ONLINE APPENDIX FOR
Moving towards the Median: Compulsory Voting and Political Polarization

APPENDIX A: FORMAL RESULTS

This appendix discusses in more detail the two models discussed in the section entitled "How CV can reduce political polarization" of the main paper: that of Callander & Wilson (hereafter C&W) and Adams & Merrill (hereafter A&M) to better understand formally how compulsory voting could lead to a decrease in polarization. Both models show how voter abstention, particularly due to alienation, can generate divergence in party platforms. However, neither model takes polarization as a central concern, or examines directly how their models could affect polarization. Likewise, neither model considers or even mentions compulsory voting. However, we are able to adapt each model to the study of compulsory voting. We show for each how CV can be understood in the context of each model, and its effect on the model's parameters. We can then also show how each model's equilibria are affected if compulsory voting generates an increase in voter turnout.

Part 1: Summary of the C&W model.
C&W model a game between two existing candidates and a potential entrant. While voters in the model are not strategic actors, C&W assign them a utility function and model their behavior. In particular, voters are assumed to receive some positive benefit from voting, but receive disutility as their own ideal point moves further away from the position taken by their most-preferred candidate. While the benefits from voting are not discussed, we understand them as including the expressive, non-economic benefits that are discussed in Appendix B, as there are rarely economic benefits from voting. A given voter's utility function is:

$$u_i(D_j, |c, b_i) \;=\; c \;-\; \alpha * \left|d_j - b_i\right|^n. \qquad (1)$$

Where c is the benefit of voting, b_i is the ideal point for citizen *I,* d_j is the policy proposed by party *j*, and α is the degree to which voters care about the gap between their own preferred policy and that of the closest party. The utility from not voting is normalized to be zero. In this setup, the voter's utility function shows that voters will abstain due to *alienation:* when neither candidate is sufficiently close to the voters' ideal point, relative to the benefit of voting (c) and the weight the voter places on the distance between the voter and candidates' ideal point (α), they receive negative utility from voting, and zero utility from not voting; in this case they simply will not vote.

C&W use this to derive a parameter, δ, that represents the maximum distance between the citizen's ideal point and the closest party such that the citizen will still be willing to vote. More specifically, they define $\delta = |d_j - b_i|$ such that:

$$c - \alpha\delta^n = 0 \qquad (2)$$

From this, we can see the relationship between citizens' tolerance for alienation and voter turnout. As citizens are willing to tolerate a larger gap between their own ideal point and that of the nearest party, given any pair of policies proposed by the two major parties, more citizens will turn out to vote. This fact is then used by C&W to inform the behavior of the strategic actors in the model.

C&W show that, under a number of different possible distributions of voters, abstention plus the threat of entry by a third-party candidate leads to equilibria in which the two parties' platforms diverge. When δ is extremely low, turnout is close to zero: only the voters who are extremely close to each party's platform turn out to vote, and the rest abstain. At this part of the parameter space, C&W show that an increase in δ, and thus in turnout, actually leads to higher divergence between the parties. However, and crucially for this paper, they show once δ reaches some threshold level, further increases in δ (and thus turnout) will lead the two parties to start proposing policies closer to the center; in their simulations this happens at around 30% turnout. As δ gets sufficiently large, both parties will converge to the policy preferred by the median voter. Thus, there is a direct link between voter turnout and polarization.

The intuition for this is as follows. Consider the case where δ is relatively low, and so some citizens abstain due to alienation. Now, consider the case where both candidates propose the policy of the median voter. In this case, voters on the two flanks are those most likely to abstain. This raises the possibility that a third party can enter the election and position itself on one of the flanks such that it wins the election. This will not be an equilibrium, as either of the two dominant parties could deviate away from the median voter's preferred policy, avoid third-party entry, and win the election. The formal proofs are available in the full Callander & Wilson article and appendix.

Effects of compulsory voting on polarization

In the original C&W, the utility from *not* voting was normalized to zero. One way to understand compulsory voting is that it changes the utility of not voting by making it negative: there is now a cost to abstention due to the fines or other penalties associated with it, along with potential expressive disutility if citizens feel negative emotions from shirking their obligation to vote. Recall that C&W show that, as the toleration for abstention δ increases, more voters will turn out. We can therefore conceptualize a move to compulsory voting as increasing δ. Before, the condition on δ was:

$$c - \alpha\delta^n = 0 \tag{3}$$

where zero was the utility of not voting. Now, the right hand side of the equation is $-v$, which we define as the cost of abstention under compulsory voting. This will mechanically increase δ, and therefore voter turnout.

