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of Political Values**

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## ABSTRACT

### Democracy, Dictatorship and the Cultural Transmission of Political Values<sup>\*</sup>

We develop a theory of endogenous regimes transitions (with a focus on democratic consolidation), which emphasizes the role of political culture and of its interaction with political institutions. Political culture reflects the extent of individual commitment across citizens to defend democracy against a potential military coup, and it is an endogenous state variable of the model along with formal political institutions. We focus on two agencies of political socialization: the family and the state. Parents invest resources in order to transmit their own political values (commitment to democracy) to their children. The state invests resources in public indoctrination infrastructures. The model displays two-way complementarities between political regimes and political culture diffusion. Consolidated democracy emerges when sufficiently many people are committed to democracy. Otherwise the model features persistent fluctuations in and out of democracy as well as cycles of political culture. Importantly, the politico-economic equilibrium may exhibit a persistent (although declining) incongruence between political institutions and political culture, which tends to evolve more slowly than formal institutions.

JEL Classification: P16, H11, H26, H41

Keywords: political culture, socialization, democracy, military, nondemocracy, political economy, political transitions, institutional consolidation, path dependency

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“In Russia the state was everything, civil society was primordial and gelatinous; in the West there was a proper relation between the state and civil society, and when the state tremble a sturdy structure of civil society was at once revealed.” (Antonio Gramsci, *Selection from Prison Notebooks*).

## 1 Introduction

There is now a relatively large literature in economics and political science focusing on the political economy of regime transitions (see for example Acemoglu and Robinson, 2006, and the references cited therein). A central question of this line of research concerns the conditions under which a given society moves from some form of nondemocratic government (such as civilian oligarchy, kleptocracy, or military dictatorship) to democracy, and vice versa. Two features characterize this perspective. The first one is the focus on economic and institutional factors (income, wealth inequality, and conflicts of interest between socioeconomic groups) in a context where the government in power has limited capacity for policy commitments. The second aspect is the adoption of a *consequentialist* perspective according to which agents have only *induced preferences* over political institutions, namely they rank institutions according to the policy outcomes such institutions generate.

In contrast to the consequentialist approach to political institutions, there is also a well established literature in political science and political theory that emphasizes the role of *political culture* and ideologies in explaining the dynamics of political institutions, and in particular, the emergence and consolidation of democratic institutions. Along this tradition, political culture is defined as “[...] *the pattern of individual attitudes and orientations toward politics among the members of a political system. It is the subjective realm that underlies and gives meaning to political actions.*” (Almond and Verba, 1963). Similarly Easton (1965) highlights political culture as “*a state of mind featuring a deep-seated set of attitudes which include the attachment to democracy as the “optimal” political institution, the belief in its legitimacy and attachment to its symbols.*” Building on this perspective, an extensive literature in political sociology and comparative politics emphasizes the importance of “immaterial” factors (values, ideologies and legitimacy) as crucial determinants of the sustainability of specific political institutions. It also points out the role of “socialization agencies” like the state and the family in the transmission of these factors across generations.

In this paper, we attempt to bridge the gap between these two perspectives of political institutional dynamics. To do this, we develop a theory of political transitions which includes

three main components. First, building on the consequentialist political economy tradition, we assume that individuals tend to evaluate institutional systems according to their induced costs and benefits. Second, we include political culture as an important factor playing a role for a variety of political, economic and institutional outcomes. Specifically, we emphasize political culture as a *commitment device* endowing citizens with a credible capacity to overcome collective action problems to defend or promote democracy in the event of a military coup.<sup>1</sup> Finally, we assume that political culture is acquired and transmitted by active political socialization over time and across generations. In this setting, we investigate how cultural and institutional factors interact and shape the endogenous dynamics of political regimes and policy outcomes in a society.

Our work has two main related motivations. The first one originates from several episodes of democratic transitions suggesting an important underlying role of political culture in the consolidation or not of a political regime. For instance, the process of democratic consolidation following the breakdown of Communism proceeded at a very different pace in various European countries. It was indeed rather rapid in countries characterized by relatively strong civil societies such as Estonia, Poland, and the Czech Republic. In such countries, broad based and diffused pro-civic and pro-democratic beliefs had developed before the communist regime thanks to the existence of civic associations, trade-unions, the Church and family transmission across generations. Conversely, democratic consolidation seemed to be much slower in countries like Croatia, Albania, Belarus and Ukraine, endowed with weaker and less developed civil societies.<sup>2</sup>

The recent case of the “Arab Spring,” i.e. the sequence of rebellions occurred in 2011 in several Middle Eastern countries against incumbent authoritarian governments, is another example suggesting how cultural factors may interact with institutional changes and evolutions of specific political regimes (see for example Bradley, 2012, and Noueihed and Warren, 2012). Indeed, the institutional transformations that occurred in countries such as Morocco, Tunisia and Egypt, appear to have caused the replacement of relatively secular autocracies with “democratic” regimes which have greatly empowered Islamist parties (partially repressed under the previous incumbent regimes). Such parties have often endorsed extremist ideologies

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<sup>1</sup>Bisin and Verdier (2000a and 2000b), among others, investigate the related issue of the role of “ideology” as a coordination device for social groups or classes, for *given* political institutions. In this paper, we do not address the related interesting problem of the role of political culture as a potential coordination device in order to focus on its role as commitment device, in presence of *endogenous* political institutions.

<sup>2</sup>See for instance on this point Bunce (1999), Kubik (2000), Haerpfer, Bernhagen, Inglehart and Welzel (2009).

and systems of values, rooted in *some* interpretation of the Islamic religion and very different from those underlying the political culture of secular democracies.<sup>3</sup> In countries where significant segments of the population share beliefs-systems largely incongruent with liberal secular institutions, one may wonder about the possibility of the “Arab Spring” to lead to the emergence (and eventual stabilization) of some type of “Islamic Republic” rather than a form of Western-type democracy.

A second motivation for this paper comes from the large political sociology tradition that emphasizes the role of the state and the family as joint and interacting agents of political socialization.<sup>4</sup> For instance, Galston (2001) and Sapiro (2004) noticed the importance of schools and the media for political socialization, elements which are potentially controlled by the state. In the same vein, Skocpol (1996) observed how a variety of state organizations give legitimation to the status quo political order. Various case studies as well highlighted the role of the state in molding a democratic society and its political culture (see for example Baker, Dalton and Hildebrandt, 1981, for the Federal Republic of Germany, Okamura, 1968, for post-war Japan, or Bennich-Björkman, 2007a, b, c, on early democratic socialization in Estonia).<sup>5</sup> Conversely, other pieces of work in comparative history have demonstrated how totalitarian and authoritarian states made large ideological investments to indoctrinate their citizens and persuade them of the legitimacy of their rule (see for instance Koon, 1985, for North Korea, Keenan, 1986, for the Soviet Union, Obeidi, 2001, for Al-Quadhafi’s Lybia, and De Grazia, 2002, for fascist Italy).

Parallel to the importance of the state, this perspective points out as well the role of the family as a socialization agency of young people’s political attitudes and behaviors. Specifically it provides detailed information on how parents act as role models and facilitators for the acquisition of political values in the family, by providing information, talking about political issues, engaging in political actions and providing children with a stable home environment.<sup>6</sup> Overall, this line of thought highlights the importance of political socialization in the construction and consolidation of political systems, and suggests that it may be worthwhile integrating

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<sup>3</sup>An exception to this might be the case of the Islamic Moderate Party or *PJD*, which has won the 2011 elections held in Morocco.

<sup>4</sup>Our paper thus emphasizes the political, rather than the economic role of the family, which is discussed for instance in Alesina and Giuliano (2010).

<sup>5</sup>We will discuss later in more detail some cases, including Estonia, the Federal Republic of Germany, and Japan, which illustrate how the implementation of democratic institutions can have a significant and persistent impact on the political culture of the new generations.

<sup>6</sup>See for instance Hyman (1959), Davies (1965), Langton (1969), Dawson and Prewitt (1969), Bronfenbrenner (1979), Jennings, Stoker and Bowers (2009), Sapiro (2004), Hooghe and Wilkenfeld (2008).

these dimensions to get a better understanding of the political economy of regime changes.

In this paper, we provide a model of political transitions using a framework with non-overlapping generations living for two periods, which incorporates some relatively standard ingredients of the existing related literature. In particular, there can be two political regimes, democracy or military dictatorship, and formal political institutions correspond, as usual, to a state variable of the model. In the former case the (producer) median voter decides the fiscal policy, while this is set by the military (which is a self-interested agent potentially posing a coup-threat to an incumbent democratic regime) in the latter case. The agents differs for their occupation, producers or soldiers, and for their attitude towards democracy. In order to focus the attention on the role of political culture and to simplify the analysis, we abstract from the role of income inequality and the inter-class distributive conflict as determinants of institutional change.<sup>7</sup>

The non-standard features of the model include the presence of two novel variables. The first one is an (additional) endogenous state variable reflecting the fraction of citizens who are either potentially intrinsically motivated to defend democracy (the “committed” citizens) or not (the “uncommitted” citizens). In the sequel we will refer to this variable as the level of political culture of the society at a point in time. This variable evolves according to a process of cultural transmission across generations as in Bisin and Verdier (2001) in which preferences for intrinsic motivation for democracy are transmitted through political socialization by paternalistic parents (each type making an *individual* investment in order to transmit their own preferences to their children).

The second variable is a control variable reflecting the *ideological investment in democratic indoctrination by the state* or, for short, the public democratic investment or democratic stock. Such a variable increases the value of political participation for those individuals that already have intrinsic preferences for democracy. Under democratic institutions, this indoctrination investment decision is taken by majority voting, and its outcome straightforwardly depends on which group is larger in society, committed citizens being always in favor of greater investment in civil virtues than uncommitted ones.

Uncommitted people never put individual effort to defend democracy from a military coup, whereas committed people put some effort provided that the level of democratic indoctrination is above a certain threshold value. The probability of success of coup depends negatively on

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<sup>7</sup>This factor has been emphasized for endogenous political transitions by Boix (2003), Aghion, Alesina and Trebbi (2004), Acemoglu and Robinson (2006), Acemoglu, Ticchi and Vindigni (2010, 2011) and Ticchi and Vindigni (2010).

the number of committed citizens who are willing to put effort in defense of democracy, and it determines the decision of the army to attempt to capture power in the first place. Similarly, under an incumbent non democratic (military) government, the probability of success of a rebellion depends positively on the number of committed agents and the (endogenous) level of repression that such government can impose. Yet, the decision to support democracy (or to rebel against a military regime) is taken individually by each committed citizen, who obtains some utility (depending on the public democratic investment) and/or the cost (depending on military repression) from the act itself of a pro-democratic behavior. Anticipating the reaction of the citizens, in equilibrium, the army attempts to make a coup only when the opposition to it is expected to be relatively mild (i.e., there are relatively few committed citizens).

In this setting, a first contribution of the paper is to highlight how family political socialization interact with existing formal political institutions and state indoctrination. Our analysis emphasizes a degree of *complementarity* between family socialization and the structure of political institutions. The more prevalent a political culture favoring one type of political regime, the more likely the emergence and consolidation of that particular political system. Conversely, a given institutional system is more likely to promote the transmission of cultural values functional to that system. These two-way interactions between cultural and institutional factors then shape the endogenous dynamics of political regimes and policy outcomes in interesting ways.

Specifically, we show that when the share of committed citizens is higher than a certain endogenous threshold, democracy is fully consolidated and military coups never occur along the equilibrium path. Conversely, when democratic political values are not sufficiently diffused, the model features potentially persistent transitions between democracy and military dictatorships along equilibrium paths emerging with positive probability. Along such paths, democracy is more stable (i.e., it persists over time with greater probability) when the committed, rather the uncommitted, citizens represent the majority, as the former have a greater incentive to make public investments in democratic socialization. The reason for this comes from the fact that committed citizens have both an *intrinsic* and a *functional* preference for democracy, whereas uncommitted citizens have only standard *functional* preferences over political institutions, whereby democracy *only matters* because of the more favorable policy outcomes that this regime generates compared to the military regime.

A second contribution of our framework is to show that political culture is a persistent phenomenon over time and across political regimes. In particular, it can be maintained even



in the presence of “incongruent” formal political institutions. This is consistent with the idea that culture appears to be like a “slow-moving” variable relatively difficult to reshape (see Eckstein, 1988, and especially Roland, 2004). Specifically, the model generates at equilibrium a potentially persistent (but declining over time) *incongruence* between formal political institutions and political culture.<sup>8</sup> It is possible for the number of citizens committed to democracy to remain relatively high for a long period of time, even under non democratic institutions, because of the private transmission of democratic culture by the family (i.e., the number of citizens intrinsically committed to democratic values). This phenomenon highlights therefore the contrast between political culture and formal political institutions.

Empirically, this result is also important for two related reasons. First, it can help explain why democracy may endogenously emerge or not in countries with different *latent* democratic cultures, but otherwise similar in terms of observable fundamentals, such as the level of economic development, the nature of the civil-military relations and the relative power of the army. Furthermore, the same result can shed some light on why apparently similar countries can evolve along very different paths of political and institutional developments, conditional on an exogenous shock changing formal political institutions (e.g., the erosion of the power and eventual collapse of the Soviet Union for the countries formerly members of the Warsaw Pact).

Thirdly, our set-up offers a set of rich comparative statics on how changes in exogenous variables such as economic income, state fiscal capacity, natural resources rents or foreign aid affect the equilibrium dynamics of political institutions and political culture. Two effects in opposite directions are highlighted on the likelihood of democratic consolidation. Indeed, any positive change in one of these variables tends to increase the size of the resources that a government in power can potentially capture. On the one hand, this increases the military incentives to attempt coups, which in turn requires higher levels of political culture for the existence of a consolidated democracy where no coup is undertaken. On the other hand, a democratic government has also higher incentives to increase public democratic investment. Along the transition path to consolidated democracy, this triggers an increase in the transmission of political cultural values functional to democratic institutions. This speeds up the rate at which a democratic regime can reach a state of consolidation. Hence to get to democracy consolidation, the system has to pass a more difficult threshold, but also disposes of a “more

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<sup>8</sup>This result is also somehow in contrast with the standard comparative politics perspective (reviewed below) which argues that formal political institutions and political culture cannot be persistently incongruent in a stable political system.

powerful engine” to reach such threshold. This logic explains why higher income or higher state capacity may not automatically lead to democratic consolidation and therefore is consistent with Acemoglu, Johnson, Robinson and Yared (2008), who find no evidence supportive of (a variety of versions of) the modernization hypothesis originally formulated by Lipset (1959).<sup>9</sup>

The previous argument applies as well to natural resource rents and foreign aid as long as there is no institutional asymmetry across political regimes in terms of their capacity to appropriate the related additional resources. Strong enough authoritarian military regimes may however have a higher centralized capacity to monopolize natural resource rents than democratic regimes prone to inefficient and decentralized rent seeking behaviors. In such a case, our analysis shows that an increase in natural resource revenues has a negative impact on democratic consolidation and the sustainability of democratic cultural values. This illustrates therefore a new channel for the possibility of a political “natural resource curse” affecting negatively political institutions *and* political culture. The same kind of logic indicates conversely that conditional foreign aid disbursed only to democratic regimes has positive effects, not only in the short time for its dissuasive effects on military coups, but also through the promotion of democratic values ensuring long term democratic consolidation.

Finally, the last part of the paper offers a discussion of some interesting case studies of democratization processes illustrating salient aspects of our theoretical framework. More specifically, we consider the experiences of Post World War II Federal Republic of Germany and Japan, as well as the historical case of Estonia during much of its 20<sup>th</sup> century history before and after the Communist regime. The first two cases are clear examples of major democratic reforms and civic socialization programs induced from the outside that contributed, jointly with intergenerational socialization, to the consolidation of democracy and the development of a specific political culture in these countries. The third case illustrates the persistence and partial malleability of democratic culture in an historical context characterized by various political regime transitions.

The paper is organized as follows. The next section reviews the related literature. Section 2 describes the framework and Section 3 describes the equilibrium across political regimes. In Section 4 we determine the optimal choice of transmission of political values. Section 5 describes the regime transitions and the dynamics of political culture. Section 6 reports the results of some comparative statics analysis and some extensions are contained in Section 7.

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<sup>9</sup>See however Glaeser, La Porta, Lopez-de-Silanes and Shleifer (2004) for an alternative perspective.

In Section 8 we discuss some evidence related to our model and Section 9 concludes. Some proof are omitted from the text and reported in the Appendix.

