

Advance Voting and Political Competition¹

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This paper presents a simple analysis of political campaigning incentives when the electorate make their voting decisions at different moments before Election Day. Many jurisdictions accommodate such voters by accepting mail-in ballots or setting up polling places where individuals may vote early. Since politicians can thereby alter their campaign promises *while* citizens vote, they have incentives to cater to different segments of the electorate at different times. This implies that those segments of the electorate who tend to vote early will pay higher taxes and receive fewer transfers than what had been announced when they voted, while later-voting segments benefit.

(JEL codes: D72, H20)

I - Introduction

Early voting is on the rise. Having been a peripheral activity in most advanced countries for the lion's share of the 20th century, early voters' share of total turnout has risen to around one-third of the votes in recent US elections (Biggers and Hanmer, 2015). The same trends can also be observed internationally, in countries ranging from Norway (where the share reached 30.2 per cent in the parliamentary election of 2013 according to Statistics Norway) to New Zealand (29.8 per cent in the general election of 2014, as reported by the New Zealand Electoral Commission).

Arranged in a wide variety of different ways across jurisdictions, the process of voting prior to a scheduled election day is also known as advance voting, advance polling, pre-poll voting, or simply "convenience voting". In jurisdictions with two or more of these terms in use, their referents may differ in details, but in this paper they will be treated as synonyms. Where sparseness of population necessitates remote ballot boxes, early votes may be cast a few days before Election Day since bad weather can cause voting to be difficult on the proper day, as happens in many coastal islands of the Republic of Ireland. Many other jurisdictions accept ballots starting much earlier, such as well over a month ahead of Election Day.

This article deals with how the increased utilization of advance voting changes candidates' incentives *vis-à-vis* their policy formulations during an election campaign. If certain identifiable (to politicians) segments of the electorate have already voted while time remains to try to attract new voters, candidates for public office have an incentive to alter their platforms to try to gain these voters, at the expense of the earlier voters, whose votes they have already received. This holds if politicians care more about winning than they do about policy, and if candidates' policy proposals as they stand on Election Day have a greater chance of implementation than do previous, "unfinished" proposals. It appears as though no article has hitherto explored these incentives, or even noted them.

When the dynamics of competition between political alternatives are discussed, they are often couched in terms of games convenient for some aspect *other* than incentives to alter campaign promises, like comparing candidates' available payments to voters (e.g. Dekel *et al.*, 2008). At other times, the focus is on how delaying one's decision ensures more information pertaining to which candidates may do well in an election (Battaglini, *et al.*, 2007; Dekel and Piccione, 2014). The closest

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discussions of incentives to alter policy proposals are the classical issues of how candidates adjust their platforms to win primaries or win general elections (e.g. Tullock, 2006; Agranov, 2016).

Models which focus on voting have in common the assumption that election promises must have some role in shaping the winning candidate's policies (otherwise they would at best only describe voting patterns and not policy). If policy platforms might change over the election campaign, voters would find themselves positioned in varying proximity to the candidates leading up to Election Day. Therefore, while it may seem a particularly demanding assumption that Election-Day platforms have greater salience than do their earlier incarnations from times leading up to the election, the impossibility of delivering on every incarnation would necessitate discrimination among incarnations also for traditional, static models. In this sense, the assumption that Election-Day platforms have a greater salience may seem the most natural due to the widespread public focus on Election Day and the sense that platforms may receive "finishing touches" until that day.

A different literature has examined the related question of how accommodating early voters impacts *who* votes, regardless of timing. The evidence is mixed, but many studies using OLS and controls have found small but positive effects on voter turnout, mainly among the groups that are the most politically active in the first place. The literature on advance voting otherwise tends to find that early voters tend to be better educated, slightly female-dominated, older, more rural, and of higher income, while no strong partisan implications are normally found (Berinsky *et al.*, 2001; Dyck and Gimpel, 2005; Barreto *et al.*, 2006; Bliss, 2010; Alvarez *et al.*, 2012; and Fullmer, 2015; see also Gronke *et al.*, 2007, for an overview).

In the US, the state of Oregon has been the topic of many studies evaluating the impact of advance voting because it switched to an all-mail system in the late 1990's. Berinsky *et al.* (2001) find that turnout may have increased by as much as six percentage points as a result, with the increase coming mostly from the "resource rich" (p. 191), i.e. those who are most likely to be politically active regardless of voting arrangements. Generally speaking, estimates tend to be higher for vote-by-mail systems of advance voting than for others (Gronke *et al.*, 2007).