Provided this increase puts δ in the area of the parameter space in which the effect of an increase in δ on divergence is negative, this will lead to a decrease in the distance between the two dominant-party platforms in equilibrium. This is, by definition, a decrease in party polarization. One nice characteristic of this model is that CV can decrease polarization even if not all voters turn out, or if some voters spoil ballots. In simulations, C&W show that under some reasonable assumptions, provided turnout is over about 30%, a further increase in turnout will decrease polarization. Recent voter turnout in two large majoritarian systems, the US and the UK, have ranged from 40% to 60% in recent elections, well within the range at which further increases should lead to at least partial convergence.

Robustness

Callander and Wilson show that their main result----that the distance between party platforms will decrease as voter turnout increases over a wide range of turnouts---holds under numerous different distributions of voter preferences. In particular, their results hold if the distribution of voters is double-peaked (bimodal) instead of single-peaked (unimodal). This suggests that, even if the electorate is polarized around this double-peaked distribution, the results still hold. They also show that if they allow abstention due to indifference as well as alienation, then their main results are the same, or even stronger. Thus, we are confident that we can apply their model to an understanding of CV under multiple types of voter distributions and types of abstention.

Calculating effect size under different assumptions

In the objections and limitations section of the manuscript, we show estimates of the magnitude of the effect of CV on polarization under different assumptions. The base figures below are taken from Callander & Wilson, and are based on their simulations of equilibria under different levels of the tolerance for alienation parameter, δ. To simulate the effects of CV, the three graphs in Figure 1A below consider three base levels of voter turnout: 40%, 50%, and 60%. These cover the range of voter turnout in US presidential and congressional elections over the past 20 years. For each baseline level of turnout, we then visualize three potential scenarios, each based on a different estimate of the net effect of CV on turnout, minus spoiled ballots. In the first (shown in blue in each graph), CV increases net turnout by 4 percentage points: this is an extremely conservative estimate, based on the high level of ballot spoilage predicted by Singh (2019). In the second (shown in green in each graph), CV increases net turnout by 8 percentage points, based on the higher estimates of spoiled ballots in Latin America by Power and Garland (2007). In the third estimate (shown in orange) CV increases net turnout by 12 percentage points; this assumes the average level of ballot spoilage due to CV in a variety of cross-country studies (Uggala 2008; Kouba and Lysek 2016; Martinez i Coma and Werner 2019). We show that, under all assumptions, CV has the potential to significantly decrease polarization.

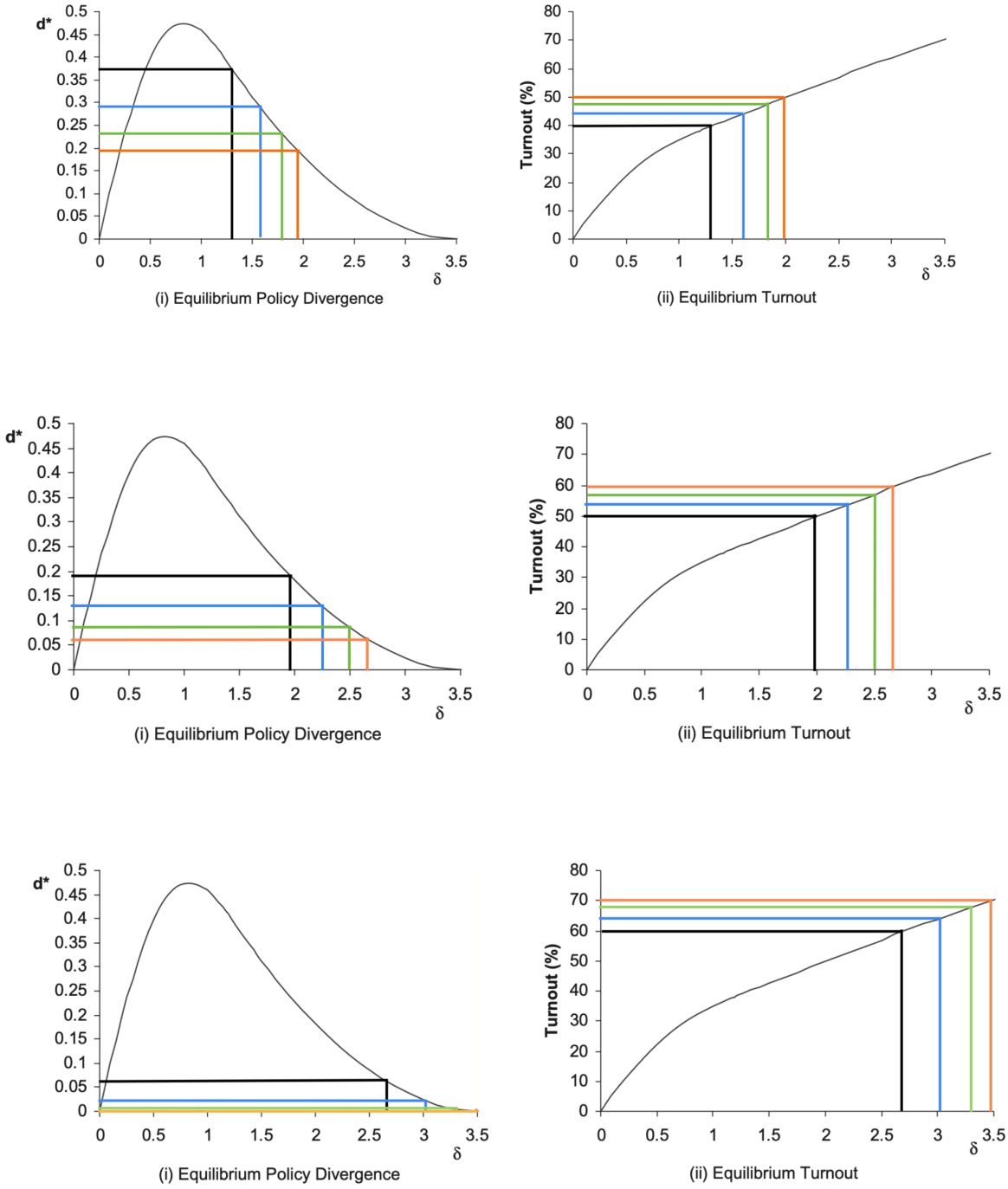
Table 1A below shows the calculations supporting the numbers in the objections and limitations section of the full manuscript. Calculations are based on the figures below. Recall that, in C&W, the equilibrium policy positions for each party can be expressed as d^*: the distance to the left (for the more liberal party) or right (for the conservative party) of the median voter that each party chooses. This means that the level of polarization in that equilibrium is $|d - (-d)| = 2d$. We use this measure of polarization to calculate the percent change in polarization when turnout increases by 4, 8, or 10 percentage points (pp) in each scenario. All calculations are intended to be approximations only.

