Abstract

This paper develops a political economy model that provides an explanation as for why ruling elites in oligarquic societies may rely on income redistribution to the poor (the masses) in order to prevent them from attempting a revolution. We refer to this kind of redistribution as populist redistribution because, first it does not increase the poor’s productive capacity (human capital), and second it seeks to “buy” political support (peace) to perpetuate the elite’s control of political power. We examine the conditions under which ruling elites choose to deter the poor (by means of military repression and/or populist redistribution), to engage in a dispute with the poor for the control of political power, or, alternatively, to extend democracy. According to the results of the model populist redistribution (or military repression), if any, increases with initial wealth inequality and with the amount of redistribution that the poor can undertake under democracy, and decreases with the relative importance of a human capital externality in production. The model explains why in some cases the use of an apparently inefficient policy of populist redistribution turns out to be optimal for both groups (the ruling elite and the poor class) when the alternative is to use of military repression or default to conflict.

Keywords: populism, oligarchy, democracy, conflict, inequality.

JEL Classification Numbers: H11, D73, D74, D78, D30.

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“...there was no place on them (the large states) for the smallholder, who now had to make his way to the city and fend for himself as well as he could, a Roman citizen in name, but a proletarian in the making. Yet as a citizen he still had a vote. To those with wealth and political ambition he became someone to buy or to intimidate.”

J.M. Roberts (2004), p. 239.

1. Introduction

Throughout history oligarchic regimes’s elites have relied on different methods to try to perpetuate their control of political power. While in some cases ruling elites have used only military repression to deter any threat of revolution, in some other cases they have relied on income transfers to the poor (the “masses”, the “people”) in order to dissuade them from attempting a regime change. However, ruling elites have not always been able to completely deter the poor classes from forcing such a regime change, and have had to engage in a dispute with them, sometimes violent, for the control of political power. Yet, in some other cases, ruling elites have decided, in their own best interest, to politically empower the poor and allow for a peaceful transition to democracy. This paper develops a model that captures these different historical scenarios, explains the choices made by oligarchic regimes, and provides a framework for understanding the prolongation (through military repression and/or populist redistribution) of oligarchic regimes, or their eventual fall.

One of the main objectives of this paper is to explain the conditions under which a ruling elite chooses to engage in populist redistribution as opposed to (or in addition to) military repression in order to deter the masses from attempting a revolution that seeks to change the political regime. The model also sheds light on the conditions for a peaceful or non-peaceful transition to democracy. We derive the optimal expenditure done by the elite under each one of these possible cases (oligarchy with populism and/or military repression, transition to democracy, and democracy). *A priori*, however, it is not clear under what conditions an oligarchic regime would use military repression, populist redistribution, or a combination of both in order to maintain political control. Thus, the proposed model explains these different means used by oligarchic elites to maintain political control, or not, based on the elite’s incentive to engage in repression and/or populist redistribution, *vis-à-
vis the poor class’ incentive to allocate resources to challenge the elite’s political control. These incentives, in turn, depend on the “fundamentals” of the economy: a measure of wealth inequality, the technology parameters of conflict and production, the (maximum) level of wealth redistribution that the poor can undertake if the political regime were to be a democracy, and the relative importance of a (Lucas-type) human capital externality in production.

In addition to this introduction, the paper contains five sections. Section 2 clarifies some concepts that will be used throughout the paper such as oligarchy, democracy, and populism; Section 3 contains a short review of the related literature. Section 4 explains the basic setup of the model, its components, and the description of the equilibrium. In section 5 we study the main results of the model and present the comparative statics results. Section 6 concludes.

2. Basic Concepts

The classification of political regimes into two major groups, oligarchy (when the political power is controlled by a few members of society) and democracy (when political decisions are taken by the majority of the population) is useful for the interpretation of the history of political development. While Absolute (or Unrestricted) Monarchy, an institution that already belongs to the past, can be considered an extreme case of an oligarchic regime, the so called Constitutional Monarchies in many contemporaneous societies (such as Great Britain, Japan, Spain and Sweden) can be seen as institutions that democracies can do without. Even though the Monarchy was the most important political institution from the Middle Ages until the 19th century, it was also common to observe oligarchic regimes.

In the remainder of the paper we will use this broad characterization of political regimes and we will distinguish between oligarchic and democratic regimes based on a real factor, namely, whether the political (and economic) decisions are controlled by a small minority (the elite), or whether they are determined by the majority group in the population.\(^2\)

However, the distinction between oligarchic and democratic regimes has not always been so clear-cut. This is particularly the case in times of transition from one regime to another,

\(^2\)Oligarchy or “non-democracy” is the term used by Acemoglu and Robinson (2005).
where the difference between the two regimes becomes blurry. For instance, history has witnessed democratic elements in the core of oligarchic societies (Sparta between the 7th and 6th Centuries B.C.) and also oligarchic elements in democratic societies (Athens during the 5th and 4 Centuries B.C.\(^3\), and a few western European societies, like Great Britain, during the second half the 19th Century and the first half of the 20th Century).

Nevertheless, the existence of an elite, or elites, is not a sufficient condition for a regime to be oligarchic, especially in those societies that are governed under formally democratic institutions. In other words, a democratic society is characterized by how diluted across the population the political power is, and not by the lack of an elite. In fact, democracy was interpreted by Schumpeter ([1942] 1954a) as the competition, in the political arena, between different elites for the support of a wide mass of voters.\(^4\)

One of the most interesting aspects of the analysis of political regimes is their dynamics. A good portion of political history (at least that of Europe, post-colonial Latin America, and 20th century Asia and Africa) could be related to the tensions between pro-oligarchic and pro-democratic forces, with the predominance of the latter in the long run.\(^5\) These tensions, however, have not always resulted in violent struggles. Each transition episode should be analyzed taking into account multiple elements, and economists can contribute to the understanding of regime transitions by explaining some of these elements, and by doing so, we can attempt to partially explain the transition process, or the “perpetuation” of oligarchic regimes.

Our paper takes a step forward by providing an explanation of “populism”. This has been a recurrent phenomenon in Latin America’s recent political history, and, more importantly, a crucial component of the explanation as for why some oligarchic regimes have managed to remain in power during the 20th century in this region.

\(^3\)See Finley (1981) and Kilcullen (2000).

\(^4\)According to McCormick (2001), Machiavelli (in Discourses) was the first author to conceive democracy as a competition between elites for the popular vote (but, also, as a system of additional political controls imposed on the elites by the wide mass of voters).

\(^5\)According to Schumpeter’s interpretation of Plato’s Political Theory (Schumpeter, 1954 a), he considered the process of economic development (the growth of population, commerce, and wealth) to be “rebellious”, in the sense of being incompatible with the perpetuation of the ideal (and oligarchic) Republic. A modern expression of this idea can be found in Roxborough (1984, p. 24).
Defining populism has proven to be a difficult task (especially in the context of Latin America in the Twentieth century\(^6\)). According to Knight (1998), populism in Latin America has been intimately related to a style for obtaining (and maintaining) political power. Roberts (2000, p.14) notes that “In essence, populism is an informal alternative to institutionalized forms of political representation, ...provided by political parties”. According to Torcuato di Tella, who made important contributions to the understanding of Latin American populism, paternalism is an essential component of it which is characterized by “a political movement which enjoys the support of the mass of the working class and/or the peasantry, but which does not result from the autonomous organizational power of either of these two sectors\(^7\).” di Tella’s definition is somehow in the middle between Knight’s “formalist” approach to populism (the style as the essence) and the “substantive” approach, the one favored by economists. According to the latter, populism, more precisely economic populism, is a set of economic policy measures (or promises) directed towards obtaining support from “the masses”.\(^8\) Kauffman and Stallings (1992), who followed the substantive approach, identify the following political goals of populism: “(1) mobilizing support within organized labor and lower-middle-class groups; (2) obtaining complementary backing from domestically oriented business; and (3) politically isolating the rural oligarchy, foreign enterprises, and large-scale industrial elites.”