In certain cases it has been possible to use stronger identification strategies. One such study is by Kousser and Mullin (2007), who exploit differing assignments of mail-in ballots in counties of California. They find a two-percentage point *reduction* in turnout rates, on average, from assignment to mail-in ballots. Cross-sectional individual and aggregate data from the 2004 and 2008 presidential elections analysed by Burden *et al.* (2014) find similar results, and theorize that the reason that early voting might have such counterintuitive effects is that it "makes voting a more private and less intense process" (p. 98) by lessening Election-Day focus by the media, family, and acquaintances. A weaker focus on Election Day may also benefit those who vote mainly because they feel social pressure to do so; e.g. peers may have difficulties monitoring voting when it can happen by various different means over long periods of time (*cf.* Funk, 2010; Ekman, 2016).

When approximately one-third of the electorate vote early, changes in turnout limited to even the largest magnitudes found in the literature will be dominated by extant voters switching to voting early, and so are unlikely to sufficiently alter the composition of early- and late-voting segments to stop advance voting from benefitting later voters, as shall presently be explained.

The importance of turnout and electorate composition depends on the extent to which candidates can accommodate later voters. If they face substantial costs of shifting policies to benefit later voters, they will attach greater priority to voters overall irrespective of when ballots are cast, affecting the design of policy proposals. On the other hand, if shifting costs are negligible, only the

preferences of the later voters matter. To analyse these impacts, this paper constructs a simple model to capture incentives to cater to the part of the electorate that votes relatively late.

Individual early voters cannot make their segment vote significantly later by altering the time at which they cast their ballot and so have no incentive to avoid being “fooled” by altering the timing of their vote in response to candidate incentives. However, early voters would be “fooled” also in the more important sense that their preferred candidates would tend to move away from them to attract later voters. Potential commitment devices to stop such moves may stem from party or individual reputation, but are unlikely to work because of three problems.

Firstly, information about the political process has no instrumental value to voters, as is well-known from the classic rational-ignorance result; one’s vote being essentially meaningless, it does not “pay” to get informed about politics and the possibility that promises change after one has voted (Becker, 1958; Downs, 1957). Secondly and relatedly, platform alterations are apt to be framed as new promises rather than as retractions of old ones, making it harder for *de-facto* retractions to be detected (anything else would be bad PR). Thirdly, candidates who try to commit but later find themselves down in the polls will face a trade-off between disappointing early voters and winning the election, which creates some pressure on altering policy platforms. The issue of commitment will be discussed further in Section III.

The rest of this paper is structured as follows. Section II outlines the simple model that explains why early voters will tend to lose. It establishes that changes to policy proposals during an election will favour later voters as long as the costs of making such changes are not prohibitively high. It also shows that the introduction of advance voting *may* nevertheless benefit earlier voters if advance voting attracts disproportionately more new voters who share preferences with previous early voters, and if the costs of changing policy promises are sufficiently high. As the aforementioned literature on turnout and advance voting makes clear, this second proposition is empirically unlikely to apply, so that moves towards increased convenience voting are apt to benefit Election Day voters.

Section III deals with how the results vary if the assumptions about uninformed voters change, and how commitment affects the impact of advance voting. It shows that demand for commitment to initial campaign platforms by early voters can render advance voting impactless, but that incentives to win the election are nevertheless apt to overpower commitments. Section IV discusses the applicability of the basic model, using data on petrol taxes across US states for illustration, as petrol taxes are likely to divide rural (early) and urban (late) voters. Section V concludes.

II – A Simple Model

This section presents what is essentially an extended median-voter model (Hotelling, 1929; Black, 1948) in which n citizens decide on the amount of resources to be taxed and allocated to the production of some public good, g . The extension is that citizens belong to two different groups, early and late voters, and that these groups differ in average preferences over the optimal amount of resources which are to be used for the production of the public good. This is meant to capture the fact that identifiable segments of the electorate tend to vote at different times due to different incentives to do so (e.g. convenience), and identifiable segments of the electorate are apt to want different things. For simplicity, it is assumed that each type votes at one discrete time.

