

Equalizing Political Participation and, in turn, Political Influence with Civil Liability Rules

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Abstract

Data reported by the authors in Section 1, below, suggest that elected public officials in the U.S. are disproportionately responsive to the public policy preferences of their affluent constituents (Bartels, 2016, 253-254; Gilens, 2012, 241). However, these data do not exclude the possibility that the public policy positions of these officials are driven by their own preferences which the affluent largely share because of shared backgrounds (Bartels, 2016, 347). This possibility implies, therefore, that if legislators vote their own preferences, then low income/less-well educated constituents could acquire a proportionally equal share of political influence by participating to elect representatives who share the voters' political preferences. Moreover, this possibility inspires the authors' analysis in Section 6 of the use of civil liability rules to equalize political participation rates which, in turn, could equalize political influence rates if the policy makers' preferences align with those of the voters.

In Section 2, the authors show that if the voters' participation rates determine their influence rates then perfectly equal participation rates could imply perfectly equal influence rates. In Section 3, the authors derive analytically the i th voter's privately-optimal political participation rate (P_i^*), while, in Section 4, they derive analytically the socially-optimal participation rate (P_s^*). In Section 5, the authors obtain a numerical solution for P_s^* using hypothetical data and, in Section 6, in a case study, they analyze the use of civil liability rules to incentivize the i th eligible voter to substitute P_s^* for P_i^* to induce perfectly equal political participation rates and, in turn, by the argument of Section 2, perfectly equal political influence rates. Section 7 is a conclusion.

Keywords: Political Participation, Political Influence, Economic Optimization, Civil Liability Rules.

Political Influence Rates and Political Participation Rates

Equal political influence, an essential feature of liberal democratic theory, contemplates that different citizens with different political interests are protected equally by the government. However, there are studies which suggest that liberal democratic practice in some states, such as the U.S., the focus of this paper, does not meet this standard. For example, Bartels' analyses suggest that members of Congress are "responsive to the preferences of affluent citizens but largely or even wholly unresponsive to the preferences of the poor" (2016, 253-254). Similarly, Gilens concludes from his analyses that "policy makers attend to the preferences of the affluent but largely ignore the preferences of other constituents, at least when their preferences diverge from those of the well-off" (2012, 87).

Alternatively, Bartels' analyses suggest that the public policy positions of public officials are largely motivated by their own preferences, which, however, the affluent share because of shared personal narratives (2016, 265).¹ In particular, he concludes that his "analyses suggest that the specific policy views of citizens, whether rich or poor, have less impact in the policy-making process than the ideological convictions of elected officials" (2016, 347).² Bartels's analyses imply, therefore, that if policy makers vote their own preferences, then the politically disengaged could acquire a proportionally equal share of political influence by participating to elect representatives who share the voters' political ideology.³

Interestingly, low income, less-well educated constituents do not, as a class, participate politically at the relatively high rates of their high income, better-educated counterparts. For example, data show that, in 2008, individuals in the highest income/education quintile were 2.15 times as politically active as individuals in the lowest quintile when political activity was measured by participation in at least two of the activities which included

1 In the Downs model of democracy, a constituent's political influence is not dependent upon the ideological biases of his representatives. In particular, Downs assumes that the political party in power (the government) seeks to retain power by maximizing its votes in the next election in which this party will compete for votes with the party out of power. Since, in that analysis, the voter favors the party whose policies are expected to maximize his net benefit, each party must anticipate the cost/benefit effects of its program on the preference functions of the voters (1957, 72).

2 In contrast, Gilens concludes that the disproportionate influence of the affluent is the result of their disproportionate political spending although he acknowledges that "the role of money is complex and far from completely understood" (2012, 246). Bartels asserts that political contributions are "far from the whole story" as "political scientists have provided little direct evidence connecting political giving and political clout" (2016, 265).

3 An individual's political ideology identifies his liberal/conservative orientation which is a distillation of his public policy positions. These public policy positions, in turn, are products of the information -- filtered through a complex of "political values" -- which the individual acquires (Zaller, 1992, 23).

“contacting a government official, working with fellow citizens to solve a community problem, making a political contribution, attending a protest, or working for a political party or candidate” (Schlozman et al, 2012, 124).⁴

Indeed, there is evidence that increased participation of low income constituents results in their increased political influence. Fowler, for example, concludes that compulsory voting in Australia resulted in increased turnout, increased representation of the lower income constituents, and more progressive public policies such as an improved social safety net (2013, 180). Jackman attributes this policy shift to “party competition” for the support of the electorate which compulsory voting also shifts to the left (2001, 16316).

