Distributive Politics and Economic Ideology

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DISTRIBUTIVE POLITICS AND ECONOMIC IDEOLOGY[*]

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Abstract

This paper presents a theoretical model to investigate the effect of heterogeneous ideological preferences over the public provision of goods on both the scope of government spending and the electoral competition among political parties. The proposed model points out that the presence of both ideological politicians who compete for office and electoral uncertainty generate a partisanship effect on economic policy. In particular, pro-market (right-wing) politicians commit to lower public provision of goods and income taxation schedules that implement larger income inequality than pro-government (left-wing) politicians. The model also predicts that the public funding of goods through income taxation confers an electoral advantage to pro-market ideological positions. In fact, pro-market politicians can court moderate pro-leftist voters by promises of higher net income that pro-government politicians are not willing to fund. As a result, a right-wing party exhibits larger chances of winning elections, and its policy proposal determines lower ideological sacrifice than for the left-wing party.

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1 Introduction

Empirical evidence shows that individuals broadly disagree on the extent of government provision of goods and services such as health care coverage and education. This heterogeneity of individuals' positions on the economic role of government can arise because of either different views on how society should work or diverse perceptions on the relative merits of governments and markets (Bénabou 2008).[1] For instance, some citizens believe that society should rely on individual responsibility and advocate for a reduced involvement of government in the economy. This ideological view considers that individuals should be free to choose their doctors, health insurance plan and the school of their children in private markets. Perceptions and beliefs over the benefits of competitive markets may also justify positions against government intervention. Individuals who perceive that markets work properly, or at least better than the public sector, would limit the scope of government to the provision of pure public goods such as national defense or property rights protection. On the other side, equality of opportunities claims are often argued by individuals who believe that all citizens have right to affordable health care and education, universal access to which should be guaranteed by governments.[2]

Whichever set of subjective beliefs and perceptions individuals hold, it constitutes economic ideology about the proper role of government providing goods and services. These ideologies translate into heterogeneous policy preferences over the resources that governments must devote to finance the public provision of goods. Besides the ideological conflict on the extent of government provision of goods, there emerges conflict of interest to decide who bear the cost of funding these goods. Indeed, it is not possible to ignore the level of public provision of goods in the analysis of the effect of taxation schedules on the private well-being of citizens. Citizens care about their own economic well-being and therefore support taxation policies that redistribute income towards them. Thus, examining the ideological conflict on the economic role of government also requires to consider the distributive conflict generated by the possibility of income redistribution. This paper presents a theoretical model to examine how representative democracies make redistributive and allocation policy decisions in the presence of these conflicts of interests.

In representative democracies conflicts of interests among individuals are channelled through elections, where citizens choose among political parties who will then be in charge of economic policy. Nevertheless, political parties competing for office also exhibit conflicting views over policy outcomes because they are composed of politicians who are also citizens with their own partisan

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[1] International surveys report both the persistence over time and the significant large disparity in citizens' economic beliefs across and within countries (see for instance The World Values Survey). For the particular case of beliefs on the relative merits of governments and markets, the International Pew Research Survey (2007) documents different views about the extent of free-market beliefs and the economic role of government around the World.

[2] Public intervention is also supported by individuals who believe that market failures are specially common in markets for health and education. For instance, the existence of asymmetric information in health care insurance markets which creates moral hazard and adverse selection; the spillover effects and externalities generated by education; or the presence of capital market imperfections such as liquidity constraints that limit the access to some goods for low income individuals. See Currie and Gahvari (2008) for a comprehensive survey of the literature.

preferences (Wittman 1977, 1983; Alesina 1988; Osborne and Slivinski 1996; Besley and Coate 1997). On the other side, political need to obtain the support of a majority of citizens to be elected and, therefore, electoral incentives must also be considered in the analysis of partisan competition among politicians (Calvert 1985). For these reasons, this research examines the effect of conflicting partisan politicians running for office on allocation and income redistribution policies. This paper also investigates whether the strategic use of income redistribution to court groups of voters affects both the scope of government spending and the extent of electoral competition among partisan politicians.

In order to investigate the simultaneous effect of ideological political parties and electoral incentives on both allocation and redistribution policies, this paper develops an electoral competition model with partisan politicians and probabilistic voting. The analysis considers an economy in which citizens belong to groups that are associated to levels of gross income obtained by individuals in a market economy. Through an electoral process citizens choose a government that can redistribute income among groups through tax-transfers schedules and fund the provision of goods with revenues raised by income taxation. There are no constraints in the available income taxation schedules that government can use (i.e. non-linear schedules are feasible), and these schedules do not distort economic decisions that create deadweight losses. This simplifying assumption is made in order to better isolate the effect of partisan preferences on public provision of goods and income redistribution. The government is elected from two partisan political parties, right and left, that compete for office. Right-wing (left-wing) party holds pro-market (pro-government) ideological views and advocates for a reduced (significant) public provision of goods. In spite of their partisan views, parties can credibly commit to policy platforms that depart from their ideological positions, and they can have private benefits associated to winning elections. When choosing their vote, individuals care about the effect of policy platforms on both their net income and the public provision of goods over which they exhibit heterogeneous views. These partisan positions on public provision of goods are represented by satiable Euclidean preferences and, therefore, the well-being of ideological individuals decreases when policies depart from their desired levels of public provision. Citizens also consider the relative valence or popularity of parties running for office. The realization of this valence is unknown by parties when choosing their policy platforms, and that creates uncertainty about the electoral outcome (i.e. probabilistic voting). Every citizen votes for the party that provides her larger well-being given policy platforms and parties' valence, and the winner party attracts the majority of the votes and implements the committed economic policies.

The proposed model provides interesting new insights on the effect of partisan positions on redistributive and allocation policies. The model first shows that the presence of both ideological politicians (who compete for office) and uncertainty about the electoral outcome generates a partisanship effect on economic policy (i.e. policy divergence). The pro-government party offers larger public provision of goods than the right-wing party which holds pro-market ideological positions. On the other side, income taxation schedules proposed by parties aim to maximize their electoral

returns. As we learnt from distributive politics literature (Lindbeck and Weibull 1987; Dixit and Londregan 1996), electoral incentives make politicians redistribute income toward groups with lower gross income and more pivotal voters who are most likely to change their vote. Despite the fact that both parties have incentives to favor the same groups of voters, the right-wing party can target larger net income to all groups because it commits to a lower direct provision of goods. The analysis underlines that the strategic courting of voters leads to fund the public provision of goods by reducing in larger proportion the net income of groups with more resources (always assuming a balanced budget). Given that a left-wing party commits to higher provision of goods, it commits to income taxation schedules that implement lower income inequality than that proposed by the right-wing party. Hence, in spite of politicians who do not exhibit partisan preferences over the distribution of income, the model predicts that net income inequality depends on parties' partisan positions over public provision of goods.

Interestingly, the main novel contribution of this paper shows how the presence of partisan preferences over economic policies can affect the scope of political competition among political parties. Departing from a symmetric distribution of ideological preferences in which neither party has an advantage, the model predicts an asymmetric equilibrium in which one ideological position exhibits electoral advantage. In particular, the electoral race is conditioned because, in an economy with resource scarcity, citizens are willing to trade their partisan views over public provision of goods in exchange for increases of net income. Then, pro-market politicians can court moderate pro-leftist citizens who could swing their vote by strategically targeting larger promises of income that pro-government politicians are not willing to fund. As a result, the political redistribution of income allows pro-market ideological positions to exhibit larger chances of winning elections. The analysis also shows that this advantage leads the left-wing party to support larger ideological sacrifice because risk aversion makes it to reduce the proposal of public funding of goods, in order to try to prevent the victory of the ideological positions of its opponent.

Several political economy contributions have analyzed the effect of electoral incentives on the size and scope of government (Persson and Tabellini 1999, 2000; Lizzeri and Persico 2001; Milessi-Ferreti et al. 2002). These contributions assume that voters have homogeneous preferences over policy and politicians uniquely care about winning elections. Under these assumptions, electoral competition leads politicians to announce the same combination of public goods and redistributive transfers that maximizes their chances of being elected. However, economic policy convergence predicted by this literature is refused by empirical evidence (Besley and Case 2003). In particular, empirical research for the US shows that politicians' partisan preferences affect policy outcomes at federal and state levels of government (Lee, Moretti and Butler 2004; Bartels 2008).[3] In order

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[3] Besley and Case (2003) reports that the larger the fraction of Democrat party seats in the state legislature is, the larger the state spending per person; Lee et al. (2004) show the highly partisan voting behavior of legislators in the US Congress; Bartels (2008) finds out a significant partisanship effect in the American redistributive policy between Republicans and Democrats. Nevertheless, Ferreira and Gyourko (2009) find lack of partisan effect in policy outcomes at local level in the US; Furthermore, policy divergence could not be caused exclusively by politicians' preferences

to rationalize the presence of ideological positions, recent contributions have microfounded the existence of citizens' economic beliefs which create heterogeneous preferences over economic policy.[4] This heterogeneity has not been considered in the theoretical analysis of the political choice of allocation and redistribution policy. This paper overcomes this limitation introducing partisan politicians and voters who exhibit heterogeneous preferences on the extent of government provision of goods. In contrast to previous results in the literature, the identity of political parties matters and the composition of government spending depends on the ideology of the party that wins the election.

The rest of the paper is organized as follows. The next section presents the electoral competition model on which the analysis relies. Section III characterizes political equilibrium and discusses the main results about the effect of partisan politics on the scope of government, income taxation schedules and competition between political parties. Section IV characterizes the set of constrained Pareto efficient allocations and compare it with the equilibrium allocations that result from electoral competition. The final section concludes and briefly discusses further research.

2 A Model of Partisan Electoral Competition

2.1 Economic Environment and Political Structure

Consider an economy populated by a continuum of citizens with measure one. Citizens belong to a finite number of groups with measure μ^j, $j \in \{1, ..., J\}$, and none of them constitutes a majority of the population. Each individual i in group j is endowed with y^j units of a private good. This endowment can be thought as the level of gross income obtained by individuals of a given occupation (or economic group) in a market economy. In this economy, the aggregate income is fixed and given by $y = \sum_{j=1}^{J} \mu^j y^j$, and the initial distribution of income across groups can be modified by government intervention. In particular, through a voting process citizens choose a government that implements allocation and redistribution policies.

Consider that there are two political parties, left (L) and right (R), competing for office in an election. Suppose that voting is costless, nobody abstains and winning the election corresponds to obtaining the support of the majority of the population. Politicians can raise income taxes to fund both the public provision of goods and group-specific cash transfers. There are no constraints on

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over policy outcomes. As an example, Glaeser, Ponzetto and Shapiro (2005) point out that politicians might choose strategically policy divergence in order to mobilize core voters and raise their chances of winning elections.