Table 1A: The effect of CV on polarization.

	Percent decrease in polarization measure when baseline turnout is…		
Net Turnout Increase	**40%**	**50%**	**60%**
0pp (baseline)	2*0.363= 0.726	2*0.1780 = 0.356	2*.0535= 0.107
10 p.p.	(0.726-2*0.178)/0.726 = 51.0%	(0.356-2*0.0535)/0.356 = 69.9%	(0.107-2*0)/0.107 = 100%
8 p.p.	(0.726-2*0.210)/0.726 = 42.1%	(0.356-2*0.0735)/0.356 = 58.7%	(0.107-2*0.004)/0.107 = 92.5%
4 p.p.	(0.726-2*0.2815)/0.726 = 22.4%	(0.356-2*0.121)/0.356 = 32.0%	(0.107-2*0.0225)/0.107 = 57.9%

Note: This table reports estimates of the extent to which compulsory voting would reduce equilibrium polarization under different scenarios. All numbers are estimated based on a simulation of the model in Callander & Wilson. Code to produce these results is available in the replication files for this paper. The following page provides a visual illustration of these numbers.

Figure 1A: Visual representation of the effect of CV on polarization.



Note: The underlying figure is taken from Callander & Wilson, Figure 2, p. 1054. Straight lines have been manually added to illustrate how increasing turnout affects equilibrium policy divergence (polarization).

Adams and Merrill:

The second formal model we drew on is Adams & Merrill (2003). A&M develop a unified turnout model to examine how the possibility of voter abstention, combined with voters who have partisan preferences separate from their policy preferences, leads to divergence in party platforms. Adams & Merrill argue that this divergence is a normative good, as it gives voters a meaningful choice between parties that is absent when both parties converge to the policy preferred by the median voter. We argue instead that excessive divergence is by definition polarization, and can lead to the negative consequences of polarization that are well established.

This appendix discusses the model presented in Adams & Merrill in more detail. We first discuss voter preferences and behavior, including how voter turnout is modeled, and then consider how political parties will behave, and potential equilibria. In A&M, voters make a decision both about vote *choice* (i.e. which candidate they prefer) as well as whether to *turn out* or abstain. Voters' utility from a particular candidate is modeled as:

$$U_i(K) = \sum_j A_j V_{ij}(K) + \boldsymbol{B_K t_i} \qquad \textbf{(4)}$$

The first term describes a particular citizen's utility from the policy position taken by candidate K. A_j is a vector of parameters, and $V_{ij}(K)$ is "voter i's evaluation of K's position along policy *j.*" The second term describes citizen i's utility from non-policy characteristics: $\boldsymbol{t_i}$ is "a vector of characteristics unique to the voter" and $\boldsymbol{B_K}$ is a set of parameters. A&M assume that each citizen will vote for whichever candidate K maximizes $U_i(K)$. Thus, under this utility function, voters care about the policy position taken by each party, but also have some non-policy preferences (given by the second term of the utility function) that make voters predisposed to vote for one party over the other.

