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A Model of Focusing in Political Choice*

Salvatore Nunnari[†]
salvatore.nunnari@unibocconi.it

Jan Zápal[‡]
j.zapal@cerge-ei.cz

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Abstract

This paper develops a theoretical model of voters' and politicians' behavior based on the notion that voters focus disproportionately on, and hence overweight, certain *attributes* of policies. We assume that policies have two attributes and that voters focus more on the attribute in which their options differ more. First, we consider exogenous policies and show that voters' *focusing* polarizes the electorate. Second, we consider the endogenous supply of policies by office-motivated politicians who take voters' distorted focus into account. We show that focusing leads to inefficient policies, which cater excessively to a subset of voters: social groups that are larger, have more distorted focus, are more moderate, and are more sensitive to changes in a single attribute are more influential. Finally, we show that augmenting the classical models of voting and electoral competition with focusing can contribute to explain puzzling stylized facts as the inverse correlation between income inequality and redistribution or the *backlash effect* of extreme policies.

JEL Codes: D03, D72, D78

Keywords: Focus; Attention; Salience; Political Polarization; Probabilistic Voting Model; Electoral Competition; Behavioral Political Economy; Income Inequality; Redistribution

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[†]Bocconi University and IGIER, Via Rontgen 1, Milano, 20136, Italy.

[‡]CERGE-EI, IAE-CSIC and Barcelona GSE, Politickych Veznu 7, 111 21 Prague, Czech Republic.

1 Introduction

Evaluating policy alternatives is a difficult task. In fact, many important political decisions involve multiple *consequences*, even for the same voter. On June 23, 2016, UK citizens were asked to choose between two different levels of integration with their neighboring countries: remaining a member of the European Union (EU) or leaving the EU. This choice will have had multiple consequences: given a voter's preferences and beliefs, each option had some relative advantages or *benefits* (for example, leaving the EU has fiscal benefits, in terms of reduced contributions to the EU budget) and some relative disadvantages or *costs* (for example, leaving the EU has trade costs, in terms of higher prices of imported goods and reduced competitiveness of exports).[1] Beyond this example, many public policies have multiple consequences and involve a trade-off between benefits and costs, not only for society as whole but also from the prospective of the single citizen. A prominent example is the size of government: higher revenues give governments the ability to provide more public goods (infrastructure, mandatory spending programs, etc.) but require higher taxation. Other examples are the degree of government surveillance (more surveillance means a lower chance of terrorist attacks but also less privacy and more limitations to personal freedom); the degree of industry regulation (more intervention means higher consumer protection and lower risk of systemic crises but also less competition and product innovation); immigration policy (more openness means a larger working age population and more sustainable social security programs but also higher heterogeneity of preferences and potential social turmoil); and the degree of environmental regulation (stricter regulation means higher quality of life and lower chances of environmental catastrophes but also higher costs of production and private investments). In all these domains, how the different consequences are weighted is crucial for the resolution of the trade-off and the formation of voters' preferences.

A large body of experimental research in the social sciences has documented that preferences over options with multiple consequences, or *attributes*, are influenced by the environment: manipulating the set of available alternatives affects choice over consumer products which differ in quality and price (Huber, Payne and Puto, 1982; Simonson, 1989; Simonson and Tversky, 1992; Heath and Chatterjee, 1995); choice over lotteries which vary in prizes and probabilities across alternatives (Allais, 1953; Herne, 1999; Slovic and Lichtenstein, 1971); and choice over monetary allocations which differ in efficiency and fairness (Roth, Murnighan and Schoumaker, 1988; Galeotti, Montero and Poulsen, 2015).

[1] See Dhingra, Ottaviano, Sampson and Van Reenen (2016) for a discussion of the trade-off between fiscal benefits and trade costs. For other relative advantages and disadvantages of the two options, see *The Economist's "Brexit" Backgrounder*, published on February 24, 2016 and available at `http://www.economist.com/blogs/graphicdetail/2016/02/graphics-britain-s-referendum-eu-membership`.

Building on this evidence, economists have recently developed models where the choice set can distort the relative weights a decision-maker attaches to the attributes of an alternative or, in other words, can affect the extent to which a decision-maker focuses on certain attributes (Kőszegi and Szeidl, 2012; Bordalo, Gennaioli and Shleifer, 2012, 2013a,b, 2015a,b; Bushong, Rabin and Schwartzstein, 2015). The theoretical implications of this selective focus for political behavior are largely unexplored and unclear. In fact, most theories of voting are based on the classic model of choice where the subjective value each option gives to a decision-maker is independent of the other available options.

In this paper, we develop a model of voters' and politicians' behavior based on the idea that voters focus more on attributes in which the available policies differ more. This assumption is based on the notion that our limited cognitive resources are attracted by a subset of the available sensory data (Taylor and Thompson, 1982) and, in particular, that "our mind has a useful capability to focus on whatever is odd, different or unusual" (Kahneman, 2011). Section 3 presents our framework. We consider a continuum of voters in different social groups who choose the location of a unidimensional policy (e.g., the size of government). Each policy has two *attributes*: it gives to all voters in the same social groups benefits and costs. For voter in a given group, the *consumption utility* from a policy equals the difference between its benefits and its costs. However, when evaluating policies, voters use *focus-weighted utility* instead of consumption utility. We assume that voters focus more on the attribute in which options differ more, that is, on the attribute which delivers the greater range of consumption utility.

In Section 4, we analyze the consequences of focusing for their preferences over an exogenous pair of policies. We show that voters focus on the relative advantage—that is, the larger benefits or the smaller costs—of the policy which gives them the higher consumption utility. As a consequence, focusing does not affect what policy a voter prefers but it strengthens the intensity of preferences between this policy and the alternative (that is, it *polarizes* the electorate). We then consider the effect of focus on the *endogenous* formation of voters' choice set. In Section 5, we introduce *focusing voters* into a model of electoral competition between two office-motivated parties. In the unique equilibrium of this game, the two parties offer the same policy and, thus, voters have undistorted focus. Nonetheless, any deviation from the equilibrium policies triggers voters' selective attention (on different attributes for different voters) and, thus, focusing affects the politicians' electoral calculus. We show that the equilibrium policies are generically different than the ones emerging with rational voters and do not maximize utilitarian welfare; and that politicians are more likely to inefficiently cater to larger groups, to groups with more distorted focus, to groups that are more sensitive to changes in the attribute they focus on (in equilibrium), and to groups that are more moderate.

In Section 6, we explore the relevance of voters' distorted attention in one important application—fiscal policy. In particular, we consider a stylized Meltzer and Richard (1981) model where parties offer a public good funded by a proportional tax rate and show the model helps explain facts that are puzzling from the perspective of existing political economy theories—the negative correlation between income inequality and both the support for redistribution (Ashok, Kuziemko and Washington, 2015) and the top marginal tax rates (Piketty, Saez and Stantcheva, 2014). Following a marginal deviation from the convergent equilibrium policies, poor voters (who prefer more redistribution) focus on the public good's benefits, while rich voters (who prefer less redistribution) focus on the public good's costs. If increased income inequality affects costs more than it affects benefits, selective attention amplifies rich voters' marginal sensitivity to policies more than poor voters', as the latter group focuses on benefits and underweights costs, and makes rich voters more responsive to electoral platforms. This leads rich voters to become more influential in the politicians' calculus and, thus, to obtain less redistribution than before even if most of the electorate would benefit from more redistribution.

Finally, in Section 7, we consider more general choice sets, with a finite number of policies. We show that, when the choice set includes more than two policies, focusing not only affects the intensity of preferences but it can also affect its ranking. We discuss how the introduction of extreme policies in the voters' choice set or *consideration set* (for example, a status quo policy, a policy enacted in a neighboring country; a policy measure suggested or required by an external body, like the EU Commission; a novel policy introduced in the public debate by the media or an extreme party) can generate a *backlash effect* and change voters' preferences, making them perceive more favorably the policies at the other end of the spectrum. We claim that this can explain the growing support for EU integration (and pro-EU parties) in European countries after Brexit.

2 Related Literature

Our work is primarily related to a recent, yet rapidly growing, research program in *behavioral political economy*, which studies electoral competition or political agency models when voters employ decision heuristics or are prone to cognitive biases. This literature considers voters who are subject to negativity bias or loss aversion (Alesina and Passarelli, 2015; Lockwood and Rockey, 2015), correlation neglect (Levy and Razin, 2015), overconfidence (Ortoleva and Snowberg, 2015), time-inconsistency (Bisin, Lizzeri and Yariv, 2015), reluctance to explicitly consider trade-offs (Patty, 2007), self-serving bias in moral judgement (Passarelli and Tabellini, Forthcoming). More closely related to this paper, Callander and Wilson (2006, 2008) introduce a theory of Downsian competition with *context-dependent voting* where the propensity to turn out and vote for the preferred candidate is greater when the other candidate is more extreme, and apply it to the puzzle of why politicians are ambiguous in their campaigns.

This paper also contributes to the theoretical literature on focusing (or *salient-thinking*) in economic choice (Kőszegi and Szeidl, 2012; Bordalo et al., 2012, 2013a,b, 2015a,b; Cunningham, 2013; Bushong et al., 2015) introduce models where the choice set distorts the relative weights a decision-maker attaches to the attributes of an alternative.[2] We share with these models the notion that the main determinant of these weights is the *range* of utilities across an attribute.[3] With respect to these models, we consider agents with heterogeneous preferences, the aggregation of these agents' conflicting preferences in a collective choice, and the endogenous formation of the choice set by political candidates.

Less closely related to this paper is the theoretical literature on poorly informed voters (Glaeser, Ponzetto and Shapiro, 2005; Gavazza and Lizzeri, 2009; Gul and Pesendorfer, 2009; Ponzetto, 2011; Glaeser and Ponzetto, 2014; Prato and Wolton, 2016; Ogden, 2016; Matějka and Tabellini, 2016). Contrary to our model, where voters have complete information on policies, these works consider voters who are uncertain about candidates' policies and receive or acquire information prior to casting their vote. The most closely related contributions are Prato and Wolton (2016), Ogden (2016) and Matějka and Tabellini (2016) who consider politicians' incentives when voters have limited cognitive resources (or attention) and allocate them endogenously to improve the available information on their policy options. The selective attention we study is inherently different from this *rational inattention*: while the former concerns stimulus-driven and ex-post allocation of attention, the latter concerns goal-driven and ex-ante allocation of attention. The (unconscious) bottom-up process we introduce and the (conscious) top-down process studied by the existing literature have both been shown to be important channels contributing simultaneously and independently to a decision-maker's overall allocation of attention in performing a task (Connor, Egeth and Yantis, 2004; Ciaramelli, Grady, Levine, Ween and Moscovitch, 2010; Pinto, van der Leij, Sligte, Lamme and Scholte, 2013).

3 Model

Consider a continuum of voters who belong to $n \geq 2$ social groups. The fraction of voters in group $i \in N = \{1, \ldots, n\}$ is $m_i > 0$, with $\sum_{i \in N} m_i = 1$. All voters from the

[2] In earlier work, Rubinstein (1988) and Leland (1994) also propose models of context-dependent choice where the similarity of attributes affects the evaluation of an option. They focus on choice over lotteries and do not motivated their model with the cognitive psychology of attention.

[3] In Section 3, we discuss how our assumptions on the mapping from the choice set to the relative weights compare with the assumptions in these models.

same social group have the same policy preferences. In particular, each policy $p \in \mathbb{R}_+$ has two *attributes*: it provides voters in group i with benefits, $B_i(p)$, and with costs, $C_i(p)$. Therefore, a voter in group i derives *consumption utility* from policy p equal to:

$$V_i(p) = B_i(p) - C_i(p). \tag{1}$$

The same policy can yield different benefits and costs to voters in different social groups.

As we discussed in the Introduction, there are many examples of policies with multiple consequences for voters and involving a trade-off between benefits and costs.

We make the following assumptions on the benefit and cost functions:

Assumption 1. *(A1) For all $i \in N$ and all $p \in \mathbb{R}_+$, (a) benefits are increasing and concave in p: $B_i(p) \geq 0$, $B_i'(p) > 0$, $B_i''(p) \leq 0$; (b) costs are increasing and convex in p: $C_i(p) \geq 0$, $C_i'(p) > 0$, $C_i''(p) \geq 0$; (c) at least one inequality between $B_i''(p) \geq$ and $C_i''(p) \leq 0$ is strict.*

Assumption 2. *(A2) For all $i \in N$, V_i admits an interior maximum at p_i (group i's "consumption bliss point"): there exists $p_i > 0$ such that $B_i'(p_i) - C_i'(p_i) = 0$.*

Assumption 3. *(A3) For all $i \in N$ and all $p \in \mathbb{R}_+$, if $i < n$, $B_i'(p) \leq B_{i+1}'(p)$ and $C_i'(p) \geq C_{i+1}'(p)$, with at least one strict inequality.*

Assumptions A1 and A2 imply that $V_i(p)$ is strictly concave in p and single-peaked around p_i, group i's *consumption bliss point.* Since $B_i'(p_i) - C_i'(p_i) = 0$, Assumption A3 implies that social groups with a lower index have a lower consumption bliss point.[4]

Our key assumption and main departure from the classical political economy models is that, when evaluating policies, voters use their *focus-weighted utility* rather than their consumption utility. Consider a *choice set* composed of two policies: $\mathcal{P} = \{p_A, p_B\}$.[5] Let $\Delta_i^B(\mathcal{P})$ be the range of benefits in $\mathcal{P}$ for voters in group i:

$$\Delta_i^B(\mathcal{P}) = |B_i(p_A) - B_i(p_B)|. \tag{2}$$

Let $\Delta_i^C(\mathcal{P})$ be the range of costs in $\mathcal{P}$ for voters in group i:

$$\Delta_i^C(\mathcal{P}) = |C_i(p_A) - C_i(p_B)|. \tag{3}$$

We assume that voters focus more on the attribute in which their available options differ more, that is, on the attribute which generates a greater range of consumption utility. This assumption is compatible with the psychology of human cognition and

[4]Formally, since $B_{i+1}'(p_i) - C_{i+1}'(p_i) > 0$ and, thus, $p_i < p_{i+1}$ for all $i < n$: When we assume A1 and A2 but not A3, we index social groups so that $p_i < p_{i+1}$ for all $i < n$.

[5]In Section 7, we consider a finite choice set, $\mathcal{P} = \{p_A, p_B, \ldots\}$, with $|\mathcal{P}| \geq 2$.

versions of it have already been explored in a number of economic contexts (Loomes and Sugden, 1982; Rubinstein, 1988; Kőszegi and Szeidl, 2012; Bordalo et al., 2013b, 2015a). The core tenet of this assumption is that focus is driven by the *salience* of an attribute. The psychology literature suggests that the detection of the salient features of the environment is a key mechanism driving the allocation of cognitive resources and that salience typically stems from contrast (Baumeister and Vohs, 2007; Nothdurft, 2005).[6] Using this language, we assume that larger differences are more salient and, thus, that voters focus on the attribute with a larger range on the utility space.

Formally, we assume that voters in group i focus on benefits if $\Delta_i^B(\mathcal{P}) > \Delta_i^C(\mathcal{P})$, focus on costs if $\Delta_i^B(\mathcal{P}) < \Delta_i^C(\mathcal{P})$ and have undistorted focus if $\Delta_i^B(\mathcal{P}) = \Delta_i^C(\mathcal{P})$.

Assumption 4. *(A4) For a voter in group i, the focus-weighted utility from $p \in \mathcal{P}$ is:*

$$\widetilde{V}_i(p|\mathcal{P}) = \begin{cases} \frac{2}{1+\delta_i} B_i(p) - \frac{2\delta_i}{1+\delta_i} C_i(p) & \text{if } \Delta_i^B(\mathcal{P}) > \Delta_i^C(\mathcal{P}) \\ \frac{2\delta_i}{1+\delta_i} B_i(p) - \frac{2}{1+\delta_i} C_i(p) & \text{if } \Delta_i^B(\mathcal{P}) < \Delta_i^C(\mathcal{P}) \\ B_i(p) - C_i(p) & \text{if } \Delta_i^B(\mathcal{P}) = \Delta_i^C(\mathcal{P}) \end{cases}$$

where $\delta_i \in (0,1]$ decreases in the severity of focusing.

When voters in group i focus on benefits (costs), the relative weight they place on benefits (costs) is larger than the weight used by rational voters—$\frac{2}{1+\delta_i} \in [1,2)$; and the weight they place on costs (benefits) is smaller than the weight used by rational voters—$\frac{2\delta_i}{1+\delta_i} \in (0,1]$. The weights on benefits and costs change discontinuously when the object of focus changes but remain constant when focus remains on a given attribute.[7] The weighing distortion is allowed to be heterogeneous across social groups. As δ_i goes to 1, focusing voters in group i converge to rational voters. As δ_i goes to 0, focusing voters in group i consider only the attribute that attracts their attention and completely neglect the other. Voters in group i focus on the same attribute for both policies in a given choice set.[8] Finally, the normalization of the utility weights ensures that the sum of the

[6] Similarly to what we do, Bordalo et al. (2012, 2013a,b, 2015a,b) assume that the salience of different attributes and, thus, the decision-maker's focus is driven by contrast, what they call *ordering*. In addition, they assume that contrast is perceived with *diminishing sensitivity*. We study the consequences of adding diminishing sensitivity to our model in Appendix A2 and show that this implies focus on costs for any choice set.

[7] Bordalo et al. (2013b, 2015a) consider similar focus weights while Kőszegi and Szeidl (2012) use weights that change continuously with the range of an attribute. We use discontinuous weights for mathematical tractability but most of the results we present below continue to hold if we assume continuous weights. In this case, there derivative of focus-weighted utility with respect to a policy includes an additional term arising from the marginal change in the weights.

[8] Kőszegi and Szeidl (2012) make a similar assumption. In Bordalo et al. (2012, 2013a,b, 2015a,b), in principle, the salient attribute of different options can be different. However, with binary choice sets and *homogeneity of degree zero*, as assumed in Bordalo et al. (2013b, 2015a), the same attribute is salient for both options.

weights on benefits and costs is independent of δ_i and of the attribute voters focus on. In other words, the normalization ensures that the model is not biased towards focus on any single attribute by construction.

4 Consequences of Focus on Voters' Preferences

Consider an exogenous choice set given by $\mathcal{P} = \{p_A, p_B\}$. When $p_A = p_B$, all voters have undistorted focus. Consider $p_A \neq p_B$ and, without loss of generality, $p_A > p_B$. By Assumption A1, p_A gives all voters larger benefits and larger costs than p_B. In this sense, p_A's *relative advantage* lies in its larger benefits, while p_B's relative advantage lies in its lower costs. Proposition 1 shows that voters focus on the relative advantage of the policy which delivers the higher consumption utility.[9]

Proposition 1. *Assume A1, A4 and $\mathcal{P} = \{p_A, p_B\}$, $p_A \geq p_B$. Voters in group $i \in N$, (a) focus on benefits if and only if $V_i(p_A) > V_i(p_B)$; (b) focus on costs if and only if $V_i(p_A) < V_i(p_B)$; (c) have undistorted focus if and only if $V_i(p_A) = V_i(p_B)$.*

Consider a social group $i \in N$ that receives higher consumption utility from p_A, the larger policy in the choice set. For voters in this social group, the larger benefits from p_A more than compensate its larger costs. This happens if and only if the range of benefits—which measures the advantage of p_A in the consumption utility space—is larger than the range of costs—which measures the disadvantage of p_A in the same space. Given our assumption on the determinants of voters' attention, this leads voters in group i to focus on benefits.

Proposition 2, which uses the order-restricted preferences implied by A3,[10] says that focusing separates the electorate into two contiguous subsets of social groups, or *factions*: a faction composed of voters with relatively high consumption bliss points—who focus on benefits—and a faction composed of voters with relatively low consumption bliss points—who focus on costs.

Proposition 2. *Assume A1, A3, A4 and $\mathcal{P} = \{p_A, p_B\}$. For any $i \in N$, (a) if voters in group i focus on benefits, then voters in groups $j > i$ focus on benefits; (b) if voters in group i focus on costs, then voters in group $j < i$ focus on costs; (c) if voters in group i have undistorted focus and $p_A \neq p_B$, then voters in group $j < i$ focus on costs and voters in group $j > i$ focus on benefits.*

Proposition 3 shows that the members of these two factions maintain the same ranking between the two policies in their choice set for any degree of focusing but that their

[9] We present all proofs in Appendix A1.

[10] Order-restricted preferences satisfy the following: if $p > p'$ and $i < i'$ or if $p < p'$ and $i > i'$, then $V_i(p) > V_i(p') \Rightarrow V_{i'}(p) > V_{i'}(p')$ (Persson and Tabellini, 2000, Definition 3). When $p > p'$, we have $V_i(p) - V_i(p') = \int_{p'}^{p} [B_i'(x) - C_i'(x)]\, dx$ non-decreasing in i by Assumption A3. Similarly for $p < p'$.

intensity of preferences—that is, how much each voter cares about his preferred policy and, thus, the conflict of preferences between members of the two factions—grows in the degree of focusing (that is, decreases in δ_i).

Proposition 3. *Assume A1, A4 and $\mathcal{P} = \{p_A, p_B\}$. For all social groups $i \in N$, (a) focusing does not change the ranking of policies in voters' preferences, that is, the signs of $V_i(p_A) - V_i(p_B)$ and $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P})$ coincide; (b) focusing increases the intensity of preferences between policies, that is, the signs of $-\left[\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P})\right]$ and $\frac{\partial}{\partial \delta_i}\left[\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P})\right]$ coincide.*

To understand the intuition behind Proposition 3, consider a group $i \in N$ that receives higher consumption utility from p_A, the larger policy. By Proposition 1, these voters overweight the relative advantage of p_A with respect to p_B and underweight its relative disadvantage. As a consequence, the difference in perceived, or focus-weighted, utility between the two options is larger than the difference in consumption utility, that is, $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P}) > V_i(p_A) - V_i(p_B)$.

The second part of Proposition 3 implies that distorted focus does not affect social choice when society votes over binary agendas and no abstention is allowed. However, as we hope to show in the rest of this paper, this does not mean that focusing is not important in politics or collective decision making. In particular, as Proposition 3(b) suggests, focusing matters whenever the intensity of preferences affects the likelihood of casting a vote (for example, with costly voting) or the likelihood of voting for a particular candidate (for example, with stochastic choice, or whenever other considerations enter the voters' decision).[11] Moreover, selective attention can affect not only the intensity of preferences but also the ranking over options when the choice set is larger and includes more than two policies. We explore these last two possibilities in Sections 5, where we introduce a model of electoral competition with citizens who vote probabilistically, and in Section 7, where we show results for a finite choice set, possibly including more than two (exogenous or endogenous) options.

5 Electoral Competition with Focusing Voters

5.1 Modeling Electoral Competition

In the previous section, we considered the effect of focus on voters' preferences over an *exogenous* choice set. In this section, we consider the effect of voters' focus on the *endogenous* supply of policies by political parties or candidates.

[11]Note that, for the same reason, focusing will also affect any other form of costly collective action (campaign contribution; declaration of support; volunteering or canvassing; active political participation).

