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Office-Holding Premia and Representative Democracy

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Abstract

I consider a policy issue stylized as redistribution in a representative democracy in which holding office offers an income premium. Predominance of high earners in the legislature implies that not a single lawmaker supports the policy preferred by lower-income citizens. This predominance cannot arise if legislators from a lower-income background support redistribution once they hold office. Therefore, office-holding premia must be high enough to induce them to join the legislators from a high-income background in opposing redistribution once in office. If inequality is high enough, then legislators are recruited from a political elite consisting of high earners to begin with.

Keywords: Representative Democracy, Legislature, Legislators, Representatives, Representation, Policy Preferences, Citizen-Candidates, Office-Holding Premia, Redistribution.
JEL classification: D72.

1 Introduction

High earners and affluent citizens predominate the legislatures in many representative democracies (e.g., Carnes 2012; Gagliarducci et al. 2010; Peichl et al. 2013; Dal Bó et al. 2017). Following the 2016 elections, of the members of the 115th United States Congress, over 95% hold at least a bachelor's degree, over 60% hold degrees beyond that, over 40% hold a law degree, and about 40% and 38%, respectively, have declared law or business as one of their professions (Manning 2018). Of the overall US population aged 25 and over in 2016, only about 30% held at least a bachelor's degree and less than 20% worked in broadly defined management, business, financial operations, and legal occupations.[1] By some estimates, the median net worth among members of Congress in 2013 of over one million US dollars was more than 18 times that year's median net worth among US households of under $60,000.[2]

A natural question that arises from these observations is what role the policy preferences of lower-income citizens play in the policy-making process. Political scientists are divided on this question. Some argue that lower-income citizens' policy preferences are underrepresented (e.g., Gilens 2005, 2009; Carnes 2012; Peters and Ensink 2015) while others disagree (e.g., Soroka and Wlezien 2008; Ura and Ellis 2008; Kelly and Enns 2010; Branham et al. 2017).

This question is timely. Many important policy issues have a more or less explicit inherent redistributional component. Some issues concern redistribution directly, like the progressivity of taxation or welfare spending. Other issues concern redistribution less explicitly, like the overarching policy areas of education, health care, social insurance, and pensions (e.g., Besley and Coate 1991; Boadway and Marchand 1995). In the United States, lower-income citizens—those with less-than-average income—constitute a majority, as median income is less than mean income (also see Piketty et al. 2018). In the majority of congressional districts, the majority belongs to this group of lower-income citizens as well.[3] They tend to prefer more redistribution than high earners (e.g., Corneo and Grüner 2002; Durante et al. 2014). Yet, laws are passed that are expected to reduce redistribution, like the December 2017 tax reform.[4]

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[1]Education: United States Census Bureau, 2012–2016 American Community Survey 5-year estimates, downloaded from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_S1501&src=pt on 9/25/2018. Occupations: United States Bureau of Labor Statistics, Current Population Survey, at https://www.bls.gov/cps/aa2016/cpsaat11b.htm, accessed on 9/25/2018.

[2]Center for Responsive Politics, accessed at https://www.opensecrets.org/news/2015/01/one-member-of-congress-18-american-households-lawmakers-personal-finances-far-from-average/ on 9/24/2018.

[3]In over 89% of all congressional districts for the 115th United States Congress, the median household income is less than the mean household income in the United States overall. The district median household income is less than the district mean household income in all congressional districts. In all states, the median household income is less than both the mean household income in the state and in the United States overall. Data: United States Census Bureau, 2012–2016 American Community Survey 5-year estimates, in 2016 inflation-adjusted US dollars, retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_DP03&src=pt on 4/20/2018.

[4]115th Congress, Public Law 97: https://www.congress.gov/bill/115th-congress/house-bill/1/text; Congressional Budget Office, estimates of distributional effects: https://www.cbo.gov/publication/53429.

I show that the situation might be quite different from what the ongoing debate among political scientists suggests. The predominance of high earners in the legislature may well imply that not a single lawmaker supports the redistribution policies preferred by lower-income citizens, whose redistribution preferences thus play no role in the policy-making process. Assuming that high earners oppose redistribution when in office, the underlying logic is rather general. Candidates from a lower-income background win the seat in the majority of districts as long as they support redistribution once in office. Thus, for the observed predominance of high earners to arise, it must be the case that legislators from a lower-income background also oppose redistribution once in office. This finding is concerning if the legislature is supposed to represent all citizens' policy preferences, let alone represent them equally.

I present this finding in an environment that incorporates another observation. Empirical evidence suggests that in many democratic societies, holding office offers a premium over the market income individuals can expect (e.g., Gagliarducci et al. 2010; Eggers and Hainmueller 2009; Peichl et al. 2013; Kotakorpi et al. 2017). This premium derives from relatively high legislator salaries and opportunities to generate outside, and possibly future post-legislature,[5] income from, e.g., businesses, consultancy, board memberships, speeches, and books. Its size depends on the laws and ethics rules in place, and their enforcement.[6] As to relatively high legislator salaries, in the United States in 2016 for example, the salary of a generic member of the United States Congress was $174,000, which was more than four times the median earnings of under $40,000 in the US population aged 25 and over.[7] That is, winning a seat in Congress would have more than quadrupled the median earner's income. In addition, the 2016 outside earned income limit was $27,495 (Brudnick 2016). Outside unearned income from, e.g., investments—which might in part be made out of the relatively high congressional salaries[8]—is unrestricted. In 2015, the latest year with available data, the highest estimated outside income reported for a member of Congress was over $650,000.[9] From the point of view of the individual legislator, the laws and rules in place are given political institutions that may affect their income and thus the redistribution policies they support once in office.

In the environment I describe in Section 2, individuals are heterogenous in income and reside in one of a finite number of electoral districts. Both in society and in the majority of electoral districts, lower-income citizens constitute a majority. They support redistribution while high-income citizens oppose it. The redistribution policy is chosen by a vote in a legisla-

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[5]See, e.g., Diermeier et al. (2005); Parker and Parker (2009); Palmer and Schneer (2016).

[6]As an example, see Djankov et al. (2010) on financial and business disclosure rules.

[7]Brudnick (2016) and United States Census Bureau, 2012–2016 American Community Survey 5-year estimates, downloaded from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_S1501&src=pt on 9/25/2018.

[8]According to Manning (2018), at the beginning of the 115th Congress, members had on average served in Congress for about 10 years already, allowing for investments made out of the high congressional salaries.

[9]Center for Responsive Politics, accessed at https://www.opensecrets.org/personal-finances/top-outside-income?filter=C&year=2015 on 9/13/2018.

ture consisting of representatives of the districts. Each district's representative is determined in an election in which all citizens residing in the district can both run for office and vote over candidates. The election winner holds office, pockets a premium over their market income to the extent the political institutions allow, and votes for their preferred redistribution policy.

I then show in Section 3 that the observed predominance of high earners in the legislature may well imply that not a single lawmaker supports redistribution. If office-holding premia are low, then legislators from a lower-income background support redistribution once in office. Thus, lower-income candidates win the seat in the majority of electoral districts and high earners do not predominate in the legislature. Therefore, the predominance of high earners requires high office-holding premia. They must be high enough to induce legislators from a lower-income background to fall in line with those from a high-income background and oppose redistribution. It follows that not a single legislator supports the policy preferred by lower-income citizens, whose policy preferences thus play no role in the policy-making process.

To be clear, I do not assume that office-holding premia or legislator salaries are so high that legislators from all backgrounds oppose redistribution once in office. While the environment incorporates office-holding premia, in principle, these premia could be very low, or even zero. I use the empirical observation that high earners predominate in the legislature to discipline the model and to identify the relevant subset of the parameter space. In that subset, office-holding premia are high enough to induce legislators from all backgrounds to oppose redistribution once in office. The underlying logic is not affected by an additional dimension of heterogeneity among citizens or an additional policy dimension as long as they are orthogonal to income. The conclusion neither depends on an interpretation of legislators' individual voting behavior or policy outcomes, nor on a definition of legislative representation.

The focus of this paper is on the policies supported by legislators, and how these are affected by political institutions. It highlights a reality in many democratic societies— office-holding premia—that may affect the extent to which policy outcomes correspond to citizen preferences. A lack of congruence does not require, e.g., issue bundling, influence by special-interest groups, asymmetric information, or costly voting (e.g., Besley and Coate 2008; Lohmann 1998; Campbell 1999). Focusing on redistribution, this paper complements work by Mattozzi and Snowberg (2018) (also see Huber and Ting 2013). They assume that the more successful individuals are in the private sector, the better they are at securing resources for their district in the legislative process. If this skill is important, then all districts elect high-income individuals, who oppose redistribution, over candidates from a lower-income background. However, Carnes and Lupu (2016) find that given the choice, voters do not reject lower-income candidates. The results I present in Section 3 are consistent with this finding.

I consider a citizen-candidate structure (Osborne and Slivinski 1996; Besley and Coate 1997) with a policy issue stylized as redistribution (e.g., Meltzer and Richard 1981) and an income premium associated with holding office. I use this model to link the predominance

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of high earners among lawmakers to the redistribution policy they support once they hold office. For simplicity and focus, I abstract from the roles of ability and candidate quality (e.g., Messner and Polborn 2004; Caselli and Morelli 2004; Poutvaara and Takalo 2007), political parties (e.g., Bernhardt et al. 2009; Galasso and Nannicini 2011; Mattozzi and Merlo 2015), agency problems (e.g., Besley 2004; Gagliarducci et al. 2010), reelection concerns (e.g., Duggan 2000; Van Weelden 2013), post-legislature careers (e.g., Diermeier et al. 2005; Mattozzi and Merlo 2008; Parker and Parker 2009), and political influence through, e.g., lobbying (e.g., Besley and Coate 2001; Felli and Merlo 2006; Gehlbach et al. 2010). However, focusing on some of these aspects, I argue in Section 4 that the logic will often carry over.

I present the model in Section 2, describe its equilibrium predictions and their implications in Section 3, and then offer additional discussion of my assumptions and results in Section 4.

2   The Model

There is a unit measure continuum of risk neutral individuals. Each individual belongs to one of two mutually exclusive groups. A measure $\mu_l > 0$ of individuals belongs to the low-income group l with income or earnings potential $w_l > 0$ while a measure $\mu_h > 0$ of individuals belongs to the high-income group h with income or earnings potential $w_h > w_l$, where $\mu_l + \mu_h = 1$. The average income in society is $\bar{w} = \mu_l w_l + \mu_h w_h$. In line with empirical observations in, e.g., the United States, median income is less than mean income, i.e., $\mu_l > \mu_h$.

Each individual resides in exactly one of an odd finite number $d > 1$ of pairwise disjoint electoral districts, with an equal measure $1/d$ of individuals each, and indexed by $j \in D = \{1, \ldots, d\}$. In each district j, the measure of individuals belonging to income group i is $\mu_i^j > 0$, where $\mu_l^j + \mu_h^j = 1/d$ for all $j \in D$, and $\sum_j \mu_i^j = \mu_i$ for all $i \in \{l, h\}$. There are districts with a majority of individuals from the low-income group l, collected in $D_l = \{j \in D : \mu_l^j > \mu_h^j\}$. There may be districts with a majority of individuals from the high-income group h, collected in $D_h = \{j \in D : \mu_l^j < \mu_h^j\}$. In every district, one group is a strict majority: $D = D_l \cup D_h$. In line with empirical observations in, e.g., the United States (see Footnote 3), the majority of districts has a majority of individuals from the low-income group l, i.e., $|D_l| > |D_h|$.

Society has to decide whether or not it wants to implement redistribution. All productive activity is taxed proportionally at rate $t \in \{0, 1\}$, and every individual receives a lump sum transfer $\tau \geq 0$. The budget is required to balance, $\tau(\mu_l + \mu_h) = t(\mu_l w_l + \mu_h w_h)$, or more compactly, $\tau = t\bar{w}$, which implies that a tax rate t directly determines a transfer $\tau = t\bar{w}$. A pair (t, τ) can thus be written as $(t, \tau) = (t, t\bar{w}) = t(1, \bar{w})$. The policy choice can be summarized by $t = 1$ representing redistribution, and $t = 0$ representing no redistribution.[10]

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[10]In a tax policy space $[0, 1]$, the ideal point of every individual in any role would be either 0 or 1. As long as an equilibrium of the voting game in the legislature in which the majority does not implement their shared ideal point is considered unreasonable and somehow ruled out, the restriction to $\{0, 1\}$ is inconsequential.