These non-policy preferences are central to the A&M model. They argue that most voters do in fact have partisan preferences that are separate from policy preferences. For example, a British citizen who was raised in a Labour-voting household may continue to identify with the Labour party and vote for them even if they are dissatisfied with the particular policy proposal put forth by the Labour candidate. In the US, certain racial and ethnic groups both have preferences that on average are more liberal (conservative) than average, and also seem to identify with the Democratic (Republican) party for reasons that, at least in part, are non-policy-oriented, and more due to positive or negative affect towards each party.

A&M also separately model each voter's decision about whether to turn out to vote. In particular, they argue that a citizen will only vote when two conditions are met. First, they must get at least some minimal level of utility from voting for their preferred candidate. Second, the utility differential between two candidates must exceed some threshold level. If the first condition is not met, a citizen abstains due to *alienation*. If the second condition is not met, a citizen abstains due to *indifference*.

First, consider abstention due to alienation. A&M argue that, if a citizen's utility from voting for their most-preferred party falls below some threshold level, then a citizen would rather abstain than vote. In particular, they argue that there is an *alienation threshold,* $T_i(A)$*,* which is unique to each voter and defined by a set of voter characteristics (for example, a particular voter's alienation threshold could be affected by their age, gender, income, or other characteristics). Thus, if K is the party that maximizes citizen i's utility, that citizen will only vote if $U_i(K) \geq T_i(A)$.

Second, consider abstention due to indifference. A&M argue that each citizen compares the utility they get from voting from each party; if the gap between them is too small, then the citizen is effectively *indifferent* between the two parties, and does not view voting as worthwhile. Thus, if the

two parties propose very similar platforms, and the citizen does not have a very strong partisan identity, then that citizen may not vote. A&M define $T_i(I)$ as a citizen's *indifference threshold,* and allow it to be a function of some set of voter characteristics that may differ from that used to define $T_i(A)$. Thus, given two candidates K and K', a citizen will only turn out to vote if $|U_i(K) - U_i(K')| \geq T_i(I)$.

To simplify the model, Adams & Merrill assume that there is a unidimensional policy space, and that there is only one non-policy preference, namely partisanship. They assume that preferences over the two are separate but correlated; that is, if a citizen has left-wing policy preferences, they are also likely (but not certain) to also prefer the left-wing party for non-policy reasons. They can therefore consider two distributions of potential voters, composed of the partisans of each party. They assume that each party's voters have single-peaked preferences that are distributed around a party median; these two distributions combined result in a single-peaked distribution of voters overall, with the preference of the electorate's median voter located in between the party medians.

Rather than providing a general solution to the model, A&M consider the characteristics of equilibria across different assumptions. In particular, they assume that voter utilities are as follows:

- $U_i(D) = B - |x_i - D|$, for Democratic partisans
- $U_i(D) = -|x_i - D|$, for Republican partisans
- $U_i(R) = -|x_i - R|$ for Democratic partisans
- $U_i(R) = B - |x_i - R|$ for Republican partisans

And then examine equilibrium behavior. They show that, when $B = 0$ and thus there are no non-policy (partisan) preferences, the unique equilibrium is for both parties to co-locate at the preference of the median voter.

Next, they allow non-policy preferences, setting $B > 0$. Additionally, they assume that $B > T_A, B > T_I, and\ B < \infty$. That is, "not all voters abstain due to alienation and partisans' biases are sufficiently strong that they do not abstain from indifference when the candidates take identical positions" (A&R, p169). Once this assumption is made, they show that in any equilibrium, the party platforms diverge, and (similarly to the C&W model) there will be a symmetric equilibrium in which the Left and Right parties locate at equal distances to the left and right of the policy preferred by the median voter. At this equilibrium point, both parties get 50% of the vote, and neither can improve their vote count by moving towards a more extreme policy (which mobilizes alienated voters but loses voters in the middle of the distribution) or towards the center (which may mobilize indifferent voters but loses alienated voters).

The effect of CV in A&M

Similar to the C&W model, we model CV in the A&M model as changing the alienation threshold. Recall that the alienation threshold, T_A, is defined as the minimum utility a voter must receive from their most-preferred candidate in order to turn out to vote. We can therefore conceptualize CV as *decreasing* T_A*:* voters will now be willing to turn out even when they are receiving lower utility from the closest candidate. A&M do not perform comparative statics on how this parameter affects the degree of polarization in equilibrium.

However, two aspects of the A&M model support our argument. First, they find that when there is no possibility of abstention (that is, there is full turnout) that the parties converge to the preference of the median voter; a divergent equilibrium requires the possibility of abstention due to alienation. This suggests that, if CV is extremely effective at mobilizing voters, that it should eliminate

abstention due to alienation and decrease polarization. As we discussion in the final two sections of the manuscript, this is unlikely: CV typically increases turnout, but even when CV is strongly enforced, some voters will either not turn out, or will spoil their ballots and thus still be able to abstain.