[4] The literature mainly focuses on examining how beliefs over the fairness of social competition affect individuals' preferences for income redistribution policy. For instance, theoretical contributions by Piketty (1995), Alesina and Angeletos (2005) and Bénabou and Tirole (2006); and empirical work by Fong (2001), Alesina and Glaeser (2004) and Alesina and LaFerrara (2005). Bénabou (2008) develops a model in which ideology emerges as the result of collectively sustained distortions in beliefs concerning the proper scope of the public sector providing goods and services; Alesina and Fuchs-Schündeln (2007) points out that indoctrination can be a relevant source to explain the formation of economic beliefs over the role of government in the economy. In particular, they show how communist dictatorship in East Germany leads to stronger preferences for government intervention and redistribution.

the taxation schedule that government can implement, and for simplicity suppose that economic policies do not create distortions and deadweight losses. The government has available a linear technology that produces one unit of public good, g, with one unit of private good. Then, political parties can make promises over the amount of resources that they would devote to the production of those goods, g_P for $P \in \{L, R\}$.[5] On the other side, let c_P^j be the net income that results from taxation policy promised by party P to group j. Thus, the vector $c_P \equiv \{c_P^j\}_{j=1}^J$ denotes the distribution of net income among groups promised by party P. Before the election, each party credibly commits to redistribution and allocation policy platforms $x_P = (g_P, c_P)$ to be implemented if P wins the election. These policy platforms must satisfy economic feasibility:

$$g_P + \sum_{j=1}^J \mu^j c_P^j = y \tag{1}$$

The set of constraints is completed by the non-negativity constraints $g_P \geq 0$ and $c_P^j \geq 0$ for each group. These constraints define a budget set of private and public spending allocations which are feasible. The set of available and attainable fiscal policies that satisfies all restrictions, $X \subset \mathbb{R}^{J+1}$, is non-empty, convex and compact.

2.2 Citizens' Preferences

Citizens care about the effect of income tax-transfers schedules on their own economic well-being. Suppose that individuals have the same preferences over available net income, c, represented by the utility function $u(c)$. This function is continuous, twice differentiable, strictly increasing ($u_c > 0$, where subscript denotes partial derivative with respect to the identified argument) and strictly concave ($u_{cc} < 0$) in c. Marginal utility is bounded away from 0 and $u_c(0) = \infty$.

Citizens hold heterogeneous views over the role of government providing goods and services. In particular, each individual has a desired level of public goods provision, g^*. The larger the ideological bliss point is, the stronger the belief in government intervention. It is common to assume that ideological preferences over social outcomes are well-represented by satiable Euclidean preferences $W(g; g_i^*)$. The function $W(\cdot)$ is twice differentiable, continuous and strictly concave in the distance, z_i, between implemented and ideologically desired public goods policy for individual i, i.e. $z_i = |g - g_i^*|$.[6] For analytical simplicity, consider that individuals' partisan valuation over public provision of goods is represented by quadratic utility, $W(g; g_i^*) = -(g - g_i^*)^2$.

Parties do not know the idiosyncratic ideological position of each citizen, $g_i^* \geq 0$. However,

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[5] By *public goods*, we refer to goods provided by the government which are not targeted to specific groups but to the whole population.

[6] The specification of satiable preferences allows to captures the presence of ideological citizens that, for instance, are against large expenditures to fund the public provision of goods. As an example, this specification captures the fact that, above a certain level of public provision, larger expenditures decrease the well-being of pro-market citizens. Instead, in standard models with non-satiable preferences, larger public provision of goods always implies larger well-being for all citizens.

ideological beliefs are persistent over time and, therefore, we can assume that the distribution of partisan preferences in each group is common knowledge. Suppose that the idiosyncratic ideological parameter of individuals who belong to group j are drawn from a uniform distribution, $F^j(g^*)$, over the range $[g_a^{*j}, g_b^{*j}]$. Groups can differ with respect to both their average ideological positions, $\overline{g}^{*j} = (g_a^{*j} + g_b^{*j})/2$, and the ideological heterogeneity within the group, which is measured by the density of the distribution, $\phi^j = 1/(g_b^{*j} - g_a^{*j})$. Assume that ϕ^j is small enough, and therefore the distribution of ideological preferences is sufficiently dispersed within each group. Groups with a broader support of ideological parameters (i.e. greater ideological dispersion) exhibit lower density. Denote $\phi = \sum_{j=1}^{J} \mu^j \phi^j$ the weighted average of the ideological heterogeneity across groups.

Given the assumption on uniform distribution of ideologies within groups, let $g_m^* \equiv (\sum_{j=1}^{J} \mu^j \phi^j \overline{g}^{*j})/\phi$ be the weighted average of the mean ideology in each group weighted by the size and ideological heterogeneity of the group. This weighted average measures the median ideological type in the overall population, and this ideological type differs from the mean ideological position as long as the level of ideological heterogeneity varies across groups.

Given the policy platform $x_P = (g_P, c_P)$ proposed by $P \in \{L, R\}$, the indirect utility function of citizen i who belongs to group j and exhibits ideological type g_i^* is given by:

$$V_i(c_P^j, g_P; g_i^*) = u(c_P^j) + W(g_P; g_i^*) \tag{2}$$

This function is strictly continuous, twice differentiable and strictly concave in c^j and g, and it captures both self-interested and ideological motivations of citizens.

In addition to economic policies, citizens also care about the personal qualities of politicians ruling the polity. Suppose that once parties announce policy platforms, along the electoral campaign, political parties receive random popularity shocks, ε_L and ε_R, common to all citizens. The relative popularity shock, $\varepsilon = \varepsilon_L - \varepsilon_R$, measures the perception that voters have on party L with respect to R at the time of the election (i.e. average relative popularity of party L). We assume that the common shock ε is uniformly distributed, and independently from g_i^*, with density ψ and expected value, $E(\varepsilon)$, equal to 0. The density parameter ψ is a measure of aggregate dispersion in the perception of the shock, and hence of aggregate uncertainty about the election outcome. Indeed, a lower value of ψ means more uncertainty about the distribution of the popularity shock. We assume that ψ is small enough, and therefore there is sufficient uncertainty regarding the electoral outcome.[7]

2.3   Partisan Politicians

Political parties hold heterogeneous positions on the extent of government provision of goods. Specifically, suppose that each party has a desired level of public provision of goods denoted by

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[7]Next section and Mathematical Appendix A discuss with more detail the precise boundary conditions on the value of ψ.

$g_P^* \geq 0$, which yields a strictly higher utility than all other policies. Parties consider that the residual aggregate income of the economy has to be in hands of citizens, but we assume that parties do not have partisan preferences about how income has to be distributed across groups. For simplicity we also assume that parties' preferences over public goods are represented by satiable quadratic utility, $W_P(g; g_P^*) = -(g - g_P^*)^2$ for $P \in \{L, R\}$. This utility function is strictly continuos, differentiable and strictly concave in g.

We further suppose that party L, pro-government party, is the one with the highest preference for public intervention, and party R, pro-market party, believes in a lower involvement of government in the economy, $g_L^* > g_R^* > 0$. In each group there are citizens whose ideological views correspond to parties' positions (i.e. $g_P^* \in [g_a^{*j}, g_b^{*j}] \; \forall j$ and $\forall P$), and groups can be biased toward either rightist or leftist ideological positions. Nevertheless, to preserve symmetry, we suppose that parties' ideological leanings are symmetrically located around the median ideological type (i.e. $g_m^* = (g_R^* + g_L^*)/2$). This assumption implies that there is no overall population bias toward any party ideological position, so neither party L nor R has an exante advantage in the election.

In spite of partisan views over policy, politicians can credibly commit to a policy platform $x_P = (g_P, c_P)$ that departs from their ideological positions.[8] Besides partisan preferences, politicians can assign non-material private benefits associated to power. Denote by Q the ego-rents or value that both parties attach to winning elections (which for simplicity we assume independent of ideological positions). This parameter measures the degree of politicians' office-holding motivation and is assumed to be weakly positive if P comes to power and 0 otherwise. Given the presence of electoral uncertainty, the expected utility of party R is defined as:

$$EU_R(x_R, x_L) = P(x_R, x_L)[Q + W_R(g_R; g_R^*)] + [1 - P(x_R, x_L)]W_R(g_L; g_R^*) \qquad (3)$$

where the probability that party R comes to office, $P(x_R, x_L)$, captures the uncertainty regarding electoral outcome and summarizes expected voting behavior of citizens. The expected utility for party L is symmetric with probability of winning equal to $1 - P(x_R, x_L)$.

3 Political Equilibrium

3.1 Stages of the Political Game

The timing of the political game is as follows: **i)** political parties simultaneously and non-cooperatively credibly announce their economic policy platforms, $x_R = (g_R, c_R)$ and $x_L = (g_L, c_L)$; **ii)** the random common popularity shock, ε, is realized; **iii)** citizens vote for the party that they prefer, $\{R, L\}$; and finally, **iv)** whichever party P that obtains the majority of the votes, wins the election and

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[8] Alesina (1988) points out the credibility problem of partisan politicians in one-shot static games. To avoid candidates' commitment problem, we assume that this model represents the reduced form of a dynamic game in which political parties run in repeated elections. Parties would be punished by losing credibility if politicians do not deliver the announced policy.

implements the economic policy promised at the beginning of the game. Hence, the political game presented above has two stages: policy announcements and voting. We now seek to characterize the political equilibrium of the game working backwards.

3.1.1 Voting

Citizens vote for the party that they prefer given economic policy announcements and the relative popularity of political parties. [At the voting stage, policy platforms (x_R, x_L) and common bias ε are observed by voters]. Suppose that an individual with ideological preference g_i^* who belongs to group j is promised public goods provision and income tax-transfers schedules (g_R, c_R^j) by pro-market party and (g_L, c_L^j) by pro-government party. Given individuals' preferences over economic policies (2) and the realization of the random shock, citizen i in group j votes for party R over L conditional on policy platforms if:

$$V_i(c_R^j, g_R; g_i^*) > V_i(c_L^j, g_L; g_i^*) + \varepsilon \tag{4}$$

while voting for party L if this inequality is reversed. Given policy platforms, in each group can be citizens with an idiosyncratic ideological parameter, g_s^{*j}, such that they are indifferent between voting for the pro-market, R, as for the pro-government, L, party. The swing voter type in group j is implicitly defined by:

$$u(c_R^j) + W(g_R; g_s^{*j}) = u(c_L^j) + W(g_L; g_s^{*j}) + \varepsilon \tag{5}$$

[Voters who belong to group j with an ideological type g_i^* below (above) the cut-off ideological type, g_s^{*j}, vote for pro-market party (pro-government party)]. Suppose that voters who are indifferent between political parties randomize equally over the set of parties. The swing voter type in group j when citizens' preferences over public goods are represented by quadratic utility is given by:

$$g_s^{*j} = \bar{g}_{LR} + \frac{1}{2\Delta_g}[u(c_R^j) - u(c_L^j) - \varepsilon] \tag{6}$$

where $\bar{g}_{LR}$ is the average of parties' promises regarding public provision of goods and Δ_g is the difference between leftist and rightist proposals.[9] Given that partisan preferences over public goods are uniformly distributed in each group, the overall vote share [fraction of votes received by party R] for party R [when policy platforms are x_R and x_L] is given by:

$$S_R \equiv S_R(x_R, x_L; \varepsilon) = \frac{1}{2} + \sum_{j=1}^{J} \mu^j \phi^j [g_s^{*j} - \bar{g}^{*j}] \tag{7}$$

The complement share of citizens, $1 - \sum_{j=1}^{J} \mu^j F^j(g_s^{*j})$, votes for pro-government party L, S_L.

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[9]See Mathematical Appendix A for full development and discussion of swing voter types, vote shares and probability of winning.