## 1.1 Related literature

In the political economics literature, closely related to us is the recent paper by Persson and Tabellini (2009) who consider theoretically and empirically the nexus between political and economic development, through the accumulation of democratic capital. We depart from that piece of work in two ways. First, we present a dynamic political game where both the technology of production of political culture (by distinct agencies of socialization such as the state and the households) and the role of the army as a player of the game are endogenized. Second, in our setting political culture broadly defined (including investment in democratic infrastructure) acts as a commitment device, whereas in Persson and Tabellini (2009) works as a coordination mechanism in a global game structure. In this sense, political culture plays in our model a similar role to political institutions, in the first generation literature on political transitions. However, there are two important differences: first, in our model political culture is produced with a specific technology involving both the state and the family. Second, political culture is potentially more persistent than formal political institutions, since it does not change immediately (but adjusts endogenously over time), when the latter changes. In addition, we provide some novel results concerning the dynamics and stochastic steady states of our political game.

Another contribution closely connected to us is the recent paper by Gorodnichenko and Roland (2012). It emphasizes the importance of individualist versus collectivist cultural values for democratic transitions. These authors provide empirical evidence that countries with individualistic culture tend to be more democratic, controlling for other determinants of democracy emphasized in the literature. In their model however, cultural values are given and exogenous to the institutional environment. Also they enter in a reduced form as fixed differential probabilities to overcome collective action problems and replace autocrats by democratic institutions. In our setting, cultural values also have differential impacts on collective actions problems. However they evolve endogenously through joint actions of the state and families and therefore depend on the environment and political regime in place. As well, given that we provide a simple micro link between the extent of democratic culture and collective action, our model generates endogenous probabilities to overcome collective action issues and, as a consequence, interesting stochastic persistence of political regimes with non linear dynamics towards consolidated and unconsolidated democratic institutions.

In the political science literature, our paper also relates to Gerring, Bond, Barndt and Moreno (2005) who argued that the growth of democratic stock has beneficial effects on the accumulation of physical, human and “political” capital, which fosters economic growth. This contribution differs from ours in two main respects: first, it is essentially empirical; second, it addresses the question, which we do not consider at all, of the relation between democracy (i.e., democratic stock) and subsequent macroeconomic outcomes such as growth.

More generally, our work connects to other important bodies of literature in political theory and political science, political economy, the economics of endogenous preferences transmission, and in the recent burgeoning field of behavioral political economy.

The first contribution in the political science and political theory literature, is probably the *Politics* of Aristotle. The great ancient Greek philosopher was perhaps the first author to recognize that a prerequisite for democracy is not only the existence of large middle class (i.e., of a relatively equal distribution of income), but also the sharing of an egalitarian participatory orientation among its citizens (Book IV, 1962 [352 BC]).<sup>10</sup> Also, in his classic work *De la Démocratie en Amérique* (1994 [1835]), Alexis de Tocqueville claimed that the emergence and flourishing of democracy in America reflects the political culture of its people, and in particular their liberal and participatory orientations. Similarly Lasswell (1951) claimed that the emergence and persistence of democratic regimes depends to a large extent on the nature of mass political beliefs, while Inglehart (1989) also note “political culture” as a crucial link between economic development and democracy.

As already mentioned, our theory is partially consistent with the *congruence doctrine* on institutional consolidation arguing that a political regime is stable only if it is *congruent* with the prevailing political culture among its people (Almond and Verba, 1963; Eckstein, 1966).<sup>11</sup> According to that perspective, authoritarian regimes are stable only when people believe that dictatorial powers are legitimate and, similarly democracy is stable when people are convinced to be the ultimate source of political power. While our model includes dynamic complementarities between political cultural values and political institutions that are consistent with this view, our analysis also illustrates the existence of equilibrium situations where the degree of latent incongruence between values and political regimes can persist for significant amounts of time.

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<sup>10</sup>Other classical authors who recognized the importance of political culture include Charles-Louis de Montesquieu, who in *De L'Esprit des Lois* (1989 [1748]) argues that the positive laws and institutions governing a society reflect its dominant mentality.

<sup>11</sup>See also Hibbing and Theiss-Morse (1995), Norris (1999), Pharr and Putnam (2000), Mishler and Rose (2001), Hadenius and Teorell (2005) and Inglehart and Welzel (2005).

In political economy and comparative political economy, the present paper is most closely associated to the literature on political transition pioneered by Acemoglu and Robinson (2000, 2001, 2006) and Boix (2003). A few recent papers have also addressed the related question of what factors facilitate the endogenous transformation of a “transitional democracy” (under the threat of a regime change such as a potential military coup) into a consolidated democracy, where the median voter has full *de jure* and *de facto* power. In particular, Acemoglu and Robinson (2001) allows for bidirectional political transitions, and, for a range of exogenous parameters, features persistent transitions from democracy to oligarchy and the other way around. Acemoglu, Ticchi and Vindigni (2010) also considers unconsolidated or “transitional democracy” and show that can also potentially turn into a consolidated democracy along the equilibrium path of the political game. Neither of these two papers though considers the role of political culture and political socialization as a factor of regime consolidation, and the role of cultural legacies to explain the emergence and persistence of democratic institutions.

Our set-up of cultural evolution builds on the literature on cultural transmission and endogenous preferences formation as initiated in Bisin and Verdier (2000a, 2000b and 2001), and recently extended by Tabellini (2008), Greif and Tadelis (2010), Bidner and Francois (2011) and Acemoglu and Jackson (2012), to analyze the evolution of preferences for cooperation and morality in political, market and organizational contexts.<sup>12</sup> Our emphasis on the role of the family as an agent of political socialization and promoter of collective political action resonates as well with recent empirical works investigating the impact of family ties on generalized trust and political participation (Alesina and Giuliano, 2011), or the interactions between family values and the demand for public regulation (Alesina, Algan, Cahuc, and Giuliano, 2010). These papers, however are not concerned with explaining political transitions and institutional regime consolidation.<sup>13</sup>

More directly related to us, a recent theoretical paper by Farvaque, Mihailov and Naghavi (2012) also adapts the cultural transmission model of Bisin and Verdier (2001) to explain the rise and fall of communism, exploring the interactions between economic incentives (capital accumulation) and social preferences transmitted by ideology.<sup>14</sup> They introduce two types of agents (inequality-averse and inefficiency-averse) and analyze the socioeconomic dynamics of

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<sup>12</sup>See Bisin and Verdier (2011) and the references cited therein for an extensive review of this literature.

<sup>13</sup>Recent work by Dixit (2009) also considers the issue of collective cultural socialization in “other-regarding” preferences to stimulate social cooperation and growth, but again does not address the issue of changes in political regimes and institutions.

<sup>14</sup>See also Alesina and Fuchs-Schündeln (2007) for an empirical analysis of the impact of centrally planned versus market oriented institutions on individual preferences for redistribution and state intervention, using the natural “experiment” of German separation and reunification.

regime transition between liberal market economies and centrally-planned economies abolishing private ownership. Our paper is complement to theirs. Indeed, while Farvaque, Mihailov and Naghavi (2012) consider transitions between alternative economic systems, we focus on transitions between alternative political systems (democracies and authoritarian systems). The two aspects may not be independent but somehow highlight different perspectives of the role of culture. Farvaque, Mihailov and Naghavi (2012) consider the issue of ideological preferences on the standard economic inequality/efficiency trade-off. We emphasize the role of political culture as a commitment device to solve political collective action problems. Also, we introduce the family and the state as two sources of political indoctrination that work in a complementary way. Finally our model has some endogenous stochastic dynamic features related to the uncertainty of political regimes transition.

We also connect to the behavioral economics literature and the political economy of beliefs formation (Lott, 1999; Alesina and Angeletos, 2005; Aghion, Algan and Cahuc, 2011; Bénabou and Tirole, 2006; Bénabou, 2008; Dessì, 2008; Saint-Paul, 2009). In some of these models, individuals or governments make various kinds of investments, such as the strategic manipulation of information, in changing the future preferences and beliefs of themselves or of their citizens. This is related to our assumption that the state and the family may attempt, at some cost, to shape the political culture of further generations. Our focus however is different from these papers as we are concerned about the interactions and implications of these modes of investments in the emergence and stability of political regimes in a given society.

Through some of our comparative statics, the paper relates to the literature on the political economy of the “resources curse” (e.g., Torvik, 2002; Robinson, Torvik and Verdier, 2006). With respect to that literature, we highlight a new “cultural channel” through which natural resources may affect the functioning of political institutions in the long term. Finally, although our focus is different, our comparative statics of economic income on political culture also connects indirectly to the literature on cultural diffusion and economic development (Ashraf and Galor, 2007; Spolaore and Wacziarg, 2009).

## 2 The basic setup

We consider an economy populated by a countable infinity of non-overlapping generations of agents living for two periods. Each generation is formed by a continuum of agents of measure one. Agents are identical but differ along two dimensions. One is their occupation, which can be either working as producer or being employed in the army. The military has measure

$x < 1/2$  and must be formed at each point in time in order to provide basic goods such as national defense and law and order. We assume that forming an army is always optimal for every government in office, even though the army may use its *de facto* political power generated by the monopoly of the means of coercion in order to replace a civilian government with a military regime. Producers or citizens have size  $1 - x > 1/2$  and productivity and income equal to  $A$ . Individuals also differ in their attitude towards democracy and will be distinguished between committed and uncommitted to democracy. The former derive utility from defending democratic institutions from military coups or from opposing to authoritarian regimes (revolution), while the latter do not.  $\chi_c^i$  is an indicator function equal to 1 if the individual is committed, and 0 if he is uncommitted;  $q_t \in [0, 1]$  will denote the share of committed citizens of generation  $t$  in the society.

The political regime of the country can be either a democracy ( $s = D$ ) or a military dictatorship ( $s = M$ ). In a democracy, collective decisions are made by a leader elected with majoritarian elections. In a military dictatorship instead the military commander is in power. Political transitions occur instantaneously and can take place due to the occurrence of either a coup (transition from  $D$  to  $M$ ), or to a rebellion of citizens against a military regime (transition from  $M$  to  $D$ ). We assume that regime changes can take place in the second period of life cycle only. Therefore,  $s_t^1 = s_{t-1}^2$  denotes the political regime in the first period of life of generation  $t$ , which is inherited from the previous generation, and also corresponds to the regime at the beginning of the second period; the political regime that emerges in the second period of life will be denoted with  $s_t^2$ . The political regime in place at beginning of each period,  $s_t^i \in \{D, M\}$  with  $i = 1, 2$ , and the *political culture* of the society, corresponding to the “taste” for democracy,  $q_t \in [0, 1]$ , will be the two state variables of the game.

If the military attempts a coup, this is successful with probability 1 if there is no opposition by the citizens, while the coup fails when the share of committed agents in the society  $q$  is higher than a certain threshold  $\bar{q} \in (0, 1)$ . The threshold  $\bar{q}$  is stochastic and has a distribution  $f(\bar{q})$ . Therefore,

$$F(q) \equiv \Pr(q \geq \bar{q}) = \int_0^q f(\bar{q}) d\bar{q}$$

represents the probability that the coup is not successful. We will later assume that  $F'(q) = f(q)$  is not too increasing. We also assume that each soldier bears a cost  $T > 0$  when the military undertakes a coup.

The preferences of the producer  $i$  of generation born at time  $t \in [0, \infty)$  can be represented

as follows

$$U_t^i = u_{t,1}^i + \mathbb{E}_t \{u_{t,2}^i\} = c_{t,1}^i + \lambda G_{t,1} + \mathbb{E}_t \{c_{t,2}^i + \lambda G_{t,2} + \chi_o^i (\chi_c^i b_{2t} - \eta)\}, \quad (1)$$

where  $u_{t,j}^i$  is the instantaneous utility in period  $j \in \{1, 2\}$ ,  $\mathbb{E}_t$  is the expected value operator conditional on the information available at the first period of life and no discounting is assumed. Expression (1) reflects the assumption that the per-period utility function depends linearly on a set of arguments which include the private good consumption,  $c_{t,j}^i$ , and the potential consumption of a public good  $G_{t,j}$ ;  $\lambda > 0$  is the taste for the public good. In addition, when individuals oppose to a military coup or attempt a rebellion against a military regime they pay a cost  $\eta > 0$ .  $\chi_o^i$  is an indicator function equal to 1 if the agents opposes to a coup, and it is 0 otherwise. However, individuals may derive utility from this opposition if they are committed to defend democracy ( $\chi_c^i = 1$ ). This utility corresponds to the total level of ideological investment in democratic indoctrination by the state (or shortly, the public democratic investment)

$$b_{t,2} = b_t + \varepsilon_t,$$

where  $b_t$  is the level produced by the government at time  $t$  (first period of life), and  $\varepsilon_t$  is an exogenous shock to public democratic investment uniformly distributed between 0 and  $\bar{b}$  whose realization is known at the beginning of the second period of life. The cost of production of public democratic investment is  $\tilde{C}(b)$ , with  $\tilde{C}'(b) > 0$ ,  $\tilde{C}''(b) > 0$ ,  $\tilde{C}'''(b) > 0$  and  $\tilde{C}(0) = 0$ . We will denote with  $i \in \{c, u\}$  the committed and the uncommitted individuals respectively.

When the individual is in the army, he receives the wage  $w$  and does not get utility from the public good  $G$  (i.e.,  $\lambda = 0$ ). His cost of effort for the provision of national defense is  $h > 0$ ;  $e_{t,j}$  is an indicator function equal to 1 if the soldier puts effort, and it is equal to 0 otherwise. Hence, the expected utility of the military in the first period of life is

$$U_t^m = u_{t,1}^m + \mathbb{E}_t \{u_{t,2}^m\} = c_{t,1}^m + e_{t,1}h + \mathbb{E}_t \{c_{t,2}^m + e_{t,2}h\}.$$

We also allow the military to undertake investments that increase the cost of rebellion for the citizens when the army is in power. We assume that an increase  $\Delta\eta > 0$  in the individual cost of rebellion implies a cost for the government equal to  $\tilde{C}_M(\Delta\eta)$ , with  $\tilde{C}'_M(\Delta\eta) > 0$ ,  $\tilde{C}''_M(\Delta\eta) > 0$  and  $\tilde{C}_M(0) = 0$ .<sup>15</sup>

The fiscal instrument available to every government is proportional taxation of incomes; we assume that taxes generate no distortions as long as they are set at a level  $\tau$  below some threshold  $\hat{\tau}$  representing the potential “fiscal capacity” of the state, and distortions are prohibitively

<sup>15</sup>It is clear from the framework that this investment in repression by the military could also be interpreted as an investment in indoctrination against cultural values committed to democracy.



high for levels higher than  $\hat{\tau}$ . Moreover, we capture distortions generated by a military dictatorship by assuming that military government is potentially less “competent” than a civilian government in raising taxes. This means that if the army sets taxes at  $\tau_t$ , it only collects revenues  $\phi\tau_t$  per unit of tax base where  $\phi < 1$  is a measure of the military appropriation capacity.

The government budget constraint in period  $j$  of life of generation  $t$  under democracy reads

$$w_{t,j}x + G_{t,j} + I_{t,j}\tilde{C}(b_t) \leq \tau_{t,j}A(1-x). \quad (2)$$

The left hand side are total expenditures, given by the wage bill of the army, the public good provision and the cost  $\tilde{C}(b_t)$  to produce the level  $b_t$  of democratic capital.  $I_{t,j}$  is an indicator function equal to 1 for the first period of life ( $j = 1$ ) and equal to 0 in the second period ( $j = 2$ ) since  $b_t$  is produced in the first period only. The right hand side of (2) represents the revenues and takes into account that a mass  $x$  of low-skill agents are part of the army and do not produce any output. The government budget constraint under dictatorship is till given by (2) with the exception that the expenditure on the public democratic investment is replaced by the cost of the additional repression  $\tilde{C}_M(\Delta\eta)$ .

Savings are not allowed and therefore private good consumption is always equal to the net disposable income for each agent, i.e.,  $c_{t,j}^i = (1 - \tau_{t,j})A^i$ . We also assume that shirking soldiers are caught with a probability  $\gamma \in (0, 1)$ , and that there is limited liability so that the soldier caught shirking loses his wage for one period. The incentive-compatibility constraint,  $w_{t,j} - h \geq (1 - \gamma)w_{t,j}$ , leads to the following efficiency wage

$$w_{t,j} = h/\gamma. \quad (3)$$

Political culture represented by the commitment of the individuals toward democracy is transmitted from parents to child. In particular, we assume that the process of transmission of political values is imperfect in the sense that parents are successful in transmitting their culture to offsprings only with some probability  $\delta \in (0, 1)$ . With the complementary probability  $1 - \delta$ , the offspring takes the values of a citizen chosen randomly in the population. This means that he will be committed with probability  $q$  and uncommitted with probability  $1 - q$ . The cost  $H(\delta)$  for the parent of transmitting his political culture to the offspring is increasing and convex in the probability  $\delta$  of being successful, i.e.,  $H'(\delta) > 0$ ,  $H''(\delta) > 0$  and  $H(0) = 0$ .

The structure and timing of events of the political game played by the generation born at time  $t$  is as follows and is summarized in Figure 1.