In particular, we introduce focusing voters into a classical model of electoral competition, the probabilistic voting model à la Lindbeck and Weibull (1987). Two identical parties, $j \in \{A, B\}$, simultaneously announce a binding policy, $p_j \in \mathbb{R}_+$.[12] Voters observe parties' policies, evaluate them with their focus-weighted utility (rather than their consumption utility) and vote as if they are pivotal (or derive expressive utility from voting). The indirect utility voter v in group i receives when voting for each candidate is:

$$\begin{aligned} u_{v,i}(A) &= \widetilde{V}_i(p_A|\mathcal{P}) \\ u_{v,i}(B) &= \widetilde{V}_i(p_B|\mathcal{P}) + \epsilon_v \end{aligned} \tag{4}$$

where $\mathcal{P} = \{p_A, p_B\}$ is voters' endogenous choice set and $\epsilon_v \sim U[-\frac{1}{2\phi}, \frac{1}{2\phi}]$ is an individual-level shock to the relative popularity of party B, which is realized after policies are announced but before the election. Given these assumptions, voter v in group i votes for A if and only if $\widetilde{V}_i(p_A|\mathcal{P}) > \widetilde{V}_i(p_B|\mathcal{P}) + \epsilon_v$.

Parties are purely office-motivated and maximize their vote shares.[13] From the parties' perspective, the expected share of voters in group i who vote for A is:[14]

$$\tfrac{1}{2} + \phi \left[\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P})\right]. \tag{5}$$

The two parties objective functions are:

$$\begin{aligned} \pi_A(p_A|\mathcal{P}) &= \tfrac{1}{2} + \phi \sum_{i \in N} m_i \left[\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P})\right] \\ \pi_B(p_B|\mathcal{P}) &= 1 - \pi_A(p_A|\mathcal{P}). \end{aligned} \tag{6}$$

5.2 Benchmark: Endogenous Policies with Rational Voters

In this electoral game, parties simultaneously announce their policies. For all $j \in \{A, B\}$, a pure strategy of party j is a policy in $\mathbb{R}_+$ and a mixed strategy for party j is a distribution over $\mathbb{R}_+$. The solution concept we adopt is Nash equilibrium. As a benchmark, we first consider fully rational voters, that is, $\delta_i = 1$ for all $i \in N$. In this case, $\widetilde{V}_i(p_A|\mathcal{P}) = B_i(p_A) - C_i(p_A)$ only depends on p_A, not on the entire choice set $\mathcal{P}$. Similarly, $\widetilde{V}_i(p_B|\mathcal{P}) = B_i(p_B) - C_i(p_B)$ only depends on p_B.

Proposition 4. *Assume A1, A2 and $\delta_i = 1$ for all $i \in N$. A Nash equilibrium in mixed strategies exists and is unique. The equilibrium policies are (p_r^*, p_r^*), where p_r^* is*

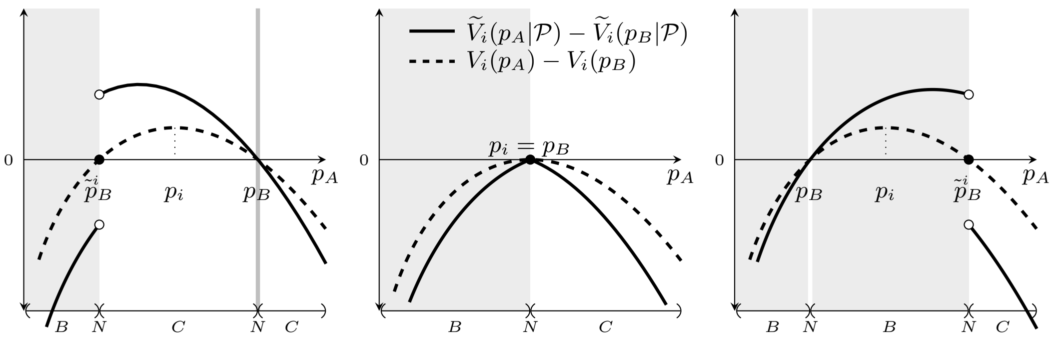
[12] Analogously, parties can announce feasible pairs $(B_i(p_j), C_i(p_j))$ to each group $i \in N$.

[13] All results we present below are robust to parties maximizing the probability of winning.

[14] As commonly assumed in these models, we assume that ϕ is large enough to guarantee that vote shares are always interior.

Figure 1: $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P})$ given $\mathcal{P} = \{p_A, p_B\}$
$B_i(p) = 2\sqrt{p}$, $C_i(p) = \frac{p^2}{2}$, $\delta_i = \frac{2}{3}$

(a) $p_i < p_B$ (b) $p_B = p_i$ (c) $p_B < p_i$



the unique solution to:

$$\sum_{i \in N} m_i \left[B_i'(p) - C_i'(p)\right] = 0. \qquad (\mathcal{O}_r)$$

Moreover, $p_r^* \in (p_1, p_n)$.

Proposition 4 shows that, when voters do not suffer from distorted focus, equilibrium policies maximize a *social consumption utility function* where the weight on each social group is determined by its population share, m_i. This means that electoral competition leads to policies that are optimal in an utilitarian sense, that is, policies that maximize the sum of voters' utilities.[15]

5.3 Endogenous Policies with Focusing Voters

We now introduce focusing voters. We first consider a society composed of two groups, where $p_1 < p_2$, and then move to the more general case. In the rational benchmark, the equilibrium platforms are (p_r^*, p_r^*), where $p_r^* \in (p_1, p_2)$ is the unique solution to $m_1 V_1'(p) + m_2 V_2'(p) = 0$: a marginal deviation by either party results in a gain of votes from one group which is exactly offset by a loss of votes from the other group.

Focusing changes the parties' calculus. Consider a marginal deviation from (p_r^*, p_r^*) to (p, p_r^*). A first, important, implication of our assumptions is that a deviation by a single party changes voters' evaluation of the policies offered by both parties. Formally, a deviation to p changes both terms in $\widetilde{V}_i(p|\{p, p_r^*\}) - \widetilde{V}_i(p_r^*|\{p, p_r^*\})$.

Consider first voters in group 1, that is, voters with a lower consumption's bliss point. Figure 1a shows that a marginal deviation from $p_r^* > p_1$ to p implies that voters

[15] Note that this is not a feature of any electoral competition with probabilistic voting: suboptimal equilibrium policies arise if the precision of the popularity shock, ϕ, is heterogeneous across social groups. We deliberately shut down this source of inefficiency to avoid a confounding factor and to highlight the inefficiencies that are solely due to selective attention.

in group 1, who are now choosing from the set $\{p, p_r^*\}$, prefer the lower policy and, thus, focus on costs. As Lemma A2 formally shows, this means that the derivative off $\widetilde{V}_1(p|\{p, p_r^*\}) - \widetilde{V}_1(p_r^*|\{p, p_r^*\})$ with respect to p evaluated at p_r^* equals:

$$\tfrac{2\delta_1}{1+\delta_1} B_1'(p_r^*) - \tfrac{2}{1+\delta_1} C_1'(p_r^*). \tag{7}$$

At the margin, voters in group 1 overweight costs and underweight benefits relative to their rational counterparts. This gives parties an incentive to run on *lower* platforms.

At the same time, this incentive is counter-balanced by an incentive to run on *larger* platforms, which results from the focus of voters in group 2. As Figure 1c shows, a marginal deviation from $p_r^* < p_2$ to p implies that voters in group 2, who are now choosing from the set $\{p, p_r^*\}$, prefer the larger policy and, thus, focus on benefits. This implies that the derivative of $\widetilde{V}_2(p|\{p, p_r^*\}) - \widetilde{V}_2(p_r^*|\{p, p_r^*\})$ with respect to p evaluated at p_r^* equals:

$$\tfrac{2}{1+\delta_2} B_2'(p_r^*) - \tfrac{2\delta_2}{1+\delta_2} C_2'(p_r^*). \tag{8}$$

At the margin, voters in group 2 overweight benefits and underweight costs, creating an incentive for parties to propose larger policies. The equilibrium platforms balance these two incentives, as characterized in equation ($\mathcal{O}_{f,2}$) in Proposition 5.[16]

Proposition 5. *Assume A1, A2, A4. Consider $n = 2$ with $p_1 < p_2$. A Nash equilibrium in pure strategies exists and is unique. Let:*

$$\mathcal{O}_{f,2}(p) = \tfrac{2m_1}{1+\delta_1}\left[\delta_1 B_1'(p) - C_1'(p)\right] + \tfrac{2m_2}{1+\delta_2}\left[B_2'(p) - \delta_2 C_2'(p)\right]. \tag{$\mathcal{O}_{f,2}$}$$

The equilibrium platforms of the two parties are (p_f^*, p_f^*), where:
(a) if $\mathcal{O}_{f,2}(p_1) > 0 > \mathcal{O}_{f,2}(p_2)$, $p_f^* \in (p_1, p_2)$ is the unique solution to $\mathcal{O}_{f,2}(p) = 0$;
(b) if $\mathcal{O}_{f,2}(p_1) \leq 0$, $p_f^* = p_1$;
(c) if $\mathcal{O}_{f,2}(p_2) \geq 0$, $p_f^* = p_2$.

Proposition 5 implies that groups that are larger and have more distorted focus are more influential in the electoral calculus. Larger groups, that is, groups with larger m_i, receive larger weight in the parties' objective function and, hence, have larger impact on the equilibrium policy. Groups with more distorted focus, that is, groups with lower δ_i, have a stronger intensity of preferences between platforms, as noted in Proposition 3, and, thus, are more sensitive to electoral announcements.

Corollary 1. *Consider the unique equilibrium policy of the electoral competition game with focusing voters and two groups, p_f^*. If $p_f^* \in (p_1, p_2)$, p_f^* approaches p_i when m_i increases or δ_i decreases for any $i \in \{1, 2\}$.*

[16] Proposition 5 follows from the more general existence and uniqueness result we prove below.

It is interesting to compare the equilibrium policy, p_f^*, to the utilitarianly efficient policy, p_r^*, that emerges from competition with rational voters. In general, we can have both $p_f^* > p_r^*$ and $p_f^* < p_r^*$. In fact, with two groups and an homogeneous degree of focusing, we can characterize the direction of the inefficiency generated by focusing.[17]

Corollary 2. *Assume $n = 2$ and $\delta_1 = \delta_2$. $p_f^* \geq p_r$ if and only if $m_2 B_2'(p_r^*) \geq m_1 C_1'(p_r^*)$.*

Corollary 2 implies that equilibrium policies are generically inefficient. Politicians inefficiently cater to larger groups and to groups that are more sensitive to changes on the attribute they focus on.

Proposition 5 also shows that the equilibrium policy can coincide with the consumption bliss point of one of the groups, something that cannot happen with two groups of rational voters. The intuition behind this result lies in the polarization of preferences induced by focusing. Denote by p_i^c the *cost-focus bliss point* of voters in group i—that is, the unique maximizer of $\widetilde{V}_i$ when voters in group i focus on costs. Similarly, denote by p_i^b the *benefit-focus bliss point*—that is, the unique maximizer of $\widetilde{V}_i$ when voters in group i focus on benefits.[18] When $\delta_i \in (0, 1)$, we have $p_i^c < p_i < p_i^b$, where p_i^b increases and p_i^c decreases with the degree of focusing. As discussed above, a marginal deviation from a pair of identical policies makes voters in group 1 focus on costs and voters in group 2 focus on benefits. Therefore, the electoral calculus of parties facing focusing voters is similar to the electoral calculus of parties facing two rational but more strongly opposed groups of voters, one with ideal policy $p_1^c < p_1$ and one with ideal policy $p_2^b > p_2$. For this reason, focusing might lead to extreme policies.

When the equilibrium policy coincides with the consumption bliss point of one of the groups, it is *locally unresponsive* to the model parameters, that is, it remains constant in some regions of the parameter space. This is another feature of equilibrium policies with focusing voters which is not shared with the case of rational voters.

Corollary 3. *Electoral competition with focusing voters polarizes the electorate. The equilibrium policy might coincides with the consumption bliss point of a group of voters and, thus, be locally unresponsive to parameter changes.*

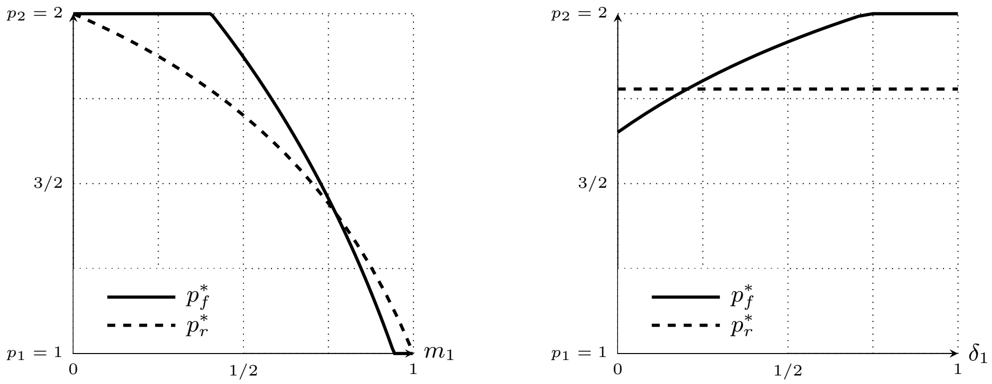
Figure 2 shows an example of the equilibrium policy for specific functional forms of the benefits and costs functions. The two panels illustrate the comparative statics with respect to m_1 and δ_1 (Corollary 1). In both panels, for some parameter values, the equilibrium policy coincides with p_1 or p_2, and, in this cases, it is unresponsive to the model parameters (Corollary 3). In both panels, p_f^* can be both above or below p_r^* (Corollary 2).

[17] We omit the formal argument, which subtracts ($\mathcal{O}_r$) evaluated at p_r^* from ($\mathcal{O}_{f,2}$) and uses the fact that $\mathcal{O}_{f,2}(p)$ is strictly decreasing in p by Assumption A2.

[18] If p_i^c does not exist set $p_i^c = 0$. Similarly, if p_i^b does not exist set $p_i^b = \infty$.

Figure 2: Equilibrium with focusing voters
$B_1(p) = \sqrt{p}$, $C_1(p) = \frac{p^2}{4}$, $p_1 = 1$, $B_2(p) = 4\sqrt{2p}$, $C_2(p) = \frac{p^2}{2}$, $p_2 = 2$

(a) Effect of m_1, $\delta_1 = \delta_2 = \frac{3}{4}$, $m_2 = 1 - m_1$ (b) Effect of δ_1, $\delta_2 = \frac{3}{4}$, $m_1 = \frac{2}{5} = 1 - m_2$



We discussed the case with $n = 2$ to better deliver the intuition. We next characterize the equilibrium of the electoral game for an arbitrary number of social groups, $n \geq 2$. In this more general case, the equilibrium policy is determined by a condition on the left and right derivatives of $\widetilde{D}_i(p'|\{p', p\}) = \widetilde{V}_i(p'|\{p', p\}) - \widetilde{V}_i(p|\{p', p\})$ with respect to p', evaluated at $p' = p$. These elements, which are denoted, respectively, by $\widetilde{D}_i'^{-}(p|\overline{\mathcal{P}})$ and $\widetilde{D}_i'^{+}(p|\overline{\mathcal{P}})$, capture the effect of a marginal deviation from a convergent pair of policies—(p, p)—to (p', p) with $p' < p$, for the left derivative; and to (p', p) with $p' > p$, for the right derivative.

Proposition 6. *Assume A1, A2, A4 and let p_f^* be the unique solution to*

$$\sum_{i \in N} m_i \widetilde{D}_i'^{-}(p|\overline{\mathcal{P}}) \geq 0 \qquad \sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\overline{\mathcal{P}}) \leq 0. \tag{$\mathcal{O}_f$}$$

A Nash equilibrium in pure strategies exists and is unique. The equilibrium platforms of the two parties are (p_f^*, p_f^*). Moreover, $p_f^* \in [p_1, p_n]$.

Proposition 6 shows that there exists a unique equilibrium characterized by a convergent equilibrium policy p_f^*. Focusing requires us to use this more general approach, with the left and right derivatives, to characterize p_f^*. Consider Figure 1b and an electorate with three social groups. Assume that, with rational voters, the equilibrium policy coincides with p_2, the consumption bliss point of the middle group. In this case, a marginal deviation from (p_2, p_2) by either party has no effect on the votes from group 2 since $V_2'(p_2) = 0$. Consider now focusing voters and a marginal deviation to (p, p_2) with $p < p_2$. Since benefits decrease faster than costs, the range of benefits in the new choice set is larger than the range of costs. This induces voters in group 2 to focus on benefits and, thus, to react more strongly than rational voters to a deviation from p_2 to $p < p_2$.

Formally, $\widetilde{D}_2'^{-}(p_2|\overline{\mathcal{P}}) > 0$. Similarly, a marginal deviation to (p, p_2) with $p > p_2$ implies a faster increase in costs than in benefits. This induces voters in group 2 to focus on costs and, thus, to react more strongly than rational voters to a deviation. Formally, $\widetilde{D}_2'^{+}(p_2|\overline{\mathcal{P}}) < 0$. Since $\widetilde{D}_2'^{-}(p_2|\overline{\mathcal{P}}) \neq \widetilde{D}_2'^{+}(p_2|\overline{\mathcal{P}})$, the objective function of party A is not differentiable in p_A when $p_A = p_B = p_2$ and we cannot use the derivative to characterize the equilibrium policy. Despite this, p_f^* can be characterized using the left and right derivatives of the parties' objective functions.[19]

In the discussion above, we assumed that p_f^* coincides with the consumption bliss point of some group. When $p_f^* \neq p_i$ for any $i \in N$, we do not need to use the left and right derivatives since, as shown in Lemma A2, $\widetilde{D}_i'(p|\overline{\mathcal{P}})$ exists when $p \neq p_i$ for any $i \in N$. In this case, $p_f^* \in (p_k, p_{k+1})$ for some $k \in \{1, \ldots, n-1\}$ is implicitly defined by a generalized version of ($\mathcal{O}_{f,2}$):

$$\sum_{i=1}^{k} m_i \left[\tfrac{2\delta_i}{1+\delta_i} B_i'(p_f^*) - \tfrac{2}{1+\delta_i} C_i'(p_f^*)\right] + \sum_{i=k+1}^{n} m_i \left[\tfrac{2}{1+\delta_i} B_i'(p_f^*) - \tfrac{2\delta_i}{1+\delta_i} C_i'(p_f^*)\right] = 0. \tag{9}$$

It is immediate that the comparative statics stated in Corollary 1 for $n = 2$ as well as the local unresponsiveness of p_f^* to the model parameters stated in Corollary 3 carry over to the model with arbitrary number of groups.[20]

It is interesting to determine what groups are more influential in the politicians' calculus among those that (marginally) focus on costs in equilibrium—that is, among groups 1 through k—as well as among those that (marginally) focus on benefits in equilibrium—that is, among groups $k+1$ through n. Investigating what groups are more influential requires an explicit measure of influence. We use as measure of influence the weight a group receives in the expression that implicitly defines p_f^*, that is, the parties' first order condition. We can rewrite (9) as:

$$\sum_{i=1}^{k} \tfrac{2m_i}{1+\delta_i} \left[V_i'(p_f^*) - B_i'(p_f^*)(1-\delta_i)\right] + \sum_{i=k+1}^{n} \tfrac{2m_i}{1+\delta_i} \left[V_i'(p_f^*) + C_i'(p_f^*)(1-\delta_i)\right] = 0. \tag{10}$$

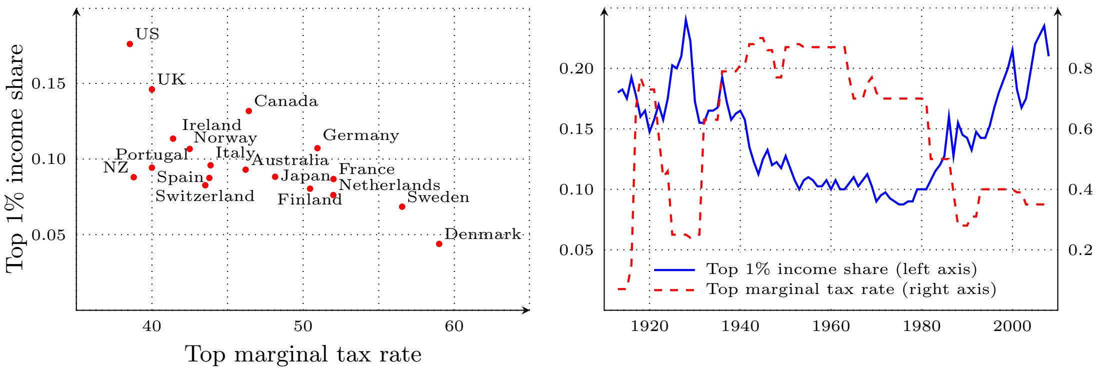
If, for the sake of the argument, we assume that groups are homogeneous in terms of size and degree of focus, equation (10) shows that, among groups 1 through k, the most influential group is the group with the largest $B_i'(p_f^*)$. Similarly, among groups $k+1$ through n, the most influential group is the group with the largest $C_i'(p_f^*)$. Under the

[19] $\widetilde{D}_2'^{-}(p_2|\overline{\mathcal{P}}) > 0$ and $\widetilde{D}_2'^{+}(p_2|\overline{\mathcal{P}}) < 0$ imply that $\widetilde{D}_2$ has a kink at p_2 that constitutes a local maximum. ($\mathcal{O}_f$) therefore requires the objective function of the parties to have a kink at the equilibrium policy.

[20] When m_i increases for some i, m_j has to decrease for some $j \neq i$. To make the comparative static statement sharper, we assume that when m_i increases, m_j decreases for some $j \neq i$ such that p_i and p_j are on different sides of p_f^* and, thus, voters in group i and j focus on different attributes after a marginal deviation from the equilibrium policy.

Figure 3: Top 1% income share and top marginal tax rate

(a) International (2005-2009 or most recent)   (b) US



Note: Data courtesy of Piketty et al. (2014) (see their paper for original sources). Income excludes government transfers and is before individual taxes.

order restricted preferences implied by A3, this means that, among the first k groups, the k-th group is the most influential and, among the remaining groups, the $(k+1)$-th group is the most influential. In other words, within the two factions of voters with opposite focus, the most moderate groups are the most influential.

Corollary 4. *Within the two factions that (marginally) focus on benefits and cost in equilibrium, the most moderate groups are the most influential.*

6 Application: Fiscal Policy

In the last 30 years, the US (as well as other developed economics) have experienced a rapid and sustained increase in the degree of income inequality (see Figure 3, Panel a). Contrary to the predictions of the standard political economy models, this trend has not been accompanied by increased demand for redistribution by voters (see Figure 4) or by more redistributive policies (see Figure 3, Panel b). To the contrary, the data points to an inverse correlation between these time series.