Our definition of populism is substantive: the attempt to gain political support using paternalistic policies, in the form of income redistribution, that do not increase the workers’ productive capacity nor their level of education. In other words, populism (or, in our own terms, populist policies) can be seen as the price that ruling elites would have to pay to buy support and (perhaps temporary) political peace. As noted in the introduction, we see populism as an alternative that elites have in order to perpetuate their political power, the other alternative being military repression.

Although the substantive approach to populism has an important limitation, namely the identification of populism with “anti-neo-liberal” economic policies (which would make

\(^6\)See Roxborough (1984), and Dix (1985).
\(^7\)Dix (1985).
\(^8\)The substantive approach to Latin American populism (fiscal and monetary expansionary policies beyond limits, as well as wage and price controls, etc., whose main purpose is to redistribute income) was the focus of Dornbusch and Edwards (1992, ch. 1). See also Kauffman and Stallings (1992).
difficult the understanding of recent populist governments in Latin America such as Fujimori’s in Peru), for the main purpose of this paper this limitation is unimportant, because the only economic policy measure that we will examine is public expenditure. Both the old analysis of traditional populism and the recent analysis of “neo-populism” consider the paternalistic manipulation of public expenditure (income redistribution) to be one of the main characteristics of populism.⁹

Populism has played a major role in the disputes between pro-oligarchic and pro-democratic forces in oligarchic as well as democratic societies. If the substantive approach is to be taken seriously, then economic inequality constitutes a necessary, although not always sufficient, condition for the existence of populism.¹⁰

One of the regions of the world with the highest prevalence of populism is Latin America during the 20th century. Latin America, as it is well known, has been characterized for having high levels of income (and wealth) inequality when compared to other regions of the world. The outstanding economic inequality of this region, according to Kauffman and Stallings (1992), Sachs (1989) and others, is one of the most important factors that explains the persistence (and recurrence) of populist governments (and the lack of them in the lower income inequality countries, such as East Asia during the second half of the Twentieth century).¹¹

3. Related Literature

In a general picture, this paper is related to a branch of the Political Economy literature that was developed during the 1990’s and whose main objective has been to explain the competition for political power (among others, see Alesina and Drazen (1991), Bertola (1993), Alesina and Rodrik (1994), Persson and Tabellini (1994), Bénabou (2000), Esteban and Ray (2000), Ferreira (2000), and Campante and Ferreira (2004)). This branch has

⁹See Drake (2005).
¹⁰For instance, in classic Athens there was some populism based on the poverty of the demos. However, the concentration of wealth in Ancient Greece (VIII to III Centuries B.C.) was small compared to that of Persia or later in Imperial Rome (see Finley, 1981, and Morris, 2004).
¹¹However, a high concentration of income is not a sufficient condition for the existence of populism. In fact, “clientelism” has aroused in some countries as a substitute (see the analysis in Robinson and Verdier, 2003, and Urrutia, 1992).
advanced in the explanation of the macroeconomic consequences of political competition between different interest groups in democratic societies. Among those consequences it is worth emphasizing the effects of political competition on the allocation of public funds to different objectives. As a result of this political competition a “populist equilibrium”, or, alternatively, an “oligarchic equilibrium” can arise (Ferreira and Campante, 2004). Also, this paper is related to the literature that studies the effects of social conflict on educational reforms (see Grossman (1994), Bourguignon and Verdier (2000), Acemoglu and Robinson (2000), and Grossman and Kim (2003), among others). The main argument in these papers is that educational reforms, made possible by the redistribution of resources from the elite to the masses, diminishes political instability and fosters investment and economic growth.

In a recent paper Acemoglu (2004) offered a theoretical explanation of the transition (peaceful or violent, slow or abrupt) from oligarchic to democratic societies. According to his argument, in a certain moment in time an oligarchic regime may have a comparative advantage over a democratic one in terms of the preservation of property rights, thanks to its greater capacity and incentives to set lower tax rates on the elite’s wealth.\(^{12}\) In any case, an oligarchic regime would generate stagnation in the longer run because it tends to protect the members of the elite, isolating any possibility of economic competition. Democracy, on the other hand, propels the emergence of competition, fostering the efficient allocation of resources, and therefore economic development.

Bourguignon and Verdier (2000) proposed yet another mechanism to explain the peaceful transition from an oligarchic to a democratic regime: the elite may decide to increase educational expenditure in favor of the poor in order to avoid the risk of a violent revolution, and the property expropriation that comes with it (as in Acemoglu and Robinson, 1996), and, at the same time, stimulate economic growth \textit{via} higher rates of human capital investment.

\[^{12}\]The papers by Bertola (1993), Alesina and Rodrik (1994) and Persson and Tabellini (1994) are based on a similar kind of argument. However, an opposite argument is presented by Galor and Zeira (1993), Saint-Paul and Verdier (1993), and Perotti (1993). Their argument is that the accumulation of human capital that would follow from the redistribution of income would constitute the main engine for economic growth.
accumulation.\textsuperscript{13,14} In Galor and Moav (2004) the elite may decide, in its own interest, to increase the tax rate that they themselves have to pay in order to finance public expenditure in education (in favor of the poor) to prevent the return on capital from declining. Their argument relies on the complementarities between physical and human capital accumulation in the process of economic development. The increase in human capital not only favors the workers and the capitalists, but also creates an engine for sustained economic growth, and the transition to democracy.

This paper is also related to the economic literature that has tried to model the causes and macroeconomic consequences of populism. Campante and Ferreira (2004) developed a model of political competition between different interest groups for the allocation of public funds. In their model, the groups’ relative lobbying effectiveness determines whether the equilibrium is populist (inefficiently pro-poor) or oligarchic (inefficiently pro-rich). Dal Bó and Dal Bó (2004) add an appropriation sector to a canonical general equilibrium trade model, where apparently inefficient populist policies that protect the labor sector turn out to be optimal because they increase the incentives to work in the productive rather than in the appropriation sector. As a result, in their model, populist policies reduce crime in equilibrium. Glomm and Rioja (2003) study the long run macroeconomic consequences of populist fiscal policies in an overlapping generations framework. Using Brazilian data to calibrate their model, they find that imposing a non-populist public expenditure pattern would increase the growth rate of the economy by 0.3 percentage points per year.

In the remaining sections of the paper we present the model and the main results.

4. The Model

4.1. The Basic Structure

Assume there is a continuum of individuals of size one. The population is divided into two groups: a ruling elite, which is a group of size $1 - p$, and the poor (the “masses”), which is a group of size $p$. It is assumed that the elite initially holds the control of political power.

\textsuperscript{13}However, Bourguignon and Verdier (2000) are aware of the possibility that, for the elite, the present value of the benefits (in terms of the portion of higher income that they are able to capture) of extending democracy may turn out to be lower than the cost of redistribution that comes with democracy.

\textsuperscript{14}For a complementary explanation see also Grossman and Kim (2003).
One of the choices that the elite can make is whether to extend political power to the poor class or not. If it does, we will call the political system a democracy. Otherwise, that is, if the elite remains in power, we will refer to it as an oligarchic regime.

4.1.1. Endowments

Each individual in the economy has a non-negative endowment of wealth. Wealth cannot be directly consumed, but rather it is used to finance the accumulation of human capital, which is the only (individual) input of the consumption good’s production technology. For the sake of simplicity, we assume that there is no alternative use of wealth.

Given that the total population is assumed to have size one, the total and the average endowments in the population are equal.

