

Growth and Endogenous Political Institutions

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Abstract

In this paper we study the dynamics of political institutions and the different public policies they imply. While political institutions are influenced by economic development, they are in turn a key determinant of the development process. In particular, democratic institutions implement different public policies than oligarchies, and therefore imply different economic outcomes. Economic development in turn increases the likelihood of transitions from oligarchy to democracy because it changes the relative costs for and benefits from the public policies arising under democratic regimes. We show that different scenarios of political development can arise endogenously: democratic transitions under the shadow of social conflict and democratic transitions initiated by the oligarchic elite. Moreover, we show that democratic regimes tend to provide more efficient public policies, and more redistribution than oligarchic regimes. The results are compared to historical and empirical evidence, and the consequences of the simplifying assumptions are discussed in detail.

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1 Introduction

Democratic societies are usually associated with higher levels of economic development than non-democratic societies. While this correlation is often taken as a stylized fact, relatively few theoretical contributions investigate the relationship between the evolution of political institutions and the level of economic development or economic growth. The observed positive correlation indeed raises the question whether democratic systems exhibit inherently more efficient characteristics and are therefore more conducive to economic development than non-democracies, or whether the adoption of more democratic political institutions is only a by-product of economic development. Several contributions have tried to show empirically that good political institutions provide a better environment for economic activity, and that institutions are in fact the most important factor in explaining the huge differences in growth performances observed across countries. Rodrik, Subramanian, and Trebbi (2004) for example show that once institutions are controlled for, the degree of openness has not direct effect on incomes, while geography has at best weak direct effects. These results are in line with other recent empirical studies like Mauro (1995), Hall and Jones (1999), Acemoglu, Johnson, and Robinson (2001), and suggest that countries with better political institutions, more secure property rights and a well functioning system of checks against government's power will invest more in both physical and human capital and will use these factor more efficiently to produce a greater level of income. Merely comparing non-democratic regimes to democracies is not sufficient in this context, however, since democratic systems characterized by a complex set of rules governing social interactions and the resolution of conflicts of interests which play an important role in shaping the state's interventions in the marketplace. In search for the precise channels and institutional details that determine economic outcomes, a substantial literature analyzes the economic consequences of the political institutions arising under democracies. This includes, among others, investigations of the effects of the political system, the role of voting systems (majoritarian vs proportional) or of the form of state (unitary vs federal) to name a few, as well as their implications for various governmental activities and economic performance in general, see e.g. Persson, Roland, and Tabellini (2000) as well as two recent books by Persson and Tabellini (2003) and Alesina and Glaeser (2004) for surveys of theories and empirical evidence. Several findings emerge. The rules governing the aggregation of conflicting interests, in a word the political institutions, are not neutral. These rules have a first order effect on the economic performance and the growth possibilities of a community as a whole, but also on the relative well being of its various members. Institutions appear to exhibit a large degree of persistence and path dependence, compare for example the discussion of the differences between the U.S. and continental Europe provided by Alesina and Glaeser (2004), who document the long term effects of the early constitutional stages.

Once these findings are acknowledged, the next logical questions that

arise are why not all countries adopt democratic regimes, under which conditions countries democratize, and which are the driving forces for democratization. The question of why countries democratize(d) has triggered substantial research effort, particular in the political sciences, but it appears far from being a settled issue. Recent economic theories of democratization highlight different channels of transition from oligarchy to democracy. In a series of articles, Acemoglu and Robinson (2000, 2001, 2003, 2004) emphasize the role of coups and suggest that the threat of a revolution might have been crucial in inducing incumbent elites to give up their monopoly of political power and extend the franchise to larger groups of the population.¹ Democracy essentially serves the role of a commitment device since the under oligarchy the elite cannot credibly commit to future redistribution. The elite receives no intrinsic gains from democratization but it is forced ‘from below’ to concede power and, eventually, redistribute to the poor. Another line of research highlights the productive function of democratic government and argues that it was actually in the interest of the elite itself to democratize. Lizzeri and Persico (2004) show that in some cases, like England, democratization might have actually been in the elite’s own interest. The reason is that the provision of public goods, or the prevention of inefficient rent-seeking and corrupt behavior was easier under democracy than under oligarchy, as a consequence of the stronger checks and balances, and the possibility to spread responsibility on more shoulders. An alternative argument why the elite might prefer to give up its monopoly in political power, based on superior possibilities of property rights protection under democracy, is provided by Gradstein (2004b). Bourguignon and Verdier (2000) propose a model in which democracy provides better incentives to accumulate growth-enhancing human capital, inducing the oligarchic elite to release political power and trigger a democratic transition for efficiency reasons. These theories of democratization ‘from above’ all emphasize that certain factors or public goods, such as property rights protection or education, become more important as an economy develops and are more easily provided under democracy.² In contrast to the previously mentioned line of argument, however, the latter papers provide arguments for the elite implementing democracy ‘from above’ to reap the benefits of that form of government but without being, strictly speaking, under a serious threat of a revolution or coup.³ Taken together, the theories of democratization ‘from below’ implicitly focus on the redistributive role of democracies, while theories of democratization ‘from above’ stress the productive role of public good and service provision as driving forces behind democratic transitions.

¹This ‘social conflict’ view is also emphasized in Acemoglu, Johnson, and Robinson (2004).

²See e.g. Gradstein (2004a) for a dynamic model of the emergence of property rights protection in the context of economic development.

³An argument for why the extension of the franchise can be in the interest of those holding oligarchic power, which builds on an internal struggle between members of the elite can be found in the paper by Oxoby and Llavador (2004). In Ticchi and Vindigni (2004b), the extension of the franchise can be in the interest of the elite can if this helps in motivating the masses to provide effort in wars.

This paper provides a simple theory of endogenous political institutions based on the interaction between the intertwined processes of economic development and democratization. The transition to democracy is seen as an endogenous event. While it is certainly true that the process of institution building is incremental overtime, it is possible to identify key periods for the formation of political institutions in the history of each country. In a very long run perspective as the one adopted here, democratization can therefore be interpreted as a unique event characterized by the abolition of oligarchic states. We propose a simple dynamic model of democratization that illustrates the different effects of political institutions on the primary functions of the public sector, and that can generate both types of democratization, democratization 'from below' and 'from above'. The basic idea underlying our approach is that democratization is essentially about provision of productive public goods and redistribution of incomes. In particular, as argued in the literature, the extension of the franchise and democratization can occur because it is in the elite's own interest, a democratization 'from above', or because the elite is forced to democratize through the threat of open conflict, a democratization 'from below'. How democratization proceeds, depends primarily on the economic environment, the level of development, and development history, and is therefore to a large extent endogenous. The main differences between oligarchy and democracy concern public good provision and redistribution. In particular, the fact that decisions about redistribution and public good provision are made by different groups of interest under both regimes imply different public policies. Since our theory focusses on the dynamic emergence of different transition regimes, we abstract from modelling constitutional details. These are the focus of several other recent contributions.⁴ We rather focus on the two main traditional functions of governments, namely public good provision and income redistribution. The model predicts a permanent bidirectional feedback mechanism between political institutions and economic development. In terms of public policies, democracies are predicted to create environments which are more favorable for economic activities (i.e. are more efficient in the public good provision) than the ones implemented under oligarchies. Finally democracies implements more progressive income redistribution.