The policy t is chosen by a legislature with at most d members in a plurality vote. Each legislator represents a single electoral district. Each electoral district is represented by at most one legislator. Each district's representative is determined in a plurality vote election between candidates residing in it. Every individual in society can run for office to represent the district they reside in at direct (utility) cost $\delta > 0$. Candidates cannot commit to a policy platform. As legislators they vote sincerely, according to their policy preferences. At the district level, all individuals vote sincerely for a candidate who they expect to vote for the policy they most prefer among the alternatives. If there is only one candidate for office, then this candidate automatically becomes the legislator. If there is no candidate for office, then the district does not send a representative to the legislature. If there are no legislators at all, then nature draws a policy $t \in \{0, 1\}$ from some known distribution. At all stages, at the individual level and in the aggregate, ties are broken by equal-probability random draws.

The legislative technology is fixed and does not require any special skill or ability. One can think of it as consisting of aides, advisors, and specialists. Legislators receive direct office (utility) benefits $b > \delta$. This assumption ensures that every district is represented in the legislature, even if their legislator's vote is not pivotal for its policy choice. Legislators' income while in office offers a premium over the market income they could expect in the private sector. This premium is represented by a factor $\gamma \geq 1$, implying an in-office income γw_i for legislators from group i. The implication $\gamma w_h > \gamma w_l > 0$ captures the idea that on average, the skills and abilities required and fostered in activities with higher market-income potential are more transferable to, e.g., politicians' opportunities to generate outside income. Thus, given the same constraints, these skills and abilities allow for a higher income while in office. All at most d legislators' in-office income γw_i is subject to taxation and transfers.

The environment and the structure of the game are common knowledge. The equilibrium concept is pure-strategy Nash equilibrium. I say that an income group is predominant in the legislature if the majority of legislators has a background that indicates membership in it.

Definition 1. *A group predominates in the legislature if the majority of legislators is from it.*

3 Analysis

In Section 3.1, I describe individuals' payoffs and a few insights directly deriving from them. In the following two Sections 3.2 and 3.3, I characterize the equilibrium. As all voting is sincere, equilibrium only requires that no individual finds it profitable to change their decision whether or not to run for office given all others' decisions whether or not to run for office. I distinguish between two cases: (i) low office-holding premia, $\gamma w_l < \bar{w}$; and (ii) high office-holding premia, $\gamma w_l \geq \bar{w}$. In Section 3.4, I show that the predominance of high earners in the legislature likely implies that not a single lawmaker supports the redistribution policy

preferred by lower-income citizens. In Section 3.5, I provide further insights that inform the interpretation of the results. Appendix C collects omitted proofs.

3.1 Payoffs, Policies, Majorities, and Some Entry

If a majority of legislators supports redistribution, then the policy $t = 1$ is chosen by the legislature, implementing redistribution that equalizes after-tax incomes. If a majority of legislators opposes redistribution, then $t = 0$ is chosen by the legislature, implementing no redistribution. All individuals from group i not in office simply receive their after-tax income $(1 - t)w_i + \tau = (1 - t)w_i + t\bar{w} \in \{w_i, \bar{w}\}$ as payoff. Individuals that run for office incur the cost δ. An office holder from group i collects both the exogenous office benefits b and the after-tax income while in office, $(1 - t)\gamma w_i + \tau = (1 - t)\gamma w_i + t\bar{w} \in \{\gamma w_i, \bar{w}\}$, minus the costs of running for it. The payoffs for individuals from group i associated with redistribution are

$$
(1) \qquad \varphi_i(1) = \begin{cases} \bar{w} & \text{if not running for office,} \\ \bar{w} - \delta & \text{if running for office and losing,} \\ b + \bar{w} - \delta & \text{if running for office and winning,} \end{cases}
$$

while the payoffs for individuals from group i associated with no redistribution are

$$
(2) \qquad \varphi_i(0) = \begin{cases} w_i & \text{if not running for office,} \\ w_i - \delta & \text{if running for office and losing,} \\ b + \gamma w_i - \delta & \text{if running for office and winning.} \end{cases}
$$

An office holder votes for the policy t that maximizes their own payoff. The policy stance of a legislator from group i thus derives from a comparison of the third entries in (1) and (2).

Lemma 1. *A legislator from group i supports (opposes) redistribution if $\gamma w_i < \bar{w}$ ($\gamma w_i \geq \bar{w}$).*

That is, legislators from the high-income group h always oppose redistribution because $\gamma \geq 1$ and $w_h > \bar{w}$ together imply that $\gamma w_h > \bar{w}$. Whether legislators from the low-income group l support or oppose redistribution depends on the size of the office-holding premium γ. The policy preferences of a noncandidate voter from group i similarly follow from a comparison of the first entries in (1) and (2), and from $w_h > \bar{w} > w_l$.

Lemma 2. *Low-(High-)income noncandidate voters prefer redistribution (no redistribution).*

Low-income individuals prefer redistribution while high-income individuals prefer no redistribution. Given that $\mu_l > \mu_h$ and $|D_l| > |D_h|$, both in society and in the majority of districts, the majority of individuals belongs to the low-income group and prefers redistribution.

Observation 1. *In society and in the majority of districts, the majority prefers redistribution.*

A first insight about district elections is that there are candidates for office in every district.

Lemma 3. *In every equilibrium, in every district, at least one candidate runs for office.*

That is, every district has a lawmaker representing it in the legislature, which thus has an odd finite number $d > 1$ of legislators. If some district had no candidates for office, then some policy would be implemented by the legislature without a vote from this district, or by nature's draw if there are no legislators at all. Whatever that policy is, even if becoming this district's legislator does not change it, deviating to running for office is profitable. Holding office allows to collect the surplus from direct office benefits over the costs of running. If this legislator's vote affects the legislature's policy choice, then the payoff from deviating to running increases further. If there are no legislators at all, then deviating to running in fact allows to dictate the policy. Hence, every district has at least one candidate. However, all candidates for office in a district are expected to receive the same share of all votes cast in it.

Lemma 4. *In every equilibrium, in every district, all candidates for office expect to receive an equal share of the votes cast in the district.*

All candidates running for office in a district are expected to receive the same share of votes cast and thus to have the same probability of winning the election. Receiving a smaller vote share than another candidate implies losing the election with certainty. Thus, expecting to receive a smaller vote share than another candidate implies expecting to lose the election with certainty. In fact, it implies expecting that all other candidates that support the same policy also lose with certainty, and that the district's elected legislator supports the opposite policy with certainty. It is then profitable to drop out of the race and save the costs of running. Doing so may even change the election outcome in the district towards electing a legislator who supports the same policy, possibly changing the policy chosen by the legislature.

3.2 Low Office-Holding Premia

Suppose that the political institutions determining the premium for holding office are fairly restrictive, so that $\gamma w_l < \bar{w}$. That is, the income a legislator from the low-income group can generate while in office is low enough for them to support redistribution. At the same time, legislators from the high-income group always oppose redistribution. A range of values for the institutional parameter γ strictly greater than one, i.e., with a strictly positive income premium for holding office, is entirely consistent with this inequality. In this case, the strict majority of candidates for office in a district belongs to the majority group in that district.

Lemma 5. *Let $\gamma w_l < \bar{w}$. In every equilibrium, in every district, a strict majority of candidates for office belongs to the district's majority group.*

Candidates from different groups support opposing policies, and they find support from voters from their own group. Suppose that there was no candidate from the majority group. Then, for any member of it to enter the race would mean to win the election with certainty. Doing so would allow to, at least, capture the surplus of the direct benefits from holding office over the direct costs of running for it. Hence, there must be at least one candidate from the majority group. Suppose that the majority of candidates is from the minority group. In this case, the larger number of candidates from the minority group is expected to share the smaller number of votes from that group while the smaller number of candidates from the majority group is expected to share the larger number of votes from their group. That is, all candidates from the minority group are expected to lose the election with certainty. They can do better by dropping out, thereby at least saving the direct costs of running for office.

The next result distinguishes between two cases. This distinction is based on the comparison of some payoffs and some costs facing an individual from the high-income group in two scenarios. On one side of the comparison is the highest payoff an individual from the high-income group could possibly attain as a legislator. On the other side is the sum of the highest payoff that same individual could possibly attain when not in office and the direct cost saved by not running. This comparison can be captured by inequalities distinguishing the case of relatively high costs of running for office, $2\delta \geq b + (\gamma - 1)w_h$, from the case of relatively low costs of running for office, $2\delta < b + (\gamma - 1)w_h$. Proposition 1 covers both cases.

Proposition 1. *Let $\gamma w_l < \bar{w}$. If $2\delta \geq b + (\gamma - 1)w_h$, then an equilibrium exists, and in every equilibrium, all legislators are from their district's majority group, supporting its preferred policy, and the legislature chooses redistribution. If $2\delta < b + (\gamma - 1)w_h$, if an equilibrium exists, then the strict majority of candidates for office in a district is from the district's majority group. Legislators from the low-(high-)income group support (oppose) redistribution.*

For the case of relatively high direct costs of running for office and low office-holding premia, Proposition 1 shows that an equilibrium exists. In every such equilibrium, every district is represented by a legislator that belongs to the income group that has a majority in that district. From Lemmas 4 and 5, all candidates in a district are expected to receive the same share of votes and the strict majority of them belongs to the district's majority. The candidates incur the costs of running for office to enter an equal-probability lottery over who wins it. For high costs of running, entering this lottery is not profitable enough to sustain more than two candidates in equilibrium. With at most two candidates running, if a strict majority of them is from the district's majority group, then all of them have to be.

As office-holding premia are low, legislators support the preferred policy of their income group. Thus, every legislator supports the policy that the majority of individuals residing in their district prefers. In this sense, a district's majority finds representation through the elected official. As the majority of districts has a majority of lower-income citizens, the

majority of legislators are lower-income citizens and support redistribution. As a result, the policy chosen by the legislature is redistribution. In this sense, the majority of individuals in society, and in the majority of districts, finds representation in the legislative outcome. That is, low office-holding premia, $\gamma w_l < \bar{w}$, and relatively high direct costs of running for office, $2\delta \geq b + (\gamma - 1)w_h$, ensure that the majority of legislators support the policy preferred by the majority of citizens. Predominance of high earners in the legislature is impossible.

In the case of relatively low costs of running for office, without further restrictions on the parameters, an equilibrium may not exist. However, if an equilibrium exists, then the strict majority of candidates for office in a district is from the majority group in that district. That is, in the majority of districts, the strict majority of candidates for office are lower-income citizens. This implication is in principle testable. All candidates in a district are expected to capture equal vote shares and thus to win the election with equal probability. This probability is determined by the number of candidates, with more candidates implying a lower probability of winning for each one. Fixing the benefits and income associated with holding office, lower costs of running for office compensate for a lower probability of winning it when entering a race with many candidates. If there are candidates from both groups, then a fairly sharp condition involving parameters has to hold in equilibrium in district j: $\mu_l^j / n_l^j = \mu_h^j / n_h^j$, where $n_i^j > 0$ is the number of candidates from group i running for office in district j. While all candidates in a district are equally likely to win the election, since the majority of them is from the majority income group in the district, a district's legislator is more likely to be from the district's majority income group than they are to be from the minority income group.

As an example of equilibrium nonexistence, the following scenario may arise. For concreteness, consider a district with a majority of low-income individuals. An equilibrium may require that there are exactly two candidates in this district, and that both belong to the low-income group. In this case, all voters in the district are indifferent among them, so that both candidates are expected to win the election with probability one-half. Suppose that no individual from the low-income group in the district can profitably deviate. If an individual from the high-income group were to deviate to entering the district's race, then that candidate would capture the votes of all the district's high-income voters. The two candidates from the low-income group would then be expected to share the votes of all the district's low-income voters equally. Then, for this profile with two low-income candidates in this district to be an equilibrium, deviating to entering the district's race should not be profitable for individuals from the high-income group. However, the parameter constellation may be such that half of the votes of all the district's low-income individuals is less than all the votes of all the district's high-income individuals. In this case, individuals from the high-income group can profitably deviate to entering the race, expecting to win it with certainty. Their expected payoff would increase by the surplus of the direct office benefits over the direct costs of running for office. If they were to affect the policy outcome in the legislature, then their expected payoff would

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increase even further. Hence, in this case, this profile with exactly two candidates in this district, both from the low-income group, is not an equilibrium. Thus, an equilibrium does not exist. In Appendix B, I illustrate this issue in more detail with an explicit example.[11]

To summarize, with low office-holding premia, predominance of high earners in the legislature is either impossible, or it arises while in the majority of districts, the strict majority of candidates for office are lower-income citizens.

3.3   High Office-Holding Premia

Now suppose that holding office offers a rather high premium over the market income individuals can expect from their productive activity when not in office. That is, suppose that lower-income individuals can generate income while in office that is above the average income in society, $\gamma w_l \geq \bar{w}$. Then, by Lemma 1, legislators from the low-income group oppose redistribution once in office, and thus do not support the policy preferred by the low-income group anymore. Proposition 2 characterizes the equilibrium, distinguishing between relatively high and low costs of running for office, $2\delta \geq b + (\gamma - 1)w_h$ and $2\delta < b + (\gamma - 1)w_h$, respectively.