Endowments in the Oligarchic Regime  On the one hand, let $e^o_{e} > 0$ and $e^o_{l} > 0$ be the endowments of each agent of the ruling elite and the poor class respectively, when the political regime is oligarchic (when the elite is in power). We will assume that $e^o_{e} > e^o_{l}$. In words, the members of the ruling elite have a higher wealth endowment than the members of the poor class. The mean endowment in the whole population when the regime is oligarchic, $\bar{e}^o$, is then equal to $(1 - p)e^o_{e} + pe^o_{l}$. Let $d^o = e^o_{e} - e^o_{l}$, be a measure of inequality in the distribution of endowments when the regime is oligarchic. Using the last expression, we can express the endowment of each individual of the ruling elite in this political regime as: $e^d_{e} = \bar{e}^o + pd^o$, and the endowment of each member of the poor class as: $e^d_{l} = \bar{e}^o - (1 - p)d^o$.

Endowments in the Democratic Regime  We will assume that in a democratic regime the majority of the population (the poor class) decides on the amount of wealth redistribution, if any, from the members of the elite to the members of the poor class. Let $e^d_{e} > 0$ and $e^d_{l} > 0$ be the endowments of each agent of the ruling elite and the poor class, respectively, under a democratic regime. That is, $e^d_{e}$ and $e^d_{l}$ are the endowments of each individual in each one of the groups after the redistribution of endowments that comes with democracy takes place.

15 The setup in this subsection closely follows Bourguignon and Verdier (2000).
For our purposes, we don’t need to assume anything regarding which group’s endowment turns out to be larger after the redistribution takes place (that is, whether $e^d < e^o$). However, we will assume that $e^d < e^o$ and $e^d > e^o$ (the endowment of the elite in a democratic regime is smaller than in the oligarchic regime, and the opposite is true for the poor class). Our corresponding measure of inequality under the democratic regime is: $d^d = e^d - e^d$.

Given the assumption that the endowment of each agent of the poor class is larger under democracy and the endowment of the ruling elite is lower, inequality under democracy is lower than inequality under oligarchy as long as: $\theta = |d^d| / d^o < 1$\(^{16}\). The parameter $\theta$ captures the relative level of inequality between the democratic and the oligarchic regime. The lower is $\theta$, the larger the reduction in inequality in the democratic regime is, relative to the inequality that prevailed in the oligarchic regime. Furthermore, the mean endowment in the population under democracy, $e^d$, is equal to $(1 - p)e^d + pe^d$.

Note the we can now express the endowment of each individual of the ruling elite under democracy as: $e^d = e^d + pd^d = e^d + p\theta d^o$, and the endowment of each member of the poor class in the democratic regime as: $e^d = e^d - (1 - p)d^d = e^d - (1 - p)d^o$.

We will assume that the redistribution of endowments that takes place in a democratic regime does not induce any endowment losses, and as a result the mean endowment in the population under democracy is equal to the mean endowment when the elite is in power $(\bar{e}_e = \bar{e}^d = \bar{e})$\(^{17}\).

4.1.2. Human Capital Formation Technology

As mentioned earlier, agents can only use their wealth endowment to accumulate human capital, which is itself the only individual factor of production of the consumption good. Let $h(e) = (1 + e)^\gamma$ with $0 < \gamma < 1$, be the amount of human capital that an agent with an endowment $e$ can accumulate.

Using the endowment levels derived in the previous section, we can deduce the amounts of human capital acquired by the two types of individuals in each one of the two political

\(^{16}\)Presumably, however, it is most likely that the elite’s endowments after redistribution is still larger than that of the poor class ($e^d > e^d$), and, as a result $d^d > 0$.

\(^{17}\)This assumption is made only for analytical simplicity. However, the setup of the model can easily be extended to allow for endowment losses of redistribution.
regimes. On the one hand, when the elite is in power the average level of human capital in the economy is given by:

\[ h^o = (1 - p)h(e^o_e) + ph(e^o_l) = (1 - p)\left(1 + \bar{e} + pd^o\right)^\gamma + p\left(1 + \bar{e} - (1 - p)d^o\right)^\gamma, \quad (4.1) \]

where the first term is the proportion of the population in the elite times the human capital of each member of the elite, and the second term is the proportion of poor individuals in the population times their human capital.

On the other hand, in a democratic regime the average human capital in the economy is given by:

\[ h^d = (1 - p)h(e^d_e) + ph(e^d_l) = (1 - p)\left(1 + \bar{e} + p\theta d^o\right)^\gamma + p\left(1 + \bar{e} - (1 - p)\theta d^o\right)^\gamma. \quad (4.2) \]

Note that with \(0 < \gamma < 1, h^d > h^o.\)

### 4.1.3. Income

We will assume that each individual's income is determined by her own level of human capital. Also, we will assume the existence of a Lucas-type externality, where individual \(i\)'s human capital is more productive the higher the average human capital in the population is.\(^{19}\) More precisely, let individual \(i\)'s income be:

\[ y(e^j_i, h^j_i) = h(e^j_i)^\alpha \left(\frac{h}{h_i}\right)^\eta, \text{ with } 0 < \alpha, \eta < 1, \text{ and } \alpha + \eta \leq 1, \text{ for } i = e, l \text{ and } j = o, d, \quad (4.3) \]

where \(\alpha\) measures the elasticity of income to individual's human capital, and \(\eta\) captures the size of the human capital externality in production.

Using equation 4.3, the income of each individual of the elite in an oligarchic regime is given by:

\(^{18}\)This follows directly from the assumption that \(\gamma < 1\) and from Jensen's inequality. Note that if we were to allow for an endowment loss of redistribution, \(h^d > h^o\) would only be the case for a sufficiently small \(\gamma\), and/or a sufficiently low endowment loss from redistribution.

\(^{19}\)See Lucas (1988).
and under a democratic regime, income of each individual of the elite is given by:

\[ y^d_e = (1 + \bar{e} + p\theta\delta^o) \alpha^\gamma \left( \bar{h}^o \right)^\eta, \]  

(4.5)

Given that \( \theta < 1 \), the human capital of the elite individuals is lower under the democratic than under the oligarchic regime. However, average human capital in the economy is larger under democracy than in an oligarchic regime (that is, \( \bar{h}^d > \bar{h}^o \)). As a result, if the human capital externality is sufficiently large, and/or the amount of redistribution that can take place under democracy is sufficiently small (\( \theta \) sufficiently large), the elite individuals’ income may be higher under democracy than under oligarchy. In other words, depending on \( \theta \) (which measures how much redistribution can be decided by the poor if the elite extends political power), \( \gamma \) (which measures the concavity of the human capital formation technology), and \( \eta \) (the size of the human capital externality), the income of each individual member of the elite may be larger under democracy than under oligarchy.

Income for each individual of the poor class in the oligarchic regime is given by:

\[ y^o_l = (1 + \bar{e} - (1-p)d^o) \alpha^\gamma \left( \bar{h}^o \right)^\eta, \]  

(4.6)

and, under a democratic regime is given by:

\[ y^d_l = (1 + \bar{e} - (1-p)\theta\delta^o) \alpha^\gamma \left( \bar{h}^o \right)^\eta. \]  

(4.7)

Given that \( \theta < 1 \), and \( \bar{h}^d > \bar{h}^o \), then \( y^d_l > y^o_l \). In words, poor individuals’ income is unambiguously larger under democracy than under oligarchy.\(^{20}\)

Having determined the main components behind income for each group under each one of the political regimes we now turn to studying the dispute of political power.

\(^{20}\)Note that if we allow for endowment losses of redistribution it may be the case that the poor class’ income is lower under democracy.
4.2. The Dispute of Political Power

Given the assumption that the elite initially holds the control of political power, at the beginning of the game the elite chooses whether to extend democracy or not. On the one hand, if the elite’s income under a democratic regime is larger than under oligarchy ($y_e^o < y_e^d$), the elite will decide to extend democracy and no resources are allocated, by either of the two groups to the dispute of political power, nor does any income redistribution (populist expenditure) take place. Recall from the previous section that for this outcome to arise the human capital externality has to be sufficiently large and/or the amount of redistribution of endowments under democracy sufficiently low.