Several empirical contributions found that economic development apparently serves to stabilize democratic systems, but found no causal effect of economic development on the timing of democratization, see Przeworski *et al.* (1997, 2000). Recent empirical evidence, however, seems to indicate that there is also a positive causal effect of economic development on the probability that a country democratizes as well as a positive effect of de-

⁴Aghion, Alesina, and Trebbi (2004) study the optimal constitutional size of a minority required to block legislation, and conversely the size of the supermajority needed to pass legislation. Ticchi and Vindigni (2004a) address the choice between a majoritarian and a consensual democracy made by a rich elite and show that the elite is likely to choose a majoritarian democracy the larger the (exogenous) degree of inequality. These studies, which are inherently static in nature, provide a deeper economic understanding of the reasons for the emergence of different political institutions.

velopment on the stability of democracies, see Barro (1999) and Boix and Stokes (2003).

This paper is therefore at the intersection of several branches of literature. Apart from contributing to the recent literature on democratization and the forces that drive the transition that was mentioned above, our model contributes to the literature on the transition between different regimes of long-term growth. The mechanism driving our results is based on a positive feedback effect between economic development and the democratic transition, where the acceleration in growth derives from the more efficient provision of productive public goods under democracy. This channel is complementary to the channels based on fertility in the model by Galor and Weil (2000), based on human evolution in Galor and Moav (2002), based on the role of life expectancy in Cervellati and Sunde (2002), and on the role of public education Galor, Moav, and Vollrath (2004). For an exhaustive survey on this literature, see Galor (2004).

The paper proceeds as follows. Section 2 lays out the basic economic framework and the potential for political conflict. Section 3 analyzes the model and presents the major result, a characterization of the interactions between economic and political development of an economy. Section 4 discusses the model implications in a historical perspective and presents some empirical findings corroborating the theory, while section 5 discusses some of the simplifying assumptions. Finally, section 6 concludes and points at directions for future research.

2 The Basic Framework

This section presents the economic environment, and the decision problem faced by individuals with different factor endowments. We then introduce and discuss the potential for political conflict that arises in this economy.

2.1 Economic Environment

We consider an economy that is populated by an infinite sequence of subsequent generations t of individuals i . Each individual has one parent and one offspring, there are no fertility decisions to be made. Consequently, there is no population growth over generations, with the size of each generation being $L_t = L$. During their life, individuals inelastically supply one unit of labor on the labor market, and earn in exchange a competitively determined wage for their labor input. We abstract from labor-leisure choices. Moreover, individuals are endowed with physical capital, which they inherit as bequests from their parents. A fraction $0 < \gamma < 1/2$ of individuals is also endowed with land, while all the land is distributed equally among land-owners. Individuals maximize their utility, which is logarithmic in

consumption c and bequests b ,⁵

$$u_t^i = u(c_t^i, b_t^i) = (1 - \beta) \log c_t^i + \beta \log b_t^i. \quad (1)$$

All individuals therefore optimally choose to spend a constant fraction $(1-\beta)$ of their individual income y_t^i on consumption, such that $c_t^i = (1-\beta)y_t^i$, while they bequeath the rest of their income to their offspring, hence $b_t^i = \beta y_t^i$. To keep things simple, we assume that bequests can only be invested into physical capital K , and that, conversely, capital can only be created through investing the bequests of the preceding generation. There is no other possibility to invest resources in capital formation. At the end of a generation's lifetime, its capital fully depreciates. Consequently, the capital stock available to an individual corresponds to his parent's bequests, such that $k_t^i = b_{t-1}^i = \beta y_{t-1}^i$. Land resources are ready to use for production for their owners. Moreover, land does not depreciate. Land is bequeathed from generation to generation.⁶ Individuals use all their factor endowments for the generation of income by supplying them to the production process and selling them on the respective factor markets. Individual incomes are thus determined by the respective endowments and the corresponding factor prices realized on the competitive factor markets. For notational convenience, we denote aggregate variables by upper case letters, and individual variables by lower case letters. Consequently, the aggregate resources available in the economy during the existence of generation t are labor input L , an aggregate capital stock $K_t = B_{t-1} = \int b_{t-1}^i di$, and land N . Also, we introduce the following notation for average per capita variables: average individual incomes $y_t = Y_t/L$, average capital endowment $k_t = K_t/L$, and average land endowment $n = N/L$.

The economy is fully competitive, and all resources are employed in the production of a single commodity Y according to a production technology exhibiting constant returns to scale of the form

$$Y_t = [(1 + G_t)A_t K_t + N]^\alpha L^{(1-\alpha)}. \quad (2)$$

Besides the resource inputs, production is affected by a productivity index A_t , which reflects the technological state of the art of production, and by a productivity enhancing public good G_t , which reflects for example infrastructure. Public goods provision is discussed in more detail in the next section. Technological progress, as implied by the production function, relatively favors capital-intensive production as opposed to land-intensive production. This is expressed by the fact that productivity of physical capital

⁵This formulation of the utility function is not crucial for the main insights, but simplifies the analysis considerably. It is noteworthy, however, that the development dynamics of the economy, as shown below, essentially depend on the distribution of factor endowments, and hence the decision on consumption and bequest, which in reality may differ across different groups of the society.

⁶For simplicity, assume that there is no market for land, so no land is ever traded. This assumption is without loss of generality. In fact, as will become clear below, due to the timing of events even allowing for land markets would not change the results as land markets are implicitly included in the model through the rents land generates.

in the form of A changes over the course of generations, while that of land remains constant and is normalized to 1. To keep the model simple, and since we are not interested in analyzing the determinants of productivity growth, we assume that technological innovations arrive only with the birth of a new generation. The process of technological progress is exogenous according to⁷

$$\frac{A_t - A_{t-1}}{A_{t-1}} = a_t = a > 0 \quad \forall t. \quad (3)$$

The production function is formally equivalent to the production of a homogeneous commodity in two distinct sectors, one employing exclusively land resources together with labor, and the other exclusively physical capital together with labor.⁸ Since the economy is competitive, all factors are paid according to their marginal products. For convenience, we normalize population size to 1 in what follows, such that $L_t = 1 \quad \forall t$. Hence, equilibrium factor prices in terms of wages, capital rents and land rents, in the economy are given by

$$w_t = (1 - \alpha) [(1 + G_t)A_t k_t + n]^\alpha; \quad (4)$$

$$r_t = \alpha [(1 + G_t)A_t k_t + n]^{\alpha-1} (1 + G_t)A_t; \quad (5)$$

$$\text{and } \rho_t = \alpha [(1 + G_t)A_t k_t + n]^{\alpha-1}, \quad (6)$$

respectively. The production technology is therefore able to replicate the permanent growth in capital stocks and incomes experienced by most countries in the western world. Moreover, while the implied income share of labor is stable over generations, as was the case in history, the incomes generated by capital grow at the expense of the incomes generated by land over the course of development, see also Acemoglu and Robinson (2003). Individual incomes, which can be allocated optimally to consumption and bequests, are determined by the individual resources employed in the production process and the respective rents accruing to them. Hence, all individuals earn a labor income plus a capital income. Those individuals i belonging to the fraction γ of the population owning land, which we denote in the following by $i \in E$ and refer to as the ‘landlord elite’, additionally own income from renting out their land to the production process. Note that due to the equal distribution of land among the elite, every landowner has land resources of $n^E = n/\gamma$. On the other hand, members of the group without land, the landless people or ‘proletariat’, $i \in P$, have no land, so $n^P = 0$, and hence also enjoy no incomes from land resources. Individual gross incomes can thus be written as

$$y_t^i = w_t + r_t k_t^i + \rho_t n_t^i \quad \text{with } i \in \{E, P\}. \quad (7)$$

Substituting with the expressions for equilibrium factor prices given by conditions (4), (5) and (6), and denoting effective physical capital as $\tilde{k}_t(G_t)$,

⁷Endogenizing the rate of technical progress would not affect the main argument.