[Figure 1 about here]

At the beginning of the first period of life of a generation  $t$ , political institutions are inherited from the previous period (i.e.,  $s_t^1 = s_{t-1}^2$ ) and political transitions are not possible. The government in office, chooses the following set of policy variables  $\{\tau_{t,1}; G_{t,1}; w_{t,1}; b_t; \Delta\eta_t\}$ , i.e., taxes, public good, military wages and the public democratic investment, or the investment in repression if the regime is nondemocratic. The policy chosen is implemented and the stage-game ends.

In the second period of generation  $t$ , political transitions are feasible, and events take place according to the following timing.

If the initial political state is democracy ( $s_t^1 = D$ ), then:

1. The exogenous shock to public democratic investment  $\varepsilon_t$  is realized.
2. The army decides whether to attempt a coup or not.
3. The low-skill agents decide whether to mobilize in defense of democracy. In case of no mobilization, the coup is successful with probability 1 and a political transition to a military regime immediately occurs ( $s_t^2 = M$ ). If there is mobilization, the coup fails with probability  $F(q_t)$ , so that  $s_t^2 = D$ , and succeeds with probability  $1 - F(q_t)$ , so that  $s_t^2 = M$ .
4. The pivotal agent, i.e. the median voter if  $s_t^2 = D$  or the military commander if  $s_t^2 = M$ , decides taxes, public spending and military wages, and the game ends.<sup>16</sup>

If the initial political state is military dictatorship ( $s_t^1 = M$ ), then:

1. The citizens decide whether to mobilize against the military or not (after  $\varepsilon_t$  is known).
2. If there is no mobilization, the political regime remains a dictatorship ( $s_t^2 = s_t^1 = M$ ). If there is mobilization, this is successful with probability  $F(q_t)$  and determines a transition to democracy ( $s_t^2 = D$ ), while the rebellion is unsuccessful with probability  $1 - F(q_t)$ , and the political system remains authoritarian ( $s_t^2 = M$ ).
3. Again, the pivotal agent decides taxes, public spending and military wages, and the game ends.

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<sup>16</sup>In principle, the military commander may want to give up power to democracy at the beginning of the second period. However, if this option is not exercised in the first period, then it is not exercised in the second one.

### 3 Equilibrium across regimes

#### 3.1 Preliminary results

The subgame perfect equilibria of the dynamic political game described above can be computed by solving the two-periods political game played by each generation. We make the following assumptions.

**Assumption 1** :  $\lambda > 1/(1 - x)$ .

**Assumption 2** :  $(1 - \hat{\tau})A + \lambda\hat{\tau}A(1 - x) - \lambda xh/\gamma \leq (1 - \gamma)h/\gamma$ .

**Assumption 3** :  $T \leq \phi\hat{\tau}A(1 - x)/x - h/\gamma$ .

Assumption 1 ensures that the citizens always want to provide the public good  $G$  when in power. Assumption 2 guarantees that the participation constraint of soldiers is never binding under democracy (as we will show next, the left hand side is the per period utility of citizens and the right hand side is the utility of soldiers in a democratic political system). Assumption 3 implies that the military finds optimal undertaking a coup if no opposition is expected.

We solve the game by backward-induction starting from the analysis of the second period of the game for generation  $t$ , and then analyze the equilibrium in first period of life.

We first start describing the fiscal policies across regimes in the two periods of life.

The fiscal policy of a democratic government maximizes the per-period utility function of the citizens described in (1), subject to the government budget constraint (2) and to the incentive-compatibility constraint of the army (3). In the second period of the life cycle, this implies setting taxes at the maximum rate  $\hat{\tau}$ , paying the efficiency wage to the military and spend all remained revenues in the public good. In the first period, a democratic government has also to decide the public democratic investment  $b_t$ . Similarly, in the second period of life, a military government sets taxes at  $\hat{\tau}$  and spends all revenues in military wages; the policy is the same in the first period except that it also decides the investment in repression  $\Delta\eta_t$ . The following proposition summarizes the optimal fiscal policy.

**Proposition 1** *The fiscal policy of a democratic government is*

$$\begin{aligned}\tau_{t,1}^D &= \hat{\tau}, G_{t,1}^D = \hat{\tau}A(1 - x) - xh/\gamma - \tilde{C}(b_t), w_{t,1}^D = h/\gamma, \\ \tau_{t,2}^D &= \hat{\tau}, G_{t,2}^D = \hat{\tau}A(1 - x) - xh/\gamma, w_{t,2}^D = h/\gamma,\end{aligned}$$

and the dictatorial policy is

$$\begin{aligned}\tau_{t,1}^M &= \hat{\tau}, G_{t,1}^M = 0, w_{t,1}^M = [\phi\hat{\tau}A(1-x) - \tilde{C}_M(\Delta\eta_t)]/x, \\ \tau_{t,2}^M &= \hat{\tau}, G_{t,2}^M = 0, w_{t,2}^M = \phi\bar{w}^M, \bar{w}^M = \hat{\tau}A(1-x)/x,\end{aligned}$$

where  $b_t$  and  $\Delta\eta_t$  will be determined below.

We now analyze the conditions under which the citizens undertake an opposition to a military coup. First note that each individual is atomistic and his behavior does not change the successful probability of the coup. Therefore, from (1) it is immediate that for a given level of public democratic investment  $b_{t,2}$ , committed agents oppose a coup if the level of democratic stock of committed agents is higher than a certain threshold,  $b_{t,2} \geq \eta$ . In this case, the coup fails with probability  $F(q_t)$  and  $s_t^2 = D$ , while it succeeds with probability  $1 - F(q_t)$  and the military dictatorship is established,  $s_t^2 = M$ . When  $b_{t,2} < \eta$ , the coup succeeds with probability 1. Similarly, when  $b_{t,2} \geq \eta$  and the political regime is a military dictatorship ( $s_t^1 = M$ ), there is a rebellion against this regime. With probability  $F(q_t)$  this is successful and there is a transition to democracy ( $s_t^2 = D$ ), while the rebellion fails with probability  $1 - F(q_t)$  and the military remains in power ( $s_t^2 = M$ ).

We here study under what conditions the military undertakes a coup and when it does not. Consider first the case where  $b_{t,2} \geq \eta$ , so that there is opposition by citizens. The military finds optimal to undertake a coup when its expected payoff from a coup is higher than the payoff from democracy,  $u^M(\text{coup}) \geq u^M(D)$ . From the military's expected payoff of a coup

$$u^M(\text{coup}) = F(q_t)u^M(D) + [1 - F(q_t)]u^M(M, \phi) - T,$$

where the utility in dictatorship is

$$u^M(M, \phi) = \phi\bar{w}^M - h = \phi\hat{\tau}A(1-x)/x - h, \quad (4)$$

and the utility in democracy

$$u^M(D) = w^D - h = \frac{1-\gamma}{\gamma}h, \quad (5)$$

follows that the military will attempt a coup when

$$u^M(M, \phi) \geq u^M(D) + \frac{T}{1 - F(q_t)}. \quad (6)$$

Since the left hand side of condition (6) is increasing in  $\phi$  and the right hand side is increasing in  $q_t$ , condition (6) is equivalent to

$$q_t < \tilde{q}(\phi),$$

where  $\tilde{q}(\phi)$  is the level of  $q$  satisfying (6) with equality. The interpretation is that the military undertakes a coup when the pervasiveness of “committed” individuals democratic institutions is below some threshold  $\tilde{q}(\phi)$ . This result is consistent with the claim by Juan Linz that authoritarian coups and regimes require the backing of “significant segment” of the mass population (Alexander, 2002, p. 5).

When  $b_{t,2} < \eta$ , coups are successful with probability 1 (as there is no opposition), and the condition for a military coup attempt,  $u^M(\text{coup}) \geq u^M(D)$ , becomes  $u^M(M, \phi) \geq u^M(D) + T$ , which corresponds to (6) with  $F(q_t) = 0$ . Assumption 3 ensures that this condition always holds and therefore that the military undertakes a coup when there is no opposition by the citizens. If such a condition did not hold, then this means that the military is so inefficient in extracting rents that it never finds optimal trying to get to power, which would easily lead to a consolidated democracy. Assumption 3 rules out this possibility as this is not an interesting case from the perspective of our theory.

The following proposition summarizes these results.

**Proposition 2** *Independently on the presence of opposition, the military undertakes a coup when  $q_t < \tilde{q}(\phi)$ , where  $\tilde{q}(\phi)$  is implicitly defined by the following condition  $[1 - F(q_t)][u^M(M, \phi) - u^M(D)] = T$ . When  $q_t \geq \tilde{q}(\phi)$ , the military never attempt a coup if opposition is expected ( $b_{t,2} < \eta$ ).*

**Proof.** In the text. ■

### 3.2 Equilibrium public democratic investment

The optimal choice of the public democratic investment by the democratic government depends on the probability that the committed citizens will oppose to a military coup, which is given by

$$\Pr(\varepsilon_t \geq \eta - b_t) \equiv P(b_t) = \frac{\bar{b} + b_t - \eta}{\bar{b}}, \quad (7)$$

and on the probability of no opposition equal to  $\Pr(\varepsilon_t < \eta - b_t) \equiv 1 - P(b_t) = (\eta - b_t)/\bar{b}$ . Two cases can be considered depending on whether  $\tilde{q}(\phi)$  is larger or smaller than 1/2.

i) **Case**  $\tilde{q}(\phi) > 1/2$ . Consider first the situation where the military undertakes a coup independently from opposition (i.e.,  $q_t < \tilde{q}(\phi)$ —see Proposition 2). When  $0 < q_t \leq 1/2$ , the uncommitted agents are the majority and choose the provision of the public democratic

investment  $b_t$  that solves the following optimization problem<sup>17</sup>

$$\max_{b_t} U_t^u(D) = [a - C(b_t)] + (1 - \hat{\tau})A + P(b_t)F(q_t)[a - (1 - \hat{\tau})A], \quad (8)$$

where  $C(b_t) \equiv \lambda \tilde{C}(b_t)$  and

$$a \equiv (1 - \hat{\tau})A + \lambda \hat{\tau}A(1 - x) - \lambda x h / \gamma \quad (9)$$

is the per-period total utility of the citizens under democracy (gross of the public democratic investment). The first component of (8) in square brackets is the utility in the first period of life, while the remaining part is the expected utility in the second period. This comes from the fact that there is no opposition to the coup with probability  $1 - P(b_t)$ , so that the military will be in power with certainty and the utility of the citizens is  $(1 - \hat{\tau})A$ . With probability  $P(b_t)$ , there is opposition to the coup; this fails with probability  $F(q_t)$ , the system remains democratic and the citizens' payoff is  $a$ , while it succeeds with probability  $1 - F(q_t)$  and the citizens get  $(1 - \hat{\tau})A$ .

When instead  $1/2 < q_t < \tilde{q}(\phi)$ , the committed individuals are in power. Their utility is the same as the uncommitted plus the net expected payoff from opposition, which is equal to

$$\mathbb{E}_t \{(b_t + \varepsilon_t) - \eta | b_t + \varepsilon_t - \eta \geq 0\} = \frac{(\bar{b} + b_t - \eta)^2}{2\bar{b}}, \quad (10)$$

where we have used the fact that  $\varepsilon_t$  is uniformly distribution between 0 and  $\bar{b}$ . Therefore, the committed optimization problem becomes

$$\max_{b_t} U_t^c(D) = a - C(b_t) + (1 - \hat{\tau})A + P(b_t)F(q_t)[a - (1 - \hat{\tau})A] + \frac{(\bar{b} + b_t - \eta)^2}{2\bar{b}}. \quad (11)$$

When  $q_t \geq \tilde{q}(\phi)$ , the committed are in power and the military does not attempt a coup with opposition, but undertakes it with no opposition, i.e. the following condition holds

$$u^M(D) + T/[1 - F(q_t)] \geq u^M(M, \phi) > u^M(D) + T.$$

The utility of committed and uncommitted citizens coincide, as there is never a coup *with* opposition in equilibrium, and the maximization problem is identical to (8) with  $F(q_t) = 1$ .

ii) **Case**  $\tilde{q}(\phi) < 1/2$ . Similar reasoning as before shows that for  $q_t \in [0, \tilde{q}(\phi))$ , the uncommitted agents are in power and the optimal policy  $b_t$  solves problem (8). Similarly for

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<sup>17</sup>We are here implicitly assuming that soldiers do not vote. Allowing them to vote would only change the threshold below which the uncommitted are in power; rather than  $q_t \leq 1/2$  this happens when  $q_t \leq 1/2(1 - x)$ , as the military always (weakly) prefer the uncommitted citizens' policy to the committed one.

$q_t \in [\tilde{q}(\phi), 1]$ , simple inspection provides that there is no coup *with* opposition in equilibrium. The utility of committed and uncommitted citizens coincide, and the optimal policy  $b_t$  solves a maximization problem identical to (8) with  $F(q_t) = 1$ .

The following assumption ensures that the level of public democratic investment chosen by the government when  $q_t \geq \tilde{q}(\phi)$  is such that there will be opposition to coups independently on the realization of the random shock  $\varepsilon_t$  (i.e.,  $b_t = b^* = \eta$ ).

**Assumption 4** :  $(1/\bar{b}) [a - (1 - \hat{\tau}) A] \equiv (1/\bar{b}) [\lambda \hat{\tau} A(1 - x) - \lambda x h/\gamma] \geq C'(\eta)$ .

The following proposition characterizes then fully the choice of public democratic investment by the democratic government.

**Proposition 3** - *When  $\tilde{q}(\phi) > 1/2$ . The optimal public democratic investment under democracy ( $s_t^1 = D$ ) is equal to*

1.  $b_u^*(q_t) = \min \{b_u(q_t); \eta\}$ , where  $b_u(q_t)$  is defined by the following equation

$$-C'(b_t) + (1/\bar{b}) F(q_t) [a - (1 - \hat{\tau}) A] = 0, \quad (12)$$

when  $q_t \in [0, 1/2]$  and the uncommitted citizens are in power;

2.  $b_c^*(q_t)$  is defined by

$$-C'(b_t) + (1/\bar{b}) F(q_t) [a - (1 - \hat{\tau}) A] + (\bar{b} + b_t - \eta) / \bar{b} = 0. \quad (13)$$

when  $q_t \in (1/2, \tilde{q}(\phi))$  and the committed individuals are the majority;

3.  $b^* = \eta$  when  $q_t \in [\tilde{q}(\phi), 1]$ .

Moreover,  $b_c^*(q_t)$  and  $b_u^*(q_t)$  are both increasing in  $q_t$ , with  $b_c^*(q_t) > b_u^*(q_t)$ .

- When  $\tilde{q}(\phi) < 1/2$ , the policy at point (1) applies for  $q_t \in [0, \tilde{q}(\phi))$  and point (3) for  $q_t \in [\tilde{q}(\phi), 1]$ .

**Proof.** See the Appendix. ■

The following features of the optimal public democratic investment are worth noting. First, also the uncommitted citizens are in favor of providing the public democratic investment (note that  $b_u(q_t)$  is always strictly positive) and this comes from the fact that they find optimal inducing the committed to defend the threatened democracy. Second, committed citizens

always want to provide a public democratic investment higher than the level preferred by the uncommitted ( $b_c^*(q_t) > b_u^*(q_t)$ ) because they obtain a consumption value from it. Third, there is a complementarity between the political culture, transmitted by the family, and the public democratic investment provided by the state. This complementarity arises from the fact that more diffused political culture (a higher fraction  $q_t$  of committed individuals) increases the probability that a military coup fails when the committed oppose to it ( $F(q_t)$  is increasing in  $q_t$ ). This in turn increases the returns of a democratic government to invest in democratic indoctrination.

Figure 2 reports some examples for the level of provision of public democratic investment for all values of  $q$ .

[Figure 2 about here]

### 3.3 Political equilibrium in democracy

The following proposition describes the political equilibrium when the initial political regime is democratic.

**Proposition 4** *Consider the case where  $\tilde{q}(\phi) > 1/2$ . The equilibrium under democracy ( $s_t^1 = D$ ) is the following.*

1. *If  $q_t \in [0, 1/2]$ , the military always undertakes a coup, and the committed citizens oppose when  $\varepsilon_t \geq \eta - b_u^*(q_t)$ , which happens with probability  $P(b_u^*(q_t))$  determined by (7) with  $b_u^*(q_t)$  defined in Proposition 3. When citizens oppose, coup attempts fail with probability  $F(q_t)$  and the political system remains democratic ( $s_t^2 = s_t^1 = D$ ), and succeed with probability  $1 - F(q_t)$  and the system transition to dictatorship ( $s_t^2 = M$ ). When citizens do not oppose (i.e.,  $\varepsilon_t < \eta - b_u^*(q_t)$ ), dictatorship is established with probability 1. Therefore, the per-period probability that democracy persists is  $P(b_u^*(q_t)) F(q_t)$ ;*
2. *if  $q_t \in (1/2, \tilde{q}(\phi))$ , the equilibrium is the same as the one described at point (1) except that the committed citizens oppose when  $\varepsilon_t \geq \eta - b_c^*(q_t)$  and the corresponding probability is  $P(b_c^*(q_t))$ ; therefore, the per-period probability that democracy persists is  $P(b_c^*(q_t)) F(q_t)$ ;*
3. *if  $q_t \in [\tilde{q}(\phi), 1]$ , the military never undertakes coups (since there is always opposition by the citizens,  $\varepsilon_t \geq \eta - b^* = 0$ ) and the political system remains democratic.*



When  $\tilde{q}(\phi) < 1/2$ , point (1) applies for  $q_t \in [0, \tilde{q}(\phi))$  and point (3) for  $q_t \in [\tilde{q}(\phi), 1]$ .

