Online Appendix for "Redistributive Politics, Power Sharing and Fairness"

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1 Introduction

This note contains several (theoretical and empirical) extensions of the baseline model studied in the paper "Redistributive Politics, Power Sharing and Fairness", by Debowicz, Saporiti and Wang. Starting with the theory and continuing with the numeration of the paper, first Proposition 3 restates the equilibrium transfers of the three income groups lifting the assumption of non-income-sorting. In the second place, Proposition 4 displays the equilibrium when the power sharing rule is given by the difference-form function (in the jargon of the contest literature), which implies that the influence of the parties at the policymaking process is determined by the margin of victory or electoral mandate, instead of by the ratio of votes. Finally, Lemma 1 and Lemma 2 deal with the equilibrium characterization of the redistributive policy when the two parties have different fairness concerns.

With regard to the empirical part, first it shows in a series of tables the estimates for the full list of controls that are present in the regressions of the paper. In addition, it also carries out a robustness analysis of the results, replacing the Taagepera's (1986) index of electoral rule disproportionality with the Gallagher's (1991) index, and considering a non-linear approximation to the relationships under study.

2 Theoretical Extensions

2.1 Income sorting

In the baseline model, we have assumed that the ranking of disposable incomes after redistribution preserves the ordering of the initial incomes of the groups, i.e., $y_R \geq$

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$y_M \geq y_P$, limiting consequently the amount of tactical redistribution among different socio-economic groups that the politicians can propose at the election. Let's suppose now that income sorting is possible, which might be the case for instance if social mobility occurs as result of targeted spending. The set of feasible policies is given by

$$X' = \left\{ \mathbf{x} \in \mathbb{R}^N : \sum_{i \in N} n_i x_i = 0, \ \& \ x_i \geq -e_i \ \forall i \in N \right\}.$$

Let's call $\mathcal{G}' = \left(X', \Pi^C\right)_{C=A,B}$ the redistributive election game determined by the model (with symmetric party fairness) of the paper and the policy set X'. Using the argument of Propositions 1 and 2, it is immediate to see that under Condition $\mathbb{C}$, this game has a unique equilibrium in pure strategies; and that parties announce the same transfers at the equilibrium. Specifically,

Proposition 3 (Income Sorting) Let $\left(\mathbf{x}^A, \mathbf{x}^B\right) \in X' \times X'$ denote the pure-strategy equilibrium of the redistributive election game $\mathcal{G}'$. For all $i \in N$ and all $C = A, B$,

$$x_i^C = \underbrace{(e - e_i)}_{AR} + \underbrace{\beta \cdot (\phi_i - \phi)}_{TR}, \quad \text{where } \beta = \frac{(1-\gamma)\eta}{2\phi_\alpha \eta (1-\gamma) + \gamma}. \tag{1}$$

Notice in equation (1) above that the main feature of the transfer policy, namely, the "two-part structure", with the altruistic and tactical redistribution components, is the same under sorting and non-sorting. Actually, AR-transfers are the same in both cases. With regard to the TR-transfers, there are some minor differences, but essentially they are very similar. In particular, notice that now the β parameter is positive and the same for all groups; and that it is multiplied by the ideological neutrality gap of the group, instead of the gap of the poor. The AR- and TR-transfers of the middle class remains positive, which means that this group continues benefiting from targeted spending. On the contrary, for the rich both AR and TR are negative, meaning that the group pays for redistribution. The poor finally might benefit or not depending on whether AR is greater or smaller than TR, exactly like before.

As it happens in the standard Lindbeck-Weibull model without fairness and power sharing, notice that the ranking of the groups based on disposable incomes after redistribution changes under sorting in such a way that the rich people become the lowest income group, while the middle class becomes the richest and the poor the new middle class. This ranking is not very appealing, since income redistribution in the real world doesn't seem to produce such outcomes. To put it differently, though some social mobility occurs in practice, non-rich voters do not seem to possess the political power in a western democracy to carry out a level of expropriation of the rich that transforms the latter after taxes into the poorest group of society. That's why in the paper we assume taxation and redistribution are limited by the "more natural" non-income-sorting condition.

Regarding the comparative statics effects associated with the equilibrium of Proposition 3, the results are as follows.[1]

Corollary 5 Let $\mathbf{x}^C \in X$ denote party C's equilibrium policy at the redistributive election game $\mathcal{G}'$. For all $i \in N$ and all $C = A, B$,

$$\frac{\partial x_i^C}{\partial \phi_i} = \frac{(1-\gamma)^2\,\eta^2\left[(1-n_i)2\sum_{j\neq i} n_j\phi_j\alpha_j + 2n_i\alpha_i\sum_{j\neq i} n_j\phi_j\right] + (1-n_i)\,\gamma\,(1-\gamma)\eta}{(2\phi_\alpha\,(1-\gamma)\eta+\gamma)^2} > 0.$$

Corollary 5 displays the effect of a change in ϕ_i on x_i^C. As happens in the Lindbeck-Weibull model and in contrast with the result derived under non-income-sorting, equilibrium transfers rise in *all* groups with the density of swing voters.

Corollary 6 Let $\mathbf{x}^C \in X$ denote party C's equilibrium policy at the redistributive election game $\mathcal{G}'$. For all $i \in N$,

(6.A) $\frac{\partial x_i^C}{\partial \alpha_i} = -\frac{(\phi_i-\phi)2n_i\phi_i\,(1-\gamma)^2\eta^2}{(2\phi_\alpha\,(1-\gamma)\eta+\gamma)^2} \lesseqgtr 0 \;\Leftrightarrow\; \phi_i \gtreqless \phi,$

(6.B) $\frac{\partial x_i^C}{\partial \gamma} = -\frac{(\phi_i-\phi)\,\eta}{(2\phi_\alpha\,(1-\gamma)\eta+\gamma)^2} \lesseqgtr 0 \;\Leftrightarrow\; \phi_i \gtreqless \phi,$

(6.C) $\frac{\partial x_i^C}{\partial \eta} = \frac{(\phi_i-\phi)\,\gamma\,(1-\gamma)}{(2\phi_\alpha\,(1-\gamma)\eta+\gamma)^2} \gtreqless 0 \;\Leftrightarrow\; \phi_i \gtreqless \phi.$

Given our assumption that $\phi_M > \phi > \phi_P > \phi_R$, Corollaries (6.A) and (6.B) offer a similar conclusion than that derived under non-income-sorting, namely, fairness concern curbs tactical redistribution (TR-transfers) for those benefiting from targeting spending (here only the middle class). Further, altruistic redistribution isn't directly affected by fairness. With respect to (6.C), the power sharing effect on TR-transfers is positive for the high density group, that is, the middle class, and negative for the other two groups. The interpretation is similar to that given in the paper: as policymaking power gets more concentrated in the winning party, electoral spending flows from the less responsive to the more responsive groups of voters. The only difference is that under non-income-sorting the rich benefits even if they are the less responsive group because of the need to keep the ranking of disposable income unchanged after redistribution.

Corollary 7 The groups' after-tax equilibrium incomes $y_i = e + \beta\cdot(\phi_i - \phi)$, $i \in N$, determine an estimate of the Gini coefficient equal to $\hat{G} = \beta \cdot K$, where $K = e^{-1}\left[n_M(\phi_M - \phi) + n_R n_P(\phi_R - \phi_P)\right]$. Thus,

(7.A) $\frac{\partial \hat{G}}{\partial \alpha_i} = -K\,\beta^2\,2n_i\phi_i < 0$, $i \in N$,

[1] The numeration of corollaries is set consecutively to that used in the paper.