Voters have preference characteristics for the public good according to a_t^i , where t captures when the individual votes, i.e. either “early” or “late”, and i indexes voters. There are k early voters and l late ones. A citizen’s utility is given by $U_t^i = f(c_t^i, h_t^i)$, where the term c is utility from

consumption and h is utility from leisure. Labour supply is denoted w_t^i and the tax rate is τ , so that a citizen maximizes his utility subject to two constraints, on consumption, $c_t^i \leq (1 - \tau)w_t^i + g$ (the wage rate is normalized to one), and on time, $z_t^i = w_t^i + h_t^i$, where z_t^i is the total amount of “effective” time per period, capturing productivity differences between the two types of voters.

By the standard definition of single-crossing preferences (e.g. Persson and Tabellini, p. 23), if a voter with a given value of α_t^i prefers g to g' , it implies that all voters with a preference parameter greater than or equal to α_t^i share the same preference. When this holds, the Median Voter Theorem can be applied.

Now let α_k^{median} be the median preference among the k early voters and α_l^{median} the corresponding preference among the l late ones. The median preference among the entire set of voters may be denoted by α_{k+l}^{median} , so that whenever $\alpha_k^{median} \neq \alpha_l^{median}$, α_{k+l}^{median} is closer to α_k^{median} the more strongly early voters outnumber late ones, and closer to α_l^{median} the more strongly late voters outnumber early ones. If early voters’ preferences are completely ignored as political candidates compete for the late voters, the levels of taxation and of public-good provision in the jurisdiction are fully determined by α_l^{median} , so that the more distant are α_l^{median} from α_{k+l}^{median} and the smaller is l , the smaller is the minority whose preferences swing the election.

Since changing platforms to attract persons who have not already voted may be difficult, levels of g and τ will not in the general case shift completely to reflect the median preferences of the section of the electorate who vote late. In the presence of such “shifting costs”, the relative magnitudes of l and k will be important, since the candidates cannot hope to reach the median preference of both. The classic Median Voter Theorem is a special case of the present model when shifting costs are prohibitively large, since in this case candidates may only position themselves once to attempt to attract a majority of the votes.

A formula which obtains the winning policy platform in the present context is therefore given by

$$\left(1 - \frac{k}{l+k}\right) \alpha_l^{median} + \frac{k}{l+k} \alpha_{k+l}^{median}.$$

The cost of shifting is $c \in [0, 1]$ and is raised to the power of the fraction of voters who vote early, $\frac{k}{l+k}$, where l and k are both strictly positive. This formula encapsulates the essence of what has been said so far. The higher is the shifting cost, the more weight is given the full set of voters, early or late ($\frac{\partial}{\partial c} > 0$ when $\alpha_{k+l}^{median} > \alpha_l^{median}$, $\frac{\partial}{\partial c} \leq 0$ when not). In the extreme case where $c = 0$, the winning policy is α_l^{median} as long as there is but one late voter. In the opposite extreme, $c = 1$ implies that the median voter of both sets determines the election completely, no matter how many l 's there are. This is a special case of the traditional Median Voter Theorem.

For values of c strictly between the extremes, a greater fraction of type- k voters encourages positions away from α_l^{median} ($\frac{\partial}{\partial k} > 0$ when $\alpha_{k+l}^{median} > \alpha_l^{median}$, $\frac{\partial}{\partial k} \leq 0$ when not). Intuitively, if platform alterations are not costless, k -types will be promised more the fewer l -types there are; if one candidate ignored this and positioned himself at a distance from α_l^{median} so that α_l^{median} is just reachable by c , the other candidate would gain an easy victory if he began the election by positioning himself a little bit closer to α_{k+l}^{median} than the first candidate, thus gaining most of the more numerous k -types and then moved towards α_l^{median} for the late stage of the campaign.

If an election reform introduces greater convenience for early voters more than for later ones, it may induce a rise in k for two separate reasons; (1) more Election-Day voters may decide to vote in advance, or (2) previous abstainers may decide to vote. In either case, the share of voters who are of type k will increase, but reason (1) will affect both α_l^{median} and α_k^{median} , while reason (2) affects α_{k+l}^{median} and α_k^{median} . If the additional type- k voters are inclined to be more like the k -types before the reform, then (1) implies that the distance between α_l^{median} and α_{k+l}^{median} increases, since the latter remains unchanged (no new voters), but the l -types farthest away from the k -types remain late voters. When the reform attracts new voters, as in reason (2), the distance between α_{k+l}^{median} and α_k^{median} is reduced when new and old late voters tend to be alike with respect to preferences.