To better understand how a more incomplete increase in turnout due to CV would affect the equilibria in the A&M model, we examine A&M's logic how abstention from alienation affects party incentives. A&M's paper does provide an example in which they set values for the model's parameters and solve for the equilibrium algorithmically, finding equilibrium policy choices in which each party locates strictly in between the policy of the overall median voter, and the median voters of its own partisans. This is because moving away from the median gains significant votes from current abstainers, while (to a certain point) losing few votes to alienation or indifference on the other side of the distribution. As tolerance for alienation increases (that is, the model parameter T_A decreases), the density of voters who can be convinced to turn out by each party moving away from the median decreases; this will decrease incentives towards polarization. For an increase in turnout in this manner to *not* lead to at least partial convergence would require weaker pressures to result in higher polarization and divergence.

APPENDIX B: EXPRESSIVE VOTING

Both the models we draw on in the main paper (and describe in Appendix A, above) assume that voters receive expressive benefits from voting. This assumption is common in work on political behavior. However, as it differs from some of the classic models of voting, this appendix discusses our decision to rely on models that use expressive benefits and compares it to the alternative, instrumental, model of voting.

In the original model of spatial politics, Downs (1957) assumed that voters vote for instrumental reasons (i.e. that voters vote in order to change the outcome of the election). For each voter, the standard utility of voting for one candidate over another was assumed to be: $U = p^* B - C$, where p is the probability of one's vote influencing the outcome of the election, B is the differential benefit that the voter gets from the election of party X rather than party Y, and C is the cost of voting.

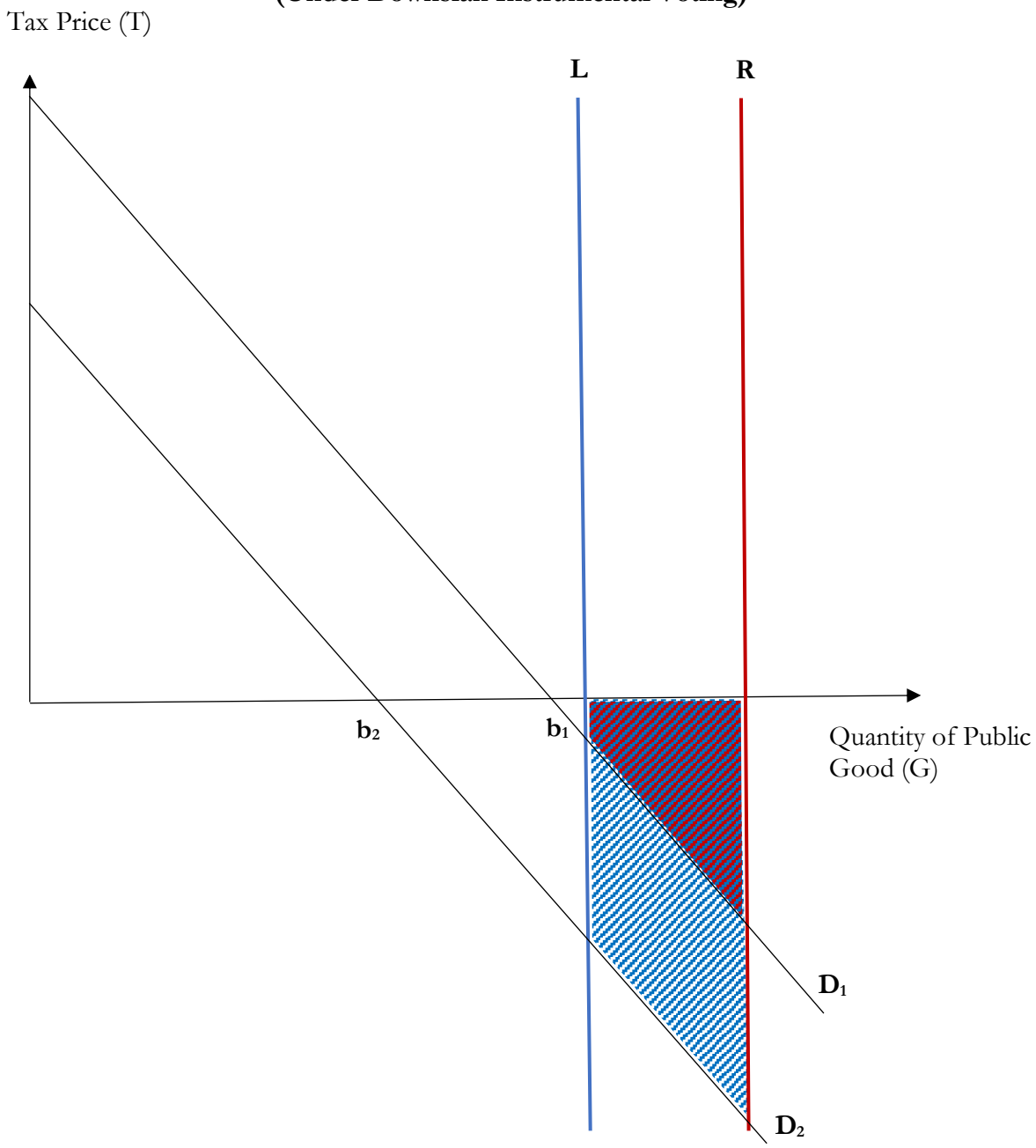
However, this model is limited in several ways. First, in almost all elections, the probability that an individual voter can influence the outcome of the election is effectively zero. Given positive costs of voting, then, virtually no voters should vote, and should free ride on others' votes. This is the classic collective action problem posited by Olson (1965): individuals need some kind of private or excludable benefit in order to participate in forms of collective action, including voting.