(7.B) $\frac{\partial \hat{G}}{\partial \gamma} = -\frac{K\beta^2}{\eta(1-\gamma)^2} < 0,$

(7.C) $\frac{\partial \hat{G}}{\partial \eta} = \frac{\gamma K \beta^2}{(1-\gamma)\eta^2} > 0,$

(7.D) $\frac{\partial \hat{G}}{\partial \phi_i} = \beta\left(\frac{\partial K}{\partial \phi_i} - 2K\beta n_i \alpha_i\right),\, i \in N,$

where $\frac{\partial K}{\partial \phi_P} = -n_P(n_M+n_R)e^{-1} < 0$, $\frac{\partial K}{\partial \phi_M} = e^{-1} n_M(1-n_M) > 0$, and $\frac{\partial K}{\partial \phi_R} = e^{-1} n_R(n_P-n_M) \gtrless 0$ depending on whether $n_P \gtrless n_M$.[2]

To conclude, the results shown in (7.A)-(7.D) indicates that the sign of the comparative statics effects of the main parameters of the model over the Gini are the same regardless of whether income-sorting is or isn't permitted.

2.2 Margin of victory

The equilibrium analysis carried out in the paper rests on the assumption that the influence of the parties at the policymaking process is determined by the ratio of vote shares, as is expressed by the rule

$$\rho^C = \frac{1}{1+\left(\frac{1-v^C}{v^C}\right)^{\eta}}. \tag{2}$$

Although that seems to be the view adopted by other papers in the literature (e.g., Saporiti 2014, Matakos, Troumpounis and Xefteris 2015, and Herrera, Morelli, and Nunnari 2016), an equally significant and intuitive hypothesis sees instead that influence to be determined by the absolute margin of victory, that is, by the difference of the vote shares, which in a democracy provides to the winning party the right according to law to carry out a particular political programme as approved by the electorate. In practice, however, a narrow margin of victory reduces the leeway of the winning party to implement policies aligned with its electoral platform. By contrast, the party that wins an election with a landslide victory receives from the public a clear mandate to govern and pursue its policy goals (Faravelli et al. 2015).

To formalize this argument, let party C's influence on policy be determined by the margin of victory or electoral mandate $v^{-C} - v^C = 1 - 2v^C$, so that

$$\hat{\rho}^C = \frac{1}{1+\exp\left(\eta\left(1-2v^C\right)\right)}, \tag{3}$$

where the circumflex accent mark "hat" over the character ρ is used to distinguished this case from (2). In the theory of conflict, the expression in (3) is known as the

[2]We assume that $\frac{n_M}{n_P n_R} > \frac{\phi_P - \phi_R}{\phi_M - \phi}$, which ensures that $K > 0$ and the Gini index is well defined.

difference-form contest success function, due to Hirshleifer (1989), whereas (2) is usually called the Tullock contest success function, after Tullock (1980).[3]

Figure 1: Party influence over policy: vote ratio vs margin of victory

The graph in Figure 1 illustrates party A's probability of determining the redistributive policy, that is, A's policy influence power, as a function of the ratio (in red) and the margin (in blue) of victory, as expressed in equations (2) and (3), respectively. The graph shows that both rules determine the same power distribution when parties' vote shares are equal. On the contrary, when parties have different vote shares, the ratio of victory determines a more disproportionate allocation of power, in the sense that the party with the higher vote share receives an even greater influence over policy. This discrepancy between the two expressions tends to narrow as the influence parameter η takes greater values.

For the purpose of the analysis conducted in this work, it is worth mentioning that the different power distribution emerging from (2) and (3) have minor implications on the equilibrium characterization. To see this, let's call $\hat{\mathcal{G}} = \left(X, \hat{\Pi}^C\right)_{C=A,B}$ the redistributive election game determined by the model (with symmetric party fairness) of the paper and the power sharing rule (3), where the payoffs $\hat{\Pi}^C$ have been appropriately redefined (specifically, $\hat{\Pi}^C\left(\mathbf{x}^A, \mathbf{x}^B\right) = (1-\gamma)\cdot\hat{\rho}^C - \gamma\,\frac{1}{2}\cdot\sum_{i\in N} n_i\left(y_i^C - y^C\right)^2$). Using the argument of Propositions 1 and 2, and given that $\hat{\rho}^C$ is a continuous and monotone transformation of v^C for a given η, it is immediate to see that under Condition $\mathbb{C}$, this game has a unique equilibrium in pure strategies; and that parties announce the same transfer policy at the equilibrium. To be more specific,

Proposition 4 (Margin of Victory) Let $\left(\mathbf{x}^A, \mathbf{x}^B\right) \in X\times X$ denote the pure-strategy equilibrium of the redistributive election game $\hat{\mathcal{G}}$. For all $i \in N$ and all $C = A, B$,

$$x_i^C = e - e_i + \hat{\beta}_i \cdot (\phi - \phi_P), \tag{4}$$

where $\hat{\beta}_R = \hat{\beta}_M = \frac{(1-\gamma)\,\eta\,\sigma_P}{2[(1-\gamma)\,\eta\,\phi_\alpha + \gamma]}$ and $\hat{\beta}_P = -\frac{(1-\gamma)\,\eta}{2[(1-\gamma)\,\eta\,\phi_\alpha + \gamma]}$.

[3] Skaperdas (1996) offers an axiomatic foundation of several popular contest success functions, including the two employed here, that is, the Tullock and the difference-form functions.

The result stated in Proposition 4 shows that under the "margin of victory" power sharing rule, the pure-strategy equilibrium of the election game has the same structure and comparative statics effects than before. The only difference is that the coefficient in (4) that accompanies the ideological neutrality gap of the poor is smaller. Intuitively, this happens because a less disproportionate allocation of power under (3) diminishes the fierceness of political competition and the prominence of the swing voter group in the election, leading to less tactical redistribution and consequently to a more egalitarian distribution of income among the groups. Despite this, the qualitative results under the two power sharing regimes are similar.

2.3 Asymmetric fairness concern

So far, the analysis has focused on the symmetric motivation case where the two parties care equally about fairness, that is, $\gamma^A = \gamma^B = \gamma$. Obviously, it is possible to imagine an alternative scenario where parties, representing perhaps different socio-economic groups, express distinct concern with economic inequality. In particular, that might be the case if one party is "captured by" the rich and the elite, and the other is heavily influenced by the unions and the working class.

To fix ideas, let's consider a simple case of asymmetric motivation in which party A cares only about power, and party B is only concerned with fairness. Formally, let's assume $0 = \gamma^A \neq \gamma^B = 1$. The payoff functions of the parties in this case are

$$\widetilde{\Pi}^A\left(\mathbf{x}^A, \mathbf{x}^B\right) = \rho^A, \tag{5}$$

and

$$\widetilde{\Pi}^B\left(\mathbf{x}^A, \mathbf{x}^B\right) = -\frac{1}{2} \cdot \sum_{i \in N} n_i \left(y_i^B - y^B\right)^2. \tag{6}$$

Denote by $\widetilde{\mathcal{G}} = \left(X, \widetilde{\Pi}^C\right)_{C=A,B}$ the resulting redistributive election game, determined by the model of the paper and the payoffs (5) and (6). Using the argument of Proposition 1, it is immediate to see that under Condition $\mathbb{C}$, this game has a unique equilibrium in pure strategies. To be more specific,

Lemma 1 (Asymmetric Fairness Concern) Let $\left(\mathbf{x}^A, \mathbf{x}^B\right) \in X \times X$ be the pure-strategy equilibrium of the election game $\widetilde{\mathcal{G}} = \left(X, \widetilde{\Pi}^C\right)_{C=A,B}$. Assume for all $i \in N$, θ_i is uniformly distributed over $[\frac{-1}{2\phi_i}, \frac{1}{2\phi_i}]$, with $\phi_M > \sum_{i \in N} n_i \phi_i > \phi_P > \phi_R$. Then,

$$x_i^A = e - e_i + \widetilde{\beta}_i \cdot (\phi - \phi_P), \; i \in N \tag{7}$$

and

$$x_i^B = e - e_i, \; i \in N \tag{8}$$

where $\widetilde{\beta}_M = \widetilde{\beta}_R = \sigma_P (2\phi_\alpha)^{-1} = -\sigma_P \, \widetilde{\beta}_P$.

