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Political Representation, Voter Information, and Government Allocations: A Theory of Optimal Localism

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ABSTRACT

We explore a link between political institutions, voters' media access, and social welfare and model an optimal distribution of media access across a nation's citizenry, given the nation's political structure. We define localism, relative to an individual voter, as information regarding a governing body's allocation of funds to that individual voter; optimal localism is then defined as income distribution that equilibrates the welfare of individuals across localities. We show that a democratic political structure can generate significant inefficiencies, in particular as a result of its locally-representative structure. Direct and indirect political incentive mechanisms might reduce the inefficiencies.

I Introduction

Despite the negative nature of Arrow's (1963) path-breaking work on collective decision making, societies routinely make political and social choices. Moreover, while political theorists and economists question the motivation of individual voters (i.e., "rational ignorance"), broad participation in political and civic life likely contributes to economic growth and material well-being. Importantly, in representative democracies, informa-

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tion relating to collective decision-making (i.e., voter relevant information) has been long recognized as valuable, as the history of franking privileges in Anglo-American democracy suggests.¹

Local voter-relevant information is particularly important in representative democracies such as the United States, for several reasons. First, the locally representative United States Congress is separate from the Executive branch. Unlike most European parliamentary democracies where the representative branch and executive branch are the same, the locally elected US Congressional representatives serve in a different body than the nationally elected US executive. Second, the United States is large and extremely diverse, and the locally elected representatives therefore serve far more divergent interests than locally elected representatives in many other representative democracies. These interests can also diverge heavily from those of the nationally elected executive, even if the representative and executive belong to the same political party. Finally, the United States Congress is bicameral, with two equally- powerful legislative bodies, the House of Representatives and the Senate. One of those legislative bodies, the Senate, gives equal representation to each of the fifty states, regardless of their size. California, with a population of 35,484,453, has two Senators, as does Wyoming, with a population of 501,242. Thus, certain institutional and demographic attributes in the United States imply a need

¹Franking privileges trace back to the English House of Commons in the 17th century; in 1775, the American Continental Congress authorized franking privileges for its members. Thus, even nascent democratic systems saw value in representatives communicating with their constituents.

for information that is locally relevant.²

The pursuit of "localism" has thus flowed from specific institutional features in the political structure of the United States, and this pursuit led to specific regulatory features. While an unambiguous definition of localism is elusive, the definition of localism employed by the Federal Communications Commission appears rooted in the idea of communities. The concept of a community is particularly useful when the objectives of policy-makers are political-economic, since measures of state and county level localism have the benefit of clear, well-defined boundaries. One could therefore construct a definition of localism based on political coverage that is specifically relevant to voters in a locality. This political coverage could include coverage of a state's US Senatorial delegation, coverage of a US representative within the representative's district, coverage of the state legislature, coverage of a state representative within their district, and coverage of local politics.

In what follows, we define localism, relative to an individual voter, as information regarding a governing body's allocation of funds to that individual voter. Thus, optimal localism in this context is that distribution of localism that induces the optimal distribution of government spending.

A bit more precisely, we add a model of optimal government expendi-

²When radio, the first mass medium, began achieving significant penetration in the late 1920s and early 1930s, the United States Congress and the newly-created Federal Communications Commission created a regulatory framework that gave each representative and senator the capacity to reach their constituents through radio. This new regulatory framework also tried to meet the representatives' and senators' goal that their constituents receive radio services that reflected their unique local needs.

ture to a model of voters' media access and government allocations. This allows us to model the pattern of media access across political jurisdictions that generates the optimal distribution of government expenditures. We compare this to an equilibrium that reflects basic features of political representation in the United States, and find, perhaps surprisingly, that greater media access can lower social welfare in some cases, if politically "over-represented" citizens have "too much" media access.

A Mass Media and Governance Structure

Responding to the locally-representative nature of the United States Congress (i.e., the House of Representatives and the Senate), regulators assume that geographically local media outlets provide unique local, voter-relevant information ("localism"). Generically, the value of voter relevant information to any individual resides in the information's impact, at the margin, on the material well-being of the voter.