Inspired by the possibility of equalizing political influence rates by equalizing political participation rates, the authors explore the use of civil liability rules to equalize participation rates. Counterintuitively, the analysis implicitly assumes that participation at a given rate is equally efficacious across income/education lines.⁵

The Theoretical Framework

Equal Participation Rates (EPP) and Equal Influence Rates (EPI)

Let F_i , $i = 1, 2, \dots, n$, where $F_i \geq 0$, represent the i th eligible voter’s political influence rate (measured in units per year of favorable public policy) and n represent the number of society’s eligible voters. The equality (EPI) of political influence rates can be measured by the equality, in percentage terms, of the F_i , $i = 1, 2, \dots, n$, on an arbitrary continuum from “0” to “1”, where 0 is absolute inequality (zero percent equality) and 1 is perfect equality (one hundred per cent equality).

Hence, EPI is a measure of the extent to which the individuals’ political influence rates converge to the same value. However, EPI is an outcome and, as such, cannot be directly manipulated. Therefore, a liberal democracy which seeks to manipulate EPI must, instead, target a proxy for EPI. The authors borrow from the linkage between participation and influence rates in Section 1 and designate the equality (EPP) of participation rates as the proxy for EPI. In order to derive EPP, let P_i , $i = 1, 2, \dots, n$, (1) where $P_i \geq 0$, represent the

4 However, a subset of these data show (2012, 122) that those in the highest income/education quintile were 3.5 times as politically active as those in the lowest quintile when political activity was measured more narrowly by “campaign work” and other data show (2012, 153) that, in 2008, those in the highest income/education quintile were 1.5 times as politically active as those in the lowest quintile when political activity was measured by voting rates.

5 Birch concludes that although “(c)itizens under compulsory voting do not have significantly higher (or lower) levels of political knowledge, party identification or direct engagement with political actors during election campaigns . . . , (t)hey are somewhat more likely to engage in other acts of political participation, and significantly more likely to take part in protest activities” (2009, 77). Therefore, increased participation of the historically disengaged could possibly serve over time as a vehicle for closing gaps in their political competency.

ith eligible voter's political participation rate (measured in units per year of a composite of leisure hours and discretionary income allocated by voter i to the political activities described in Section 1). Then, EPP can be measured by the equality, in percentage terms, of the P_i , $i = 1, 2, \dots, n$, on an arbitrary continuum from "0" to "1", where, again, 0 is absolute inequality and 1 is perfect equality.

It is easy to show that EPP could imply EPI. Assume, for example, that $F_i = mP_i$, $i = 1, 2, \dots, n$, and that $P_i = M$, $i = 1, 2, \dots, n$, i.e., the i th eligible voter's political influence rate is a constant proportion (m) of his political participation rate which society fixes at M . Then, if $n = 3$, $P_1 = M$, $P_2 = M$ and $P_3 = M$ and, therefore, $F_1 = mM$, $F_2 = mM$ and $F_3 = mM$ and assuming that $M = 0.06$ and $m = 1/10$ then $P_1 = 0.06$, $P_2 = 0.06$, and $P_3 = 0.06$ and $F_1 = 0.006$, $F_2 = 0.006$ and $F_3 = 0.006$. Therefore, if the P_i and the F_i are *linearly* related and the P_i are perfectly equal then $EPP = 1$ implies $EPI = 1$.

Private and Social Optima

The i th eligible voter's political participation decision is captured in a simple model which assumes that he sets $P_i = P_i^*$, the optimal participation rate, to maximize the difference between his (expected) participation benefit and his (expected) participation cost. A possible source of the benefit is the expected funding of a skill-enhancement program, while a possible source of the cost is the expected sacrifice of family time with children.⁶ Since the necessary condition for a maximum is that marginal benefit equals marginal cost, this model implies that the eligible voter sets $P_i^* = 0$ if he perceives that, at each $P_i > 0$, marginal participation cost exceeds marginal participation benefit. Cost/benefit considerations also explain the decision not to participate in the Riker and Ordeshook analysis (1968).⁷

This paper assumes that a liberal democracy has an interest in the political participation of its eligible voters distinct from the eligible voter's own interest in participation.⁸ Society's decision-making is captured in a

6 There are, in addition, psychic benefits from political participation and psychic costs of non-participation. For example, the psychic benefits from voting include public approval for exercising a civic duty, while the psychic costs of not voting include public disapproval for not exercising this duty (Green and Gerber, 2010, 331).