⁸Also Acemoglu and Robinson (2003) use the specification used for the production technology in equation (2).

with

$$\tilde{k}_t(G_t) := (1 + G_t)A_t k_t, \quad (8)$$

income of individual i , $i \in \{E, P\}$, can be expressed as

$$y_t^i = \left(\tilde{k}_t(G_t) + n \right)^\alpha \left[(1 - \alpha) + \frac{\alpha \tilde{k}_t(G_t)}{\tilde{k}_t(G_t) + n} \frac{k_t^i}{k_t} + \frac{\alpha}{\tilde{k}_t(G_t) + n} n^i \right]. \quad (9)$$

This immediately implies that average per capita income in the economy can be calculated as $y_t = \left(\tilde{k}_t(G_t) + n \right)^\alpha$.

2.2 Institutions and the Public Sector

Next, consider the role of the state. The main purpose of the paper is to provide a simple model that allows to characterize the dynamic interdependencies between economic development and political development in terms of democratization. Political decisions are essentially made along two dimensions, the size and the structure of the state in form of the budget and its use. The total budget is given by tax revenues R . Political decisions always affect also the use of this budget, which is subject to the fundamental trade-off between efficiency and equity. Efficiency-enhancing activities of the state are represented by the provision of a public good G , which enters the production function (2) in the form of higher productivity of physical capital. On the other hand, the state can pursue equity-driven activities, condensed as purely non-productive lump-sum redistribution in form of transfers T , which are equally distributed among the population. We assume that there are no inefficiencies affecting either public good provision or redistribution, in the sense that neither of these two uses of tax revenues implies a waste of income. Rather, every unit of income used for public good provision produces one unit of public good, and likewise for redistribution. The budget must be balanced for every generation, since there are no capital markets allowing for intergenerational loans and debt. The budget is financed by proportional income taxation, implying a budget of the state for a given generation of individuals of $\tau Y_t \geq G_t + T_t$.

Note that we abstract from timing issues regarding production, taxation of income and public goods provision or redistribution. Rather, this formulation is meant to highlight the role of the size and structure of the public sector for individuals, while they themselves have to decide about both dimensions. Meanwhile, intergenerational issues are neglected, since they do not add fundamental insights to the main argument of our paper.⁹ In the following, the tax rate τ required to finance the public sector, as well as the amounts of redistributive transfers T , and public goods G to be provided by the public sector, are determined as the outcome of a political process to be specified next. Of course, given τ and G and the respective

⁹One could argue that also in reality, by projecting future budgets, democratically elected governments adhere to a similar reverse timing with respect to production, taxation and spending the tax revenues on redistribution or public goods, which affect the production process itself.

total production outcome Y , the size of the public sector τY as well as the size of the redistributive component of the public sector T are determined residually, so that by choosing two variables the size and structure of the public sector are fully determined.

2.3 Political Conflict and Timing of Events

Size and structure of the public sector are chosen by the respective group of the population that is in power. Hence, power itself is defined as the possibility to decide upon issues such as public goods provision and redistribution. Public sector variables are essentially determined by the median voter of the respective electorate. Individuals are only heterogeneous with respect to whether they own land or not, and hence there are only two political regimes: oligarchy, where one group of individuals has exclusive political power, while the other group has no vote; and democracy, where all individuals, regardless of their status with respect to land-ownership, enjoy suffrage. Despite having exclusive decision power, we assume that an oligarchic elite cannot forcefully tax and expropriate the politically subordinate class. Hence, if the elite desires a budget for some purpose, for example the provision of productive public goods, it can only finance the required tax revenues itself, but not force non-elitist people to participate. A crucial feature of democracy is the fact that the rules of the ‘democratic game’ are fixed and known to everyone, in particular when it comes to making collective decisions, such as the size and structure of the state. The distinction to oligarchy in this respect is that the ruling oligarchic elite sets the rules itself, and hence can change them unilaterally, e.g. decide autonomously on the amount of public good provision. This is not possible under democracy.

Under a landlord oligarchy, the elite can determine T as well as the optimal level of public good provision G , both of which landlords have to fully finance themselves. Hence, the elite completely determines the public sector. Under democracy, on the other hand, the constitution sets the rules for redistribution and public good provision, and the levels of public good provision G and redistribution T are determined by majority rule. Since $\gamma < 1/2$, this means that it is essentially chosen by a member of the landless, the group of the median voter.

Following the historical experience, we assume that initially political suffrage was confined to the land-owning elite only, implying an oligarchy of landowners. Of course, there are possibilities to change the political regime. Clearly, the respective ruling elite can offer to give up exclusive political power and extend the suffrage to other individuals as well.¹⁰ On the other hand, if this is not the case, the politically excluded may try to obtain power by going to open conflict and violently challenging the ruling elite. To model this possibility, we adopt a ‘guns model’, according to which the winner of an open conflict, if it arises, is determined by the

¹⁰We exclude the possibility of discretionary extension of suffrage to particular persons, and assume that it can only be done regarding entire groups. In other words, apart from land ownership, there is no, potentially ‘unobservable’, heterogeneity of individuals.

group with preponderance in fighting power. Fighting power is determined by all the resources, persons and physical capital, that are available to a specific group. In the current context, there are only two observationally distinct groups, where the landlord elite is able to unleash a total conflict power of $\gamma (K_t^E)$, while the proletariat is able to set free a fighting power of $(1 - \gamma)K_t^P$.¹¹ Note that realizing fighting power effectively and credibly does not require any investments. Rather, the resources can be thought of as being fully reversible, leading to conflict potential that can be mobilized instantaneously and costlessly in the case an open conflict occurs. Consequently, the outcome of an open conflict depends on the sign of the following ‘guns condition’,

$$\gamma k_t^E \begin{matrix} \geq \\ < \end{matrix} (1 - \gamma)k_t^P . \quad (10)$$

In other words, the elite prevails with its political will if they have more conflict potential, i.e. if the left hand side is larger than (or equal to) the right hand side, while the proletariat enforces its desired political system if the opposite is true. Note that, since they constitute the majority and since expropriation of rents and discriminatory taxation is ruled out, the people face no trade-off between a populist oligarchy or democracy as the elite does between elitist oligarchy and democracy.

The timing of events faced by every generation t , for the example of an oligarchy of the landlord elite, can be summarized as follows.

1. Birth, inheritance and investment of bequests;
2. Elite: decision about defending oligarchic status quo or making a democratic offer;
3. People: decision about agreement or disagreement to decision of the elite;
4. Conflict resolution;
5. Implementation of Political Regime and Public Policy, Production;
6. Consumption and bequest decision, death.