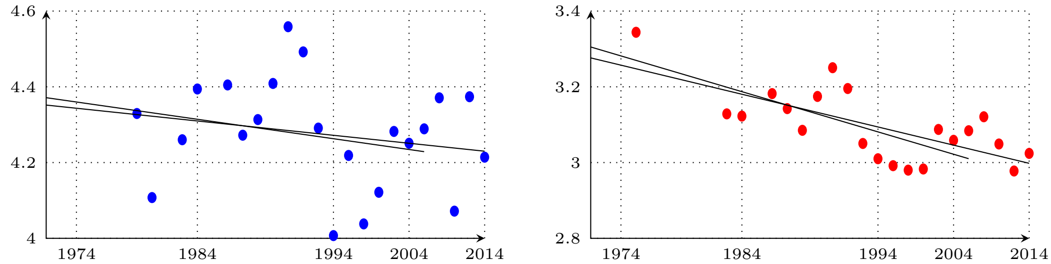
What is the impact of distorted focus on voters' preferences and parties' political offer regarding taxation and public goods provision? Can selective attention help us to explain the empirical patterns from Figures 3 and 4, that are widely regarded as puzzling?

In order to answer these questions, we introduce a basic model of fiscal policy à la Meltzer and Richard (1981) (see also Weingast, Shepsle and Johnsen, 1981). A public good, $p \in \mathbb{R}_+$, is financed by a proportional income tax, $\tau \geq 0$. Society is composed of two groups of voters, R for Rich and P for Poor, with different income: $y_R > y_P \geq 0$. The measure of voters in group $i \in \{R, P\}$ is $m_i \in (0, 1)$. The average income in society

Figure 4: Preferences for redistribution in General Social Survey (GSS)

(a) Government should reduce income differences (1-7)

(b) Government should improve the standard of living of poor Americans (1-5)



Note: GSS obtained from http://gss.norc.org/. Variables rescaled so that larger values correspond to stronger support for redistribution. Shorter trend ends in 2006. Left panel: Average of *eqwlth* variable. Both trends insignificant. Right panel: average of *helppoor* variable. Both trends significant at 1%. See Ashok et al. (2015) for a thorough analysis of the data.

is $\overline{y} = m_R y_R + m_P y_P$. Given public good p and tax τ, the consumption utility of voters in group i is:

$$u_i(p, \tau) = (1 - \tau) y_i + B(p). \tag{11}$$

The government budget is balanced—that is, $p = \tau \overline{y}$—and, thus, the indirect consumption utility of voters in group i from public good level p is:

$$V_i(p) = y_i + B(p) - \frac{y_i}{\overline{y}} p. \tag{12}$$

With respect to the general model we introduced above, the policy gives homogeneous benefits to all groups, $B_i(p) = B(p)$, but the costs are heterogeneous and proportional to relative income, $C_i(p) = \frac{y_i}{\overline{y}} p$. The latter implies that a group's consumption bliss point depends negatively on relative income:

$$p_i = B'^{-1} \left(\frac{y_i}{\overline{y}} \right)$$

so that p_i decreases in a group's own income and increases in the other group's income.

As a benchmark, we first consider electoral competition between two office-motivated parties facing rational voters.

Proposition 7. *Assume $\delta_R = \delta_P = 1$. A Nash equilibrium in mixed strategies exists and is unique. The equilibrium policies are (p_r^*, p_r^*), where p_r^* is the unique solution to:*

$$B'(p_r^*) = \frac{m_R y_R + m_P y_P}{\overline{y}} = 1.$$

The equilibrium policy with rational voters balances the weighted average marginal benefits and the weighted average marginal costs (where the weights are given by the population shares) and, hence, is efficient. Moreover, since the average marginal costs are invariant to the income distribution as well as to population shares, these two variables have no impact on the equilibrium level of public good.[21] The comparative statics, however, are different if we introduce focusing voters.

Proposition 8. *Assume $\delta_i < 1$ for any $i \in \{P, R\}$. A Nash equilibrium in pure strategies exists and is unique. The equilibrium policies are (p_f^*, p_f^*), where, if $p_f^* \in (p_R, p_P)$, then p_f^* is the unique solution to:*

$$\tfrac{2m_R}{1+\delta_R}\left[\delta_R B'(p_f^*) - \tfrac{y_R}{\bar{y}}\right] + \tfrac{2m_P}{1+\delta_P}\left[B'(p_f^*) - \delta_P \tfrac{y_P}{\bar{y}}\right] = 0.$$

Moreover, (a) when $\delta_R = \delta_P$, then $p_f^* \geq p_r^*$ if and only if $\frac{m_P}{m_R} > \frac{y_R}{\bar{y}}$; (b) when $p_f^* \in (p_R, p_P)$, then p_f^* decreases with income inequality, that is, with higher y_R or lower y_P.

The equilibrium characterization and its uniqueness are a direct consequence of Proposition 5 for the general case. The condition that defines the equilibrium policy, p_f^*, is the same as in the statement of Proposition 5, adapted to the application at hand. At the margin, voters in group R—who prefer less redistribution than p_f^*—focus on costs; and voters in group P—who prefer more redistribution than p_f^*—focus on benefits. The proposition shows that the equilibrium level of public goods is inefficiently high when voters in group P constitute a large fraction of the population or when the level of income inequality is small. In both cases, parties inefficiently cater to Pvoters.

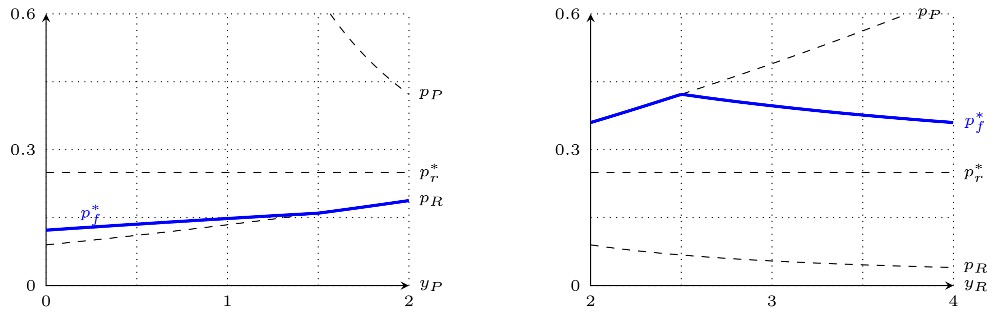
Intuitively, parties are more likely to cater to P voters when they are a larger fraction of the population because they are a larger basin of votes. More interestingly, parties are more likely to cater to P voters when income inequality is small and the equilibrium level of public goods is *decreasing* with income inequality. To see the intuition behind this result, consider the condition that defines p_f^* in Proposition 8: in this expression, income inequality only affects marginal costs. As an example, consider an increase in y_R. With rational voters, an increase in y_R by dy_R increases the marginal costs of R voters by $\frac{y_P m_P}{\bar{y}^2} dy_R$ and decreases the marginal costs of P voters by $\frac{y_P m_R}{\bar{y}^2} dy_R$. In the politicians' calculus, the former increase and the latter decrease are weighted, respectively, by m_R and m_P. Thus, the two effect perfectly offset each other, making p_r^* invariant to the income distribution. With focusing voters, a higher y_R still increases the marginal costs

[21] Note that the stylized facts from Figures 3 and 4 are also inconsistent with another workhorse model of electoral competition, the median voter model (Downs, 1957). The median voter model obtains as a special case of the probabilistic voting model when $\epsilon_v = 0$ for all voters. In this case, the equilibrium policy is the consumption bliss point of the larger group. If we assume that P voters are the majority and R voters are an elite, that is, $m_R < 1/2$, the equilibrium policy coincides with p_P, which is increasing with income inequality, that is, with larger y_R or smaller y_P. In short, in the median voter model, larger income inequality leads to larger redistribution.

Figure 5: Equilibrium p_f^* in Meltzer and Richard (1981) model
$B(p) = \sqrt{p}$, $\delta_P = \delta_R = \frac{1}{2}$

(a) $y_R = 3$, $m_P = \frac{2}{5}$

(b) $y_P = 1$, $m_P = \frac{4}{5}$



of R voters and decreases the marginal costs of P voters. However, since P voters focus on benefits, they underweight the decrease in their marginal costs. Conversely, since R voters focus on costs, they overweight the increase in their marginal costs. An increase in y_R, thus, leads to an increase in the average population-and-focus-weighted marginal costs and to a decrease in the demand for redistribution. Figure 5 shows how the equilibrium level of public good provision (or redistribution) changes in the Meltzer and Richard (1981) model with income inequality.

Voters' focusing can, thus, explain why increased income inequality is associated with constant or decreasing demand for redistribution and, hence, with constant or decreasing observed levels of redistribution.[22] A natural question is whether this prediction is limited to the simple version of the Meltzer and Richard (1981) model we presented in this Section or, rather, more general. We argue that similar comparative statics obtain in a richer version of the model.

To see this, consider a more general version of the model where group P receives benefits $B_P(p)$ and suffers costs $C_P(p)$ from public good level p. Group R receives benefits $B_R(p)$ and suffers costs $C_R(p)$ from public good level p. The equilibrium level of public goods and hence of redistribution, p_f^*, is implicitly defined by ($\mathcal{O}_{f,2}$), adapted to this more general setup:

$$\frac{2m_R}{1+\delta_R}\left[\delta_R B_R'(p_f^*) - C_R'(p_f^*)\right] + \frac{2m_P}{1+\delta_P}\left[B_P'(p_f^*) - \delta_P C_P'(p_f^*)\right] = 0 \qquad (13)$$

[22]The main alternative explanations of the observed correlations (or lack thereof) between income inequality and redistribution are stronger political participation or lobbying by the wealthy, the prospect of upward mobility, and other-regarding preferences. Most of these explanations attenuate the positive relationship between redistribution and income inequality predicted by Meltzer and Richard (1981), instead of reversing it. See Borck (2007) for a survey of the theory on voting for redistribution and Alesina and Giuliano (2011) and Ashok et al. (2015) for a survey of the determinants of preferences for redistribution.

Instead of modeling income inequality explicitly by specifying income levels for the two groups, suppose the degree of income inequality is $\Delta \in \mathbb{R}$, where higher Δ means higher income inequality. For $i \in \{P, R\}$, denote the derivative of B_i' and C_i' with respect to Δ by $B_i'^{\Delta}$ and $C_i'^{\Delta}$ respectively. Using the implicit function theorem, we obtain that higher income inequality decreases p_f^* if the following expression is negative:

$$\tfrac{2m_R}{1+\delta_R}\left[\delta_R B_R'^{\Delta}(p_f^*) - C_R'^{\Delta}(p_f^*)\right] + \tfrac{2m_P}{1+\delta_P}\left[B_P'^{\Delta}(p_f^*) - \delta_P C_P'^{\Delta}(p_f^*)\right]. \tag{14}$$

To understand this condition, consider first the simple version of the Meltzer and Richard (1981) model discussed above and suppose $\Delta = y_R$. In our simpler model, Δ has no effect on benefits, $C_R'^{\Delta}(p_f^*) = \frac{m_P y_P}{\bar{y}^2}$ and $C_P'^{\Delta}(p_f^*) = -\frac{m_R y_P}{\bar{y}^2}$. Substituting these expressions into (14), we have that (14) is negative if $\frac{-1}{1+\delta_R} + \frac{\delta_P}{1+\delta_P} < 0$, which holds as long as $\delta_P\delta_R < 1$ (that is, at least one group has distorted focus).

Consider now a more general model where income inequality potentially affects not only the marginal costs but also the marginal benefits of the two groups. When the effect of Δ on the marginal cost is as in the previous paragraph, the prediction that p_f^* is decreasing in Δ holds when δ_P is sufficiently close to zero or the effect of income inequality on marginal benefits is low. In particular, the result that p_f^* is decreasing in Δ, which requires that (14) is negative, (a) is reinforced when $B_R'^{\Delta}(p_f^*)$ and $B_P'^{\Delta}(p_f^*)$ are negative but is possibly reversed otherwise; (b) holds for almost all values of $B_R'^{\Delta}(p_f^*)$, including negative ones, when δ_R is sufficiently close to zero; (c) holds when $-m_R C_R'^{\Delta}(p_f^*) + m_P B_P'^{\Delta}(p_f^*) < 0$ if δ_P and δ_R are sufficiently low, that is, it depends only on how income inequality impacts the marginal cost of the R group and the marginal benefits of the P group.

7 Larger Choice Sets and Decoy Effects

In this section, we extend the basic framework introduced in Section 3 to more than two policies. Denote by $\mathcal{P} = \{p_A, p_B, \ldots\}$ the voters' *choice set* and assume it is finite, $p \in \mathbb{R}_+$ for any $p \in \mathcal{P}$ and $|\mathcal{P}| \geq 2$. Let $\mathcal{P}_-$ and $\mathcal{P}_+$ be, respectively, the smallest and the largest policy in $\mathcal{P}$. Let $\Delta_i^B(\mathcal{P})$ be the range of benefits in $\mathcal{P}$ for voters in group i:

$$\Delta_i^B(\mathcal{P}) = \max_{p\in\mathcal{P}} B_i(p) - \min_{p\in\mathcal{P}} B_i(p) = B_i(\mathcal{P}_+) - B_i(\mathcal{P}_-). \tag{15}$$

Similarly, let $\Delta_i^C(\mathcal{P})$ be the range of costs in $\mathcal{P}$ for voters in group i:

$$\Delta_i^C(\mathcal{P}) = \max_{p\in\mathcal{P}} C_i(p) - \min_{p\in\mathcal{P}} C_i(p) = C_i(\mathcal{P}_+) - C_i(\mathcal{P}_-). \tag{16}$$

The second equality in the equations above follows by Assumption A1. The focus-weighted utility of voters in group i is still defined by Assumption A4. However, with this more general, larger, choice set, the range of benefits and costs is defined by (15) and (16) rather than by (2) and (3).

First, we consider how focusing affects voters' preferences with a more general choice set; and how adding a policy to voters' choice set changes their preferences over the original policies. Second, we consider what policies are endogenously offered in an electoral campaign by two office-motivated politicians, when we allow for other, exogenous policies, to belong to voters' choice set and, thus, potentially affect voters' focus.

Proposition 9 (analogous to Proposition 1) shows that the attribute voters focus on is determined by the comparison between the consumption utilities granted by the smallest and the largest policy in the choice set.

Proposition 9. *Assume A1, A4 and $\mathcal{P} = \{\mathcal{P}_-, \ldots, \mathcal{P}_+\}$. The focus of any group is determined exclusively by the extreme policies, $\mathcal{P}_-$ and $\mathcal{P}_+$, with voters focusing on the relative advantage of the extreme policy with the higher consumption utility. Voters in group $i \in N$, (a) focus on benefits if and only if $V_i(\mathcal{P}_+) > V_i(\mathcal{P}_-)$; (b) focus on costs if and only if $V_i(\mathcal{P}_+) < V_i(\mathcal{P}_-)$; have undistorted focus if and only if $V_i(\mathcal{P}_+) = V_i(\mathcal{P}_-)$.*

7.1 The Decoy Effect on Voters' Preferences

Given a policy $p \in \mathbb{R}_+$, define $\tilde{p}^i$ as the policy other than p which gives voters in group i the same consumption utility as p.[23] Proposition 10 shows how expanding voters' choice set to include an additional policy affects their focus.

Proposition 10. *Assume A1, A2, A4. Consider two choice sets, $\mathcal{P}$ and $\mathcal{P}' = \mathcal{P} \cup \{p'\}$. For any $i \in N$, (a) if under $\mathcal{P}$ voters in group i focus on benefits, after adding p', they: focus on benefits if $p' < \tilde{\mathcal{P}}_-^i$; have undistorted focus if $p' = \tilde{\mathcal{P}}_-^i$; focus on costs if $p' > \tilde{\mathcal{P}}_-^i$; (b) if under $\mathcal{P}$ voters in group i focus on costs, after adding p', they: focus on benefits if $p' < \tilde{\mathcal{P}}_+^i$; have undistorted focus if $p' = \tilde{\mathcal{P}}_+^i$; focus on costs if $p' > \tilde{\mathcal{P}}_+^i$; (c) if under $\mathcal{P}$ voters in group i have undistorted focus and $\mathcal{P}_- \neq \mathcal{P}_+$, after adding p', they: focus on benefits if $p' < \mathcal{P}_-$; have undistorted focus if $p' \in [\mathcal{P}_-, \mathcal{P}_+]$; focus on costs if $p' > \mathcal{P}_+$.*

The effect of expanding the choice set on voters' focus depends on the original focus and on the location of the additional policy. When voters are focusing on benefits, adding a sufficiently large policy induces voters to focus on costs. Conversely, if voters are focusing on costs, adding a sufficiently small policy induces voters to focus on benefits. Notice that voters who are focusing on benefits can always be induced to focus on costs with a proper addition to their choice set. Formally, there always exists p' such that, if

[23] If $p' \in \mathbb{R}_+$ such that $V_i(p) = V_i(p')$ and $p' \neq p$ does not exist, set $\tilde{p}^i$ to an arbitrary negative constant.

voters focus on benefits under $\mathcal{P}$, then the same voters focus on costs under $\mathcal{P} \cup \{p'\}$. However, since policies are bounded below at zero, it might be impossible to induce voters who are currently focusing on costs to focus on benefits. This is the case when $\tilde{\mathcal{P}}_+^i \leq 0$, that is, when $\mathcal{P}_+$ is sufficiently large.

In Proposition 11 we address the question of how adding an exogenous policy p_C to the voters' choice set changes the evaluation of the policies in the original choice set. We say that expanding the choice set changes the focus of group i towards costs (benefits) whenever voters in group i focus on benefits (costs) or have undistorted focus under the original choice set but instead focus on costs (benefits) under the expanded choice set.

Proposition 11. *Assume A1, A2, A4. Consider two choice sets, $\mathcal{P}$ and $\mathcal{P}'$, such that $p_A \in \mathcal{P}$, $p_B \in \mathcal{P}$, $p_A > p_B$ and $\mathcal{P}' = \mathcal{P} \cup \{p_C\}$. For any $i \in N$, if voters in group i focus on different attributes in $\mathcal{P}$ and $\mathcal{P}'$ and $\delta_i < 1$, then, (a) if adding p_C changes focus towards costs, then $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P}) > \widetilde{V}_i(p_A|\mathcal{P}') - \widetilde{V}_i(p_B|\mathcal{P}')$; (b) if adding p_C changes focus towards benefits, then $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P}) < \widetilde{V}_i(p_A|\mathcal{P}') - \widetilde{V}_i(p_B|\mathcal{P}')$; (c) if voters have distorted focus both in $\mathcal{P}$ and $\mathcal{P}'$, then there exists $\overline{\delta}_i \in (0,1)$ such that for any $\delta_i < \overline{\delta}_i$, $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P})$ and $\widetilde{V}_i(p_A|\mathcal{P}') - \widetilde{V}_i(p_B|\mathcal{P}')$ have different (strict) signs; (d) $p_C \in \arg\min_{p \in \mathcal{P}'} \widetilde{V}_i(p|\mathcal{P}')$.*

Proposition 11 first shows that larger policies are hurt, in terms of their evaluation by voters in group i, when focus switches towards costs or away from benefits (part a) and gain when focus switches towards benefits or away from costs (part b). In these cases, not only voters' intensity of preferences changes, but, according to part (c), for sufficiently strong focusing, also their ranking is affected. Finally, part (d) implies that policies that change the attribute voters in group i focus on are bound to lose if their fate is determined by voters in the same group. The intuition behind this result is simple. Suppose voters in group i focus on benefits under $\mathcal{P}$. By Proposition 10, a policy p' that changes the focus towards costs under $\mathcal{P}' = \mathcal{P} \cup \{p'\}$ has to be large. But large policies are not evaluated favorably when voters focus on costs.

When the smaller, initial choice set considered in Proposition 11 is composed of only two policies, this proposition implies that the policy preferred under $\mathcal{P}$ is hurt by the change of focus. To see this, consider $\mathcal{P} = \{p_A, p_B\}$ with $p_A > p_B$ and suppose voters in group i are not indifferent between p_A and p_B. If $\widetilde{V}_i(p_A|\mathcal{P}) > \widetilde{V}_i(p_B|\mathcal{P})$, by Propositions 1 and 3, voters in group i focus on benefits. Therefore, any change of focus brought about by a third policy has to be towards costs. By Proposition 11(a), p_A, the policy preferred in $\mathcal{P}$, is hurt by the change of focus. If $\widetilde{V}_i(p_A|\mathcal{P}) < \widetilde{V}_i(p_B|\mathcal{P})$, a similar argument implies that voters in group i focus on costs and, thus, any change of focus has to be towards benefits, which, in turn, hurts p_B, the policy preferred in $\mathcal{P}$.

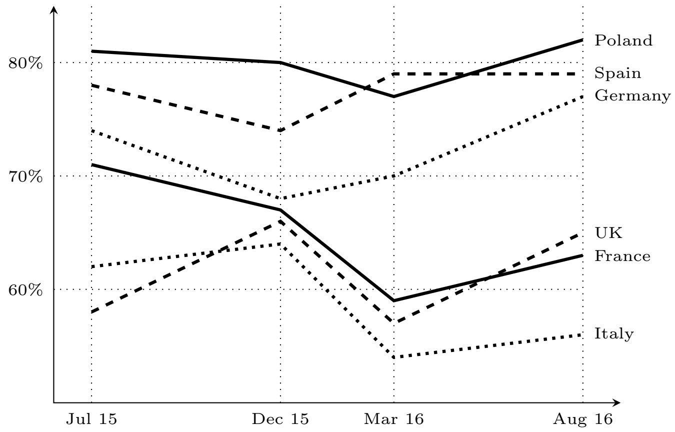
Corollary 5. *Assume A1, A2, A4. Consider* $\mathcal{P} = \{p_A, p_B\}$ *and* $\mathcal{P}' = \mathcal{P} \cup \{p_C\}$ *such that* $\widetilde{V}_i(p_A|\mathcal{P}) > \widetilde{V}_i(p_B|\mathcal{P})$. *For any* $i \in N$, *if voters in group* i *focus on different attributes in* $\mathcal{P}$ *and* $\mathcal{P}'$ *and* $\delta_i < 1$, *then, (a)* $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P}) > \widetilde{V}_i(p_A|\mathcal{P}') - \widetilde{V}_i(p_B|\mathcal{P}')$*; (b) if voters have distorted focus in* $\mathcal{P}'$, *then there exists* $\overline{\delta}_i \in (0, 1)$ *such that for any* $\delta_i < \overline{\delta}_i$, $\widetilde{V}_i(p_A|\mathcal{P}') < \widetilde{V}_i(p_B|\mathcal{P}')$.

Propositions 10 and 11 imply that focusing and its changes generate a *backlash effect*. Consider a choice set $\mathcal{P}$ composed of two policies p_B and $p_A > p_B$. Suppose voters in group i focus on benefits in $\mathcal{P}$, which, in light of the discussion leading to Corollary 5, is equivalent to assuming that voters in group i prefer p_A to p_B, $\widetilde{V}_i(p_A|\mathcal{P}) > \widetilde{V}_i(p_B|\mathcal{P})$. Now consider a third policy, p_C, is added to the voter's choice set. There are many potential channels through which an additional policy can enter the voter's choice set (or their *consideration set*): p_C can be the policy suggested by a media outlet, a think tank, or an international organization; a policy adopted in a neighboring country; or the status-quo policy, with p_A and p_B representing two alternative reforms. Suppose the addition of p_C changes the attribute voters in group i focus on and that they now focus on costs. Since voters used to focus on benefits, this implies, by Proposition 10, that p_C has to be sufficiently large. Given a sufficiently large degree of focusing, Proposition 11 implies that the addition of p_C leads to a reversal of preferences of voters in group i who, under $\mathcal{P}' = \mathcal{P} \cup \{p_C\}$, prefer p_B to p_A and p_A to p_C. In short, the addition of a large policy leads to a preference shift towards smaller policies. The mirror version of this effect is the addition of a small policy that leads to a preference shift towards larger policis.