7 Riker and Ordeshook test the model $R = Px_B - C + D$, where they interpret the probability "P", as "a function of the estimated closeness of the vote" in an upcoming election, "B" as a measure of the individual's interest in "the outcome of the . . . election", "C" as the individual's "costs of voting" in the election, and "D" as the individual's "sense of citizen duty" to vote in an election (1968, 28, 32, 35-36, 37, 38). Hence, the individual derives the expected benefit ($Px_B + D$) from and incurs the expected cost (C) of voting. Therefore, his expected net benefit, "R", is either positive, in which case he votes, or zero or negative, in which case, he does not vote. Riker and Ordeshook conclude, using aggregate data, that the variables of the model are valid predictors of turnout (1968, 38). However, Aldrich points out that although aggregate data validates the predictive value of "P", survey data does not (1993, 252). He explains this curiosity by hypothesizing that "P" is not causal but, instead, correlates with other variables, such as strategic decisions of candidates, that could induce increased voting in close elections (1993, 266-267).

8 In particular, the authors assume that society is an independent optimizer that seeks to maximize its own net benefit. Downs asserts that such a model of government decision-making is "useless as a guide to practical decisions" since the societal objective function is unknown (1957, 15).

simple model where $P_s = (1/n) \sum P_i$, $i = 1, 2, \dots, n$, (2) represents the social participation rate. The model assumes that society sets $P_s = P_s^*$, the optimal participation rate, to maximize the difference between its (expected) participation benefit and its (expected) participation cost by satisfying the marginal conditions for a social optimum. A possible source of social benefit is enhanced political legitimacy, while a possible source of social cost is the sacrifice of scarce resources to obtain that benefit.⁹ (Political legitimacy is a public good and as such is non-excludable. Therefore, the private sector does not produce this good because no one will pay to consume it since no one can be excluded from its consumption.)

Equality (EPI) of political influence implies both social cost (SC) and social benefit (SB). Therefore, society sets $EPI = EPI^*$, the socially optimal rate, where $0 \leq EPI^* \leq 1$, to maximize $NSB(EPI)$, the (expected) net social benefit, which is calculated as the difference between $SB(EPI)$ and $SC(EPI)$.¹⁰ At EPI^* , therefore, society satisfies the first and second order conditions for a social maximum, i.e., $MSB(EPI) = MSC(EPI)$ and $dMSB(EPI)/dEPI < dMSC(EPI)/dEPI$, where $MSB(EPI)$ is the marginal EPI benefit and $MSC(EPI)$ is the marginal EPI cost. One could estimate EPI^* in a cost/benefit analysis of the democratic effects of EPI over a range of EPI rates. Schlozman et al specify possible democratic effects of the equality of political *voice*, a cousin of, if not a proxy for, EPP as well as of EPI (2012, 114).¹¹

Incentivizing the Substitution of P_s^* for P_i^* , $i = 1, 2, \dots, n$,

Assume that $EPI^* = 1$. This target could be satisfied by subjecting the *economically-rational* eligible voter to a negligence or a strict liability rule to incentivize him – by manipulating his cost/benefit calculations -- to substitute P_s^* for P_i^* with the result that $P^*_1 = P^*_2 = \dots = P^*_n = P_s^*$.¹²

9 Birch concludes that there is “some evidence” of an association of compulsory voting “with higher levels of system legitimacy” (2009, 115). Birch concludes (2009, 140) that mandatory compulsory voting has a positive “impact” on political engagement. Therefore, increased participation of the historically disengaged could serve as a vehicle for closing possible gaps in their political efficacy

10 The sources of $SB(EPI)$ and $SC(EPI)$ are, respectively, the positive and negative democratic effects of EPI (see footnote 11, below).

11 The positive democratic effects include “promoting equal protection of interests, conferring on all a sense of full membership in the community, nurturing the democratic capacities of individuals, cultivating norms of social trust and reciprocity that shore up democratic communities, and endowing policies with legitimacy.” The negative democratic effects include endangering “essential liberties” since restrictions force “the quiescent to” participate and constrain the “super-activists” from participating. Negative effects also include risking the adoption of policies that are “ill advised, responsive to short-run considerations and lukewarm majorities, and insufficiently protective of the rights of others” as political voice is extended to individuals “who are too ill-informed, mercurial, and intolerant to get involved in politics”.