The result shown above offers several interesting insights. First, it shows that when parties have different fairness concerns, their redistributive policies can diverge at the equilibrium. In particular, given that party B has been assumed to be purely altruistic, (8) dictates that B's equilibrium policy proposes a level of redistribution that equalizes the after-tax incomes of all socio-economic groups. For the policy of party A this is not the case obviously, since the middle class receives in addition an extra bit of positive tactical redistribution transfers.

Second, remember that the implemented policy is a compromise of the electoral proposals done by the parties, each weighted by its corresponding power share. For the equilibrium of Proposition 1 it transpires therefore that for all $i \in N$,

$$x_i = e - e_i + \rho^A \cdot \widetilde{\beta}_i \cdot (\phi - \phi_P), \tag{9}$$

where ρ^A is given by equation (2), with $v^A = 1/2 + \sum_{i \in N} n_i \, \phi_i \left(u_i \left(y^A \right) - u_i \left(y^B \right) \right)$, and $u_i \left(y^A \right) - u_i \left(y^B \right) = \widetilde{\beta}_i \cdot (\phi - \phi_P) - \alpha_i \cdot (\phi - \phi_P)^2 \cdot \sum_{i \in N} n_i \cdot \widetilde{\beta}_i^2$. These are obviously complex expressions that do not allow to say much about what happens with the transfer x_i of each group as the parameters of the model change. To be concrete, the problem is with the TR-transfers (AR-transfers are the same), which depend now on party A's power share, as shown in (9). How these shares respond to the parameters isn't easy to tell without imposing further restrictions on the model structure.

Third, it is interesting to see that (7) and (8) are particular instances of the redistributive policy characterized in the symmetric fairness case of the text, namely,

$$x_i^C(\gamma) = (e - e_i) + \beta_i(\gamma) \cdot (\phi - \phi_P), \text{ with } \beta_M(\gamma) = \beta_R(\gamma) = \frac{(1-\gamma)\,\eta\,\sigma_P}{(1-\gamma)\,2\,\eta\,\phi_\alpha + \gamma} = -\sigma_P\,\beta_P(\gamma), \tag{10}$$

when γ takes the values of 0 and 1, respectively. Having noted that, one might be tempted to think that perhaps the equilibrium of any other asymmetric case can be obtained in the same fashion by replacing the different levels of parties' fairness concern into the symmetric equilibrium shown in (10). We argue, however, that's correct in the limit case $0 = \gamma^A \neq \gamma^B = 1$ considered by Lemma 1, but not otherwise.

To elaborate, suppose party B remains altruistic (i.e., $\gamma^B = 1$), and let A care about power *and* fairness (i.e., $\gamma^A \in (0, 1)$). At the equilibrium, party B's redistributive policy continues to be the initial income gap $e - e_i$. By contrast, a closed-form expression for the policy of party A is hard to derive even under the assumption that voters' ideological bias is drawn from a uniform distribution. The problem is parties do not converge to the same policy, and that transforms the first-order partial derivative of the power share with respect to the expected vote share into a nontrivial expression (see equation (19) below). On the contrary, in the symmetric fairness case, regardless of the nature of the c.d.f. F_i, the expected vote shares are equal to $1/2$ at the equilibrium, because parties propose the same redistributive policy. That implies that (19) is simply equal to η, and that simplifies enormously the calculation of the transfers.

Having said that, it can be shown that party A's transfers (specifically, the TR-transfers) to the swing voter group (middle class) are now smaller than that given by (10). The reason is competition for votes in the asymmetric fairness case is less intense due to the fact that party B is by assumption less concerned with power sharing than under symmetry (in this example, B is not concerned at all with power). Other things equal, that reduces the level of tactical redistribution that a fair-minded party A is willing to implement and to trade against equity.[4]

Thus, although a closed-form solution for the previous asymmetric fairness case is hard to workout, compared with the symmetric case and provided that the relatively more opportunistic party is also fair-minded, the equilibrium transfers imply less targeted spending on the more responsive voter groups. This occurs by the fact that competition among political parties becomes less fierce, to which parties respond by curbing tactical redistribution. Below we state formally this observation and we generalize it for the case where none of the parties is purely altruistic.

Consider the redistributive election game $\widetilde{\widetilde{\mathcal{G}}}\left(\gamma^A, \gamma^B\right) = \left(X, \widetilde{\widetilde{\Pi}}^C\left(\gamma^C\right)\right)_{C=A,B}$, determined by the model of the paper and the payoff functions $\widetilde{\widetilde{\Pi}}^C$, $C = A, B$, where for each $\gamma^C \in [0,1]$, $\widetilde{\widetilde{\Pi}}^C\left(\gamma^C\right) = \left(1-\gamma^C\right)\cdot \rho^C - \gamma^C \frac{1}{2} \cdot \sum_{i\in N} n_i \left(y_i^C - y^C\right)^2$.

Lemma 2 If Condition $\mathbb{C}$ holds, then the election game $\widetilde{\widetilde{\mathcal{G}}}\left(\gamma^A, \gamma^B\right)$ has a unique pure-strategy equilibrium $\left(\mathbf{x}^A\left(\gamma^A, \gamma^B\right), \mathbf{x}^B\left(\gamma^A, \gamma^B\right)\right) \in X \times X$. Moreover, if for all $i \in N$, θ_i is uniformly distributed over $[\frac{-1}{2\phi_i}, \frac{1}{2\phi_i}]$, with $\phi_M > \sum_{i\in N} n_i\phi_i > \phi_P > \phi_R$, then

(2.A) For all $0 < \gamma^C < \gamma^{-C}$, $0 < x_M^C\left(\gamma^C, \gamma^{-C}\right) \le x_M^C\left(\gamma^C\right)$, with strict inequality if $\eta \neq 1$, and $\lim_{\gamma^C \to 0} x_i^C\left(\gamma^C, \gamma^{-C}\right) = x_i^C(0)$;

(2.B) For all $\gamma^C < \gamma^{-C} < 1$, $0 < x_M^{-C}\left(\gamma^C, \gamma^{-C}\right) \le x_M^{-C}\left(\gamma^{-C}\right)$, with strict inequality if $\eta \neq 1$, and $\lim_{\gamma^{-C} \to 1} x_i^{-C}\left(\gamma^C, \gamma^{-C}\right) = x_i^{-C}(1)$; and

(2.C) For all $0 \le \gamma^C < \gamma^{-C} \le 1$, $\left|y_i\left(\gamma^C, \gamma^{-C}\right) - e\right| < \left|y_i\left(\gamma^C\right) - e\right|$.

The existence result stated above follows from the same argument used in the proof of Proposition 1. To be more concrete, regardless of the levels of party fairness concerns, Condition $\mathbb{C}$ is sufficient to ensure the quasi-concavity of each party's conditional payoff function; and that's enough due to Debreu-Glicksberg-Fan's theorem to guarantee the existence of a pure-strategy Nash equilibrium for the election game $\widetilde{\widetilde{\mathcal{G}}}\left(\gamma^A, \gamma^B\right)$ (where, remember, γ^A is not necessarily equal to γ^B).