Absent significant shifting costs, reason (1) implies that policy comes to favour more “extreme” l -types (in the sense that they are farther from α_{k+l}^{median} when only those voters most keen to vote late remain late voters), while (2) does nothing since α_l^{median} remains unchanged. The more substantial are shifting costs, the more reason (2) comes to favour early voters by making this group larger. Note that this is true even though advance voting always induces a shift of the victorious policy platform towards the late voters during the campaign; the end destination is still closer to the earlier voters when advance-voting reforms attract mainly new and early voters. Since reason (1) leaves α_{k+l}^{median} unchanged, it would not imply the same advantage for early voters.

The prediction is therefore that early voters can *benefit* when shifting costs are substantial and there is a major influx of former non-voters (that is, when the new early voters are not former late voters). However, in light of the empirical evidence on the backgrounds of early voters cited in Section I, this effect is unlikely to be large since most estimates suggest no major influx. Consequently, early voting regimes will tend to favour the preferences of late voters.

III – Relaxing Assumptions

If some voters know that what is promised them at an early stage of the election campaign may be retracted later through new promises directed at other voters, their preferred voting time will not change (since it would not cause their segment’s voting time to change), but they will demand that their candidate’s platform does not change. For a politician intent to capture these voters, the problem reduces to that of the objective in the traditional Median Voter Theorem (finding a single position on a distribution) since commitment means he cannot alter his promises during the election campaign. Whether he will make his campaign promises at the median of this distribution depends on what his opponent does.

Only k -type voters will demand commitment since l -types have nothing to gain from it. The number of votes which can be had by a credible commitment therefore depends on the share of early voters who are “naïve” (do not demand commitment) and the share who are “sophisticated” (do). In a two-candidate setting in which *all* early voters are sophisticated and only one candidate, Candidate A , credibly commits to an early platform, platform α_{k+l}^A , the other candidate, Candidate B , knows that a position closer to α_k^{median} is useless as far as capturing k -types’ votes goes. Therefore, he will position himself a little nearer to α_l^{median} than α_{k+l}^A . Anticipating this, Candidate A places α_{k+l}^A as close to α_l^{median} as is necessary for his share of the l -types’ votes together with all the k -types’ votes to give him a majority. The smaller is k relative to l , the larger is the required move towards α_l^{median} .

Candidate B cannot do anything to avoid losing, because the only votes he can get are from late voters and late voters choose whichever of α_{k+l}^A and α_{k+l}^B is closest to them. If Candidate B tries to

gain votes from the early types, he will fail since they are all sophisticated. The only resort left for Candidate B is to become credible like Candidate A . This makes the situation reduce to that of the traditional Median Voter Theorem, since committed candidates evidently choose α_{k+l}^{median} .

If only a *fraction* of the voters of type k are sophisticated, a two-candidate setting in which only one is credible will continue to reward credibility with secure votes. But because the naïve k -types will now vote for Candidate B (retaining the above nomenclature), the greatest number of early votes that Candidate A can get is now all of the sophisticated ones plus half of the naïve ones. This implies that he will get fewer than half of the late votes, with the shortfall increasing the greater is the distance between α_l^{median} and α_k^{median} . Since Candidate A can only choose a platform once, he could also attempt to appeal more to the late voters, but doing so would make him gain less than half of the early naïve voters and the non-committing Candidate B will be able to get half of the late voters.

More generally, the committed candidate will fail to reach one half of the unsophisticated voters (early and late), so that commitment pays if the number of sophisticated early voters is sufficiently large relative to the distance between α_l^{median} and α_k^{median} that his majority support is ensured. In the trivial case in which $\alpha_l^{median} = \alpha_k^{median}$, it would suffice if a single early voter were sophisticated to ensure majority support. A separation of the median points by one voter would then evidently demand a compensatory increase of one sophisticated early voter.

If a commitment is merely an aspiration, so that it may be broken, then losing candidates will be tempted to alter their policy proposals in order to improve their chances of winning. In this setting, sophisticated early voters judge politicians on how likely they are to refrain from amending promises made early in the election campaign. Each voter may have a different estimate of this probability. The candidate deemed likelier by a voter to stick to his early platform gets that voter's support. If two candidates are equally credible, they will have gained in expectation the same share of the early votes.