Proposition 2. *Let $\gamma w_l \geq \bar{w}$. An equilibrium exists, and in every equilibrium, all legislators oppose redistribution and the legislature chooses no redistribution. If $2\delta \geq b + (\gamma - 1)w_h$, then in each district there is one candidate from any group; if $2\delta = b + (\gamma - 1)w_h$, then there can be two candidates, both from the high-income group; if $2\delta < b + (\gamma - 1)w_h$, then there are at least two candidates. All candidates in all districts being high earners is always an equilibrium.*

When the premium for holding office is rather high, then once in office, due to the high income while in office, candidates from all income groups oppose redistribution. The political institutions grant high enough premia for holding office to lead low-income individuals who become legislators to oppose the policies preferred by the low-income group. Thus, all voters are indifferent among all candidates from all income-group backgrounds, and all legislators oppose redistribution. It follows that the policy chosen by the legislature is no redistribution, irrespective of the legislature's composition in terms of the income-group background of its members. The policy outcome represents the redistribution preferences of a possibly small minority in society, not those of the possibly large majority. A colorful interpretation of these implications is that when holding office is lucrative enough, then legislators ignore the policy preferences of lower-income citizens, despite them constituting a majority.

These implications arise irrespective of whether or not the costs of running for office are relatively high or relatively low. With respect to the equilibrium, the parameter case only determines how many candidates are running for office in each district. When the costs of

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[11]To the extent that the action profile arising in a single repetition of the game is a realization of strategic randomization, mixed-strategy equilibria involve an element of chance. They are thus not very informative about the link between the observed realized composition of the legislature and the policies lawmakers support.

running for office are relatively high, few citizens run; when they are relatively low, more citizens do so. The reason is as before. All candidates are expected to win the election with equal probability, which is determined by the number of candidates, with more candidates implying a smaller probability of winning for each one. In equilibrium, fixing the benefits and income associated with holding office, in order for it to be worthwhile to enter this lottery, higher costs of running for office have to be compensated for by a higher probability of winning, which requires fewer competing candidates.

To summarize, with high office-holding premia, predominance of high earners in the legislature is an equilibrium outcome.

3.4   The Predominance of High Earners

Following the insights from Sections 3.2 and 3.3, this section links the observed predominance of high earners among lawmakers to the redistribution policy lawmakers support. Recall that an income group predominates in the legislature if the majority of legislators has a background that indicates membership in it. Then, the predominance of high earners in the legislature likely implies that not a single legislator supports the policy preferred by lower-income citizens.

Proposition 3. *Suppose that high earners predominate in the legislature. If $2\delta \geq b + (\gamma - 1)w_h$, then no legislator supports redistribution. If $2\delta < b + (\gamma - 1)w_h$, then either in the majority of districts, the strict majority of candidates are lower-income citizens, or no legislator supports redistribution.*

The proof of this result follows directly from combining insights from Propositions 1 and 2, and is thus provided here in terms of its discussion in the main text. First, suppose that $2\delta \geq b + (\gamma - 1)w_h$. For the case of low office-holding premia, $\gamma w_l < \bar{w}$, Proposition 1 states that every legislator is from their district's majority group. As the majority of districts has a majority of low-income individuals, the majority of legislators is from the low-income group. That is, high earners cannot possibly predominate in the legislature if $\gamma w_l < \bar{w}$. By contrast, for the case of high office-holding premia, $\gamma w_l \geq \bar{w}$, Proposition 2 shows that in every district, irrespective of which group has a majority in it, the single candidate can be from the high-income group. In the special case in which there are two candidates, both of them have to be from the high-income group. That is, a majority of high-income individuals in the legislature is an equilibrium outcome if $\gamma w_l \geq \bar{w}$. Combining these insights, predominance of high earners in the legislature implies that office-holding premia are high: $\gamma w_l \geq \bar{w}$ must hold. It then follows from Proposition 2 that all legislators oppose redistribution. No lawmaker supports the policy preferred by lower-income citizens.

Second, suppose that $2\delta < b + (\gamma - 1)w_h$. For the case of low office-holding premia, $\gamma w_l < \bar{w}$, Proposition 1 shows that if an equilibrium exists, then the strict majority of candidates for office in a district is from the district's majority group. Assume that an equilibrium

exists. Then, in the majority of districts, the strict majority of political candidates running for office are lower-income citizens. This prediction is in principle testable and seems to be counterfactual. According to Carnes (2018, pp. 66-67), for example, less than 5 percent of candidates in 2012–2014 US state legislative elections were working-class citizens, defined as working as manual laborer, in the service industry, in clerical occupations, or in labor unions. By contrast, for the case of high office-holding premia, $\gamma w_l \geq \bar{w}$, Proposition 2 shows that in every district, irrespective of which group is a majority in it, all candidates for office can be from the high-income group. That is, a majority of high-income individuals in the legislature is an equilibrium outcome if $\gamma w_l \geq \bar{w}$. It again follows from Proposition 2 that all legislators oppose redistribution. No lawmaker supports the policy preferred by lower-income citizens.

To summarize, in the empirically relevant case, the political institutions allow for holding office to offer a high enough premium over the market income an individual can expect to induce lower-income individuals to oppose redistribution once they hold office. To many, high office-holding premia might seem to be a fact (see, e.g., Gagliarducci et al. 2010; Eggers and Hainmueller 2009; Peichl et al. 2013; Kotakorpi et al. 2017). It then follows that not a single legislator supports the redistribution policy preferred by lower-income citizens. The logic is as follows. Candidates from a lower-income background will win the election in the majority of districts as long as they support redistribution once they hold office. That is, high earners cannot possibly predominate in the legislature. For the observed predominance of high earners to arise in equilibrium, it must be the case that legislators from a lower-income background oppose redistribution once they hold office. That is, while office-holding premia could in principle be very low, they must be high enough to induce legislators from a lower-income background to oppose redistribution. It follows that voters are indifferent among candidates from all income backgrounds, which is consistent with the findings of Carnes and Lupu (2016).

One likely consequence of the predominance of high earners in the legislature thus is that all legislators support the same redistribution policy once in office. This finding does not imply that we should observe that all legislators vote the same. The votes of a minority of legislators from a lower-income background cannot be pivotal for the legislature's policy choice. Thus, in the presence of, e.g., reelection concerns (see Section 4.1), they might vote according to the preferences of their district's low-income majority. This way they can claim that they have represented their constituents' preferences, but that they were outvoted. Doing so, they escape the electoral costs of supporting their preferred policy against the preferred policy of their district's majority while seeing their preferred policy prevail nonetheless.

If society wishes to ensure that some lawmakers support the redistribution policies preferred by lower-income citizens, then it could target the premium for holding office. Lowering legislator salaries or tightening the restrictions on, e.g., outside income decreases the premium holding office offers over the market income individuals can expect. A large enough change in this dimension of the political institutions might move society to an equilibrium in which

legislators from a lower-income background do not forget where they came from. However, it might affect legislator ability and quality, which I abstract from here.

3.5 Forgetful Politicians and Political Elites

Following Proposition 3, in this section I interpret some implications. Suppose that office-holding premia are high, $\gamma w_l \geq \bar{w}$, and high earners predominate the legislature. Once in office, all legislators oppose redistribution. Legislators from the high-income group always oppose redistribution, and they would have done so as a private person. For legislators from the low-income group, the premium for holding office is high enough to lead them to oppose a policy that they would have supported as a private citizen. Once they hold office, they oppose the preferred redistribution policy of the income group they used to belong to. That is, legislators from a lower-income background forget where they came from.

From Proposition 2, in the case of relatively high costs of running for office, $2\delta \geq b + (\gamma - 1)w_h$, the candidate can be from any group. Therefore, some legislators might be forgetful of their background. In the special case of $2\delta = b + (\gamma - 1)w_h$, districts can have two candidates for office, both from a high-income background. In the case of relatively low costs of running for office, $2\delta < b + (\gamma - 1)w_h$, all of a district's at least two candidates can be from the high-income group. However, for some parameter constellations, legislators are necessarily recruited from a political elite, consisting of individuals with high incomes.

Proposition 4. *Let $\gamma w_l \geq \bar{w}$ and $2\delta < b + (\gamma - 1)w_h$. If $w_h - w_l > \delta/(\gamma - 1)$, then there are only candidates from the high-income group in equilibrium. If $w_h - w_l \leq \delta/(\gamma - 1)$, then there may or may not be an equilibrium with candidates from the low-income group; if $w_h - w_l$ is small enough, then there is an equilibrium with candidates from the low-income group.*

This result can be interpreted in terms of income inequality. Fix the group sizes μ_l and μ_h as well as mean income $\bar{w}$. A greater difference $(w_h - w_l)$ then represents a mean-preserving spread of the income distribution. It maps directly into higher income inequality as measured by the coefficient of variation of income, $(\sqrt{\mu_l \mu_h}/\bar{w})(w_h - w_l)$ (see Appendix A for details). Then, Proposition 4 shows that if office-holding premia are high, the costs of running for office are relatively low, and the income distribution is unequal enough, then there is an endogenous political elite in the sense that all candidates for office and thus all legislators are recruited exclusively from the high-income group. This elite arises even though there are no formal restrictions, like income or wealth requirements. The reason is that compared to lower-income citizens, high earners are relatively more inclined to run for office as their relative income increase from winning it, $(\gamma - 1)(w_h - w_l)$, rises with inequality.

Another way to look at the condition $w_h - w_l > \delta/(\gamma - 1)$ is to focus on institutions. The lower bound $\delta/(\gamma - 1)$ on the income difference that ensures a political elite is potentially not restrictive at all. It decreases with the office-holding premium γ, because high earners' income

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increase from winning the office relative to that of lower-income citizens rises with γ. For high office-holding premia, the bound is low enough for even small income differences to suffice for a political elite to arise. If the income distribution is not too unequal, or office-holding premia are not too high, then there may be candidates from the low-income group. If there are such candidates, however, then they forget where they came from once they hold office.

If society wishes to prevent the selection of legislators from a political elite consisting of high earners, then it could again target the premium for holding office. Cutting legislator salaries or tightening the restrictions on, e.g., outside income decreases the premium holding office offers over the market income individuals can expect. Such a change increases the lower bound on the income difference that ensures a political elite. However, again, it might affect legislator ability and quality, which I abstract from here.

The extent of inequality does not affect the redistribution policy the legislature chooses. This prediction is in line with some empirical evidence (e.g., Perotti 1996; Rodríguez 1999). Whether or not the legislature chooses redistribution solely depends on whether or not the office-holding premia are high enough for legislators from a lower-income background to oppose redistribution once they hold office.

4   Discussion

Throughout the paper, I interpret γ as an income premium associated with holding office. Empirical evidence for office-holding premia is provided by, e.g., Gagliarducci et al. (2010), Eggers and Hainmueller (2009), Peichl et al. (2013), Kotakorpi et al. (2017). One possible element of such a premium is a disproportionately high legislator salary. Again, as an example, in the United States in 2016, the salary of a generic member of the United States Congress was $174,000, which was more than four times the median earnings of under $40,000 in the US population aged 25 and over (see Footnote 7). With such a salary interpretation, the predominance of high earners in the legislature being associated with high office-holding premia is consistent with empirical evidence that higher politician pay is associated with more educated politicians from higher-paying occupations (e.g., Gagliarducci and Nannicini 2013; Carnes and Hansen 2016).

Another element of a high office-holding premium is outside income generated from, e.g., businesses, consultancy, board memberships, speeches, and books. With a focus on this element, γ captures restrictions on outside activities and income imposed by the political institutions. It might capture explicit restrictions as well as implicit rules and custom. It might similarly capture how time-consuming the role of a legislator is, and thus how much time they can spend engaging in outside activities. Any such restrictions deriving from institutions and legislature custom are the same for all legislators. The productivity of outside opportunities, for example, thus depends on the individual office holder's productivity in those activities. On

average, the skills and abilities associated with high-income occupations in the private sector are likely more transferable to politicians' opportunities to generate outside income than those associated with less well-paying occupations. Outside income could also be derived from wealth, which might be correlated with income or earnings potential. In principle, γ could be interpreted as capturing, in a reduced form, legislators' increased income potential in a post-legislature career (e.g., Diermeier et al. 2005; Eggers and Hainmueller 2009; Parker and Parker 2009; Palmer and Schneer 2016). Higher expected future income likely does affect a legislator's support for, e.g., certain changes to the tax code.