Second, the classic instrumental model is not well-equipped for examining abstention due to alienation. To show this important limitation of the Downsian instrumental account of turnout, we begin with a standard example, discussed in Brennan and Lomasky (1993). In this example, we hold p and C constant and focus only on the B term. The goal is to see which voters under the Downsian instrumental model have the highest differential benefit from choosing one party rather than the other. Each voter is assumed to have an ideal point that represents the quantity of a public good that they would demand at the current tax-price (for example, the amount of investment in public schools that she would support given the prevailing tax system). In Figure 2A below, we have two voters (v_1 and v_2) whose ideal points (or "bliss" points) are b_1 and b_2. The demand curves D_1 and D_2 represent the quantity of the public good that each voter would demand for any given marginal tax-price. This is a standard representation of downward sloping demand curves where a voter prefers less of a good the more expensive it is. To show why the standard Downsian model is unable to account for abstention due to alienation, consider two parties X and Y that are offering platforms with different amounts of the public good. Party X promises to provide L amount of the public good at the relevant tax-price, while party Y promises to provide R amount.

Our two voters v_1 and v_2 will receive different benefits from choosing party X over party Y. Both voters would have preferred lower amounts of the public good than either L or R at the current tax-price, which means both receive less utility than they would at the bliss point. And both voters prefer L to R because it is closer to their ideal point. The areas shaded in the figure show how much utility each of these voters would gain from receiving policy L instead of policy R (or, conversely, how much utility they would lose if they were to receive policy R rather than policy L). For the voter with more moderate preferences (v_1), the expected utility differential is the difference between (i) the loss of having to pay a higher than desired price for R amount of public good and (ii) the loss of having to pay this higher price for L amount of the public good. The B term for voter v_1 is the smaller purple parallelogram in Figure 2A.[1]

[1] Each of these amounts are graphically represented as triangles formed by the demand curve D_1 and the x-axis with the right edge at either L or R. You can think of them as standard microeconomics

Figure 2A
The Impossibility of Abstention from Alienation
(Under Downsian Instrumental Voting)



representations of consumer surplus – although the "surplus" is negative due to being forced to purchase at too high a price.

For the voter with the more extreme preferences v2, the expected utility differential (B-term) is the larger parallelogram shaded in blue (that incorporates the purple parallelogram for voter v_1). This area is larger in size because voter v_2's ideal is further away from their preferred level at both R and L. (This means that the consumer "surplus" triangles below the demand curve D_2 and the x-axis are much larger, as is their differential.)

Figure 2A illustrates the general principle that, under Downsian instrumental voting, the perceived benefits of voting *increase* as the voter's ideal point gets further away from the main political parties. Holding all other factors constant, the most extreme voters on either the left or the right are the most motivated voters, even when the parties are both offering centrist platforms. With a fixed cost C of voting, the probability of participation will therefore be highest for those voters whose ideal points are more extreme: abstention will be restricted to those whose ideal points fall closer to L and to R (the abstainers from indifference). In practice, this would mean that a voter who finds her preferences well-represented by the mainstream parties would be *less* likely to vote than a fringe voter on the far-left or far-right who thoroughly rejects the platforms of all the mainstream parties! The counterintuitive nature of this result shows a significant problem with Downsian instrumental voting when it comes to accounting for abstention from alienation.

This finding is not limited to the self-interested version of the instrumental model. In recent years, alternative instrumental models have been proposed, including the altruistic model of voting and the contributory model of voting. Unfortunately, neither of these alternatives can account for abstention due to alienation.