**Proof.** Straightforward from the text. ■

The political equilibrium under democracy can be summarized as follows. When political culture is lower than a certain threshold,  $q_t < \tilde{q}(\phi)$ , the military always attempts a coup. The probability that the coup succeeds and that the political system transition to dictatorship is negatively related to the level of political culture in the society and to the level of public democratic investment chosen in the previous period. When political culture is sufficiently high,  $q_t \geq \tilde{q}(\phi)$ , the military never attempts a coup (as the committed would always oppose to it), and there are never transitions to military regimes.

### 3.4 Equilibrium investment in repression

When the military is in power ( $s_t = M$ ), it always chooses the maximum tax rate  $\hat{\tau}$  and no provision of the public good  $G$  and revenues are spent in military wages. In the first period of life, the military also chooses the investment in repression  $\Delta\eta_t$  which reduces the probability that citizens will rebel against its rule in the following period. The maximization problem of the military reads

$$\begin{aligned} \max_{\Delta\eta_t} U_t^M(M) &= [\phi\hat{\tau}A(1-x)/x - C_M(\Delta\eta_t)] \\ &+ P(\Delta\eta_t) [F(q_t)u^M(D) + (1-F(q_t))u^M(M, \phi)] + (1-P(\Delta\eta_t))u^M(M, \phi), \end{aligned} \quad (14)$$

with  $C_M(\Delta\eta_t) \equiv \tilde{C}_M(\Delta\eta_t)/x$ . The first component of (14) is the utility of the military in the first period of life and the remaining part of this expression is the expected utility in the second period. This takes into account that rebellions take place with probability

$$P(\Delta\eta_t) \equiv \Pr(\varepsilon_t \geq \eta + \Delta\eta_t) = \frac{\bar{b} - (\eta + \Delta\eta_t)}{\bar{b}} = 1 - \frac{\eta + \Delta\eta_t}{\bar{b}}, \quad (15)$$

and succeed with probability  $F(q_t)$ ; the per-period utility of the military under democracy and dictatorship  $u^M(D)$  and  $u^M(M, \phi)$  are given by (5) and (4) respectively.

The following proposition defines the optimal investment in repression.

**Proposition 5** *The optimal investment in repression by the military government ( $s_t^1 = M$ ) is  $\Delta\eta_t^* = \min\{\Delta\eta_t^M; \bar{b} - \eta\}$ , where  $\Delta\eta_t^M$  is implicitly defined by the following condition*

$$-C'_M(\Delta\eta_t) + (1/\bar{b})F(q_t)[u^M(M, \phi) - u^M(D)] = 0. \quad (16)$$

**Proof.** Equation (16) is the first order condition of problem (14).<sup>18</sup> Since there is no rebellion when  $\bar{b} \leq \eta + \Delta\eta_t^M$  independently on the realization of  $\varepsilon_t$ , it is never optimal to set  $\Delta\eta_t^M > \bar{b} - \eta$ , which leads to  $\Delta\eta_t^*$ . ■

### 3.5 Political equilibrium in military dictatorships

When  $\Delta\eta_t^* = \bar{b} - \eta$ , the military finds optimal to invest so many resources in increasing their repressive apparatus that rebellions are never possible, and dictatorship consolidates. When instead  $\Delta\eta_t^M < \bar{b} - \eta$ , there is always a positive probability, given by (15), that the (committed) citizens attempt a rebellion (i.e., that  $\varepsilon_t > \eta + \Delta\eta_t^M$ ). This implies that a transition to democracy will take place at some point. Since  $\Delta\eta_t^M$  is increasing in  $q_t$ ,<sup>19</sup> there is a unique level of  $q = \bar{q}_M$ , such that  $\Delta\eta_t^M(\bar{q}_M) = \bar{b} - \eta$ . For all  $q_t > \bar{q}_M$ ,  $\Delta\eta_t^M(q_t) > \bar{b} - \eta$  and  $\Delta\eta_t^* = \bar{b} - \eta$ , while  $\Delta\eta_t^* = \Delta\eta_t^M(q_t) < \bar{b} - \eta$  for all  $q_t < \bar{q}_M$ . If  $\bar{q}_M < \tilde{q}(\phi)$ , then the military dictatorship becomes permanent when  $q_t \in [\bar{q}_M, \tilde{q}(\phi))$  because the military regime invests a large amount of resources in repression, while dictatorship never consolidates when  $\bar{q}_M > \tilde{q}(\phi)$ .

The following condition ensures that there is always a positive probability that rebellions take place and that the political system transitions to democracy independently on the level of political culture in the society since it implies that  $\Delta\eta_t^M < \bar{b} - \eta$  for all  $0 \leq q_t \leq \tilde{q}(\phi)$ .

**Condition 1:**  $\bar{q}_M > \tilde{q}(\phi)$ .

The following proposition summarizes the political equilibrium in military dictatorship.

**Proposition 6** *If Condition 1 is satisfied, the committed citizens undertake a rebellion when  $\varepsilon_t \geq \eta + \Delta\eta_t^*$ , which happens with probability  $P(\Delta\eta_t^*)$  determined by (15). The rebellion succeeds with probability  $F(q_t)$  and the political system transitions to democracy ( $s_t^2 = D$ ), while it fails with probability  $1 - F(q_t)$  and the system remains a dictatorship ( $s_t^2 = s_t^1 = M$ ). Therefore, the per-period probability that dictatorship survives is  $1 - P(\Delta\eta_t^*)F(q_t)$ . If Condition 1 is not satisfied,  $P(\Delta\eta_t^*) = 0$  for all  $q_t > \bar{q}_M$  and military dictatorship survives with probability 1 once it is established when  $q_t \in [\bar{q}_M, \tilde{q}(\phi)$ .*

**Proof.** In the text. ■

<sup>18</sup>Note that the second order condition of problem (14) is always satisfied given that  $C_M''(\Delta\eta_t) < 0$ .

<sup>19</sup>Differentiating (16) with respect to  $q_t$ , we obtain that

$$\partial\Delta\eta_t^M/\partial q_t = F'(q_t)[u^M(M, \phi) - u^M(D)]/[\bar{b}C_M''(\Delta\eta_t)] > 0.$$

## 4 Transmission of political values

We here analyze the dynamics of the political culture in the society. To simplify the analysis, we assume that parents are naive in the decision of transmitting their cultural traits, in the sense that they do not take into account the variation across generations in the composition  $q$ .

The maximized altruistic expected utility of children for each committed parent is

$$\max_{\delta_c} [\delta_c + (1 - \delta_c) q_t] V_{t+1}^{cc} + (1 - \delta_c) (1 - q_t) V_{t+1}^{cu} - H(\delta_c), \quad (17)$$

where  $H(\delta_c)$  is the cost for the parent of transmitting his political culture to the offspring, while  $V_{t+1}^{cc}$  and  $V_{t+1}^{cu}$  denote the utility that a committed parent derives respectively from a committed and from an uncommitted child. The probability that the child is committed is the sum of the probability  $\delta_c$  that he gets the same social values of the parent, and the probability  $(1 - \delta_c) q_t$  that he will be committed by getting his values from the society. With probability  $1 - \delta_c$  the parent fails in transmitting his social values and the child gets them from society, so that he will be committed with probability  $q_t$  and uncommitted with probability  $1 - q_t$ .

The first order condition of (17) defines the optimal transmission probability  $\delta_c$  chosen by a committed parent<sup>20</sup>

$$(1 - q_t) \Delta V_{t+1}^c = H'(\delta_c), \quad (18)$$

where  $\Delta V_{t+1}^c \equiv V_{t+1}^{cc} - V_{t+1}^{cu}$ .

Similarly, the maximized altruistic expected utility of children for each uncommitted parent is

$$\max_{\delta_u} [\delta_u + (1 - \delta_u) (1 - q_t)] V_{t+1}^{uu} + (1 - \delta_u) q_t V_{t+1}^{uc} - H(\delta_u),$$

where  $\delta_u$  is probability that the uncommitted parent is successful in transmitting his political culture to the offspring, and  $V_{t+1}^{uu}$  and  $V_{t+1}^{uc}$  denote the utility that a uncommitted parent derives respectively from an uncommitted and from a committed child. The first order condition defining the optimal transmission probability  $\delta_u$  is

$$q_t \Delta V_{t+1}^u = H'(\delta_u), \quad (19)$$

where  $\Delta V_{t+1}^u \equiv V_{t+1}^{uu} - V_{t+1}^{uc}$ .

The share of committed individuals in the generation  $t + 1$  is

$$q_{t+1} = q_t [\delta_c + (1 - \delta_c) q_t] + (1 - q_t) (1 - \delta_u) q_t, \quad (20)$$

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<sup>20</sup>  $H''(\delta) > 0$  guarantees that the second order condition is satisfied.

where  $\delta_c + (1 - \delta_c) q_t$  is the fraction of children from committed parents that become committed, and  $(1 - \delta_u) q_t$  is the share of children from uncommitted parents getting the committed political values.<sup>21</sup> Therefore, the change in the share of committed individuals in the society from the generation at  $t$  and  $t + 1$  is defined as

$$\Delta q_{t+1} \equiv q_{t+1} - q_t = q_t (1 - q_t) (\delta_c - \delta_u). \quad (21)$$

The steady state level of the composition of society under no change in the political regime,  $\Delta q_{t+1} = 0$ , implies that  $\delta_c = \delta_u$  and, therefore,  $H'(\delta_c) = H'(\delta_u)$ . Using (18) and (19), this leads to the following steady state condition

$$\frac{\Delta V^c}{\Delta V^u} = \frac{q}{1 - q}. \quad (22)$$

where  $\Delta V^c$  and  $\Delta V^u$  are the values of  $\Delta V_{t+1}^c$  and  $\Delta V_{t+1}^u$  at the steady state equilibrium.

#### 4.1 The conditional dynamics of political culture

When  $q_t \in [\tilde{q}(\phi), 1]$ , there are no military coups against democracy when there is opposition, and Assumption 4 guarantees that this is always the case. Since the committed citizens never enjoy the payoff from opposing a coup, the utility of committed and uncommitted are identical and  $\Delta V_{t+1}^c = \Delta V_{t+1}^u = 0$  for all  $q_t \geq \tilde{q}(\phi)$ . This implies that citizens do not put effort in trying to have their children with the same traits, i.e.,  $\delta_c = \delta_u = 0$ , which will lead to no change in  $q$  over time. This also means that there will be no coups and regime transitions in all future periods, and that democracy is consolidated.

When  $q_t \in [0, \tilde{q}(\phi))$ , the military undertakes coups independently on the level of public democratic investment. For the committed parents, we have that

$$\Delta V_{t+1}^c \equiv V_{t+1}^{cc} - V_{t+1}^{cu} = \mathbb{E}_{t,2} \{(b_{t+1} + \varepsilon_{t+1}) - \eta | b_{t+1} + \varepsilon_{t+1} - \eta \geq 0\} = \frac{(\bar{b} + b_{t+1} - \eta)^2}{2\bar{b}}, \quad (23)$$

where  $b_{t+1} = b_t = b_i^*(q_t)$  is the expected equilibrium public democratic investment for the next generation, which is equal to the current one since agents are naive and do not take into account the change in  $q$  for the next generation. The expression in (23) is the same as the one in (10) and corresponds to the expected utility that a committed citizen gets from the opposition to a military coup.

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<sup>21</sup> With probability  $1 - \delta_u$  each uncommitted parent is unsuccessful in transmitting his political values, and the child gets the same values of a citizen randomly chosen in the population, so becoming committed with probability  $q_t$ .

For an uncommitted parent we obtain that

$$\Delta V_{t+1}^u \equiv V_{t+1}^{uu} - V_{t+1}^{uc} = \eta \frac{\bar{b} + b_{t+1} - \eta}{\bar{b}}, \quad (24)$$

which is the expected cost of opposing a military coup. This comes from the fact that an uncommitted parent will evaluate the utility of his child from opposing a coup with his own preferences, which implies that he will take into account the losses from opposition but not the gains that the committed child will get from it.

Substituting (23) and (24) into (22), we obtain that the steady state composition  $q_e$  of society under democracy is implicitly defined by the following equation

$$\frac{b_e(q_e) + \bar{b} - \eta}{2\eta} = \frac{q_e}{1 - q_e}. \quad (25)$$

The analysis for the dynamics of the political culture under dictatorship is very similar and is reported in the proof of the following proposition that characterizes the conditional cultural dynamics across regimes.

**Proposition 7** *The conditional cultural dynamics under democracy ( $s_t = D$ ) is the following.*

1. *When  $q_t \in [1/2, 1]$  the steady state value of the share of committed citizens is  $\tilde{q}_c$  implicitly defined by*

$$\frac{b_c^*(\tilde{q}_c) + \bar{b} - \eta}{2\eta} = \frac{\tilde{q}_c}{1 - \tilde{q}_c}; \quad (26)$$

*$q_{t+1} > q_t$  when  $q_t < \tilde{q}_c$ , and  $q_{t+1} < q_t$  when  $q_t > \tilde{q}_c$ .*

2. *When  $q_t \in [0, 1/2]$  the steady state value  $\tilde{q}_u$  of the share of committed citizens in the society is given by*

$$\frac{b_u^*(\tilde{q}_u) + \bar{b} - \eta}{2\eta} = \frac{\tilde{q}_u}{1 - \tilde{q}_u}; \quad (27)$$

*$q_{t+1} > q_t$  when  $q_t < \tilde{q}_u$ , and  $q_{t+1} < q_t$  when  $q_t > \tilde{q}_u$ .*

3. *The steady state value of the share of committed citizens under dictatorship ( $s_t = M$ ) is  $\tilde{q}_M$ , defined by*

$$\frac{\bar{b} - \eta(\tilde{q}_M)}{2\eta(\tilde{q}_M)} = \frac{\tilde{q}_M}{1 - \tilde{q}_M}; \quad (28)$$

*$q_{t+1} > q_t$  when  $q_t < \tilde{q}_M$ , and  $q_{t+1} < q_t$  when  $q_t > \tilde{q}_M$ .*

4. *The following ranking always holds:  $\tilde{q}_M < \tilde{q}_u < \tilde{q}_c$ .*

**Proof.** See the Appendix. ■

The results in Proposition 7 importantly highlight the two-way complementarity between the decisions of the family and the state on political socialization. As already noticed from

Proposition 3, a higher level of political culture in the society (e.g., a higher value of  $q$ ) increases the incentive for a democratic state to provide public democratic investment. Conversely however there is also a dynamic complementarity that works in the opposite direction: other things equal, when parents expect a relatively higher provision of public democratic investment by the state for the next generation, they invest more in the transmission of democratic political culture (i.e.,  $q_e$  is increasing in  $b_e$ ). The explanation of this result is immediate from the comparison of (23) and (24) which represent the expected net gains of the committed and uncommitted parents from the transmission of their traits. A higher provision of public democratic investment increases the probability,  $P(b_{t+1}) = (\bar{b} + b_{t+1} - \eta) / \bar{b}$ , that the offspring will oppose to coups, which rises the incentive of both groups for transmitting their own traits. However, the payoff of the committed parents increases more than the one of the uncommitted because committed individuals have an intrinsic value from opposition that is increasing in  $b$ . This in turn explains why higher levels of public democratic investment increase the steady state level of political culture.

Note that along with the two-way complementarity between family socialization and state indoctrination, Proposition 7 is also partially consistent with the *congruence doctrine* between political institutions and political culture (Almond and Verba, 1963; Eckstein, 1966). Such doctrine says that there should be a definite congruence relationship between patterns of political values and the nature of the political regime that prevails. Result 4 is suggestive of such relationship. Indeed it indicates that controlling for regime stability, democratic culture is less likely to prevail in authoritarian regimes than in democratic regimes (as  $\tilde{q}_M < \tilde{q}_u < \tilde{q}_c$ ). Hence long term patterns of political culture tend to be congruent with long term stable political structures. Note however that such congruence may be only partial. Indeed when  $\tilde{q}_M > 0$ , the model generates a *latent* permanent degree of democratic political culture even under long standing authoritarian regimes.<sup>22</sup>

Figure 3 describes the dynamics of political culture in democracy and dictatorship in the special case where  $\tilde{q}_u < 1/2$  and  $\tilde{q}_c < \tilde{q}(\phi)$ .

[Figure 3 about here]

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<sup>22</sup>Such degree of “partial” congruence is consistent with the fact that in presence of shocks, long standing authoritarian regimes may transit at some point to more democratic regimes, as has been observed for instance in the case of the ‘Arab Spring’.