3.1.2 Policy Announcements

Rolling back to the first stage of the game, when politicians commit to policy platforms, the common valuation shock has not been realized. The swing voter type in each group depends on both policy platforms and the realized value of the shock, $g_s^{*j} = g_s^{*j}(x_R, x_L, \varepsilon)$. Hence, parties are uncertain about who are the swing voters in each group and voting is a random variable for politicians. Given that the expected value of the shock is equal to zero, the expected swing voters in group j are citizens indifferent between parties' economic policy proposals. Political parties therefore choose their platforms keeping in mind that the expected voting decisions in each group are given by the expected cut-point ideological type, $E[g_s^{*j}] = \widehat{g}_s^{*j}$. Let $\widehat{g}_s^* \equiv (\sum_{j=1}^{J} \mu^j \phi^j \widehat{g}_s^{*j})/\phi$ be the expected swing voters' ideological type in the overall population. This type is the weighted average ideological type of the expected swing voters in each social group, where weights depend on the concentration of voters located at the cut-points.[10]

We assume majority voting, so that winning the election corresponds to obtaining more than fifty per cent of the total vote. Given the expected swing voter type in each group and distributional assumptions on ideological types and popularity shock, the probability that pro-market party R wins the election can be expressed as:

$$P(x_R, x_L) = \frac{1}{2} + \psi 2\Delta_g [\widehat{g}_s^* - g_m^*] \tag{8}$$

Pro-government party L anticipates winning the election with the complementary probability $1 - P(x_R, x_L)$. Probabilistic voting provides continuity of the probability function in a multidimensional policy space. Strict continuity of both individuals' indirect utility functions and the distribution of ideological preferences in each group, and the aggregate uncertainty created by the random shock yield a smooth mapping from policy platforms to expected vote shares. This smoothness insures that the probability of winning for each party P is strictly continuous in both policy platforms. On the other side, probability of winning is the sum of striclty concave functions of policy plafforms, multiplied by striclty positive parameters. Thus, the probability function for each party P is strictly concave in party's own platform, x_P, and strictly convex in its opponent's proposal, x_{-P}.[11]

Taking the opponent's policy choice problem as given, each political party chooses a combination of public good provision and net income for each group, $x_P = (g_P, c_P)$ for $P \in \{R, L\}$, that maximizes its expected utility subject to economic feasibility and non-negativity constraints. Parties take into account the uncertainty regarding the electoral outcome by the probability function (8) which summarizes expected voting behavior of citizens given announced policies. Thus, the

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[10] This definition follows from Dixit and Londregan (1998) discussion on the economic ideology of swing voters.

[11] See Austen-Smith and Banks (2005) and Banks and Duggan (2006) for a detailed technical discussion on continuity and quasiconcavity properties of probability of winning functions in probabilistic voting models.

policy choice problem of the right-wing party R is given by:

$$\max_{g_R, \{c_R^j\}_{j=1}^J} EU_R(x_R, x_L) \quad \text{s.t.} \quad g_R + \sum_{j=1}^J \mu^j c_R^j = y \quad \text{and} \quad g_R \geq 0 \quad ; \quad c_R^j \geq 0 \;\; \forall j \qquad (9)$$

The pro-government party L makes simultaneous policy announcements and its policy choice problem is symmetric to the one of party R. [details appendix]

3.2 Equilibrium Policies

Proposition 1 (Existence) *A Nash Equilibrium in pure strategies exists, and it is unique.*

Proof. [1] For each citizen, parties' policy proposals, idiosyncratic ideological preferences and popularity shock yield different utility levels under the government of either party R or L. Then, every citizen votes for the party which provides her the maximum level of utility. When the utility level implied by each party is the same, indifferent individuals randomize equally over the set of political parties and vote for one of the parties.

[2] Given that for each political party i) the feasible set of strategies defined by the government's budget constraint is non-empty, compact and convex; and ii) parties' expected utility functions are 1) strictly continuous in both policy platforms, x_R and x_L; and 2) strictly concave in its own platform, x_P, and strictly convex in the platform of its opponent, x_{-P}, for $P \in \{R, L\}$, because of the continuity and concavity properties of both probability functions and parties' partisan preferences. Then, given [1], according to Glicksberg's Fixed Point Theorem, there does exists a unique Nash Equilibrium in pure strategies, and it is unique. ∎

The system of equations made up of the best responses for each political party and their budget constraints simultaneously determine the Nash Equilibrium in the first stage of the game. Therefore, equilibrium parties' proposals of public goods and net income taxation, (g_P^N, c_P^N) for $P \in \{R, L\}$, satisfy the following system of equations:

$$\frac{\frac{\partial P(x_R^N, x_L^N)}{\partial g_R} \Omega_R^N}{\lambda_R} + \frac{P(x_R^N, x_L^N) \frac{\partial W_R(g_R^N; g_R^*)}{\partial g_R}}{\lambda_R} = 1 \qquad (10)$$

$$\frac{\frac{\partial P(x_R^N, x_L^N)}{\partial c_R^j} \Omega_R^N}{\lambda_R} = \mu^j \qquad \forall \; j \qquad (11)$$

$$\frac{-\frac{\partial P(x_R^N, x_L^N)}{\partial g_L} \Omega_L^N}{\lambda_L} + \frac{[1 - P(x_R^N, x_L^N)] \frac{\partial W_L(g_L^N; g_L^*)}{\partial g_L}}{\lambda_L} = 1 \qquad (12)$$

$$\frac{-\frac{\partial P(x_R^N, x_L^N)}{\partial c_L^j} \Omega_L^N}{\lambda_L} = \mu^j \qquad \forall \; j \qquad (13)$$

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where Ω_P^N for $P \in \{R, L\}$ denotes party P's benefit of winning elections. This benefit is defined as the difference between party's payoffs under victory and under defeat;[12] and where $\lambda_P > 0$ is the Lagrange multiplier associated to party P's budget constraint, which measures the value of one extra unit of income for partisan politicians.[13]

This system of equations shows that, in equilibrium, parties equalize the marginal cost of providing public goods to the marginal benefit in their expected utility expressed in terms of income (i.e. normalized by the Lagrange multiplier, λ_P). Furthermore, for each group, parties equalize the marginal cost of increasing one unit of net income in a group of size μ^j to the marginal contribution to their expected utility, expressed also in terms of income.

The system of best responses reveals that both parties offering the same economic policy cannot be an equilibrium. Politicians are trading off the desirability of the policy from their partisan views against the probability that their policy proposal wins the election. In the presence of electoral uncertainty, the electoral competition between partisan politicians, who can commit to policy platforms, determines divergent equilibrium policy platforms.

Proposition 2 (Policy Divergence) *In equilibrium, partisan parties announce divergent economic policy platforms, $x_R^N \neq x_L^N$. In particular, pro-government party's proposal of public good provision is larger than the pro-market party's policy platform, $g_L^N > g_R^N$.*

If parties uniquely considered the electoral returns of policy platforms and converge, there would not be incentives to modify platforms to increase their chances of winning elections. Nevertheless, both parties still would have incentives to adjust public goods policies toward their ideological positions because departing from them is costly. Therefore, full convergence cannot be an equilibrium.

If parties chose their most preferred policies, there would not be incentives to adapt platforms to parties' ideological bliss points. However, politicians would have incentives to adjust policies to increase their electoral returns because they care about the electoral outcome. Indeed, politicians compete for office aiming to avoid the victory of their opponents who would implement distasteful ideological views. The potential presence of private benefits associated to victory would increase the relevance of electoral incentives.

In equilibrium, there is partial economic policy divergence, in which each party balances its policy preferences with its chances of ruling the polity. These insights on partisan electoral competition with commitment are well-known and rely on classical contributions due to Wittman (1977,

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[12] The benefits of winning are divided into two components. The first component captures politicians' weakly positive private payoffs associated to win elections. The second component measures the ideological benefits associated to victory. Hence, party P's benefits of winning elections are given by:

$$\Omega_P^N = \Omega_P(x_R^N, x_L^N) = Q + W_P(g_P^N; g_P^*) - W_P(g_{-P}^N; g_P^*)$$

In equilibrium, this magnitude is weakly positive to prevent the situation where party P prefers to lose.

[13] See Mathematical Appendix B for a detailed discussion and complete characterization of the political equilibrium and the propositions presented in this subsection.

1983) and Calvert (1985). This theoretical framework has not been considered to investigate how partisan preferences affect the simultaneous political choice of public goods provision and income redistribution.

In equilibrium, the provision of public goods and income taxation schedules proposed by partisan politicians satisfy economic feasibility and the following system of best responses:

$$-\psi 2(g_R^N - g_m^*)\Omega_R^N - 2(g_R^N - g_R^*)P(x_R^N, x_L^N) = \frac{1}{\mu^k}\frac{\phi^k}{\phi}\mu^k\psi u_c(c_R^{kN})\Omega_R^N \qquad \forall\ k \in \{1, ..., J\} \qquad (14)$$

$$-\psi 2(g_L^N - g_m^*)\Omega_L^N - 2(g_L^N - g_L^*)[1 - P(x_R^N, x_L^N)] = \frac{1}{\mu^k}\frac{\phi^k}{\phi}\mu^k\psi u_c(c_L^{kN})\Omega_L^N \qquad \forall\ k \in \{1, ..., J\} \qquad (15)$$

This system of equations can be written as follows:[14]

$$\sum_{j=1}^{J}\mu^j MRS_{g_R,c_R}^{jg_m^*} + \alpha_R^N \sum_{j=1}^{J}\mu^j MRS_{g_R,c_R}^{jg_R^*} = MRT_{g,c} \qquad (16)$$

$$\sum_{j=1}^{J}\mu^j MRS_{g_L,c_L}^{jg_m^*} + \alpha_L^N \sum_{j=1}^{J}\mu^j MRS_{g_L,c_L}^{jg_L^*} = MRT_{g,c} \qquad (17)$$

where $MRS_{g_P,c_P}^{jg_m^*}$ is the marginal rate of substitution between public goods and net income for individuals in group j with median ideological type given policy platform by party $P \in \{R, L\}$; $MRS_{g_P,c_P}^{jg_P^*}$ is the rate at which individuals in group j who hold ideological positions of party $P \in \{R, L\}$ are willing to trade public goods for net income; and $MRT_{g,c}$ is the rate at which the government is able to transform income into public goods. Furthermore, in equilibrium, α_R^N and α_L^N are given by:

$$\alpha_R^N = \frac{P(x_R^N, x_L^N)}{\psi\Omega_R^N} \qquad \text{and} \qquad \alpha_L^N = \frac{[1 - P(x_R^N, x_L^N)]}{\psi\Omega_L^N} \qquad (18)$$

These equations capture how electoral incentives and ideological positions simultaneously determine the equilibrium choice of public goods proposals by political parties. When one party announces public goods provision closer to its ideological leanings, it reduces its expected number of votes. That raises its chances of losing in front of politicians who would provide public goods more distant from its partisan preferences. It is important to notice that even pure ideological politicians (i.e. $Q = 0$) do not announce public goods platforms that perfectly reflect their partisan preferences. Politicians have concave utility over the distance between proposed and ideologically desired public goods policy and therefore they exhibit ideological risk aversion. The marginal increase in utility from a undesired level of provision is larger than the marginal gain in utility because public goods provision is closer to their partisan positions. Ideological risk aversion limits parties' incentives to diverge. In particular, risk aversion leads pro-market (pro-government) party

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[14]See Mathematical Appendix B.4. for a complete description of how this system of equations is obtained.

to propose public goods provision larger (lower) than its ideological bliss point. Thus, electoral competition generates an ideological sacrifice in platforms proposed by party P, z_P. This ideological sacrifice is defined as the difference between proposed and ideologically desired public goods policy by party P, $z_P = |g_P^N - g_P^*| \quad \forall P \in \{R, L\}$.