With respect to the rest of the Proposition, (2.A) points out that so long as party C is fair-minded, it will redistribute less to the swing voter group than in the case where

[4] What happens in the limit when party A is not fair-minded is that its willingness to trade votes for equity vanishes, and therefore it behaves independently of the intensity of electoral competition (power sharing regime).

both parties have the same level of fairness concern because electoral competition is less intense under asymmetric party fairness (differentiated parties). In addition, (2.A) shows that in the limit, when party C is fully opportunistic, it behaves in the same way regardless of the intensity of competition (power sharing regime). The interpretation of (2.B) is similar. That is, so long as party $-C$ is not purely altruistic, it will also redistribute less under asymmetric fairness; and again, in the limit, when $-C$ becomes purely altruistic, it chooses the same level of redistribution regardless of the intensity of competition. Finally, (2.C) says that the magnitude of TR-transfers to all income groups is smaller under asymmetric party fairness, which results compared with the symmetric case in a more egalitarian distribution of after-tax disposable incomes.

2.4 Proofs

2.4.1 Proof of Proposition 3

Like in the proof to Proposition 2, we consider only the problem of party A, which is (given the policy $\mathbf{x}^B \in X'$ of the other party)

$$\max_{\mathbf{x}^A} \Pi^A\left(\mathbf{x}^A, \mathbf{x}^B\right)$$

$$\text{s.t.} \quad \sum_{i \in N} n_i x_i^A = 0, \tag{11}$$

$$x_i^A + e_i \geq 0 \text{ for all } i \in N. \tag{12}$$

The main difference between this optimization problem and party A's problem under the non-income-sorting constraints is the restrictions (8) and (9) of Appendix A in the paper, which are now lifted. The Lagrange function is $\mathcal{L} = \Pi^A\left(\mathbf{x}^A, \mathbf{x}^B\right) + \lambda[0 - \sum_{i \in N} n_i x_i^A] + \sum_{i \in N} \mu_i \left(x_i^A + e_i\right)$, where λ and μ_i stand for the Lagrange multipliers associated with (11) and (12), respectively. Consider the case where $\lambda \geq 0$ and $\mu_i = 0$ for all $i \in N$. The first-order conditions reduce to equation (11) and:

$$\frac{\partial \Pi^A}{\partial x_R^A} - n_R \lambda = 0, \tag{13}$$

$$\frac{\partial \Pi^A}{\partial x_M^A} - n_M \lambda = 0, \tag{14}$$

$$\frac{\partial \Pi^A}{\partial x_P^A} - n_P \lambda = 0. \tag{15}$$

The first-order partial derivative of the payoff function is: $\frac{\partial \Pi^A}{\partial x_i^A} = (1-\gamma)\eta \cdot \frac{\partial v^A}{\partial x_i^A} - \gamma n_i \left(\tilde{e}_i + x_i^A\right)$, where $\tilde{e}_i = e_i - e$ and $\frac{\partial v^A}{\partial x_i^A} = n_i \phi_i - 2n_i\left(\tilde{e}_i + x_i^A\right)\phi_\alpha$. Combining (13) and

(14) and following the steps of Appendix A, we have that

$$x_R^A = e_M - e_R + x_M^A - \frac{(1-\gamma)\,\eta\,(\phi_M - \phi_R)}{(1-\gamma)\,2\phi_\alpha + \gamma}. \tag{16}$$

By the same token, using (14) and (15), it follows that

$$x_P^A = e_M - e_P + x_M^A - \frac{(1-\gamma)\,\eta\,(\phi_M - \phi_P)}{(1-\gamma)\,2\phi_\alpha + \gamma}. \tag{17}$$

Finally, substituting (16) and (17) into (11), we get the transfer to the middle class:

$$x_M^A = e - e_M + \frac{(1-\gamma)\,\eta\,(\phi_M - \phi)}{(1-\gamma)\,2\phi_\alpha + \gamma}. \tag{18}$$

The transfers to the rich and the poor are obtained by replacing (18) back into (16) and (17), respectively. ∎

2.4.2 Proof of Proposition 4

The proof is identical to the proof of Proposition 2. The only difference is the value of the first-order partial derivative of the power sharing function with respect to the vote share. In the ratio of victory case, this derivative is

$$\frac{\partial \rho^A}{\partial v^A} = \frac{1}{\left(1+\left(\frac{1-v^A}{v^A}\right)^{\eta}\right)^2} \cdot \eta \left(\frac{1-v^A}{v^A}\right)^{\eta-1} \cdot \frac{1}{\left(v^A\right)^2}, \tag{19}$$

whereas in the margin of victory case is

$$\frac{\partial \hat{\rho}^A}{\partial v^A} = \frac{1}{\left(1+e^{\eta\left(1-2v^A\right)}\right)^2} \cdot e^{\eta\left(1-2v^A\right)} \cdot 2\eta.$$

Since at the equilibrium $\mathbf{x}^A = \mathbf{x}^B$ and $v^A = \frac{1}{2}$, it follows that $\frac{\partial \rho^A}{\partial v^A} = \eta$, and $\frac{\partial \hat{\rho}^A}{\partial v^A} = \frac{1}{2}\eta$. The rest of the proof proceeds in the same manner as the proof of Proposition 2. ∎

2.4.3 Proof of Lemma 1

First of all, it is immediate to verify that the policy of party B that maximizes its objective function subject to the usual constraints is $x_i^B = e - e_i$, $i \in N$.

Second, party A's optimization problem consists in maximizing with respect to $\mathbf{x}^A$ the power sharing function $\rho^A\left(\mathbf{x}^A, \mathbf{x}^B\right)$, given that $x_i^B = e - e_i$ $\forall i \in N$, and subject to the following set of restrictions:

$$\begin{aligned} \sum_{i \in N} n_i x_i^A &= 0, & (20) \\ x_i^A + e_i &\geq 0 \text{ for all } i \in N, & (21) \\ e_R + x_R^A &\geq e_M + x_M^A, & (22) \\ e_M + x_M^A &\geq e_P + x_P^A. & (23) \end{aligned}$$

Suppose $\lambda \geq 0$, $\mu_i = 0$ for all $i \in N$, $\delta_1 > 0$ and $\delta_2 = 0$, where λ, μ_i, δ_1, and δ_2 are the Lagrange multipliers associated with (20)–(23). The first-order conditions are (20), (21), (23), together with

$$\frac{\partial \rho^A}{\partial x_R^A} - \lambda n_R + \delta_1 = 0, \quad (24)$$

$$\frac{\partial \rho^A}{\partial x_M^A} - \lambda n_M - \delta_1 = 0, \quad (25)$$

$$\frac{\partial \rho^A}{\partial x_P^A} - \lambda n_P = 0, \quad (26)$$

$$e_R + x_R^A - e_M - x_M^A = 0. \quad (27)$$

Combining (24) and (25), we get

$$\frac{\partial \rho^A}{\partial v^A}\left(\frac{\partial v^A}{\partial x_M^A} + \frac{\partial v^A}{\partial x_R^A}\right) = (n_M + n_R)\,\lambda. \quad (28)$$

Meanwhile, note that (26) can be rewritten as

$$\frac{\partial \rho^A}{\partial v^A}\frac{\partial v^A}{\partial x_P^A} = n_P \lambda, \quad (29)$$

where $\frac{\partial v^A}{\partial x_i^A} = n_i \phi_i - 2 n_i \left(\tilde{e}_i + x_i^A\right)\phi_\alpha$. Combining (28) and (29) and after some algebraic manipulation, we have that

$$x_P^A + e_P - e_M + \frac{\phi - \phi_P}{n_M + n_R}\frac{1}{2\phi_\alpha} = x_M^A. \quad (30)$$