12 Political scientists have hypothesized that incentivizing increases in the number of political participants through rewards and penalties creates a risk of diluting the level of politically informed participation. However, Shineman, in a mobilization experiment, in which she offered rewards and imposed penalties to test that and other hypotheses, found “that adding new voters did not decrease the information quality of the active voting population” (2016, 19).

Hence, these rules yield $EPP = 1$ and, in turn, by an argument in Section 2, $EPI = 1$.

Limitations of the Generality of the Analysis Constitutional Issues

Public policies to compel political participation limit the political participation of some individuals while they force the participation of others and, as a result, these policies raise constitutional issues around the protections of personal liberties such as speech and assembly.¹³ Breyer's test for the constitutionality of such restrictions appears to capture the reasoning of U.S. Supreme Court decisions by providing that a policy which limits or forces speech is constitutional if it reasonably *balances* the likely "speech-enhancing" and "speech-restricting" effects (2005, 49).

Potential Political Constraints

Political realities could disrupt the potential relationship between political participation and political influence. In fact, some observers, such as Parvin, conclude that, because of these realities, the solution to democratic breakdown lies in democratizing representation by, for example, "the use of mini-publics" and not in the use of participatory strategies (2018, 17).¹⁴ For example, if the historically disengaged do not share the political skills of the politically engaged, then the former are not as likely to discern the ideological core of a political candidate as skillfully as the latter and, therefore, are not as likely to elect representatives who share their political ideology.

In addition, the historically disengaged, as potential challengers of the status quo, are disproportionately disadvantaged by legislative dynamics such as partisan gerrymandering and distributive politics (pork barrel spending),

13 See, for example, *McConnell v. Federal Election Commission*, 540 U.S. 93, 134 (2003) and *West Virginia State Board of Education v. Barnette*, 319 U.S. 624, 634, 642 (1943) in which the Court addressed, in the former, the constitutionality of the limitation of speech, while, in the latter, the Court addressed the constitutionality of the compulsion of speech. In *McConnell*, the Court held, in part, that restrictions on "coordinated expenditures" by a non-candidate on behalf of a party or a candidate are *constitutional*. The Court contrasted these restrictions with the *unconstitutional* restrictions on expenditures made "independently of the candidate and his campaign". The former, the Court said, are not like the latter which not only 'impose far greater restraints on the freedom of speech and association' but also 'fail to serve any substantial governmental interest stemming *the* reality or appearance of corruption in the electoral process.' In *Barnette*, the Court held that governmental action that required students and teachers to salute and pledge allegiance to the flag was unconstitutional as it required these individuals to affirm a set of beliefs with which they did not agree. The Court said that if the "compulsory flag salute" were constitutional then "a Bill of Rights which guards the individual's right to speak his own mind, left it open to public authorities to compel him to utter what is not in his mind." The Court added that it applied "the limitations of the Constitution with no fear that freedom to be intellectually and spiritually diverse or even contrary will disintegrate the social organization."

14 Parvin asserts that "elite organizations" such as lobbying entities that intervene politically on behalf of the "more advantaged" have replaced "grassroots organizations" such as trade unions which at one time mobilized the "least advantaged" for political action (2018, 5-7). He concludes that "(c)itizen participation, traditionally conceived, can no longer provide the check on elite power that the system requires . . . so we need . . . an institutional check which incorporates citizens' voices into the democratic system but which does not rely on widespread citizen participation" (2018, 3).

both of which favor the reelection of incumbents. Consider, for example, partisan gerrymandering in which political party A, while in power, maps electoral districts to gain an electoral advantage over political party B through cracking or packing of the latter's supporters.¹⁵ As a result, in winner-take-all, district-wide contests, these practices result in "wasted votes", thereby reinforcing the electoral prospects of incumbents (Stephanopoulos and McGhee, 2015, 834).¹⁶

Moreover, "legislators, agencies, interest groups, and program recipients" engage in distributive politics to form "policy subsystems" to fund programs to solve specific problems of the interest groups' members (Stein and Bickers, 1995, 6).