After birth, and the realization of bequests and investment, the respective elite can either decide to remain in power and opt for the status quo, or to make a democratic offer. This offer implies an extension of suffrage to the respectively politically excluded group. Under democracy where nobody is excluded from political participation, the entire electorate makes a decision whether to keep democracy or to move to an oligarchy. Under oligarchy, the politically disenfranchised people, on the other hand, can then either choose to accommodate the elite’s proposal, or to challenge it by going to

¹¹Including land resources as a means of generating conflict potential analogously to physical capital would lead to identical results.

open conflict.¹² Once the potential conflict is resolved, the consequential political system materializes, and the associated decisive voter makes his decision about the public policy to be implemented. Then production takes place under this system, in particular, under the resulting taxation, and the public good provision and redistribution schemes that are implemented. Eventually, people consume or bequeath their remaining net income, and die. This completes the description of the model.

3 Development, Democratization, and their Interdependencies

This section first establishes some basic results concerning the dynamics of the development process and provides an analysis of the decision problems faced by members of the different groups in the economy. Using these results, we then turn to the characterization of the processes of economic and political development, and highlight their interdependencies by considering development as the succession of generations and their political and economic decisions within an evolving environment.

3.1 The Provision of Public Goods

From the exogenous productivity growth given by (3), and the fact that capital is only created through bequests it follows that both incomes and capital endowments are increasing from generation to generation. This is true regardless of the political regime, and of whether landowners or landless are concerned. The first useful result concerns the evolution of capital endowments of landowners and landless, which asymptotically converge, regardless of the political environment and the level of public good provision. As an index of relative inequality in capital endowments, consider the ratio of individual i 's capital endowment to the average capital endowment per head in the economy,

$$\lambda_t^i := \frac{k_t^i}{\bar{k}_t} , \quad i \in \{E, P\} . \quad (11)$$

We can then state the following result:

Lemma 1. *For any $\{\gamma, n, a\}$, $\lim_{t \rightarrow \infty} \lambda_t^E \searrow 1$ and $\lim_{t \rightarrow \infty} \lambda_t^P \nearrow 1$.*

Proof. Using the expressions for average per capita income, and the expressions for equilibrium factor prices, one has

$$\lambda_t^i = \frac{y_{t-1}^i}{y_{t-1}} = (1 - \alpha) + \frac{\alpha n^i}{\bar{k}_{t-1}(G_t) + n} + \frac{\alpha \tilde{k}_{t-1}}{\bar{k}_{t-1}(G_t) + n} \lambda_{t-1}^i . \quad (12)$$

¹²Note that this description of timing is without loss of generality. In particular, the same timing holds under democracy, where the ‘ruling elite’ consists of all people populating the economy. Under the current setting, the the median voter in equilibrium does not opt for oligarchy e.g. of the people, since expropriation of land resources is prohibited, and democracy provides the cheapest way to finance public good provision. See also the discussion below.

The initial conditions $k_0^E = k_0^P = 0$ imply that $\lambda_t^E > 1$ and $\lambda_t^P < 1 \forall t > 0$. Relative inequality in capital endowments of family i converge to a steady state value

$$\lambda_*^i = \frac{(1 - \alpha) (\tilde{k} + n) + \alpha n^i}{\tilde{k}(1 - \alpha) + n},$$

which depends on the steady state value of \tilde{k} . Due to unbounded technical progress, incomes and capital endowments increase over generations, implying $\lim_{t \rightarrow \infty} \tilde{k}_t = \infty$. Since land is fixed, using l'Hôpital's rule, this implies that $\lim_{t \rightarrow \infty} \lambda_*^i = \lambda_*^i = \frac{(1-\alpha)}{(1-\alpha)} = 1$, $i \in \{E, P\}$, which proves convergence.

Moreover, condition (12) implies that $\lambda_t^P = (1 - \alpha) + \frac{\alpha \tilde{k}_{t-1}}{\tilde{k}_{t-1}(G_t) + n} \lambda_{t-1}^P$ with $\frac{\partial \lambda_t^P}{\partial \tilde{k}_{t-1}} = \frac{\alpha n}{(\tilde{k}_{t-1}(G_t) + n)^2} \lambda_{t-1}^P > 0$. However, since $\gamma \lambda_t^E + (1 - \gamma) \lambda_t^P = 1 \forall t$, this implies also that $\frac{\partial \lambda_t^E}{\partial \tilde{k}_{t-1}} < 0$, which proves the directions of convergence. \square

The following comparative statics results are useful for later reference:

Lemma 2. *Everything else equal, the relative capital endowments of landlords λ^E adapt as follows to changes in the environment:*

(i) $\partial \lambda_t^E / \partial a < 0$ and $\partial \lambda_t^E / \partial A < 0$, (ii) $\partial \lambda_t^E / \partial \gamma < 0$, (iii) $\partial \lambda_t^E / \partial n > 0$.

Proof. The results follow from taking partial derivatives of condition (12), and because $\partial A / \partial a > 0$. \square

From a certain point during the development process onwards, economic development and public good provision are complements, in the sense that from a certain level of development onwards, it is efficient to invest in infrastructure, where the efficient level of public good provision is denoted by G^* .

Lemma 3. G^* increases with the level of development.

Proof. From the expression of average income, and the fact that marginal benefits of public good provision have to equal marginal costs of 1, G^* can be derived to be

$$G_t^* = \alpha^{\frac{1}{1-\alpha}} (A_t k_t)^{\frac{\alpha}{1-\alpha}} - \frac{A_t k_t + n}{A_t k_t} \quad ;, \quad (13)$$

which can be shown to be strictly increasing in both A_t and k_t . \square

Moreover, this implies the following result:

Lemma 4. *There exists a unique generation \underline{t} : $G_t^* = 0 \forall t < \underline{t}$ and $G_t^* > 0 \forall t' \geq \underline{t}$.*

Proof. The necessary condition for $G^* > 0$ is

$$\alpha ((1 + G) A_t k_t)^{\alpha-1} A_t k_t \geq 1.$$

The result follows since for low levels of development, i.e. k and A , this condition is not (necessarily) satisfied, while monotonicity of development and hence growth in A and k ensures that there must be a unique generation t for which the condition eventually holds. \square

What sort of public sector would be implemented prior to \underline{t} ? Under oligarchy, the elite would produce without bothering to set-up an infrastructure themselves, whose marginal costs for them amount to $1/\gamma$. But even under democracy, no group, neither landlords nor landless, would endorse public good provision. The landlords, since it would be inefficient, and the landless, essentially for the same reason: implementing a scheme of direct redistribution would benefit them more. Intuitively, public goods complement technology in the production process, so if technology is not sufficiently advanced, the provision of public goods is not worthwhile. This leads to the following result.

Lemma 5. *Public goods are provided only if it is overall efficient to provide at least some public goods.*

Proof. Net income of individual i from a purely redistributive state is $y^i + \tau(y - y^i)$. Hence, landless individuals $i \in P$ enjoy a net gain from redistribution since $y^P \leq y$, while landlords suffer a net loss. Now consider public good provision. For $t < \underline{t}$, the marginal benefit from providing public good provision is lower than the marginal cost, implying lower net individual income $y^i(G)(1 - \tau(G)) = y^i(G) - G$ for any individual i when a positive amount of G is provided, compared to $G = 0$. Thus, $G_t|_{t < \underline{t}} = 0$ under landlord oligarchy, as well as under democracy, since in that case the median voter prefers redistribution to public good provision. \square

3.2 Political Economy Equilibrium with Inequality

We now turn to the analysis of the different possible transition regimes to democracy. First, consider the possibility that democratization arises when the disenfranchised landless are powerful enough to implement democratization by force, i.e. when

$$\gamma k_t^E < (1 - \gamma)k_t^P, \quad (14)$$

provided that it is in their interest to have a democracy.