The assumption of only two income levels is not important. The logic is that in the empirically relevant case, low-income candidates that support redistribution once in office win the district election in the majority of districts. That is, predominance of high earners in the legislature is impossible. Therefore, suppose that there are additional income levels and some are very low, but nonzero (modeling income in office and the office-holding premium differently, they could in fact be zero). In order for the observed predominance of high earners in the legislature to arise in equilibrium, office-holding premia would have to be high enough for even those lowest-income citizens to oppose redistribution once in office.

I assume that all individuals are equally productive in operating a fixed legislative technology that can be thought of as aides, advisors, and specialists. Therefore, politician selection is driven by the policies they are expected to support, not by their quality, with all its interpretations. The common direct utility costs of running for office $\delta > 0$ imply that before redistribution, running might be relatively less costly, in terms of payoffs, for high-income individuals. This assumption captures the idea that the skills and abilities required and fostered in activities with higher income potential are likely helpful in campaigning and related activities. However, the equally common direct utility benefit $b > \delta$ implies that lower-income individuals would still find it beneficial to hold office, even if their vote has no effect on the policy outcome. More importantly, the assumption that $b > \delta$ ensures that every district is represented in the legislature, even if their legislator's vote is not pivotal for the legislature's policy choice. If $b < \delta$ were to hold, then an equilibrium would not exist.

I restrict the policy space for the tax rate t to $\{0, 1\}$. If that policy space was $[0, 1]$ instead, then the ideal point of every individual in any role would be either 0 or 1. As long as an equilibrium of the voting game in the legislature in which the majority does not implement their shared ideal point is considered unreasonable and somehow ruled out, the restriction to $\{0, 1\}$ is inconsequential. Given this policy space, the analysis is unchanged when voting in the legislature is strategic with weakly dominated voting strategies being excluded. For simplicity, I abstract from a trade-off between the size of the pie and its distribution, thereby, in a sense, favoring redistribution. If this trade-off were present, then redistribution would be implemented with a tax rate less than one. None of the results would change materially.

The assumption that $|D_l| > |D_h|$ captures the empirical observation that lower-income

citizens do not only constitute a majority in the United States overall, which is captured by the assumption that $\mu_l > \mu_h$, but also in the majority of US congressional districts (see Footnote 3). If $|D_l| < |D_h|$ were to hold, then high earners would constitute a majority in the majority of electoral districts. That is, in the majority of congressional districts, the median income in the district is higher than the mean income in the population overall. For the case of high office-holding premia, the analysis and predictions would be unaffected. However, high earners could predominate in the legislature even in the case of low office-holding premia.

Besides the direct utility cost δ of running for office, I abstract from any financial campaign costs. Such costs could be a concern if the only way candidates can pay for them is out of their own pocket. In this case, only rich citizens can run for office to begin with, which would be a serious problem for a democratic society. However, such costs are less of a concern if candidates can fundraise to cover them. In particular, to the extent that candidates receive support, i.e., raise money from interest groups whose policy issue is orthogonal to the income and redistribution dimension, all predictions and conclusions are unaffected (see Section 4.3).

The assumption that legislators vote according to their own policy preferences finds empirical support in the literature (e.g., Levitt 1996; Lee et al. 2004; Matsusaka 2017). The logic of the results then builds on the idea that the political institutions elected representatives face in office may alter their policy preferences. It follows that in the empirically relevant case, the predominance of high earners in the legislature implies that the political institutions induce all legislators to oppose redistribution once in office, irrespective of the income group they come from. The reason is that the observed predominance of high earners in the legislature cannot arise as long as political candidates from a lower-income background support redistribution once they hold office. In the majority of districts, lower-income citizens would run for and win the office. This logic is not undermined by an additional dimension of heterogeneity among citizens or an additional policy dimension as long as they are entirely orthogonal to income. In Sections 4.1–4.3, I further argue that it often carries over when accounting for possibly relevant aspects. I focus on legislators' concerns regarding group identity and reelection, the selection of political candidates by parties, and special interest groups.

4.1 Group Identity and Reelection Concerns

There are a number of concerns lawmakers might have that affect the policies they support in office. For example, some might argue that a sense of group identity might be important enough to induce legislators to further their original groups' political interests. Similarly, the desire to be reelected by their district might convince legislators to support the policies preferred by their constituents. In particular, such concerns might counteract the effect of high office-holding premia on the policies legislators from the low-income group support once in office. Therefore, suppose that these concerns lead to legislators from a lower-income

background to support redistribution once in office, even when office-holding premia are high.

Legislators from a high-income background further their group's interests by opposing redistribution. In addition, I ignore the possibility that reelection concerns induce them to support redistribution. This case seems counterfactual in, for example, the United States, as then all legislators would support redistribution while laws are passed that are expected to reduce it, such as, e.g., the 115th Congress' Public Law 97 (see Footnote 4). Therefore, suppose that these concerns do not affect the voting behavior of legislators from the high-income group. That is, they oppose redistribution.

In this case, legislators from either group support the redistribution policy preferred by their group. By analogy to the analysis of low office-holding premia in Section 3.2, in the empirically relevant case, the observed predominance of high earners in the legislature is impossible. As before, as long as candidates from a lower-income background support redistribution once they hold office, they will win the seat in the majority of districts.

4.2 Candidate Selection by Parties

Suppose that there are two parties that for each district, each select exactly one candidate from the district's population, and that only care about winning seats in the legislature. (I discuss policy-motivated parties below.) That is, for every district, parties strictly prefer winning the district's seat over not winning it. For simplicity, suppose that there are neither costs of running for office upon being selected by a party (or that the party incurs them), nor benefits from holding office (or that the party collects them). Thus, if the legislature chooses redistribution, then the payoff of an individual from group i is $\bar{w}$, holding office or not; if the legislature chooses no redistribution, then the payoff of an individual from group i is w_i when not in office and γw_i when in office. As $\gamma \geq 1$, all individuals weakly prefer to be selected as a candidate by a party due to the possibility of their vote being pivotal in the legislature. Legislators from a high-income background always oppose redistribution. For legislators from a lower-income background, there are two cases. Either the office-holding premium is low enough for them to support redistribution, or it is high enough for them to oppose it.

Consider the case in which office-holding premia are low enough for legislators from a low-income background to support redistribution. That is, a legislator from any group supports the policy preferred by the members of that group. In the unique equilibrium, in each district, both parties select candidates from the district's majority group. Consider any district and suppose for a contradiction that at least one party selects a candidate from the district's minority group. If both parties select candidates from the district's minority group, then all voters in the district are indifferent between the candidates, and both parties are expected to win the seat with probability one-half. Then, either party can deviate to selecting a candidate from the district's majority group. Such a candidate then is the only candidate in

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the race that supports the preferred policy of the majority in the district. Therefore, doing so wins the seat with certainty and is thus profitable. Hence, at least one party selects a candidate from the district's majority group. If the other party selects a candidate from the district's minority group, then that party does not win the seat with certainty. It can deviate to also selecting a candidate from the district's majority group. Doing so increases the probability of winning the seat from zero to one-half and is thus profitable. Finally, suppose that both parties select candidates from the district's majority group. Then, both parties are expected to win the seat with probability one-half. Deviating to selecting a candidate from the district's minority group is not profitable as it implies not winning the seat with certainty. In the unique equilibrium thus both parties select candidates from the district's majority group. Each district's legislator is from the majority group in that district, and supports its preferred policy in the legislature. As the majority of districts has a majority of lower-income individuals, the majority of legislators has a lower-income background and supports redistribution. The legislature thus chooses redistribution. It is impossible for high earners to predominate the legislature if office-holding premia are low enough for legislators from a lower-income background to support redistribution.

Next, consider the case in which office-holding premia are high enough for legislators from a lower-income background to oppose redistribution. That is, once in office, all legislators support the policy preferred by the members of the high-income group, irrespective of their background. Thus, in all districts, all voters are indifferent among all candidates, irrespective of which group they come from. Any profile of candidates from any group selected by the parties is an equilibrium. Both parties are expected to win each district's seat with probability one-half, and the legislature chooses no redistribution. In particular, any profile with two candidates from the high-income group in the majority of districts is an equilibrium. Therefore, high earners can predominate the legislature if office-holding premia are high enough for legislators from a lower-income background to oppose redistribution.

Given the policy space in this environment, the conclusions are unchanged if parties are policy-motivated and play only weakly undominated strategies. Suppose that one party supports redistribution while the other one opposes it. If office-holding premia are low enough, then legislators from a lower-income background support redistribution while legislators from a high-income background oppose it. Parties then select candidates that support their preferred policy. In this case, the party that supports redistribution and selected its candidates from the low-income group wins the seat in the majority of districts, i.e., in all those that have a majority of low-income individuals. Thus, high earners cannot predominate in the legislature. If office-holding premia are high enough, then legislators from all groups oppose redistribution once in office. Parties are then indifferent among the backgrounds of possible candidates. In this case, high earners can predominate in the legislature.

To summarize, the logic underlying the results carries over to at least some cases in which

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the candidates for office are selected by parties. In the cases discussed here, predominance of high earners in the legislature can only arise due to the political institutions inducing all legislators to support the same policy—no redistribution—once in office.

4.3 Special Interest Groups

Suppose that special interest groups only care about "winning a district's seat" by supporting (e.g., financially) a candidate who is aligned with them and votes in their favor on related policy issues once in office. Then, to the extent that their interest is orthogonal to the income and redistribution dimension, their motivation and behavior is the same as that of office-motivated parties analyzed in Section 4.2. The insights from this analysis then carry over.

5 Conclusion

This paper contributes to the discussion about what role the preferences of lower-income citizens play in the policy-making process in representative democracies. I consider a policy issue stylized as redistribution in a representative democracy in which holding office offers an income premium, for which there is empirical evidence in many democratic societies. I show that in the empirically relevant case, the observed predominance of high earners in the legislature may imply that not a single lawmaker supports the policies preferred by lower-income citizens. This predominance cannot arise as long as potential political candidates from a lower-income background support redistribution once they hold office. Therefore, for high earners to predominate in the legislature, legislators from a lower-income background have to forget where they came from. If income inequality is high enough, then legislators are selected from a political elite consisting of high earners to begin with. A society that wishes to prevent the selection of legislators from a political elite or to improve the representation of lower-income citizens' policy preferences could attempt to decrease the office-holding premium by cutting legislator salaries and tightening ethics rules. Then, however, the effects of such changes on legislator ability and quality need to be considered.

Appendices

A   The Coefficient of Variation of Income

Letting σ_w^2 be the variance of income w, the coefficient of variation of income cv_w is given by

$$cv_w = \frac{\sqrt{\sigma_w^2}}{\bar{w}}.$$

In this environment, using $\bar{w} = \mu_l w_l + \mu_h w_h$ and $\mu_l + \mu_h = 1$, the variance of income is

$$
\begin{aligned}
\sigma_w^2 &= \mu_l(w_l - \bar{w})^2 + \mu_h(w_h - \bar{w})^2 \\
&= \mu_l w_l^2 - 2\mu_l w_l \bar{w} + (\mu_l + \mu_h)\bar{w}^2 + \mu_h w_h^2 - 2\mu_h w_h \bar{w} \\
&= \mu_l w_l^2 - 2\mu_l w_l(\mu_l w_l + \mu_h w_h) + (\mu_l w_l + \mu_h w_h)^2 + \mu_h w_h^2 - 2\mu_h w_h(\mu_l w_l + \mu_h w_h) \\
&= \mu_l w_l^2 - \mu_l^2 w_l^2 + \mu_h w_h^2 - 2\mu_l \mu_h w_l w_h - \mu_h^2 w_h^2 \\
&= \mu_l w_l^2(1 - \mu_l) - 2\mu_l \mu_h w_l w_h + \mu_h w_h^2(1 - \mu_h) \\
&= \mu_l \mu_h w_l^2 - 2\mu_l \mu_h w_l w_h + \mu_l \mu_h w_h^2 \\
&= \mu_l \mu_h(w_l^2 - 2w_l w_h + w_h^2) \\
&= \mu_l \mu_h(w_h - w_l)^2.
\end{aligned}
$$

Therefore, the coefficient of variation of income is

$$cv_w = \frac{\sqrt{\mu_l \mu_h}}{\bar{w}}(w_h - w_l).$$

B   An Illustrative Example

Here, I provide an example to illustrate that in the case of low office-holding premia and relatively low costs of running for office, equilibrium existence depends on the parameter constellation. I describe the example in Section B.1 and provide the details in Section B.2.