Thus, substituting (30) and (27) into (20), we get the transfer to the middle class, namely,

$$x_M^A = e - e_M + \sigma_P \frac{1}{2\phi_\alpha}\left(\phi - \phi_P\right),$$

from which we also obtain the transfer to the poor and the rich. ∎

2.4.4 Proof of Lemma 2

Without loss of generality, let's suppose $\gamma^A < \gamma^B$. The existence of a pure strategy Nash equilibrium $\left(\mathbf{x}^A\left(\gamma^A,\gamma^B\right),\mathbf{x}^B\left(\gamma^A,\gamma^B\right)\right)\in X\times X$ for the election game $\widetilde{\widetilde{\mathcal{G}}}\left(\gamma^A,\gamma^B\right)$ follows from Proposition 1 in the paper. To prove (2.A), notice that following the reasoning of the proof to Proposition 2, we can derive an (implicit) expression for the equilibrium transfers of party A, namely,

$$x_i^A(\gamma^A,\gamma^B) = e - e_i + \beta_i^A(\gamma^A,\gamma^B)\cdot(\phi-\phi_P),\ \text{for } i\in\mathcal{N}, \tag{31}$$

where $\beta_R^A(\gamma^A,\gamma^B) = \beta_M^A(\gamma^A,\gamma^B) = \frac{(1-\gamma^A)\sigma_P\,\partial\rho^A/\partial v^A}{\partial\rho^A/\partial v^A\,(1-\gamma^A)\,2\,\phi_\alpha+\gamma^A} = -\sigma_P\beta_P^A(\gamma^A,\gamma^B)$. Note that, since $\frac{\partial\rho^A}{\partial v^A}$ depends on x_i^A (and also on x_i^B), this is not a closed-form solution for $x_i^A(\gamma^A,\gamma^B)$. However, we show below that this partial derivative is bounded. Indeed, differentiating ρ^A, that is, equation (2), with respect to v^A, we have that

$$\frac{\partial\rho^A}{\partial v^A} = \eta\cdot\left(\frac{1}{v^Av^B}\cdot\frac{1}{2+\left(\frac{v^B}{v^A}\right)^\eta+\left(\frac{v^A}{v^B}\right)^\eta}\right).$$

Let $\Psi(\eta) = \frac{1}{v^Av^B}\frac{1}{2+\left(\frac{v^B}{v^A}\right)^\eta+\left(\frac{v^A}{v^B}\right)^\eta}$. By definition, the disproportionality parameter $\eta\geq 1$. It is easy to see that $\Psi(1)=1$, and that $\Psi(\cdot)$ is decreasing in η, that is,

$$\frac{\partial\Psi}{\partial\eta} = -\frac{\left(\frac{v^B}{v^A}\right)^\eta\ln\left(\frac{v^B}{v^A}\right)+\left(\frac{v^A}{v^B}\right)^\eta\ln\left(\frac{v^A}{v^B}\right)}{v^Bv^A\left[2+\left(\frac{v^B}{v^A}\right)^\eta+\left(\frac{v^A}{v^B}\right)^\eta\right]^2} < 0. \tag{32}$$

Therefore, if $\eta = 1$, then $\partial\rho^A/\partial v^A = \eta$; whereas if $\eta > 1$, then the expression in (32) implies that $\Psi(\eta) < 1$, and consequently that $\frac{\partial\rho^A}{\partial v^A} = \eta\cdot\Psi(\eta) < \eta$. Altogether this means $0 < \frac{\partial\rho^A}{\partial v^A} < \infty$. Further, since $e > e_M$, the fact that $\frac{\partial\rho^A}{\partial v^A}\leq\eta$ implies from (31) and (10) that $0 < x_M^A\left(\gamma^A,\gamma^B\right)\leq x_M^A\left(\gamma^A\right)$ for all $0<\gamma^A<\gamma^B$, with strict inequality if $\eta\neq 1$. Taking the limit of (31) when γ^A approaches zero, we see that $\lim_{\gamma^A\to 0} x_i^A\left(\gamma^A,\gamma^B\right) = e-e_i+\beta_i^A(0,\gamma^B)\cdot(\phi-\phi_P) = x_i^A(0)$, where $\beta_R^A(0,\gamma^B) = \beta_M^A(0,\gamma^B) = \sigma_P\,(2\,\phi_\alpha)^{-1} = -\sigma_P\beta_P^A(0,\gamma^B)$, which proves (2.A). The proof for (2.B) is done using a similar argument.

Finally, note from (31) and the equivalent for party B that $\left|y_i^C(\gamma^A,\gamma^B)-e\right| = \left|x_i^C(\gamma^A,\gamma^B)+e_i-e\right| = \left|\beta_i^C(\gamma^A,\gamma^B)\cdot(\phi_P-\phi)\right|$, with $C=A,B$. Repeating the step but using instead (10), we also have that $\left|y_i^C(\gamma)-e\right| = \left|x_i^C(\gamma)+e_i-e\right| = \left|\beta_i(\gamma)\cdot(\phi_P-\phi)\right|$. Thus, appealing to the argument of the previous paragraph, it follows that for all $i \in \mathcal{N}$,

$$\left|y_i^A(\gamma^A, \gamma^B) - e\right| \le \left|y_i^A(\gamma^A) - e\right|, \tag{33}$$

with strict inequality if $\eta \neq 1$ and $\gamma^A > 0$. By the same token, for all $i \in \mathcal{N}$, $\left|y_i^B(\gamma^A, \gamma^B) - e\right| \le \left|y_i^B(\gamma^B) - e\right|$, with strict inequality if $\eta \neq 1$ and $\gamma^B < 1$. Moreover, by Corollary 3.B in the paper, $\gamma^A < \gamma^B$ implies that $\left|y_i^B(\gamma^B) - e\right| < \left|y_i^B(\gamma^A) - e\right| = \left|y_i^A(\gamma^A) - e\right|$, where the last identity follows from the fact that parties converge to the same policy under symmetric fairness concern. Thus, for all $i \in \mathcal{N}$,

$$\left|y_i^B(\gamma^A, \gamma^B) - e\right| < \left|y_i^A(\gamma^A) - e\right|. \tag{34}$$

Combining (33) and (34),

$$\left|\rho^A \cdot [y_i^A(\gamma^A, \gamma^B) - e]\right| + \left|\rho^B \cdot [y_i^B(\gamma^A, \gamma^B) - e]\right| < \left|y_i(\gamma^A) - e\right|, \tag{35}$$

which implies using the properties of the absolute value function that

$$\left|\rho^A \cdot [y_i^A(\gamma^A, \gamma^B) - e] + \rho^B \cdot [y_i^B(\gamma^A, \gamma^B) - e]\right| < \left|y_i(\gamma^A) - e\right|. \tag{36}$$

Therefore, by (36), $\left|y_i(\gamma^A, \gamma^B) - e\right| < \left|y_i(\gamma^A) - e\right|$, as is stated in (2.C). ∎

3 Empirical Extensions

In this section, we complement the empirical analysis of our paper "Redistributive Politics, Power Sharing and Fairness". Firstly, in Tables 1 to 4 we display the regression tables analysed in the paper, but showing the full list of controls. Secondly, Tables 5 to 8 are analogous to Tables 1 to 4, but they replace the Taagepera's (1986) index of electoral rule disproportionality by the Gallagher's (1991) index, which is another well-known measure of political power sharing. Finally, thirdly, Tables 9 to 12 consider a non-linear approximation to the relationships under study. In particular, recognizing that the independent variables investigated don't enter into the determination of the tactical transfers in a linear way, we express them in natural logarithm.