Each party could increase its electoral returns by adjusting public goods to the weighted average of the preferred policies by individuals with median ideological types. This adjustment would raise its chances of winning elections and implementing its policy platforms. However, parties hold ideological positions regarding public goods provision and it would be costly to depart from these positions. In case of victory politicians should implement a less preferred policy. Besides, electoral incentives to adjust policies are decreasing because of concavity of the probability function. Therefore, parties do not have incentives to promise the same level of public goods.

The extent of policy divergence between parties' policy proposals depends on i) the degree of aggregate uncertainty regarding the electoral outcome; ii) the polarization between parties' ideological leanings; and iii) the presence of politicians' private benefits associated to win elections.[15]

3.3 Distributive Politics

As far as income taxation policies are concerned, the electoral competition between partisan politicians leads to income taxation schedules that satisfy:

$$\phi^k u_c(c_P^{kN}) = \phi^{k'} u_c(c_P^{k'N}) \qquad \forall \, k, k' \in \{1, ..., J\} \quad \text{and} \quad \forall \, P \in \{R, L\} \tag{19}$$

The electoral incentives for political income redistribution are consistent with the well-known insights on distributive politics highlighted by Lindbeck and Weibull (1987) and Dixit and Londregan (1996). In equilibrium, both parties redistribute resources towards groups with lower gross income because of the concavity of utility over consumption. Political parties also favor groups with larger concentration of pivotal voters who could swing their vote. In the proposed model, the concentration of expected swing voters is measured by the densitiy of the uniform distribution of economic ideological preferences within each group, ϕ^j.[16]

While in Persson and Tabellini (1999, 2000) and Lizzeri and Persico (2004) individuals exhibit partisan biases or attachments to ideological fixed positions that are not related to economic policy and could be interpreted as positions on value issues (e.g. religious and moral positions), where politicians who compete for office should favor groups with more non-biased voters, this paper builds a stochastic preference probabilistic voting model in which voters and politicians hold ideological positions over economic policy. In this case, redistributive policies favors groups with larger

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[15]The effect of these factors on policy divergence is discussed with detail in the comparative statics section.

[16]Given that the marginal utility of consumption at 0 net income is equal to infinite, $u_c(0) = \infty$, then corner solutions are not possible and the equilibrium is always interior.

concentration of individuals whose economic ideological positions made them indifferent between policy proposals.

The factors that characterize income taxation schedules are identical for both parties and therefore both parties favor the same groups of voters targeting either larger transfers or lower taxes. However, politicians commit to different levels of public goods provision and therefore they promise different net income in absolute terms. The larger the provision of public goods is, the lower the magnitude of net income targeted to individuals.

Proposition 3 (Income Tax-Transfers Schedules) *The pro-market party offers larger net income than the pro-government party to all groups of the polity, $c_R^{jN} > c_L^{jN} \ \forall j \in \{1, ..., J\}$.*

The public provision of goods is funded through non-linear income taxation schedules. Given the assumption on concavity of utility over income, politicians fund public goods reducing in larger proportion the net income of groups targeted with more resources (i.e. public goods are funded through progressive income taxation). Therefore, given that the left-wing party commits to higher provision of goods, the pro-government party announces income taxation schedules that implement lower income inequality than the proposed by pro-market party.

Corollary 4 (Partisan Income Inequality) *The pro-government party implements lower income inequality than the pro-market party.*

It is relevant to notice that although politicians do not exhibit partisan preferences over the distribution of income, ideological preferences over public goods provision lead parties to offer different levels of income inequality. Redistributive politics is affected by the presence of partisan politicians even when parties do not hold ideological positions over the distribution of income.[17]

Each party commits to its largest public good platform in the particular case in which all groups exhibit the same concentration of expected swing voters, $\phi^j = \phi \ \ \forall j$. In this case, according to (19), the marginal utility of private consumption is equalized across groups of voters. The expected marginal electoral returns of targeting net income are identical across groups and politicians do not have incentives to discriminate them in terms of net income. In equilibrium, both political parties commit to income taxation schedules that implement an egalitarian distribution of income. The equilibrium policy platforms satisfy the following system of equations:

$$MRS_{g_R,c_R}^{g_m^*} + \gamma_R^N MRS_{g_R,c_R}^{g_R^*} = MRT_{g,c} \tag{20}$$

$$MRS_{g_L,c_L}^{g_m^*} + \gamma_L^N MRS_{g_L,c_L}^{g_L^*} = MRT_{g,c} \tag{21}$$

---

[17]Dixit and Londregan (1998) consider a distributive politics game in which citizens and parties exhibit ideological concerns about the distribution of income and the extent of inequality. However, this important contribution abstracts away the possibility of partisan preferences over the public provision of goods.

3.4   Advantage of Pro-Market ideological positions

In equilibrium, the expected swing voter type in group j, $\widehat{g}_s^{*jN}$, is implicitly defined by:

$$u(c_R^{jN}) - u(c_L^{jN}) = W(g_L^N; \widehat{g}_s^{*jN}) - W(g_R^N; \widehat{g}_s^{*jN}) \qquad \forall\, j \in \{1, ..., J\} \tag{22}$$

As the analysis above has shown, the net income promised to any group j by the right-wing party is larger than the income that results from taxation schedules committed by the left-wing party, $c_R^{jN} > c_L^{jN} \;\forall j$. This means that, in equilibrium, expected swing voters' private well-being is larger under right-wing party's income taxation platform, i.e. $u(c_R^{jN}) > u(c_L^{jN})$. Besides, the pro-government party promises larger provision of public goods than the pro-market party, $g_L^N > g_R^N$. Given these equilibrium policy platforms, according to (22), the ideological utility loss of expected swing voters under the left-wing proposal is lower than the ideological loss implied by the right-wing platform, i.e. $W(g_L^N; \widehat{g}_s^{*jN}) > W(g_R^N; \widehat{g}_s^{*jN})$. This shows that equilibrium swing voters are indifferent between the ideological benefits associated to left-wing party's victory (i.e. lower ideological sacrifice) and the larger private economic well-being obtained if the right-wing party wins the election. Therefore, in equilibrium, the ideological positions of expected swing voters in each group are closer to pro-government than to pro-market ideological positions.

Proposition 5 (Ideology Swing Voters) *In equilibrium, the expected pivotal voters are moderate pro-leftist citizens.*

The ideological type of the equilibrium indifferent voter in each group is larger than the median ideological position in the overall population, $\widehat{g}_s^{*jN} > g_m^*$. This result suggests that in equilibrium political parties commit to policies such that in each group there exists a subset of citizens biased towards pro-government ideological positions who end up preferring the overall economic policy platforms by the right-wing party. A subset of centrist and moderate pro-leftist citizens are expected to vote for the pro-market party. Hence, in equilibrium the probability that the left-wing party wins elections is lower than the chances for the right-wing party, $P(x_R^N, x_L^N) > 1/2$.

Corollary 6 (Electoral Advantage right-wing party) *In equilibrium, the probability that pro-market politicians win the election is higher than the chances for pro-government politicians.*

Citizens hold ideological positions but also care about their own economic well-being and support taxation policies that redistribute income towards them. In fact, voters are willing to trade ideological positions over the public provision of goods by promises of larger net income. This provides an advantage to the pro-market party which can court centrist and moderate pro-leftist voters in every group targeting them with larger net income and reducing the public provision of goods. This strategic targeting of net income allows right-wing politicians to increase their expected electoral returns and, at the same time, propose public good provision closer to its partisan positions. The expected strategy of the right-wing party forces ideological risk-averse pro-government party to decrease its promises of public goods. The left-wing party increases the targeted amount of net

income to groups with larger concentration of pivotal voters in order to increase their expected number of votes. As a result, in equilibrium, public good platform by the left-wing party supports a larger ideological sacrifice than the proposal by the right-wing party, $z_L^N > z_R^N$.

Corollary 7 (Ideological Sacrifice left-wing party) *In equilibrium, the pro-government public goods proposal supports a larger ideological sacrifice than the proposal of the pro-market party.*

I have underlined that each political party promises its largest public goods platform when all groups exhibit the same concentration of pivotal voters. In this particular case, both the electoral advantage of the right-wing party and the ideological sacrifice of the left-wing party are minimized. However, when the concentration of expected swing voters differs across groups, politicians have incentives to discriminate them through differential net income. The differentiation across groups is possible because of the availability of non-linear income taxation schedules. In this case, there exists more competition to attract pivotal moderate pro-leftist voters who could swing their vote. This competition leads both parties to reduce resources to fund public goods provision and to increase the net income targeted to groups.

3.5   Discussion of the main result

Lizzeri and Persico (2001) first pointed out that, under certain conditions, in a distributive politics game with public goods, targetability of cash transfers can yield a premium over public goods. In particular, electoral incentives lead office-motivated politicians to reduce the provision of public goods, because of their lack of targetability, and to increase the amount of resources devoted to cash transfers. This paper shows that these incentives also exist in partisan electoral competition and under less restrictive conditions. The main novelty relies on pointing out that now targetability provides an advantage for particular partisan politicians. Indeed, the possibility of differential targeting of net income, given the availability of non-linear taxation schedules, allows the right-party to attract larger expected number of voters. Group-specific income targeting increases the electoral advantage of right-wing party and raises the ideological sacrifice of the left-wing party.

One of the main insights of this paper relies on presenting a new source of electoral advantage that depends on politicians' partisan preferences over economic policy. Several significant contributions have examined electoral advantages generated by exogenous non-economic policy positions. For instance, Roemer (1998) discusses how the presence of value issues such as religion might confer an advantage to right-wing parties and limit the extent of income redistribution; Groseclose (2001) analyzes partisan competition when one party exhibits a valence advantage over the other competing party (e.g. incumbency advantage); Besley and Preston (2007) and Besley et al. (2010) investigates the policy implications of electoral advantage in districts with a larger presence of core voters attached to one party ideological positions unrelated to economic platforms. In order to create electoral advantages, these contributions consider that voter choices depend on issues not related to economic policy. In contrast to the previous literature, this paper examines the case in

which politicians expect that voters make their electoral choices based uniquely on the effect of policy proposals on their economic well-being. [*] In this case, the electoral advantage depends on chosen economic policy platforms and therefore it is an endogenous variable in the electoral competition game.

The model presented in this paper can be viewed as the reduced form of a two-party competition in a majoritarian electoral system. Iversen and Soskice (2006) underline that countries with majoritarian electoral system are dominated by right-wing parties which undertake less redistribution of income. This paper suggests a new explanation for this evidence. In majoritarian systems, when parties hold partisan positions over the public provision of goods, pro-government ideological positions can be more costly to pursue in terms of electoral feasibility. The public funding of goods through non-linear income taxation schedules provides an electoral advantage to pro-market ideological positions. Right-wing parties exhibit larger chances of winning elections and their policy proposals yield to larger income inequality.