This process which "make(s) democracy safe for incumbents" -- who are motivated to participate in the subsystems by campaign contributions which are funded by the members of the interest groups -- does so at the expense of "the relationship between legislators and their constituents" (Stein and Bickers, 1995, 143, 144).¹⁷

Privately Optimal Participation

The individual's privately optimal participation rate (omitting for convenience the subscript "i") can be derived by maximizing

$$NB(P, \overline{ED}) = B(P, \overline{ED}) - C(P, \overline{ED}), \quad (4)$$

where P is the individual's participation rate; \overline{ED} is the individual's *fixed* educational achievement; and B and C (omitting, for convenience, the characterization of values as "expected") are the individual's participation benefit, which increases with P at a decreasing rate and the individual's participation cost, which increases with P at an increasing rate, respectively. Therefore, NB, the individual's net participation benefit, follows an inverted-

15 Cracking is a strategy by which political party A partitions the supporters of political party B in multiple districts so that party B does not win a majority of votes in any one district and packing is a strategy by which the former concentrates these supporters in a single district so that party B wins that district but no others (*Rucho v. Common Cause* and *Lamone v. Benisek*, 2019, 4).

16 The U.S. Supreme Court in *Rucho v. Common Cause* and in *Lamone v. Benisek* refused to upset state-legislated districting plans, which, in one case, favored republican candidates and, in the other case, favored democratic candidates. The Court argued that the Constitution's framers, who were familiar with the practice of partisan gerrymandering, intended that "electoral districting problems" raise political not judicial issues (2019, 10). In particular, the Court rejected the notion that the Constitution requires -- as does the test for constitutionality proposed by Stephanopoulos and McGhee (2015, 834) -- that the number of congressional seats acquired in an election by a political party be proportional to its statewide vote.

17 Stein and Bickers found that only a subset of a legislator's constituents including, for example, members of interest groups, who benefit from new awards, are motivated to pay attention to these awards and that only vulnerable incumbent members of Congress are motivated, by political gain, to acquire these awards for their districts (1995, 136). These findings, therefore, have implications for conclusions of others about the conduct of distributive politics (1995, 123, 143). Since, in general, vulnerable incumbents do not occupy influential Congressional committees, the findings raise questions about Ferejohn's conclusion (1974, 233-234) that committee members direct the awards to their own districts and since, in general, a legislator's constituents are not paying attention to new awards the findings raise questions about Shepsle and Weingast's conclusion (1981, 107-108) that legislators tend to form universal coalitions in support of new awards to avoid the uncertainty of exclusion from winning coalitions.

U shaped path with respect to P. Hence, the individual maximizes NB, when $NB > 0$, by setting $P = P^*$, the privately optimal participation rate, where $dB/dP = dC/dP$ and $d^2B/dP^2 < d^2C/dP^2$.¹⁸

Alternatively, one can derive P^* by solving a minimization problem. In particular, this problem (omitting, for convenience, the variable \overline{ED}) requires minimization of the expression $C(P) + RD(P)$, where $C(P)$, as above, is the cost at P of participation and $RD(P)$, interpreted as the residual damage at P, is the cost at P of nonparticipation and is derived in equation “(5)”. Hence, $RD(P) = B(P^{\text{MAX}}) - B(P)$, (5) where P^{MAX} represents the individual’s maximum *possible* political participation rate, $B(P^{\text{MAX}})$ represents the individual’s maximum *possible* participation benefit, and $B(P)$, as above, is the individual’s *realized* participation benefit at P.¹⁹ Hence, $RD(P)$, the difference at P between the maximum possible benefit and the realized benefit, is the foregone participation benefit at P or, therefore, the *residual damage* at P when benefit is viewed as damage avoided.

As P increases, $C(P)$ increases at an increasing rate, whereas $RD(P)$, which is inversely related to $B(P)$, decreases at a decreasing rate. Hence, the vertical sum of $C(P)$ and $RD(P)$ follows a U-shaped path which at P^* , where $dRD/dP = -dC/dP$ and $d^2RD/dP^2 > -d^2C/dP^2$, is minimized.²⁰

Socially Optimal Participation

The socially optimal political participation rate (P_s^*) can be derived by maximizing $NSB(P_s) = SB(P_s) - SC(P_s)$, (7) where P_s is the social participation rate, and SB , and SC (omitting, for convenience the characterization of values as “expected”) are the social participation benefit, which increases with P_s at a decreasing rate, and the social participation cost, which increases with P_s at an increasing rate, respectively. Therefore, $NSB(P_s)$, the net social participation benefit, follows an inverted U-shaped path with respect to P_s . Hence, society maximizes $NSB(P_s)$ by setting $P_s = P_s^*$, where $dSB/dP_s = dSC/dP_s$ and $d^2SB/dP_s^2 < d^2SC/dP_s^2$.