## 5 Regime transitions and the dynamics of political culture

The following proposition summarizes the equilibrium of the model for any given initial level  $q_0$  of democratic culture.

**Proposition 8** *Let  $q_0$  be the initial value of political culture in the society. The equilibrium of the model is the following. If  $q_0 \in [\tilde{q}(\phi), 1]$ , democracy persists with probability 1 (consolidated or permanent democracy).*

1. When  $\tilde{q}(\phi) > 1/2$ , then
  - 1.i) if  $\tilde{q}_c \geq \tilde{q}(\phi)$  and  $\tilde{q}_u < 1/2$ , there is a positive probability that democracy converges to a permanent democracy for all  $q_0 \in (1/2, \tilde{q}(\phi))$  (converging consolidating democracy), while it consolidates with probability zero for all  $q_0 \in [0, 1/2]$ ;
  - 1.ii) if  $\tilde{q}_c \geq \tilde{q}(\phi)$  and  $\tilde{q}_u \geq 1/2$ , there is a positive probability that democracy converges to a permanent democracy for all  $q_0 \in [0, \tilde{q}(\phi))$  (fully converging consolidating democracy);
  - 1.iii) if  $\tilde{q}_c < \tilde{q}(\phi)$ , there is a zero probability that democracy consolidates for all  $q_0 \in [0, \tilde{q}(\phi))$ .
2. When  $\tilde{q}(\phi) \leq 1/2$ , if  $\tilde{q}_u \geq 1/2$ , there is a positive probability that democracy converges to a permanent democracy for all  $q_0 \in [0, 1/2)$  while it never consolidates if  $\tilde{q}_u < 1/2$ .

Examples of the equilibrium described in Proposition 8 are reported in Figures 4a–4c.

[Figures 4a, 4b, 4c about here]

When  $q_0 \in [\tilde{q}(\phi), 1]$  there are no coups and no transitions to authoritarian regimes. Democracy is therefore consolidated. Indeed, the level of public democratic investment  $b_c^*(q_t)$  is such that the citizens would always oppose to coups attempt. The military does not find optimal undertaking coups when democratic political culture is sufficiently salient in society (i.e.,  $q > \tilde{q}(\phi)$ ). Since committed citizens never enjoy the payoff from opposing to a coup, the utility of committed and uncommitted agents are identical and both groups do not put any family socialization effort to transmit their own political culture. Given that cultural transmission is only related to random matching oblique transmission,  $q$  remains constant over time and democracy persists. This result suggests the existence of *threshold effects* (due to political culture) in democratic consolidation.

When  $q_0 \in (1/2, \tilde{q}(\phi))$ , democracy is potentially unstable. The military undertakes coups independently from the level of public democratic investment. However, public democratic investment affect the fraction of committed citizens that may oppose or not to coups. The political system may remain democratic or transit to dictatorship. If the steady state level of political culture  $\tilde{q}_c$  is lower than the threshold value  $\tilde{q}(\phi)$  necessary for democratic consolidation, then the political system never converges to a permanent democracy since there is always a reduction in the share of committed citizens as long as  $q_t \in (\tilde{q}_c, \tilde{q}(\phi))$ . In this case the equilibrium is characterized by oscillations between political regimes (see Figure 4a). If instead  $\tilde{q}_c \geq \tilde{q}(\phi)$  (because of the high level of the public democratic investment), then committed citizens have higher incentives in transmitting their values than uncommitted ones. Political culture will diffuse over time under democratic institutions for all  $q_t \in (1/2, \tilde{q}(\phi))$ . If opposition to coups is successful for some periods so that no transition to dictatorship takes place, then at some point the share of individuals committed to defend democracy will be such that it is not optimal for the military to undertake military coups (i.e.,  $q_t = \tilde{q}(\phi)$ ). In other words, when  $\tilde{q}_c \geq \tilde{q}(\phi)$  there is always a strict positive probability that democracy consolidates (Figure 4b describes this case of converging consolidating democracy).

When  $\tilde{q}_c \geq \tilde{q}(\phi)$  and  $\tilde{q}_u \geq 1/2$ , the share of committed citizens increases over time for all values  $q_t < \tilde{q}(\phi)$  when the system remains democratic. This implies that there is always a positive probability that the political system converges to a permanent democracy for all initial levels of political culture (see Figure 4c for an example of fully converging consolidating democracy). When instead  $\tilde{q}_u < 1/2$ , there is no possibility to converge to a permanent democracy as long as  $q_t < 1/2$ .

Finally, if  $\tilde{q}(\phi) \leq 1/2$ , then it is immediate to see that convergence to permanent democracy takes place only when  $\tilde{q}_u \geq 1/2$ .

From Proposition 8 we also get the following important properties on the persistence and consolidation of democracy.

**Proposition 9** (*Stochastic Persistence of Regimes*) *When a regime can be consolidated with positive probability, then the more time the political system is in that regime, the more likely that regime will occur next period.*<sup>23</sup>

**Proof.** See the Appendix. ■

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<sup>23</sup>It can also be easily verified that for any  $q_0 < \tilde{q}(\phi)$ , the probability that the political system converges to a permanent democracy is (weakly) increasing in the steady state values of the share of committed citizens in the society  $\tilde{q}_u$  and  $\tilde{q}_c$ .



The two-way dynamic complementarity between political institutions and “slow moving” political values is at the heart of our result of stochastic persistence of regimes. Indeed, the longer a political regime is in place, the longer public policies are designed to promote the evolution of cultural political values congruent with the preservation of that regime. This in turn makes that regime more likely to survive in the future. Specifically, parents optimally choose to transmit political values that are congruent with the political regime they live in. Therefore, when democracy survives, parents have higher incentives to transmit democratic values and consequently the extent of democratic political culture in the society increases. In turn, a higher degree of democratic culture makes it optimal for a democratic government to invest more resources in public democratic indoctrination. This increases the survival likelihood of democracy (as it makes it more likely for citizens to oppose to coups and to succeed). Conversely, dictatorial regimes undertake repressive and propaganda actions that increase the cost to opposition and reduce the incentives of families to transmit democratic values. In turn this situation leads overtime to the diffusion of a political culture less likely to support or make revolutions against the regime. As a consequence, the longer the dictatorial regime is in place, the lower the likelihood to democratic transition and the higher the probability of staying into dictatorship.

## 6 Comparative statics

In this section we develop some comparative statics analysis trying to understand how some variables, such as the level of state capacity, economic development, natural resources, foreign aid and external threat affect the transmission of political culture and the process of democratic consolidation.

To this aim, we now assume that the economy has a certain amount of natural resources  $N$ , that are property of the state, and that it may receive some aid  $H$  from foreign countries. We also assume that foreign aid is conditional on the political system being democratic;  $\alpha_t^s$  will be an indicator function equal to 1 if the system is a democracy and 0 if it is a dictatorship. This implies that the government budget constraint under democracy can be rewritten as

$$\hat{\tau}A(1-x) - xh/\gamma - G^D - \tilde{C}(b) + N + \alpha^s H = 0,$$

with  $\tilde{C}(b) = 0$  in the first period of life cycle. This implies that  $u_t^c = a - C(b_t)$ , where the term  $a$  is now defined as follows

$$a \equiv (1 - \hat{\tau})A + \lambda\hat{\tau}A(1-x) - \lambda xh/\gamma + \lambda N + \lambda\alpha_t^s H. \quad (29)$$

Once we take into account that the term  $a$  is defined as in (29) rather than (9), the analysis of the equilibrium under democracy is unchanged.

Condition (6) defining when the military undertakes a coup also in presence of citizens' opposition is unchanged, but  $u^M(M, \phi)$  in (4) is now given by the following expression

$$u^M(M, \phi) = \phi \hat{\tau} A (1 - x) / x + N/x - h,$$

while  $u^M(D)$  is still given by (5). This implies that (6) can be rewritten as  $q_t \leq \tilde{q}(\phi)$ , with

$$\tilde{q}(\phi) = F^{-1} \left( 1 - \frac{T}{\phi \hat{\tau} A (1 - x) / x + N/x - h/\gamma} \right). \quad (30)$$

In analyzing the effects of the variables  $(\hat{\tau}, A, N, h, H, \phi)$  on the process of consolidation of democracy, we need to consider two effects of these variables. The first effect is on  $\tilde{q}(\phi)$ . Higher values of  $\tilde{q}(\phi)$  reduce the probability of consolidation of democracy because (i) the size of the region  $[\tilde{q}(\phi), 1]$  where democracy is consolidated shrinks, and (ii) the probability that the steady state value of the share of committed citizens in the society  $\tilde{q}_c$  (or both  $\tilde{q}_c$  and  $\tilde{q}_u$ ) is higher than  $\tilde{q}(\phi)$  lowers, which makes the transition to permanent democracy less likely. The second effect of these variables is on the steady state values of the share of committed citizens  $\tilde{q}_u$  and  $\tilde{q}_c$  (recall that the probability of the political system converging to a permanent democracy is increasing in these values for a given level of  $\tilde{q}(\phi)$ ). Then, we also remind that the above set of variable of interest affect the thresholds  $\tilde{q}_u$  and  $\tilde{q}_c$  only through the levels of public democratic investment  $b_u^*(q)$  and  $b_c^*(q)$ , and that  $\tilde{q}_u$  and  $\tilde{q}_c$  are increasing in  $b_u^*(q)$  and  $b_c^*(q)$  respectively.

The effects of the variables considered on the probability of consolidation of democracy are summarized in the following proposition.

**Proposition 10** *The threshold  $\tilde{q}(\phi)$  is increasing in  $\hat{\tau}$ ,  $A$ , and  $N$ , it is decreasing in  $h$  and  $\phi$ , and it is independent on  $H$ . The thresholds  $b_u^*(q)$  and  $b_c^*(q)$  are both increasing in  $\hat{\tau}$ ,  $A$ , and  $N$ , and both decreasing in  $h$  and  $H$ , while they are independent on  $\phi$ . This implies that the overall effect of a higher level of state capacity  $\hat{\tau}$ , economic development  $A$ , natural resources  $N$ , and external threat  $h$  on the consolidation of democracy is ambiguous, while more foreign aid  $H$  that is conditioned on the existence of a democratic political system, or a lower appropriation capacity  $\phi$  by the military, increases the probability that democracy becomes permanent.*

**Proof.** See the Appendix. ■

The results contained in Proposition 10 can be explained as follows. On the one hand, higher levels of state capacity  $\hat{\tau}$ , economic development  $A$ , and natural resources  $N$ , increase

the amount of resources that the military can appropriate once in power; this reduces the region of parameters where the military does not undertake coups and democracy is consolidated (i.e.,  $\tilde{q}(\phi)$  increases and the region  $[\tilde{q}(\phi), 1]$  shrinks). On the other hand, this also implies that the citizens have higher incentives to defend democracy and increase the public democratic investments ( $b_u^*(q)$  and  $b_c^*(q)$  are higher). This translates into stronger opposition against military coups and higher accumulation of political culture in the society (i.e., higher  $q$ ). This in turn favors the process of consolidation of democracy.

Similarly, a higher level of external threat, represented by an increase in the effort parameter  $h$  of the military, also has two opposing effects. First, it leads to larger rents to the military under democracy, so reducing its incentive to undertake power. This increases the region where democracy is consolidated. At the same time, higher rents to the military reduce the net payoff of citizens from democracy relative to military dictatorship. Therefore, citizens also have lower incentives to defend democracy and to provide public democratic investment, leading to lower accumulation of political culture in the society (lower  $q$ ).

Finally, more foreign aid  $H$  conditioned on the existence of a democratic system only generates a positive effect on democratic consolidation. Indeed, such a change does not affect the incentives of the military to take power, as these resources cannot be appropriated by them. At the same time, it unambiguously stimulates an unconsolidated democratic government to invest in public democratic infrastructures to defend democracy from a military coup. As a consequence, foreign aid conditioned to democracy stimulates indirectly the spreading of a political culture congruent to the regime and helps its consolidation. In contrast, a lower value of the military appropriation capacity  $\phi$  reduces the incentives of the military to take power, while it has no effect on public democratic investments. As a result, such a change increases the probability that democracy consolidates.

## 7 Extensions

The previous section showed that higher state capacity, income and natural resources rents have ambiguous effects on democratic consolidation. A positive change in these variables leads both to more resources that the military can potentially appropriate and increased incentives for a democratic government to invest in public democratic infrastructures. In this section, we show that these comparative statics are unambiguous when there is some strong enough asymmetry across political regimes on the capacity of appropriation of the resources.<sup>24</sup>

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<sup>24</sup>This is already the case for instance for conditional foreign aid in the previous section.

- **Inefficiency of appropriation of the military**

Consider first the situation where the military appropriation capacity  $\phi$  depends negatively on productivity  $A$  or the fraction of committed citizens  $q$ , so that  $\phi \equiv \phi(A, q)$  with  $\partial\phi/\partial A < 0$  and  $\partial\phi/\partial q < 0$ . This case can reflect the fact that richer and more productive economies are technologically more sophisticated and specialized. Therefore it may require special competencies to extract efficiently resources from the country, competencies that the military do not have. As well, it may be more difficult for the military to get the cooperation from citizens to tax efficiently the economy. Such cooperation is more difficult to obtain when the legitimacy of the regime is put into question, something that is more likely to happen when there are more committed citizens in the society.

In this case, an increase in  $A$  may unambiguously favor the consolidation of democracy because it not only generate an increase in public democratic investment but also a reduction of the threshold  $\tilde{q}(\phi)$  above which the military does not undertake coups. Indeed, it can be easily observed from (30) that an increase in  $A$  reduces  $\tilde{q}(\phi)$  when  $\partial[A\phi(A, q)]/\partial A = \phi(A, q) + A\partial\phi/\partial A < 0$ , which is the case if  $-\partial\phi/\partial A > 0$  is strong enough. In words, the increase in productivity helps the consolidation of democracy by making the military regime less efficient in extracting rents.<sup>25</sup>

- **The effects of rent-seeking with natural resources in heterogeneous societies**

Consider now the effect of natural resources on democracy consolidation. A possible asymmetry in resource appropriation between a strong authoritarian regime and a democratic regime may reside in the ability for the first regime to restrict access to rent seeking and to capture resource revenues more efficiently than a democratic regime, in which social groups enjoy more freedom to undertake uncoordinated distortive rent seeking activities. In this section, we propose an extension to our framework that takes into account these features and show it can lead natural resources to affect negatively the consolidation of democratic regimes. Interestingly, this comparative statics illustrates the possibility of a “political curse effect” of natural resources on political institutions going through the channel of political socialization and cultural evolution.

To see that, consider the existence of  $K \geq 2$  groups of equal size in the society, so that each group has size  $(1 - x)/K$ . Under a democratic regime, each group  $k = 1, \dots, K$  may exert an effort  $w_k$  to appropriate natural resources  $N$ .<sup>26</sup> We assume the absence of coordination

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<sup>25</sup> A similar results obtains when  $\partial\phi/\partial q < 0$ . At higher levels of  $q$  corresponds a lower  $\phi$  since  $\partial\phi/\partial q < 0$  and this also reduces  $\tilde{q}(\phi)$ .

<sup>26</sup> This implies that natural resources do not enter into the government budget constraint.

problems within each group so that each agent  $i$  of group  $k$  exerts an effort

$$w_k^i = \frac{w_k}{(1-x)/K} = \frac{K}{1-x} w_k.$$

The utility cost of effort for each agent is linear in  $w_k^i$ . Total effort for rent-seeking activities in the society will be given by

$$W = \sum_{k=1}^K w_k, \quad (31)$$

and the share of natural resources appropriated by each group  $k$  is equal to its share of effort, i.e. equal to  $w_k/W$ . We also assume that total effort in rent-seeking affects negatively the individuals' productivity, i.e.  $A(W)$  with  $A'(W) \equiv \partial A(W)/\partial W < 0$  and  $A''(W) \leq 0$ . This last assumption is consistent with the rent seeking literature that emphasizes the distortive aspect of rent-seeking behavior on the non-resource economy, such as diverting entrepreneurial talent to unproductive rent-seeking (Torvik, 2002, and Mehlum et al., 2006), or erosion of property rights in the non-resource sector (Hodler, 2006). Finally, we assume that the military gets all natural resources in military dictatorship, which implies that  $w_k = 0$  for all  $k$ .

We first compute the optimal effort of each individual in rent-seeking activities. Since this is chosen at the group level and all individuals in the group exert the same effort, we can write the maximization problem of an (uncommitted) individual belonging to group  $k$  in the second period of life under democracy as follows

$$\begin{aligned} \max_{w_k} \quad & a(W) + \frac{K}{1-x} \left( -w_k + \frac{w_k}{W} N \right) \\ \text{with } a(W) \quad & \equiv (1 - \hat{\tau}) A(W) + \lambda \hat{\tau} (1-x) A(W) - \lambda x h / \gamma, \end{aligned} \quad (32)$$

where  $W$  is given by (31) and  $a(W)$  denotes the per-period utility of the citizen net of the natural resources rents and of the rent-seeking effort.