One related contribution is Huber and Ting (2009) who also depart from non-economic considerations to examine the presence of an advantage for right-wing parties in majoritarian electoral systems. Their analysis considers two types of transfers: means tested income redistribution from the rich to the poor; and geographically-targeted transfers to specific districts. They show how the right-wing party may create an electoral advantage when focuses more on targeted rather than redistributive transfers. Instead, the explanation proposed in this paper does not constrain income redistribution schedules: tax-transfers schedules can be specific to groups of voters distinguished by income-levels, geographic location or any other characteristic. The analysis therefore suggests a different explanation for why right-wing parties have an advantage in majoritarian systems, one that is grounded in the presence of partisan preferences over the public provision of goods.

4   Comparative Statics

Equilibrium policy platforms proposed by political parties diverge because of both uncertainty about electoral outcome and politicians' partisan preferences on the economic role of government. Hence, it is worthwhile to examine how the presence of private benefits associated to office-holding and the degree of uncertainty affect equilibrium policies and the competition between parties.

4.1   Electoral uncertainty

In the proposed model, citizens' voting decisions do not uniquely depend on economic policy platforms. In fact, citizens also consider the valence of politicians running for office.[18]This valuation is unknown by politicians when they choose policy platforms and therefore it generates uncertainty

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[18]This valence could be interpreted as the charisma or popularity of politicians who compete for office. In some particular elections and systems of government (e.g. presidential systems), citizens' voting decisions might be highly determined by personal characteristics of politicians.

about the electoral outcome. This uncertainty has been introduced through a common shock received by political parties along the electoral campaign. In particular, the relative valuation of politicians is drawn from a uniform distribution with density ψ. Thus, the parameter ψ can be interpreted as a measure of the relative weight between policy platforms and politicians' valence on individuals' voting decisions.

When the valence of politicians has a large impact on voting decisions (i.e. low parameter ψ), the electoral uncertainty faced by parties when choosing policy platforms is high. For instance, consider the limit case in which $\psi \to 0$ (i.e. huge electoral uncertainty). In this situation, party R's equilibrium condition (14) can be written as:

$$-2(g_R^N - g_R^*)P(x_R^N, x_L^N) \to 0 \tag{23}$$

Similarly, given (15), party L's equilibrium condition is given by:

$$-2(g_L^N - g_L^*)[1 - P(x_R^N, x_L^N)] \to 0 \tag{24}$$

Given that the expected valence is equal to zero, when $\psi \to 0$ the equilibrium probability that party R wins elections tends to one-half. Therefore, by (23) and (24), when politicians face huge electoral uncertainty equilibrium public goods proposals tend to converge to parties' ideological bliss points:

$$g_R^N \to g_R^* \quad \text{and} \quad g_L^N \to g_L^* \tag{25}$$

Public good policy divergence rises with uncertainty. The larger the electoral uncertainty is, the closer public goods proposals to parties' ideological positions. The extent of policy divergence depends on parties' ideological polarization (i.e. $g_L^* - g_R^* > 0$). Furthermore, as uncertainty rises, the electoral advantage of ideological market positions decreases. Indeed, both parties tend to exhibit the same chances of winning elections.

At the opposite extreme, citizens could vote mainly on economic policy proposals rather than politicians' valence (i.e. high parameter ψ). In that case, the electoral uncertainty faced by politicians when choosing policy platforms would be low. When $\psi \to \infty$, equilibrium conditions (16) and (17) can be written as:

$$\sum_{j=1}^{J} \mu^j \frac{-2(g_P^N - g_m^*)}{u_c(c_P^{jN})} \to 1 \quad \text{then} \quad \sum_{j=1}^{J} \mu^j MRS_{g,c}^{jg_m^*} \to MRT_{g,c} \quad \forall P \in \{R, L\} \tag{26}$$

Hence, in equilibrium, both parties tend to converge to identical economic policy platforms (i.e. $g^N = g_R^N = g_L^N$ and $c^{j\,N} = c_R^{jN} = c_L^{jN} \quad \forall j$) and the ideological sacrifice is lower for the right. The equilibrium public goods provision and income taxation schedules tend to converge towards the weighted average of the preferred policy of individuals located in group j with median ideological type. Both political parties tend to implement the same income inequality through

taxation schedules characterized by (19). When policy platforms tend to converge, individuals are expected to be indifferent between political parties and thus the equilibrium parties' probabilities of winning elections tend to one-half (i.e. the electoral advantage of the right tends to zero).

In the particular case in which all groups exhibit the same concentration of pivotal voters ($\phi^j = \phi \quad \forall j$), both political parties announce income taxation schedules that implement an egalitarian distribution of income ($c^{j\ N} = c^N \quad \forall j$). In this situation, when electoral uncertainty is reduced, parties' equilibrium policy platforms satisfy:

$$\frac{-2(g_P^N - g_m^*)}{u_c(c^N)} \to 1 \quad \text{then} \quad MRS_{g,c}^{g_m^*} \to MRT_{g,c} \quad \forall P \in \{R, L\} \tag{27}$$

Hence, political parties tend to converge towards the preferred public good policy by the median ideological type in the overall population.

These insights point out that when uncertainty decreases, policy platforms tend to converge and policy platforms determine a larger ideological sacrifice for the left. While convergence is monotonically less likely as uncertainty increases, the novel result of the model, the electoral advantage of the right, is non monotonic in ψ. Indeed, the electoral advantage goes to zero when uncertainty goes to both extremes.

The presence of strong forces toward policy convergence in models of partisan electoral competition was first raised by Calvert (1985). In fact, ideological risk aversion leads parties towards policy convergence. The presence of uncertainty about the identity of swing voters is a necessary condition to prevent that risk-averse politicians implement identical policy platforms. However, the two novel insights provided by our model about the non monotonic electoral advantage and the different ideological sacrifices could not be obtained in that standard setting.

4.2   Private Benefits of winning elections

As the analysis above suggests, even pure ideological parties (i.e. $Q = 0$) consider the effect of policy platforms on their chances of winning elections. Policy motivated politicians sacrifice ideological positions in order to prevent the victory of their opponents' partisan preferences. The potential presence of private benefits associated to win elections would increase the relevance of electoral incentives even more. Indeed, office-motivated politicians are willing to sacrifice ideology in order to raise their expected number of votes. In the limit case in which office-holding is the only thing that matter ($Q \to \infty$), politicians choose policy platforms to maximize their expected electoral returns. In equilibrium, public goods provision and income taxation schedules tend to converge and satisfy (26). Politicians adjust policy platforms to the weighted average of the preferred policy of individuals with median ideological positions in each social group.

5 Normative Analysis: Utilitarian Allocation

This section undertakes welfare analysis, investigating the allocation of resources that would be implemented by a benevolent government. Consider the utilitarian social welfare function (UW) which aggregates all individuals' utilities given them the same weight. UW is:

$$\sum_{j=1}^{J} \mu^j u(c^j) + \sum_{j=1}^{J} \mu^j \int_{g_a^{*j}}^{g_b^{*j}} W(g; g_i^*) \phi^j dg_i^* \tag{28}$$

A benevolent utilitarian government maximizes this social welfare function subject to the available resources given by the economy feasibility constraint.[19] The allocation of net income across groups satisfies:

$$u_c(c_U^k) = u_c(c_U^{k'}) \quad \forall k, k' \in \{1, ..., J\} \tag{29}$$

A benevolent government implements income taxation schedules that lead to an egalitarian distribution of income, $c_U^j = c_U \; \forall j$. This result follows from the assumptions on homogeneous preferences over net income represented by concave utility functions, and the absence of distortions and income losses generated by income redistribution. The utilitarian allocation of resources satisfies:

$$\frac{W_g(g_U; \overline{g}^*)}{u_c(c_U)} = 1 \rightarrow MRS_{g,c}^{\overline{g}^*} = MRT_{g,c} \tag{30}$$

Therefore, a benevolent utilitarian government maximizes welfare when it provides the level of public goods preferred by individuals with average ideological type subject to economic feasibility. Does electoral competition implement the utilitarian allocation?

On the one hand, only in the particular case in which groups exhibit the same concentration of expected swing voters, politicians do not have electoral incentives to discriminate across groups and political parties implement an egalitarian distribution of income. On the other hand, politicians' provision of public goods tends to converge when either i) the uncertainty about the electoral outcome is low; or ii) the private benefits associated to win elections are large (i.e. reduced weight of partisan preferences).

Hence, political parties choose income redistribution schedules and public goods provision that implement the utilitarian allocation if and only if: i) groups exhibit the same concentration of expected swing voters; and ii) politicians only consider electoral incentives because of either large private benefits associated to win elections or the absence of electoral uncertainty.

It is important to notice that when only the first condition holds (i.e. egalitarian distribution of income), politicians' partisan preferences prevent to reach the utilitarian allocation. In this case, pro-market (pro-government) party underprovides (overprovides) public goods with respect to the utilitarian level of provision (i.e. $g_R^N < g_U < g_L^N$).

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[19] See Mathematical Appendix D for details regarding the characterization of the utilitarian allocation.

6 Conclusions

This paper has first investigated the effect of heterogeneous partisan preferences over the public provision of goods on the scope of government spending and the political redistribution of income. The presence of both ideological politicians and uncertainty about the electoral outcome generates a partisanship effect on economic policy. The economic ideology of the party ruling the polity matters for the size of public provision of goods and the distribution of income among individuals. In particular, pro-government politicians promise larger public provision of goods and lower net income than pro-market politicians. As a result, the composition of government spending between public goods and cash transfers depends on the ideology of the party that wins the election. Furthermore, pro-government party commits to income taxation schedules that implement lower income inequality than the schedules proposed by the right-wing party.

The main contribution of this paper consists on showing how ideological preferences over economic policy can affect the electoral competition among partisan politicians. Partisan citizens are willing to trade their economic ideology for promises of higher income. In that case, pro-market politicians make use of redistributive schedules to court moderate pro-leftist citizens and then increase their expected number of votes. The availability of redistributive politics provides an electoral advantage to pro-market politicians who exhibit a higher probability of winning elections. This advantage implies that pro-government parties support larger ideological sacrifices aiming to avoid the victory of more distasteful policies from its opponent.

Political economy has put emphasis on how political institutions, in particular electoral rules, affect size and composition of government spending across countries.[20] However, empirical research by Persson and Tabellini (2003) and Shelton (2007) points out that there exists significant variation in the scope of government spending among countries with similar levels of economic development, social and demographic features and even political institutions such as electoral rules. The theoretical predictions raised in this paper suggest that economic ideological positions held by citizens and politicians may be a complementary source to explain these disparities. That source of variation has not been explored in the literature and constitutes a venue of future empirical research. It would be worthwhile to test the existence of a partisanship effect on the extent of public good provision and the composition of public spending across countries. Nevertheless, it is important to notice that the feasibility of this empirical research is seriously limited by the current availability of microdata on individuals' preferences over public good provision. It would be also necessary to overcome the absence of data on parties' ideological positions regarding government provision of goods and services.[21]

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[20]Persson and Tabellini (1999, 2000), Lizzeri and Persico (2001), Milessi-Ferreti et al. (2002) discuss the direct effect of electoral rules on politicians' incentives to allocate public budgets; Persson, Roland and Tabellini (2007) examine the indirect effect of electoral rules on government spending through party structure and the existence of coalition governments.