In order to give empirical content to the theoretical results in this Section, let policies be different degrees of integration with the European Union. If we interpret the decision of UK citizens to leave the EU as the addition of an extreme policy to the choice set of voters in other European countries, the backlash effect discussed above can potentially explain why "support for the EU has risen in Europe in the wake of Brexit" (Financial Times, November 21, 2016, see also Figure 6). Similarly, it can explain why in the Spanish parliamentary elections that were held two days after Britain's vote to leave the European Union, "Spanish voters turned away from anti-establishment parties and endorsed the perceived safety and security of ruling conservatives" (LA Times, June 27, 2016).[24]

[24] See also the Financial Times, June 28, 2016: "Unidos Podemos was the big loser of Spain's general election, shedding more than 1m votes since the last ballot in December. [...] Unidos Podemos leaders [...] pointed to Britain's shock decision to leave the EU just two days before the election. [...] some leftwing voters may have decided at the last minute to back more conservative options, or to stay at home."

Figure 6: Support for EU Integration in EU Member States



Note: Data from Bertelsmann Stiftung eupinions survey (see de Vries and Hoffmann, 2017, for details).

7.2 The Decoy Effect on Electoral Competition

Finally, in this Section, we consider how the policies endogenously offered by two office motivated parties are affected by the presence of an exogenous policy which belongs to voters' choice set or, more generally, contributes to the salience of an attribute and the direction of their focus.

Suppose an additional party, party C enters the election with platform $p_C \in \mathbb{R}_+$. In order to isolate the effect of C on voters' focus, we assume that voters in neither group are willing to vote for C. We also assume that $p_C \notin [p_1, p_n]$.[25]

Proposition 12. *Suppose A1, A2, A4. Consider an electoral competition between parties A and B in the presence of an additional party C with policy $p_C \in \mathbb{R}_+$. There exists at most one pure strategy Nash equilibrium. If (p_A^*, p_B^*) constitute a Nash equilibrium, then $p_A^* = p_B^* = p_d^*$ where $p_d^* \geq p_f^*$ if $p_f^* \geq p_C$ while $p_d^* \leq p_f^*$ if $p_f^* \leq p_C$.*

Proposition 12 shows that the additional party does not create asymmetric or multiple equilibria. At the same time, despite the fact that no voters vote for it, its presence potentially changes the equilibrium policies proposed by the two mainstream or viable parties, A and B. Namely, the policy of the additional party pushes the equilibrium away from the equilibrium that would prevail in its absence. In other words, Proposition 12 provides an electoral, endogenous policy, version of the backlash effect discussed above for exogenous policies. The intuition lies behind the effect of p_C in determining the attribute voters focus on. If p_C is sufficiently low and parties A and B locate their policies in $[p_1, p_n]$, all voters focus on benefits under the resulting choice set. This leads to larger equilibrium policies.

[25]Given the assumption that voters are unwilling to vote for C, this is perhaps a natural assumption.

The characterization of the electoral equilibria with a third extreme or non-viable party C is complex, but becomes tractable when p_C is sufficiently large. In this case, for any pair of policies announced by parties A and B, all voters focus on costs and, hence, the electoral competition between parties A and B facing focusing voters is isomorphic to the electoral competition between parties A and B facing rational voters who put a large weight on policies' costs (but whose weighting is not affected by a marginal deviation by either party).

Proposition 13. *Assume A1, A2, A4. Consider electoral competition between parties A and B in the presence of an additional party C with policy* $p_C > \max_{i \in N} \tilde{0}^i$*. A Nash equilibrium in pure strategies exists and is unique. The equilibrium policies are* (p_d^*, p_d^*)*, where* p_d^* *is the unique solution to:*

$$\max_{p \in \mathbb{R}_+} \sum_{i \in N} \tfrac{2m_i}{1+\delta_i} \left[\delta_i B_i(p) - C_i(p)\right].$$

As a result of focusing, the equilibrium characterized in Proposition 13 has several properties that would not emerge with rational voters as well as with focusing voters but only two parties. First, in this equilibrium, voters in all groups focus on costs. This is driven by the large policy of the additional party. Second, it is possible for the equilibrium policy p_d^* to lie outside the interval of the consumption bliss points of the electorate; in particular, we can have $(p_d^* < p_1$. When the electorate has a fixed focus on costs, it is no longer true that a party moving its policy below p_1 loses votes from all social groups. With sufficiently strong focusing by all groups, the equilibrium policy can even equal 0.

8 Conclusions

How voters (and politicians) allocate their attention is fundamental for understanding political preferences and public policies. Cognitive psychology has pointed to two complementary mechanisms: a goal-driven and ex-ante allocation of attention that is driven by preferences (or *rational inattention*) and a stimulus-driven and ex-post allocation of attention that shapes preferences (or *focusing*). While the existing literature in political economy has centered on the former, this is the first paper to explore the latter.

We introduce focusing in a formal model of electoral competition by assuming that, in forming their perception of policies' value, voters focus disproportionately on the attribute in which their options differ more. We show that selective attention leads to a polarized electorate; that politicians facing focusing voters offer policies which do not achieve utilitarian welfare; that social groups that are larger, have more distorted focus, and are more sensitive to changes on a single attribute are more influential; and that selective attention can contribute to explain puzzling empirical patterns, as the inverse correlation between income inequality and redistribution.

Our simple framework can deliver many other interesting results that we have not explored in this paper: for example, voters with distorted focus have stronger preferences and this makes them are more likely to turn out to vote, make financial contributions, actively participate to a candidate's campaign or engage in other forms of collective action. We believe that there are many possible directions for the next steps in this research. Regarding the model we introduced, it would be interesting to introduce heterogeneous parties (for example, policy motivated parties) or allow policies to have uncorrelated attributes (for example, electoral platforms which offer a position on many different issues or candidates who have different personal characteristics). More generally, there are many exciting open questions, as what exact features of the political environment trigger voters' attention and how focusing interacts with the conscious research for information by poorly informed voters.

References

Alesina, Alberto and Francesco Passarelli, "Loss aversion in politics," 2015. NBER Working Paper No. 21077.

_ **and Paola Giuliano**, "Chapter 4: Preferences for redistribution," in Jess Benhabib, Alberto Bisin, and Matthew O Jackson, eds., *Handbook of Social Economics*, Vol. 1, Amsterdam: Elsevier, 2011, pp. 93–131.

Allais, Maurice, "L'extension des théories de l'équilibre économique général et du rendement social au cas du risque," *Econometrica*, 1953, *21* (4), 503–546.

Ashok, Vivekinan, Ilyana Kuziemko, and Ebonya Washington, "Support for redistribution in an age of rising inequality: New stylized facts and some tentative explanations," *Brookings Papers on Economic Activity*, 2015, *Spring*, 367–433.

Baumeister, Roy F and Kathleen D Vohs, *Encyclopedia of social psychology*, Thousand Oaks, CA: Sage Publications, 2007.

Bisin, Alberto, Alessandro Lizzeri, and Leeat Yariv, "Government policy with time inconsistent voters," *American Economic Review*, 2015, *105* (6), 1711–1737.

Borck, Rainald, "Voting, inequality and redistribution," *Journal of Economic Surveys*, 2007, *21* (1), 90–109.

Bordalo, Pedro, Nicola Gennaioli, and Andrei Shleifer, "Salience theory of choice under risk," *Quarterly Journal of Economics*, 2012, *127* (3), 1243–1285.

_ , _ , and _ , "Salience and asset prices," *American Economic Review*, 2013, *103* (3), 623–628.

_ , _ , and _ , "Salience and consumer choice," *Journal of Political Economy*, 2013, *121* (5), 803–843.

_ , _ , and _ , "Competition for attention," *Review of Economic Studies*, 2015, *83* (2), 481–513.

_ , _ , and _ , "Salience theory of judicial decisions," *Journal of Legal Studies*, 2015, *44* (1), 7–33.

Bushong, Benjamin, Matthew Rabin, and Joshua Schwartzstein, "A model of relative thinking," 2015. Harvard University, Department of Economics.

Callander, Steven and Catherine H Wilson, "Context-dependent voting," *Quarterly Journal of Political Science*, 2006, *1* (3), 227–255.

_ and _ , "Context-dependent voting and political ambiguity," *Journal of Public Economics*, 2008, *92* (3), 565–581.

Ciaramelli, Elisa, Cheryl Grady, Brian Levine, Jon Ween, and Morris Moscovitch, "Top-down and bottom-up attention to memory are dissociated in posterior parietal cortex: Neuroimaging and neuropsychological evidence," *Journal of Neuroscience*, 2010, *30* (14), 4943–4956.

Connor, Charles E, Howard E Egeth, and Steven Yantis, "Visual attention: Bottom-up versus top-down," *Current Biology*, 2004, *14* (19), R850–R852.

Cunningham, Tom, "Comparisons and choice," 2013. Harvard University, Department of Economics.

de Vries, Catherine and Isabell Hoffmann, "Supportive but wary: How Europeans feel about the EU 60 years after the Treaty of Rome," Technical Report, Bertelsmann Stiftung 2017.

Dhingra, Swati, Gianmarco Ottaviano, Thomas Sampson, and John Van Reenen, "The consequences of Brexit for UK trade and living standards," 2016. London School of Economics, Centre for Economic Performance.

Downs, Anthony, *An economic theory of democracy*, New York, NY: Harper, 1957.

Galeotti, Fabio, Maria Montero, and Anders Poulsen, "Efficiency versus equality in real-time bargaining with communication," 2015. School of Economics, University of East Anglia, Norwich, UK.

Gavazza, Alessandro and Alessandro Lizzeri, "Transparency and economic policy," *Review of Economic Studies*, 2009, *76* (3), 1023–1048.

Glaeser, Edward L and Giacomo AM Ponzetto, "Shrouded costs of government: The political economy of state and local public pensions," *Journal of Public Economics*, 2014, *116*, 89–105.

_ , _ , and Jesse M Shapiro, "Strategic extremism: Why Republicans and Democrats divide on religious values," *Quarterly Journal of Economics*, 2005, *120* (4), 1283–1330.

Gul, Faruk and Wolfgang Pesendorfer, "Partisan politics and election failure with ignorant voters," *Journal of Economic Theory*, 2009, *144* (1), 146–174.

Heath, Timothy B and Subimal Chatterjee, "Asymmetric decoy effects on lower-quality versus higher-quality brands: Meta-analytic and experimental evidence," *Journal of Consumer Research*, 1995, *22* (3), 268–284.

Herne, Kaisa, "The effects of decoy gambles on individual choice," *Experimental Economics*, 1999, *2* (1), 31–40.

Huber, Joel, John W Payne, and Christopher Puto, "Adding asymmetrically dominated alternatives: Violations of regularity and the similarity hypothesis," *Journal of Consumer Research*, 1982, *9* (1), 90–98.

Kahneman, Daniel, *Thinking, Fast and slow*, New York, NY: Farrar, Straus & Giroux, 2011.

Kőszegi, Botond and Adam Szeidl, "A model of focusing in economic choice," *Quarterly Journal of Economics*, 2012, *128* (1), 53–104.

Leland, Jonathan W, "Generalized similarity judgments: An alternative explanation for choice anomalies," *Journal of Risk and Uncertainty*, 1994, *9* (2), 151–172.

Levy, Gilat and Ronny Razin, "Correlation neglect, voting behavior, and information aggregation," *American Economic Review*, 2015, *105* (4), 1634–1645.

Lindbeck, Assar and Jörgen W Weibull, "Balanced-budget redistribution as the outcome of political competition," *Public Choice*, 1987, *52* (3), 273–297.

Lockwood, Ben and James Rockey, "Negative voters: Electoral competition with loss-aversion," 2015. University of Warwick, Department of Economics.

Loomes, Graham and Robert Sugden, "Regret theory: An alternative theory of rational choice under uncertainty," *Economic Journal*, 1982, *92* (368), 805–824.

Matějka, Filip and Guido Tabellini, "Electoral competition with rationally inattentive voters," 2016. Bocconi University.

Meltzer, Allan H and Scott F Richard, "A rational theory of the size of government," *Journal of Political Economy*, 1981, *89* (5), 914–927.

Nothdurft, Hans-Christoph, "Salience of feature contrast," in Laurent Itti, Geraint Rees, and John K Tsotsos, eds., *Neurobiology of attention*, Amsterdam: Elsevier, 2005, pp. 233–239.

Ogden, Benjamin, "The imperfect beliefs voting model," 2016. European Center for Advanced Research in Economics and Statistics (ECARES).

Ortoleva, Pietro and Erik Snowberg, "Overconfidence in political behavior," *American Economic Review*, 2015, *105* (2), 504–535.

Passarelli, Francesco and Guido Tabellini, "Emotions and political unrest," *Journal of Political Economy*, Forthcoming.

Patty, John W, "Incommensurability and issue voting," *Journal of Theoretical Politics*, 2007, *19* (2), 115–131.

Persson, Torsten and Guido Tabellini, *Political economics: Explaining economic policy*, London: MIT Press, 2000.

Piketty, Thomas, Emmanuel Saez, and Stefanie Stantcheva, "Optimal taxation of top labor incomes: A tale of three elasticities," *American Economic Journal: Economic Policy*, 2014, *6* (1), 230–271.

Pinto, Yair, Andries R van der Leij, Ilja G Sligte, Victor AF Lamme, and H Steven Scholte, "Bottom-up and top-down attention are independent," *Journal of Vision*, 2013, *13* (3), 16–16.

Ponzetto, Giacomo AM, "Heterogeneous information and trade policy," 2011. CEPR Discussion Paper No. 8726.

Prato, Carlo and Stephane Wolton, "The voters' curses: Why we need goldilocks voters," *American Journal of Political Science*, 2016, *60* (3), 726–737.

Roth, Alvin E, J Keith Murnighan, and Françoise Schoumaker, "The deadline effect in bargaining: Some experimental evidence," *American Economic Review*, 1988, *78* (4), 806–823.

Rubinstein, Ariel, "Similarity and decision-making under risk (Is there a utility theory resolution to the Allais paradox?)," *Journal of Economic Theory*, 1988, *46* (1), 145–153.

Simonson, Itamar, "Choice based on reasons: The case of attraction and compromise effects," *Journal of Consumer Research*, 1989, *16* (2), 158–174.

_ **and Amos Tversky**, "Choice in context: Tradeoff contrast and extremeness aversion," *Journal of Marketing Research*, 1992, *29* (3), 281–295.

Slovic, Paul and Sarah Lichtenstein, "Comparison of Bayesian and regression approaches to the study of information processing in judgment," *Organizational behavior and human performance*, 1971, *6* (6), 649–744.

Taylor, Shelley E and Suzanne C Thompson, "Stalking the elusive "vividness" effect," *Psychological Review*, 1982, *89* (2), 155–181.

Weingast, Barry R, Kenneth A Shepsle, and Christopher Johnsen, "The political economy of benefits and costs: A neoclassical approach to distributive politics," *Journal of Political Economy*, 1981, *89* (4), 642–664.

A1 Proofs

A1.1 Preliminaries

Following notation and lemmas facilitate the proofs of the propositions below. First, for any $i \in N$ and $p \in \mathbb{R}_+$, let $\tilde{p}^i$ be the solution to $V_i(p) = V_i(\tilde{p}^i)$ such that $p \neq \tilde{p}^i$ if the solution exists and let it be an arbitrary negative constant when the solution does not exists. Notice that for $p < p_i$, $\tilde{p}^i > p_i$ and for $p > p_i$, $\tilde{p}^i < p_i$.

Second, $\forall i \in N$, $\forall p \in \mathbb{R}_+$, $\forall p' \in \mathbb{R}_+$ and any choice set $\mathcal{P}$ with $p \in \mathcal{P}$ and $p' \in \mathcal{P}$, let $\widetilde{D}_i(p|\mathcal{P}) = \widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P})$. Derivative of $\widetilde{D}_i$ with respect to p is $\widetilde{D}'_i(p|\mathcal{P}) = \frac{\partial}{\partial p}\widetilde{D}_i(p|\mathcal{P})$ and includes the effect of p directly on $\widetilde{V}_i(p|\mathcal{P})$ as well as indirectly on both $\widetilde{V}_i(p|\mathcal{P})$ and $\widetilde{V}_i(p'|\mathcal{P})$ through $\mathcal{P}$ that contains p.

Third, for a real valued function f, denote by f'^- and f'^+ the left and right derivative of f respectively. Fourth, let $\mathcal{P}_+$ and $\mathcal{P}_-$ be the largest and smallest elements, respectively, of $\mathcal{P}$. Finally, let

$$\begin{aligned} v_{b,i}(p) &= \tfrac{2}{1+\delta_i}B_i(p) - \tfrac{2\delta_i}{1+\delta_i}C_i(p) \\ v_{n,i}(p) &= B_i(p) - C_i(p) \\ v_{c,i}(p) &= \tfrac{2\delta_i}{1+\delta_i}B_i(p) - \tfrac{2}{1+\delta_i}C_i(p) \end{aligned} \tag{A1}$$

and note that, $\forall p \in \mathbb{R}_+$, $\forall i \in N$ and $\forall a \in \{b, n, c\}$, $v''_{a,i}(p) < 0$ by Assumption A1. Furthermore, we have, $\forall p \in \mathbb{R}_+$ and $\forall i \in N$, $v'_{b,i}(p) \geq v'_{n,i}(p) \geq v'_{c,i}(p)$ since

$$v'_{b,i}(p) - v'_{n,i}(p) = v'_{n,i}(p) - v'_{c,i}(p) = \tfrac{1-\delta_i}{1+\delta_i}\left[B'_i(p) + C'_i(p)\right]. \tag{A2}$$

Throughout, we use that, $\forall i \in N$ and $\forall p \in \mathbb{R}_+$, $\widetilde{V}_i(p|\{p,p\}) - \widetilde{V}_i(p|\{p,p\}) = 0$ and $\widetilde{V}_i(\tilde{p}^i|\{p,\tilde{p}^i\}) - \widetilde{V}_i(p|\{p,\tilde{p}^i\}) = 0$ whenever $\tilde{p}^i \geq 0$. The former is immediate. The latter follows since $\tilde{p}^i \geq 0$ implies that $V_i(p) = V_i(\tilde{p}^i)$, so that voters in group i have undistorted focus given choice set $\mathcal{P} = \{p, \tilde{p}^i\}$.

Lemma A1. *Assume A1. For all $i \in N$, $\forall p \in \mathbb{R}_+$ and $\forall p' \in \mathbb{R}_+$, if $\delta_i = 1$, then $\widetilde{D}_i(p|\{p,p'\}) = \widetilde{V}_i(p|\{p,p'\}) - \widetilde{V}_i(p'|\{p,p'\})$ is continuous in p, $\widetilde{D}'_i(p|\{p,p'\})$ exists and $\widetilde{D}''_i(p|\{p,p'\}) < 0$.*

Proof. The lemma follows immediately from Assumption A1 as $\delta_i = 1$ implies that, $\forall i \in N$ and $\forall p \in \mathbb{R}_+$, $\widetilde{D}_i(p|\{p,p'\}) = V_i(p) - V_i(p')$. □

Lemma A2. *Assume A1, A2, A4. For all $i \in N$, $\forall p \in \mathbb{R}_+$ and $\forall p' \in \mathbb{R}_+$, given $\mathcal{P} = \{p, p'\}$, if $\delta_i < 1$, then,*

1. *if $p' = p_i$, voters in group i focus on benefits when $p < p_i$ and focus on costs when $p > p_i$; $\widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P})$ is continuous in p and is differentiable in p except at $p = p_i$;*

2. *if $p' < p_i$, voters in group i focus on benefits when $p \in [0, p') \cup (p', \tilde{p}^{i\prime})$ and focus on costs when $p > \tilde{p}^{i\prime}$; $\widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P})$ is continuous and differentiable in p except at $p = \tilde{p}^{i\prime}$ and*
$$\lim_{p\to(\tilde{p}^{i\prime})^-} \widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P}) > 0$$
$$\lim_{p\to(\tilde{p}^{i\prime})^+} \widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P}) < 0;$$

3. *if $p' > p_i$, voters in group i focus on benefits when $p < \tilde{p}^{i\prime}$ and focus on costs when $p \in (\tilde{p}^{i\prime}, p') \cup (p', \infty)$; $\widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P})$ is continuous and differentiable in p except at $p = \tilde{p}^{i\prime}$ and*
$$\lim_{p\to(\tilde{p}^{i\prime})^-} \widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P}) < 0 \text{ when } \tilde{p}^{i\prime} > 0$$
$$\lim_{p\to(\tilde{p}^{i\prime})^+} \widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P}) > 0 \text{ when } \tilde{p}^{i\prime} \geq 0;$$

4. *$\widetilde{D}'_i(p|\mathcal{P}) = \frac{\partial}{\partial p}\left[\widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P})\right]$ equals*
$$\tfrac{2}{1+\delta_i}B'_i(p) - \tfrac{2\delta_i}{1+\delta_i}C'_i(p) \text{ if } p < x$$
$$\tfrac{2\delta_i}{1+\delta_i}B'_i(p) - \tfrac{2}{1+\delta_i}C'_i(p) \text{ if } p > x;$$

where $x = p_i$ *if* $p' = p_i$ *and* $x = \tilde{p}^{i\prime}$ *if* $p' \neq p_i$*;*

5. *if* $p' = p_i$*, then*

$$\widetilde{D}_i^{\prime -}(p_i|\mathcal{P}) = \tfrac{2}{1+\delta_i} B_i'(p_i) - \tfrac{2\delta_i}{1+\delta_i} C_i'(p_i)$$
$$\widetilde{D}_i^{\prime +}(p_i|\mathcal{P}) = \tfrac{2\delta_i}{1+\delta_i} B_i'(p_i) - \tfrac{2}{1+\delta_i} C_i'(p_i).$$

Proof. Throughout, fix $i \in N$, $p \in \mathbb{R}_+$ and $p' \in \mathbb{R}_+$ and let $\mathcal{P} = \{p, p'\}$ and $\delta_i < 1$.

Consider part 1. Since $p' = p_i$, $V_i(p) < V_i(p')$ if $p \neq p'$ and hence, by Proposition 1, voters in group i focus on costs when $p > p'$ and focus on benefits when $p < p'$. Voters in group i have undistorted focus when $p = p_i$. Hence $\widetilde{D}_i(p|\mathcal{P})$ equals

$$\begin{aligned} \tfrac{2}{1+\delta_i}[B_i(p) - B_i(p_i)] - \tfrac{2\delta_i}{1+\delta_i}[C_i(p) - C_i(p_i)] &\text{ if } p < p_i \\ \tfrac{2\delta_i}{1+\delta_i}[B_i(p) - B_i(p_i)] - \tfrac{2}{1+\delta_i}[C_i(p) - C_i(p_i)] &\text{ if } p > p_i \\ [B_i(p) - B_i(p_i)] - [C_i(p) - C_i(p_i)] &\text{ if } p = p_i. \end{aligned} \tag{A3}$$

$\widetilde{D}_i(p|\mathcal{P})$ is continuous in p at any $p \neq p_i$ since B_i and C_i are continuous. At $p = p_i$, $\lim_{p \to p_i^-} \widetilde{D}_i(p|\mathcal{P}) = 0$, $\widetilde{D}_i(p_i|\mathcal{P}) = 0$ and $\lim_{p \to p_i^+} \widetilde{D}_i(p|\mathcal{P}) = 0$. $\widetilde{D}_i(p|\mathcal{P})$ is differentiable in p at any $p \neq p_i$ since B_i and C_i are differentiable.