Starting with Tables 1-3, they suggest that in those countries where the per capita income is relatively high (exceeding for instance a threshold of 20,000 2005-USD), the net broad transfers to the non-poor tend to be significantly lower. That is, in richer societies, the net taxes to the non-poor tend to be higher, as expected. More interestingly, Table 4 indicates that, controlling for other factors (including fixed effects), older democracies tend to have lower Gini indicators. And that larger and less educated populations are associated with greater levels of inequality (OLS column).

The regressions including the Gallagher index in Tables 5-7 confirm the link between the income gaps of the groups and the net transfers to them (Hypothesis 1), with magnitudes that are quite close to those in the regressions with the Taagepera index in Tables 1-3. They also provide additional support to the hypotheses that electoral rule disproportionality and the transfers to the groups (Hypothesis 4) and, respectively, the after-tax Gini of disposable incomes (Hypothesis 7) are linked, though only in the OLS framework. Additionally, they indicate that as party fairness concern increases, the Gini decreases in a statistically significant way (Hypothesis 6).

Finally, the regressions taking the natural logarithm of the determinants of the equilibrium tactical transfers, shown in Tables 9-11 tend to confirm the validity of Hypothesis 1 and Hypothesis 4. The regression considering party fairness in Table 12 finds also some support for Hypothesis 6, specifically the association between the inequality concern of the political parties and the Gini index; and it confirms the validity of Hypothesis 7. Once again, we do not find evidence supporting Hypothesis 2, 3, and 5. Additionally, we find once again that older democracies tend to have lower Gini than newer ones, and that in a give democracy, as it ages, income inequality raises. Finally, we find that, given the other controls, the openness of the economy is positively correlated with the Gini of post-tax income inequality.

Table 1: Regressions of the net transfers – Full sample

	Least Squares			Fixed Effects		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e-e_P$)	0.49***			0.55***		
	(0.03)			(0.02)		
Income Gap of the MC ($e-e_M$)		0.87***			0.58***	
		(0.11)			(0.09)	
Income Gap of the Rich ($e-e_R$)			0.45***			0.40***
			(0.02)			(0.02)
Electoral Rule Disproportionality (η)	-1.79***	0.82***	3.44***	-24.93**	-6.49	-14.17
	(0.26)	(0.27)	(0.52)	(10.49)	(8.59)	(22.34)
Per Capita Income 15K-20K	0.37	-1.17	-2.59			
	(0.92)	(0.91)	(1.88)			
Per Capita Income above 20K	-0.33	-3.37***	-7.24***			
	(0.99)	(0.95)	(1.93)			
Constant	3.15***	-0.31	-0.61	43.21**	9.37	23.19
	(0.85)	(0.82)	(1.73)	(18.88)	(15.46)	(40.18)
N	112	112	112	114	114	114
FE groups	-	-	-	23	23	23
R^2	0.83	0.61	0.86	0.86	0.32	0.84

Standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
R^2 is adjusted-R^2 for least squares and within-R^2 for fixed effects.

Table 2: Regressions of the net transfers – Restricted samples

	Multiple Regressors			Party Fairness Concern		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e - e_P$)	0.45***			0.48***		
	(0.05)			(0.04)		
Income Gap of the MC ($e - e_M$)		0.73**			0.76***	
		(0.27)			(0.27)	
Income Gap of the Rich ($e - e_R$)			0.55***			0.43***
			(0.05)			(0.04)
Ideological Neutrality of the Poor (ϕ_P)	-6.94	-3.69	-10.15			
	(8.87)	(14.54)	(22.92)			
Ideological Neutrality of the MC (ϕ_M)	17.86	-15.27	-22.43			
	(11.70)	(20.33)	(34.23)			
Ideological Neutrality of the Rich (ϕ_R)	-10.63	8.60	28.78			
	(6.50)	(10.91)	(18.03)			
Fairness Concern of the Poor (α_P)	3.62**					
	(1.33)					
Fairness Concern of the MC (α_M)		5.94***				
		(1.83)				
Fairness Concern of the Rich (α_R)			8.28***			
			(2.04)			
Party Fairness Concern (γ)				5.66	-8.77	-23.98
				(5.11)	(6.71)	(14.22)
Electoral Rule Disproportionality (η)	0.96	2.01*	7.55***	-1.15**	1.35**	4.55***
	(0.59)	(0.98)	(1.62)	(0.45)	(0.63)	(1.24)
Per Capita Income 15K-20K	0.64	2.32	4.91*	0.06	-0.81	-2.01
	(0.90)	(1.57)	(2.48)	(0.99)	(1.32)	(2.76)
Per Capita Income above 20K	3.20**	-0.35	2.97	-1.97	-5.60***	-12.58***
	(1.12)	(1.81)	(2.99)	(1.35)	(1.89)	(3.56)
Constant	-15.27**	-19.24**	-30.47***	2.02*	-0.07	0.74
	(6.77)	(8.25)	(10.42)	(1.17)	(1.45)	(3.24)
N	28	28	28	26	26	26
R^2	0.96	0.85	0.96	0.91	0.78	0.92

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
R^2 is adjusted-R^2.

Table 3: Regressions of the net transfers (narrow definition) – Full sample

	Least Squares			Fixed Effects		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e - e_P$)	0.13***			0.16***		
	(0.02)			(0.02)		
Income Gap of the MC ($e - e_M$)		0.80***			0.43*	
		(0.24)			(0.26)	
Income Gap of the Rich ($e - e_R$)			0.36***			0.36***
			(0.03)			(0.02)
Electoral Rule Disproportionality (η)	0.48**	1.64***	2.72***	-6.83	6.81	-10.59
	(0.18)	(0.32)	(0.62)	(5.95)	(9.99)	(17.26)
Per Capita Income 15K-20K	-0.21	-4.19***	-4.78*			
	(0.80)	(1.12)	(2.67)			
Per Capita Income above 20K	-2.03**	-6.79***	-9.08***			
	(0.84)	(1.11)	(2.71)			
Constant	-0.73	-2.21**	-1.15	10.67	-16.90	16.01
	(0.69)	(1.09)	(2.36)	(10.80)	(18.07)	(31.30)
N	88	88	88	90	90	90
FE groups	-	-	-	19	19	19
R^2	0.37	0.42	0.75	0.54	0.04	0.84

Standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
R^2 is adjusted-R^2 for least squares and within-R^2 for fixed effects.

Table 4: Regressions of the Gini index

	Full Sample		Restricted Samples	
	Least Squares	Fixed Effects	Multiple Regressors	Parties' Fairness
Ideological Neutrality of the Poor (ϕ_P)			13.37	
			(11.83)	
Ideological Neutrality of the MC (ϕ_M)			-5.36	
			(23.66)	
Ideological Neutrality of the Rich (ϕ_R)			17.88	
			(12.85)	
Fairness Concern of the Poor (α_P)			-1.05	
			(4.31)	
Fairness Concern of the MC (α_M)			6.42	
			(4.76)	
Fairness Concern of the Rich (α_R)			-1.70	
			(2.11)	
Party Fairness Concern (γ)				-12.80**
				(6.14)
Electoral Rule Disproportionality (η)	2.81***	25.91**	3.58**	2.29**
	(0.45)	(12.29)	(1.40)	(0.93)
Real GDP (th. USD)	0.19	0.02	-0.05	0.14
	(0.15)	(0.14)	(0.06)	(0.58)
Real GDP (th. USD) square	-0.00	-0.00		0.00
	(0.00)	(0.00)		(0.01)
Completed Secondary Schooling	-6.63***	-1.05	-5.84	0.03
	(1.89)	(2.90)	(4.05)	(4.14)
Democracy Index	0.41	0.65		1.49
	(0.62)	(0.56)		(1.52)
Age of Democracy	-0.08***	0.14**		-0.11***
	(0.02)	(0.06)		(0.04)
Economy's Openness	0.02**	-0.02	0.01	-0.01
	(0.01)	(0.01)	(0.02)	(0.02)
Population (th.)	0.00***	0.00		0.00
	(0.00)	(0.00)		(0.00)
% Population 15-64 y.o.	0.12	-0.25*	0.81	-0.59
	(0.17)	(0.13)	(0.55)	(0.37)
% Population over 65 y.o.	0.19	-0.13	0.27	0.27
	(0.13)	(0.20)	(0.30)	(0.37)
Constant	10.19	-7.36	-62.54	49.15*
	(11.61)	(21.95)	(39.38)	(25.63)
N	171	171	30	40
FE groups	-	26	-	-
R^2	0.43	0.22	0.81	0.62