We explore the provision of voter-relevant information in a system of "asymmetric" political representation such as exist in the United States Congress. Note, in particular, the division of political representation in the United States between the Senate and House of Representatives.³

According to Stromberg (2004), the increasing returns nature of mass media, in combination with the two-sided advertiser supported nature of

³We abstract from the Presidency for simplicity.

media, suggests that large groups would receive more voter relevant information and more favorable political treatment. This in turn suggests a bias against smaller groups of voters:

Increasing-returns-to-scale will induce mass media to provide less news to small groups of voters. This news bias will translate into a bias in public policy. Small groups will receive less favorable policies because of the provision of information by mass media firms.

Thus, Stromberg predicts that the mass nature of media generates reduced representation for small groups.

We suggest that due to the varying structure of democratic political representation, the opposite might in fact be true - increasing returns technologies may induce a media structure that, taking into account the "asymmetric" nature of democratic political representation noted above (i.e., the senate), can actually over-provide certain kinds of voter-relevant information to some voters that leads to smaller groups of voters gaining disproportionate, and possibly welfare reducing, political power.

Most generically, we suggest that the varying structural attributes of the democratic political structure, in combination with the nature of mass media, can result in quite different economic outcomes. More precisely, we suggest that Stromberg's (2004) analysis provides a plausible description of the interaction between a *parliamentary* representative system and mass media, but less likely a system like that in the United States. While the House of Lords (the English Senate) is vestigial and constitutionally

powerless, the senate in the United States is an integral and powerful decision making body (Lee, 1998; Knight, 2004). Importantly, while the House of Representatives is population proportional, the senate consists of two senators from each of the fifty states, regardless of population, which implies the per-capita vote of some states is more heavily-weighted than others. An important element in what follows is that an individual senator's vote from any given state is equal to any other individual senator from another state; thus, by implication, the voting weight in the senate of any given individual voter in a less populated state is greater than any given individual voter in a more populated state. For example, an individual voter from Wyoming who casts a vote for a senator has a more heavily weighted vote than an individual voter from California; in fact, as we noted above, the proportion is approximately 70:1. In short, to the extent a small-state bias drives political decision making, the nature of mass media may be amplifying a small-state bias, and not diminishing it.

In fact, it has been suggested (Lee, 1998; Knight, 2004) that a small-state agenda-setting bias may dominate the Senate, in part due to the lower cost of obtaining small-states votes relative to a large state. In short, it is "cheaper" for representatives from small states to build winning coalitions in the Senate, and the payoffs to the small states are substantial (an effect that may be amplified by incumbency). This possible small state bias, which may lead to the over-provision of public goods in small states,

has prompted recent research on decentralization of the public sector (e.g., Besley and Coate, 2003; Lockwood, 2002).

Note that, implicitly, decentralization in the United States would shift the political structure more towards a parliamentary-type system, in the sense that voting outcomes become more locally representative. In what follows, we suggest that decentralization can be achieved in at least two ways, one direct, the other less so: (1) directly modifying the existing incentive structure for Senators or (2) changing the information structure of voters, in a fashion that affects the representative incentives. For example, if the pay scales of senators were amended such that they represented a per-capita basis, senators from large states, *ceteris paribus*, would have greater incentives and those from small states diminished incentives. This shift in the incentive structure might be sufficient to induce a change in the fundamental bargaining processes in the senate. Moreover, assuming voter information is critical to electoral success, structural or behavioral regulation might induce a shift in information that influences the probability of re-election, and thus influence the incentives of senators.

It is this potential information bias that we suggest might amplify the extant structural bias against large-states: two-sided advertiser-supported mass media markets may tend to promote national news that can be packaged with national advertising. This may be particularly the case in large urban markets that generate the numbers and demographic profile sought

by national advertisers - rural voters may not provide the same numbers or demographic. To the extent that programming for large markets is skewed nationally, voters in those states might be receiving less local voter-relevant information. Similarly, if programming in rural areas is not skewed nationally, voters in these regions are being relatively over-provided with local (voter relevant) programming. This suggests that empirical work which explores the content of voter relevant information in different demographic and population areas might be particularly useful.