Whatever probability less than one that a candidate was going to keep his early platform unchanged, at least one of them has an incentive to make new promises which attract later voters when both candidates are past the early stage of the election campaign. If they are not completely tied in the polls after the early stage of the campaign, one of them will be particularly tempted, and if they are tied both will nevertheless have some incentive to break their commitment. Whether they will act on this incentive depends on the value they place on winning relative to losing, how well they expect to be able to explain breaking the commitment in future elections, as well as on idiosyncratic factors. What follows sketches the situations that candidates confront.

One candidate's breaking a commitment while that of the other candidate survives intact can be detrimental to the commitment-breaker. Taking the extreme case from above in which commitment is necessary to gain any early votes at all, breaking a commitment will ruin one's reputation for future elections completely. The candidate who ponders breaking a commitment therefore makes the following, highly simplified, comparison:

$$p(v + \beta d) + (1 - p)[q(v + \beta[qv + (1 - q)d]) + (1 - q)(d + \beta[qv + (1 - q)d])] \\ \lesseqgtr d + \beta[qv + (1 - q)d],$$

where p is the probability that the opponent does not also break his commitment, v is the value of victory, d that of defeat, β the discount factor of future elections, and q the "default" probability of victory. This setting only allows for one generalized future period, which may be natural in the

presence of term limits, or if politicians do not aim for a long career in politics, or if voters only punish commitment-breakers for so long. Notice that breaking a commitment when one's opponent honours his means losing election credibility in the future period. Setting the loss d equal to nought, the expression becomes

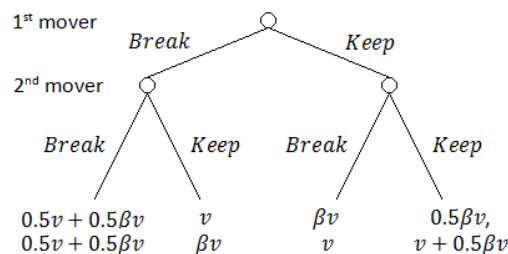
$$pv + (1 - p)[q(v + \beta qv) + (1 - q)\beta qv] \leq \beta qv.$$

Because breaking a commitment reduces the opponent's chance of winning the upcoming election, it incentivizes him to break his commitment, too. Although keeping his commitment guarantees a win in future elections, breaking it when the rival is already "tainted" means that he does not ruin future election chances completely. If two equally tainted or clean candidates have the same "default" probability of success in future elections, so that $q = 0.5$, The simplified setting in which $d = 0$ yields a payoff comparison which may be put into the following game matrix, where the initially losing candidate is the row player:

	Break	Keep
Break	$0.5(v + 0.5\beta v) + 0.25\beta v,$ $0.5(v + 0.5\beta v) + 0.25\beta v$	$v,$ βv
Keep	$\beta v,$ v	$0.5\beta v,$ $v + 0.5\beta v$

Evidently, $(Break, Break)$ is an equilibrium since for the column player $0.5v > 0.5\beta v$ (after rewriting) for positive values on winning the election and for values of β less than one. Were the row player to remain committed to his initial policy proposals, the column player would do likewise, making $(Keep, Keep)$ another equilibrium since $v + 0.5\beta v > v$. In addition, there is a mixed-strategy equilibrium, but it is not of great interest in the present context.

The row player is by assumption the candidate who fares poorly in the polls. For as long as he does not alter his policy proposals, his rival wishes to remain committed, too. But as soon as this situation changes the column player breaks his commitment as well. Consequently, a dynamic version of the static game presented above would have more realism. In such a dynamic setting, the first mover is the row player, who therefore chooses between $Break$, which yields $0.5v + 0.5\beta v$ by the optimal choice of the opponent, and $Keep$, which gives him $0.5\beta v$.



Since $Break$ is better, commitments will never be honoured. The sophisticated early voters can figure this out, and so will not believe the early promises. Early sophisticates may abstain from voting or they may vote randomly. In any event they cease to impact policy when a commitment can be broken. Consequently, candidates end up choosing the same policy as they did in Section II; α_l^{median} with no shifting costs, or tending towards this point the lower are their shifting costs.