B.1   The Example

Suppose that $\gamma w_l < \bar{w}$ and $2\delta < b + (\gamma - 1)w_h$ holds. Consider the special case in which $2\delta < b \le b + (\gamma - 1)w_l \le b + (\gamma - 1)w_h < b + (\gamma - 1)w_h + (w_h - \bar{w}) \le 3\delta$. For concreteness, consider a district j with a majority of low-income individuals, i.e., $\mu_l^j > \mu_h^j$. The argument is symmetric for a district with a majority of high-income individuals. In every equilibrium, there are exactly two candidates, and both belong to the low-income group, which has a majority in the district. (See Section B.2 for the details.) There are two cases: **(i)** $\mu_l^j/2 \ge \mu_h^j$ and **(ii)** $\mu_l^j/2 < \mu_h^j$. For case **(i)**, it can be shown that no individual in district j can profitably

deviate if there are exactly two candidates in district j, both from the low-income group. If a similar condition holds in all districts, adjusted appropriately to account for the group that has a majority, then an equilibrium exists. In this equilibrium, every legislator belongs to their district's majority group and supports its preferred policy. As the majority of districts has a majority of low-income individuals, the majority of legislators belongs to the low-income group, and thus the legislature chooses redistribution. By contrast, in case **(ii)**, a profile with two candidates in district j, both from the low-income group, invites profitable deviations in district j, so that an equilibrium does not exist. The reason is that irrespective of whether or not they can affect the policy outcome in the legislature, individuals from the high-income group h can deviate to running for office, win with certainty, and capture the surplus of direct benefits in office over the direct costs of running for it. If they can affect the policy outcome in the legislature, running is even more profitable. (See Section B.2 for the details.)

B.2 The Details

Let $\gamma w_l < \bar{w}$, $2\delta < b \leq b + (\gamma - 1)w_l \leq b + (\gamma - 1)w_h < b + (\gamma - 1)w_h + (w_h - \bar{w}) \leq 3\delta$, and $\mu_l^j > \mu_h^j$. By Lemma 3, in every equilibrium, there is at least one candidate in district j. By Lemma 1, as $\gamma w_l < \bar{w} < \gamma w_h$, a legislator from group l supports redistribution while a legislator from group h opposes it. Thus, following Lemma 2, voters from group l prefer candidates from group l, voters from group h prefer candidates from group h, and both randomize when they are indifferent among candidates. Following Lemma 4, all candidates in a district are expected to receive the same share of votes and thus to win with equal probability. Following Lemma 5, a strict majority of the candidates in a district belongs to the majority group in that district, i.e., the low-income group l in district j. I take 3 steps.

1. *First, in every equilibrium, district j has exactly two candidates, and both are from the low-income group l.* By Lemma 3, district j has at least one candidate. Suppose for a contradiction that in some equilibrium, district j has exactly one candidate. By Lemma 5, that candidate must be from group l. For individuals from group l, deviating from not running to running does not affect the policy outcome, as both candidates support the same policy. Voters are indifferent so that both candidates win with equal probability. If the policy is redistribution, then the payoff from deviating is

$$\frac{1}{2}(b + \bar{w} - \delta) + \frac{1}{2}(\bar{w} - \delta) > \bar{w} \quad \Leftrightarrow \quad b > 2\delta,$$

which holds by assumption; if the policy is no redistribution, then that payoff is

$$\frac{1}{2}(b + \gamma w_l - \delta) + \frac{1}{2}(w_l - \delta) > w_l \quad \Leftrightarrow \quad b + (\gamma - 1)w_l > 2\delta,$$

which again holds by assumption. That is, irrespective of the policy chosen by the legislature, individuals from group l can profitably deviate from not running to running.

Similarly, suppose for a contradiction that in some equilibrium, district j has $n \geq 3$ candidates. Let $n_i^j \geq 0$ denote the number of candidates from group i in district j. By Lemma 5, $n_l^j > n_h^j$, where $n = n_l^j + n_h^j \geq 3$. By Lemma 4, if $n_h^j > 0$, then $\mu_l^j / n_l^j = \mu_h^j / n_h^j$ has to hold; and all candidates are expected to win with equal probability $1/(n_l^j + n_h^j)$. As $d > 1$ is odd, there are three cases: **(a)** the legislature chooses redistribution irrespective of the vote of district j's legislator; **(b)** the legislature chooses no redistribution irrespective of the vote of district j's legislator; and **(c)** the vote of district j's legislator decides the policy.
Case (a). If the legislature chooses redistribution irrespective of the vote of district j's legislator, then the candidates from group l have an expected payoff of

$$\frac{1}{n}(b + \bar{w} - \delta) + \frac{n-1}{n}(\bar{w} - \delta).$$

For every candidate from group l, deviating to not running does not affect the policy chosen by the legislature, and thus implies payoff $\bar{w}$. Doing so is profitable because

$$\bar{w} > \frac{1}{n}(b + \bar{w} - \delta) + \frac{n-1}{n}(\bar{w} - \delta) \quad \Leftrightarrow \quad n\delta > b,$$

which holds by assumption because $n\delta \geq 3\delta > b$, a contradiction.
Case (b). If the legislature chooses no redistribution irrespective of the vote of district j's legislator, then the candidates from group l have an expected payoff of

$$\frac{1}{n}(b + \gamma w_l - \delta) + \frac{n-1}{n}(w_l - \delta).$$

For every candidate from group l, deviating to not running does not affect the policy chosen by the legislature, and thus implies payoff w_l. Doing so is profitable because

$$w_l > \frac{1}{n}(b + \gamma w_l - \delta) + \frac{n-1}{n}(w_l - \delta) \quad \Leftrightarrow \quad n\delta > b + (\gamma - 1)w_l,$$

which holds by assumption because $n\delta \geq 3\delta > b + (\gamma - 1)w_l$, a contradiction.
Case (c). If the vote of district j's legislator decides the policy the legislature chooses, then there are two cases: $n_h^j = 0$ and $n_h^j > 0$. If $n_h^j = 0$, then irrespective of who wins the election, the legislature will choose redistribution. So, candidates (from group l) have expected payoff

$$\frac{1}{n}(b + \bar{w} - \delta) + \frac{n-1}{n}(\bar{w} - \delta).$$

Deviating to not running does not affect the policy, thus implies payoff $\bar{w}$, and is profitable as

$$\bar{w} > \frac{1}{n}(b + \bar{w} - \delta) + \frac{n-1}{n}(\bar{w} - \delta) \quad \Leftrightarrow \quad n\delta > b,$$

which holds by assumption as $n\delta \geq 3\delta > b$, a contradiction. If $n_h^j > 0$, then some candidates oppose redistribution once in office. So, candidates from group l have expected payoff

$$\frac{1}{n_l^j + n_h^j}(b + \bar{w} - \delta) + \frac{n_l^j - 1}{n_l^j + n_h^j}(\bar{w} - \delta) + \frac{n_h^j}{n_l^j + n_h^j}(w_l - \delta).$$

Each one of them can profitably deviate to not running: not running ensures that a candidate from group l wins with certainty as $\mu_l^j/(n_l^j - 1) > \mu_h^j/n_h^j$, implying payoff $\bar{w}$, which satisfies

$$\bar{w} > \frac{1}{n_l^j + n_h^j}(b + \bar{w} - \delta) + \frac{n_l^j - 1}{n_l^j + n_h^j}(\bar{w} - \delta) + \frac{n_h^j}{n_l^j + n_h^j}(w_l - \delta)$$
$$\Leftrightarrow \quad (n_l^j + n_h^j)\delta + n_h^j(\bar{w} - w_l) > b,$$

which holds by assumption because $\bar{w} > w_l$ and $(n_l^j + n_h^j)\delta \geq 3\delta > b$, a contradiction.

That is, in all cases, candidates from group l can profitably deviate. Thus, profiles with exactly one or at least three candidates in district j cannot be an equilibrium. Therefore, in every equilibrium, district j has exactly two candidates. By Lemma 5, candidates from group l are a strict majority among candidates, implying that in every equilibrium, both candidates in district j are from group l.

2. *Second, neither the two candidates nor any other individual from group l can profitably deviate.* As both candidates are from group l and thus support the same policy, deviating to not running does not affect the policy chosen by the legislature. If the policy chosen by the legislature is redistribution, then the payoff from deviating to not running is $\bar{w}$, and

$$\bar{w} < \frac{1}{2}(b + \bar{w} - \delta) + \frac{1}{2}(\bar{w} - \delta) \quad \Leftrightarrow \quad 2\delta < b,$$

which holds by assumption; if the policy is no redistribution, then that payoff is w_l, and

$$w_l < \frac{1}{2}(b + \gamma w_l - \delta) + \frac{1}{2}(w_l - \delta) \quad \Leftrightarrow \quad 2\delta < b + (\gamma - 1)w_l,$$

which again holds by assumption, as $2\delta < b \leq b + (\gamma - 1)w_l$. Thus, the candidates cannot profitably deviate to not running. For noncandidate individuals from group l, deviating to running implies a probability of $1/3$ of winning, but does not affect the policy outcome, as both candidates are also from group l. If the policy chosen by the legislature is redistribution, then the payoff of an individual from group l is $\bar{w}$. The payoff from deviating to running is

$$\frac{1}{3}(b + \bar{w} - \delta) + \frac{2}{3}(\bar{w} - \delta) < \bar{w} \quad \Leftrightarrow \quad b < 3\delta,$$

which holds by assumption. If the policy chosen by the legislature is no redistribution, then

the payoff of an individual from group l is w_l. The payoff from deviating to running is

$$\frac{1}{3}(b + \gamma w_l - \delta) + \frac{2}{3}(w_l - \delta) < w_l \quad \Leftrightarrow \quad b + (\gamma - 1)w_l < 3\delta,$$

which again holds by assumption. Thus, noncandidate individuals from group l cannot profitably deviate to running.

3. *Third, considering individuals from group h, either* **(i)** $\mu_l^j/2 \geq \mu_h^j$ *or* **(ii)** $\mu_l^j/2 < \mu_h^j$.

Case (i). Suppose that $\mu_l^j/2 \geq \mu_h^j$. If $\mu_l^j/2 > \mu_h^j$, then no individual from group h can profitably deviate either. While doing so implies receiving the votes of all individuals from group h, the share of all cast votes this candidate from group h receives is smaller than that each one of the other two candidates is expected to receive. That is, deviating to running implies losing the election with certainty, and thus not possibly affecting the policy chosen by the legislature, but incurring the cost $\delta > 0$. If $\mu_l^j/2 = \mu_h^j$, then for every individual from group h, to deviate to running implies to win the election with positive probability equal to that of each of the other two candidates. As $d > 1$ is odd, there are three cases: **(a)** the legislature chooses redistribution irrespective of the vote of district j's legislator; **(b)** the legislature chooses no redistribution irrespective of the vote of district j's legislator; and **(c)** the vote of district j's legislator decides the policy. Consider each case in turn.

Case (a). If the legislature chooses redistribution irrespective of the vote of district j's legislator, then individuals from group h have payoff $\bar{w}$. Deviating to running gives

$$\frac{1}{3}(b + \bar{w} - \delta) + \frac{2}{3}(\bar{w} - \delta).$$

Doing so is not profitable because

$$\bar{w} \geq \frac{1}{3}(b + \bar{w} - \delta) + \frac{2}{3}(\bar{w} - \delta) \quad \Leftrightarrow \quad 3\delta \geq b,$$

which holds by assumption.

Case (b). If the legislature chooses no redistribution irrespective of the vote of district j's legislator, then individuals from group h have payoff w_h. Deviating to running gives

$$\frac{1}{3}(b + \gamma w_h - \delta) + \frac{2}{3}(w_h - \delta).$$

Doing so is not profitable because

$$w_h \geq \frac{1}{3}(b + \gamma w_h - \delta) + \frac{2}{3}(w_h - \delta) \quad \Leftrightarrow \quad 3\delta \geq b + (\gamma - 1)w_h,$$

which holds by assumption.

Case (c). If the vote of district j's legislator decides the policy the legislature chooses, then individuals from group h have payoff $\bar{w}$, as both candidates support redistribution once in

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office. Deviating to running implies expected payoff

$$\frac{1}{3}(b + \gamma w_h - \delta) + \frac{2}{3}(\bar{w} - \delta).$$

Doing so is not profitable because

$$\bar{w} \geq \frac{1}{3}(b + \gamma w_h - \delta) + \frac{2}{3}(\bar{w} - \delta) \quad \Leftrightarrow \quad 3\delta \geq b + (\gamma - 1)w_h + (w_h - \bar{w}),$$

which holds by assumption.

Therefore, if $\mu_l^j/2 \geq \mu_h^j$, then no individual from group h can profitably deviate either. Thus, if a similar condition holds for every district, adjusted to reflect which group has a majority in the district, then an equilibrium exists. In such an equilibrium, every legislator belongs to their district's majority group and supports its preferred policy. As the majority of districts has a majority of low-income individuals, the majority of legislators belongs to the low-income group, and thus the legislature chooses redistribution.