18 Educational achievement (ED) is a particularly important determinant of the private cost and benefit of political participation. Schlozman et al conclude that education contributes to the accumulation of “nearly all” of the inputs that promote political engagement including, for example, “income and civic skills, motivation to use such resources for political purposes, and access to social networks through which requests for political activity are made” (2012, 185). Since the $B(ED,P)$ function is shifted up relative to the $C(ED,P)$ function for the academic *achiever*, he maximizes $NB(ED,P)$ at a relatively large P, where he satisfies the marginal conditions for a maximum, but because the $C(ED,P)$ function is shifted up relative to the $B(ED,P)$ function for the *non-achiever*, he maximizes $NB(ED,P)$ at a relatively small P, where he satisfies those conditions. Therefore, ED, at a given value of P, determines the positions of the $B(ED,P)$ and $C(ED,P)$ functions, and, in turn, the position of the $NB(ED,P)$ function, while P determines their slopes.

19 Consider the calculation of $RD(P)$. Assume that $P^{\text{MAX}} = 10$ percent and $B(10) = \$18$. If at $P = 6$ percent, $B(6) = \$14$, then $RD(6) = \$18 - \$14 = \$4$.

20 It is easy to show that this minimization problem is the the equivalent of the maximization problem in equation “(4)”. Since the vertical summation of $RD(P)$ and $C(P)$ yields $RD(P) + C(P) = B(P^{\text{MAX}}) - [B(P) - C(P)]$, (6) when $C(P) + RD(P)$ is minimized, $NB(P) --$ the second term on the right hand side of “(6)” -- is maximized,. Hence, the individual’s objective of maximizing “(4)” is satisfied by minimizing “(6)”.

However, P_s^* can be derived, instead, by minimizing the expression $SC(P_s) + RSD(P_s)$, where $SC(P_s)$, as above, is the social cost at P_s of participation and $RSD(P_s)$, interpreted as the residual damage at P_s , is the social cost at P_s of non-participation and is derived in equation “(8)”. Hence, $RSD(P_s) = SB(P_s^{MAX}) - SB(P_s)$, (8) where P_s^{MAX} represents society’s maximum *possible* political participation rate, $SB(P_s^{MAX})$ represents society’s maximum *possible* participation benefit, and $SB(P_s)$, as above, is society’s *realized* participation benefit at P_s . Hence, $RSD(P_s)$, the difference at P_s between the maximum possible benefit and the realized benefit, is the foregone participation benefit at P_s or, therefore, the residual social damage at P_s when social benefit is viewed as social damage avoided.

Since, as P_s increases, $RSD(P_s)$, which is inversely related to $B(P_s)$, decreases at a decreasing rate and $SC(P_s)$ increases at an increasing rate, their sum, $SC(P_s) + RSD(P_s)$, which follows a U-shaped path, is minimized at P_s^* where $dRSD/dP_s = -dSC/dP_s$ and $d^2RSD/dP_s^2 > -d^2SC/dP_s^2$. Notice that since $RSD(P_s) + SC(P_s) = SB(P_s^{MAX}) - [SB(P_s) - SC(P_s)]$, when $RSD(P_s) + SC(P_s)$ is minimized, $NSB(P_s)$ is maximized.²¹

Estimating P_s^* with Hypothetical Data

Assume for simplicity that $SB(P_s) = aP_s^b$ and $SC(P_s) = gP_s^h$, where $a > 0$, $0 < b < 1$, $g > 0$, and $h > 1$. Hence, as P_s increases, $SB(P_s)$ increases at a decreasing rate and $SC(P_s)$ increases at an increasing rate reflecting, respectively, decreasing marginal benefit and increasing marginal cost of P_s . At the intersection of the marginal curves, where $P_s = P_s^*$, $NSB(P_s)$ is maximized.