[21]Little empirical work has been done to identify and estimate economic partisan preferences of political parties. One exception is Kim and Fording (2002) who present measures of both parties' and government's ideologies based on

One of the novel contributions of this paper is the existence of an electoral advantage when partisan parties compete for office. The analysis suggests that pro-government ideological positions could be more costly to pursue in terms of electoral feasibility. In contrast to the previous contributions that examined the effect of exogenous non-economic factors, this paper provides a new source of electoral advantage which is directly related to economic policy and endogenous to the political process. In further research, it would be interesting to test whether in majoritarian systems right-wing parties exhibit higher chances of winning elections than parties which favor a larger involvement of government in the public provision of goods, given that our model's prediction of an electoral advantage only applies to majoritarian systems. It might also be testable whether in majoritarian systems the electoral advantage of pro-market ideological leanings yields lower public provision of goods and larger income inequality.

Interesting further research could also be devoted to examining how the presence of different dimensions of ideology affect the chosen economic policy. In this paper, I investigated the case in which individuals have ideology only over the role of government providing goods and services. The analysis could be extended to include citizens' different views regarding the fair distribution of income and the extent of inequality. Furthermore, the model might be enlarged to incorporate the fact that some citizens vote taking into account mainly value issues (e.g. moral and religious positions) represented by parties and they abstract away from economic policy proposals. It would be interesting to analyze the simultaneous impact of both value issues and economic ideologies on voter choices, implemented economic policies and political competition among parties. Further research is necessary to analyze these extensions.

Party Manifesto Data provided by Budge et al.(2001). One of the main components included in politicians' ideology are their views on the economic role of government.

MATHEMATICAL APPENDIX

A. **POLITICAL GAME**

A.1. **Swing voters**

Given policy platforms, there might be citizens in group j with an idiosyncratic ideological parameter, g_s^{*j}, such that they are indifferent between voting for the pro-market, R, as for the pro-government, L, party. The swing voter type in group j is implicitly defined by:

$$
\begin{aligned}
V_i(c_R^j, g_R; g_s^{*j}) &= V_i(c_L^j, g_L; g_s^{*j}) + \varepsilon \\
u(c_R^j) + W(g_R; g_s^{*j}) &= u(c_L^j) + W(g_L; g_s^{*j}) + \varepsilon
\end{aligned}
\tag{31}
$$

For the case in which individuals' preferences over public goods are represented by Euclidean quadratic preferences, the swing voter type in group j can be obtained as follows:

$$
\begin{aligned}
u(c_R^j) - (g_R - g_i^*)^2 &= u(c_L^j) - (g_L - g_i^*)^2 + \varepsilon \\
[u(c_R^j) - u(c_L^j)] - g_R^2 - g_i^{*2} + 2g_R g_i^* &= -g_L^2 - g_i^{*2} + 2g_L g_i^* + \varepsilon \\
g_L^2 - g_R^2 + [u(c_R^j) - u(c_L^j)] + 2g_R g_i^* - 2g_L g_i^* - \varepsilon &= 0 \\
(g_L - g_R)(g_L + g_R) + [u(c_R^j) - u(c_L^j)] + g_i^* 2(g_R - g_L) - \varepsilon &= 0 \\
(g_L - g_R)(g_L + g_R) + [u(c_R^j) - u(c_L^j)] - \varepsilon &= g_i^* 2(g_L - g_R)
\end{aligned}
$$

Arranging terms, the ideological cut-off type in group j is given by:

$$
g_s^{*j} = \frac{(g_L + g_R)}{2} + \frac{1}{2(g_L - g_R)}[u(c_R^j) - u(c_L^j)] - \frac{\varepsilon}{2(g_L - g_R)}
\tag{32}
$$

$$
g_s^{*j} = \overline{g}_{LR} + \frac{1}{2\Delta_g}[u(c_R^j) - u(c_L^j) - \varepsilon]
\tag{33}
$$

where $\overline{g}_{LR}$ is the average of parties' promises regarding public provision of goods and Δ_g is the difference between leftist and rightist proposals.

A.2. **Vote Share**

I assume that the idiosyncratic ideological parameter of individuals who belong to group j is drawn from a uniform distribution, F^j, over the range $[g_a^{*j}, g_b^{*j}]$. Therefore, the fraction of citizens who vote for party R in group j is given by:

$$
\begin{aligned}
S_R^j(x_R, x_L) &= F^j(g^{*j}) = \phi^j[g_s^{*j} - g_a^{*j}] = \phi^j[g_s^{*j} - g_a^{*j} + \overline{g}^{*j} - \overline{g}^{*j}] = \\
&= \phi^j[g_s^{*j} - g_a^{*j} + \frac{g_a^{*j} + g_b^{*j}}{2} - \overline{g}^{*j}] = \phi^j[g_s^{*j} + \frac{g_b^{*j} - g_a^{*j}}{2} - \overline{g}_j^*] = \\
&= \phi^j[g_s^{*j} - \overline{g}^{*j} + \frac{1}{2\phi^j}] \\
&= \frac{1}{2} + \phi^j[g_s^{*j} - \overline{g}^{*j}]
\end{aligned}
\tag{34}
$$

Hence, the overall vote share for party R can be written as:

$$
S_R(x_R, x_L; \varepsilon) = \sum_{j=1}^{J} \mu^j F^j(g^{*j}) = \frac{1}{2} + \sum_{j=1}^{J} \mu^j \phi^j[g_s^{*j} - \overline{g}^{*j}]
\tag{35}
$$

The complement share of citizens, $1 - \sum_{j=1}^{J} \mu^j F^j(g_s^{*j})$, votes for pro-government party L, S_L.

A.3. Parties' Probability of winning

Given that the expected value of the popularity shock is equal to zero, the expected swing voters in group j are citizens with an ideological type, $\widehat{g}_s^{*j}$, such that they are indifferent between parties' economic policy proposals. Therefore, the expected cut-off ideological type is given by:

$$
E(g_s^{*j}) = \widehat{g}_s^{*j} = \overline{g}_{LR} + \frac{1}{2\Delta_g}[u(c_R^j) - u(c_L^j)]
\tag{36}
$$

I assume majority voting and then winning the election corresponds to obtaining more than fifty per cent of the total vote. Given the expected swing voter type in each group and the assumed uniform distribution of ideological types and popularity shock, the probability that pro-market party R wins the election is obtained as follows:

$$
\begin{aligned}
P(x_R, x_L) &= P(S_R \geq \frac{1}{2}) = P\left(\frac{1}{2} + \sum_{j=1}^{J} \mu^j \phi^j[\widehat{g}_s^{*j} - \overline{g}^{*j} - \frac{\varepsilon}{2\Delta_g}] \geq \frac{1}{2}\right) \\
&= P\left(\sum_{j=1}^{J} \mu^j \phi^j[\widehat{g}_s^{*j} - \overline{g}^{*j} - \frac{\varepsilon}{2\Delta_g}] \geq 0\right) = P\left(\sum_{j=1}^{J} \mu^j \phi^j[\widehat{g}_s^{*j} - \overline{g}^{*j}] \geq \sum_{j=1}^{J} \mu^j \phi^j \frac{\varepsilon}{2\Delta_g}\right) \\
&= P\left(\sum_{j=1}^{J} \mu^j \phi^j[\widehat{g}_s^{*j} - \overline{g}^{*j}] \geq \phi \frac{\varepsilon}{2\Delta_g}\right) = P\left(\varepsilon \leq 2\Delta_g \frac{\sum_{j=1}^{J} \mu^j \phi^j[\widehat{g}_s^{*j} - \overline{g}^{*j}]}{\phi}\right) \\
&= G\left(\frac{2\Delta_g}{\phi} \sum_{j=1}^{J} \mu^j \phi^j[\widehat{g}_s^{*j} - \overline{g}^{*j}]\right)
\end{aligned}
\tag{37}
$$

$$
\tag{38}
$$

Thus, pro-market party's probability of winning is given by:

$$P(x_R, x_L) = \frac{1}{2} + \frac{\psi}{\phi} 2\Delta_g \sum_{j=1}^{J} \mu^j \phi^j [\widehat{g}_s^{*j} - \overline{g}^{*j}] \tag{39}$$

Pro-government party anticipates winning the election with the complementary probability $1 - P(x_R, x_L)$. Furthermore, the median ideological type, g_m^*, and the expected swing voters' ideology in the overall population, $\widehat{g}_s^*$, are defined as:

$$g_m^* = \frac{\sum_{j=1}^{J} \mu^j \phi^j \overline{g}^{*j}}{\phi} \qquad \text{and} \qquad \widehat{g}_s^* = \frac{\sum_{j=1}^{J} \mu^j \phi^j \widehat{g}^{*j}}{\phi} \tag{40}$$

Hence, party R's probability of winning can also be expressed as:

$$P(x_R, x_L) = \frac{1}{2} + \psi 2\Delta_g [\widehat{g}_s^* - g_m^*] \tag{41}$$

As an alternative, making use of (36) this probability can be written in terms of policy platforms as:

$$P(x_R, x_L) = \frac{1}{2} + \psi \left(\frac{\sum_{j=1}^{J} \mu^j \phi^j [u(c_R^j) - u(c_L^j)]}{\phi} + 2\Delta_g [\overline{g}_{LR} - g_m^*] \right) \tag{42}$$

B. **POLITICAL EQUILIBRIUM**

B.1. **Policy Choice Problem**

Taking the opponent's policy choice problem as given, each political party chooses a combination of public good provision and net income for each group, $x_P = (g_P, c_P)$ for $P \in \{R, L\}$, that maximizes its expected utility subject to economic feasibility and non-negativity constraints. Thus, the policy choice problem of party R is given by:

$$\max_{g_R, \{c_R^j\}_{j=1}^{J}} EU_R(x_R, x_L) \quad \text{s.t.} \quad g_R + \sum_{j=1}^{J} \mu^j c_R^j = y \quad \text{and} \quad g_R \geq 0 \ ; \ c_R^j \geq 0 \ \forall j \tag{43}$$

Party L makes simultaneous policy announcenments and its policy choice problem is given by:

$$\max_{g_L, \{c_L^j\}_{j=1}^{J}} EU_L(x_R, x_L) \quad \text{s.t.} \quad g_L + \sum_{j=1}^{J} \mu^j c_L^j = y \quad \text{and} \quad g_L \geq 0 \ ; \ c_L^j \geq 0 \ \forall j \tag{44}$$

The constrained optimization problems for parties R and L exhibit the following Lagrangeans:

$$\mathcal{L}_R(g_R, c_R^1, ..., c_R^J; \lambda_R) = P(x_R, \overline{x}_L)[Q_R + W_R(g_R; g_R^*)] + [1 - P(x_R, \overline{x}_L)]W_R(\overline{g}_L; g_R^*) +$$
$$+ \lambda_R[y - g_R - \sum_{j=1}^{J} \mu^j c_R^j] + \gamma_{g_R} g_R + \sum_{j=1}^{J} \mu^j \gamma_{c_R}^j c_R^j \qquad (45)$$

$$\mathcal{L}_L(g_L, c_L^1, ..., c_L^J; \lambda_L) = [1 - P(\overline{x}_R, x_L)][Q_L + W_L(g_L; g_L^*)]] + P(\overline{x}_R, x_L)W_L(\overline{g}_R; g_L^*) +$$
$$+ \lambda_L[y - g_L - \sum_{j=1}^{J} \mu^j c_L^j] + \gamma_{g_L} g_L + \sum_{j=1}^{J} \mu^j \gamma_{c_L}^j c_L^j \qquad (46)$$

where λ_P is the Lagrange multiplier associated to the economy feasibility constraint for $P \in \{R, L\}$; and $\gamma_{gP} \geq 0$ and γ_{cP}^j are the multipliers associated to the non-negativity constraints $g_P \geq 0$ and $c_P^j \geq 0$ for all groups $j \in \{1, ..., J\}$ for $P \in \{R, L\}$.