Case (ii). Suppose that $\mu_l^j/2 < \mu_h^j$. Suppose for a contradiction that in some equilibrium, district j has exactly two candidates, both from the low-income group l. Again, as $d > 1$ is odd, there are three cases: **(a)** the legislature chooses redistribution irrespective of the vote of district j's legislator; **(b)** the legislature chooses no redistribution irrespective of the vote of district j's legislator; and **(c)** the vote of district j's legislator decides the policy. As $\mu_l^j/2 < \mu_h^j$, for every individual from group h, deviating to running implies expecting to win the election with certainty. Consider each of the cases **(a)** to **(c)** in turn.

Case (a). If the legislature chooses redistribution irrespective of the vote of district j's legislator, then individuals from group h have payoff $\bar{w}$. Deviating to running is profitable as the payoff from doing so is $b + \bar{w} - \delta > \bar{w}$, because $b > \delta$, a contradiction.

Case (b). If the legislature chooses no redistribution irrespective of the vote of district j's legislator, then individuals from group h have payoff w_h. Deviating to running is profitable as the payoff from doing so is $b + \gamma w_h - \delta > \gamma w_h \geq w_h$, because $b > \delta$ and $\gamma \geq 1$, a contradiction.

Case (c). If the vote of district j's legislator decides the policy the legislature chooses, then individuals from group h have payoff $\bar{w}$, as both candidates support redistribution once in office. Deviating to running is profitable as the payoff from doing so is $b + \gamma w_h - \delta > \gamma w_h \geq w_h > \bar{w}$, because $b > \delta$ and $\gamma \geq 1$, a contradiction.

Therefore, if $\mu_l^j/2 < \mu_h^j$, then individuals from group h can profitably deviate to running. It follows that profiles with exactly two candidates in district j, both from the low-income group l, cannot be an equilibrium. That is, an equilibrium does not exist.

C Proofs

In this appendix, I provide the proofs. Lemmas 1 and 2 derive directly from comparing the respective entries in Equations (1) and (2); Proposition 3 derives directly from combining insights from Propositions 1 and 2 as detailed in the main text. Their proofs are thus omitted.

Lemma 3

Proof. Suppose for a contradiction that in some equilibrium, no individual runs for office. Then, there is no legislator and nature draws a policy $t \in \{0, 1\}$ from some known distribution. For every individual, their expected payoff is $p\bar{w} + (1-p)w_i$ for some $p \in [0, 1]$. Deviating to running for office implies becoming the only legislator, being able to dictate the policy. Given that $\gamma \geq 1$ and $b > \delta$, for an individual from group i, this deviation is associated with the payoff $\max\{b + \bar{w} - \delta, b + \gamma w_i - \delta\} = b + \max\{\bar{w}, \gamma w_i\} - \delta > \max\{\bar{w}, \gamma w_i\} \geq \max\{\bar{w}, w_i\} \geq p\bar{w} + (1-p)w_i$ for all $p \in [0, 1]$, which is thus profitable, a contradiction. Thus, in equilibrium, there is at least one district with a legislator.

Suppose for a contradiction that in some equilibrium, in some district j, no individual runs for office. Then, the legislature chooses a policy without a vote from district j. Consider any individual from the high-income group h in district j. This individual opposes redistribution both when a noncandidate voter and when a legislator in office (Lemmas 1 and 2). Deviating to running for office implies becoming the district's legislator and getting to vote against redistribution. There are four exhaustive cases: **(a)** the legislature chooses redistribution over no redistribution with at least two more votes for redistribution than against it; **(b)** the legislature chooses redistribution over no redistribution with exactly one more vote for redistribution than against it; **(c)** the legislature is perfectly divided with an equal number of votes for and against redistribution; and **(d)** the legislature chooses no redistribution over redistribution with at least one more vote against redistribution than for it. Consider each case in turn and recall that $b > \delta$ and $\gamma \geq 1$.

Case (a). The individual's expected payoff is $\bar{w}$. Upon deviating, their vote does not affect the policy choice. Thus, the individual's expected payoff associated with deviating to running for office is $b + \bar{w} - \delta > \bar{w}$. That is, deviating to running for office is profitable, a contradiction.

Case (b). The individual's expected payoff is $\bar{w}$. Upon deviating, their vote equalizes the number of votes for and against redistribution, so that a fair coin flip determines the policy. Thus, the individual's expected payoff associated with deviating to running for office is

$$\frac{1}{2}(b + \bar{w} - \delta) + \frac{1}{2}(b + \gamma w_h - \delta) = b + \frac{1}{2}\bar{w} + \frac{1}{2}\gamma w_h - \delta > \frac{1}{2}\bar{w} + \frac{1}{2}\gamma w_h > \bar{w},$$

as $\gamma w_h \geq w_h > \bar{w}$. That is, deviating to running for office is profitable, a contradiction.

Case (c). A fair coin flip determines the policy so that the individual's expected payoff is

$(1/2)\bar{w} + (1/2)w_h$. Upon deviating, their vote leads to a strict majority against redistribution. Thus, the individual's expected payoff associated with deviating to running for office is

$$b + \gamma w_h - \delta > \gamma w_h \geq w_h > \frac{1}{2}\bar{w} + \frac{1}{2}w_h,$$

as $w_h > \bar{w}$. That is, deviating to running for office is profitable, a contradiction.

Case (d). The individual's expected payoff is w_h. Upon deviating, their vote does not affect the policy choice. Thus, the individual's expected payoff associated with deviating to running for office is $b + \gamma w_h - \delta > \gamma w_h \geq w_h$. That is, deviating to running for office is profitable, a contradiction.

Therefore, in every case, individuals from group h in district j can profitably deviate to running for office, precluding an equilibrium, a contradiction. Thus, in every equilibrium, in every district, at least one candidate runs for office. ∎

Lemma 4

Proof. Irrespective of the institutions γ in place, all candidates from the same group always support the same policy once in office, either redistribution, or no redistribution. Voters are indifferent among candidates that support the same policy once in office. If there are more than one candidate supporting the preferred policy of some group of voters once in office, then these voters randomize their votes among them. Hence, all candidates from the same group as well as all candidates from different groups who support the same policy once in office are expected to receive the same share of votes.

Suppose for a contradiction that in some equilibrium, there is a district j with a candidate from group i who is expected to receive a smaller share of the votes cast in the district than some other candidate in this district's election. It follows that there are candidates from both groups, supporting opposing policies once in office—otherwise, voters would be indifferent, randomize their vote, and the candidates would be expected to receive the same share of votes. As legislators from the high-income group h always oppose redistribution, it follows that legislators from the low-income group l must be supporting redistribution in this case. The candidate who is expected to receive a smaller share of the votes expects (i) to lose the election with certainty; (ii) that all other candidates from the same group, if any, lose the election with certainty—as they are expected to receive the same share of the votes, which is smaller than some other candidate's share; and (iii) that a candidate from the other group becomes the district's legislator with certainty, supporting the opposite policy. Given this legislator's vote, the legislature chooses either **(a)** redistribution or **(b)** no redistribution. Recall that $\delta > 0$.

Case (a). Suppose that the policy chosen by the legislature is redistribution. Then, the expected payoff of the candidate who expects to lose with certainty is $\bar{w} - \delta$. If this candidate is

from group l (i.e., the district's legislator is from group h), then the expected payoff associated with deviating to not running for office is $\bar{w} > \bar{w} - \delta$, because the policy chosen by the legislature does not change: if anything changes, then it is because another candidate from group l, rather than one from group h, becomes district j's legislator, strengthening the support for redistribution in the legislature. Thus, this candidate can profitably deviate to not running for office.

If this candidate is from group h (i.e., the district's legislator is from group l), then the expected payoff associated with deviating to not running for office is either $\bar{w} > \bar{w} - \delta$ if the policy chosen by the legislature does not change, or $w_h > \bar{w} > \bar{w} - \delta$ if the policy chosen by the legislature does change as a consequence of another candidate from group h, rather than one from group l, becoming district j's legislator and exercising the pivotal vote against redistribution. Thus, this candidate can profitably deviate to not running for office.

Case (b). Suppose that the policy chosen by the legislature is no redistribution. Then, the expected payoff of the candidate who expects to lose with certainty is $w_i - \delta$. If this candidate is from group l (i.e., the district's legislator is from group h), then the expected payoff associated with deviating to not running for office is either $w_l > w_l - \delta$ if the policy chosen by the legislature does not change, or $\bar{w} > w_l > w_l - \delta$ if the policy chosen by the legislature does change as a consequence of another candidate from group l, rather than one from group h, becoming district j's legislator and exercising the pivotal vote for redistribution. Thus, this candidate can profitably deviate to not running for office.

If this candidate is from group h (i.e., the district's legislator is from group l), then the expected payoff associated with deviating to not running for office is $w_h > w_h - \delta$, because the policy chosen by the legislature does not change: if anything changes, then it is because another candidate from group h, rather than one from group l, becomes district j's legislator, strengthening the opposition to redistribution in the legislature. Thus, this candidate can profitably deviate to not running for office.

That is, for every candidate who is expected to receive a smaller share of a district's votes than some other candidate, deviating to not running for office is profitable, a contradiction. Thus, in every equilibrium, in every district, all candidates expect to receive equal vote shares. ∎

Lemma 5

Proof. Suppose for a contradiction that in some equilibrium, there is a district $j \in D$ in which it is not the case that a strict majority of the candidates for office belongs to the district's majority group. By Lemma 3, in every equilibrium, in every district, there is at least one candidate. By Lemma 1, as $\gamma w_l < \bar{w} < \gamma w_h$, office holders from group l support redistribution while office holders from group h oppose it. Thus, following Lemma 2, voters from group l prefer candidates from group l, voters from group h prefer candidates from group h, and both

randomize when they are indifferent among candidates. District j either has a majority of low-income individuals or a majority of high-income individuals. Consider each case in turn.

District j has a low-income majority. Suppose that $j \in D_l$. Then, $\mu_l^j > \mu_h^j$. Let $n_i^j \geq 0$ denote the number of candidates from group i in district j. Thus, suppose that $n_l^j \leq n_h^j$. There are three cases: **(i)** $n_h^j = n_l^j = 0$; **(ii)** $n_h^j > 0$ and $n_l^j = 0$; and **(iii)** $n_h^j > 0$ and $n_l^j > 0$.

Case (i). If $n_h^j = n_l^j = 0$, then there is no candidate for office in district j, contradicting Lemma 3.

Case (ii). Suppose that $n_h^j > 0$ and $n_l^j = 0$. Then, district j's legislator is from group h and opposes redistribution. The legislature chooses either redistribution or no redistribution. Consider individuals from group l in district j. Deviating to running for office implies becoming district j's legislator and getting to vote for redistribution with certainty: as voters from group h are indifferent among the candidates from group h, they randomize so that the vote share each candidate from group h is expected to receive is $\mu_h^j / n_h^j \leq \mu_h^j$ while the vote share the single candidate from group l will receive with certainty is $\mu_l^j > \mu_h^j$.

Suppose that the policy chosen by the legislature is redistribution (despite district j's legislator voting against it). Then, the expected payoff of an individual from group l in district j is $\bar{w}$. As $b > \delta$, the expected payoff associated with deviating to running for office is $b + \bar{w} - \delta > \bar{w}$, because the policy chosen by the legislature does not change. (A candidate from group l, rather than one from group h, becomes district j's legislator, strengthening the support for redistribution in the legislature even further.) Thus, this deviation is profitable.

Suppose that the policy chosen by the legislature is no redistribution. Then, the expected payoff of an individual from group l in district j is w_l. As $b > \delta$ and $\gamma \geq 1$, the expected payoff associated with deviating to running for office is either $b + \gamma w_l - \delta > \gamma w_l \geq w_l$ if the policy chosen by the legislature does not change, or $b + \bar{w} - \delta > \bar{w} > w_l$ if the policy chosen by the legislature does change as a consequence of a candidate from group l, rather than one from group h, becoming district j's legislator and exercising the pivotal vote in favor of redistribution. Thus, this deviation is profitable.

Thus, for individuals from group l in district j, irrespective of the policy chosen by the legislature, deviating to running for office is profitable, a contradiction.

Case (iii). Finally, suppose that $n_h^j > 0$ and $n_l^j > 0$. Then, the vote share each candidate from group h is expected to receive is $\mu_h^j / n_h^j < \mu_l^j / n_l^j$, which is the vote share each candidate from group l is expected to receive, as $\mu_l^j > \mu_h^j$ and $n_l^j \leq n_h^j$. That is, all candidates from group h are expected to receive a smaller share of all votes cast in the district than some other candidate, and thus to lose the election with certainty, which contradicts Lemma 4.

District j has a high-income majority. Suppose that $j \in D_h$. Then, $\mu_l^j < \mu_h^j$. Let $n_i^j \geq 0$ denote the number of candidates from group i in district j. Thus, suppose that $n_l^j \geq n_h^j$. There are three cases: **(i)** $n_l^j = n_h^j = 0$; **(ii)** $n_l^j > 0$ and $n_h^j = 0$; and **(iii)** $n_l^j > 0$ and $n_h^j > 0$.