The first order condition of problem (32) is

$$[(1 - \hat{\tau}) + \lambda \hat{\tau} (1-x)] A'(W) + \frac{K}{1-x} \left( -1 + \frac{W - w_k}{W^2} N \right) = 0, \quad (33)$$

where we have used the fact that  $\partial W / \partial w_k = 1$ .<sup>27</sup> Given that all groups have the same size and there is no heterogeneity among them, the equilibrium is symmetric and, therefore,  $w_k = W/K$  for all  $k = 1, \dots, K$ . Taking into account this fact, equation (33) defines the

<sup>27</sup>The second order condition of this problem can be written as

$$[(1 - \hat{\tau}) + \lambda \hat{\tau} (1-x)] A''(W) - \frac{K}{1-x} 2N \frac{W - w_k}{W^3} < 0,$$

and it is always satisfied since  $A''(W)$  is nonpositive.

equilibrium level of total effort  $W^*$  and consequently the equilibrium effort in rent-seeking by each group  $k$  equal to  $w_k^* = W^*/N$ . It can easily be observed that the total effort in rent-seeking activities is increasing in the amount  $N$  of natural resources available, and that this reduces the productivity of the individuals (i.e.,  $\partial A(W^*)/\partial N < 0$ ).

In order to determine the effect of natural resources on the consolidation of democracy, we need understand the effect of an increase in  $N$  on  $\tilde{q}(\phi)$  and on  $b_u^*(q_t)$  and  $b_c^*(q_t)$  (which in turn affect  $\tilde{q}_u$  and  $\tilde{q}_c$  respectively). As in Section 6, the decision problem of the military about undertaking coups is unchanged, which means that an increase in  $N$  reduces the probability of consolidation of democracy by increasing  $\tilde{q}(\phi)$ .

For the optimal levels of public democratic investment  $b_u^*(q)$  and  $b_c^*(q)$ , it can be shown that the impact of  $N$  depends crucially on the number  $K$  of rent-seeking groups in society. Indeed when there are few groups doing rent-seeking under democracy, each group limits its rent-seeking behavior about natural resources as it partly internalizes the negative externalities generated by such activities on the non-resource sector. The individuals' utility then increases in the amount  $N$  of natural resources available and this increases the incentive of a democratic government to spend more resources in public democratic investment in order to defend the regime (i.e.,  $\partial b_c^*(q_t)/\partial N > 0$  and  $\partial b_u^*(q_t)/\partial N > 0$ ). When instead the number of rent-seeking groups is very large, such as in the limit case where  $K$  tends to infinity, one gets the situation of competitive rent-seeking where each group is very small and does not internalize the distortive effects generated by its behavior on the rest of the economy. This translates into a strong decrease in market productivity  $A$  and a reduction of public democratic investment as citizens gain less from the defense of democracy. In turn, the reduction of the optimal levels of public democratic investment  $b_u^*(q)$  and  $b_c^*(q)$  imply lower thresholds  $\tilde{q}_u$  and  $\tilde{q}_c$  of the steady state composition of society, which means a lower probability of a transition to a consolidated democracy.

Specifically when  $K$  is sufficiently high, then a higher level of natural resources has an unambiguously negative effect on the consolidation of democracy and one gets the following proposition.

**Proposition 11** *A higher level of natural resources  $N$  increases the threshold  $\tilde{q}(\phi)$ . When the number of groups in the society is sufficiently large, (i.e.,  $K > K^*$ ) a higher  $N$  reduces both  $b_u^*(q)$  and  $b_c^*(q)$  and makes democratic consolidation unambiguously less likely. When the number of groups in the society is not too large, (i.e.,  $K < K^*$ ) more natural resources have*

instead an ambiguous effect on democratic consolidation.<sup>28</sup>

**Proof.** See the Appendix. ■

• **Permanent of effects of temporary shocks on the consolidation of democracy**

The framework presented has also the feature that temporary shocks may have permanent effects on the consolidation of democracy through the process of family transmission of political culture. Consider for example a temporary increase in the level of productivity at time  $t$ , so that  $\Delta A_t > 0$ . As shown in Section 6, a permanent increase in  $A$  has ambiguous effects on the probability of consolidation of democracy as it increases the public democratic investment  $b_u^*(q_t)$  and  $b_c^*(q_t)$  (and the associated steady state values of the share of committed and uncommitted citizens in the society,  $\tilde{q}_c$  and  $\tilde{q}_u$ ) but it also lowers the threshold  $\tilde{q}(\phi)$  above which the military does not attempt coups. In the case of one period increase in  $A$ , the long run value of  $\tilde{q}(\phi)$  is unchanged. However, the increase in the public democratic investment generated by a higher productivity also rises the probability that the democratic regime persists from  $t$  to  $t + 1$ , which gives more incentives to the committed individuals to transmit their traits (i.e.,  $\partial q_{t+1}/\partial A_t > 0$ ). As the level of committed citizens at time  $t + 1$  is higher (relative to the case where there is no productivity shock), the probability to remain in democracy will also be higher. This positively affects the transmission of political culture and the probability to remain in democracy at  $t + 1$ . The mechanism just described is at work in all periods. In sum, while the impact of an increase in  $A$  will decline over time, its final effect is a higher probability that democracy persists and consolidates.

## 8 Some evidence

In this section, we provide a few but significant illustrations of some of the main mechanisms on which our theory is based. We first focus on the cases of Post World War II Federal Republic of Germany and Japan. Then we consider the interesting case of Estonia during much of its 20<sup>th</sup> century turbulent history.

### 8.1 The cases of post World War II: Germany and Japan

#### Germany:

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<sup>28</sup>Under the additional convenient assumption that  $A'''(W) \geq 0$ , it can be shown that the threshold  $K^*$  above which such negative effect is unambiguous is unique.

As it is well-known, political (and economic) institutions in both the Federal Republic of Germany and in the former Empire of Japan were drastically transformed under the active supervision of the Allied military government. This process of essentially exogenous institutional change, following the military defeat of the Axis power in 1945, led to creation in both countries of parliamentary democracies, whose legislature was elected under universal suffrage. Nevertheless, a major concern was raised in both countries relative to the congruence between the new democratic institutions and the prevailing political culture within the West German and Japanese population.

In the case of Germany, “[...] this concern was reinforced by early postwar surveys, which suggested that Germans had neither developed a deep commitment to the democratic forms of the Federal Republic nor adopted appropriate roles as citizens participating in a democracy.” (Baker, Dalton, and Hildebrandt, 1981, p. 16). Nevertheless, since the end of World War II both the Allied occupation forces and then the Federal government undertook a major effort to reeducate or “denazify” the German people (related in our model to the variable of investment in public socialization *b*). This program not only included the removal of former Nazi from most power positions and the punishment of war criminals, but also use the mass media, the educational system and public forum to conduct a pervasive campaign of political education of democratic norms, targeted particularly to the younger generations.<sup>29</sup>

By several quantitative indicators, this major public investment in political education appeared to be highly fruitful according to different pieces of evidence cited in (Baker, Dalton, and Hildebrandt, 1981). For instance, the number of citizens of the Federal Republic who believed that Bundestag represented the public interest doubled between 1951 and 1964; while only over half favored a democratic form of government, the same figure increased to three quarters by 1965 (see p. 25). Moreover, political discussion was much higher in 1973 than it used to be in 1953, with the youngest generation raised in the democratic environment of the Federal Republic showing the highest level of it (see p. 39, and p. 48). In 1973, 44% of the German citizens (see p. 30) felt that they could “bring about a change in their nation”, a figure somewhat above the corresponding mean at the European level of 41%, which demonstrate a relatively diffused sense of political efficacy, and therefore of internalization of a fundamental democratic norm.

These features lead Baker, Dalton, and Hildebrandt to conclude that: “All the evidence suggests that a viable democratic political culture has developed in the Federal Republic of Germany during the postwar period. Because diffuse support for the system and its norms is

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<sup>29</sup>See also Baker, Dalton, and Hildebrandt (1981, ch. 1).



quite pervasive [i.e. the number of committed citizens is relatively high in terms of our model], it is increasingly inappropriate to argue that the German political culture is incongruent with the existing political structure.” (Baker, Dalton, and Hildebrandt, 1981, p. 69).

### **Japan:**

Similarly for Japan, 1945 war defeat represented a major catalyst for radical political and social change. As World War II came definitively to an end, there was the creation of new democratic institutions at the behest of external authorities (Sayuri, 2010). In the postwar years of the Allied occupation (1945–51) the country was run by the Supreme Commander for the Allied Powers (SCAP) whose occupation policies contributed to transform profoundly the key institutions of the post-war Japan, with the focus on the twofold aim of demilitarization and democratization. These objectives were codified in the new Japanese Constitution of 1947, considered one of the most advanced democratic constitution of its time. In particular, the explicit renunciation of war and the extent of guaranteed human rights represented the two major innovations of the Japan’s post-war constitution.

As in the case of the denazification in Germany, the process of demilitarization in Japan targeted those officials, journalists, educators and businessman blamed for being implicated in the pre-war militarist policies. Alongside the dismantling of Japanese militarist structure, a wide program of reforms whose implementation relied heavily on Japanese local authorities was started to democratize Japan’s political and social institutions.

One of the main target of reform was the educational system, being one of the primary agent of socialization blamed for spreading pre-war militarist ideas throughout the Japanese population. A series of initiatives were implemented in the field of education to pursue, coherently with the broader reform action of the postwar years, the general goals of demilitarization, democratization and delocalization: about one quarter of the teachers in charge during the pre-war time left the profession; teaching programmes and textbooks were revised; the old elitist structure was dismantled and a new educational system was shaped upon the US model; the control of education of young people was democratized by transferring a large number of responsibilities to local education authorities, namely locally elected boards acting independently from the Ministry of Education (Neary, 2002, pp. 40–41).

The new educational system played a crucial role in spreading a democratic political culture among the youngest generations of Japanese. The early 1960s witnessed the first open and massive expression of this new political consciousness, as thousands of young Japanese took the street to protest against the renewal of Japan’s unequal security treaty with the United

States (Haddad, 2012, p. 66). As Haddad highlights, the target of the mass protests was not the treaty itself, but the method used to pass it, which infringed the normal democratic procedure. Hence, protagonists of this early episode of protest were young students who belonged to the first generation to have been educated in the postwar democratic educational system; fed with democratic ideas and become politically active, they were asserting their role as active citizens (Haddad, 2012, p. 66). As the new generations educated after WWII were increasingly numerous in the Japanese society, their democratic political culture began to take roots and to become increasingly dominant. According to Haddad's tipping point model of political change—grounded on the importance of generational effects in creating opportunities for democratic change—a further consolidation and deepening of Japan's democratic institutions occurred when the post-war generation took over important positions of power in the mid-1990s and reformed democratic institutions to better serve the needs of Japan's contemporary society (Haddad, 2012, pp. 98–101).

Alongside the central role played by education and generational fractures, a further element contributed to shape Japan's democratic political culture, i.e. the persistence of some aspects of the country's traditional political culture. In his analysis of Japanese political culture, Richardson (1974, p. 244) has come to the conclusion that, looking at the short experience of the Japanese postwar democracy, it could be argued that “democratic concepts can be internalized at the mass level in a relatively short period of time” with Japan developing its own peculiar viable democratic political culture. Indeed, the adoption of democratic values, institutions and practises has been accompanied by the preservation of important aspects of their traditional culture (Haddad, 2012, p. 101). Given that part of these traditional traits were going through family transmission, these facts are consistent with our view of a certain congruence between family political socialization and public indoctrination.

The case of Japan is also a good example of the persistency of political culture across time. An example is provided by the fact that the Japanese democracy features very high level of civic engagement compared to other Western democracies. As a legacy of the wartime mobilization and of pre-war civic activities, civic engagement registered a rapid increase in postwar time. As argued by Kage, civic engagement acted as an important accelerator for the rebuilding of Japan in the aftermath of WWII (Kage, 2011, p. 159); and it still represents a cornerstone of today's Japanese democracy. An example of Japan's extraordinary high rates of civic participation is provided by the fact that more than 90% of Japanese families are members of their local neighborhood associations (Haddad, 2012, p. 194).

To conclude, from 1945 onwards Japanese succeeded in adopting liberal democratic insti-

tutions introduced from outside during the occupation time; and by reshaping them through the development of a Japanese democratic political culture, they have created their own consolidated democratic structures.

## 8.2 The case of Estonia in 1918–1991

The case of Estonia during the period 1918-1991 provides another illustration of our theory and the causal mechanisms interlinking political institutions, political socialization and cultural legacies. In particular, the Estonian case highlights the following features of our theory: a) an incumbent (unconsolidated) democratic government has the incentive to invest in civic virtues (democratic infrastructure or public political socialization); b) citizens committed to democracy tend to invest in transmitting their “type” to their offspring (private political socialization), and the more so under democracy; finally c) democratic virtues (i.e., the mass of citizens committed to democracy) has some degree of persistence (declining over time) in presence of nondemocratic formal political institutions, while the future of a new democracy depends on historical legacies (the number of citizens intrinsically committed to democracy present at the critical juncture of the democratic transition).<sup>30</sup>

This section draws extensively on the recent contributions of Bennich-Björkman (2007a, 2007b and 2007c), which address the question of how institutional change affects political culture, but also the complementary question of how the persistence of a certain type of culture potentially influences the consolidation of new political institutions. The author draws on previous historical and sociological research. It also presents an original body of evidence consisting in interviews, conducted in 1998, with the surviving members the generation of Estonians whose original socialization occurred during in the 1920s and 1930s (the first episode of democratic government in Estonian history). This cohort of people is of particular interest since in 1944 a fraction of it left the country, mainly to resettle in democratic countries such as Sweden and Canada (relatively similar in terms of political culture and especially political and economic institutions),<sup>31</sup> and the rest stayed and lived under the Soviet rule in the Estonian Soviet Socialist Republic for the following four decades.<sup>32</sup>

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<sup>30</sup>More generally, as already remarked, several other “success stories” of Post-Communist democratization like the ones of Poland and Slovenia, as well as other examples much more “troubled democratization paths” of countries like Russia, Ukraine, Romania, or Bulgaria, point out to the importance of particular “historical legacies” (e.g., civic virtues) that these societies carried with them into democratic times. See for instance, Dryzek and Holmes (2002), Grzymala-Busse (2002), Jones-Luong (2002) and Kitschelt (2003).

<sup>31</sup>See also Bennich-Björkman (2006) for a comparative analysis mainly focused on the differences in political culture between Swedish-Estonians and the Canadian-Estonians.

<sup>32</sup>The opinion survey in question was conducted in 1998 and involved 291 Estonians living at that time respectively in their native country, in Sweden and in Canada. These two groups of people thus potentially

A brief review of the most significant events in the history of Estonia since its independence from the Russian Empire in 1918, to its secession from the Soviet Union in 1991, will be helpful. Estonia became an independent nation, whose state had the form of a parliamentary Republic with proportional representation (modelled after the constitution of the Weimar Republic), in 1918 after the defeat of the Russian Empire in World War I. Equally interesting, the overwhelming de facto political power enjoyed by the Junkers landlords aristocracy until then was broken-up by a major agrarian reform immediately implemented by the newly born state. This led to a society with a relatively horizontal structure mainly formed by small-scale peasants with a petit urban bourgeoisie. The economic power of the new state was also consolidated, as part of the Junkers' holding were converted into state property. The creation of the Estonian Republic came along with a major transformation and reallocation of both de jure and de facto political power, both in the direction of consolidating the newly established democratic regime. Furthermore, the land reform itself favoured the creation of a multitude of cooperative producers' associations, supported by the state which contributed to the consolidation of the civil society (we will discuss this issue further below).

A significant fact documented by various historians is the major effort done since the very beginning by the new Estonian democratic government, both at the central and local level, to increase both the level of formal education, and the diffusion of democratic values (through the schooling process and other channels), especially among the young generations socialized during the 1920s and 1930s. For example, Estonian language schools were established, and artistic life of all kinds flourished. In 1919, instruction in the Estonian language was introduced at the University of Tartu; in addition, Tallinn Technical University and the Estonian Academy of Music were established in Tallinn. One of the more notable cultural acts of the independence period, unique in Western Europe at the time of its passage in 1925, was a guarantee of cultural autonomy to minority groups comprising at least 3,000 persons, including Jews. The democratic character of the Estonian educational and cultural reforms, and more generally the generous and tolerant legislation toward minorities implemented (Church and state were formally separated in Estonia in 1925; see Hope, 1994, p. 46), is important since it clearly highlights of existence and progressive consolidation of shared republican values since the early

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represent, loosely speaking, respectively the "treatment" and the "control" group of a potential quasi-natural experiment consisting in the invasion of Estonia by the Red Army in 1944. Nevertheless, as Bennich-Björkman remarks, the decision to migrate was affected by social and geographic factors, and therefore the assignment of individuals to the two groups was far from random, due to a potential selection bias. See Appendix A and B of Bennich-Björkman (2007b) for a detailed description of the construction of the survey and the results of its statistical analysis.

years of the new state.<sup>33</sup>

In addition, many people interviewed (see Bennich-Björkman, 2007c, pp. 37–38) recall that the educational process put special emphasis on civic education and nationalism (public investment in political socialization), which can be thought of in terms of our model as a relatively high investment in the endogenous component of  $b$ . In particular, civic training focused on the rights of citizens and on the workings of the democratic process. These facts match with the prediction of our theory that a relatively unconsolidated democracy has the incentive to invest in increasing the democratic stock of its citizens, a goal that can be partly achieved by empowering the public educational system as agency not only of transmission of human capital, but also of promotion of democratic political socialization.