Table 5: Regressions of the net transfers (Gallagher index) – Full sample

	Least Squares			Fixed Effects		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e-e_P$)	0.55***			0.55***		
	(0.03)			(0.02)		
Income Gap of the MC ($e-e_M$)		0.86***			0.56***	
		(0.10)			(0.09)	
Income Gap of the Rich ($e-e_R$)			0.41***			0.40***
			(0.02)			(0.02)
Gallagher Index	-0.08	0.19***	0.57***	0.03	0.00	-0.04
	(0.05)	(0.04)	(0.09)	(0.06)	(0.05)	(0.12)
Per Capita Income 15K-20K	-1.17	-0.86	-2.25			
	(1.12)	(0.83)	(1.86)			
Per Capita Income above 20K	-2.85**	-2.10**	-4.20**			
	(1.15)	(0.83)	(1.87)			
Constant	1.30	-0.94	-2.06	-1.67**	-2.30***	-1.90
	(1.10)	(0.78)	(1.82)	(0.70)	(0.42)	(1.31)
N	116	116	116	116	116	116
FE groups	-	-	-	23	23	23
R^2	0.78	0.64	0.86	0.85	0.31	0.84

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
R^2 is adjusted-R^2 for least squares and within-R^2 for fixed effects.

Table 6: Regressions of the net transfers (Gallagher index) – Restricted samples

	Multiple Regressors			Party Fairness Concern		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e - e_P$)	0.47***			0.51***		
	(0.05)			(0.06)		
Income Gap of the MC ($e - e_M$)		0.70**			0.82***	
		(0.28)			(0.26)	
Income Gap of the Rich ($e - e_R$)			0.49***			0.37***
			(0.06)			(0.05)
Ideological Neutrality of the Poor (ϕ_P)	-5.44	-2.52	-16.38			
	(9.44)	(13.89)	(23.32)			
Ideological Neutrality of the MC (ϕ_M)	14.43	-17.61	-33.90			
	(12.47)	(19.90)	(35.05)			
Ideological Neutrality of the Rich (ϕ_R)	-7.41	11.95	42.65**			
	(7.20)	(11.08)	(18.87)			
Fairness Concern of the Poor (α_P)	4.15**					
	(1.47)					
Fairness Concern of the MC (α_M)		6.20***				
		(1.86)				
Fairness Concern of the Rich (α_R)			8.71***			
			(2.17)			
Party Fairness Concern (γ)				2.51	-9.61	-25.19
				(7.15)	(6.92)	(16.15)
Gallagher Index	0.09	0.26**	0.93***	-0.08	0.19*	0.55**
	(0.08)	(0.12)	(0.21)	(0.11)	(0.10)	(0.25)
Per Capita Income 15K-20K	0.88	2.81*	6.09**	-0.43	-0.46	-1.79
	(1.00)	(1.58)	(2.62)	(1.38)	(1.31)	(3.08)
Per Capita Income above 20K	3.60**	1.03	5.70*	-3.40*	-3.24**	-8.01**
	(1.27)	(1.84)	(3.29)	(1.66)	(1.52)	(3.60)
Constant	-18.02**	-21.15**	-28.39**	1.15	0.37	1.16
	(7.50)	(8.25)	(11.14)	(1.75)	(1.47)	(3.92)
N	29	29	29	28	28	28
R^2	0.95	0.83	0.96	0.86	0.74	0.89

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
R^2 is adjusted-R^2.

Table 7: Regressions of the net transfers (narrow def./Gallagher) – Full sample

	Least Squares			Fixed Effects		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e - e_P$)	0.14***			0.16***		
	(0.02)			(0.02)		
Income Gap of the MC ($e - e_M$)		0.66***			0.39	
		(0.23)			(0.27)	
Income Gap of the Rich ($e - e_R$)			0.33***			0.36***
			(0.03)			(0.02)
Gallagher Index	0.10***	0.25***	0.52***	0.03	-0.02	-0.07
	(0.03)	(0.05)	(0.10)	(0.03)	(0.06)	(0.10)
Per Capita Income 15K-20K	-0.11	-3.19***	-4.36*			
	(0.76)	(1.13)	(2.52)			
Per Capita Income above 20K	-1.50*	-4.48***	-6.21**			
	(0.78)	(1.11)	(2.54)			
Constant	-1.08	-2.51**	-2.91	-1.90***	-4.42***	-2.64**
	(0.70)	(1.15)	(2.35)	(0.42)	(0.44)	(1.12)
N	89	89	89	89	89	89
FE groups	-	-	-	18	18	18
R^2	0.40	0.40	0.78	0.54	0.04	0.84

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
R^2 is adjusted-R^2 for least squares and within-R^2 for fixed effects.

Table 8: Regressions of the Gini index (Gallagher index)

	Full Sample		Restricted Samples	
	Least Squares	Fixed Effects	Multiple Regressors	Parties' Fairness
Ideological Neutrality of the Poor (ϕ_P)			-1.13	
			(13.74)	
Ideological Neutrality of the MC (ϕ_M)			27.03	
			(19.19)	
Ideological Neutrality of the Rich (ϕ_R)			1.92	
			(10.01)	
Fairness Concern of the Poor (α_P)			6.43	
			(3.78)	
Fairness Concern of the MC (α_M)			-2.96	
			(3.90)	
Fairness Concern of the Rich (α_R)			-0.54	
			(2.40)	
Party Fairness Concern (γ)				-13.38**
				(6.41)
Gallagher Index	0.29***	-0.03	0.25*	0.23*
	(0.05)	(0.06)	(0.14)	(0.13)
Real GDP (th. USD)	0.24	0.05	-0.10	0.37
	(0.15)	(0.15)	(0.06)	(0.60)
Real GDP (th. USD) Square	-0.00	-0.00		-0.00
	(0.00)	(0.00)		(0.01)
Completed Secondary Schooling	-4.51**	-2.56	-8.23*	0.60
	(1.91)	(2.85)	(4.53)	(4.31)
Democracy Index	0.49	0.30		0.45
	(0.64)	(0.54)		(1.52)
Age of Democracy	-0.05**	0.12*		-0.10**
	(0.02)	(0.06)		(0.04)
Economy's Openness	0.01	-0.02	-0.01	-0.02
	(0.01)	(0.01)	(0.01)	(0.02)
Population (th.)	0.00***	0.00		0.00
	(0.00)	(0.00)		(0.00)
% Population 15-64 y.o.	0.08	-0.22	0.04	-0.70*
	(0.18)	(0.13)	(0.57)	(0.38)
% Population over 65 y.o.	-0.07	-0.06	0.03	0.02
	(0.12)	(0.20)	(0.32)	(0.37)
Constant	15.44	35.77***	-0.39	69.14***
	(11.74)	(8.61)	(40.21)	(24.11)
N	171	171	33	40
FE groups	-	26	-	-
R^2	0.41	0.20	0.70	0.59