II Model

In what follows, we develop a simple and stylized model in which political representatives (i.e., senators) and individuals (i.e., voters) interact via spending and voting, mediated by information. In particular, we model a scenario in which senators are motivated to expend costly effort for their constituents by the prospect of re-election from which the elected senator captures rents. Information available to voters plays an important role in motivating the senator to expend effort in achieving an allocation. However, information is not the only mechanism that might induce this type of behavior. On the contrary, more direct compensation schemes could achieve the same outcome, perhaps more efficiently.

The voters in our model are sincere and vote retrospectively; if the elected representative meets a voter-determined minimum utility thresh-

old, and the voter is informed that this target has been met, the voter will vote to re-elect the representative. If voters are not informed that the target utility level has been met (whether in fact it has or has not) we assume the voter votes randomly. Importantly, random voting on the part of voters diminishes the incentives of senators to exert effort for their constituents, since given the senator achieves the target allocation, the probability of re-election is falling in random voting.

A Allocations

Let A be a single allocation, and assume for simplicity that the Senate alone determines the allocation.⁴ Let P be the total population of the country. Assume each individual i pays an identical sum t_i , where $\sum t_i = T$, in federal taxes. Let p_i be the population of the i^{th} state, where N denotes the total number of states.

There are two parametric allocations of interest: (1) lump-sum, where each state gets the same amount and (2) proportional, where each individual in each state gets the same amount. Let the proportional allocation be written as:

$$A^E = \frac{A}{P} \tag{1}$$

where A is the allocation and P is the total population. Expression (1) reflects that each individual in the total population receives an equal pro-

⁴The allocation would be amended by conference committee with the House of Representatives, but we abstract from this for simplicity.

portion of any given allocation. Assuming each individual has the same income and contributes the same amount in taxes (and assuming a balanced budget) this implies that each individual receives the same net distribution as any other individual. The balanced budget condition can be written as $A \leq G$, where $G = P \cdot (t_i y_i)$, t is the (equal) tax rate and y is the (equal) income for any given individual i .

A lump-sum allocation, A^L , for the i^{th} state can be written as

$$A_i^L = \frac{A}{N} \frac{1}{p_i} \quad (2)$$

It is convenient to define

$$\dot{N} = \frac{N p_i}{P} \quad (3)$$

and re-write (2) as:

$$\frac{A}{N} \frac{1}{p_i} = \frac{A}{\dot{N} P} \quad (4)$$

It is clear from (4) that a per-person distribution resulting from a lump-sum allocation is decreasing in \dot{N} . This implies that larger states (e.g., states with populations greater than the mean population) receive fewer per-person benefits from a lump-sum allocation than a proportional allocation. Taking the lump-sum and proportional allocations as parametric, we obtain:

$$\alpha = \tau \left(\frac{A}{\dot{N} P} \right) + (1 - \tau) \left(\frac{A}{P} \right) \quad (5)$$

In what follows, we assume that under conditions of full voter information regarding an allocation A , there exists an α^* that guarantees the re-election of a senator. For simplicity, we set α^* such that for every dollar paid in taxes, the voter receives a dollar of Federal expenditure. This implies that voters have a level of sophistication regarding the structural constraint faced by their representative, net of the level of effort required for any $\alpha \in (\alpha_1 \dots \alpha^* \dots \alpha_n)$.

B Incentives and Information

Achieving an allocation is costly in terms of effort, e , for a senator. We do not, for now, explicitly model the political decision-making process. Instead, we assume an n -state legislative stage-game similar to that of Baron and Ferejohn (1989) whereby legislators take turns being “agenda-setters.” In our framework, a legislator is chosen to be an agenda-setter. The agenda-setter proposes a distribution of the budget, subject to both a balanced budget constraint and α^* . The proposer offers $\{\frac{\alpha^*}{n}\}$ to $\frac{n-1}{2}$ other senators required for a majority, and keeps $1 - \alpha^* \frac{(n-1)}{2n}$. Then the proposer and the other $\frac{n-1}{2}$ senators vote for the proposal and the other senators vote against. We assume that being an agenda-setter, whether or not the agenda is implemented, requires effort.