On the other hand, if the elite decides not to extend democracy (that is, if $y_e^o > y_e^d$), it makes two choices. First, it chooses the amount of resources to allocate to the dispute with the poor class over the control of political power. Second, the elite can set up a system of income transfers to the poor class that only takes place conditionally on the elite remaining in power. That is, we assume that the elite can commit to redistributing income to the poor class if it were to remain in power.21 By setting up a system of (irreversible) income transfers, the elite increases the income the poor class would receive if the elite were to keep the control of political power and, as a result, it reduces the incentive of the poor class to dispute the elite’s control of political power. We will refer to this kind of redistribution as “populist” expenditure, in the sense that this type of transfer does not increase the poor class’ productive capacity (their human capital in the model), but only decreases the incentive that the poor have to challenge the elite’s control of political power by increasing the income that the latter group receives in the oligarchic regime. In other words, by engaging in populist expenditure the elite is, in some sense, “buying protection” from the poor class. In contrast, in a democratic regime it is a wealth transfer (not an income transfer).

21 A more complete version of the model, in terms of the system of income transfers being reversible once the elite remains in power, would yield exactly the same results. That version of the model assumes that if the elite does not make the income transfer (once it remains in power), it would face the threat of a “counter-attack” by the poor class. Then, in this second stage of the game the elite would face the decision of whether to fulfill the promise by doing the transfer, or to engage in yet another dispute with the poor. Given that conflict is a costly choice, from this second stage an incentive compatibility constraint arises with regard to the maximum level of income transfer that the elite would fulfill. This version of the model is perhaps too long for an appendix. Nevertheless, it is available from the authors upon request.
that takes place (which is decided by the majority of the population - the poor), and, as a result, poor individuals accumulate more human capital and receive a higher income due to their higher productive capacity.

It will be assumed that the elite enjoys a first-mover-advantage in the dispute of political power. That is, when deciding the allocation of resources to the dispute of political power and to populist redistribution, the elite takes into account how these two choices affect the poor class’ allocation of resources to the dispute of political power. This assumption implies that under certain circumstances the elite may choose a combination of resources (to defend its control of political power and a level of populist redistribution) such that the poor class, optimally, decides not to allocate any resources to disputing the elite’s control of political power. If this is the case, there is complete deterrence, but, a priori we don’t know whether the strategy used by the elite to induce this outcome is based purely on resources allocated to the dispute of political power (with no populist expenditure), if it is based only on a high enough level of populist expenditure (with no resources allocated by the elite to the dispute of political power), or, if the deterrence outcome results from a combination of positive levels of resources allocated by the elite to defending its control of political power and to populist expenditure.

However, under other circumstances it may not be optimal for the elite to completely deter the poor class from challenging its control of political power. In this case, both the poor class and the ruling elite will allocate resources to conflict, and the elite may also, in principle, choose to engage in populist redistribution to diminish the incentive of the poor class to challenge its control of political power.

We will assume that in the dispute over the control of political power the elite is successful in keeping power with probability $q$. This probability is determined, on average, by the following contest success function:

\[ \text{contest success function} \]

\[ 22 \text{In other words, we assume that the elite’s expenditure in defense and the setup of a system of income transfers to the poor represent a commitment on the incumbent’s part: the elite (more formally, the Stackelberg leader in the dispute of political power). For a similar treatment of the leader-follower nature of the contestants in conflict situations see Grossman (1999), Grossman and Kim (1995, 1996a,b), and Gershenson (2002).} \]

\[ 23 \text{This is a standard feature of leader-follower games in the political economy of conflict literature. For a more detailed explanation of this feature of leader-follower conflict games see Gershenson (2002).} \]
where $g_e$ and $g_l$ denote the resources that the ruling elite and the poor classes, respectively, allocate to the dispute of political power.\textsuperscript{24}

The positive parameter $\phi$ in equation 4.8 measures the relative efficiency of resources that the poor class allocates to this dispute. According to equation 4.8, if both $g_e$ and $g_l$ are positive, then the probability of the elite remaining in power is positive but less than one, and it is an increasing concave function of the ratio $g_e/\phi g_l$.

Figure 1 presents the game tree. The first expression in each terminal node is the elite’s payoff and the second one denotes the poor class’ payoff.

### 4.3. Consumption and Optimizing Conditions

As noted earlier, we are assuming that the ruling elite moves first, and then, after observing the elite’s choices, the poor class’ individuals decide on the allocation of resources, if any, to dispute the elite’s control of political power. We start by solving the problem faced by the poor class’ individuals.

#### 4.3.1. The poor class

The poor class individuals’ expected consumption is given by:

$$c_l = q(y^e_l + g) + (1-q)y^d_l - g_l,$$

where $g \geq 0$ is the amount of populist redistribution that the elite will make, if any, conditional on remaining in power.

The poor class chooses $g_l$ in order to maximize $c_l$, taking $g$ and $g_e$ as given. The first order condition of the poor class’ optimization problem is:

\textsuperscript{24}We do not necessarily need to think of the dispute of political power as a violent struggle. For instance, the dispute between the two groups can take the form of lobbying (see Campante and Ferreira, 2004).
\[
\frac{\partial c_i}{\partial g_l} = \begin{cases} 
\frac{\partial q}{\partial g_l}(y_i^e + g - y_l^d) - 1 < 0 & \text{and} \quad g_l = 0 \\
\text{or,} \\
\frac{\partial q}{\partial g_l}(y_i^e + g - y_l^d) - 1 = 0 & \text{and} \quad g_l > 0 
\end{cases}
\] (4.10)

Using equation 4.8 to calculate \( \frac{\partial q}{\partial g_l} \), the poor class’ choice of \( g_l \) can be summarized by the following expression:

\[
g_l = \begin{cases} 
\sqrt{\frac{g_e}{\phi}(y_l^d - y_l^e - g)} - \frac{g_e}{\phi} & \text{for} \quad 0 < g_e + \phi g < \phi(y_l^d - y_l^e) \\
0 & \text{for} \quad g_e + \phi g \geq \phi(y_l^d - y_l^e) 
\end{cases}
\] (4.11)

where \( \phi(y_l^d - y_l^e) \) is the combination of resources allocated by the elite to the dispute of political power and to populist redistribution that would dissuade the poor class from challenging the elite’s control of political power.

### 4.3.2. The Ruling Elite

Expected consumption of the ruling elite is given by:

\[
c_e = q(y_e^e - g) + (1 - q)y_e^d - g_e ,
\] (4.12)

The elite chooses \( g_e \), and sets up a system of income transfer equal to \( g \) (that will be undertaken only if the elite remains in power) in order to maximize \( c_e \) subject to the following constraints:

\[
g_e + \phi g \leq \phi(y_l^d - y_l^e),
\] (4.13)

\[
g_e \geq \varepsilon ,
\] (4.14)

\[
g \geq 0,
\] (4.15)
where $\varepsilon$ is an arbitrarily small number. The first constraint (equation 4.13) says that the ruling elite will not choose a combination of resources allocated to the dispute of political power and populist redistribution that is larger than that necessary to deter the poor class from challenging its control of political power. The second constraint (equation 4.14) would only require that $g_e$ be greater than zero. However, since the probability of the elite remaining in power (given by equation 4.8) is not defined for $g_e = g_l = 0$, we will assume that the elite chooses at least a minimum amount of resources to defend its control of political power $\varepsilon > 0$. The last constraint (equation 4.15) restricts the amount of populist redistribution to be non-negative.

Let $\lambda_1, \lambda_2, \lambda_3 \geq 0$ be the Lagrange multipliers associated with constraints 4.13 through 4.15, respectively.

In making these choices, the elite takes into account not only the direct effect of $g_e$ on $q$, but also the indirect effect of $g_e$ and $g$ on $g_l$ (see equation 4.11).