In order to solve numerically for P_s^* , the authors transform logarithmically the values of SB , SC and P_s in Table 1 to yield the values in Table 2 with which they regress $\ln SB$ on $\ln P_s$ and $\ln SC$ on $\ln P_s$ to estimate the constants in $SB(P_s)$ and $SC(P_s)$. The analysis yields $\ln a = 5.216$, $b = 0.785$, $\ln g = -0.295$ and $h = 2.537$, where the antilogarithms of $\ln a$ and $\ln g$ are $a = 184.1$ and $g = 0.7445$, respectively.

²¹This minimization problem is a variation of the Abrams and Settle (1976, 43) political participation model. They show (1976, 44-47) that the socially optimal voting rate can be obtained by minimizing the U-shaped function which represents the sum of the social costs of voting and non-voting. In their analysis, the social cost of voting, which increases with participation at an increasing rate, consists mostly of the opportunity cost of the time devoted to voting (1976, 39), while the social cost of not voting, which decreases with participation at a decreasing rate, consists of the cost of the “divergence from the wishes of the majority of all citizens” (1976, 42).

Table 1. Hypothetical Values of SB and SC in Millions of Dollars and Ps Expressed as a Percentage

Ps	SB	SC
4	524	25
6	739	73
8	966	135
9	1168	200
14	1340	610

Table 2. Logarithmic Values of Ps, SB, and SC

lnPs	lnSB	lnSC
1.38	6.261	3.218
1.79	6.605	4.290
2.07	6.873	4.905
2.19	7.063	5.298
2.63	7.200	6.413

Therefore, $SB(P_s) = 184.1P_s^{0.785}$ and $SC(P_s) = 0.7445P_s^{2.537}$ and, in turn, $NSB(P_s) = 184.1P_s^{0.785} - 0.7445P_s^{2.537}$. (9A).

Since, $RSD(P_s) = 184.1(P_s^{MAX})^{0.785} - 184.1P_s^{0.785}$, where, by assumption, P_s^{MAX} equals 16 percent, $SC(P_s) + RSD(P_s) = 0.7445P_s^{2.537} + [184.1(16)^{0.785} - 184.1(P_s)^{0.785}]$. (9B)

Hence, the first and second-order conditions that maximize “(9A)” and minimize “(9B)” are satisfied simultaneously at $P_s^* = 11.89$ percent where $NSB(P_s^*) = SC(P_s^*) + RSD(P_s^*) = \735.00 million.

Incentivizing the Individual to Substitute P_s^* for P_i^*

Assume that $P_i^* \neq P_s^*$. Then, society could induce the economically-rational eligible voter to substitute P_s^* for P_i^* by subjecting him to a liability rule.²²

The liability Rules

The Negligence Rule

In tort law, the negligence rule ties the individual’s liability for damages to his failure to use reasonable care (K^*). Therefore, under this rule, if the actor damages another individual and is adjudged to have acted unreasonably, i.e., if he is determined to have set $K = K_1 < K^*$, then he must

22 See Brown (1973) for an early discussion of the use of liability rules for incentivizing socially optimal behavior.

pay the out-of-pocket cost of care at K_1 as well as the residual damage at K_1 . The former is the opportunity cost of the resources devoted to exercising K_1 and the latter is the damage that survives at K_1 . However, if the actor is adjudged to have acted reasonably, i.e., if he is determined to have set $K = K^*$, then he is only responsible for the out-of-pocket cost of care at K^* . Moreover, if the actor sets $K = K_2 > K^*$ then he is only liable for the out-of-pocket cost of care at K_2 .

Assume that, as K increases, the residual damage function decreases at a decreasing rate and the out-of-pocket cost function increases at an increasing rate. Therefore, their vertical sum, a function of K , follows a U-shaped path which is minimized at $K = K^*$.

Interestingly, the negligence rule induces the economically rational actor -- who is assumed to have knowledge of these functions -- to set $K = K^*$ where he minimizes his liability for the sum of the cost of care and the residual damage. Compare the individual's liability at $K_1 < K^*$ and at $K_2 > K^*$. At $K = K_1$ his liability, represented by a point on the U-shaped curve, exceeds his liability at K^* , which is represented by a point on the out-of-pocket cost of care curve (which lies below the U-shaped curve). At $K = K_2$ his liability for the out-of-pocket cost of care also exceeds his liability at K^* because the out-of-pocket cost of care curve increases with K (from K^* to K_2).