Consider part 2. Since $p' < p_i$, we have $p' < p_i < \tilde{p}^{i\prime}$. When $p < p'$, we have $V_i(p) < V_i(p')$ so that, by Proposition 1, voters in group i focus on benefits. When $p > p'$, by Proposition 1, voters in group i focus on benefits when $V_i(p) > V_i(p')$, or, equivalently, when $p \in (p', \tilde{p}^{i\prime})$, and focus on costs when $V_i(p) < V_i(p')$, or, equivalently, when $p > \tilde{p}^{i\prime}$. Voters in group i have undistorted focus when $p \in \{p', \tilde{p}^{i\prime}\}$. Hence, $\widetilde{D}_i(p|\mathcal{P})$ equals

$$\begin{aligned} \tfrac{2}{1+\delta_i}[B_i(p) - B_i(p')] - \tfrac{2\delta_i}{1+\delta_i}[C_i(p) - C_i(p')] &\text{ if } p \in [0, \tilde{p}^{i\prime}) \setminus \{p'\} \\ \tfrac{2\delta_i}{1+\delta_i}[B_i(p) - B_i(p')] - \tfrac{2}{1+\delta_i}[C_i(p) - C_i(p')] &\text{ if } p > \tilde{p}^{i\prime} \\ [B_i(p) - B_i(p')] - [C_i(p) - C_i(p')] &\text{ if } p \in \{p', \tilde{p}^{i\prime}\}. \end{aligned} \tag{A4}$$

$\widetilde{D}_i(p|\mathcal{P})$ is continuous in p at any $p \notin \{p', \tilde{p}^{i\prime}\}$ since B_i and C_i are continuous. At $p = p'$, $\lim_{p \to (p')^-} \widetilde{D}_i(p|\mathcal{P}) = 0$ if $p' > 0$, $\widetilde{D}_i(p'|\mathcal{P}) = 0$ and $\lim_{p \to (p')^+} \widetilde{D}_i(p|\mathcal{P}) = 0$. At $p = \tilde{p}^{i\prime}$, $\lim_{p \to (\tilde{p}^{i\prime})^-} \widetilde{D}_i(p|\mathcal{P})$ equals

$$\begin{aligned} &\tfrac{2}{1+\delta_i}[B_i(\tilde{p}^{i\prime}) - B_i(p')] - \tfrac{2\delta_i}{1+\delta_i}[C_i(\tilde{p}^{i\prime}) - C_i(p')] \\ =&[B_i(\tilde{p}^{i\prime}) - B_i(p')] \left(\tfrac{2}{1+\delta_i} - \tfrac{2\delta_i}{1+\delta_i}\right) > 0 \end{aligned} \tag{A5}$$

where the equality follows from $V_i(\tilde{p}^{i\prime}) = V_i(p') \Leftrightarrow B_i(\tilde{p}^{i\prime}) - B_i(p') = C_i(\tilde{p}^{i\prime}) - C_i(p')$ and the inequality follows by $\tilde{p}^{i\prime} > p'$ and $\delta_i < 1$, and $\lim_{p \to (\tilde{p}^{i\prime})^+} \widetilde{D}_i(p|\mathcal{P})$ equals

$$\begin{aligned}&\tfrac{2\delta_i}{1+\delta_i}[B_i(\tilde{p}^{i\prime}) - B_i(p')] - \tfrac{2}{1+\delta_i}[C_i(\tilde{p}^{i\prime}) - C_i(p')] \\ =&[B_i(\tilde{p}^{i\prime}) - B_i(p')]\left(\tfrac{2\delta_i}{1+\delta_i} - \tfrac{2}{1+\delta_i}\right) < 0.\end{aligned} \tag{A6}$$

$\widetilde{D}_i(p|\mathcal{P})$ is differentiable in p at any $p \notin \{p', \tilde{p}^{i\prime}\}$ since B_i and C_i are differentiable. At $p = p'$, using definition of derivative in (A4), $\widetilde{D}_i'(p'|\mathcal{P}) = \frac{2}{1+\delta_i}B_i'(p') - \frac{2\delta_i}{1+\delta_i}C_i'(p')$.

Consider part 3. Since $p' > p_i$, $\tilde{p}^{i\prime} < p_i < p'$. When $p < p'$, by Proposition 1, voters in group i focus on benefits when $V_i(p) < V_i(p')$, or, equivalently, when $p < \tilde{p}^{i\prime}$, and focus on costs when $V_i(p) > V_i(p')$, or, equivalently, when $p \in (\tilde{p}^{i\prime}, p')$. When $p > p'$, we have $V_i(p) < V_i(p')$ so that, by Proposition 1, voters in group i focus on costs. Voters in group i have undistorted focus when $p \in \{\tilde{p}^{i\prime}, p'\}$. Hence $\widetilde{D}_i(p|\mathcal{P})$ equals

$$\begin{aligned}&\tfrac{2\delta_i}{1+\delta_i}[B_i(p) - B_i(p')] - \tfrac{2}{1+\delta_i}[C_i(p) - C_i(p')] \text{ if } p \in (\tilde{p}^{i\prime}, \infty) \setminus \{p'\} \\ &\tfrac{2}{1+\delta_i}[B_i(p) - B_i(p')] - \tfrac{2\delta_i}{1+\delta_i}[C_i(p) - C_i(p')] \text{ if } p < \tilde{p}^{i\prime} \\ &[B_i(p) - B_i(p')] - [C_i(p) - C_i(p')] \text{ if } p \in \{\tilde{p}^{i\prime}, p'\}.\end{aligned} \tag{A7}$$

$\widetilde{D}_i(p|\mathcal{P})$ is continuous in p at any $p \notin \{\tilde{p}^{i\prime}, p'\}$ since B_i and C_i are continuous. At $p = p'$, $\lim_{p \to (p')^-} \widetilde{D}_i(p|\mathcal{P}) = 0$, $\widetilde{D}_i(p'|\mathcal{P}) = 0$ and $\lim_{p \to (p')^+} \widetilde{D}_i(p|\mathcal{P}) = 0$. At $p = \tilde{p}^{i\prime}$, $\lim_{p \to (\tilde{p}^{i\prime})^-} \widetilde{D}_i(p|\mathcal{P})$ when $\tilde{p}^{i\prime} > 0$ equals

$$\begin{aligned}&\tfrac{2}{1+\delta_i}[B_i(\tilde{p}^{i\prime}) - B_i(p')] - \tfrac{2\delta_i}{1+\delta_i}[C_i(\tilde{p}^{i\prime}) - C_i(p')] \\ =&[B_i(\tilde{p}^{i\prime}) - B_i(p')]\left(\tfrac{2}{1+\delta_i} - \tfrac{2\delta_i}{1+\delta_i}\right) < 0\end{aligned} \tag{A8}$$

where the equality follows from $V_i(\tilde{p}^{i\prime}) = V_i(p') \Leftrightarrow B_i(\tilde{p}^{i\prime}) - B_i(p') = C_i(\tilde{p}^{i\prime}) - C_i(p')$ and the inequality follows by $\tilde{p}^{i\prime} < p'$ and $\delta_i < 1$, and $\lim_{p \to (\tilde{p}^{i\prime})^+} \widetilde{D}_i(p|\mathcal{P})$ when $\tilde{p}^{i\prime} \geq 0$ equals

$$\begin{aligned}&\tfrac{2\delta_i}{1+\delta_i}[B_i(\tilde{p}^{i\prime}) - B_i(p')] - \tfrac{2}{1+\delta_i}[C_i(\tilde{p}^{i\prime}) - C_i(p')] \\ =&[B_i(\tilde{p}^{i\prime}) - B_i(p')]\left(\tfrac{2\delta_i}{1+\delta_i} - \tfrac{2}{1+\delta_i}\right) > 0.\end{aligned} \tag{A9}$$

$\widetilde{D}_i(p|\mathcal{P})$ is differentiable in p at any $p \notin \{\tilde{p}^{i\prime}, p'\}$ since B_i and C_i are differentiable. At $p = p'$, using definition of derivative in (A7), $\widetilde{D}_i'(p'|\mathcal{P}) = \frac{2\delta_i}{1+\delta_i}B_i'(p') - \frac{2}{1+\delta_i}C_i'(p')$.

Part 4 for $p = p_i$ follows from (A3), for $p' < p_i$ follows from (A4) and for $p' > p_i$ follows from (A7). Part 5 follows from (A3). □

A1.2 Proof of Proposition 1

Fix $i \in N$, $p_A \in \mathbb{R}_+$ and $p_B \in \mathbb{R}_+$ such that $p_A \geq p_B$. Since $p_A \geq p_B$, by Assumption A1, we have $|B_i(p_A) - B_i(p_B)| = B_i(p_A) - B_i(p_B)$ and $|C_i(p_A) - C_i(p_B)| = C_i(p_A) - C_i(p_B)$. Part (a) follows since $B_i(p_A) - B_i(p_B) > C_i(p_A) - C_i(p_B) \Leftrightarrow V_i(p_A) > V_i(p_B)$. Part (b) follows since $B_i(p_A) - B_i(p_B) < C_i(p_A) - C_i(p_B) \Leftrightarrow V_i(p_A) < V_i(p_B)$. Part (c) follows since $B_i(p_A) - B_i(p_B) = C_i(p_A) - C_i(p_A) \Leftrightarrow V_i(p_A) = V_i(p_B)$. □

A1.3 Proof of Proposition 2

We first claim that, by Assumption A3, for any $k \in N$ and $l \in N$ such that $k < l$ and any $p \in \mathbb{R}_+$ and $p' \in \mathbb{R}_+$ such that $p > p'$, $V_k(p) - V_k(p') < V_l(p) - V_l(p')$. To see this, by A3, we have,

$$V_k(p) - V_k(p') = \int_{p'}^{p} \left[B_k'(x) - C_k'(x)\right] dx < \int_{p'}^{p} \left[B_l'(x) - C_l'(x)\right] dx = V_l(p) - V_l(p'). \tag{A10}$$

Now fix $p_A \in \mathbb{R}_+$ and $p_B \in \mathbb{R}_+$. It suffices to consider $p_A \neq p_B$. When $p_A = p_B$, then voters in all groups have undistorted focus so that parts (a) and (b) do not apply and part (c) assumes $p_A \neq p_B$. Without loss of generality, assume $p_A > p_B$.

To see part (a), when voters in group $i \in N$ focus on benefits, $V_i(p_A) > V_i(p_B)$ by Proposition 1 and it suffices to prove $V_j(p_A) > V_j(p_B)$ when $j > i$, which follows by the opening claim.

To see part (b), when voters in group $i \in N$ focus on costs, $V_i(p_A) < V_i(p_B)$ by Proposition 1 and it suffices to prove $V_j(p_A) < V_j(p_B)$ when $j < i$, which follows by the opening claim.

To see part (c), when voters in group $i \in N$ have undistorted focus, $V_i(p_A) = V_i(p_B)$ by Proposition 1. By the opening claim, $V_j(p_A) > V_j(p_B)$ when $j > i$, in which case voters in group j focus on benefits by Proposition 1, and $V_j(p_A) < V_j(p_B)$ when $j < i$, in which case voters in group j focus on costs by Proposition 1. □

A1.4 Proof of Proposition 3

Throughout, fix $i \in N$, $p_j \in \mathbb{R}_+$ for $j \in \{A, B\}$ and $j \in \{A, B\}$ and let $\mathcal{P} = \{p_A, p_B\}$. To prove part (a), we consider three cases depending on the sign of $V_i(p_j) - V_i(p_{-j})$.

Case 1: $V_i(p_j) = V_i(p_{-j})$: By Proposition 1, $V_i(p_j) = V_i(p_{-j})$ implies that voters in group i have undistorted focus and hence $\widetilde{V}_i(p_j|\mathcal{P}) = \widetilde{V}_i(p_{-j}|\mathcal{P})$.

Case 2: $V_i(p_j) > V_i(p_{-j})$: Since $V_i(p_j) > V_i(p_{-j})$, $p_j \neq p_{-j}$. Suppose first that $p_j > p_{-j}$. Then $V_i(p_j) > V_i(p_{-j})$ implies, by Proposition 1, that voters in group i focus on benefits. $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P})$ thus equals

$$\begin{aligned} &\tfrac{2}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] - \tfrac{2\delta_i}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] \\ &= \tfrac{2}{1+\delta_i}[V_i(p_j) - V_i(p_{-j})] + \tfrac{2(1-\delta_i)}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] > 0 \end{aligned} \tag{A11}$$

where the inequality follows by $V_i(p_j) > V_i(p_{-j})$ and $C_i(p_j) - C_i(p_{-j}) > 0$. Suppose now that $p_j < p_{-j}$. Then $V_i(p_j) > V_i(p_{-j})$ implies, by Proposition 1, that voters in group i focus on costs. $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P})$ thus equals

$$\begin{aligned} &\tfrac{2\delta_i}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] - \tfrac{2}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] \\ &= -\tfrac{2(1-\delta_i)}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] + \tfrac{2}{1+\delta_i}[V_i(p_j) - V_i(p_{-j})] > 0 \end{aligned} \tag{A12}$$

where the inequality follows by $V_i(p_j) > V_i(p_{-j})$ and $B_i(p_j) - B_i(p_{-j}) < 0$.

Case 3: $V_i(p_j) < V_i(p_{-j})$: Since $V_i(p_j) < V_i(p_{-j})$, $p_j \neq p_{-j}$. Suppose first that $p_j > p_{-j}$. Then $V_i(p_j) < V_i(p_{-j})$ implies, by Proposition 1, that voters in group i focus on costs. $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P})$ thus equals

$$\begin{aligned} &\tfrac{2\delta_i}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] - \tfrac{2}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] \\ &= -\tfrac{2(1-\delta_i)}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] + \tfrac{2}{1+\delta_i}[V_i(p_j) - V_i(p_{-j})] < 0 \end{aligned} \tag{A13}$$

where the inequality follows by $V_i(p_j) < V_i(p_{-j})$ and $B_i(p_j) - B_i(p_{-j}) > 0$. Suppose now that $p_j < p_{-j}$. Then $V_i(p_j) < V_i(p_{-j})$ implies, by Proposition 1, that voters in group i focus on benefits. $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P})$ thus equals

$$\begin{aligned} &\tfrac{2}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] - \tfrac{2\delta_i}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] \\ &= \tfrac{2}{1+\delta_i}[V_i(p_j) - V_i(p_{-j})] + \tfrac{2(1-\delta_i)}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] < 0 \end{aligned} \tag{A14}$$

where the inequality follows by $V_i(p_j) < V_i(p_{-j})$ and $C_i(p_j) - C_i(p_{-j}) < 0$.

To prove part (b), $\widetilde{V}_i(p_j|\mathcal{P}) = \widetilde{V}_i(p_{-j}|\mathcal{P})$ only in Case 1 above, in which case $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P}) = 0$ for any δ_i. $\widetilde{V}_i(p_j|\mathcal{P}) > \widetilde{V}_i(p_{-j}|\mathcal{P})$ only in Case 2 above, in which case $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P})$ equals

$$\begin{aligned} &\tfrac{2}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] - \tfrac{2\delta_i}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] \text{ if } p_j > p_{-j} \\ &\tfrac{2\delta_i}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] - \tfrac{2}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] \text{ if } p_j < p_{-j} \end{aligned} \tag{A15}$$

which is decreasing in δ_i since $\frac{\partial}{\partial \delta_i}\frac{2}{1+\delta_i} < 0$ and $\frac{\partial}{\partial \delta_i}\frac{2\delta_i}{1+\delta_i} > 0$. $\widetilde{V}_i(p_j|\mathcal{P}) < \widetilde{V}_i(p_{-j}|\mathcal{P})$ only in Case 3 above, in which case $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P})$ equals

$$\begin{array}{l} \frac{2\delta_i}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] - \frac{2}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] \text{ if } p_j > p_{-j} \\ \frac{2}{1+\delta_i}[B_i(p_j) - B_i(p_{-j})] - \frac{2\delta_i}{1+\delta_i}[C_i(p_j) - C_i(p_{-j})] \text{ if } p_j < p_{-j} \end{array} \tag{A16}$$

which is increasing in δ_i. □

A1.5 Proof of Proposition 4

Since $\delta_i = 1\ \forall i \in N$, we have, $\forall j \in \{A, B\}$, $\forall (p_j, p_{-j}) \in \mathbb{R}^2_+$ and $\forall i \in N$, $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P}) = B_i(p_j) - C_i(p_j) - [B_i(p_{-j}) - C_i(p_{-j})]$. Thus, $\forall j \in \{A, B\}$, $\forall (p_j, p_{-j}) \in \mathbb{R}^2_+$ and $\forall i \in N$, $\widetilde{V}_i(p_j|\mathcal{P}) - \widetilde{V}_i(p_{-j}|\mathcal{P})$ is strictly concave in p_j and, hence, $\pi_j(p_j|\mathcal{P})$ is strictly concave in p_j. Therefore, $\forall j \in \{A, B\}$ and $\forall p_{-j} \in \mathbb{R}_+$, the unique maximizer of $\pi_j(p_j|\mathcal{P})$ is p^*_r, the unique solution to $\sum_{i\in N} m_i [B'_i(p) - C'_i(p)] = 0$. To see that p^*_r exists and is unique, note that $\sum_{i\in N} m_i [B'_i(p) - C'_i(p)]$ is continuous and decreasing in p since its derivative $\sum_{i\in N} m_i [B''_i(p) - C''_i(p)] < 0$ by Assumption A1. Moreover, $\sum_{i\in N} m_i [B'_i(p_1) - C'_i(p_1)] > 0$ and $\sum_{i\in N} m_i [B'_i(p_n) - C'_i(p_n)] < 0$ by Assumption A2, which also shows that $p^*_r \in (p_1, p_n)$.

We now argue that if a NE exists, then the parties' equilibrium platforms are (p^*_r, p^*_r). Suppose that (μ^*_A, μ^*_B) constitutes a NE, where μ^*_j is a mixed strategy, a Borel probability measure, of party $j \in \{A, B\}$. Since (μ^*_A, μ^*_B) constitutes a NE in a constant-sum game, the equilibrium expected vote share equals $\frac{1}{2}$ for both parties. Suppose, for some $j \in \{A, B\}$, that party j contests the election with policy $p_j = p^*_r$. Then its deviation payoff equals

$$\pi_j(p^*_r|\{p^*_r, \mu^*_{-j}\}) = \tfrac{1}{2} + \phi \int_{\mathbb{R}_+} \sum_{i\in N} m_i \left[\widetilde{V}_i(p^*_r|\{p^*_r, p\}) - \widetilde{V}_i(p|\{p^*_r, p\})\right] \mu^*_{-j}(dp). \tag{A17}$$

Since, $\forall p_{-j} \in \mathbb{R}_+$, $\sum_{i\in N} m_i \left[\widetilde{V}_i(p^*_r|\{p^*_r, p_{-j}\}) - \widetilde{V}_i(p_{-j}|\{p^*_r, p_{-j}\})\right] \geq 0$, with strict inequality when $p_{-j} \neq p^*_r$, we have $\pi_j(p^*_r|\{p^*_r, \mu^*_{-j}\}) > \frac{1}{2}$ unless $\mu_{-j}(p^*_r) = 1$.

To see that (p^*_r, p^*_r) constitutes a NE, we have $\pi_j(p^*_r|\{p^*_r, p^*_r\}) = \frac{1}{2}\ \forall j \in \{A, B\}$. If, for some $j \in \{A, B\}$, party j deviates to μ_j with $\mu_j(p^*_r) < 1$, then its deviation payoff $\pi_j(\mu_j|\{\mu_j, p^*_r\}) < \frac{1}{2}$ by an argument similar to the one above. Therefore, neither party has a profitable deviation. □

A1.6 Proof of Proposition 5

Equilibrium existence and uniqueness is a consequence of Proposition 6. To see the characterization via ($\mathcal{O}_{f,2}$), note that $\mathcal{O}_{f,2}(p)$ equals $\sum_{i\in N} m_i \widetilde{D}'_i(p|\{p, p\})$ when $p \in (p_1, p_2)$, equals $\sum_{i\in N} m_i \widetilde{D}'^{+}_i(p|\{p, p\})$ when $p = p_1$ and equals $\sum_{i\in N} m_i \widetilde{D}'^{-}_i(p|\{p, p\})$

when $p = p_2$. $\mathcal{O}_{f,2}(p)$ is decreasing in p by Assumption A1 and proving Proposition 6, we establish $\sum_{i \in N} m_i \widetilde{D}_i'^{-}(p_1|\{p_1, p_1\}) > 0$ and $\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p_2|\{p_2, p_2\}) < 0$. Therefore, $p_f^* = p_1$ if $\mathcal{O}_{f,2}(p_1) \leq 0$, $p_f^* = p_2$ if $\mathcal{O}_{f,2}(p_2) \geq 0$ and p_f^* solves $\mathcal{O}_{f,2}(p) = 0$ otherwise. □

A1.7 Proof of Proposition 6

Proof of Proposition 6 relies on Lemmas A3, A5, and A6. Lemma A4 is used to prove Lemma A5. We state and prove all the lemmas first.

Lemma A3. *If (p_A^*, p_B^*) constitutes a pure strategy NE, then, $\forall j \in \{A, B\}$,*

$$\sum_{i \in N} m_i \widetilde{D}_i'^{-}(p_j^*|\{p_j^*, p_j^*\}) \geq 0$$
$$\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p_j^*|\{p_j^*, p_j^*\}) \leq 0.$$

Proof. Suppose (p_A^*, p_B^*) constitutes a NE. Since (p_A^*, p_B^*) constitutes a NE in a constant-sum game, the equilibrium vote share equals $\frac{1}{2}$ for both parties. Moreover, $\forall j \in \{A, B\}$, $\sum_{i \in N} m_i \widetilde{D}_i(p_j^*|\{p_j^*, p_j^*\}) = 0$ so that $\pi_{-j}(p_j^*|\{p_j^*, p_j^*\}) = \frac{1}{2}$.