Case (i). If $n_l^j = n_h^j = 0$, then there is no candidate for office in district j, contradicting

Lemma 3.

Case (ii). Suppose that $n_l^j > 0$ and $n_h^j = 0$. Then, district j's legislator is from group l and supports redistribution. The legislature chooses either redistribution or no redistribution. Consider individuals from group h in district j. Deviating to running for office implies becoming district j's legislator and getting to vote against redistribution with certainty: as voters from group l are indifferent among the candidates from group l, they randomize so that the vote share each candidate from group l is expected to receive is $\mu_l^j/n_l^j \leq \mu_l^j$ while the vote share the single candidate from group h will receive with certainty is $\mu_h^j > \mu_l^j$.

Suppose that the policy chosen by the legislature is no redistribution (despite district j's legislator voting for it). Then, the expected payoff of an individual from group h in district j is w_h. As $b > \delta$ and $\gamma \geq 1$, the expected payoff associated with deviating to running for office is $b + \gamma w_h - \delta > \gamma w_h \geq w_h$, because the policy chosen by the legislature does not change. (A candidate from group h, rather than one from group l, becomes district j's legislator, strengthening the opposition to redistribution in the legislature even further.) Thus, this deviation is profitable.

Suppose that the policy chosen by the legislature is redistribution. Then, the expected payoff of an individual from group h in district j is $\bar{w}$. As $b > \delta$ and $\gamma \geq 1$, the expected payoff associated with deviating to running for office is either $b + \bar{w} - \delta > \bar{w}$ if the policy chosen by the legislature does not change, or $b + \gamma w_h - \delta > \gamma w_h \geq w_h > \bar{w}$ if the policy chosen by the legislature does change as a consequence of a candidate from group h, rather than one from group l, becoming district j's legislator and exercising the pivotal vote against redistribution. Thus, this deviation is profitable.

Thus, for individuals from group h in district j, irrespective of the policy chosen by the legislature, deviating to running for office is profitable, a contradiction.

Case (iii). Finally, suppose that $n_l^j > 0$ and $n_h^j > 0$. Then, the vote share each candidate from group l is expected to receive is $\mu_l^j/n_l^j < \mu_h^j/n_h^j$, which is the vote share each candidate from group h is expected to receive, as $\mu_h^j > \mu_l^j$ and $n_l^j \geq n_h^j$. That is, all candidates from group l are expected to receive a smaller share of all votes cast in the district than some other candidate, and thus to lose the election with certainty, which contradicts Lemma 4.

In summary, therefore, in every equilibrium, in every district $j \in D$, a strict majority of candidates for office belongs to the district's majority group. ∎

Proposition 1

Proof. Consider any equilibrium. By Lemma 3, in every district, there is at least one candidate. By Lemma 1, as $\gamma w_l < \bar{w} < \gamma w_h$, office holders from group l support redistribution while office holders from group h oppose it. Thus, following Lemma 2, voters from group l prefer candidates from group l, voters from group h prefer candidates from group h, and

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both randomize when they are indifferent among candidates. By Lemma 4, all candidates in a district are expected to receive the same share of votes and thus to win with equal probability. By Lemma 5, a strict majority of the candidates in a district belongs to the majority group in that district. The statements for the parameter case $2\delta < b + (\gamma - 1)w_h$ thus follow directly.

Suppose that $2\delta \geq b + (\gamma - 1)w_h$. As $\gamma \geq 1$, it follows from this condition that

(3) $$2\delta \geq b + (\gamma - 1)w_h \geq b + (\gamma - 1)w_l \geq b.$$

Let $n_i^j \geq 0$ denote the number of candidates from group i in district j. I proceed in two steps. In **Step 1**, I show that every strategy profile such that in every district, there is exactly one candidate for office, and that candidate is from the district's majority income group, is an equilibrium. Thus, an equilibrium exists. Then, in **Step 2**, I show that any strategy profile such that in some district, there is a candidate from the minority income group cannot be an equilibrium. Hence, in every equilibrium, all legislators are from their district's majority income group—because all candidates for office are—and support its preferred policy. Thus, the majority of legislators is from the low-income group and supports redistribution, so that the legislature chooses redistribution.

Step 1. Consider any strategy profile such that $n_l^j = 1$ and $n_h^j = 0$ for all $j \in D_l$ while $n_l^j = 0$ and $n_h^j = 1$ for all $j \in D_h$. That is, all candidates and thus all legislators are from their district's majority income group and support its preferred policy. Thus, as $|D_l| > |D_h|$, the majority of legislators is from the low-income group and supports redistribution, so that the legislature chooses redistribution. Consider each type of district in turn.

Low-income majority districts. Consider any district $j \in D_l$. Then, $\mu_l^j > \mu_h^j$ and district j's candidate and legislator is from group l and supports redistribution. The payoff of the single candidate is $b + \bar{w} - \delta$ while the payoff of all other individuals in district j is $\bar{w}$. For individuals from group h, deviating to running is not profitable as it implies incurring the cost $\delta > 0$, losing the election with certainty as $\mu_h^j < \mu_l^j$, and not affecting the policy chosen by the legislature, as the district's legislator does not change, giving payoff $\bar{w} - \delta < \bar{w}$. As $b > \delta$, the only candidate cannot profitably deviate to not running as the associated payoffs are either $\bar{w} < b + \bar{w} - \delta$ if the policy chosen by the legislature does not change, or $(1/2)w_l + (1/2)\bar{w} < \bar{w} < b + \bar{w} - \delta$ if the legislature is perfectly divided with equal numbers of votes for and against redistribution as a consequence of the missing vote for redistribution by district j's legislator. For individuals from group l that are not running, deviating to running implies expecting to win the office with probability one-half, as all voters are indifferent among the two candidates and thus randomize. As both candidates support redistribution when in office, the policy chosen by the legislature cannot change with the winner. Therefore, for

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noncandidate individuals from group l in district j, deviating to running is not profitable as

$$\bar{w} \geq \frac{1}{2}(b + \bar{w} - \delta) + \frac{1}{2}(\bar{w} - \delta) \quad \Leftrightarrow \quad 2\delta \geq b,$$

which holds by (3). That is, no individual in district j can profitably deviate.

High-income majority districts. Consider any district $j \in D_h$. Then, $\mu_l^j < \mu_h^j$ and district j's candidate and legislator is from group h and opposes redistribution. The payoff of the single candidate is $b + \bar{w} - \delta$ while the payoff of all other individuals in district j is $\bar{w}$. For individuals from group l, deviating to running is not profitable as it implies incurring the cost $\delta > 0$, losing the election with certainty as $\mu_h^j > \mu_l^j$, and not affecting the policy chosen by the legislature, as the district's legislator does not change, giving payoff $\bar{w} - \delta < \bar{w}$. As $b > \delta$, the only candidate cannot profitably deviate to not running as the associated payoff is $\bar{w} < b + \bar{w} - \delta$, because the policy chosen by the legislature does not change. (The legislature chooses redistribution despite district j's legislator opposing it, so that this legislator's missing vote against redistribution has no effect.) For individuals from group h that are not running, deviating to running implies expecting to win the office with probability one-half, as all voters are indifferent among the two candidates and thus randomize. As both candidates oppose redistribution when in office, the policy chosen by the legislature cannot change with the winner. Therefore, for noncandidate individuals from group h in district j, deviating to running is not profitable because

$$\bar{w} \geq \frac{1}{2}(b + \bar{w} - \delta) + \frac{1}{2}(\bar{w} - \delta) \quad \Leftrightarrow \quad 2\delta \geq b,$$

which holds by (3). That is, no individual in district j can profitably deviate.

Therefore, every strategy profile such that $n_l^j = 1$ and $n_h^j = 0$ for all $j \in D_l$ while $n_l^j = 0$ and $n_h^j = 1$ for all $j \in D_h$ is an equilibrium, implying that an equilibrium exists.

Step 2. Suppose for a contradiction that in some equilibrium, in some district j, there is a candidate from the minority income group. By Lemma 5, a strict majority of the candidates in district j belongs to the majority group in it, so that in district j, there are at least one candidate from the district's minority income group and at least two candidates from the district's majority income group. That is, $n_l^j + n_h^j \geq 3$. By Lemma 4, $\mu_l^j / n_l^j = \mu_h^j / n_h^j$ has to hold. That is, all candidates are expected to win with equal probability $1/(n_l^j + n_h^j)$. As $d > 1$ is odd, there are three cases: **(a)** the legislature chooses redistribution irrespective of the vote of district j's legislator; **(b)** the legislature chooses no redistribution irrespective of the vote of district j's legislator; and **(c)** the vote of district j's legislator decides the policy. Finally, district j either has a majority of low-income individuals or a majority of high-income individuals. Consider each case in turn.

District j has a low-income majority. Consider each case **(a)**, **(b)**, and **(c)** in turn.

Case (a). If the legislature chooses redistribution irrespective of the vote of district j's legislator, then the candidates from group i have expected payoff

$$\frac{1}{n_l^j + n_h^j}(b + \bar{w} - \delta) + \frac{n_l^j + n_h^j - 1}{n_l^j + n_h^j}(\bar{w} - \delta).$$

For every candidate from any group i, deviating to not running does not affect the policy chosen by the legislature, and thus implies payoff $\bar{w}$. Doing so is profitable because

$$\bar{w} > \frac{1}{n_l^j + n_h^j}(b + \bar{w} - \delta) + \frac{n_l^j + n_h^j - 1}{n_l^j + n_h^j}(\bar{w} - \delta) \quad \Leftrightarrow \quad (n_l^j + n_h^j)\delta > b,$$

which holds by (3) because $(n_l^j + n_h^j)\delta \geq 3\delta > 2\delta \geq b$, a contradiction.

Case (b). If the legislature chooses no redistribution irrespective of the vote of district j's legislator, then the candidates from group i have expected payoff

$$\frac{1}{n_l^j + n_h^j}(b + \gamma w_i - \delta) + \frac{n_l^j + n_h^j - 1}{n_l^j + n_h^j}(w_i - \delta).$$

For every candidate from any group i, deviating to not running does not affect the policy chosen by the legislature, and thus implies payoff w_i. Doing so is profitable because

$$w_i > \frac{1}{n_l^j + n_h^j}(b + \gamma w_i - \delta) + \frac{n_l^j + n_h^j - 1}{n_l^j + n_h^j}(w_i - \delta) \quad \Leftrightarrow \quad (n_l^j + n_h^j)\delta > b + (\gamma - 1)w_i,$$

which holds by (3) as $(n_l^j + n_h^j)\delta \geq 3\delta > 2\delta \geq b + (\gamma - 1)w_h \geq b + (\gamma - 1)w_l$, a contradiction.

Case (c). If the vote of district j's legislator decides the policy the legislature chooses, then the candidates from group l have expected payoff

$$\frac{1}{n_l^j + n_h^j}(b + \bar{w} - \delta) + \frac{n_l^j - 1}{n_l^j + n_h^j}(\bar{w} - \delta) + \frac{n_h^j}{n_l^j + n_h^j}(w_l - \delta).$$

For each one of them, deviating to not running ensures that the election winner is expected to be a candidate from group l with certainty because $\mu_l^j/(n_l^j - 1) > \mu_l^j/n_l^j = \mu_h^j/n_h^j$, which is associated with expected payoff $\bar{w}$. Doing so is profitable because

$$\bar{w} > \frac{1}{n_l^j + n_h^j}(b + \bar{w} - \delta) + \frac{n_l^j - 1}{n_l^j + n_h^j}(\bar{w} - \delta) + \frac{n_h^j}{n_l^j + n_h^j}(w_l - \delta)$$
$$\Leftrightarrow \quad (n_l^j + n_h^j)\delta + n_h^j(\bar{w} - w_l) > b,$$

which holds by (3) because $\bar{w} > w_l$ and $(n_l^j + n_h^j)\delta \geq 3\delta > 2\delta \geq b$, a contradiction.

District j has a high-income majority. Consider each case **(a)**, **(b)**, and **(c)** in turn.

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Case (a). If the legislature chooses redistribution irrespective of the vote of district j's legislator, then the candidates from group i have expected payoff

$$\frac{1}{n_l^j + n_h^j}(b + \bar{w} - \delta) + \frac{n_l^j + n_h^j - 1}{n_l^j + n_h^j}(\bar{w} - \delta).$$

For every candidate from any group i, deviating to not running does not affect the policy chosen by the legislature, and thus implies payoff $\bar{w}$. Doing so is profitable because

$$\bar{w} > \frac{1}{n_l^j + n_h^j}(b + \bar{w} - \delta) + \frac{n_l^j + n_h^j - 1}{n_l^j + n_h^j}(\bar{w} - \delta) \quad \Leftrightarrow \quad (n_l^j + n_h^j)\delta > b,$$

which holds by (3) because $(n_l^j + n_h^j)\delta \geq 3\delta > 2\delta \geq b$, a contradiction.