Implicitly, we assume that all senators are equally talented; this is expressed in terms of effort costs expended by the representative in achieving

the target allocation. Thus, if a senator works “hard enough,” the target can be achieved (implicitly, in a model with talent differentials less talented representatives will have to expend more effort than others). The only incentive for senators is re-election; by assumption the senator has no other policy interests. The rents gained by a senator, R , can be thought of, for convenience, as “ego rents.”⁵

We assume a single incumbent senator, S_i , a single voter, V_i , a single news outlet that reports voter-relevant local news, L_i , and a given fixed government allocation for a public good, A_i , $A_i > 0$, (where subscripts refer to the i^{th} state) subject to a balanced budget constraint. The senator allocates funds, the news outlet reports news, including news regarding the allocation if they choose, and the voter votes for one of two candidates, including the incumbent, for senator. If the senator allocates sufficient funds, α^* , and if the news outlet conveys this information to a voter, then the voter votes for the senator to be re-elected. If the senator does not achieve an allocation of α^* and the voter is informed that the target has not been met, then the voter votes for the challenger. If the voter does not have information regarding the allocation, the voter votes randomly.

The probability that a voter is informed of the level of α is increasing in the amount of voter-relevant local news. Let $l \in (0, 1)$ equal the probability that the voter knows the value of α , where $l(\cdot)$ is an increasing

⁵Rogoff (1990)

linear function of local i.e., within state news coverage. The use of state boundaries to delineate local is appropriate given our focus on the senate.

The voter gets utility $u(a)$ from the allocation. The voter's utility function is given by:

$$u(a, k) = k + v(a) \quad (6)$$

where k is an outside good (normalized to 1) and $v(\cdot)$ is increasing and concave.⁶

If a senator has achieved the target allocation α^* , the chance of winning re-election is given by:

$$Pr(\text{Reelection} | \alpha^*) = \frac{1-l}{2} + l(1) \quad (7)$$

which is simply the sum of the conditional probability that all voters are not informed plus the conditional probability that all voters are informed.

Note that (7) can be re-written as:

$$Pr(\text{Reelection} | \alpha^*) = \frac{1}{2} + \frac{1}{2}l \quad (8)$$

If, on the other hand, a senator has not achieved the target allocation, i.e.,

⁶Under this specification, the provision of a public good is independent of incomes, which implies permissible empirical specifications using simple Marshallian demands.

$\alpha < \alpha^*$, then the probability of winning re-election is given by:

$$Pr(\text{Reelection} \mid \alpha < \alpha^*) = \frac{1-l}{2} \quad (9)$$

or

$$Pr(\text{Reelection} \mid \alpha < \alpha^*) = \frac{1}{2} - \frac{1}{2}l \quad (10)$$

Of course, these outcomes are contingent on the level of effort exerted by a senator.

Let e denote a senator's effort level. The cost of effort is $c(e)$, where $c(\cdot)$ is convex. The probability that $a > a^*$ is given by $\lambda(e) \in [0, 1]$. The greater the effort level, the higher the value of $\lambda(e)$, i.e., $\lambda(\cdot)$ is increasing and concave. In this case, a senator's expected value from exerting effort level e is given by:

$$E(\pi|e) = \lambda(e)\left(\frac{1}{2} + \frac{1}{2}l\right)R - c(e) + (1 - \lambda(e))\left(\frac{1}{2} - \frac{1}{2}l\right)R \quad (11)$$

The first-order conditions of (11) imply:

$$lR\lambda'(e^*) = c'(e^*) \quad (12)$$

and the solution to (12) is interior if $[\lambda(e^*)l - \frac{1}{2}l - \frac{1}{2}]R - e^* \geq 0$.⁷ Note that e^* is increasing in R and l .⁸

⁷If the solution is not interior, then $e^* = 0$.

⁸Suppose effort is discrete. Let e denote the cost of effort. If a senator exerts effort, then the probability that

C Returns to Scale and the Level of Localism

We have constructed a model in which the effort of a representative in achieving a^* depends explicitly on the values of l and R – noting that for any fixed value of R , the value of e is determined directly by the given value of l . This makes the solution to (12) straightforward. However, instead of taking l as given, suppose l is determined by market size, where, following Stromberg (2004), we assume that there are scale economies in national programming.