The elite’s choice of $g_e$ satisfies the following first order condition:

$$
\left( \frac{\partial q}{\partial g_e} + \frac{\partial q}{\partial g_l} \frac{dg_l}{dg_e} \right) (y^e_e - y^d_e - g) - 1 - \lambda_1 + \lambda_2 = 0, \quad (4.16)
$$

and the choice of populist redistribution, $g$, satisfies the first order condition:

$$
\frac{\partial q}{\partial g_l} \frac{\partial g_l}{\partial g} (y^e_e - y^d_e - g) - q - \lambda_1 \phi + \lambda_3 = 0. \quad (4.17)
$$

25 This assumption is made only for analytical convenience. An alternative way of getting around this problem would be to assume that equation 4.8 is:

$$
q = \left\{ \begin{array}{ll}
\frac{g_e}{g_e + g_l} & \text{for } g_l > 0 \\
1 & \text{for } g_l = 0
\end{array} \right.
$$

26 It should be noted that the interior solution of the elite’s problem is a saddle (the details are contained in Appendix 1). This information is used when solving the problem in order to rule out the interior solution as one of the possible equilibria.
4.4. Equilibrium

The derivation of the equilibrium yields the results summarized in the following propositions (see Appendix 2 for the full derivations):

**Proposition 1 (Democracy):** If $y_e^o < y_e^d$, the ruling elite extends democracy.

**Proposition 2 (Military deterrence):** If $y_e^o > y_e^d$, $\phi < 1$, and $\frac{y_e^o - y_e^d}{y_l^d - y_l^o} > 2\phi$, the equilibrium is such that:

i. The poor class chooses $g_l = 0$,

ii. The ruling elite chooses $g_e = \phi(y_l^d - y_l^o)$, and $g = 0$, and

iii. The regime remains oligarchic with probability one.

**Proposition 3 (Populist Deterrence):** If $y_e^o > y_e^d$, $\phi > 1$, and $\frac{1}{4\phi y_l^d - y_l^o} + \frac{y_l^d - y_l^o}{y_e^o - y_e^d} + \varepsilon\frac{(\phi - 1)}{\phi(y_e^o - y_e^d)} - 1 > 0$, the equilibrium is such that:

i. The poor class chooses $g_l = 0$,

ii. The ruling elite chooses $g_e = \varepsilon$ (the minimum possible) and $g = y_l^d - y_l^o - \frac{\varepsilon}{\phi}$, and

iii. The regime remains oligarchic with probability one.

**Proposition 4 (Dispute of Political Power):** If $y_e^o > y_e^d$, $\phi < 1$, and $\frac{y_e^o - y_e^d}{y_l^d - y_l^o} < 2\phi$, or, $\phi > 1$, and $\frac{1}{4\phi y_l^d - y_l^o} + \frac{y_l^d - y_l^o}{y_e^o - y_e^d} + \varepsilon\frac{(\phi - 1)}{\phi(y_e^o - y_e^d)} - 1 > 0$, the equilibrium is such that:

i. The poor class chooses $g_l = \frac{y_l^o - y_l^d}{2\phi} \left(1 - \frac{1}{2\phi} \frac{y_l^d - y_l^o}{y_e^o - y_e^d}\right) > 0$,

ii. The ruling elite chooses $g_e = \frac{1}{4\phi} \frac{(y_e^o - y_e^d)^2}{y_l^d - y_l^o}$, and

iii. The probability that the regime remains oligarchic, $q$, is given by $q = \frac{1}{2\phi} \frac{y_l^d - y_l^o}{y_e^o - y_e^d}$

Figure 2 summarizes the previous propositions for the case where $\varepsilon \to 0$. 
5. Analysis of the Main Results

This section presents an analysis of the equilibrium of the model and provides the comparative statics results derived from numerical simulations. More precisely, we would like to know how the equilibrium level of populist redistribution, repression, or the resources allocated to conflict change as the parameters of the economy change (initial wealth inequality, the amount of wealth redistribution that the poor class can implement in a democratic regime, and the relative importance of the human capital externality in production).

Note from Propositions 1 through 4 that as \( \varepsilon \to 0 \), the resulting equilibrium depends only on the parameter space \( \left[ \phi, \frac{y_e^d - y_e^p}{y^d - y^p} \right] \). Recall that \( \phi \) measures the relative efficiency of the resources that the poor class allocates to the dispute of political power with the elite. The other term, \( \frac{y_e^d - y_e^p}{y^d - y^p} \), can be referred to as the ratio of incentives to dispute political power. In other words, this term is the elite’s incentive to maintain political power vis-à-vis the poor’s incentive to challenge it. If this ratio is high enough, it is relatively cheap for the elite to deter the poor class from attempting a revolution. However, as explained in the beginning of the paper, it was not a priori clear whether the elite would use military repression, populist redistribution, or both, to deter any attempt of revolution. But the results from the model are clear (and simple) in this respect: if the ratio of incentives to dispute political power is high enough, and the relative efficiency of resources allocated by the poor to challenge the elite’s control of political power, \( \phi \), is greater than one, the elite prefers to use populist redistribution and the minimum level possible of military expenditure. In other words, if the poor are more efficient than the elite in the conflict over political power and the ratio of incentives to dispute political power is high enough relative to \( \phi \), the elite will use populist redistribution to deter the poor. In contrast, if \( \phi \) is smaller than one, and the ratio of incentives to dispute political power is high enough relative to \( \phi \), then it is cheaper for the elite to deter the working class using military repression, as they would only need to use a fraction \( \phi < 1 \) of the amount that they would need to use if they wanted to deter the poor with populist redistribution.

To understand under what circumstances the elite would choose not to deter the poor from attempting a revolution note that, ceteris paribus, as \( y^d - y^p \) increases (\( \frac{y_e^d - y_e^p}{y^d - y^p} \) decreases) the cost of repression becomes higher, and, at some point, the elite finds it optimal
to engage in a dispute with the poor class over the control of political power rather than completely repressing a revolution attempt by the latter group. On the one hand, if \( \phi < 1 \), military repression is the equilibrium outcome as long as the ratio of incentives to dispute political control is high enough relative to the poor’s efficiency in disputing political power (\( \phi \)). On the other hand, if \( \phi > 1 \), using populist redistribution is more advantageous for the elite than engaging in a dispute with the working class for the control of political power if \( \phi \) is sufficiently large relative to the ratio of incentives to dispute the control of political power \( \frac{y^o_e - y^d_e}{y^d_l - y^d_l} \) (see Figure 2).

Note that, in equilibrium, if the elite deters the poor from attempting a revolution, it does so using either military repression or populist redistribution, but not both at the same time. In other words, according to the model, military repression and populist redistribution are not used at the same time.

5.1. Comparative Static Results

In this subsection we conduct comparative statics of the main results of the model. We are particularly interested in determining what the model has to say regarding the relationship between the amount of populist redistribution and the initial level of wealth inequality, the amount of redistribution that would take place under democracy, and the relative importance of the human capital externality in production. We will use numerical simulations to understand how the terms \( \frac{y^o_e - y^d_e}{y^d_l - y^d_l} \) change as the key parameters of the model change.

We summarize the main results derived from the numerical simulations in the remainder

---

27 Note that the results we will derive in this section regarding how populist redistribution changes with some key parameters of the model can be directly translated to the case of military repression. Remember that if populist deterrence is the equilibrium outcome, \( g \) (the amount of populist redistribution) is equal to \( y^d_l - y^o_e \). In contrast, if military repression is the equilibrium outcome, the amount of resources used to deter the poor from attempting a revolution is equal to \( \phi(y^d_l - y^o_e) \).

28 The parameter values that we use in the baseline simulations are: \( p = 0.85 \), \( \alpha = 0.9 \), \( \eta = 0.1 \), \( \gamma = 0.8 \), \( \bar{e} = 4 \), \( d^o = 10 \), and \( \theta = 0.9 \). Note that \( \bar{e} = 4 \), and \( d^o = 10 \), imply that \( e^o_e = 12.5 \) and \( e^i_e = 2.5 \). In words, in the baseline scenario, members of the elite have five times as much wealth as members of the poor class. All the results presented in points 1, 2 and 3 are robust to large variations in the parameters of the model.
of this section.