Case (b). If the legislature chooses no redistribution irrespective of the vote of district j's legislator, then the candidates from group i have expected payoff

$$\frac{1}{n_l^j + n_h^j}(b + \gamma w_i - \delta) + \frac{n_l^j + n_h^j - 1}{n_l^j + n_h^j}(w_i - \delta).$$

For every candidate from any group i, deviating to not running does not affect the policy chosen by the legislature, and thus implies payoff w_i. Doing so is profitable because

$$w_i > \frac{1}{n_l^j + n_h^j}(b + \gamma w_i - \delta) + \frac{n_l^j + n_h^j - 1}{n_l^j + n_h^j}(w_i - \delta) \quad \Leftrightarrow \quad (n_l^j + n_h^j)\delta > b + (\gamma - 1)w_i,$$

which holds by (3) as $(n_l^j + n_h^j)\delta \geq 3\delta > 2\delta \geq b + (\gamma - 1)w_h \geq b + (\gamma - 1)w_l$, a contradiction.

Case (c). If the vote of district j's legislator decides the policy the legislature chooses, then the candidates from group h have expected payoff

$$\frac{1}{n_l^j + n_h^j}(b + \gamma w_h - \delta) + \frac{n_h^j - 1}{n_l^j + n_h^j}(w_h - \delta) + \frac{n_l^j}{n_l^j + n_h^j}(\bar{w} - \delta).$$

For each one of them, deviating to not running ensures that the election winner is expected to be a candidate from group h with certainty because $\mu_h^j / (n_h^j - 1) > \mu_h^j / n_h^j = \mu_l^j / n_l^j$, which is associated with expected payoff w_h. Doing so is profitable because

$$w_h > \frac{1}{n_l^j + n_h^j}(b + \gamma w_h - \delta) + \frac{n_h^j - 1}{n_l^j + n_h^j}(w_h - \delta) + \frac{n_l^j}{n_l^j + n_h^j}(\bar{w} - \delta)$$

$$\Leftrightarrow \quad (n_l^j + n_h^j)\delta + n_l^j(w_h - \bar{w}) > b + (\gamma - 1)w_h,$$

which holds by (3) because $w_h > \bar{w}$ and $(n_l^j + n_h^j)\delta \geq 3\delta > 2\delta \geq b + (\gamma - 1)w_h$, a contradiction.

It follows that in every equilibrium, in every district, all candidates and thus all legislators

are from their district's majority group.

To summarize, if $2\delta \geq b + (\gamma - 1)w_h$, then an equilibrium exists, and in every equilibrium, all legislators are from their district's majority group and support its preferred policy (Lemmas 1–2). As the majority of districts has a majority of low-income individuals, the majority of legislators are low-income individuals and support redistribution. Thus, the policy chosen by the legislature is redistribution. This summary completes the proof. ∎

Proposition 2

Proof. I first summarize a few features of equilibrium and then show that one exists.

Consider any equilibrium. By Lemma 3, in every district, there is at least one candidate. By Lemma 1, legislators from all groups oppose redistribution once in office as $\gamma w_h > \gamma w_l \geq \bar{w}$. As $w_l < \bar{w}$, it follows that $\gamma > 1$. Then, first, in all districts, all voters are indifferent among all candidates, irrespective of their income group background, and randomize so that all candidates are expected to win with equal probability. Second, as all legislators oppose redistribution, the legislature unanimously chooses no redistribution. There are two cases: **(i)** $2\delta \geq b + (\gamma - 1)w_h$; **(ii)** $2\delta < b + (\gamma - 1)w_h$. Consider each case in turn.
Case (i). Suppose that $2\delta \geq b + (\gamma - 1)w_h$. As $\gamma > 1$, it follows from this condition that

$$(4) \qquad 2\delta \geq b + (\gamma - 1)w_h > b + (\gamma - 1)w_l > b.$$

Consider any profile in which in every district only one individual from any group and nobody else is running for office. Consider any district j. The candidate's payoff is $b + \gamma w_i - \delta$. If the candidate deviates to not running, then district j does not have a legislator, but the policy chosen by the legislature is unchanged as all other legislators oppose redistribution. Hence, as $b > \delta$ and $\gamma > 1$, for the candidate, deviating to not running implies payoff $w_i < \gamma w_i < b + \gamma w_i - \delta$, and is thus not profitable. All other individuals have payoff w_i. Deviating to running implies to expect winning the office with probability one-half, as all voters are indifferent among the two candidates and randomize. It is not profitable because

$$w_i \geq \frac{1}{2}(b + \gamma w_i - \delta) + \frac{1}{2}(w_i - \delta) \quad \Leftrightarrow \quad 2\delta \geq b + (\gamma - 1)w_i,$$

which holds by (4). Thus, if $2\delta \geq b + (\gamma - 1)w_h$, then every profile in which exactly one individual from any group and nobody else is running for office is an equilibrium. That is, an equilibrium exists.

Next, there is no equilibrium such that in some district j, at least two candidates with at least one of them being from the low-income group l run for office. Suppose for a contradiction that in some equilibrium, in some district j, there are $n^j \geq 2$ candidates, and that at least one of them is from the low-income group l. As all candidates expect to win with probability

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$1/n^j$, for that candidate from group l, the expected payoff is given by

$$\frac{1}{n^j}(b + \gamma w_l - \delta) + \frac{n^j - 1}{n^j}(w_l - \delta).$$

Deviating to not running is profitable as it implies payoff w_l, which satisfies

$$w_l > \frac{1}{n^j}(b + \gamma w_l - \delta) + \frac{n^j - 1}{n^j}(w_l - \delta) \quad \Leftrightarrow \quad n^j \delta > b + (\gamma - 1)w_l,$$

which holds by (4) for all $n^j \geq 2$, a contradiction.

There is also no equilibrium such that in some district j, at least two candidates from the high-income group h run for office if $2\delta > b + (\gamma - 1)w_h$. Suppose for a contradiction that $2\delta > b + (\gamma - 1)w_h$ and in some equilibrium, in some district j, there are $n^j \geq 2$ candidates from the high-income group h. As all candidates expect to win with probability $1/n^j$, their expected payoff is

$$\frac{1}{n^j}(b + \gamma w_h - \delta) + \frac{n^j - 1}{n^j}(w_h - \delta).$$

Deviating to not running is profitable as it implies payoff w_h, which satisfies

$$w_h > \frac{1}{n^j}(b + \gamma w_h - \delta) + \frac{n^j - 1}{n^j}(w_h - \delta) \quad \Leftrightarrow \quad n^j \delta > b + (\gamma - 1)w_h,$$

which holds for all $n^j \geq 2$ if $2\delta > b + (\gamma - 1)w_h$, establishing a contradiction.

Finally, suppose that $2\delta = b + (\gamma - 1)w_h$. Then, in equilibrium, any district can have exactly two candidates who both are from the high-income group h. The candidates' payoffs are

$$\frac{1}{2}(b + \gamma w_h - \delta) + \frac{1}{2}(w_h - \delta).$$

Deviating to not running is not profitable as the implied payoff w_h satisfies

$$\frac{1}{2}(b + \gamma w_h - \delta) + \frac{1}{2}(w_h - \delta) \geq w_h \quad \Leftrightarrow \quad b + (\gamma - 1)w_h \geq 2\delta,$$

which holds if $2\delta = b + (\gamma - 1)w_h$. All other individuals have payoff w_i. Deviating to running implies expecting to win the office with probability one-third, as all voters are indifferent among the three candidates and thus randomize. It is not profitable as

$$w_i \geq \frac{1}{3}(b + \gamma w_i - \delta) + \frac{2}{3}(w_i - \delta) \quad \Leftrightarrow \quad 3\delta \geq b + (\gamma - 1)w_i,$$

which holds as $3\delta > 2\delta = b + (\gamma - 1)w_h > b + (\gamma - 1)w_l$.

To summarize, if $2\delta \geq b + (\gamma - 1)w_h$, then an equilibrium exists, every district has one candi-

date from any group—possibly, all from group h, all legislators oppose redistribution, and the legislature chooses no redistribution; in the special case when $2\delta = b + (\gamma - 1)w_h$, equilibria can have districts with two candidates who both are from the high-income group.

Case (ii). Suppose that $2\delta < b + (\gamma - 1)w_h$. Then, first, in every equilibrium, in every district, there are at least two candidates. Suppose for a contradiction that in some equilibrium, in some district j, there is only one candidate. As the legislature chooses no redistribution, individuals from group h that do not run have payoff w_h. Deviating to running implies expecting to win the office with probability one-half, as all voters are indifferent among the two candidates and thus randomize. Doing so is profitable for individuals from group h as

$$\frac{1}{2}(b + \gamma w_h - \delta) + \frac{1}{2}(w_h - \delta) > w_h \quad \Leftrightarrow \quad 2\delta < b + (\gamma - 1)w_h,$$

a contradiction. Then, second, in every equilibrium, in every district j, the number $n^j \geq 2$ of candidates that can be from any group i and expect to win with probability $1/n^j$ has to be such that candidates from group i cannot profitably deviate to not running, i.e.,

$$\frac{1}{n^j}(b + \gamma w_i - \delta) + \frac{n^j - 1}{n^j}(w_i - \delta) \geq w_i$$

(5)
$$\Leftrightarrow \quad \frac{b + (\gamma - 1)w_i}{\delta} \geq n^j;$$

and no individual from group i who is not running can profitably deviate to running, i.e.,

$$w_i \geq \frac{1}{n^j + 1}(b + \gamma w_i - \delta) + \frac{n^j}{n^j + 1}(w_i - \delta)$$

(6)
$$\Leftrightarrow \quad n^j + 1 \geq \frac{b + (\gamma - 1)w_i}{\delta}.$$

An example equilibrium is any profile that prescribes for every district j that $n^j = n$ candidates from group h and no candidates from group l run for office, where $n + 1 \geq (b + (\gamma - 1)w_h)/\delta \geq n$. By construction, no individual from group h can profitably deviate. Individuals from group l do not profit from deviating to running either as $n + 1 \geq (b + (\gamma - 1)w_h)/\delta > (b + (\gamma - 1)w_l)/\delta$. Thus, an equilibrium exists.

To summarize, if $2\delta < b + (\gamma - 1)w_h$, then an equilibrium exists, every district has at least two candidates, all legislators oppose redistribution, and the legislature chooses no redistribution; profiles with all candidates in all districts being from group h are equilibria. ∎

Proposition 4

Proof. By Proposition 2, an equilibrium exists, there are at least two candidates in every district, and all of them oppose redistribution once in office, irrespective of the group they belong to. From the proof of Proposition 2, Inequality (5) holds for candidates from group i,

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Inequality (6) holds for noncandidate individuals from group i. If $w_h - w_l > \delta/(\gamma - 1)$, then

$$(7) \qquad \frac{b + (\gamma - 1)w_h}{\delta} - \frac{b + (\gamma - 1)w_l}{\delta} > 1.$$

By Proposition 2, an equilibrium with all candidates in all districts being from group h exists. Suppose for a contradiction that in some equilibrium, in some district j, at least one candidate is from group l. Then, n^j satisfies both (5) and (6) for individuals from group l. With (7),

$$\frac{b + (\gamma - 1)w_h}{\delta} > n^j + 1 \geq \frac{b + (\gamma - 1)w_l}{\delta} \geq n^j,$$

which violates (6) for noncandidate individuals from group h who can thus profitably deviate to running, a contradiction. Thus, if $w_h - w_l > \delta/(\gamma - 1)$, then all candidates in all district are from group h. If $w_h - w_l \leq \delta/(\gamma - 1)$, then

$$\frac{b + (\gamma - 1)w_h}{\delta} - \frac{b + (\gamma - 1)w_l}{\delta} \leq 1$$

so that for every district j,

$$(8) \qquad n^j + 1 \geq \frac{b + (\gamma - 1)w_h}{\delta} > \frac{b + (\gamma - 1)w_l}{\delta} \geq n^j$$

may or may not hold for some integer n^j. If (8) holds for some n^j, then there is an equilibrium in which the candidates in some or all districts can be from any group, and possibly from both. If $w_l = w_h - \epsilon$, then for small enough $\epsilon > 0$, (8) holds for some n^j, as

$$n^j + 1 \geq \frac{b + (\gamma - 1)w_h}{\delta} > \frac{b + (\gamma - 1)(w_h - \epsilon)}{\delta} \geq n^j,$$

so that such an equilibrium exists, which completes the proof. ∎

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