These payoffs are evidently quite unrefined simplifications. As noted, one future period will not always be natural. In addition, future “default” victory probabilities may be lower than one half even if both candidates break their commitments, if a new and committed opponent replaces the current one in a future election. The first candidate to break his commitment may also have a less-than-one-half probability of winning when the other candidate has broken his commitment. Nevertheless, the calculations illustrate a plausible case in which there are incentives to break a commitment, and in such a case commitments are indeed worthless.

IV – Discussion

The article has so far been framed in terms to suggest that early and late voters are completely different with respect to what levels of g and τ they prefer. Of course, both groups are realistically going to be very heterogeneous and are likely to overlap with respect to what they want. The foregoing sections are merely intended to illustrate an idealized setting in order to gain insights on the effects of advance voting. But as the introduction makes clear, there are correlates in the literature on early voters to suggest that certain demographic groups will be overrepresented among the ballots cast before Election Day. This section presents some correlations on early voting and a policy which early voters are prone to like, which are not intended to be read as causal claims.

To the extent that there is something to this model, those groups that figure disproportionately prominently among the early voters should get less of what they want than corresponding groups in jurisdictions that make lesser use of advance voting. To this end, Table I presents some data on early voting and policy changes in the USA. The policy is the state-level tax on petrol (“gas”). The period sampled is 1996-2012, years in which early voting became widespread both in terms of accommodation by legislatures and in terms of utilization by the electorate².

The significance of advance voting to the petrol tax is that people in the countryside have stronger incentives to vote early than do city-dwellers. Some of the correlates on this issue have already been cited in the introduction. For example, Dyck and Gimpel (2005) estimate that mail-in ballots are particularly popular among those living up to ten miles away from a polling station (their sample size does not allow examination of still more rural areas, but their reported trends are strong). In a study that does not sample jurisdictions with advance voting, Haspel and Knotts (2005) find that distance to a polling station reduces the probability of voting generally.

Rural voters’ stronger incentives for advance voting are natural when considering the overall greater distances between individuals in the countryside. Absent an errand in the vicinity of the polling station on Election Day, mail-in ballots or early in-person voting become so much more convenient. Convenience and polling-station accessibility are also the top two reasons cited in Bliss’s (2010) survey of early voters. People in the countryside are also known to consume more petrol (e.g. Brownstone & Golob, 2009; Glaeser and Kahn, 2010), also due to greater distances outwith cities.

The states of Colorado, Oregon, and Washington are not sampled because they have largely done away with polling stations altogether. Most voters there must therefore vote by post. It would seem that the rural population is still apt to vote earlier on account of living farther away from a post box, but for the sake of cleanliness the states are nevertheless not sampled. The state of Nebraska is excluded from the regressions (Panel (b)) because its unicameral and nonpartisan legislature does

² The petrol-tax data come from U.S. Highway Statistics reports, available from <http://www.fhwa.dot.gov/>. The data on early voting come from Biggers and Hanmer’s (2015) comprehensive summary.

not allow controls on the party in power. Among the other states, twelve allowed early voting at the start of the period. Of the 34 that did not, 18 allowed it at the period's end.

There are three basic kinds of advance voting applicable to the sampled years; *VBM* (vote-by-mail), in which voters fill out their ballots and send them to the voting administration by post; *EIP* (early in-person voting), in which a polling station is set up that takes early votes; and *no-excuse absentee voting*, which is like VBM except that voters must generally request an absentee ballot (though they need not give an excuse). Panel (b) of Table I shows that each day of advance voting is associated with an increase in the petrol tax by a small fraction of a cent. In line with the aforementioned evidence in Dyck and Gimpel (2005) that rustics prefer postal voting above other forms of early voting, the VBM method of early voting is statistically significant.