Notice, by Lemma A2, $\forall p \in \mathbb{R}_+$, $\sum_{i \in N} m_i \widetilde{D}_i'^{-}(p|\{p, p\})$ and $\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\{p, p\})$ exist (the left derivative at $p > 0$). Suppose, towards a contradiction, that either $\sum_{i \in N} m_i \widetilde{D}_i'^{-}(p_j^*|\{p_j^*, p_j^*\}) < 0$ or $\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p_j^*|\{p_j^*, p_j^*\}) > 0$ for some $j \in \{A, B\}$. Then there exists $p < p_j^*$ or $p > p_j^*$, respectively, such that $\pi_{-j}(p|\{p, p_j^*\}) > \frac{1}{2}$, a contradiction since (p_A^*, p_B^*) constitutes a NE. □

To state Lemma A4, for any $k \in \{0, \ldots, n\}$ and $p \in \mathbb{R}_+$ define $T(p, k)$ as:

$$T(p,k) = \sum_{i=1}^{k} \tfrac{2\delta_i m_i}{1+\delta_i} B_i'(p) - \tfrac{2m_i}{1+\delta_i} C_i'(p) + \sum_{i=k+1}^{n} \tfrac{2m_i}{1+\delta_i} B_i'(p) - \tfrac{2\delta_i m_i}{1+\delta_i} C_i'(p) \tag{A18}$$

$T(p, k)$ is the derivative, if it exists, of $\sum_{i \in N} m_i \widetilde{D}_i(p|\{p, p\})$ when groups $i \leq k$ focus on costs and groups $i \geq k+1$ focus on benefits in case of a marginal deviation from (p, p). Lemma A4 proves several properties of $T(p, k)$, where $T'(p, k)$ denotes the derivative of $T(p, k)$ with respect to p.

Lemma A4.

1. *$\forall p \in \mathbb{R}_+$ and $\forall k \in \{0, \ldots, n-1\}$, $T(p, k) \geq T(p, k+1)$;*
2. *$\forall p \in \mathbb{R}_+$ and $\forall k \in \{0, \ldots, n\}$, $T'(p, k) < 0$;*
3. *$T(p, 0) > 0$ $\forall p \leq p_1$ and $T(p, n) < 0$ $\forall p \geq p_n$.*

Proof. For part 1, $\forall p \in \mathbb{R}_+$ and $\forall k \in \{0, \dots, n-1\}$:

$$T(p,k) - T(p,k+1) = \tfrac{2m_{k+1}(1-\delta_{k+1})}{1+\delta_{k+1}} \left[B'_{k+1}(p) + C'_{k+1}(p)\right] \geq 0 \tag{A19}$$

where the inequality follows by Assumption A1.

Part 2 is immediate since $B''_i \leq 0$ and $C''_i \geq 0$ with at least one strict inequality $\forall i \in N$ by Assumption A1.

For part 3,

$$T(p,0) = \sum_{i \in N} \tfrac{2m_i}{1+\delta_i} \left[B'_i(p) - C'_i(p)\right] + \tfrac{2(1-\delta_i)m_i}{1+\delta_i} C'_i(p) > 0 \tag{A20}$$

where the inequality follows from $p \leq p_1$, and

$$T(p,n) = \sum_{i \in N} -\tfrac{2(1-\delta_i)m_i}{1+\delta_i} B'_i(p) + \tfrac{2m_i}{1+\delta_i} \left[B'_i(p) - C'_i(p)\right] < 0 \tag{A21}$$

where the inequality follows from $p \geq p_n$. □

Lemma A5. *A solution, p^*_f, to ($\mathcal{O}_f$) exists, is unique and satisfies $p^*_f \in [p_1, p_n]$.*

Proof. Denote by $p_0 = 0$ and $p_{n+1} = \infty$. Since $0 < p_i < p_{i+1} < \infty$ $\forall i \in \{1, \dots, n-1\}$, we have $p_i < p_{i+1}$ $\forall i \in \{0, \dots, n\}$. Notice that, $\forall k \in \{0, \dots, n\}$, $\sum_{i \in N} m_i \widetilde{D}'_i(p|\{p,p\}) = T(p,k)$ if $p \in (p_k, p_{k+1})$ and, $\forall k \in \{1, \dots, n\}$, $\sum_{i \in N} m_i \widetilde{D}'^{-}_i(p|\{p,p\}) = T(p,k-1)$ and $\sum_{i \in N} m_i \widetilde{D}'^{+}_i(p|\{p,p\}) = T(p,k)$ if $p = p_k$. The former by Lemma A2 part 4 and the latter by Lemma A2 parts 4 and 5. Therefore, if p^*_f solves ($\mathcal{O}_f$), then either $T(p^*_f, k) = 0$ and $p^*_f \in (p_k, p_{k+1})$ for some $k \in \{0, \dots, n\}$ or $T(p^*_f, k-1) \geq 0$, $T(p^*_f, k) \leq 0$ and $p^*_f = p_k$ for some $k \in \{1, \dots, n\}$. Conversely, any $p' \in \mathbb{R}_+$ such that either $T(p',k) = 0$ and $p' \in (p_k, p_{k+1})$ for some $k \in \{0, \dots, n\}$ or $T(p', k-1) \geq 0$, $T(p',k) \leq 0$ and $p' = p_k$ for some $k \in \{1, \dots, n\}$ solves ($\mathcal{O}_f$). To prove the lemma, it thus suffices to show that p' exists, is unique and $p' \in [p_1, p_n]$.

For existence, we will show that if $p' \in \mathbb{R}_+$ such that $T(p',k) = 0$ and $p' \in (p_k, p_{k+1})$ for some $k \in \{0, \dots, n\}$ does not exist, then there exists $p' \in \mathbb{R}_+$ such that $T(p', k-1) \geq 0$, $T(p',k) \leq 0$ and $p' = p_k$ for some $k \in \{1, \dots, n\}$. Since p' such that $T(p',k) = 0$ and $p' \in (p_k, p_{k+1})$ for some $k \in \{0, \dots, n\}$ does not exist and since $T(p,k)$ is continuous in p $\forall k \in \{0, \dots, n\}$, we have, $\forall k \in \{0, \dots, n\}$, either $T(p,k) > 0$ $\forall p \in (p_k, p_{k+1})$ or $T(p,k) < 0$ $\forall p \in (p_k, p_{k+1})$. By Lemma A4 part 3, $T(p,0) > 0$ $\forall p \in (p_0, p_1)$ and $T(p,n) < 0$ $\forall p \in (p_n, p_{n+1})$. Since $T(p,k) > T(p'', k+1)$ $\forall p \in \mathbb{R}_+$, $\forall k \in \{0, \dots, n-1\}$ and $\forall p'' > p$ by Lemma A4 parts 1 and 2, there exist $k' \in \{1, \dots, n\}$ such that, $\forall k'' \leq k'$, $T(p, k''-1) > 0$ $\forall p \in (p_{k''-1}, p_{k''})$ and, $\forall k'' \geq k'$, $T(p, k'') < 0$ $\forall p \in (p_{k''}, p_{k''+1})$. By continuity of $T(p,k)$ in p $\forall k \in \{0, \dots, n\}$, we thus have $T(p_{k'}, k'-1) \geq 0$ and $T(p_{k'}, k') \leq 0$.

For uniqueness, suppose either $T(p',k') = 0$ and $p' \in (p_{k'}, p_{k'+1})$ for some $k' \in \{0,\ldots,n\}$ or $T(p',k'-1) \geq 0$, $T(p',k') \leq 0$ and $p' = p_{k'}$ for some $k' \in \{1,\ldots,n\}$.

If $p' \in (p_{k'}, p_{k'+1})$ so that $T(p',k') = 0$, then $T(p'',k'') < 0\ \forall p'' > p'$ and $\forall k'' \geq k'$ by Lemma A4 parts 1 and 2 and hence $T(p'',k') < 0\ \forall p'' \in (p', p_{k'+1})$, $T(p'',k'') < 0$ $\forall p'' \in (p_{k''}, p_{k''+1})$ and $\forall k'' > k'$, and $T(p_{k''+1}, k'') < 0$ and $T(p_{k''+1}, k''+1) < 0$ $\forall k'' \geq k'$. Similarly, $T(p'',k'') > 0\ \forall p'' < p'$ and $\forall k'' \leq k'$ by Lemma A4 parts 1 and 2 and hence $T(p'',k') > 0\ \forall p'' \in (p_{k'}, p')$, $T(p'',k'') > 0\ \forall p'' \in (p_{k''}, p_{k''+1})$ and $\forall k'' < k'$, and $T(p_{k''}, k''-1) > 0$ and $T(p_{k''}, k'') > 0\ \forall k'' \leq k'$.

If $p' = p_{k'}$ so that $T(p_{k'}, k'-1) \geq 0$ and $T(p_{k'}, k') \leq 0$, then, by Lemma A4 parts 1 and 2, $T(p'',k'') < 0\ \forall p'' \in (p_{k''}, p_{k''+1})$ and $\forall k'' \geq k'$, and $T(p_{k''+1}, k'') < 0$ and $T(p_{k''+1}, k''+1) < 0\ \forall k'' \geq k'$. Similarly, by Lemma A4 parts 1 and 2, $T(p'', k''-1) > 0$ $\forall p'' \in (p_{k''-1}, p_{k''})$ and $\forall k'' \leq k'$, and $T(p_{k''-1}, k''-2) > 0$ and $T(p_{k''-1}, k''-1) > 0$ $\forall k'' \leq k'$.

That $p' \in [p_1, p_n]$ if $T(p',k) = 0$ and $p' \in (p_k, p_{k+1})$ for some $k \in \{0,\ldots,n\}$ or $T(p',k-1) \geq 0$, $T(p',k) \leq 0$ and $p' = p_k$ for some $k \in \{1,\ldots,n\}$ follows from Lemma A4 part 3, from $T(p,0) > 0\ \forall p < p_1$ and $T(p,n) < 0\ \forall p > p_n$. □

Lemma A6. *Platforms (p_f^*, p_f^*) constitute a Nash equilibrium.*

Proof. It suffices to prove that $\sum_{i \in N} m_i \widetilde{D}_i(p|\{p, p_f^*\})$ has a (unique) maximum at p_f^* as a function of p. Suppose first that there exists $k' \in N$ such that $p_f^* \in (p_{k'}, p_{k'+1})$. In order to recall the coming argument below, let $k'' = k'+1$. By Lemma A2 parts 2 and 3, $\widetilde{D}_i'(p_f^*|\{p_f^*, p_f^*\})$ exists $\forall i \in N$, and hence, since p_f^* solves $(\mathcal{O}_f)$, $\sum_{i \in N} m_i \widetilde{D}_i'(p_f^*|p_f^*) = 0$. By Lemma A2 part 4, $\forall i \in N$ and $\forall p \in \mathbb{R}_+ \setminus \{\tilde{p}_f^{i*}\}$, $\widetilde{D}_i'(p|\{p, p_f^*\})$ exists and $\widetilde{D}_i''(p|\{p, p_f^*\}) < 0$. Moreover, $\forall i \in N$, whenever $\tilde{p}_f^{i*} > 0$,

$$\begin{aligned}
\lim_{p \to (\tilde{p}_f^{i*})^-} \widetilde{D}_i'(p|\{p, p_f^*\}) &= \tfrac{2}{1+\delta_i} B_i'(\tilde{p}_f^{i*}) - \tfrac{2\delta_i}{1+\delta_i} C_i'(\tilde{p}_f^{i*}) \\
\lim_{p \to (\tilde{p}_f^{i*})^+} \widetilde{D}_i'(p|\{p, p_f^*\}) &= \tfrac{2\delta_i}{1+\delta_i} B_i'(\tilde{p}_f^{i*}) - \tfrac{2}{1+\delta_i} C_i'(\tilde{p}_f^{i*})
\end{aligned} \tag{A22}$$

so that $\lim_{p \to (\tilde{p}_f^{i*})^-} \widetilde{D}_i'(p|\{p, p_f^*\}) > \lim_{p \to (\tilde{p}_f^{i*})^+} \widetilde{D}_i'(p|\{p, p_f^*\})$, since the difference of the limits is equal to $\frac{2(1-\delta_i)}{1+\delta_i}\left[B_i'(\tilde{p}_f^{i*}) + C_i'(\tilde{p}_f^{i*})\right] > 0$. Therefore, $\forall i \in N$ and $\forall p \in \mathbb{R}_+ \setminus \{\tilde{p}_f^{i*}\}$, $\widetilde{D}_i'(p|\{p, p_f^*\}) > \widetilde{D}_i'(p_f^*|\{p_f^*, p_f^*\})$ when $p < p_f^*$ and $\widetilde{D}_i'(p|\{p, p_f^*\}) < \widetilde{D}_i'(p_f^*|\{p_f^*, p_f^*\})$ when $p > p_f^*$. Hence, $\forall p \in \mathbb{R}_+ \setminus \{\tilde{p}_f^{i*}|i \in N\}$, $\sum_{i \in N} m_i \widetilde{D}_i'(p|\{p, p_f^*\}) > 0$ when $p < p_f^*$ and $\sum_{i \in N} m_i \widetilde{D}_i'(p|\{p, p_f^*\}) < 0$ when $p > p_f^*$. Now consider $\tilde{p}_f^{i*}$. If $i \geq k''$, so that $p_i > p_f^*$, then $\tilde{p}_f^{i*} > p_f^*$ and, by Lemma A2 part 2, $\lim_{p \to (\tilde{p}_f^{i*})^-} \widetilde{D}_i(p|\{p, p_f^*\}) > 0 = \widetilde{D}_i(\tilde{p}_f^{i*}|\{\tilde{p}_f^{i*}, p_f^*\}) > \lim_{p \to (\tilde{p}_f^{i*})^+} \widetilde{D}_i(p|\{p, p_f^*\})$. If $i \leq k'$, so that $p_i < p_f^*$, then $\tilde{p}_f^{i*} < p_f^*$ and, by Lemma A2 part 3, $\lim_{p \to (\tilde{p}_f^{i*})^-} \widetilde{D}_i(p|\{p, p_f^*\}) < 0 = \widetilde{D}_i(\tilde{p}_f^{i*}|\{\tilde{p}_f^{i*}, p_f^*\}) < \lim_{p \to (\tilde{p}_f^{i*})^+} \widetilde{D}_i(p|\{p, p_f^*\})$ (if

$\tilde{p}_f^{i*} = 0$ only the second inequality is relevant and if $\tilde{p}_f^{i*} < 0$ none are). In summary, $\sum_{i \in N} m_i \widetilde{D}_i(p|\{p, p_f^*\})$ is increasing in p on $[0, p_f^*)$ and decreasing on (p_f^*, ∞).

Suppose now that $p_f^* = p_{k^*}$ for some $k^* \in N$. Since p_f^* solves ($\mathcal{O}_f$), we have $\sum_{i \in N} m_i \widetilde{D}_i'^-(p_f^*|\{p_f^*, p_f^*\}) \geq 0$ and $\sum_{i \in N} m_i \widetilde{D}_i'^+(p_f^*|\{p_f^*, p_f^*\}) \leq 0$. The argument in the preceding paragraph applies to all $i \in N \setminus \{k^*\}$ using $k' = k^* - 1$ and $k'' = k^* + 1$. For group k^*, by Lemma A2 part 1, $\widetilde{D}_{k^*}(p|\{p, p_f^*\})$ is continuous and is differentiable except at p_f^*, and, by part 4, $\widetilde{D}'_{k^*}(p|\{p, p_f^*\})$ equals

$$\begin{aligned} &\tfrac{2}{1+\delta_{k^*}} B'_{k^*}(p) - \tfrac{2\delta_{k^*}}{1+\delta_{k^*}} C'_{k^*}(p) > \tfrac{2}{1+\delta_{k^*}} \left[B'_{k^*}(p) - C'_{k^*}(p)\right] > 0 \text{ if } p < p_f^* \\ &\tfrac{2\delta_{k^*}}{1+\delta_{k^*}} B'_{k^*}(p) - \tfrac{2}{1+\delta_{k^*}} C'_{k^*}(p) < \tfrac{2}{1+\delta_{k^*}} \left[B'_{k^*}(p) - C'_{k^*}(p)\right] < 0 \text{ if } p > p_f^* \end{aligned} \tag{A23}$$

where the inequalities come from $p_f^* = p_{k^*}$. Therefore, $\sum_{i \in N} m_i \widetilde{D}_i(p|\{p, p_f^*\})$ is increasing in p on $[0, p_f^*)$ and decreasing on (p_f^*, ∞). □

By Lemmas A3 and A5, any pair of platforms different than (p_f^*, p_f^*) cannot constitute a Nash equilibrium. By Lemma A6, (p_f^*, p_f^*) constitutes a Nash equilibrium. Lemma A5 shows that $p_f^* \in [p_1, p_n]$. □

A1.8 Proof of Proposition 7

From Proposition 4, with rational voters, there exists unique Nash equilibrium in mixed strategies with equilibrium platforms (p_r^*, p_r^*), where p_r^* is the unique solution to ($\mathcal{O}_r$), to $\sum_{i \in N} m_i \left[B'_i(p) - C'_i(p)\right] = 0$. Within the application, $B'_i(p) = B(p)'$ $\forall i \in \{P, R\}$, $C'_R(p) = \frac{y_R}{\bar{y}}$ and $C'_P(p) = \frac{y_P}{\bar{y}}$. $B'(p_r^*) = 1$ now follows after straightforward algebra. □

A1.9 Proof of Proposition 8

From Proposition 5, with focusing voters, there exists unique Nash equilibrium in pure strategies with equilibrium platforms (p_f^*, p_f^*), where p_f^*, if $p_f^* \in (p_R, p_P)$, is the unique solution to ($\mathcal{O}_{f,2}$), to $\frac{2m_1}{1+\delta_1}\left[\delta_1 B'_1(p) - C'_1(p)\right] + \frac{2m_2}{1+\delta_2}\left[B'_2(p) - \delta_2 C'_2(p)\right] = 0$. Within the application, group R corresponds to group 1, group P corresponds to group 2, $B'_i(p) = B(p)'$ $\forall i \in \{P, R\}$, $C'_R(p) = \frac{y_R}{\bar{y}}$ and $C'_P(p) = \frac{y_P}{\bar{y}}$. Hence the equation that implicitly defines p_f^* reads

$$\tfrac{2m_R}{1+\delta_R}\left[\delta_R B'(p_f^*) - \tfrac{y_R}{\bar{y}}\right] + \tfrac{2m_P}{1+\delta_P}\left[B'(p_f^*) - \delta_P \tfrac{y_P}{\bar{y}}\right] = 0. \tag{A24}$$

Below we use the same equation that, equivalently, reads

$$B'(p_f^*) = \frac{1 + \delta_P - \frac{m_P y_P}{\bar{y}}(1 - \delta_P \delta_R)}{1 + \delta_P - m_R(1 - \delta_P \delta_R)}. \tag{A25}$$

The $p_f^* > p_R^*$ condition in part (a) is the condition given in Corollary 2, $m_2 B_2'(p_r^*) \geq m_1 C_1'(p_r^*)$, adapted to the notation of the application, after using $B'(p_r^*) = 1$.

The comparative statics with respect to y_R and y_P in part (b) follows from $\frac{\partial}{\partial y_R}\frac{m_P y_P}{\bar{y}} = \frac{-m_P y_P m_R}{\bar{y}^2} < 0$ and $\frac{\partial}{\partial y_P}\frac{m_P y_P}{\bar{y}} = \frac{m_P \bar{y} - m_P^2 y_P}{\bar{y}^2} = \frac{m_P y_R m_R}{\bar{y}^2} > 0$ used in (A25). When y_R increases, the numerator on the right hand side of (A25) increases. When y_P decreases, the numerator on the right hand side of (A25) increases. In both cases, p_f^* decreases. □

A1.10 Proof of Proposition 9

Fix $i \in N$ and $\mathcal{P}$. When $\mathcal{P}_- = \mathcal{P}_+$, $\Delta_i^B(\mathcal{P}) = \Delta_i^C(\mathcal{P}) = 0$ and voters in group i have undistorted focus. When $\mathcal{P}_- \neq \mathcal{P}_+$, we have $\Delta_i^B(\mathcal{P}) - \Delta_i^C(\mathcal{P}) = V_i(\mathcal{P}_+) - V_i(\mathcal{P}_-)$ by Assumption A1. Hence part (a) follows since $\Delta_i^B(\mathcal{P}) > \Delta_i^C(\mathcal{P}) \Leftrightarrow V_i(\mathcal{P}_+) > V_i(\mathcal{P}_-)$, part (b) follows since $\Delta_i^B(\mathcal{P}) < \Delta_i^C(\mathcal{P}) \Leftrightarrow V_i(\mathcal{P}_+) < V_i(\mathcal{P}_-)$ and part (c) follows since $\Delta_i^B(\mathcal{P}) = \Delta_i^C(\mathcal{P}) \Leftrightarrow V_i(\mathcal{P}_+) = V_i(\mathcal{P}_-)$. □

A1.11 Proof of Proposition 10

Fix $i \in N$, $\mathcal{P}$ and $\mathcal{P}'$ such that $\mathcal{P}' = \mathcal{P} \cup \{p'\}$.

Consider part (a). Since voters in group i focus on benefits in $\mathcal{P}$, $\mathcal{P}_- < \mathcal{P}_+$ and, by Proposition 9, $V_i(\mathcal{P}_-) < V_i(\mathcal{P}_+)$. $V_i(\mathcal{P}_-) < V_i(\mathcal{P}_+)$ and $\mathcal{P}_- < \mathcal{P}_+$ jointly imply $\mathcal{P}_- < p_i$ and thus $\tilde{\mathcal{P}}_-^i > p_i$. Since $\tilde{\mathcal{P}}_-^i > p_i > 0$, we have $V_i(\mathcal{P}_-) = V_i(\tilde{\mathcal{P}}_-^i)$. Moreover, $V_i(\tilde{\mathcal{P}}_-^i) = V_i(\mathcal{P}_-) < V_i(\mathcal{P}_+)$ and $\tilde{\mathcal{P}}_-^i > p_i$ imply $\mathcal{P}_+ < \tilde{\mathcal{P}}_-^i$. In summary, $p_i \in (\mathcal{P}_-, \tilde{\mathcal{P}}_-^i)$ and $\mathcal{P}_+ \in (\mathcal{P}_-, \tilde{\mathcal{P}}_-^i)$.

Under $\mathcal{P}'$, voters in group i focus as follows. When $p' < \mathcal{P}_-$, then $\mathcal{P}'_- = p'$, $\mathcal{P}'_+ = \mathcal{P}_+$ and $V_i(p') < V_i(\mathcal{P}_-) < V_i(\mathcal{P}_+)$ so that voters in group i, by Proposition 9, focus on benefits. When $p' = \mathcal{P}_-$, then $\mathcal{P}'_- = \mathcal{P}_-$ and $\mathcal{P}'_+ = \mathcal{P}_+$ so that voters in group i focus on benefits. When $p' \in (\mathcal{P}_-, \tilde{\mathcal{P}}_-^i)$, then $\mathcal{P}'_- = \mathcal{P}_-$, $\mathcal{P}'_+ \in \{\mathcal{P}_+, p'\}$ and $V_i(\mathcal{P}_-) < V_i(\mathcal{P}'_+) \in \{V_i(\mathcal{P}_+), V_i(p')\}$ so that voters in group i, by Proposition 9, focus on benefits. When $p' = \tilde{\mathcal{P}}_-^i$, then $\mathcal{P}'_- = \mathcal{P}_-$, $\mathcal{P}'_+ = p'$ and $V_i(\mathcal{P}_-) = V_i(p')$ so that voters in group i, by Proposition 9, have undistorted focus. When $p' > \tilde{\mathcal{P}}_-^i$, then $\mathcal{P}'_- = \mathcal{P}_-$, $\mathcal{P}'_+ = p'$ and $V_i(\mathcal{P}_-) > V_i(p')$ so that voters in group i, by Proposition 9, focus on costs.

