_i u_i(x)$, with weights $\omega_i = \frac{\sum_i \pi'(e_i)\hat{x}_i}{\sum_i \pi'(e_i)}$.

9.2 Generalized costs

The model of Section 3 assumes quadratic costs; this section shows that analogous results hold for more general convex $c(e)$. To that end, suppose that $c(e) = 0$ but that $c'(e)$ has the same sign as e, while $c''(e) > 0$. $U_i(e_i)$ is then convex in e_i (since $U_i''(e) = -2 - c''(e) < 0$), so the unique best response effort level solves the first-order condition $0 = U_i'(e_i) = 2(\hat{x}_i - x) - c'(e_i)$. This solution cannot be derived explicitly, but has the same sign as $(\hat{x}_i - x)$. Extremists still exert greater effort, since $U_i'(e_i) = 0$ and $\hat{x}_i = x$ together imply that zero effort is a best response, and since (by the envelope theorem) marginal utility evaluated at the best response level of effort is zero, it does not increase with $\hat{x}_i$. Thus, $0 = \frac{\partial U_i'(e_i^*)}{\partial \hat{x}_i} = 2 - 2\frac{\partial e^*(\hat{x}_i)}{\partial \hat{x}_i} - c''(e_i)\frac{\partial e^*(\hat{x}_i)}{\partial \hat{x}_i}$, implying that best response effort $e^*(\hat{x}_i)$ increases in $\hat{x}_i$ (i.e., $\frac{\partial e^*(\hat{x}_i)}{\partial \hat{x}_i} = \frac{2}{c''(e^*)+2} > 0$), and thus the magnitude $|e^*(\hat{x}_i)|$ has the same sign as $\hat{x}_i - x$.

Averaging over the first-order best-response conditions for each citizen yields $\frac{1}{n}\sum_i c'(e_i^*) = 2(\bar{x} - x)$. Approximating $c(e) \approx c'(0)e + c''(0)e^2 = c''(0)e^2$ by its second-degree Taylor polynomial, this reduces to $2(\bar{x} - x) \approx \frac{c''(0)}{n}\sum_i e_i^* = \frac{c''(0)}{n}\Pi$. In a steady state $\Pi = 0$, so $x = \bar{x}$.

9.3 Generalized utility

The model of Section 3 assumes quadratic utility. This section generalizes to any concave function of the distance from x to $\hat{x}_i$: let $u_i(x) = -v(|x - \hat{x}_i|)$, where v is a differentiable, increasing, and convex function. $U_i(e_i)$ is concave in e_i (since $U_i''(e_i) = -v''(|x - \hat{x}_i|) - 2 < 0$), so a best response is given by the first-order necessary condition, $0 = U_i'(e_i) = -v'(|x - \hat{x}_i|)(-1)^{1_{\hat{x}_i > x}} - 2e_i$, or $e_i^* = \frac{1}{2}v'(|x - \hat{x}_i|)(-1)^{1_{\hat{x}_i < x}}$.[20] Thus, citizens with bliss points above or below x push to the right or pull to the left. Extreme citizens exert the most pressure, since $|e_i^*| = \frac{1}{2}v'(|x - \hat{x}_i|)$ increases in $|\hat{x}_i - x|$.

Social welfare $W = \sum_i u(x, \hat{x}_i) = -\sum_i v(|x - \hat{x}_i|)$ increases in x by the amount of $W'(x) = \sum_i v'(|x - \hat{x}_i|)(-1)^{1_{\hat{x}_i < x}} = \sum_i 2\pi_i = 2\Pi$. In a steady state $\Pi = 0$, so social welfare is maximized. Out of steady state, $x = x_0 + \Pi = x_0 + \frac{1}{2}W'(x) = x_0 + \frac{n}{2}\bar{u}'(x)$, where $\bar{u}'(x) = \frac{1}{n}\sum_i u_i'(x)$ is the average marginal utility across voters. Since the last term in this expression is multiplied by n, the policy outcome x can only be close to x_0 if it is also close to the social optimum, and therefore close to being steady state.

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[20]In these expressions, $1_{\hat{x}_i > x}$ is an indicator function that equals 1 if $\hat{x}_i > x$ and 0 otherwise. $1_{\hat{x}_i < x}$ is defined analogously.