Table I: Voting Régimes and Petrol Taxes, 1996-2012

Panel (a)	Early Voting	No Early Voting	Panel (b)	Panel results for petrol tax changes (in ¢) as the dependant variable					
				(1)	(2)	(3)	(4)	(5)	(6)
Mean petrol tax change (st. dev.)	0.242 (1.235)	0.143 (1.029)	Days of VBM voting	0.020 (2.534)	0.025 (2.318)	–	–	–	–
Median petrol tax change	0.000	0.000	Days of EIP voting	–	–	0.002 (0.609)	0.001 (0.401)	–	–
Most positive change in tax	18.000	7.000	Days of abs. voting	–	–	–	–	0.004 (1.500)	0.003 (1.266)
Most negative change in tax	- 3.000	- 7.000	Fraction rural pop. Republican	0.434 (1.463)	0.340 (0.955)	0.273 (0.913)	0.367 (0.991)	0.261 (0.885)	0.346 (0.963)
Mean rural pop. (st. dev.)	27.0 (15.6)	27.4 (15.6)	Republican Governor	-0.159 (1.787)	-0.151 (1.661)	-0.151 (1.690)	-0.150 (1.636)	-0.153 (1.719)	-0.149 (1.636)
Median rural pop.	27.0	25.9	Republican House	-0.135 (1.271)	-0.177 (1.555)	-0.120 (1.126)	-0.133 (1.178)	-0.147 (1.365)	-0.146 (1.290)
Mean init. petrol tax (st. dev.)	19.39 (5.25)	19.88 (5.61)	Republican Senate	0.160 (1.485)	0.112 (0.990)	0.117 (1.093)	0.078 (0.692)	0.124 (1.164)	0.092 (0.819)
Median initial petrol tax	19.50	19.50	Initial tax	-0.011 (1.339)	-0.014 (1.539)	-0.017 (2.098)	-0.017 (1.908)	-0.017 (2.080)	-0.016 (1.834)
Years of Rep. Governor (%)	59.5 (49.2)	55.4 (49.8)	Year	4.0*10 ⁻⁵ (1.584)	4.2*10 ⁻⁵ (1.647)	3.7*10 ⁻⁵ (1.401)	3.9*10 ⁻⁵ (1.459)	3.3*10 ⁻⁵ (1.256)	3.4*10 ⁻⁵ (1.282)
Years of Rep. House (%)	50.5 (50.1)	40.3 (49.1)	Region fixed effects	NO	YES	NO	YES	NO	YES
Years of Rep. Senate (%)	52.0 (50.0)	46.3 (49.9)	Constant	-28.901 (1.565)	-30.224 (1.632)	-26.462 (1.375)	-27.700 (1.426)	-23.358 (1.231)	-23.969 (1.251)
Observations	400	352	R-squared	0.028	0.034	0.020	0.027	0.023	0.029

Note: *Mean init. petrol tax* refers to the petrol tax (in ¢) which prevailed in 1996, or when a state adopted early voting. *Region* refers to which of the Bureau of Economic Analysis' eight regions of the US a state is in. In panel (b), heteroscedasticity-robust t-statistics are given within parentheses.

Panel (a) of Table I treats all forms of early voting as one category and presents summary statistics. The mean petrol tax changes are also consistent with the hypothesis that politicians take advantage of early voters. A variety of different regression models are unreported, varying the controls and the dependant variable to a percentage change rather than an absolute change in the petrol tax, but the basic message remains unchanged. VBM in particular stands out as statistically significant, implying that a state's instituting a forty-day period in which mail-in ballots are accepted is associated with nearly a penny's increase in the petrol tax.

Due to the many different segments of the electorate that vote early, there is a wealth of potential sources in which to find evidence that may or may not be consistent with the present time-sensitive median voter model. The petrol-tax illustration is but one way in which advance voting can impact legislation through its effect on political incentives. How much standards of living are

impacted for these groups depends, apart from shifting costs, on the degree to which policies can cleanly distinguish between demographic segments³.

V - Conclusion

The foregoing discussion introduces a simple generalization of the median voter model to take into account the fact that persons' voting early will incentivize politicians to promise more to later voters as Election Day approaches. The outcome is quantitatively sensitive to the costs of making such policy adjustments, and, in addition to the normal requirements on the Median Voter Theorem, it is qualitatively sensitive to the presence of sophisticated voters when it is impossible to break commitments.

Empirical associations between advance voting and policy are consistent with the predictions of the paper, but the practice of advance voting is still in its infancy and this paper's petrol-tax illustration is but one of many potential policy consequences which may follow from more applied work. Wherever different segments of the population may be identified as predominantly early voters, office seekers are incentivized to trick their members.

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³ Policies with obvious differential effects such as \$10,000 surtaxes on everyone who lives outside of cities are likely inferior to subtler policies like petrol taxes due to the perception of the former proposal as pernicious.

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