1. **Populist redistribution, if any, increases with (initial) wealth inequality**

First we ask how populist redistribution \( g = y^d_i - y^o_i \) changes as the measure of wealth inequality in the oligarchic regime, \( d^o \), changes.\(^{29}\) Note that by changing \( d^o \) note we are inducing a mean preserving spread in the distribution of wealth in the oligarchic regime (the initial level of wealth inequality). In other words, as \( d^o \) increases, the measure of wealth inequality increases but the mean endowment (wealth) remains constant. As (initial) wealth inequality increases \((\uparrow d^o)\), the ratio of incentives to dispute political power decreases (see Figure 3a).

For a given level of \( \theta \) (a measure of the amount of wealth redistribution that can take place under democracy), a higher level of inequality in the distribution of wealth increases the elite’s as well as the poor’s incentive to dispute political power. However, because we have assumed that human capital is a strictly concave function of wealth, the poor’s incentive to dispute political power increases more than the elite’s incentive to defend it (as the returns from wealth investment in human capital accumulation are higher for the poor than they are for the rich). Furthermore, an increase in wealth inequality increases the amount of populist redistribution necessary for deterring the poor from attempting a revolution. Also, populist redistribution as a percentage of the income of the poor increases with initial wealth inequality (Figure 3b).

2. **As the amount of redistribution that can be undertaken in a democratic regime increases, so does populist redistribution.**

A decrease in \( \theta \) means that wealth inequality in the democratic regime would be lower relative to inequality in the oligarquic regime.\(^{30}\) Therefore, \( \theta \) measures the extent of redistribution under democracy (where a high level of \( \theta \) means that little redistribution can be undertaken under democracy, and vice versa). A decrease in \( \theta \) increases the incentive of the poor to dispute political power as well as the elite’s incentive to defend it. However,\(^{29}\)

\(^{29}\)By doing this we are implicitly assuming that \( \phi > 1 \) and that we are in the parameter space’s region where populist deterrence is the equilibrium outcome (see Figure 2).

\(^{30}\)Recall that the parameter \( \theta = |d^d| / d^o < 1 \) captures how smaller would the measure of inequality be in a democratic regime relative to that in the status quo (oligarchy).
the elite’s incentive increases faster than the poor’s incentive, and as a result the ratio of incentives to dispute political power increases (Figure 4a). Also, if the economy is in the region of the parameter space where populist redistribution is the equilibrium outcome, a higher level of redistribution under democracy (lower \( \theta \)) increases the amount of populist redistribution (and populist redistribution as a percentage of the poor’s income) (Figure 4b). For instance, if there are institutional rules that limit the amount of redistribution that the poor can undertake in a democratic regime, or, if the elite can avoid redistribution in democracy by, for instance, moving their wealth abroad, then the amount of populist redistribution necessary to deter the poor from attempting a regime change would be lower.

3. As the relative importance of the human capital externality in production increases, populist redistribution, if any, decreases.

An increase in \( \eta \) relative to \( \alpha \) means that the human capital externality becomes more important in determining individual’s income. Remember that average human capital is higher under democracy (where the wealth endowments necessary to accumulate human capital are more evenly distributed across the population) than under the oligarquic regime. As a result, an increase in the relative importance of the human capital externality, (an increase of \( \eta \) relative to \( \alpha \)), increases the income that both groups would receive under democracy. The elite’s income in the oligarchic regime decreases as the relative importance of the human capital externality increases. In contrast, the poor’s income under the oligarquic regime increases (as the average human capital becomes more important in determining the poor’s income in the oligarquic regime). As a result, both group’s incentive to dispute political power decreases. However, because the gain of a higher human capital externality is higher for the poor than it is for the rich in the oligarquic regime, the ratio of incentives to dispute political power decreases (Figure 5a).\(^{31}\) Also, as explained above, as the incentive of the poor class to dispute political power decreases, so does the amount of populist redistribution that the elite needs to undertake to deter the former group from attempting a revolution (Figure 5b).

\(^{31}\)In carrying out this exercise we assume that \( \alpha + \eta = 1 \),
6. Concluding Remarks

This paper develops a political economy model that explains the means used by oligarchic political regimes to perpetuate their control of political power, namely, military repression, and populist redistribution. The model also accounts for situations where the oligarchic regime’s elite decides not to deter the poor from attempting a revolution and, as a result, the two groups engage in a dispute for the control of political power. Yet, the model also accounts for the possibility of a peaceful transition to democracy that takes place in the elite’s own interest.

One of the main contributions of our analysis is to provide a rationale for why ruling elites in oligarchic societies, under certain circumstances, use populist redistribution rather than military repression to dissuade a poor class from attempting a revolution that seeks to change the existing political regime. While populist redistribution works by diminishing the poor class’ incentive to challenge the elite’s control of political power, military repression works by increasing the probability that the elite remains in power if a dispute were to take place. In other words, the model explains why, in some cases, the use of an apparently inefficient policy of populist redistribution turns out to be optimal for both groups (the ruling elite and the poor class) when the alternative is the use of military repression or the default to conflict.

Our argument for explaining these four different political scenarios (oligarchic regime with military repression, oligarchic regime with populist redistribution, conflict for the control of political power, and a democratic regime) is based on the elite’s incentive to defend its control of political power vis-à-vis the poor’s incentives to challenge it, and, on the relative efficiency of the poor in challenging the elite’s power. Furthermore, each group’s incentive depends on the “fundamentals” of the economy, namely, a measure of (initial) wealth inequality, the amount of redistribution that the poor (the majority) can undertake if the regime was a democracy, and the relative importance of a Lucas-type human capital externality in production.

According to our main findings, if the elite’s incentives to defend its political power relative to the poor’s incentives to challenge it is high, and the relative efficiency of the poor in an eventual dispute of political power is high enough, the elite chooses to deter
any attempt of revolution by engaging in income redistribution to the poor. We refer to this policy choice by the elite as populist redistribution because, first, it does not increase the poor’s productive capacity and, second, its only objective is to “buy” political support (peace). If, on the other hand, the elite is relatively more efficient than the poor in an eventual dispute for political power, and the ratio of incentives to dispute political power between the two groups is high enough, the elite prefers to deter the poor using military repression. Another possible equilibrium of the model is that of a default to conflict between the two groups for the control of political power. In this case, for the elite it is not worthwhile to completely deter the poor from attempting a transition to democracy. This equilibrium arises if the ratio of incentives to dispute political power is low enough when compared to the efficiency of the poor in challenging the elite’s power. Yet, another possible equilibrium of the model is that in which the elite chooses, in its own interest, to extend political power to the poor.

Using numerical simulations we have shown that populist redistribution (or military repression), if any, increases with initial wealth inequality and with the amount of redistribution that the poor (the majority in the population) can undertake in a democracy, and diminishes with the relative importance of the human capital externality in production.

The model not only provides an explanation for the existence of different political regimes but, also, can shed some light on the understanding of political regime transitions. In a broad sense, we can conjecture (using the model) that the political history of Latin America during the 20th century can be divided into four epochs. The first being an epoch where oligarchic regimes used primarily military repression to deter revolutionary attempts (late 19th century and beginning of the 20th century). This epoch was followed by one where populist redistribution to the poor was the predominant means used by oligarchic government’s elites to placate any attempt by the poor to change the political regime (second quarter of the 20th century and the beginning of the second half of the 20th century). During a third epoch, the second half of the 20th century, Latin America witnessed disputes -many times violent - between pro-oligarquic and pro-democratic forces for the control of political power. Only a few countries in Latin America today have managed to make it into a fourth epoch, that of consolidated democracies.