Proposition 1. *There is a unique generation \hat{t} : $\gamma k_t^E \geq (1 - \gamma)k_t^P \Leftrightarrow t \geq \hat{t}$.*

Proof. The result follows directly from dividing condition (10) by k_t and applying Lemma 1. \square

This result reflects the possibility for a transition towards democracy under the threat of revolution, as studied by Acemoglu and Robinson (2001, 2003).

Since under democracy, the decisive voter belongs to the group of people, to determine the equilibrium outcome under democracy we need to characterize the preferred levels of public good provision and redistribution

by the people. The decision problem of the median voter, who happens to own no land, looks as follows:

$$\max_{\{\tau, G, T\}} (1 - \tau)y_t^P(G) + T \quad \text{s.t.} \quad T + G - \tau y_t(G) \leq 0, \quad \text{and} \quad \tau - 1 \leq 0. \quad (15)$$

The solution of this problem implies the following results:

Proposition 2. *The emerging democratic regime is characterized by $\hat{\tau} = 1$, $\hat{G} = G^*$ as $\frac{\partial y(\hat{G})}{\partial G} = 1$, and, consequently, $\hat{T} = y(G^*) - G^*$.*

Proof. The results follow directly from the Kuhn-Tucker conditions of problem (15). \square

This result illustrates that democratization implies full equalization of incomes.¹³ Moreover, a democratic regime provides the efficient level of public good. To illustrate the impact of a change in the political regime, compare this to the level of public good implemented by the elite under oligarchy. Note also that, even though landlords can decide autonomously about financing and providing public infrastructure G for themselves, by the very fact that G is a public good, they cannot exclude landless from using that infrastructure, and benefitting in terms of income.

Without loss of generality, let us now consider a landlord oligarchy. While the landless have no influence on the creation and structure of a public sector, the elite, since public good provision is productive, face a trade-off between providing it themselves while retaining exclusive political power, and giving up power in exchange for a broader financial (tax) basis available for the public good. Even though starting from an oligarchic system with the landlord elite monopolizing all political power and strictly dismissing the possibility to release power, eventually the members of the elite change their mind and extend the franchise. This is shown in the following two results. The first one, which reflects arguments made by Lizzeri and Persico (2004), implies that eventually the elite benefits more from giving up political power in exchange for more efficient production, than from retaining power, regardless of its potential superiority in terms of conflict power. Let G_t^E denote the level of public good the elite would provide if the landlords were to finance it fully by themselves, while the level of infrastructure alternatively provided under democracy with universal financing is G_t^* . Then we have the following result:

Proposition 3. *There exists a unique generation $\check{t} \geq \underline{t}$:*

$$y_t^E(G_t^E) - \frac{G_t^E}{\gamma} \begin{matrix} > \\ \leq \end{matrix} y_t(G_t^*) - G_t^* \quad \Leftrightarrow \quad t \begin{matrix} < \\ \geq \end{matrix} \check{t}. \quad (16)$$

¹³Equivalently to the landless establishing a redistribution scheme that allows them to appropriate equally all land rents and capital rents accruing to the landowners under democracy, we could alternatively allow for expropriation of factor endowments, in particular land and capital. We do not allow for discriminatory taxation.

Proof. Note that for $t < \underline{t}$: $G_t = 0$, so the elite's income under democracy is strictly lower than under oligarchy, whenever $\tau > 0$, and (16) does not hold. However, also note that the marginal income gain of a member of the elite with respect to public good provision is positive. Consider now the elite's most preferred level of G under oligarchy, which is given by $G_t^E = \arg \max \left[y_t^E(G_t) \left(1 - \frac{G_t}{\gamma y_t^E(G_t)} \right) \right]$. This implies, given $t > \underline{t}$, a tax rate faced by a member of the elite of $\tau_t^E = \frac{G_t^E}{\gamma y_t^E(G_t^E)}$, which must be compared to the respective tax rate faced under democracy. Under democracy, the tax base is larger, so the taxes required to finance a given amount of public good provision is lower. Using the result of Lemma 1, in the limit income inequality vanishes and every member of society earns the average income. In this situation, every member of the society would choose the optimal level of public good provision G^* and there is no role for redistribution T . Condition (16) therefore becomes $y_t(G_t^E) - \frac{G_t^E}{\gamma} \leq y_t(G^*) - G^*$. From optimality of G^* it follows that in the limit this condition is always satisfied for any level of G_t^E . Hence, in the limit the elite is always better off under democracy, since the people have to contribute taxes to finance the public good. The monotonicity statement follows from the monotonicity of the convergence of incomes. \square

Proposition 4. *Apart from one special case, the provision of public goods under oligarchy is never efficient.*

Proof. Consider the problem of the elite for public goods provision under oligarchy: $\max_{G^E} y_t^E - G_t^E/\gamma$. Noting that $y_t^E = y_t \left((1 - \alpha) + \frac{\alpha \lambda_t^E (1+G) A_t k_t + n/\gamma}{(1+G) A_t k_t + n} \right) = y_t C_t^E(G)$, the first order condition of the elite's optimization problem reads

$$y_t'(G) \stackrel{!}{=} \frac{1}{\gamma} - y_t \frac{(C_t^E)'(G)}{C_t^E(G)}. \quad (17)$$

where

$$(C_t^E)'(G) \equiv \left(\lambda_t^E - \frac{1}{\gamma} \right) \left(\frac{\alpha A_t k_t n}{((1+G) A_t k_t + n)^2} \right). \quad (18)$$

Note that the sign of the last expression depends on the relationship between λ_t^E and $1/\gamma$. For the elite to provide an efficient level of public goods, it would have to hold that $\lambda_t^E = 1/\gamma$, which is a knife-edge result. \square

Note that in general, the elite underprovides public goods under oligarchy. This is in particular the case for a sufficiently large level of development, i.e. as $\lambda_t^E \searrow 1$. The only scenario in which the elite would overprovide public goods is with low levels of development, where most capital is in the hands of the elite, who then would benefit disproportionately by public goods provision. The last result implies predictions about the role of inequality for the efficiency of oligarchic political institutions that differ drastically from those under democracy. Democratic institutions display

efficiency regardless of the distribution of resources, while the inefficiency of oligarchic institutions depends crucially on inequality.¹⁴ In particular, the public goods provision under oligarchic regimes declines with the degree of land inequality and increases with the degree of capital inequality. This reflects the different priorities of the elite under these scenarios. If the main source of income of the elite derives from natural resources, the elite has little incentives to provide public goods, while in contrast, incentives for public good provision are larger if the elite is more capitalistic.

As a corollary, it is possible to characterize the conditions under which a particular transition regime arises by referring to the timing of the respective transitions.

Corollary 1. *An economy eventually democratizes and experiences a democratization from above when $t \nearrow \check{t} \leq \hat{t}$, while it experiences a democratization from below when $t \nearrow \hat{t} < \check{t}$.*

An implication of this result is that a strong and entrenched elite is unlikely to propose a democratic transition. Given our assumption about technical progress, there will eventually be a democratic offer in this economy, which entails democratization from above, if it is in the elite's own interest to extend the suffrage, or democratization from below, if the people have become powerful enough to challenge the elite's political predominance. We can now analyze how the dynamics of economic and political development are affected by observable characteristics of the economy. In particular, consider the comparative statics of the timing and the consequential regime of a democratic transition with respect to technological progress a (or level of development A) by studying their impact on the crucial state variables, the stock of physical capital k available in the economy.