Take the altruistic model of voting (Fowler 2006; Jankowski 2002; 2019; Edlin, Gelman, and Kaplan 2007). Under this model, voters vote instrumentally to change the outcome of the election, but their utility function includes an altruistic concern for others. The modified utility function for altruistic voters therefore looks like this: U (voting for X over Y) = p* ($B_{self} + \alpha$ N B_{others}) – C, where p is the probability of one's vote influencing the outcome of the election, B_{self} is the differential benefit that the voter herself gets from the election of party X rather than party Y, B_{others} is the average differential benefit that other people get as a result of the election of party X rather than party Y, N is the number of other people affected by the outcome of the election, the coefficient α reflects how altruistic the voter is, and C is the cost of voting. Unlike the self-interested model, the altruistic model can explain high levels of turnout since the benefits to others can be large enough to outweigh the costs of voting. However, it is still unable to explain abstention by alienation. The self-interested portion of the utility function looks the same as the one represented in Figure 2A above and has the same problem that abstention becomes *less* likely the further away the parties are from the voter and *more* likely the closer the parties are to the voter. The altruistic component does not depend on how close the voter is to the political parties since these are the benefits to others who are located across the political spectrum. The overall altruistic utility function will therefore exclude abstention from alienation and predict higher turnout by the "alienated".

Similarly, consider the contributory model of voting described by Mackie (2015). In Mackie's model, voters continue to value both selfish and altruistic benefits in their utility function. The B component therefore has the same shape as in the altruistic utility function: $B_{self} + \alpha$ N B_{others}. The main difference is that, instead of only attributing value to their chance of being pivotal and influencing who *wins* the election, voters also value the chance of contributing to the election by either increasing the margin by which their preferred party wins or decreasing the margin by which their preferred party loses. Mackie therefore proposes a utility function U (of voting for X over Y) = q * ($B_{self} + \alpha$ N B_{others}) – C, where q is "a share … in advancing the mandate" of party X (2015, 31). This term q is meant to replace the smaller probability of being decisive p. Mackie argues that q is equal to 1/n, where n is the number of voters who also voted for X. This term has no relationship

to one's proximity to the main political parties available. Given that the benefit term is the same as the one in the altruistic model of voting above, the contributory model of voting is also unable to account for abstention by alienation.

The benefits of expressive voting

Although these instrumental models of voting cannot account for abstention from alienation, there are alternative models of voter motivation that can. The main alternative is the expressive account (Brennan and Lomasky 1993; Brennan and Hamlin 1998; 2000; Schuessler 2000; Brennan 2008; Hamlin and Jennings 2011; 2019). The thought is that the voter has attitudes towards the electoral options that she seeks to express by casting her vote. A common analogy is drawn with cheering at a football match. The cheerer expresses who she would 'prefer' to win the match; but she need not think that her individual cheering serves to *bring about* the victory of her favored team. On the expressive account, voters choose which among the rival parties/candidates they more identify with – either because of their history or because they identify with the policies of the party or because they are attracted by the personal characteristics of individual candidates. Note that this does not require partisan identification: independent voters may still prefer one candidate and receive expressive benefits from supporting them. An individual whose ideal point lies a long way from either candidate – even if she has a preference for the candidate that lies closer to her ideal – is unlikely to identify with either contender; and the only mechanism she has for expressing *that* attitude is to refrain from voting for either. Expressive voting can therefore account for abstention due to alienation.

Our paper aims to introduce further theoretical rigor into the normative conversation surrounding the desirability of CV and to bridge the gap between formal work on electoral politics and normative work on democratic theory. This involves drawing attention to this alternative account of voter motivation that can serve as a stylized model of electoral politics for both political theorists and empirical political scientists. There are several reasons why one might find expressive voting to be a compelling model of voter motivation beyond its ability to account for abstention from alienation. Below we briefly discuss five such reasons and direct the interested reader to the fuller defenses of expressive voting cited above.

First, expressive voting can explain why so many voters vote in any given national election. Purely self-interested instrumental considerations make it difficult to explain the levels of turnout in a US Presidential race (roughly two-thirds of registered voters in the most recent US election). This is because the probability of influencing the outcome of the election is very small for each of the nearly 160 million voters. Explaining such turnout is not a challenge on the expressive account. The expression of one's attitudes is essentially a 'private good'. The benefit of voting accrues to the voter, in much the same way as the benefit from cheering accrues to the individual who goes to the game.

Second, expressive voting accounts for the fact that there are few irregular voters. According to Blais (2000), the majority of eligible voters are either regular voters who vote in every (major) election (~63% in Canada and the UK) or regular abstainers who abstain in every (major) election (~14%). Only 24% of voters are irregular. Not only that, but voters are unlikely to ever switch parties. On the expressive account, voters will either be "fans" or supporters of a political party or candidate, or they will prefer to spend their time elsewhere. Some voters may also derive utility from being independents who "make up their own mind" in each election. This means that their voting behavior will generally be constant over time. Since more than 75% of the electorate is a habitual voter or non-voter and more than 90% of voters remain loyal to their party despite significant

changes in party platforms over time and significant variation in party platforms between elections, expressive voting fits the existing data.