According to our interpretation, behind the explanation of the transition between these
different political regimes in Latin America lies a decrease in economic inequality, an increase in the institutional limitations on the amount of redistribution that can be implemented in a democratic regime, an increase in openness that allows wealth to be transferred abroad in case of a threat of massive expropriation, an increase in the relative importance of human capital externalities in the production process, and a better organization and representation of the working classes in the political arena (an increase in $\phi$, in terms of our model). While this last paragraph is only a (perhaps valid) conjecture, the understanding of political regime transitions in Latin America and its main determinants doubtlessly deserves further research.
Appendix 1
(The Elite’s problem)

Using equations 4.8 and 4.11 to replace in equation 4.12, and constraints 4.13 through 4.15, the Lagrangian of the elite’s problem is:

\[ L(\cdot) = \sqrt{\frac{\phi}{\phi(y^d_l - y^o_l - g)}} (y^o_e - y^d_e - g) + y^d_e - g_e \]
\[ + \lambda_1 \left[ \phi(y^d_l - y^o_l - g) - g_e \right] + \lambda_2 (g_e - \varepsilon) + \lambda_3 g \]

Before continuing with the full set of Kuhn-Tucker conditions (Appendix 2), note the following:

i. With the assumption that \( g_e > \varepsilon \), we know that a solution to the elite’s maximization problem exists (as we have a continuous function defined on a compact set).

ii. The interior solution to the elite’s maximization problem is a saddle point. Using equation A1-1, the Hessian matrix of the elite’s problem is:

\[
H = \begin{bmatrix}
-\frac{1}{4g_e} \sqrt{\frac{1}{\phi g_e (y^d_l - y^o_l - g)}} (y^o_e - y^d_e - g) & \frac{1}{2} \sqrt{\frac{1}{\phi g_e (y^d_l - y^o_l - g)}} \left( \frac{y^o_e - y^d_e - g}{2(y^d_l - y^o_l - g)} - 1 \right) \\
\frac{1}{2} \sqrt{\frac{1}{\phi g_e (y^d_l - y^o_l - g)}} \left( \frac{y^o_e - y^d_e - g}{2(y^d_l - y^o_l - g)} - 1 \right) & \frac{1}{4} \sqrt{\frac{g_e}{\phi g_e (y^d_l - y^o_l - g)}} \left( \frac{3(y^o_e - y^d_e - g) - 4(y^d_l - y^o_l - g)}{(y^d_l - y^o_l - g)^2} \right)
\end{bmatrix}
\]

where the first leading principal: \( |A_1| = -\frac{1}{4g_e} \sqrt{\frac{1}{\phi g_e (y^d_l - y^o_l - g)}} (y^o_e - y^d_e - g) < 0 \), and the second leading principal: \( |A_2| = \left[ (y^d_l - y^o_l - g) - (y^o_e - y^d_e - g) \right]^2 \geq 0 \).
Appendix 2

(Derivation of the Equilibrium)

First, we rewrite the first order conditions of the elite’s maximization problem. Using equation 4.8 to calculate \( \frac{\partial q}{\partial g_e} \) and \( \frac{\partial q}{\partial g_l} \), equation 4.16 becomes:

\[
\frac{y_e^0 - y_e^d - g}{y_l^d - y_l^0} \cdot \left( \frac{g_l}{g_e} - \frac{dg_l}{dg_e} \right) - 1 = \lambda_1 - \lambda_2,
\]

where:

\[
\frac{dg_l}{dg_e} = \begin{cases} 
\frac{1}{2} \sqrt{\frac{y_l^d - y_l^0 - g}{\phi g_e}} - \frac{1}{\phi} & \text{for } 0 < g_e + \phi g < \phi(y_l^d - y_l^e) \\
0 & \text{for } g_e + \phi g \geq \phi(y_l^d - y_l^e)
\end{cases}
\]

Using equation 4.8 to calculate \( \frac{\partial q}{\partial g_l} \), equation 4.17 becomes:

\[
\frac{y_e^0 - y_e^d - g}{y_l^d - y_l^0} \cdot \frac{\partial g_l}{g} - q = \lambda_1 \phi - \lambda_3,
\]

where:

\[
\frac{\partial g_l}{g} = \begin{cases} 
\frac{-1}{2} \sqrt{\frac{g_e}{\phi(y_l^d - y_l^0 - g)}} & \text{for } 0 < g_e + \phi g < \phi(y_l^d - y_l^e) \\
0 & \text{for } g_e + \phi g \geq \phi(y_l^d - y_l^e)
\end{cases}
\]

and:

\[
q = \begin{cases} 
\sqrt{\frac{g_e}{\phi(y_l^d - y_l^0 - g)}} & \text{for } 0 < g_e + \phi g < \phi(y_l^d - y_l^e) \\
1 & \text{for } g_e + \phi g \geq \phi(y_l^d - y_l^e)
\end{cases}
\]

The Kuhn-Tucker conditions are:

\[
\begin{align*}
\lambda_1 \geq 0 & \quad \frac{\partial L}{\partial x_1} = \phi(y_l^d - y_l^e - g) - g_e \geq 0 & \quad \lambda_1 \left[ \phi(y_l^d - y_l^e - g) - g_e \right] = 0 \\
\lambda_2 \geq 0 & \quad \frac{\partial L}{\partial x_2} = g_e - \varepsilon \geq 0 & \quad \lambda_2 \left( g_e - \varepsilon \right) = 0 \\
\lambda_3 \geq 0 & \quad \frac{\partial L}{\partial x_3} = g \geq 0 & \quad \lambda_3 g = 0
\end{align*}
\]
Using the information of Appendix 1 as well as the Kuhn-Tucker conditions, in principle, there are six possible cases:

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<tr>
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<th>Case IB</th>
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<td>$\lambda_1 = 0$, and</td>
<td>$\lambda_1 = 0$, and</td>
</tr>
<tr>
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<td>$\phi(y_1^d - y_1^o - g) - g_e &gt; 0$</td>
</tr>
<tr>
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<tr>
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<td>$\lambda_3 = 0$, and</td>
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<tr>
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<td>$g &gt; 0$</td>
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<table>
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<th>Case IIB</th>
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</thead>
<tbody>
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<td>$\lambda_1 = 0$, and</td>
</tr>
<tr>
<td>$\phi(y_1^d - y_1^o - g) - g_e &gt; 0$</td>
<td>$\phi(y_1^d - y_1^o - g) - g_e &gt; 0$</td>
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<td>$g = 0$</td>
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<table>
<thead>
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<tbody>
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</tr>
<tr>
<td>$\phi(y_1^d - y_1^o - g) - g_e = 0$</td>
<td>$\phi(y_1^d - y_1^o - g) - g_e = 0$</td>
</tr>
<tr>
<td>$\lambda_2 = 0$, and</td>
<td>$\lambda_2 = 0$, and</td>
</tr>
<tr>
<td>$g_e &gt; \varepsilon$</td>
<td>$g_e = \varepsilon$</td>
</tr>
<tr>
<td>$\lambda_3 \geq 0$, and</td>
<td>$\lambda_3 = 0$, and</td>
</tr>
<tr>
<td>$g = 0$</td>
<td>$g &gt; 0$</td>
</tr>
</tbody>
</table>

**Analysis of the different cases:**

1. Case IA satisfies the first order conditions if:

   $$(\text{iaa}) \quad \varepsilon \geq \frac{1}{4\phi} \left( \frac{y_e^o - y_e^d}{y_1^d - y_1^o} \right)^2,$$
   and for (iab) $\frac{y_e^o - y_e^d}{y_1^d - y_1^o} \leq 2$.

   Case IIA satisfies the first order conditions for:

   $$(\text{iiaa}) \quad \frac{y_e^o - y_e^d}{y_1^d - y_1^o} \leq 2.$$

   Furthermore, the level of $g_e$ that solves equation A2-1 in this case is

   $$g_e = \frac{1}{4\phi} \left( \frac{y_e^o - y_e^d}{y_1^d - y_1^o} \right)^2.$$

   Note that if condition (iaa) holds with equality, cases IA and IIA are equivalent (in terms of $c_e$). However, if (iaa) holds with strict inequality, the elite’s consumption is larger under case IIA than under case IA (that is: $c_e^{\text{IIA}} > c_e^{\text{IA}}$).