Proposition 5. *Everything else equal, faster technological progress a and a more industrialized structure of the economy implied by a higher level of development A lead to a sooner democratization.*

Proof. Note that, following Lemma 2, $\frac{\partial \lambda^E}{\partial a} < 0$ and $\frac{\partial \lambda^E}{\partial A} < 0$, such that a transition from above is less likely. Moreover, consider the effects of a higher level of development on inequality to see that $\frac{\partial \lambda}{\partial A} = \frac{\partial}{\partial A} \left(\frac{\lambda^E}{\lambda^P} \right) = \frac{\partial}{\partial A} \left(1 + \frac{\alpha n / \gamma}{A(1+G)k+n} \right) < 0$, making a transition from below according to condition (10) more likely, i.e. decreasing \hat{t} . Finally, note that A or a , respectively, increase the level of effective physical capital \tilde{k} , and hence increase the desirability of public goods provision according to Lemma 4 leading to a lower \check{t} , and therefore unambiguously to a sooner transition regardless of the transition regime. \square

¹⁴This result is driven by the assumption of non-distortionary taxation. With distortions, both efficiency of public good provision and redistribution would depend on inequality under democracy. Nevertheless, the results on *relative* efficiency and redistribution of oligarchy and democracy would still hold.

This result implies that if economic development is fast, oligarchies tend to be less stable and disintegrate sooner. This is in line with empirical findings by Boix and Stokes (2003) that economic development speeds up the arrival of democratization.

The previous discussion illustrates that different political regimes exhibit different features in terms of public good provision. In particular, democratic political institutions are efficient regardless the inequality in the society, while on the contrary the efficiency of oligarchic political institutions depends on inequality. Elites that are more entrenched in natural resources tend to provide less public goods than capitalistic elites. The transition from oligarchic political institutions to democratic institutions can arise either under the threat of conflict by the people, or can be initiated by the elite. Finally, the transition to democratic institutions is facilitated by higher levels of development and a more dynamic technological environment. Taken together, these findings are recorded in the following,

Theorem 1. *Democratic regimes are overall more efficient than oligarchies. Democratization is initiated by the people, i.e. from below, if and only if $\hat{t} < \check{t}$. Democratization is initiated by the elite, i.e. from above, if $\hat{t} \leq \check{t}$. Democratization happens earlier the larger A and a .*

Proof. The first claim directly follows from Propositions 2 and 4. The second and third claims follow from Propositions 1, 3 and Corollary 1. The last claim is a result of Proposition 5. \square

Several aspects of this result need to be put into perspective. First, the clear-cut results are obtained under the standard assumption of a pure (one head one vote) and direct (no party representation) democracy. This implies that the preferences of the median voter, who is member of the people, are perfectly represented in public policies. In the current framework, the consequence of this assumption is full redistribution under the democratic regime and the efficient provision of public goods. In reality, however, the aggregation of preferences is heavily influenced by institutional arrangements that curb the possible choices that can be made by the electorate. Thus, the details of the institutional frame and the democratic structures can introduce a gap between *de jure* and *de facto* political power when the preferences of all groups in society, not only those of the median voter, are reflected in public policy. This observation is particularly relevant, if the preferences of different groups in society do not coincide. In the current framework, the pre-tax income of the elite is still larger than that of the poor, possibly inducing different preferences about redistribution issues. A question one might want to ask in this context is therefore whether the elite, when contemplating to offer democracy, may try to influence the design of democratic institutions in a way to limit redistribution. For example, consider the possibility that the elite can, prior to voting, restrict the policy space by imposing an upper limit to unproductive redistribution \bar{T} . The median voter's maximization problem (15) has to be modified by respecting an additional constraint that $T \leq \bar{T}$. In this case, denote the optimal choice

of public good provision selected by the median voter by G_t^P , which may in general differ from G_t^* depending on \bar{T} . Knowing this, the question then becomes whether the elite would find it profitable to impose a binding limit, i.e. $\bar{T} \leq y(G_t^*) - G_t^*$. To address this question, note that efficient public goods provision under democracy implies full redistribution and thus a net income of $y(G_t^*) - G_t^*$ for a member of the elite (and likewise a member of the people). Compared to that, if $\bar{T} \leq y(G_t^*) - G_t^*$, an elitist individual could earn an income of

$$y_t(G_t^P, \bar{T})C_t^E \left(1 - \frac{G_t^P + \bar{T}}{y_t(G_t^P, \bar{T})}\right) + \bar{T},$$

where

$$C_t^E \equiv \left[(1 - \alpha) + \frac{\alpha(1 + G_t^P)A_t k_t \lambda_t^E + \alpha \frac{n}{\gamma}}{(1 + G_t^P)A_t k_t + n} \right], \quad (19)$$

when limiting redistribution to \bar{T} . Simplifying these expressions, the elite will prefer to limit redistribution to $\bar{T} < y_t(G_t^*) - G_t^*$ if

$$C_t^E(y_t(G_t^P) - G_t^P - \bar{T}) + \bar{T} > y_t(G_t^*) - G_t^*. \quad (20)$$

In the current framework it is not possible to identify the conditions under which this condition holds since G_t^P cannot be determined analytically. Nonetheless, due to monotonicity of C_t^E in λ_t^E and n/γ , it is possible that for a sufficiently high level of inequality in either income, or land endowments, or both, the condition is satisfied. In this case, the elite would actually benefit from imposing a limit on redistribution if they could.¹⁵ Note also, that under this scenario, the democratization process would arise at the same time or even earlier than under the benchmark case, since the opportunity cost for initiating a democratic transition is lower for the elite. Taken together, while the main results on democratic transitions stated above remain unaffected, the precise framework of political institutions adopted under democracy may actually depend on the transition and the level of inequality at the time of the transition.

Another noteworthy issue in this respect is the double cost the elite faces during the transition to democracy. On the one hand, members of the elite have to pay taxes, which partly go to finance redistributive transfers. On the other hand, the elite loses the power to decide about issues such as public good provision, since the residual decision rights are taken on by the median voter under democracy. The case of democratization from below shows that the latter fact constitutes the real cost of democratization, while taxes and implicit redistribution in terms of proportional taxation are only second-order effects. Rather, taxation can very well be to the elite's advantage since universal taxation under democracy allows them to share the costs of public goods provision. This is illustrated in particular when the

¹⁵The possibility to impose restrictions requires further assumptions and arguments about the conditions under which this possibility arises, and to what extent restrictions can be implemented.

elite voluntarily offers full redistribution in order to achieve an efficient level of public good provision. Finally, land resources make no clear prediction on the timing of democratization, while the size of the elite seems to be ambiguous with respect to the transition regime. The following section briefly discusses these implications in the light of historical evidence.