Third, expressive voting explains why strong/committed partisans are more likely to vote than non-partisan voters or weak partisans. Just as the "hardcore fans" in sports are those who are likely to attend a game even when the tickets are expensive, when the game is far away, or when the stakes are low, strong partisans are likely to vote even when voter registration is expensive, when it rains on election day, and when the election is lower stakes or receives less media coverage. By contrast, weak partisans or genuine independents are less likely to vote and will vote when the stakes are high, when voting is easy, or when everyone else is going to the polls. In the US, voters who identify as partisan are more likely to vote than voters who identify as independent. Within the category of voters who identify as independent, voters who have a consistent affiliation with one party are more likely to vote than those who do not. Some voters may also strongly self-identify as "independent", and vote for candidates whom they believe fit that profile, much like partisans do.

Fourth, expressive voting explains why the domain of political contestation will often include (and even be dominated by) symbolic or morally charged matters like abortion, gay marriage, gender identity, or national identity (xenophobia). On the instrumental account, the voter's interests will play a significant and perhaps predominant role, whereas on the expressive account, what weighs are the things that the voter is likely to 'cheer' for (and boo). The latter category may be difficult to specify in abstraction from specific cases – but the expressive account is consistent with the role that moral and expressive considerations regarding identity and morality seem to play in electoral politics.

Finally, expressive voting also explains the importance of identity and social groups to one's political behavior. Just as one supports the same sports team as one's family and friends (often the home team or the team from one's alma mater), political partisanship and voting behavior seems to follow similar patterns. Parents who are regular voters often tend to have children who are regular voters and partisan preferences are often shared between parents and children. Moreover, there are consistent associations between membership in certain groups (whether based on demographic factors or shared beliefs) and support for a particular political party.

Voting by independents

While the five arguments above provide us with strong reasons to support an expressive theory of voting over an instrumental one, it is important to also note some of the limitations of this account of why people vote. For example, the notion of expressive voting as "cheering for a team" does not offer a clear account for why genuine independents vote under the model. If expressive voting cannot be reconciled with voting by independents, this would be a significant limitation of expressive voting models. The latest US Gallup poll data from 2022 shows that a record number of 41% of Americans identify as Independents, while only 28% identify as Republicans and 28% identify as Democrats (Jones 2023). Any plausible model of voting should explain why independents vote.

We propose two ways in which we might reconcile expressive voting with voting by independents. One possibility is that independents are motivated by their identity as independents (i.e. that "independent" constitutes a distinctive political identity with identifiable features analogous to the behavior of partisans). While there is no explicit Independent team for independents to boo and cheer for, Independents can still consider themselves as part of a group of Independents who are distinct from partisans of either party. In this case, the Independents who are most likely to vote are the Independents who consider their identity as Independent to be meaningful and salient to them. Klar (2014) uses survey evidence to argue that certain Independents do regard being an

Independent voter as a core part of their identity and that these voters are more likely to vote than Independents whose Independence has low salience for them. Of course, much more work is needed to investigate how Independent identity works and the analogy to sports may break down in this case.

Another possibility is that, within a polarized political system like the one in the US, independents may simply be voters with centrist preferences who are too distant from either Republicans or Democrats. These centrist voters can be strongly motivated to show up to support centrist candidates when such candidates are available. There is some reason to believe that genuine Independents in the US are more likely to be moderates. According to the Pew Research Center, approximately half of Independents who do not lean towards one of the parties are ideological moderates, while 24% are conservative and 18% are liberal. This suggests that Independents might actually be partisans of the center without a clear party to represent them. This would explain some of the turnout among genuine Independents.

Of course, in both cases, we would expect independents to vote in lower numbers than the partisans and the data on turnout in US elections does confirm that independents vote less than partisans and that independents without leanings towards one political party vote less than independents with a leaning towards either Democrats or Republicans. Overall, we think that the reviewer's objection is compelling, and that further work would have to be done to reconcile expressive voting with turnout by independents. We think this task is manageable and represents a fruitful direction for future research. Unfortunately, we cannot conclusively establish which (if either) of the mechanisms above would explain turnout by independents in ways consistent with the expressive voting model.

Although our argument about CV does not depend on the truth of the expressive theory of voting, we believe that this is a good model of voter behavior that has the advantage of explaining a range of electoral behaviors and empirical regularities in the study of turnout while remaining parsimonious and compatible with the MVT and other key results from the rational choice literature. For our purposes, however, the most important part of the expressive voting model is its ability to incorporate abstention by alienation.

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