Between the 1920s and the 1940s the Estonian society as a whole became indeed, “[...] highly communal. Civil society was vibrant, and voluntary associations covering various aspects of life and diverse fields of interest filled the country...” (Bennich-Björkman, 2007c, p. 26; see also on this issue Uustalu, 1952, pp. 233–34; Hope, 1994, p. 56; Ruutsoo, 2002, p. 57). Estonian culture was a culture of “joiners,” and in this respect the Latvian and Estonian societies were in agreement while Lithuania had much weaker traditions of associational life (Ruutsoo, 2002, p. 59).<sup>34</sup>

It is thus not too surprising (and consistent with our model) that in 1924 the Estonian government was able to defeat a coup attempt orchestrated by the Estonian Communist party and supported by Moscow. Both the relatively egalitarian distribution of income caused by the original land reform, and the peculiarly high degree of development of civicness, a democratic spirit within the society (which is of course the novel variable emphasized by our theory relative to the standard models of political transitions), generated a diffused support for the incumbent democracy. Nevertheless, ten years later, in 1934, Konstantin Pats, chief of the government together with Johan Laidoner, head of the army, violated the constitution by establishing a right-wing, authoritarian, presidential government. This event was one example of the many democratic breakdowns occurred in Europe, and in particular in all of the three Baltic republics, following the economic and political crisis of the early 1930s. In terms of our model, it can be explained with a relatively low draw of the random variable  $\varepsilon$  (the exogenous component

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<sup>33</sup> Arguably, this rich civic life was itself partly rooted in the previous Estonian historical experience transmitted across generations. “The will to associate with one other must also have rested on a sense of trust in society, which may have emanated from the shared suffering, the historic experiences, and the similar living conditions that many found themselves in. Joining together in organizations became also an expression of citizenship: Estonia was a young state that needed you.” (Bennich-Björkman, 2007c, p. 28).

<sup>34</sup> Interestingly, according to Hope (1994, p. 45), a cooperative movement providing credit and other services emerged in Estonia as early as the 1870s, and it quickly resumed operation in the 1920s, after the interruption occurred during the war period.

in the democratic stock) and the stochastic nature of political transition processes. Yet, the authoritarian government established in Estonia was significantly weaker than its counterparts in both Latvia and Lithuania, a fact which arguably reflected the relatively stronger degree of consolidation of democratic virtues present in the Estonian society. Estonia then developed a civic culture that partly survived even during the Päts regime. Indeed, as explained in greater detail below, “These experiences surfaced once the yolk of Stalinism was lifted in the 1950s and shaped Estonia under Communism into a society of “collective mobilization” where democratically inclined counter-elites could form.” (Bennich-Björkman, 2007b, p. 316).

Estonia ceased to be an independent state again in 1940, following its invasion by the Soviet Union.<sup>35</sup> It was then temporarily occupied by the German army in 1941 after Germany declared war to and invaded the Soviet Union (“Operation Barbarossa”), and then recaptured by the Red Army in 1944. It was thereafter part of the Soviet Union until the breakdown of the latter in 1991, when it once again obtained independence.

As already mentioned, in 1944 the “democratic generation” (born between 1915 and 1925), either stayed in their homeland or left (mainly) for Sweden or Canada. The main empirical results on the survey comparing the values of the sample of this set of Estonians interviewed by Bennich-Björkman are the following.

First of all, cultural adaptation and evolution did take place. As a matter of fact, early civic-oriented socialization did *not* safeguard Estonians of the interwar period who lived under authoritarian rule against becoming less democratic than their counterparts in exile. Similarly, while the exiles actively organized themselves to maintain their civic-minded culture, existing institutions and external impulses also did break through and affected their mentalities (Bennich-Björkman, 2007c, p. 117). This finding is congruent with the prediction of our theory that political culture is to some degree persistent across time, and in particular through the mechanism of its transmission by the family. However, it is also potentially gradually reshaped by the presence of “incongruent” political institutions which attempt themselves to indoctrinate people with different political values. Consistent with our theory, such policy was actively pursued by the Soviet government and was indeed to some extent effective in mitigating over time the direct and indirect influence of the “democratic generation” socialized in the 1920’s and 1930’s.<sup>36</sup>

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<sup>35</sup>The occupation of Estonia by the Soviet Union was contemplated by the one of the secret protocols of the infamous “Ribbentrop-Molotov” pact of August 1939, which precluded the German invasion of Poland and the outbreak of World War II.

<sup>36</sup>In particular, the “Sovietization” of the Estonian population was mostly effective in eroding generalized values such as trusts, tolerance and political efficacy (defined as the perception of “making a difference” in the political process). However, it had much less effect on civic virtues, which are some of the main cultural

Second, and related, there is also some evidence that, again consistent with our theory, the relatively smooth process of consolidation of democratic institution experienced by Estonia in the early 1990s may have been facilitated by the intergenerational transmission through micro-entities such as the family, of the stock democratic political culture produced early on in the 20<sup>th</sup> century under the government of the independent Estonian state. For instance Haerpfer, Bernhagen, Inglehart and Welzel (2009, p. 317, Table 20.2) report that Estonia outperformed all other electoral democracies in Post-Communist Europe in the period 1993–2006, according to both the Freedom House and the Polity IV indicators of democratic development. The conclusions of the author on this issue are summarized in the following sentence. “Do the results indicate that the Estonian transition to democracy is the beginning of the 1990s even could have been facilitated by a collective memory of political cultural traditions from the first republic transmitted not least by this interwar generation? The results just discussed partially point to an affirmative answer.” Moreover, “The republican interwar generation thus played a role in preserving such an Estonian identity, even though it has also significantly affected by Soviet experiences” (see Bennich-Björkman, 2007c, p. 116). This finding is congruent with our result that the effort made by the committed family to transmit their own trait, decreases when a nondemocratic government invests more in various forms of repression in the first place (i.e., when  $\Delta\eta$  is higher). However it may still remain positive and maintain a certain degree of transmission over generations. As a consequence, the influence of the original political culture tends to decrease (but not necessarily to vanish) across the new generations. As Bennich-Björkman, (2007b, p. 342) concludes “[...] What Estonia’s twentieth-century history nevertheless tells us is that a legacy of civic culture can travel in time and constitute a tremendous asset for a state in the process of transition to democratic government”.

## 9 Conclusions

We regard this paper as a first attempt to link two bodies of literature that, to best of our knowledge, were previously disconnected: the literature on endogenous political transitions on the one hand, and on the endogenous intergenerational transmission of preferences on the other. The motivation for this exercise is provided by much scholarship in comparative politics, which argues that political culture is an important determinant of many political outcomes including the dynamics of political regimes. Furthermore, we have argued that some important facts, such as the different paths of political development followed by former Communist countries

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reflection of democracy, such as activity and participation, and personal autonomy. See Bennich-Björkman (2007a, pp. 10–16).

cannot be entirely explained by standard “first generation” models of political transitions where agents have only induced, as opposed to intrinsic preferences over political institutions.

Rather than summarizing the results of the paper, we prefer to discuss briefly a few potential new directions of research. Many questions remain indeed still open. First and foremost, is the question of how income inequality (neglected in this paper), and the related class-conflict, interact with the politico-cultural conflict (between citizens who are and who are not committed to democracy), and the civil-military conflict (between the civil society as a whole and the army). Second, it would be potentially interesting to investigate how the dynamics of political culture is shaped by institutions other than the state or the family, such as religious organizations. Third, an interesting question to be pursued is how different patterns of democracy (i.e., the electoral system or the form of government) influence the dynamics of political culture and democratic consolidation. We hope that the bare-bone model of democracy and culture considered here can be used as a stepping stone in addressing these important issues in future research.

## 10 Appendix

### 10.1 Proof of Proposition 3

When  $q_t \in [0, 1/2]$ , the derivation of (8) with respect to  $b_t$  leads to (12) which implicitly defines  $b_u(q_t)$ . The second order condition of problem (8) reduces to  $-C''(b_t) < 0$ , which is always satisfied. The uncommitted will never choose a level of public democratic investment higher than  $\eta$ , as the committed will oppose to a coup with certainty (i.e.,  $P(b_{2t}) = 1$ ) when  $b_t = \eta$ . This implies that the optimal provision of public democratic investment for the uncommitted needs to be rewritten as  $b_u^*(q_t) = \min\{b_u(q_t); \eta\}$ .

In the region  $q_t \in (1/2, \tilde{q}(\phi))$ , the committed are in power and the optimal provision of public democratic investment  $b_c^*(q_t)$  in (13) is obtained deriving (11). The second order condition of problem (11) is

$$1/\bar{b} < C''(b_t), \quad (34)$$

which requires that the cost function of  $b_t$  is sufficiently convex or the variance of the shock to the democratic capital stock sufficiently high (i.e.,  $\bar{b}$  high enough).

When  $q_t \in [\tilde{q}(\phi), 1]$  the utility of the committed and uncommitted are equal and defined by (8) with  $F(q_t) = 1$ . The first order condition is

$$-C'(b_t) + (1/\bar{b})[a - (1 - \hat{\tau})A] = 0,$$



which shows that  $b^*$  is independent on  $q_t$ . When  $b^* \leq \eta$ , there is always the possibility that  $b_{t,2} < \eta$  and that a transition to dictatorship occurs. Assumption 4 ensures that the optimal public democratic investment for both committed and uncommitted is  $b^* = \eta$  when  $q_t \geq \tilde{q}(\phi)$ .

## 10.2 Proof of Proposition 7

If  $\tilde{q}(\phi) > 1/2$  and  $q_t \in [1/2, \tilde{q}(\phi)]$ , the committed citizens are the majority and decide the democratic fiscal policy. The steady state share of committed citizens  $\tilde{q}_c$  will be given by (25), with  $b_e(q_e) = b_c^*(q_t)$  determined by (13), i.e.,

$$\frac{b_c^*(\tilde{q}_c) + \bar{b} - \eta}{2\eta} = \frac{\tilde{q}_c}{1 - \tilde{q}_c}.$$

In general, equation (26) does not lead to a unique equilibrium. However, as the right hand side of (26) is increasing and convex in  $q$ , a sufficient condition for uniqueness is that the function  $b_c(q)$  is increasing and weakly concave in  $q$ . From the differentiation of (13) with respect to  $q$ , we obtain

$$-C''(b_c) \frac{\partial b_c}{\partial q} + \frac{1}{\bar{b}} F'(q) [a - (1 - \hat{\tau}) A] + \frac{1}{\bar{b}} \frac{\partial b_c}{\partial q} = 0 \quad (35)$$

and

$$\frac{\partial b_c}{\partial q} = \frac{(1/\bar{b}) F'(q) [a - (1 - \hat{\tau}) A]}{C''(b_c) - 1/\bar{b}} > 0,$$

since the denominator is positive from (34). The differentiation of (35) with respect to  $q$  leads to

$$\frac{\partial^2 b_c}{\partial q^2} = \frac{F''(q) [a - (1 - \hat{\tau}) A] [C''(b_c) - \bar{b}] - C'''(b_c) F'(q) [a - (1 - \hat{\tau}) A]}{(1/\bar{b}) (C''(b_c) - \bar{b})^2}. \quad (36)$$

The weak concavity of  $b_c(q)$  requires that the numerator of (36) is nonpositive, i.e., that

$$F''(q) \leq \frac{C'''(b_c) F'(q)}{C''(b_c) - \bar{b}}. \quad (37)$$

We assume that  $F''(q)$  is not too high, which implies that  $F'(q) = f(q)$  is not too increasing, and that

$$C'''(b_c) > \max \{ \bar{b}, (1/\bar{b}) \},$$

so that condition (37) is satisfied.

Under these conditions, the steady state value of the share of committed citizens  $\tilde{q}_c$  in the society is unique and implicitly defined by (26). When  $q_t < \tilde{q}_c$ ,  $\Delta q_{t+1} > 0$  and the share of committed citizens increases over time, while the opposite happens when  $q_t > \tilde{q}_c$ .

When  $q_t \in [0, \max\{1/2, \tilde{q}(\phi)\})$ , the uncommitted citizens are the majority and decide fiscal policy. This implies that the steady state value of the share of committed citizens in the society  $\tilde{q}_u$  is given by (25), where  $b_e(q_e) = b_u^*(q_t)$  is determined by (12), i.e.,

$$\frac{b_u^*(\tilde{q}_u) + \bar{b} - \eta}{2\eta} = \frac{\tilde{q}_u}{1 - \tilde{q}_u}.$$

Again, when  $q_t < \tilde{q}_u$ ,  $\Delta q_{t+1} > 0$  and  $q_t$  increases over time, and vice versa.

From the fact that  $b_c^*(q_t) > b_u^*(q_t)$  (see Proposition 3) follows that  $\tilde{q}_c > \tilde{q}_u$ .

When  $q_t < \tilde{q}(\phi)$  and the military are in power, there is always the possibility that a rebellion takes place (from Assumption 4) and that the political system becomes democratic.

We now obtain that for the committed parents

$$\begin{aligned} \Delta V_{t+1}^c(M) &\equiv V_{t+1}^{cc}(M) - V_{t+1}^{cu}(M) \\ &= \mathbb{E}_t \{ \varepsilon_t - (\eta + \Delta\eta^M) \mid \varepsilon_t - (\eta + \Delta\eta^M) \geq 0 \} = \frac{[\bar{b} - (\eta + \Delta\eta^M)]^2}{2\bar{b}}, \end{aligned}$$

and for the uncommitted parents

$$\Delta V_{t+1}^u(M) \equiv V_{t+1}^{uu}(M) - V_{t+1}^{uc}(M) = (\eta + \Delta\eta^M) \frac{\bar{b} - (\eta + \Delta\eta^M)}{\bar{b}},$$

where  $\Delta\eta^M \equiv \Delta\eta^M(q_t)$  is defined by (16). The substitution of the last two expressions into (22) implies that the steady state composition  $\tilde{q}_M$  of society in military dictatorship is implicitly defined by the following equation

$$\frac{\bar{b} - \eta(\tilde{q}_M)}{2\eta(\tilde{q}_M)} = \frac{\tilde{q}_M}{1 - \tilde{q}_M},$$

where  $\eta(\tilde{q}_M) \equiv \eta + \Delta\eta^M(\tilde{q}_M)$ . Again,  $\Delta q_{t+1} > 0$  and  $q_t$  increases over time when  $q_t < \tilde{q}_M$ , and vice versa.

The ranking  $\tilde{q}_c > \tilde{q}_u > \tilde{q}_M$  follows immediately from (26), (27), (28) and Proposition (4).

### 10.3 Proof of Proposition 9

If  $\tilde{q}(\phi) \leq 1/2$  and  $\tilde{q}_u \geq \tilde{q}(\phi)$ , then  $q_{t+1} > q_t$  for all  $q_t \in [0, \tilde{q}(\phi))$  and the probability that democracy persists when  $q_t \in [0, \tilde{q}(\phi))$  is  $P(b_u^*(q_t))F(q_t)$ , which is increasing in  $q_t$  and therefore in  $t$  (see Proposition 8). Similarly, if  $\tilde{q}(\phi) > 1/2$  and  $\tilde{q}_c \geq \tilde{q}(\phi)$ , then the probability that democracy persists is  $P(b_c^*(q_t))F(q_t)$  for all  $q_t \in (1/2, \tilde{q}(\phi))$ , and  $q_{t+1} > q_t$  for all  $q_t \in (1/2, \tilde{q}(\phi))$ . Finally, if  $\tilde{q}_c \geq \tilde{q}(\phi) > 1/2$  and  $\tilde{q}_u \geq 1/2$ , democracy persists with probability  $P(b_c^*(q_t))F(q_t)$  for all  $q_t \in (1/2, \tilde{q}(\phi))$ , and with probability  $P(b_u^*(q_t))F(q_t)$  for all  $q_t \in [0, 1/2]$ , with  $q_{t+1} > q_t$  for all  $q_t \in [0, \tilde{q}(\phi))$ .

## 10.4 Proof of Proposition 10

From (30), it is straightforward that  $\tilde{q}(\phi)$  is increasing in  $\hat{\tau}$ ,  $A$ , and  $N$ , and it is decreasing in  $h$  and  $\phi$ , while it is independent on  $H$ .