The First Order Conditions for pro-market party for an interior optimum are given by:

$$[g_R] \quad \frac{\partial P(x_R, x_L)}{\partial g_R}[Q_R + W_R(g_R; g_R^*) - W_R(g_L; g_R^*)] + P(x_R, x_L)\frac{\partial W_R(g_R; g_R^*)}{\partial g_R} = \lambda_R \qquad (47)$$

$$[c_R^j] \quad \frac{\partial P(x_R, x_L)}{\partial c_R^j}[Q_R + W_R(g_R; g_R^*) - W_R(g_L; g_R^*)] = \mu^j \lambda_R \quad \forall j \qquad (48)$$

The First Order Conditions for pro-government party for an interior optimum are given by:

$$[g_L] \quad -\frac{\partial P(x_R, x_L)}{\partial g_L}[Q_L + W_L(g_L; g_L^*) - W_L(g_R; g_L^*)] + [1 - P(x_R, x_L)]\frac{\partial W_L(g_L; g_L^*)}{\partial g_L} = \lambda_L \quad (49)$$

$$[c_L^j] \quad -\frac{\partial P(x_R, x_L)}{\partial c_L^j}[Q_L + W_L(g_L; g_L^*) - W_L(g_R; g_L^*)] = \mu^j \lambda_L \quad \forall j \qquad (50)$$

Let Ω_P denote party P's benefit of winning elections which is defined as the difference between the payoff under victory and defeat. Hence:

$$\Omega_P = \Omega_P(x_R, x_L) = Q_P + W_P(g_P; g_P^*) - W_P(g_{-P}; g_P^*) \qquad (51)$$

B.2. Equilibrium Policy Divergence

The set of FOCs implicitly define the best responses of each party as function of its opponent's strategy profile. When both candidates are playing their best responses there exists a Nash Equilibrium in which neither candidate has an incentive to offer an alternative policy. Therefore, a Nash Equilibrium of the policy announcement stage, (x_R^N, x_L^N), is a solution to the system of equations

consisting of parties' FOCs and their budget constraints. In the examined political game, we have $k = J + 1$ FOCs and a budget constraint for each candidate. Hence, the Nash equilibrium in the first stage of the game is the solution to the following system of equations and parties' budget constraints:

$$\frac{\frac{\partial P(x_R^N, x_L^N)}{\partial g_R}\Omega_R^N}{\lambda_R} + \frac{P(x_R^N, x_L^N)\frac{\partial W_R(g_R^N; g_R^*)}{\partial g_R}}{\lambda_R} = 1 \tag{52}$$

$$\frac{\frac{\partial P(x_R^N, x_L^N)}{\partial c_R^j}\Omega_R^N}{\lambda_R} = \mu^j \qquad \forall\, j \tag{53}$$

$$\frac{-\frac{\partial P(x_R^N, x_L^N)}{\partial g_L}\Omega_L^N}{\lambda_L} + \frac{[1 - P(x_R^N, x_L^N)]\frac{\partial W_L(g_L^N; g_L^*)}{\partial g_L}}{\lambda_L} = 1 \tag{54}$$

$$\frac{-\frac{\partial P(x_R^N, x_L^N)}{\partial c_L^j}\Omega_L^N}{\lambda_L} = \mu^j \qquad \forall\, j \tag{55}$$

B.3. Equilibrium Income Taxation Schedules

Consider the equilibrium FOCs for net income promised to group j by party R (48) and party L (50). Given these conditions, the equilibrium allocation of net income across groups promised by party P satisfies:

$$\frac{1}{\mu^k}\frac{\partial P(x_R^N, x_L^N)}{\partial c_P^k}\Omega_P^N = \frac{1}{\mu^{k'}}\frac{\partial P(x_R^N, x_L^N)}{\partial c_P^{k'}}\,\Omega_P^N \qquad \forall\, k, k' \in \{1, ..., J\} \quad \text{and} \quad \forall\, P \in \{R, L\} \tag{56}$$

By (39) the change in parties' probability of winning because of marginal increase in group j's net income is given by:

$$\frac{\partial P(x_R^N, x_L^N)}{\partial c_R^j} = \psi\frac{\mu^j\phi^j}{\phi}u_c(c_R^{jN}) \quad \text{and} \quad \frac{\partial P(x_R^N, x_L^N)}{\partial c_L^j} = -\psi\frac{\mu^j\phi^j}{\phi}u_c(c_L^{jN}) \qquad \forall\, j \tag{57}$$

Hence, equilibrium distribution of net income satisfies:

$$\phi^k u_c(c_P^{kN}) = \phi^{k'} u_c(c_P^{k'N}) \qquad \forall\, k, k' \in \{1, ..., J\} \quad \text{and} \quad \forall\, P \in \{R, L\} \tag{58}$$

B.4. Equilibrium Public Goods Provision

By (39) the changes in parties' probability of winning because of marginal increase in public goods provision are given by:

$$\frac{\partial P(x_R^N, x_L^N)}{\partial g_R} = -\psi 2(g_R^N - g_m^*) \quad \text{and} \quad \frac{\partial P(x_R^N, x_L^N)}{\partial g_L} = \psi 2(g_L^N - g_m^*) \tag{59}$$

In the particular case that preferences over public goods are quadratic, the effect in ideological well-being because of marginal changes in policy platforms are given by:

$$\frac{\partial W_R(g_R^N; g_R^*)}{\partial g_R} = -2(g_R^N - g_R^*) \quad \text{and} \quad \frac{\partial W_L(g_L^N; g_L^*)}{\partial g_L} = -2(g_L^N - g_L^*) \tag{60}$$

Consider party R's equilibrium FOCs for public goods (47) and net income promised to group j (48). When voters and politicians exhibit quadratic preferences, equilibrium conditions satisfy:

$$-\psi 2(g_R^N - g_m^*)\Omega_R^N - 2(g_R^N - g_R^*)P(x_R^N, x_L^N) = \lambda_R \tag{61}$$

$$\psi \mu^j \frac{\phi^j}{\phi} u_c(c_R^{jN})\Omega_R^N = \mu^j \lambda_R \qquad \forall \ j \tag{62}$$

The equilibrium conditions for party L satisfy:

$$-\psi 2(g_L^N - g_m^*)\Omega_L^N - 2(g_L^N - g_L^*)[1 - P(x_R^N, x_L^N)] = \lambda_L \tag{63}$$

$$\psi \mu^j \frac{\phi^j}{\phi} u_c(c_L^{jN})\Omega_L^N = \mu^j \lambda_R \qquad \forall \ j \tag{64}$$

Taking (61) and (62), party R's equilibrium choice between allocating one unit of income to public goods provision and to net income to group k satisfies:

$$-\psi 2(g_R^N - g_m^*)\Omega_R^N - 2(g_R^N - g_R^*)P(x_R^N, x_L^N) = \frac{1}{\mu^k}\frac{\phi^k}{\phi}\mu^k \psi u_c(c_R^{kN})\Omega_R^N \qquad \forall \ k \in \{1, ..., J\} \tag{65}$$

Similarly, the equilibrium policy choice for party L satisfies:

$$-\psi 2(g_L^N - g_m^*)\Omega_L^N - 2(g_L^N - g_L^*)[1 - P(x_R^N, x_L^N)] = \frac{1}{\mu^k}\frac{\phi^k}{\phi}\mu^k \psi u_c(c_L^{kN})\Omega_L^N \qquad \forall \ k \in \{1, ..., J\} \tag{66}$$

Simplifying and arranging terms, (65) can be written as:

$$-\phi 2(g_R^N - g_m^*) - \phi 2(g_R^N - g_R^*)\frac{P(x_R^N, x_L^N)}{\psi \Omega_R^N} = \phi^k u_c(c_R^{kN}) \qquad \forall \ k \tag{67}$$

The weighted average of the density of group-specific distributions of ideological preferences was defined as:

$$\phi = \sum_{j=1}^{J} \mu^j \phi^j \tag{68}$$

Given the equilibrium relative treatment in terms of net income (58), we obtain:

$$\frac{\phi^j}{\phi^k} = \frac{u_c(c_R^{kN})}{u_c(c_R^{jN})} \qquad \forall \ j, k \in \{1, ..., J\} \tag{69}$$

Making use of both the definition (68) and the relation (69), equilibrium condition (67) can be

written as:

$$\sum_{j=1}^{J} \mu^j \frac{\phi^j}{\phi^k} \frac{-2(g_R^N - g_m^*)}{u_c(c_R^{kN})} + \frac{P(x_R^N, x_L^N)}{\psi \Omega_R^N} \sum_{j=1}^{J} \mu^j \frac{\phi^j}{\phi^k} \frac{-2(g_R^N - g_R^*)}{u_c(c_R^{kN})} = 1 \tag{70}$$

$$\sum_{j=1}^{J} \mu^j \frac{u_c(c_R^{kN})}{u_c(c_R^{jN})} \frac{-2(g_R^N - g_m^*)}{u_c(c_R^{kN})} + \frac{P(x_R^N, x_L^N)}{\psi \Omega_R^N} \sum_{j=1}^{J} \mu^j \frac{u_c(c_R^{kN})}{u_c(c_R^{jN})} \frac{-2(g_R^N - g_R^*)}{u_c(c_R^{kN})} = 1 \tag{71}$$

$$\sum_{j=1}^{J} \mu^j \frac{-2(g_R^N - g_m^*)}{u_c(c_R^{jN})} + \frac{P(x_R^N, x_L^N)}{\psi \Omega_R^N} \sum_{j=1}^{J} \mu^j \frac{-2(g_R^N - g_R^*)}{u_c(c_R^{jN})} = 1 \tag{72}$$

Given the assumption on available technology to provide public goods, the marginal rate of transformation between income and public goods, $MRT_{g,c}$, is equal to one. Furthermore, given party R's platform, the marginal rate of substitution between public goods and net income for individuals in group j with median ideological type, $MRS_{g_R,c_R}^{jg_m^*}$, and ideological position of party R, $MRS_{g_R,c_R}^{jg_R^*}$, are given by:

$$MRS_{g_R,c_R}^{jg_m^*} = \frac{-2(g_R^N - g_m^*)}{u_c(c_R^{jN})} \quad \text{and} \quad MRS_{g_R,c_R}^{jg_R^*} = \frac{-2(g_R^N - g_R^*)}{u_c(c_R^{jN})} \quad \forall j \tag{73}$$

Hence, party R's equilibrium condition can be written as:

$$\sum_{j=1}^{J} \mu^j MRS_{g_R,c_R}^{jg_m^*} + \gamma_R^N \sum_{j=1}^{J} \mu^j MRS_{g_R,c_R}^{jg_R^*} = MRT_{g,c} \tag{74}$$

where $\gamma_R^N = \frac{P(x_R^N, x_L^N)}{\psi \Omega_R^N}$; and equilibrium Ω_R^N is given by:

$$\Omega_R^N = Q + 2\Delta_g^N(\bar{g}_{LR}^N - g_R^*) \tag{75}$$

The equilibrium condition for party L can be obtained following the same steps, and therefore it can be written as:

$$\sum_{j=1}^{J} \mu^j MRS_{g_L,c_L}^{jg_m^*} + \gamma_L^N \sum_{j=1}^{J} \mu^j MRS_{g_L,c_L}^{jg_L^*} = MRT_{g,c} \tag{76}$$

where $\gamma_L^N = \frac{[1 - P(x_R^N, x_L^N)]}{\psi \Omega_L^N}$; and equilibrium Ω_L^N is given by:

$$\Omega_L^N = Q + 2\Delta_g^N(g_L^* - \bar{g}_{LR}^N) \tag{77}$$

The system of equations formed by (74), (76) and the feasibility constraints for both parties simultaneously determine equilibrium policy platforms (c_R^N, g_R^N) and (c_L^N, g_L^N).