4 The Historical Context and Empirical Relevance

The predictions of our model are broadly in line with historical and empirical evidence. As a first attempt to substantiate this claim, we test whether the three main implications stand out in the cross-country data set collected by Persson and Tabellini (2003, 2004).¹⁶ The predictions are: (a) that countries with more democratic structures are better developed, this is a direct consequence of Lemma 1, and Propositions 1 and 3; (b) that countries with more democratic institutions have a larger state, this follows from Corollary 1, Lemma 3 and Proposition 2;¹⁷ and (c) that more democratic countries redistribute relatively more, which follows again from Proposition 2. Since the data set is confined to democracies of different quality of democratic institutions, and contains no non-democracies, we use variation in the quality of democratic institutions to test the model implications. In particular, we test the three predictions by testing the correlation of an index of the quality of democratic institutions with (a) log per capita income, denoted *lyp*, (b) the ratio of central government spending (including social security) as percentage of GDP, denoted *cgeexp*, and (c) social security and welfare spending as percentage of GDP, denoted *ssw*, respectively. To do this, we run a system of seemingly unrelated regressions to account for endogeneity and potential error correlation across equations. The quality of democratic institutions, i.e. the extent of democratization, is measured using the so-called *polityIV*-index, which assigns to each country an integer score ranging from -10 to 10 with higher values being associated with better democratic structures. Alternatively, and as robustness test, we use the so-called *gastil*-indices of political rights and civil liberties, which range from 1 to 7 with lower values associated with better democratic institutions. In the regressions, we control for several alternative factors potentially influencing the level of development, and size and structure of the public sector.¹⁸

¹⁶The data used for the analysis are a cross-country data set for 85 countries, see Persson and Tabellini (2003, 2004) for a detailed description of the data, the variables, and the data sources. The data are available at <http://rincewind.iies.su.se/perssont/datasetselectoralrules.htm>.

¹⁷Note that this result is driven by the fact that a higher level of development implies both a higher G_t^* irrespective of the political system, and a higher likelihood of democracy, which in turn implies efficiently high G_t^* as well as a higher level of redistribution T_t .

¹⁸In particular, we include log of population size (*lpop*), population structure (the shares of population in working age and retirement age, *prop1564* and *prop65*, respectively), the sum of exports and imports as share of GDP (*trade*), log total factor productivity (*loga*), an index of openness to trade measuring the fraction of years during

For reasons of brevity, Table 1 contains only the coefficient estimates for the index of democratic quality. Detailed results for the other coefficients are available upon request. The first set of regressions displays a significant positive coefficient of *polityIV* on all three dependent variables, indicating that more democratic institutions are associated with higher levels of development as measured by GDP per capita, and larger and more redistributive states.¹⁹ We refrain explicitly from interpreting these correlations as causal, since, in the light of the theoretical results obtained before, political institutions can be expected to be endogenous, at least in the long run. These correlations nevertheless indicate, however, that the three theoretical implications are not refuted by a first glance at the data. The results are also robust with respect to the measure of democratic quality, as indicated by the results using *gastil* as measure. Again, better democratic institutions are associated with higher incomes, and larger and more redistributive states. Further tests reveal that the hypothesis that democratic institutions have no impact on any of the dependent variables can be rejected at the 1-percent level. Without doubt, more empirical work would be required to rigorously test the implications of the theory, and to show that these are in line with the historical experience. However, the concepts of democratization ‘from above’ and ‘from below’ are difficult to implement in an empirical analysis, since e.g. creating a respective dummy for each country would eventually always imply a somewhat subjective judgment. Nevertheless, from the results presented so far we conclude that the model squarely fits the historical facts.

The main implications of the model presented in the last section also correspond well with the findings of earlier empirical contributions. Recently, the interdependencies of democratization, sustainability of democracy and economic development have received a revived research interest among economists and political scientists. Some contributions found that economic development apparently serves to stabilize democratic systems, but found no causal effect of economic development on the timing of democratization, see Przeworski *et al.* (1997, 2000). Recent empirical evidence,

1954-1990 during which a country was open to trade (*yrsoopen*), economic institutions fostering development (*oecd*), ethno-linguistic fragmentation (*avelf*), federal state structures (*federal*), constitutional inertia measured by dummies *con2050*, *con5180* and *con81* to account for constitutional fashions and historical context, and the age of each democracy, as defined by the fraction of the last 200 years of uninterrupted democracy, *age*. To control for unobservable influences of geographic location we control for latitude as measured by absolute distance from equator *latitude*, and introduce dummies for continental location (Africa *africa*, Eastern and Southern Asia *asia*, and Southern and Central America including the Caribbean *laam*). Historical factors are controlled for by adding dummies for colonial history (*col_uka*, *col_esp*, *col_oth*). All these variables, together with the respective index for democratic quality are used as explanatory variables. The equations for size of public sector, *cgexp*, and the size of social redistribution, *ssw*, contain as additional explanatory variables the level of development, *lyp* as well as indicators for majoritarian voting, *maj*, and presidential systems, *pres*. This takes account of the results found by Persson and Tabellini (2004) that details of democratic institutions are likely to have an impact on public policy.

¹⁹This result is robust with respect to different specifications.

however, seems to indicate that there is a positive causal effect of economic development on the probability that a country democratizes as well as a positive effect of development on the stability of democracies, see Boix and Stokes (2003).

Moreover, evidence suggests that economic development together with the political institutions in place determine the size of the public sector, as well as its structure in terms of infrastructure and transfers, such as unemployment benefits, health care and retirement pensions, see Boix (2001), who also finds that public sectors are significantly larger under democratic than under oligarchic regimes. Alesina and Glaeser (2004, ch. 2) argue that the U.S. and European countries experienced entirely different transitions towards democracy. With regard to the transition scenario corresponding to the theoretical model, the U.S. as well as the U.K. experienced democratic transitions from above, which were mainly initiated and determined by ruling classes and landowners, compare also the description in Lizzeri and Persico (2004). On the other hand, France, and also Germany, rather experienced transitions that were characterized by substantial pressure on the elites to extend the franchise.²⁰

The main predictions of our model are also supported by the findings of Boix (2001, 2003). Different regressions of the size of the public sector with a large panel data set of countries not only reveal a larger public sector in democracies, but in particular a negative effect of the size of the share of the agricultural sector in total production as well as a positive effect of per capita income on the size of government, see Boix (2001, Table 3).

Acemoglu and Robinson (2004, ch. 2) provide a survey of the cross-country evidence on the patterns of democracy. Their main conclusions are that richer countries are more likely to be democratic and that democracies are more redistributive than oligarchies with an increase in redistribution following democratization. All these facts are in line with the theoretical predictions. In particular, we have shown that richer countries on a higher level of economic development experience a democratic transition sooner. Moreover, the model implies that redistribution primarily arises under democracy, in particular if the extension of the franchise happened under the pressure of conflict from the formerly disenfranchised.

Some important issues still remain to be addressed. After their critique of the work of Przeworski *et al.* (1997, 2000), Boix and Stokes (2003) claim that the most puzzling, yet unanswered questions regarding the links between economic development and democratization concern the findings of different effects of economic development on the propensity to democratize in different historical contexts. In particular, they raise the question why early during industrialization oligarchies appear to have been less stable to democratization than at later stages of development, and why economic

²⁰While the French democracy essentially goes back to the revolution of 1789, extension of the franchise in Germany was associated with several waves of social unrest, as was the case for the revolution in 1848, the socialist movement which led Bismarck to introduce the welfare state, and the revolution in 1919 to mention just the most prominent milestones of the transition.

development after World War II seems to have mainly helped to stabilize democracies rather than to induce democratization of non-democratic regimes. According to our model, democratization can occur under very distinct scenarios, and countries that democratized early are likely to differ in several other respects than the level of economic development from those economies that democratized later, or have not democratized yet altogether. In particular, the distribution of power among oligarchs and proletariat might differ substantially due to different capital accumulation histories, land resources, and group sizes, thus making comparisons only in terms of level of development difficult. While these issues deserve further investigation, they can rationalize these empirical observations.