Assume there are two broadcast firms in a given market of size N_i , where size is the number of viewers in a broadcast market.⁹ Assume that one firm is a provider of local news, while the other provides national news; let l be the per viewer level of local news, and k the per viewer level of national news. The cost function for the provider of local news is given as:

$$N_i \gamma(l) \tag{15}$$

$a > a^*$ is given by $\lambda(a^*|1)$. If a senator does not exert effort, then the probability that $a > a^*$ is $\lambda(a^*|0)$. The probability that $a > a^*$ is assumed higher when the senator exerts effort, i.e. $\lambda(a^*|1) > \lambda(a^*|0)$. Then, a senator's expected value from exerting effort is:

$$E(\pi|e) = \lambda(a^*|1)\left(\frac{1}{2} + \frac{1}{2}l\right)R - e + (1 - \lambda(a^*|1))\left(\frac{1}{2} - \frac{1}{2}l\right)R \tag{13}$$

while a senator's expected value from not exerting effort is:

$$E(\pi|\sim e) = \lambda(a^*|0)\left(\frac{1}{2} + \frac{1}{2}l\right)R + (1 - \lambda(a^*|0))\left(\frac{1}{2} - \frac{1}{2}l\right)R \tag{14}$$

Thus, the senator exerts effort if $E(\pi|e) \geq E(\pi|\sim e)$. Simplifying (11) and (12) yields the following condition for exerting effort:

$$[\lambda(a^*|1) - \lambda(a^*|0)] l R \geq e$$

⁹It does not matter whether the stations are owned by a single owner or if each station is individually owned.

where $\gamma'(\cdot) > 0$ and $\gamma''(\cdot) < 0$. Note that the cost function for local news exhibits constant returns to scale with respect to viewers. The cost function for the provider of national news is given as:

$$N_i^\beta g(k) \quad (16)$$

where $\beta \in (0, 1)$ and $g'(\cdot) > 0$, $g''(\cdot) < 0$. Thus, the cost function for national news exhibits increasing returns to scale, i.e., $\beta < 1$. The per viewer inverse demand curve for news can be written as:

$$P = a - k - \delta l \quad (17)$$

where $\delta > 0$. Then, the firm that produces local news solves for:

$$\text{Max}(l) : N_i(a - k - \delta l)l - N_i\gamma(l) \quad (18)$$

The firm that produces national news solves for:

$$\text{Max}(k) : N_i(a - k - \delta l)k - N_i^\beta g(k) \quad (19)$$

The maximization problems in (18) and (19) yield the following first-order conditions:

$$\gamma'(l) = a - k - 2\delta l \quad (20)$$

and

$$\frac{g'(k)}{N_i^{1-\beta}} = a - \delta(l) - 2k \quad (21)$$

Proposition 1: If $N_1 > N_2$ then $l_1 < l_2$, i.e., increases in the size of the broadcast market imply a reduction in local content.

Proof of Proposition 1: The proof is by contradiction. Suppose that $N_1 > N_2$ and $l_1 \geq l_2$. Equation (20) implies that $a - k_1 = 2\delta l_1 + \gamma'(l_1)$ and $a - k_2 = 2\delta l_2 + \gamma'(l_2)$. Assume that $l_1 \geq l_2$. This implies that $2\delta l_1 + \gamma'(l_1) \geq 2\delta l_2 + \gamma'(l_2)$, which implies $k_1 \leq k_2$. Now, we re-write the first-order conditions as $a - k_1 - \delta l_1 = \delta l_1 + \gamma'(l_1)$; $(a - \delta l_1 - k_1) = k_1 + \frac{g'(k_1)}{N_1^{1-\beta}}$ and $a - k_2 - \delta l_2 = \delta l_2 + \gamma'(l_2)$; $a - k_2 - \delta l_2 = k_2 + \frac{g'(k_2)}{N_2^{1-\beta}}$. Then, $\delta l_1 + \gamma'(l_1) = k_1 + \frac{g'(k_1)}{N_1^{1-\beta}} \leq k_2 + \frac{g'(k_2)}{N_2^{1-\beta}} = \delta l_2 + \gamma'(l_2) < \delta l_1 + \gamma'(l_1)$. This implies $\delta l_1 + \gamma'(l_1) < \delta l_1 + \gamma'(l_1)$, which is a contradiction. ■