Consider part (b). Since voters in group i focus on costs in $\mathcal{P}$, $\mathcal{P}_- < \mathcal{P}_+$ and, by Proposition 9, $V_i(\mathcal{P}_-) > V_i(\mathcal{P}_+)$. $V_i(\mathcal{P}_-) > V_i(\mathcal{P}_+)$ and $\mathcal{P}_- < \mathcal{P}_+$ jointly imply $\mathcal{P}_+ > p_i$ and thus $\tilde{\mathcal{P}}_+^i < p_i$. When $\tilde{\mathcal{P}}_+^i < 0$, clearly $\mathcal{P}_- > \tilde{\mathcal{P}}_+^i$. When $\tilde{\mathcal{P}}_+^i \geq 0$, $V_i(\mathcal{P}_+) = V_i(\tilde{\mathcal{P}}_+^i)$ and thus $V_i(\tilde{\mathcal{P}}_+^i) = V_i(\mathcal{P}_+) < V_i(\mathcal{P}_-)$, which together with $\tilde{\mathcal{P}}_+^i < p_i$ implies $\mathcal{P}_- > \tilde{\mathcal{P}}_+^i$. In summary, $p_i \in (\tilde{\mathcal{P}}_+^i, \mathcal{P}_+)$ and $\mathcal{P}_- \in (\tilde{\mathcal{P}}_+^i, \mathcal{P}_+)$.

Under $\mathcal{P}'$, voters in group i focus as follows. When $p' > \mathcal{P}_+$, then $\mathcal{P}'_- = \mathcal{P}_-$, $\mathcal{P}'_+ = p'$ and $V_i(p') < V_i(\mathcal{P}_+) < V_i(\mathcal{P}_-)$ so that voters in group i, by Proposition 9, focus on costs. When $p' = \mathcal{P}_+$, then $\mathcal{P}'_- = \mathcal{P}_-$, $\mathcal{P}'_+ = \mathcal{P}_+$ so that voters in group i focus on costs. When $p' \in (\tilde{\mathcal{P}}_+^i, \mathcal{P}_+)$, then $\mathcal{P}'_- \in \{\mathcal{P}_-, p'\}$, $\mathcal{P}'_+ = \mathcal{P}_+$ and $V_i(\mathcal{P}_+) < V_i(\mathcal{P}'_-) \in \{V_i(\mathcal{P}_-), V_i(p')\}$ so that voters in group i, by Proposition 9, focus on costs. When $p' = \tilde{\mathcal{P}}^i_+$, so that $\tilde{\mathcal{P}}^i_+ \geq 0$, then $\mathcal{P}'_- = p'$, $\mathcal{P}'_+ = \mathcal{P}_+$ and $V_i(\mathcal{P}_+) = V_i(p')$ so that voters in group i, by Proposition 9, have undistorted focus. When $p' < \tilde{\mathcal{P}}^i_+$, so that $\tilde{\mathcal{P}}^i_+ \geq 0$, then $\mathcal{P}'_- = p'$, $\mathcal{P}'_+ = \mathcal{P}_+$ and $V_i(\mathcal{P}_+) > V_i(p')$ so that voters in group i, by Proposition 9, focus on benefits.

Consider part (c). Since voters in group i have undistorted focus in $\mathcal{P}$, then, by Proposition 9, $V_i(\mathcal{P}_-) = V_i(\mathcal{P}_+)$. Since $\mathcal{P}_- < \mathcal{P}_+$ and $V_i(\mathcal{P}_-) = V_i(\mathcal{P}_+)$, we have $p_i \in (\mathcal{P}_-, \mathcal{P}_+)$.

Under $\mathcal{P}'$, voters in group i focus as follows. When $p' < \mathcal{P}_-$, then $\mathcal{P}'_- = p'$, $\mathcal{P}'_+ = \mathcal{P}_+$ and $V_i(p') < V_i(\mathcal{P}_-) = V_i(\mathcal{P}_+)$ so that voters in group i, by Proposition 9, focus on benefits. When $p' \in [\mathcal{P}_-, \mathcal{P}_+]$, then $\mathcal{P}'_- = \mathcal{P}_-$ and $\mathcal{P}'_+ = \mathcal{P}_+$ so that voters in group i have undistorted focus. When $p' > \mathcal{P}_+$, then $\mathcal{P}'_- = \mathcal{P}_-$, $\mathcal{P}'_+ = p'$ and $V_i(p') < V_i(\mathcal{P}_+) = V_i(\mathcal{P}_-)$ so that voters in group i, by Proposition 9, focus on costs. □

A1.12 Proof of Proposition 11

Fix $i \in N$, $\mathcal{P}$ and $\mathcal{P}'$ such that $\delta_i < 1$, $p_A \in \mathcal{P}$, $p_B \in \mathcal{P}$, $p_A > p_B$ and $\mathcal{P} \cup \{p_C\} = \mathcal{P}'$.

To prove parts (a) and (b), we have

$$\begin{aligned}\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P}) - \left[\widetilde{V}_i(p_A|\mathcal{P}') - \widetilde{V}_i(p_B|\mathcal{P}')\right] \\ = c\left[B_i(p_A) + C_i(p_A) - [B_i(p_B) + C_i(p_B)]\right]\end{aligned} \tag{A26}$$

where $c = \frac{2(1-\delta_i)}{1+\delta_i}$ when voters in group i focus on benefits in $\mathcal{P}$ and on costs in $\mathcal{P}'$, $c = \frac{1-\delta_i}{1+\delta_i}$ either when voters in group i focus on benefits in $\mathcal{P}$ and have undistorted focus in $\mathcal{P}'$ or when voters in group i have undistorted focus in $\mathcal{P}$ and focus on costs in $\mathcal{P}'$, $c = -\frac{1-\delta_i}{1+\delta_i}$ either when voters in group i focus on costs in $\mathcal{P}$ and have undistorted focus in $\mathcal{P}'$ or when voters in group i have undistorted focus in $\mathcal{P}$ and focus on benefits in $\mathcal{P}'$, and $c = -\frac{2(1-\delta_i)}{1+\delta_i}$ when voters in group i focus on costs in $\mathcal{P}$ and on benefits in $\mathcal{P}'$.

Since $p_A > p_B$, by Assumption A1, $B_i(p_A) + C_i(p_A) - [B_i(p_B) + C_i(p_B)] > 0$. Hence, the sign of $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P}) - \left[\widetilde{V}_i(p_A|\mathcal{P}') - \widetilde{V}_i(p_B|\mathcal{P}')\right]$ coincides with the sign of c.

To prove part (c), consider choice set $\mathcal{R}$ with $p_A \in \mathcal{R}$ and $p_B \in \mathcal{R}$. Then

$$\begin{aligned}\lim_{\delta_i \to 0} \widetilde{V}_i(p_A|\mathcal{R}) - \widetilde{V}_i(p_B|\mathcal{R}) = 2\left[B_i(p_A) - B_i(p_B)\right] > 0 \\ \lim_{\delta_i \to 0} \widetilde{V}_i(p_A|\mathcal{R}) - \widetilde{V}_i(p_B|\mathcal{R}) = -2\left[C_i(p_A) - C_i(p_B)\right] < 0\end{aligned} \tag{A27}$$

when voters in group i focus on benefits and costs respectively, where the inequalities follow from $p_A > p_B$ by Assumption A1. Since voters in group i focus on different attributes and have distorted focus both in $\mathcal{P}$ and $\mathcal{P}'$, they either focus on benefits in $\mathcal{P}$ and on cost in $\mathcal{P}'$, or vice versa. Thus, there has to exists $\overline{\delta}_i \in (0,1)$ such that for any $\delta_i < \overline{\delta}_i$, $\widetilde{V}_i(p_A|\mathcal{P}) - \widetilde{V}_i(p_B|\mathcal{P}) > 0$ and $\widetilde{V}_i(p_A|\mathcal{P}') - \widetilde{V}_i(p_B|\mathcal{P}') < 0$, or vice versa.

To prove part (d), we consider three cases depending on which attribute voters in group i focus on in $\mathcal{P}$.

Case 1: voters in group i focus on benefits in $\mathcal{P}$: It suffices to show that, $\forall p \in \mathcal{P}$, $V_i(p) \geq V_i(p_C)$ and $p_C > p$. To see this, if voters in group i have undistorted focus in $\mathcal{P}'$, then $\widetilde{V}_i(p|\mathcal{P}') - \widetilde{V}_i(p_C|\mathcal{P}') = V_i(p) - V_i(p_C)$, so that $\widetilde{V}_i(p|\mathcal{P}') \geq \widetilde{V}_i(p_C|\mathcal{P}')$ $\forall p \in \mathcal{P}'$ if $V_i(p) \geq V_i(p_C)$ $\forall p \in \mathcal{P}$, and if voters in group i focus on costs in $\mathcal{P}'$, then

$$\begin{aligned}
&\widetilde{V}_i(p|\mathcal{P}') - \widetilde{V}_i(p_C|\mathcal{P}') \\
&\qquad = \tfrac{2\delta_i}{1+\delta_i} B_i(p) - \tfrac{2}{1+\delta_i} C_i(p) - \left[\tfrac{2\delta_i}{1+\delta_i} B_i(p_C) - \tfrac{2}{1+\delta_i} C_i(p_C)\right] \\
&\qquad = -\tfrac{2(1-\delta_i)}{1+\delta_i} B_i(p) + \tfrac{2}{1+\delta_i} V_i(p) - \left[-\tfrac{2(1-\delta_i)}{1+\delta_i} B_i(p_C) + \tfrac{2}{1+\delta_i} V_i(p_C)\right] \\
&\qquad = \tfrac{2}{1+\delta_i}[V_i(p) - V_i(p_C)] + \tfrac{2(1-\delta_i)}{1+\delta_i}[B_i(p_C) - B_i(p)]
\end{aligned} \tag{A28}$$

so that $\widetilde{V}_i(p|\mathcal{P}') \geq \widetilde{V}_i(p_C|\mathcal{P}')$ $\forall p \in \mathcal{P}'$ if $V_i(p) \geq V_i(p_C)$ and $p_C > p$ $\forall p \in \mathcal{P}$.

We now show that, $\forall p \in \mathcal{P}$, $V_i(p) \geq V_i(p_C)$ and $p_C > p$, when voters in group i focus on benefits in $\mathcal{P}$ and do not focus on benefits in $\mathcal{P}' = \mathcal{P} \cup \{p_C\}$. Since voters in group i focus on benefits, $\mathcal{P}_- < \mathcal{P}_+$, so that $V_i(\mathcal{P}_-) < V_i(\mathcal{P}_+)$ by Proposition 9, and, hence, $\mathcal{P}_- < p_i$. $\mathcal{P}_- < p_i$ implies $\tilde{\mathcal{P}}_-^i > p_i$ so that, since $V_i(\tilde{\mathcal{P}}_-^i) = V_i(\mathcal{P}_-) < V_i(\mathcal{P}_+)$, $\mathcal{P}_+ < \tilde{\mathcal{P}}_-^i$. In summary, $p_i \in (\mathcal{P}_-, \tilde{\mathcal{P}}_-^i)$ and $\mathcal{P}_+ \in (\mathcal{P}_-, \tilde{\mathcal{P}}_-^i)$. Moreover, $V_i(\mathcal{P}_-) = \min_{p \in \mathcal{P}} V_i(p)$. To see this, if there exists $p \in \mathcal{P}$ such that $V_i(\mathcal{P}_-) > V_i(p)$, then $p > \tilde{\mathcal{P}}_-^i$ since $\mathcal{P}_- < p_i$, but then $p > \mathcal{P}_+$. Therefore, it suffices to show that $V_i(\mathcal{P}_-) \geq V_i(p_C)$ and $p_C > \mathcal{P}_+$. Since voters in group i do not focus on benefits in $\mathcal{P}'$, by Proposition 10, $p_C \geq \tilde{\mathcal{P}}_-^i$. Combining $p_C \geq \tilde{\mathcal{P}}_-^i$ with $p_i \in (\mathcal{P}_-, \tilde{\mathcal{P}}_-^i)$ and $\mathcal{P}_+ \in (\mathcal{P}_-, \tilde{\mathcal{P}}_-^i)$, we have $V_i(\mathcal{P}_-) \geq V_i(p_C)$ and $p_C > \mathcal{P}_+$.

Case 2: voters in group i focus on costs in $\mathcal{P}$: It suffices to show that, $\forall p \in \mathcal{P}$, $V_i(p) \geq V_i(p_C)$ and $p_C < p$. To see this, if voters in group i have undistorted focus in $\mathcal{P}'$, then $\widetilde{V}_i(p|\mathcal{P}') - \widetilde{V}_i(p_C|\mathcal{P}') = V_i(p) - V_i(p_C)$, so that $\widetilde{V}_i(p|\mathcal{P}') \geq \widetilde{V}_i(p_C|\mathcal{P}')$ $\forall p \in \mathcal{P}'$ if $V_i(p) \geq V_i(p_C)$ $\forall p \in \mathcal{P}$, and if voters focus on benefits in $\mathcal{P}'$, then

$$\begin{aligned}
&\widetilde{V}_i(p|\mathcal{P}') - \widetilde{V}_i(p_C|\mathcal{P}') \\
&\qquad = \tfrac{2}{1+\delta_i} B_i(p) - \tfrac{2\delta_i}{1+\delta_i} C_i(p) - \left[\tfrac{2}{1+\delta_i} B_i(p_C) - \tfrac{2\delta_i}{1+\delta_i} C_i(p_C)\right] \\
&\qquad = \tfrac{2}{1+\delta_i} V_i(p) + \tfrac{2(1-\delta_i)}{1+\delta_i} C_i(p) - \left[\tfrac{2}{1+\delta_i} V_i(p_C) + \tfrac{2(1-\delta_i)}{1+\delta_i} C_i(p_C)\right] \\
&\qquad = \tfrac{2}{1+\delta_i}[V_i(p) - V_i(p_C)] + \tfrac{2(1-\delta_i)}{1+\delta_i}[C_i(p) - C_i(p_C)]
\end{aligned} \tag{A29}$$

so that $\widetilde{V}_i(p|\mathcal{P}') \geq \widetilde{V}_i(p_C|\mathcal{P}')$ $\forall p \in \mathcal{P}'$ if $V_i(p) \geq V_i(p_C)$ and $p_C < p$ $\forall p \in \mathcal{P}$.

We now show that, $\forall p \in \mathcal{P}$, $V_i(p) \geq V_i(p_C)$ and $p_C < p$, when voters in group i focus on costs in $\mathcal{P}$ and do not focus on costs in $\mathcal{P}' = \mathcal{P} \cup \{p_C\}$. First note that focus on costs in $\mathcal{P}$ and not in $\mathcal{P}'$ implies, by Proposition 10, that $p_C \leq \tilde{\mathcal{P}}_+^i$ and hence $\tilde{\mathcal{P}}_+^i \geq 0$. Since voters in group i focus on costs, $\mathcal{P}_- < \mathcal{P}_+$, so that $V_i(\mathcal{P}_-) > V_i(\mathcal{P}_+)$ by Proposition

9, and, hence, $\mathcal{P}_+ > p_i$. $\mathcal{P}_+ > p_i$ implies $\tilde{\mathcal{P}}_+^i < p_i$ so that, since $V_i(\tilde{\mathcal{P}}_+^i) = V_i(\mathcal{P}_+) < V_i(\mathcal{P}_-)$, $\mathcal{P}_- > \tilde{\mathcal{P}}_+^i$. In summary, $p_i \in (\tilde{\mathcal{P}}_+^i, \mathcal{P}_+)$ and $\mathcal{P}_- \in (\tilde{\mathcal{P}}_+^i, \mathcal{P}_+)$. Moreover, $V_i(\mathcal{P}_+) = \min_{p \in \mathcal{P}} V_i(p)$. To see this, if there exists $p \in \mathcal{P}$ such that $V_i(\mathcal{P}_+) > V_i(p)$, then $p < \tilde{\mathcal{P}}_+^i$ since $\mathcal{P}_+ > p_i$, but then $p < \mathcal{P}_-$. Therefore, it suffices to show that $V_i(\mathcal{P}_+) \geq V_i(p_C)$ and $p_C < \mathcal{P}_-$. We already have $p_C \leq \tilde{\mathcal{P}}_+^i$. Combining $p_C \leq \tilde{\mathcal{P}}_+^i$ with $p_i \in (\tilde{\mathcal{P}}_+^i, \mathcal{P}_+)$ and $\mathcal{P}_- \in (\tilde{\mathcal{P}}_+^i, \mathcal{P}_+)$, we have $V_i(\mathcal{P}_+) \geq V_i(p_C)$ and $p_C < \mathcal{P}_-$.

Case 3: voters in group i have undistorted focus in $\mathcal{P}$: If voters in group i focus on costs in $\mathcal{P}'$, by (A28), it suffices to show that, $\forall p \in \mathcal{P}$, $V_i(p) \geq V_i(p_C)$ and $p_C > p$. If voters in group i focus on benefits in $\mathcal{P}'$, by (A29), it suffices to show that, $\forall p \in \mathcal{P}$, $V_i(p) \geq V_i(p_C)$ and $p_C < p$. Since voters in group i have undistorted focus in $\mathcal{P}$, by Proposition 9, $V_i(\mathcal{P}_-) = V_i(\mathcal{P}_+)$. Moreover, we have $p_A > p_B$ and hence $\mathcal{P}_- < \mathcal{P}_+$ so that, since $V_i(\mathcal{P}_-) = V_i(\mathcal{P}_+)$, $p_i \in (\mathcal{P}_-, \mathcal{P}_+)$. Thus $V_i(\mathcal{P}_-) = V_i(\mathcal{P}_+) = \min_{p \in \mathcal{P}} V_i(p)$. If voters in group i focus on costs in $\mathcal{P}'$, by Proposition 10, $p_C > \mathcal{P}_+$. Combining $p_C > \mathcal{P}_+$ with $p_i \in (\mathcal{P}_-, \mathcal{P}_+)$ implies $V_i(\mathcal{P}_+) > V_i(p_C)$. If voters in group i focus on benefits in $\mathcal{P}'$, by Proposition 10, $p_C < \mathcal{P}_-$. Combining $p_C < \mathcal{P}_-$ with $p_i \in (\mathcal{P}_-, \mathcal{P}_+)$ implies $V_i(\mathcal{P}_-) > V_i(p_C)$. □

A1.13 Proof of Proposition 12

The proof is complicated by the fact that we need to establish properties of the parties' objective functions given presence of an additional policy. We start the proof by proving four technical Lemmas A7, A8, A9, A10. Recall that $\widetilde{D}_i'(p|\mathcal{P}) = \frac{\partial}{\partial p}\left[\widetilde{V}_i(p|\mathcal{P}) - \widetilde{V}_i(p'|\mathcal{P})\right]$, given choice set $\mathcal{P}$ and policies $p \in \mathcal{P}$ and $p' \in \mathcal{P}$. Below, when listing the policies in $\mathcal{P}$ explicitly, we use the convention to list p and p' in the first two positions. That is, given $\mathcal{P} = \{p, p', p''\}$, $\widetilde{D}_i(p|\{p, p', p''\}) = \left[\widetilde{V}_i(p|\{p, p', p''\}) - \widetilde{V}_i(p'|\{p, p', p''\})\right]$, and analogously for derivatives.

Lemma A7. *Assume A1, A2, A4. For all $i \in N$, $\forall p \in \mathbb{R}_+$ and $\forall p' \in \mathbb{R}_+$,*

$$\widetilde{D}_i'(p|\{p, p, p'\}) = \begin{cases} v_{b,i}'(p) & \text{if } p < \tilde{p}^{i\prime} \\ v_{c,i}'(p) & \text{if } p > \tilde{p}^{i\prime} \end{cases}$$

$$\widetilde{D}_i'^{-}(\tilde{p}^{i\prime}|\{\tilde{p}^{i\prime}, \tilde{p}^{i\prime}, p'\}) = \begin{cases} v_{n,i}'(\tilde{p}^{i\prime}) & \text{if } p' < p_i \\ v_{b,i}'(\tilde{p}^{i\prime}) & \text{if } p' \geq p_i \end{cases}$$

$$\widetilde{D}_i'^{+}(\tilde{p}^{i\prime}|\{\tilde{p}^{i\prime}, \tilde{p}^{i\prime}, p'\}) = \begin{cases} v_{c,i}'(\tilde{p}^{i\prime}) & \text{if } p' \leq p_i \\ v_{n,i}'(\tilde{p}^{i\prime}) & \text{if } p' > p_i \end{cases}$$

Proof. Fix $i \in N$, $p \in \mathbb{R}_+$ and $p' \in \mathbb{R}_+$. Note that

$$\begin{aligned} \widetilde{D}_i'^{-}(p|\{p,p,p'\}) &= \lim_{h\to 0^-} \tfrac{\widetilde{D}_i(p+h|\{p,p,p'\})-\widetilde{D}_i(p|\{p,p,p'\})}{h} \\ \widetilde{D}_i'^{+}(p|\{p,p,p'\}) &= \lim_{h\to 0^+} \tfrac{\widetilde{D}_i(p+h|\{p,p,p'\})-\widetilde{D}_i(p|\{p,p,p'\})}{h} \end{aligned} \tag{A30}$$

where $\widetilde{D}_i(p|\{p,p,p'\}) = 0$. By Proposition 9, direct verification shows that there exists $\bar{h} > 0$ such that, $\forall h \in (-\bar{h}, 0)$, $\widetilde{D}_i(p+h|\{p,p,p'\}) = v_{z,i}(p+h) - v_{z,i}(p)$, where

$$z = \begin{cases} b & \text{if } (p' < p_i \wedge p < \tilde{p}^{i\prime}) \text{ or } (p' \geq p_i \wedge p \leq \tilde{p}^{i\prime}) \\ n & \text{if } p' < p_i \wedge p = \tilde{p}^{i\prime} \\ c & \text{if } (p' < p_i \wedge p > \tilde{p}^{i\prime}) \text{ or } (p' \geq p_i \wedge p > \tilde{p}^{i\prime}) \end{cases} \tag{A31}$$

and such that, $\forall h \in (0, \bar{h})$, $\widetilde{D}_i(p+h|\{p,p,p'\}) = v_{z,i}(p+h) - v_{z,i}(p)$, where

$$z = \begin{cases} b & \text{if } (p' > p_i \wedge p < \tilde{p}^{i\prime}) \text{ or } (p' \leq p_i \wedge p < \tilde{p}^{i\prime}) \\ n & \text{if } (p' > p_i \wedge p = \tilde{p}^{i\prime}) \\ c & \text{if } (p' > p_i \wedge p > \tilde{p}^{i\prime}) \text{ or } (p' \leq p_i \wedge p \geq \tilde{p}^{i\prime}) \end{cases} \tag{A32}$$

which proves the lemma. □

Lemma A8. *Assume A1, A2, A4. For all $i \in N$ and $\forall p \in \mathbb{R}_+$,*

$$\begin{aligned} \widetilde{D}_i'(p|\{p,p\}) &= \begin{cases} v_{b,i}'(p) & \textit{if } p < p_i \\ v_{c,i}'(p) & \textit{if } p > p_i \end{cases} \\ \widetilde{D}_i'^{-}(p_i|\{p_i,p_i\}) &= v_{b,i}'(p_i) \\ \widetilde{D}_i'^{+}(p_i|\{p_i,p_i\}) &= v_{c,i}'(p_i) \end{aligned}$$