5 Discussion

Before concluding, we briefly discuss the implications of the simplifying assumptions we make. The adoption of a subsequent generation framework with a joy-of-giving representation of individual utility gives rise to myopic behavior as the members of a given generation do not internalize the consequences of their choices on subsequent generations. This appears to be a reasonable assumption for considering long-run processes as done in this analysis. Moreover, introducing forward looking agents would complicate the analysis, while not changing the main results, as long as some discounting is incorporated.

The adoption of exogenous technological progress is of no relevance. Introducing endogenous innovations, with physical or human capital representing the engine for growth, could be accomplished without altering the main findings. The assumption that technological progress is not neutral with respect to all factors of production, and augments capital rather than land, is, together with the assumption of logarithmic utility and the accumulation of capital through bequests, crucial for the result that inequality declines with the level of development and vanishes in the limit. This result also implies that eventually democracy emerges. Assuming heterogeneous bequest behavior in the society, with the elite bequeathing relatively less capital due to their bequests of natural resources as was the case historically would tend to strengthen our results. On the other hand, if the elite would transfer a larger fraction of their incomes to their offspring, income might not converge fully, but the income share generated from land ownership would still decrease over the course of generations, which is sufficient for our results as long as the provision of public goods exclusively by the elite is sufficiently costly, or if that were not possible at all.

Further issues resulting from the fact that technological progress is also not neutral with respect to the relative position of the two groups in society are left aside in the current analysis. Endogenizing technological progress also opens questions concerning the political aspects of technology adoption. On the one hand, as studied by Cervellati and Fortunato (2004), the elite could resist innovation in order to block structural change and the income

loss associated with modernization. In that model, the degree of resistance to innovation is not constant but declines with the level of inequality and development, and disappears eventually. Similarly, the elite might block modernization to delay or avoid democratic transitions and the associated loss of political power, see Mokyr (2000).

Following the literature on democratic transitions initiated by the elite, e.g. Bourguignon and Verdier (2000), Lizzeri and Persico (2004) and Gradstein (2004b), a democratic transition can deliver a gain in efficiency for society as a whole, but in particular for the elite. In our model, this is represented by the possibility to provide a public good at lower costs under democracy than under oligarchy. In a more general framework, this efficiency improvement under democracy could also be obtained as equilibrium outcome. A related line of research, see Cervellati, Fortunato, and Sunde (2004), explores the possibility that the higher efficiency of democratic systems arises in the form of a self-sustained social contract as outcome of a strategic game of rent-seeking investments played between and within different social groups.

In terms of fiscal policy, we consider the possibility for progressive redistribution under democracy, but exclude taxation and regressive redistribution under oligarchy. This is done for simplicity, since the key feature of the analysis is that democracy is *relatively* more progressive, reflecting an opportunity cost for democratization on part of the elite. Also for simplicity, taxation implies no distortions, which leads to corner solutions for taxation in the voting game, i.e. full redistribution under democratization. Finally, and in line with previous contributions like Acemoglu, Johnson, and Robinson (2004), we consider a simple conflict technology, a ‘guns model’. The outcome of a conflict is deterministic, implying that (potentially costly) conflict never arises in equilibrium, such that democratic transitions essentially arise under a shadow of conflict. Also, we do not consider incentives for triggering violent conflict, and endogenous investments in conflict activity, as is done e.g. by Grossman (2001) or Esteban and Ray (1999). While the role of each of these three assumptions is clear, a simultaneous consideration of potential for regressive and distortionary redistribution, together with a conflict game with endogenous effort choice, would require a more in-depth analysis. This is the case, since both the dynamic evolution of inequality, and the relative conflict potential of the different groups of society would then depend on the particular specification adopted. While the main mechanism would still work, the joint consideration of these elements appears to be of particular interest in light of the analysis of the structure of the public sector under the different transition regimes, and of the precise conditions under which they may arise.

6 Conclusion and Future Research

We conclude by summarizing the focus and the main results of the current analysis, which represents a first step in modelling the interrelation between

development and political institutions. We have provided a simple dynamic model of economic and political development that is able to reproduce several recent theories about the endogenous transition towards democracy and the determinants of the design of constitutions within a single framework. The main mechanism implies that economic development is a prerequisite for a democratic transition. Moreover, depending on the economic environment, this transition is triggered either by the ruling elite in the initial oligarchy, leading to a democratization ‘from above’; or by the initially disenfranchised people, whose threat to go to open conflict and mount a revolution initiates a democratic transition ‘from below’. The results also indicate that in equilibrium democratic political institutions are generally more efficient than oligarchies, and arise sooner the faster the process of economic development.

To make our argument as transparent as possible, we provided a model, which is stylized in several respects. We close by providing a discussion of the limitations of this analysis. The deeper investigation of these issues constitutes our agenda for future research. In particular, in order to highlight the impact of the democratization process on institutional design, we concentrated on ‘bang-bang’ democratization episodes, with only two possible states, oligarchy and universal franchise. In reality, democratic transitions are generally gradual processes of the extension of the franchise. The consideration of the forces behind gradual extensions might deliver additional insights. In particular, democratic extensions can be thought of as reducing conflict pressure without the need to give away more political influence than necessary. Also, it is likely that the institutions emerging from a gradual extension depend on the actual path of democratization. For example, different public goods may be provided depending on the preferences and needs of the groups of society that are newly enfranchised.

Also, the consideration of more than two groups of individuals may change the predictions of the model. On the one hand, questions of cohesion, group formation, and coalitions could arise. On the other hand, this modification together with the potential for gradual extensions of the franchise would provide a much richer picture of democratization experiences.

Finally, to highlight the feedbacks between economic development, democratization and institutional arrangements, we concentrated on two very distinct forces behind democratization, democratization in the interest of the elite and under the threat of conflict. Other forces behind democratic transitions, such as enlightenment views emphasizing the role of liberal or emancipative values and the spread of knowledge, the emergence of an economically important but politically disenfranchised middle class, or issues of competition and conflicting interests within the ruling elite, have been neglected for simplicity. While we believe that these issues could be addressed and would enrich the picture of democratic transitions and their effects on arising institutions, we also believe that the main idea of the current model could be preserved.

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Table 1: **Empirical Estimates**

| | Dependent Variable | | |
|-----------------------|--------------------|--------------|------------|
| | <i>lyp</i> | <i>cgexp</i> | <i>ssw</i> |
| <i>polityIV</i> | 0.040* | 0.874* | 0.462* |
| | (0.018) | (0.437) | (0.222) |
| <i>N</i> | 58 | 58 | 58 |
| <i>R</i> ² | 0.935 | 0.771 | 0.858 |
| <i>gastil</i> | -0.146* | -2.905* | -1.976** |
| | (0.060) | (1.336) | (0.659) |
| <i>N</i> | 59 | 59 | 59 |
| <i>R</i> ² | 0.934 | 0.776 | 0.868 |

Notes: Results from SURE estimations. Other explanatory variables are a constant, *lpop*, *loga*, *prop1564*, *prop65*, *trade*, *yrsoopen*, *oecd*, *avelf*, *federal*, *con2150*, *con5180*, *con81*, *age*, *latitude*, *africa*, *asia*, *laam*, *col_uka*, *col_esp*, and *col_oth*. In the equations for *cgexp* and *ssw* additional explanatory variables are *lyp*, and *pres*, *maj*. See also footnote 18. Standard errors are in parentheses. Significance at 5 percent and one percent level is indicated by * and **, respectively.