In the particular case in which all groups exhibit the same concentration of expected swing voters ($\phi^j = \phi \; \forall j$), both political parties implement income taxation schedules that implement an

egalitarian distribution of income ($c_R^{j\,N} = c^N$ and $c_L^{j\,N} = c^N$ $\forall j$). Thus, the system of equations that simultaneously determine equilibrium policy platforms can be written as:

$$MRS^{g_m^*}_{g_R,c_R} + \gamma_R^N MRS^{g_R^*}_{g_R,c_R} = MRT_{g,c} \qquad (78)$$

$$MRS^{g_m^*}_{g_L,c_L} + \gamma_L^N MRS^{g_L^*}_{g_L,c_L} = MRT_{g,c} \qquad (79)$$

B. 5. **Electoral Advantage Party R**

In equilibrium, the expected indifferent swing voter in group j, $\widehat{g}_s^{*jN}$, is implictly defined by:

$$u(c_R^{jN}) - u(c_L^{jN}) = W(g_L^N; \widehat{g}_s^{*jN}) - W(g_R^N; \widehat{g}_s^{*jN}) \qquad \forall\, j \in \{1, ..., J\} \qquad (80)$$

In equilibrium, net income in group j promised by party R is larger than the income that results from party L's platform, therefore expected swing voters' private well-being is larger under party R's income taxation policy platform:

$$c_R^{jN} > c_L^{jN} \rightarrow u(c_R^{jN}) - u(c_L^{jN}) > 0 \qquad \forall\, j \qquad (81)$$

In equilibrium, party L commits to larger public goods proposals than party R, $g_L^N > g_R^N$. Therefore, according to (80), in equilibrium, swing voters' ideological utility loss under party L's proposal is lower than the ideological loss implied by party R's proposal:

$$W(g_L^N; \widehat{g}_s^{*jN}) - W(g_R^N; \widehat{g}_s^{*jN}) > 0 \qquad \forall\, j \qquad (82)$$

Expected swing voters are indifferent between the ideological benefits associated to party L's victory and the larger private economic well-being if party R wins the election. Therefore, in equilibrium the ideological positions of expected swing voters in group j are closer to pro-government party L's ideological leanings than to pro-market R's positions. In this case, the ideology of the equilibrium indifferent type in any group is larger than the median ideological position in the overall population:

$$\widehat{g}_s^{*jN} > g_m^* \quad \forall\, j \quad \rightarrow \quad \widehat{g}_s^{*N} > g_m^* \qquad (83)$$

This shows that in each group there exists a subset of citizens biased toward the pro-government ideology who are expected to vote for the pro-market party. Thus, in equilibrium the probability that party R wins elections is larger than one-half:

$$P(x_R^N, x_L^N) > 1/2 \qquad (84)$$

B.6. **Ideological Sacrifice Party L**

The equilibrium expected swing voter type in group j can be written as:

$$\widehat{g}_S^{*jN} = \bar{g}_{LR} + \frac{1}{2\Delta_g}[u(c_R^{jN}) - u(c_L^{jN})] \tag{85}$$

Differentiating (85) with respect to g_R and g_L yields:

$$\frac{d\widehat{g}_S^{*jN}}{dg_R} = \frac{1}{2} + \frac{u(c_R^{jN}) - u(c_L^{jN})}{2\Delta_g^2} \tag{86}$$

$$\frac{d\widehat{g}_S^{*jN}}{dg_L} = \frac{1}{2} - \frac{u(c_R^{jN}) - u(c_L^{jN})}{2\Delta_g^2} \tag{87}$$

In equilibrium each party balances its policy preferences and its chances of winning elections and therefore the electoral returns of policy platforms are not exhausted. This implies that the sign of both (86) and (87) is positive. Hence, the impact of public goods platforms changes in the equilibrium expected indifferent voter type is larger for the right-wing than for the left-wing proposal:

$$\frac{d\widehat{g}_S^{*jN}}{dg_R} > \frac{d\widehat{g}_S^{*jN}}{dg_L} \tag{88}$$

This result shows that the variation in the expected vote share in every group if the right-wing party would raise its public provision of goods is larger than the expected change when the left-wing party would reduce its level of public provision. This therefore implies that the effect of these policy changes on equilibrium probability of winning elections would be larger for the pro-market party than for the pro-government party.

$$\frac{\partial P(x_R^N, x_L^N)}{\partial g_R} > \frac{\partial P(x_R^N, x_L^N)}{\partial g_L} \tag{89}$$

The changes in parties' equilibrium probability of winning elections because of marginal changes in public goods provision are given by:

$$\frac{\partial P(x_R^N, x_L^N)}{\partial g_R} = -\psi 2(g_R^N - g_m^*) > 0 \quad \text{and} \quad \frac{\partial P(x_R^N, x_L^N)}{\partial g_L} = \psi 2(g_L^N - g_m^*) > 0 \tag{90}$$

Given (89) and (90), the concavity of the probability function implies that the distance between the right-wing public good equilibrium proposal with respect to the median ideological position is larger than the distance of the later position with respect to the equilibrium platform proposed by the left-wing party:

$$|g_R^N - g_m^*| > |g_L^N - g_m^*| \tag{91}$$

By assumption, there is not aggregate ideological bias in the overall population. Ideological positions of political parties are symmetrically located around the median ideological position:

$$|g_R^* - g_m^*| = |g_L^* - g_m^*| \tag{92}$$

Hence, given (91) and (92), the equilibrium ideological sacrifice of pro-government party is larger than the equilibrium sacrifice of pro-market party.

$$z_L^N > z_R^N \tag{93}$$

C. COMPARATIVE STATICS

C.1. Electoral Uncertainty

In the limit case in which $\psi \to 0$ (i.e. huge electoral uncertainty), party R's equilibrium condition (65) can be written as:

$$-2(g_R^N - g_R^*)P(x_R^N, x_L^N) \to 0 \tag{94}$$

Similarly, given (66), party L's equilibrium condition is given by:

$$-2(g_L^N - g_L^*)[1 - P(x_R^N, x_L^N)] \to 0 \tag{95}$$

Furthermore, when $\psi \to 0$, the equilibrium probability that party R wins elections tends to one-half. Therefore, given (94) and (95), parties' equilibrium public goods proposals tends to their respective ideological bliss points:

$$g_R^N \to g_R^* \quad \text{and} \quad g_L^N \to g_L^* \tag{96}$$

Both parties exhibit the same chances of winning elections, i.e. $P(x_R^N, x_L^N) = 1/2$, and parties' platforms do not support ideological sacrifice, $z_R^N = z_L^N = 0$.

C.2. Private Benefits of winning

When parties' private benefits associated to win elections are huge (i.e. $Q \to \infty$), equilibrium conditions (74) and (76) can be written as:

$$\sum_{j=1}^{J} \mu^j \frac{-2(g_P^N - g_m^*)}{u_c(c_P^{jN})} \to 1 \quad \text{then} \quad \sum_{j=1}^{J} \mu^j MRS_{g,c}^{jg_m^*} \to MRT_{g,c} \quad \forall P \in \{R, L\} \tag{97}$$

Therefore, in equilibrium, when $Q \to \infty$ both politicial parties tend to converge to the same economic policy platform (i.e. $g^N = g_R^N = g_L^N$ and $c^{j\,N} = c_R^{jN} = c_L^{jN} \quad \forall j$). The equilibrium distribution of net income across groups is characterized by (58). Furthermore, the equilibrium

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public goods provision and income taxation schedules tend to converge towards the weighted average of the preferred policy of individuals located in group j with median ideological type.

In the particular case in which all groups exhibit the same concentration of expected swing voters ($\phi^j = \phi \quad \forall j$), both political parties implement income taxation schedules that yield an egalitarian distribution of income ($c^{j\ N} = c^N \quad \forall j$). Parties' equilibrium policy platform satisfies:

$$\frac{-2(g_P^N - g_m^*)}{u_c(c^N)} \to 1 \quad \text{then} \quad MRS_{g,c}^{g_m^*} \to MRT_{g,c} \quad \forall P \in \{R, L\} \tag{98}$$

Both political parties tend to converge towards the preferred public good policy of the median ideological type. Furthermore, when political parties converge to the same policy platforms, individuals are expected to be indifferent between parties. Thus, the equilibrium probability that party R wins elections tends to one-half.

D. **UTILITARIAN ALLOCATION**

The utilitarian social welfare function (UW) integrates over all individuals' utilitiy functions:

$$UW \quad \equiv \quad \sum_{j=1}^{J} \mu^j \left[\int_{g_a^{*j}}^{g_b^{*j}} V(c^j, g; g_i^*) \phi^j dg_i^* \right] \tag{99}$$

$$= \quad \sum_{j=1}^{J} \mu^j \left[\int_{g_a^{*j}}^{g_b^{*j}} [u(c^j) + W(g; g_i^*)] \phi^j dg_i^* \right]$$

$$= \quad \sum_{j=1}^{J} \mu^j u(c^j) + \sum_{j=1}^{J} \mu^j \int_{g_a^{*j}}^{g_b^{*j}} W(g; g_i^*)] \phi^j dg_i^* \tag{100}$$

A benevolent utilitarian government maximizes (100) subject to the economy feasibility constraint. The Lagrangean for the constrained optimization problem is given by:

$$\mathcal{L}_U = \sum_{j=1}^{J} \mu^j u(c^j) + \sum_{j=1}^{J} \mu^j \int_{g_a^{*j}}^{g_b^{*j}} W(g; g_i^*) \phi^j dg_i^* + \lambda \left[y - g - \sum_{j=1}^{J} \mu^j c^j \right] \tag{101}$$

The First Order Conditions for an interior optimum are given by:

$$[c^j] \quad \mu^j u_c(c^j) = \lambda \mu^j \to u_c(c^j) = \lambda \quad \forall j \tag{102}$$

$$[g] \quad -2(g - \overline{g}^*) = \lambda \ \to W_g(g; \overline{g}^*) = \lambda \tag{103}$$

Considering (102), the distribution of net income across groups satisfies:

$$u_c(c_U^k) = u_c(c_U^{k'}) \quad \forall k, k' \in \{1, ..., J\} \tag{104}$$

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Furthermore, the utilitarian allocation of resources satisfies:

$$\frac{W_g(g_U; \overline{g}^*)}{u_c(c_U)} = 1 \rightarrow MRS_{g,c}^{\overline{g}^*} = MRT_{g,c} \tag{105}$$

Therefore, a benevolent utilitarian government implements an egalitarian distribution of income and the level of public goods provision preferred by individuals with average ideology.

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