Proof. The first equality follows from Lemma A2 part 4 and the last two equalities follow from Lemma A2 part 5. □

Lemma A9. *Assume A1, A2, A4. For any $i \in N$, $\forall p \in \mathbb{R}_+$, $\forall p' \in \mathbb{R}_+$ and $\forall p'' \in \mathbb{R}_+$, when $p < p'$,*

1. $\widetilde{D}_i'^{-}(p|\{p,p\}) > \widetilde{D}_i'^{-}(p'|\{p',p'\})$ *and* $\widetilde{D}_i'^{+}(p|\{p,p\}) > \widetilde{D}_i'^{+}(p'|\{p',p'\})$*;*
2. $\widetilde{D}_i'^{-}(p|\{p,p,p''\}) > \widetilde{D}_i'^{-}(p'|\{p',p',p''\})$ *and* $\widetilde{D}_i'^{+}(p|\{p,p,p''\}) > \widetilde{D}_i'^{+}(p'|\{p',p',p''\})$*.*

Proof. Fix $i \in N$, $p'' \in \mathbb{R}_+$, $p \in \mathbb{R}_+$ and $p' \in \mathbb{R}_+$ such that $p < p'$. To see part 1, by

Lemma A8 we have

$$\widetilde{D}_i'^-(p|\{p,p\}) = \begin{cases} v'_{b,i}(p) & \text{if } p \le p_i \\ v'_{c,i}(p) & \text{if } p > p_i \end{cases}$$
$$\widetilde{D}_i'^+(p|\{p,p\}) = \begin{cases} v'_{b,i}(p) & \text{if } p < p_i \\ v'_{c,i}(p) & \text{if } p \ge p_i \end{cases} \tag{A33}$$

and part 1 follows by $v''_{b,i}(p) < 0$, $v''_{c,i}(p) < 0$ and $v'_{b,i}(p) \ge v'_{c,i}(p)$. To see part 2, by Lemma A7 we have

$$\widetilde{D}_i'^-(p|\{p,p,p''\}) = \begin{cases} v'_{b,i}(p) & \text{if } (p'' < p_i \wedge p < \tilde{p}^{i\prime\prime}) \text{ or } (p'' \ge p_i \wedge p \le \tilde{p}^{i\prime\prime}) \\ v'_{n,i}(p) & \text{if } (p'' < p_i \wedge p = \tilde{p}^{i\prime\prime}) \\ v'_{c,i}(p) & \text{if } (p'' < p_i \wedge p > \tilde{p}^{i\prime\prime}) \text{ or } (p'' \ge p_i \wedge p > \tilde{p}^{i\prime\prime}) \end{cases}$$
$$\widetilde{D}_i'^+(p|\{p,p,p''\}) = \begin{cases} v'_{b,i}(p) & \text{if } (p'' > p_i \wedge p < \tilde{p}^{i\prime\prime}) \text{ or } (p'' \le p_i \wedge p < \tilde{p}^{i\prime\prime}) \\ v'_{n,i}(p) & \text{if } (p'' > p_i \wedge p = \tilde{p}^{i\prime\prime}) \\ v'_{c,i}(p) & \text{if } (p'' > p_i \wedge p > \tilde{p}^{i\prime\prime}) \text{ or } (p'' \le p_i \wedge p \ge \tilde{p}^{i\prime\prime}) \end{cases} \tag{A34}$$

so that part 2 follows by $v''_{b,i}(p) < 0$, $v''_{c,i}(p) < 0$ and $v'_{b,i}(p) \ge v'_{n,i}(p) \ge v'_{c,i}(p)$. □

Lemma A10. *Assume A1, A2, A4. For all $i \in N$, $\forall p \in \mathbb{R}_+$ and $\forall p' \in \mathbb{R}_+$,*

1. $\widetilde{D}_i'^-(p|\{p,p,p'\}) = \widetilde{D}_i'^-(p|\{p,p\})$ *and* $\widetilde{D}_i'^+(p|\{p,p,p'\}) = \widetilde{D}_i'^+(p|\{p,p\})$ *if* $p' = p_i$*;*
2. *if* $p' < p_i$*, then*

$$\widetilde{D}_i'^-(p|\{p,p,p'\}) - \widetilde{D}_i'^-(p|\{p,p\}) \begin{cases} = 0 & \text{if } p \notin (p_i, \tilde{p}^{i\prime}] \\ \ge 0 & \text{if } p \in (p_i, \tilde{p}^{i\prime}] \end{cases}$$
$$\widetilde{D}_i'^+(p|\{p,p,p'\}) - \widetilde{D}_i'^+(p|\{p,p\}) \begin{cases} = 0 & \text{if } p \notin [p_i, \tilde{p}^{i\prime}) \\ \ge 0 & \text{if } p \in [p_i, \tilde{p}^{i\prime}); \end{cases}$$

3. *if* $p' > p_i$*, then*

$$\widetilde{D}_i'^-(p|\{p,p,p'\}) - \widetilde{D}_i'^-(p|\{p,p\}) \begin{cases} = 0 & \text{if } p \notin (\tilde{p}^{i\prime}, p_i] \\ \le 0 & \text{if } p \in (\tilde{p}^{i\prime}, p_i] \end{cases}$$
$$\widetilde{D}_i'^+(p|\{p,p,p'\}) - \widetilde{D}_i'^+(p|\{p,p\}) \begin{cases} = 0 & \text{if } p \notin [\tilde{p}^{i\prime}, p_i) \\ \le 0 & \text{if } p \in [\tilde{p}^{i\prime}, p_i). \end{cases}$$

Proof. Fix $i \in N$, $p \in \mathbb{R}_+$ and $p' \in \mathbb{R}_+$. Part 1 follows from (A33) and (A34) and the fact that $p' = p_i$ implies $p_i = \tilde{p}^{i\prime}$. To see part 2, the equality when $p \notin (p_i, \tilde{p}^{i\prime}]$ and

$p \notin [p_i, \tilde{p}^{i\prime})$ respectively follows directly from (A33) and (A34). The inequality when $p \in (p_i, \tilde{p}^{i\prime}]$ and $p \in [p_i, \tilde{p}^{i\prime})$ respectively follows from $\widetilde{D}_i^{\prime -}(p|\{p,p\}) = v_{c,i}^{\prime}(p)$ when $p > p_i$ and $\widetilde{D}_i^{\prime +}(p|\{p,p\}) = v_{c,i}^{\prime}(p)$ when $p \geq p_i$. To see part 3, the equality when $p \notin (\tilde{p}^{i\prime}, p_i]$ and $p \notin [\tilde{p}^{i\prime}, p_i)$ respectively follows directly from (A33) and (A34). The inequality when $p \in (\tilde{p}^{i\prime}, p_i]$ and $p \in [\tilde{p}^{i\prime}, p_i)$ respectively follows from $\widetilde{D}_i^{\prime -}(p|\{p,p\}) = v_{b,i}^{\prime}(p)$ when $p \leq p_i$ and $\widetilde{D}_i^{\prime +}(p|\{p,p\}) = v_{b,i}^{\prime}(p)$ when $p < p_i$. □

We first prove that the electoral competition game has at most one pure strategy Nash equilibrium and that, in any Nash equilibrium in pure strategies, the two competing parties offer the same policy.

Fix $p_C \in \mathbb{R}_+$. Suppose profile (p_A^*, p_B^*) constitutes a pure strategy Nash equilibrium in the electoral competition game between parties A and B in the presence of an additional party with policy $p_C \in \mathbb{R}_+$. Then, by an argument similar to the one used in the proof of Proposition 6, $\forall p^* \in \{p_A^*, p_B^*\}$,

$$\sum_{i \in N} m_i \widetilde{D}_i^{\prime -}(p^*|\{p^*, p^*, p_C\}) \geq 0 \qquad \sum_{i \in N} m_i \widetilde{D}_i^{\prime +}(p^*|\{p^*, p^*, p_C\}) \leq 0. \tag{$\mathcal{O}_d$}$$

We now argue that there exists at most one p^* such that ($\mathcal{O}_d$) holds. Fix p^* such that ($\mathcal{O}_d$) holds at p^*. First, we claim that ($\mathcal{O}_d$) fails at any $p \in (p^*, \infty)$. To see this, since ($\mathcal{O}_d$) holds at p^*, by Lemma A9 part 2, $\forall p \in (p^*, \infty)$, $0 \geq \sum_{i \in N} m_i \widetilde{D}_i^{\prime +}(p^*|\{p^*, p^*, p_C\}) > \sum_{i \in N} m_i \widetilde{D}_i^{\prime +}(p|\{p, p, p_C\})$. Furthermore, from Lemma A7, $\forall i \in N$ and $\forall p \in \mathbb{R}_+ \setminus \{\tilde{p}_C^i\}$, $\widetilde{D}_i^{\prime -}(p|\{p, p, p_C\}) = \widetilde{D}_i^{\prime +}(p|\{p, p, p_C\})$. Hence, there exists $\overline{p} > p^*$ such that, $\forall p \in (p^*, \overline{p})$, we have $\sum_{i \in N} m_i \widetilde{D}_i^{\prime -}(p|\{p, p, p_C\}) = \sum_{i \in N} m_i \widetilde{D}_i^{\prime +}(p|\{p, p, p_C\}) < 0$, and thus, by Lemma A9 part 2, $\forall p \in (p^*, \infty)$, $\sum_{i \in N} m_i \widetilde{D}_i^{\prime -}(p|\{p, p, p_C\}) < 0$ so that ($\mathcal{O}_d$) fails at any $p \in (p^*, \infty)$. We now claim that ($\mathcal{O}_d$) fails at any $p \in [0, p^*)$. To see this, since ($\mathcal{O}_d$) holds at p^*, by Lemma A9 part 2, $\forall p \in [0, p^*)$, $\sum_{i \in N} m_i \widetilde{D}_i^{\prime -}(p|\{p, p, p_C\}) > \sum_{i \in N} m_i \widetilde{D}_i^{\prime -}(p^*|\{p^*, p^*, p_C\}) \geq 0$. By Lemma A7 again, there exists $\overline{p} < p^*$ such that, $\forall p \in (\overline{p}, p^*)$, we have $\sum_{i \in N} m_i \widetilde{D}_i^{\prime +}(p|\{p, p, p_C\}) = \sum_{i \in N} m_i \widetilde{D}_i^{\prime -}(p|\{p, p, p_C\}) > 0$, and thus, by Lemma A9 part 2, $\forall p \in [0, p^*)$, $\sum_{i \in N} m_i \widetilde{D}_i^{\prime +}(p|\{p, p, p_C\}) > 0$ so that ($\mathcal{O}_d$) fails at any $p \in [0, p^*)$.

We now prove that $p_d^* \geq p_f^*$ if $p_f^* \geq p_C$. Recall that p_f^* is the unique solution to

$$\sum_{i \in N} m_i \widetilde{D}_i^{\prime -}(p|\{p, p\}) \geq 0 \qquad \sum_{i \in N} m_i \widetilde{D}_i^{\prime +}(p|\{p, p\}) \leq 0 \tag{A35}$$

and satisfies $p_f^* \in [p_1, p_n]$. Suppose first that there exists $k \in N \setminus \{n\}$ such that $p_f^* \in (p_k, p_{k+1})$. Then, from Lemma A8, $\forall i \in N$ and $\forall p \in \mathbb{R}_+ \setminus \{p_i\}$, $\widetilde{D}_i^{\prime -}(p|\{p, p\}) = \widetilde{D}_i^{\prime +}(p|\{p, p\})$ and hence $\sum_{i \in N} m_i \widetilde{D}_i^{\prime +}(p_f^*|\{p_f^*, p_f^*\}) = 0$. Thus, there exists $\overline{p} < p_f^*$ such that, $\forall p \in (\overline{p}, p_f^*)$,

$$\begin{aligned} 0 < \sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\{p,p\}) &= \sum_{i=1}^{k} m_i v_{c,i}'(p) + \sum_{i=k+1}^{n} m_i \widetilde{D}_i'^{+}(p|\{p,p\}) \\ &\leq \sum_{i=1}^{k} m_i \widetilde{D}_i'^{+}(p|\{p,p,p_C\}) + \sum_{i=k+1}^{n} m_i \widetilde{D}_i'^{+}(p|\{p,p,p_C\}) \end{aligned} \tag{A36}$$

where the first inequality follows by Lemma A9 part 1, the first equality follows by Lemma A8 and the second inequality follows, for the first sum, since Lemma A7 implies $\widetilde{D}_i'^{+}(p|\{p,p,p_C\}) \in \{v_{b,i}'(p), v_{n,i}'(p), v_{c,i}'(p)\}$ $\forall i \in N$ and $\forall p \in \mathbb{R}_+$ and we have $v_{b,i}'(p) \geq v_{n,i}'(p) \geq v_{c,i}'(p)$ $\forall p \in \mathbb{R}_+$ and, for the second sum, since Lemma A10 part 2 implies $\widetilde{D}_i'^{+}(p|\{p,p,p_C\}) = \widetilde{D}_i'^{+}(p|\{p,p\})$ $\forall i \in N$ such that $p_C < p_i$ and $\forall p \in \mathbb{R}_+$ such that $p < p_i$. Thus, $\forall p \in (\overline{p}, p_f^*)$, $\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\{p,p,p_C\}) > 0$ and hence, by Lemma A9 part 2, $\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\{p,p,p_C\}) > 0$ $\forall p \in [0, p_f^*)$.

Suppose now that there exists $k \in N$ such that $p_f^* = p_k$. Then we have that $\sum_{i \in N} m_i \widetilde{D}_i'^{-}(p_f^*|\{p_f^*, p_f^*\}) \geq 0$ and, by Lemma A9 part 1, there exists $\overline{p} < p_f^*$ such that, $\forall p \in (\overline{p}, p_f^*)$, $\sum_{i \in N} m_i \widetilde{D}_i'^{-}(p|\{p,p\}) > 0$, so that, by Lemma A8 again, we have $\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\{p,p\}) > 0$. Therefore, $\forall p \in (\overline{p}, p_f^*)$,

$$\begin{aligned} 0 < \sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\{p,p\}) &= \sum_{i=1}^{k-1} m_i v_{c,i}'(p) + \sum_{i=k}^{n} m_i \widetilde{D}_i'^{+}(p|\{p,p\}) \\ &\leq \sum_{i=1}^{k-1} m_i \widetilde{D}_i'^{+}(p|\{p,p,p_C\}) + \sum_{i=k}^{n} m_i \widetilde{D}_i'^{+}(p|\{p,p,p_C\}) \end{aligned} \tag{A37}$$

where the first equality follows by Lemma A8 and the second inequality follows, for the first sum, by similar argument as in the previous paragraph and, for the second sum, since $\widetilde{D}_i'^{+}(p|\{p,p,p_C\}) = \widetilde{D}_i'^{+}(p|\{p,p\})$ either $\forall i \in N$ such that $p_C = p_i$ and $\forall p \in \mathbb{R}_+$, by Lemma A10 part 1, or $\forall i \in N$ such that $p_C < p_i$ and $\forall p \in \mathbb{R}_+$ such that $p < p_i$, by Lemma A10 part 2. Thus, $\forall p \in (\overline{p}, p_f^*)$, $\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\{p,p,p_C\}) > 0$ and hence, by Lemma A9 part 2, $\sum_{i \in N} m_i \widetilde{D}_i'^{+}(p|\{p,p,p_C\}) > 0$ $\forall p \in [0, p_f^*)$. The proof that $p_d^* \leq p_f^*$ if $p_f^* \leq p_C$ is analogous and omitted. □

A1.14 Proof of Proposition 13

Suppose the policy of the additional party $p_C > \max_{i \in N} \tilde{0}^{i}$. This implies, $\forall i \in N$, that $p_C > p_i$ and $V_i(p_C) < V_i(p)$ $\forall p \in [0, p_C)$. Consider any pair of policies of parties A and B, (p_A, p_B) and choice set $\mathcal{P} = \{p_A, p_B, p_C\}$. If $\mathcal{P}_- = \mathcal{P}_+$, $p_A = p_B = p_C$, so that voters in any group i have undistorted focus. If $\mathcal{P}_- < \mathcal{P}_+$, we have $\mathcal{P}_- \leq p_C$ and $p_C \leq \mathcal{P}_+$. The former implies that, $\forall i \in N$, $V_i(\mathcal{P}_-) \geq V_i(p_C)$, and the latter implies that, $\forall i \in N$,

$V_i(p_C) \geq V_i(\mathcal{P}_+)$. Since $\mathcal{P}_- < \mathcal{P}_+$, $V_i(\mathcal{P}_-) > V_i(\mathcal{P}_+)$ $\forall i \in N$, so that voters in all groups focus on costs by Proposition 9.

We now argue that profile of profile (p_C, p_C) does not constitute a Nash equilibrium in the electoral game. To see this, the payoff of party A from (p_C, p_C) is $\frac{1}{2}$. Consider deviation by party A to 0. We know that, $\forall i \in N$, $V_i(0) > V_i(p_C)$. Moreover, $\forall i \in N$, the attribute voters in group i focus on in $\{0, p_C, p_C\}$ is equal to the attribute voters in group i focus on in $\{0, p_C\}$. Therefore, by Proposition 3, $\forall i \in N$, $\widetilde{V}_i(0|\{0, p_C, p_C\}) > \widetilde{V}_i(p_C|\{0, p_C, p_C\})$ and thus payoff of party A from the deviation is (strictly) profitable.

Given $j \in \{A, B\}$, consider policy party j contests the election with, p_j, and suppose $p_j \neq p_C$. We argue that the best response of party $-j = \{A, B\} \setminus \{j\}$ is p_d^*, where p_d^* is the unique solution to

$$\max_{p \in \mathbb{R}_+} \sum_{i \in N} \tfrac{2m_i}{1+\delta_i} \left[\delta_i B_i(p) - C_i(p)\right]. \tag{A38}$$

This follows from the fact that given $p_j \neq p_C$ and any p_{-j}, voters in all groups focus on costs. Given this, any solution to (A38) is the best response of party $-j$ to p_j. By Assumption A1, the objective function in (A38) is strictly concave and thus (A38) has unique solution.

Since the best response of any party to the policy of its opposition that differs from p_C is p_d^*, and given that (p_C, p_C) does not constitute a Nash equilibrium, the electoral competition game admits unique pure strategy Nash equilibrium (p_d^*, p_d^*). □

A2 Diminishing Sensitivity

Our focus-weighted utility captures one key feature of sensory perception: human beings' perceptive apparatus is attuned to detect changes in stimuli. This is captured by *ordering*, whereby individuals focus on an attribute when it varies more than other attributes in the choice set. In addition to ordering, Bordalo et al. (2012, 2013a,b, 2015a,b) also assume that individuals perceive stimuli with *diminishing sensitivity*.

In order to consider both ordering and diminishing sensitivity in our basic framework, we can replace Assumption A4 with the following one.

Assumption 5. *(A5) For a voter in group i, the focus-weighted utility from $p \in \mathcal{P} = \{p_A, p_B\}$ with $p_A \neq p_B$ is:*

$$\widetilde{V}_i(p|\mathcal{P}) = \begin{cases} \frac{2}{1+\delta_i} B_i(p) - \frac{2\delta_i}{1+\delta_i} C_i(p) & \text{if } \frac{|B_i(p_A) - B_i(p_B)|}{B_i(p_A)+B_i(p_B)} > \frac{|C_i(p_A) - C_i(p_B)|}{C_i(p_A)+C_i(p_B)} \\ \frac{2\delta_i}{1+\delta_i} B_i(p) - \frac{2}{1+\delta_i} C_i(p) & \text{if } \frac{|B_i(p_A) - B_i(p_B)|}{B_i(p_A)+B_i(p_B)} < \frac{|C_i(p_A) - C_i(p_B)|}{C_i(p_A)+C_i(p_B)} \\ B_i(p) - C_i(p) & \text{if } \frac{|B_i(p_A) - B_i(p_B)|}{B_i(p_A)+B_i(p_B)} = \frac{|C_i(p_A) - C_i(p_B)|}{C_i(p_A)+C_i(p_B)} \end{cases}$$

where $\delta_i \in (0, 1]$ decreases in the severity of focusing.

Consider $\mathcal{P} = \{p_A, p_B\}$ with $p_A > p_B > 0$. Assumption A5 implies that voters in group $i \in N$ focus on benefits if and only if

$$\frac{B_i(p_A) - B_i(p_B)}{B_i(p_A) + B_i(p_B)} > \frac{C_i(p_A) - C_i(p_B)}{C_i(p_A) + C_i(p_B)}. \tag{A39}$$

After some algebra, this condition rewrites as

$$\frac{B_i(p_A)}{C_i(p_A)} > \frac{B_i(p_B)}{C_i(p_B)}. \tag{A40}$$

It is immediate that this condition is unlikely to hold for $p_A > p_B$: since B_i is concave and C_i is convex, $B_i'(p)$ is non-increasing while $C_i'(p)$ is non-decreasing and, hence, $B_i(p)$ is likely to eventually grow at a lower rate than $C_i(p)$. More formally, Proposition A1 shows that, under a mild sufficient condition on B_i and C_i, incorporating diminishing sensitivity à la Bordalo et al. (2012, 2013a,b, 2015a,b) into our *salience function* means that voters in group i focus on costs for any pair of (distinct) policies.[26] Note that, for example, if $C_i(0) = 0$, that is, when policies have no fixed cost, the condition in the statement of Proposition A1 is satisfied.

Proposition A1. *Assume A1, A5 and $\mathcal{P} = \{p_A, p_B\}$, $p_A > p_B > 0$. For any $i \in N$, if $B_i(0)C_i'(0) \geq B_i'(0)C_i(0)$, then voters in group i focus on costs.*

Proof. Fix $i \in N$, $p_A \in \mathbb{R}_+$ and $p_B \in \mathbb{R}_+$ such that $p_A > p_B > 0$. By A5, voters in group i focus on costs if and only if $\frac{B_i(p_A)}{C_i(p_A)} < \frac{B_i(p_B)}{C_i(p_B)}$. Since $p_A > p_B > 0$, it suffices to show that $\frac{B_i(p)}{C_i(p)}$ is decreasing in p for any $p \in \mathbb{R}_{++}$. We have

$$\frac{\partial}{\partial p}\frac{B_i(p)}{C_i(p)} = \frac{B_i'(p)C_i(p) - B_i(p)C_i'(p)}{C_i(p)^2} \tag{A41}$$

so that we need to prove that, $\forall p \in \mathbb{R}_{++}$, $B_i'(p)C_i(p) - B_i(p)C_i'(p) < 0$. We have, $\forall p \in \mathbb{R}_{++}$, $\frac{\partial}{\partial p}\left[B_i'(p)V_i(p) - B_i(p)C_i'(p)\right] = B_i''(p)C_i(p) - B_i(p)C_i''(p) < 0$, where the inequality follows from Assumption A1. Hence $B_i'(p)C_i(p) - B_i(p)C_i'(p) < 0$ for any $p \in \mathbb{R}_{++}$ if $B_i'(0)C_i(0) - B_i(0)C_i'(0) \leq 0$. □

[26] Some formulations of diminishing returns require the denominators in A5 to read $xB_i(p_A) + yB_i(p_B)$ and $xC_i(p_A) + yC_i(p_B)$, where x and y are positive constants. Proposition A1 continues to hold with this version of Assumption A5 as well since it leaves (A40) unchanged.