References

[1] Acemoglu, Daron. 2003. "Why not a political Coase theorem? Social conflict, commitment, and politics." *Journal of Comparative Economics*, 31: 620-652.

[2] Becker, Gary. 1983. "A Theory of Competition Among Pressure Groups for Political Influence." *Quarterly Journal of Economics*, 98(3): 371-400.

[3] Buchanan, James M. and Gordon Tullock. 1962. *The Calculus of Consent.* Ann Arbor, MI: University of Michigan Press.

[4] Buntaine, Mark T., Michael Greenstone, Guojun He, Mengdi Liu, Shaoda Wang, and Bing Zhang. 2024. "Does the Squeaky Wheel Get More Grease? The Direct and Indirect Effects of Citizen Participation on Environmental Governance in China." *American Economic Review*, 114(3): 815-850.

[5] Casella, Alessandra, Aniol Llorente-Saguer, and Thomas R. Palfrey. 2012. "Competitive Equilibrium in Markets for Votes." Journal of Political Economy, 120(4): 593-658.

[6] Chapman, Hannah S. 2021. "Shoring up Autocracy: Participatory Technologies and Regime Support in Putin's Russia." *Comparative Political Studies* 54 (8): 1459–89.

[7] Chen, Jidong, Jennifer Pan, and Yiqing Xu. 2016. "Sources of Authoritarian Responsiveness: A Field Experiment in China." *American Journal of Political Science*, 60 (2): 383–400.

[8] Coughlin, Peter J. "Probabilistic voting theory." Cambridge University Press, 1992.

[9] Downs, Anthony. 1957. *An Economic Theory of Democracy.* New York: Harper and Row.

[10] Erikson, Robert S. "The Puzzle of Midterm Loss." *The Journal of Politics*, 50(4): 1011-1029.

[11] Fisman, Raymond, Hui Lin, Cong Sun, Yongxiang Wang, and Daxuan Zhao. 2021. "What Motivates Non-Democratic Leadership: Evidence from COVID-19 Reopenings in China." *Journal of Public Economics*, 196: 104389.

[12] Kawai, Kei and Takeaki Sunda. 2025. "Estimating Candidate Valence." *Econometrica*, 93(2): 463-501.

[13] Krishna, Vijay, and John Morgan. 2011. "Overcoming Ideological Bias in Elections". *Journal of Political Economy*, 119(2): 183-211.

[14] Lalley, Steven and E. Glen Weyl. 2018. "Quadratic Voting: How Mechanism Design Can Radicalize Democracy." *American Economic Review: Papers and Proceedings*, 1(1): 2018.

[15] Ledyard, John O. 1984. "The Pure Theory of Large Two-Candidate Elections." *Public Choice*, 44: 7-41.

[16] McMurray, Joseph C. 2017. "Voting as Communicating: Mandates, Minor Parties, and the Signaling Voter's Curse." *Games and Economic Behavior*, 102: 199-223.

[17] Menuet, Maxime, Hugo Oriola, and Patrick Villieu. 2024. "Do Conservative Central Bankers Weaken the Chances of Conservative Politicians?" *Social Choice and Welfare*, 62: 681-738.

[18] Page, Benjamin I. and Robert Y. Shapiro. 1983. "Effects of Public Opinion on Policy." *American Political Science Review*, 77(1):175-190.

[19] Plott, Charles R. 1967. "A Notion of Equilibrium and its Possibility Under Majority Rule." *American Economic Review*, 57(4): 787-806.

[20] Rubinstein, Ariel. 1982. "Perfect Equilibrium in a Bargaining Model." *Econometrica*, 50(1): 97-109.

[21] Shirikov, Anton. 2024. "Rethinking Propaganda: How State Media Build Trust through Belief Affirmation." *The Journal of Politics*, 86(4): 729941.

[22] Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures," *Journal of Political Economy*, 64(5): 416-424.

[23] Xefteris, Dimitrios and Nicholas Ziros. 2024. "The 'Invisible Hand' of Vote Markets." *Social Choice and Welfare*, 62: 153-165.