   **Proof:** Let $\varepsilon = \frac{\beta^2 (y_e^o - y_e^d)^2}{4\phi (y_1^d - y_1^o)}$, with $\beta > 1$. Using the last expression, the conditions of Case IA, and equations 4.8 and 4.11 to replace in equation 4.12, we have:
\[
c^\text{IIA} = \frac{\beta}{2\phi} \left( \frac{y_c^d - y_e^d}{y_i^d - y_i^o} \right)^2 \left( 1 - \frac{\beta}{2} \right) + y_e^d. \]
Furthermore, using the level of \( g_e \) that solves the first order conditions in Case IIA, the conditions of Case IIA, and equations 4.8 and 4.11 to replace in equation 4.12, we obtain: \( c^\text{IIA} = \frac{1}{4\phi} \left( \frac{y_c^o - y_e^d}{y_i^d - y_i^o} \right)^2 + y_e^d. \) Finally, note that \( c^\text{IIA} > c^\text{IA} \) if \( (\beta^2 - 1)^2 > 0. \)

2. Case IB satisfies the first order conditions if:

\( (\text{iba}) \varepsilon \geq \frac{1}{4\phi} \left( \frac{y_c^o - y_e^d - g}{y_i^d - y_i^o - g} \right)^2, \) and for \( (\text{ibb}) \frac{y_c^o - y_e^d}{y_i^d - y_i^o} \leq 2. \) Furthermore, the level of \( g \) that solves equation A2-2 in this case is \( g = 2(y_i^d - y_i^o) - (y_c^o - y_e^d). \)

Case IIB satisfies the first order conditions for:

\( (\text{ib}) \frac{y_c^o - y_e^d}{y_i^d - y_i^o} \leq 2. \) Furthermore, the level of \( g_e \) that solves equation A2-1 in this case is \( g_e = \frac{1}{4\phi} \left( \frac{y_c^o - y_e^d - g}{y_i^d - y_i^o - g} \right)^2, \) and the level of the level of \( g \) that solves equation A2-2 in this case is \( g = 2(y_i^d - y_i^o) - (y_c^o - y_e^d). \)

Note that if condition (iba) holds with equality, cases IB and IIB are equivalent (in terms of \( c_e \)). However, if (iba) holds with strict inequality, the elite’s consumption is larger under case IIB than under case IB (that is: \( c^\text{IIB} > c^\text{IB} \)).

Proof: Let \( \varepsilon = \frac{\beta^2}{4\phi} \left( \frac{y_c^o - y_e^d - g}{y_i^d - y_i^o - g} \right)^2, \) with \( \beta > 1. \) Using the last expression, the level of \( g \) that solves equation A2-2, the conditions of Case IB, and equations 4.8 and 4.11 to replace in equation 4.12, we have: \( c^\text{IB} = \frac{\beta}{\phi} (2 - \beta) \left[ (y_c^o - y_e^d) - (y_i^d - y_i^o) \right] + y_e^d. \) Furthermore, using the levels of \( g_e \) and \( g \) that solve equations A2-1 and A2-2 respectively, the conditions of Case IIB, and equations 4.8 and 4.11 to replace in equation 4.12, we obtain: \( c^\text{IIB} = \frac{1}{\phi} \left[ (y_c^o - y_e^d) - (y_i^d - y_i^o) \right] + y_e^d. \) Finally, note that \( c^\text{IIB} > c^\text{IB} \) if \( (\beta^2 - 1)^2 > 0. \)

3. Note from the previous two points that cases IIA and IIB are possible solutions when \( \frac{y_c^o - y_e^d}{y_i^d - y_i^o} \leq 2. \) We can use the information obtained for each one of these two cases from the
previous points to compare $c_e^{IIA}$ and $c_e^{IIB}$. Comparing the expressions derived in points 1 and 2, note that $c_e^{IIA} \geq c_e^{IIB}$ if 
\[
\left(\frac{1}{2} \frac{y_e^o - y_e^d}{y_l^d - y_l^o} - 1\right)^2 \geq 0.
\]

So far, point 1 ruled out Case IA, point 2 ruled out Case IB, and point 3 ruled out Case IIB.

4. Case IIIA satisfies equation A2-1 and $\lambda_1 \geq 0$ for:

\[(iiiia) \quad \frac{y_e^o - y_e^d}{y_l^d - y_l^o} \geq 2\phi.\]

Furthermore, note that in this case $g_e = \phi(y_l^d - y_l^o)$. Using this last expression, and equations 4.8 and 4.11 to replace in equation ??, we obtain:

\[c_e^{IIIA} = y_e^o - \phi(y_l^d - y_l^o).\]

Case IIB satisfies equations A2-1, A2-2, and the conditions $\lambda_1, \lambda_2 \geq 0$ for:

$\phi > 1$. Using the conditions of Case IIB and equations 4.8 and 4.11 to replace in equation 4.12, we obtain: $c_e^{IIIB} = y_e^o - (y_l^d - y_l^o) - \varepsilon(1 - \frac{1}{\phi})$.

Note that with $\varepsilon \to 0$, $c_e^{IIIB} > c_e^{IIIA}$ when $\phi > 1$.

5. Using the information of point 1 and point 5, in the area of the parameter space where:

$\phi > 1$ and $\frac{y_e^o - y_e^d}{y_l^d - y_l^o} \leq 2$, there are two remaining cases: IIA and IIB. Comparing the elite’s consumption level derived above for these two cases we obtain that: $c_e^{IIA} \geq c_e^{IIB}$ if:

\[\frac{1}{4\phi} \frac{y_e^o - y_e^d}{y_l^d - y_l^o} + \frac{y_l^d - y_l^o}{y_e^o - y_e^d} + \varepsilon \frac{(\phi - 1)}{\phi(y_e^o - y_e^d)} - 1 \geq 0.\]

Note that as $\varepsilon \to 0$, this condition reduces to

\[\frac{1}{4\phi} \frac{y_e^o - y_e^d}{y_l^d - y_l^o} + \frac{y_l^d - y_l^o}{y_e^o - y_e^d} - 1 \geq 0.\]

This last expression (when it holds with equality) generates the function that separates the region of the parameter space where there is an equilibrium with populist deterrence from that where there is a dispute of political power (see Figure 2).
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Ruling elite chooses ge and sets up a system of transfers g that will be implemented only if the elite remains in power (cannot be taken back if the elite remains in power).

Poor class takes as given ge and the commitment of a transfer g, and chooses gl.

Dispute of political power

- elite remains in power
  - prob=q
    - $y_e^o - g - g_e$
    - $y_l^o + g - g_l$
- poor class obtains political power
  - prob=1-q
    - $y_e^d - g_e$
    - $y_l^d - g_l$
Figure 2
Equilibrium

\[
\frac{y_e^o - y_e^d}{y_i^d - y_i^o}
\]

"Military deterrence"

\[g_e = g_e^{det} = \phi (y_i^d - y_i^o)\]
\[g_i = 0\]
\[g = 0\]

"Populist deterrence"

\[g_e = \epsilon\]
\[g_i = 0\]
\[g = y_i^d - y_i^e\]

"Dispute of Political Power"

\[0 < g_e < g_e^{det}\]
\[g_i > 0\]
\[g = 0\]

"Democracy"
Figure 3

(a) Ratio of Incentives to Dispute Political Power vs. Wealth Inequality

(b) Populist Redistribution vs. Wealth Inequality
Figure 4

(a) Ratio of Incentives to Dispute Political Power vs. Extent of Wealth Redistribution under Democracy

(b) Populist Redistribution vs. Extent of Wealth Redistribution under Democracy

- Populist Redist.
- Pop. Redist. / Income of the poor
Figure 5

(a) Ratio of Incentives to Dispute Political Power vs. Relative Importance of the H.K. externality

(b) Populist Redistribution vs. Relative Importance of the H.K. externality ($\eta$)