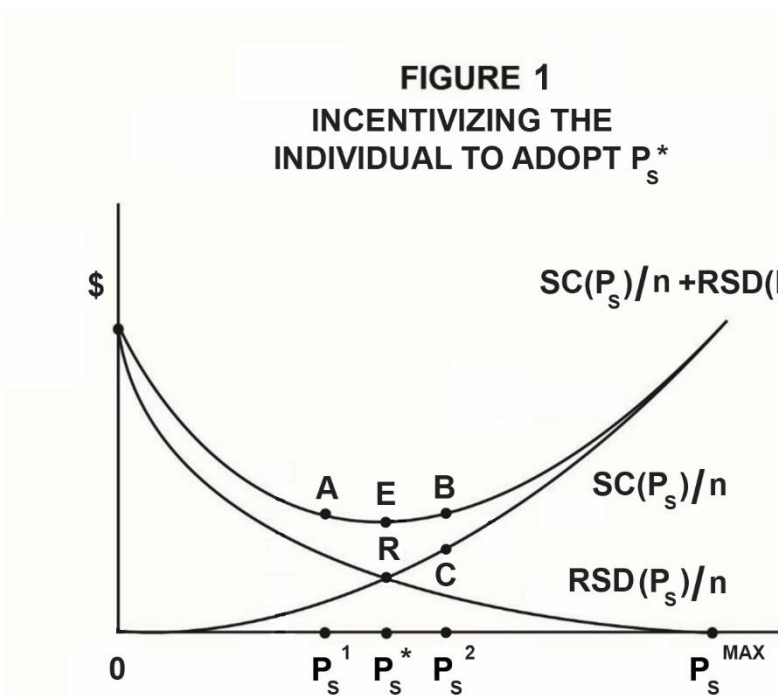
The Strict Liability Rule

The strict liability rule -- a no-fault rule that ties the individual's liability to the fact, alone, that he damaged another individual -- holds the individual responsible, even at K^* , for residual damage as well as for the out-of-pocket cost of care. Therefore, this rule, too, given the U-shaped path of the sum at K of the out-of-pocket cost of care and the residual damage, incentivizes the economically rational individual to set $K = K^*$ where, again, he minimizes his liability since, at $K = K^*$, his liability is less than his liability at $K_1 < K^*$ or at $K_2 > K^*$.

The Individual Sets $P_i = P_s^*$ under a Liability Rule

Consider Figure 1, in which n is the number of a society's citizens who are eligible to vote, $SC(P_s)/n$ is the average social cost, which increases with P_s at an increasing rate, and $RSD(P_s)/n$ is the average residual social damage, which decreases with P_s at a decreasing rate. The sum of these costs is

minimized at $P_s = P_s^*$ where $SC(P_s)/n + RSD(P_s)/n = SC(P_s^*)/n + RSD(P_s^*)/n$.



In the presence of one or the other of the liability rules, the economically rational individual, who, by assumption, knows the $SC(P_s)/n$ and $RSD(P_s)/n$ functions, chooses P_s^* in the figure to minimize his liability. For example, if a “negligence” rule is in force, the individual, by choosing P_s^* , limits his liability to $SC(P_s^*)/n = “R”$, which is less than his liability at P_s^1 of $[SC(P_s^1) + RSD(P_s^1)]/n = “A”$, and is also less than his liability at P_s^2 of $SC(P_s^2)/n = “C”$. If, instead, a “strict liability” rule is in force, the individual, again, chooses P_s^* to minimize his liability in the figure since, by choosing P_s^* , his liability is equal to $[SC(P_s^*) + RSD(P_s^*)]/n = “E”$, which is less than his liability at P_s^1 of $[SC(P_s^1) + RSD(P_s^1)]/n = “A”$ and is also less than his liability at P_s^2 of $[SC(P_s^2) + RSD(P_s^2)]/n = “B”$.

Conclusion

The authors assume, based on suggestions in the political science literature, that political participants could acquire political influence by electing representatives with whom they share the same political preferences. Motivated by this possibility, the authors derive the socially-optimal political participation rate and show that in a liberal democracy – where equal political

influence is a goal -- civil liability rules could be employed to incentivize the economically rational individual to substitute this rate for his privately-optimal rate. In theory, therefore, political participation at the socially optimal rate ensures the maximum net social gain from participation as well as equal political participation rates and, in turn, equal political influence rates.

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