Table 9: Regressions of the net transfers (logged parameters) – Full sample

	Least Squares			Fixed Effects		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e-e_P$)	0.49***			0.54***		
	(0.03)			(0.02)		
Income Gap of the MC ($e-e_M$)		0.87***			0.58***	
		(0.11)			(0.09)	
Income Gap of the Rich ($e-e_R$)			0.45***			0.40***
			(0.02)			(0.02)
Electoral Rule Disproportionality ($ln(\eta)$)	-3.28***	1.61***	6.60***	-52.27***	-12.73	-12.86
	(0.48)	(0.49)	(0.95)	(18.96)	(15.76)	(40.79)
Per Capita Income 15K-20K	0.37	-1.22	-2.71			
	(0.93)	(0.91)	(1.86)			
Per Capita Income above 20K	-0.44	-3.40***	-7.20***			
	(0.99)	(0.94)	(1.90)			
Constant	1.51*	0.42	2.49	23.03**	3.70	3.77
	(0.79)	(0.75)	(1.60)	(8.95)	(7.45)	(19.22)
N	112	112	112	114	114	114
FE groups	-	-	-	23	23	23
R^2	0.83	0.61	0.86	0.86	0.33	0.84

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
R^2 is adjusted-R^2 for least squares and within-R^2 for fixed effects.

Table 10: Regressions of the net transfers (logged parameters) – Restricted samples

	Multiple Regressors			Party Fairness Concern		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e - e_P$)	0.44***			0.48***		
	(0.05)			(0.04)		
Income Gap of the MC ($e - e_M$)		0.70**			0.82***	
		(0.27)			(0.27)	
Income Gap of the Rich ($e - e_R$)			0.56***			0.43***
			(0.05)			(0.04)
Ideological Neutrality of the Poor ($ln(\phi_P)$)	-3.83	-3.23	-6.20			
	(5.54)	(8.94)	(13.73)			
Ideological Neutrality of the MC ($ln(\phi_M)$)	11.39	-10.93	-15.35			
	(7.64)	(13.25)	(21.47)			
Ideological Neutrality of the Rich ($ln(\phi_R)$)	-6.95	5.67	17.44			
	(4.14)	(6.97)	(11.01)			
Fairness Concern of the Poor ($ln(\alpha_P)$)	13.04**					
	(4.90)					
Fairness Concern of the MC ($ln(\alpha_M)$)		21.67***				
		(6.74)				
Fairness Concern of the Rich ($ln(\alpha_R)$)			27.13***			
			(6.57)			
Party Fairness Concern ($ln(\gamma)$)				0.29	-0.33	-1.11
				(0.40)	(0.53)	(1.15)
Electoral Rule Disproportionality ($ln(\eta)$)	1.82*	3.65**	13.57***	-2.10**	2.42*	8.29***
	(1.05)	(1.72)	(2.76)	(0.84)	(1.18)	(2.41)
Per Capita Income 15K-20K	0.47	2.11	4.68*	0.08	-0.82	-2.25
	(0.90)	(1.55)	(2.38)	(1.01)	(1.36)	(2.92)
Per Capita Income above 20K	3.14**	-0.51	3.35	-2.08	-5.36**	-12.37***
	(1.11)	(1.77)	(2.85)	(1.36)	(1.91)	(3.72)
Constant	-17.33**	-33.98***	-32.16**	2.24	-0.49	-0.34
	(7.58)	(10.67)	(11.87)	(1.43)	(1.86)	(3.98)
N	28	28	28	26	26	26
R^2	0.96	0.85	0.97	0.90	0.76	0.91

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
R^2 is adjusted-R^2.

Table 11: Regressions of the net transfers (narrow def./logged params.) – Full sample

	Least Squares			Fixed Effects		
	Poor	MC	Rich	Poor	MC	Rich
Income Gap of the Poor ($e - e_P$)	0.13***			0.16***		
	(0.02)			(0.02)		
Income Gap of the MC ($e - e_M$)		0.83***			0.46*	
		(0.24)			(0.25)	
Income Gap of the Rich ($e - e_R$)			0.36***			0.36***
			(0.03)			(0.02)
Electoral Rule Disproportionality ($ln(\eta)$)	0.95***	3.12***	5.26***	-3.19	28.53	3.47
	(0.34)	(0.60)	(1.14)	(10.91)	(17.78)	(31.33)
Per Capita Income 15K-20K	-0.25	-4.26***	-4.92*			
	(0.79)	(1.12)	(2.64)			
Per Capita Income above 20K	-2.06**	-6.79***	-9.09***			
	(0.83)	(1.11)	(2.67)			
Constant	-0.30	-0.71	1.34	-0.19	-18.14**	-4.85
	(0.65)	(1.03)	(2.24)	(5.25)	(8.45)	(15.02)
N	88	88	88	90	90	90
FE groups	-	-	-	19	19	19
R^2	0.38	0.42	0.76	0.53	0.07	0.84

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
R^2 is adjusted-R^2 for least squares and within-R^2 for fixed effects.

Table 12: Regressions of the Gini index (logged parameters)

	Full Sample		Restricted Samples	
	Least Squares	Fixed Effects	Multiple Regressors	Parties' Fairness
Ideological Neutrality of the Poor ($ln(\phi_P)$)			7.91	
			(7.01)	
Ideological Neutrality of the MC ($ln(\phi_M)$)			-3.12	
			(14.31)	
Ideological Neutrality of the Rich ($ln(\phi_R)$)			11.45	
			(7.51)	
Fairness Concern of the Poor ($ln(\alpha_P)$)		-2.21		
			(15.45)	
Fairness Concern of the MC ($ln(\alpha_M)$)		20.56		
			(16.30)	
Fairness Concern of the Rich ($ln(\alpha_R)$)			-4.38	
			(6.69)	
Party Fairness Concern ($ln(\gamma)$)				-1.30*
				(0.67)
Electoral Rule Disproportionality ($ln(\eta)$)	5.10***	39.33	6.39**	4.38**
	(0.79)	(26.46)	(2.21)	(1.67)
Real GDP (th. USD)	0.21	0.03	-0.06	0.17
	(0.14)	(0.15)	(0.05)	(0.57)
Real GDP (th. USD) Square	-0.00	-0.00		0.00
	(0.00)	(0.00)		(0.01)
Completed Secondary Schooling	-6.15***	-1.86	-5.10	0.22
	(1.87)	(2.87)	(3.80)	(4.11)
Democracy Index	0.37	0.63		1.49
	(0.62)	(0.59)		(1.51)
Age of Democracy	-0.08***	0.13**		-0.12***
	(0.02)	(0.06)		(0.04)
Economy's Openness	0.02*	-0.02	0.01	-0.01
	(0.01)	(0.01)	(0.02)	(0.02)
Population (th.)	0.00***	0.00		0.00
	(0.00)	(0.00)		(0.00)
% Population 15-64 y.o.	0.13	-0.25*	0.75	-0.59
	(0.17)	(0.13)	(0.52)	(0.37)
% Population over 65 y.o.	0.17	-0.09	0.29	0.22
	(0.12)	(0.20)	(0.29)	(0.38)
Constant	12.03	19.43	-36.32	47.54*
	(11.47)	(13.69)	(36.52)	(25.08)
N	171	171	30	40
FE groups	-	26	-	-
R^2	0.44	0.21	0.82	0.63

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