Differentiating (13) with respect to  $\hat{\tau}$  and rearranging terms, we obtain that

$$\frac{\partial b_c^*(q_t)}{\partial \hat{\tau}} = \frac{\lambda A (1-x) F(q_t)}{\bar{b} [C''(b_c^*(q_t)) - (1/\bar{b})]} > 0.$$

From (13) we also have that

$$\frac{\partial b_c^*(q_t)}{\partial A} = \frac{\lambda \hat{\tau} (1-x) F(q_t)}{\bar{b} [C''(b_c^*(q_t)) - (1/\bar{b})]} > 0,$$

$$\frac{\partial b_c^*(q_t)}{\partial N} = \frac{\lambda F(q_t)}{\bar{b} [C''(b_c^*(q_t)) - (1/\bar{b})]} > 0,$$

$$\frac{\partial b_c^*(q_t)}{\partial h} = \frac{\partial b_c^*(q_t)}{\partial H} = -\frac{\lambda x F(q_t)}{\gamma \bar{b} [C''(b_c^*(q_t)) - (1/\bar{b})]} < 0,$$

and

$$\frac{\partial b_c^*(q_t)}{\partial \phi} = 0.$$

Similarly, we obtain that  $\partial b_u^*(q_t)/\partial \hat{\tau} > 0$ ,  $\partial b_u^*(q_t)/\partial A > 0$ ,  $\partial b_u^*(q_t)/\partial N > 0$ ,  $\partial b_u^*(q_t)/\partial h = \partial b_u^*(q_t)/\partial H < 0$ , and  $\partial b_u^*(q_t)/\partial \phi = 0$ .

## 10.5 Proof of proposition 11

We first derive some preliminary results that have been reported in the text before the statement of the proposition.

Equation (33) defining the optimal level of total effort  $W^*$  can be rewritten as

$$\frac{N}{W} = \frac{K}{K-1} \left\{ 1 - \frac{1-x}{K} [(1-\hat{\tau}) + \lambda \hat{\tau}(1-x)] A'(W) \right\}, \quad (38)$$

once we take into account that the equilibrium is symmetric ( $w_k = W/K$  for all  $k = 1, \dots, K$ ). As the left hand side of (38) is a strictly decreasing function in  $W$  and the right hand side is increasing in  $W$ ,  $W^*$  is unique and the optimal effort in rent-seeking by each group  $k$  is  $w_k^* = W^*/N$ .

Total effort in rent-seeking activities is increasing in the amount  $N$  of natural resources available, and that this reduces the productivity of the individuals. Indeed denoting with  $IF$  the left hand side of (33) defining  $W^*$  and applying the implicit function theorem to this equation, we have that

$$\frac{\partial W^*}{\partial N} = -\frac{\partial IF/\partial N}{\partial IF/\partial W} > 0,$$

as  $\partial IF/\partial W < 0$  from the second order condition and  $\partial IF/\partial N = K(W - w_k)/(1 - x)W^2 > 0$ . Hence,  $\partial A(W^*)/\partial N < 0$  follows from  $A'(W) < 0$ .

As in Section 6, the decision problem of the military about undertaking coups is unchanged, which means that an increase in  $N$  reduces the probability of consolidation of democracy by increasing  $\tilde{q}(\phi)$ .

The effect of  $N$  on the optimal levels of public democratic investment  $b_u^*(q)$  and  $b_c^*(q)$  may now be different than in the baseline framework. It can be easily shown that  $b_u^*(q)$  and  $b_c^*(q)$  are still given by (12) and (13) with the term  $a$  replaced by  $a(W)$  as defined in (32) and with the additional terms on gains and effort costs from natural resources. In particular,  $b_c^*(q)$  is now defined by

$$-C'(b_t) + (1/\bar{b})F(q_t) \left[ a(W) - (1 - \hat{\tau})A + \frac{K}{1 - x} \left( -w_k + \frac{w_k}{W}N \right) \right] + \frac{\bar{b} + b_t - \eta}{\bar{b}} = 0. \quad (39)$$

Applying the implicit function theorem to (39) leads to

$$\frac{\partial b_c^*(q_t)}{\partial N} = \frac{F(q_t)}{\bar{b} [C''(b_c^*(q_t)) - (1/\bar{b})]} \quad (40)$$

$$\left\{ [(1 - \hat{\tau}) + \lambda \hat{\tau}(1 - x)] \left[ A'(W) \frac{K - 2}{K - 1} - \frac{W}{K - 1} A''(W) \right] + \frac{1}{(1 - x)(K - 1)} \right\} \frac{\partial W}{\partial N},$$

where we have used the fact that  $N/W$  is defined by (38), and  $\partial w_k/\partial W = 1/K$  since  $w_k = W/K$ . As  $\partial W/\partial N > 0$  and the denominator of the first term of (40) is positive, the sign of  $\partial b_c^*(q_t)/\partial N$  is determined by the expression in brace. The component containing  $A'(W)$  is negative while the other two are positive; this implies that the effect of a higher level of natural resources on the public democratic investment is generally ambiguous.

However, one can notice that when there are two groups in the society ( $K = 2$ ), the first term is zero and therefore  $\partial b_c^*(q_t)/\partial N > 0$ . When instead the number of rent-seeking groups is very large, such as in the limit case where  $K$  tends to infinity, the two positive terms of (40) are small enough and  $\partial b_c^*(q_t)/\partial N < 0$ . Hence there exists a threshold  $K^*$  such that  $\partial b_c^*(q_t)/\partial N < 0$  holds for  $K > K^*$ .

Under the additional assumption that  $A'''(W) \geq 0$ , it can be shown that the threshold  $K^*$  above which such negative effect is unambiguous is unique. Indeed the term in brace in (40) is monotonically decreasing in  $K$  if

$$[(1 - \hat{\tau}) + \lambda \hat{\tau}(1 - x)] \left\{ \frac{A'(W)}{(K - 1)^2} + \left[ \frac{W}{(K - 1)^2} + \frac{K - 2}{K - 1} \frac{\partial W}{\partial K} \right] A''(W) - \frac{W}{(K - 1)} A'''(W) \frac{\partial W}{\partial K} \right\}$$

$$- \frac{1}{(1 - x)^2 (K - 1)^2} < 0,$$

which is always satisfied when  $A'''(W) \geq 0$ , since  $\partial W/\partial K > 0$  from (38).

The term in brace in (40) is monotonically decreasing in  $K$  and the fact that this is positive for  $K = 2$  and negative for  $K$  sufficiently high implies there exists a unique  $K^*$  such that  $\partial b_c^*(q_t)/\partial N < 0$  for  $K > K^*$  and vice versa. Similar results obviously hold as well for  $b_u^*(q)$ .

The reduction of the optimal levels of public democratic investment  $b_u^*(q)$  and  $b_c^*(q)$  imply lower thresholds  $\tilde{q}_u$  and  $\tilde{q}_c$  of the steady state composition of society, which means a lower probability of a transition to a consolidated democracy.

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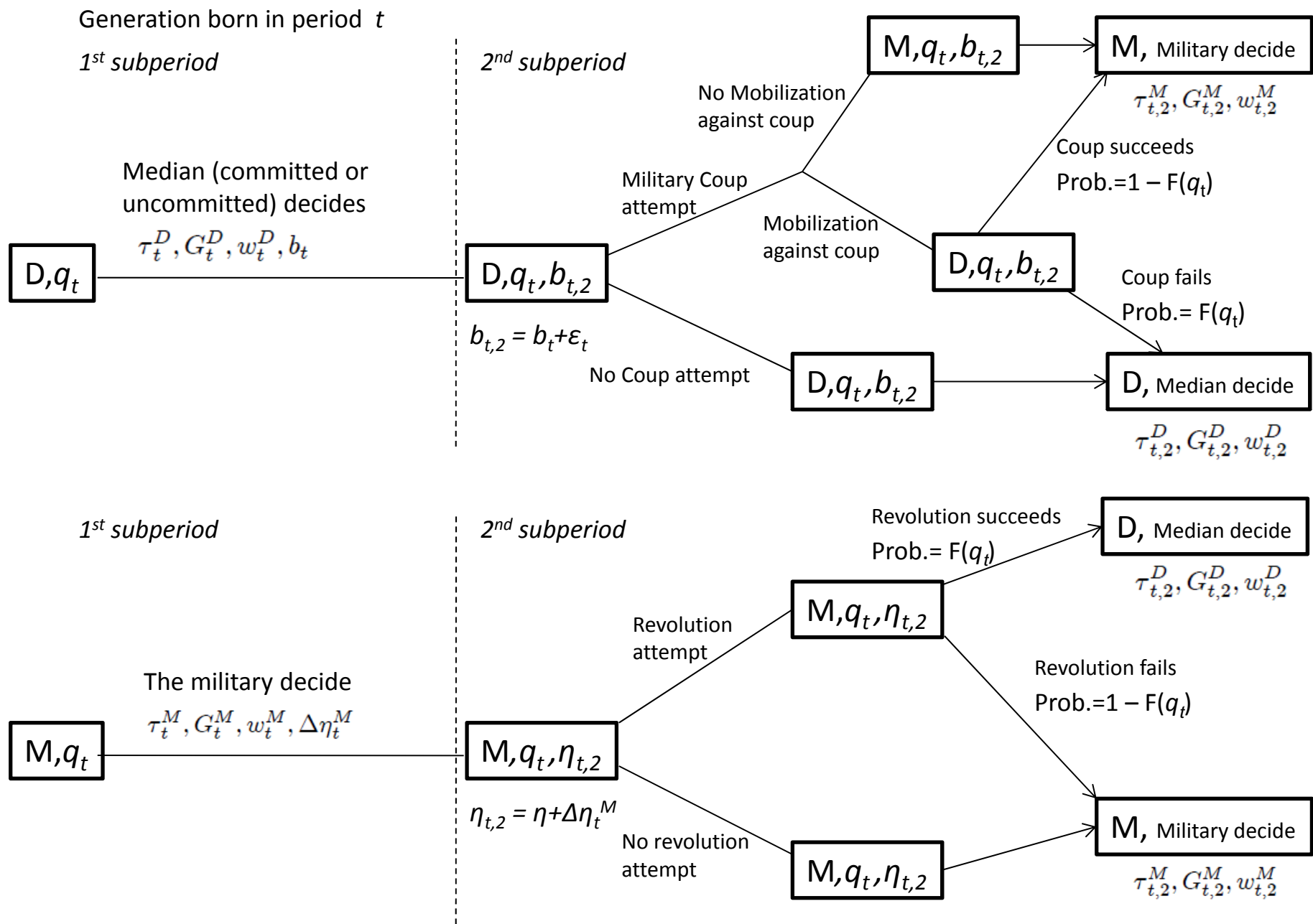
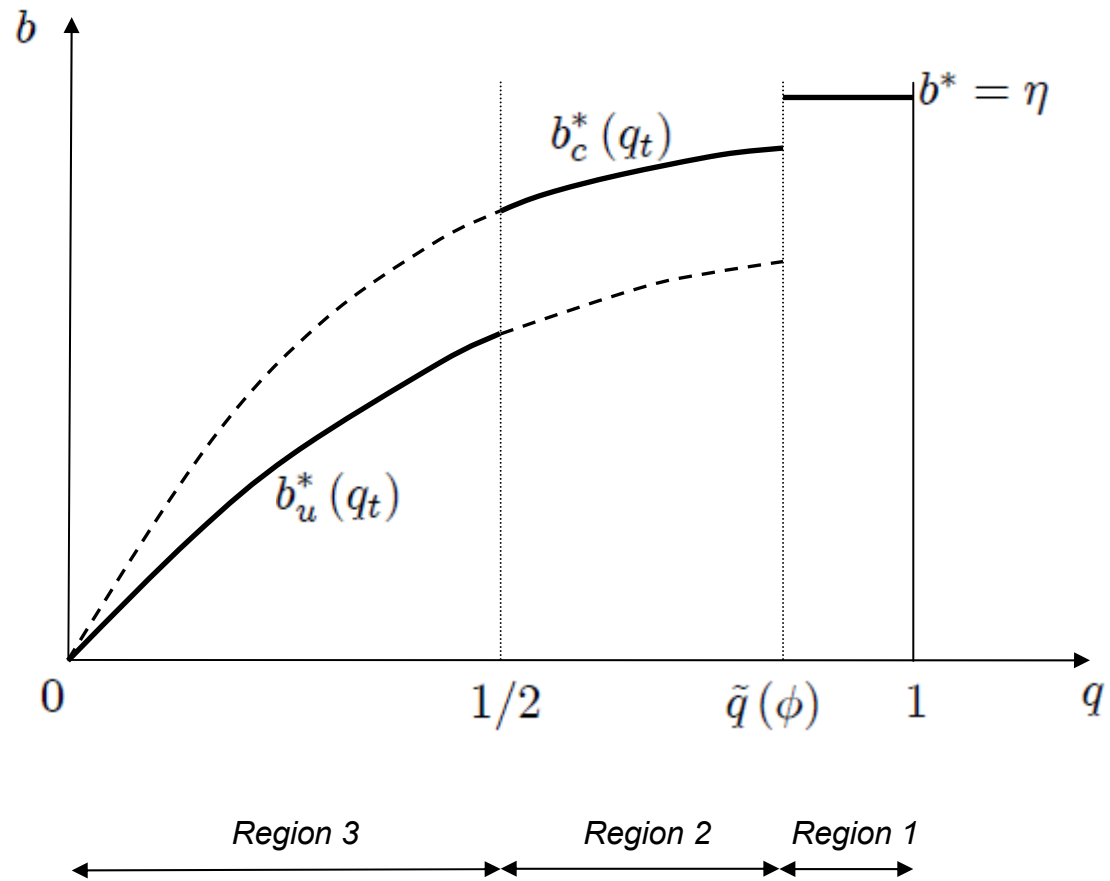
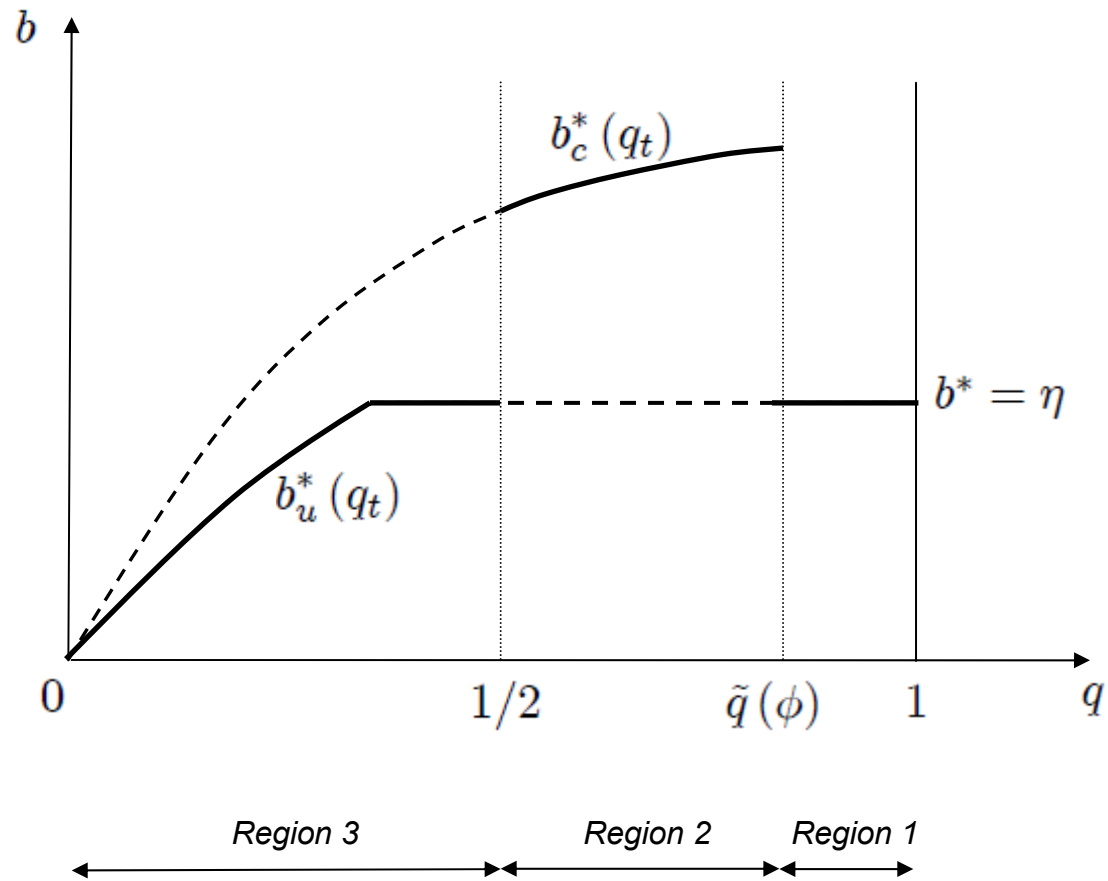


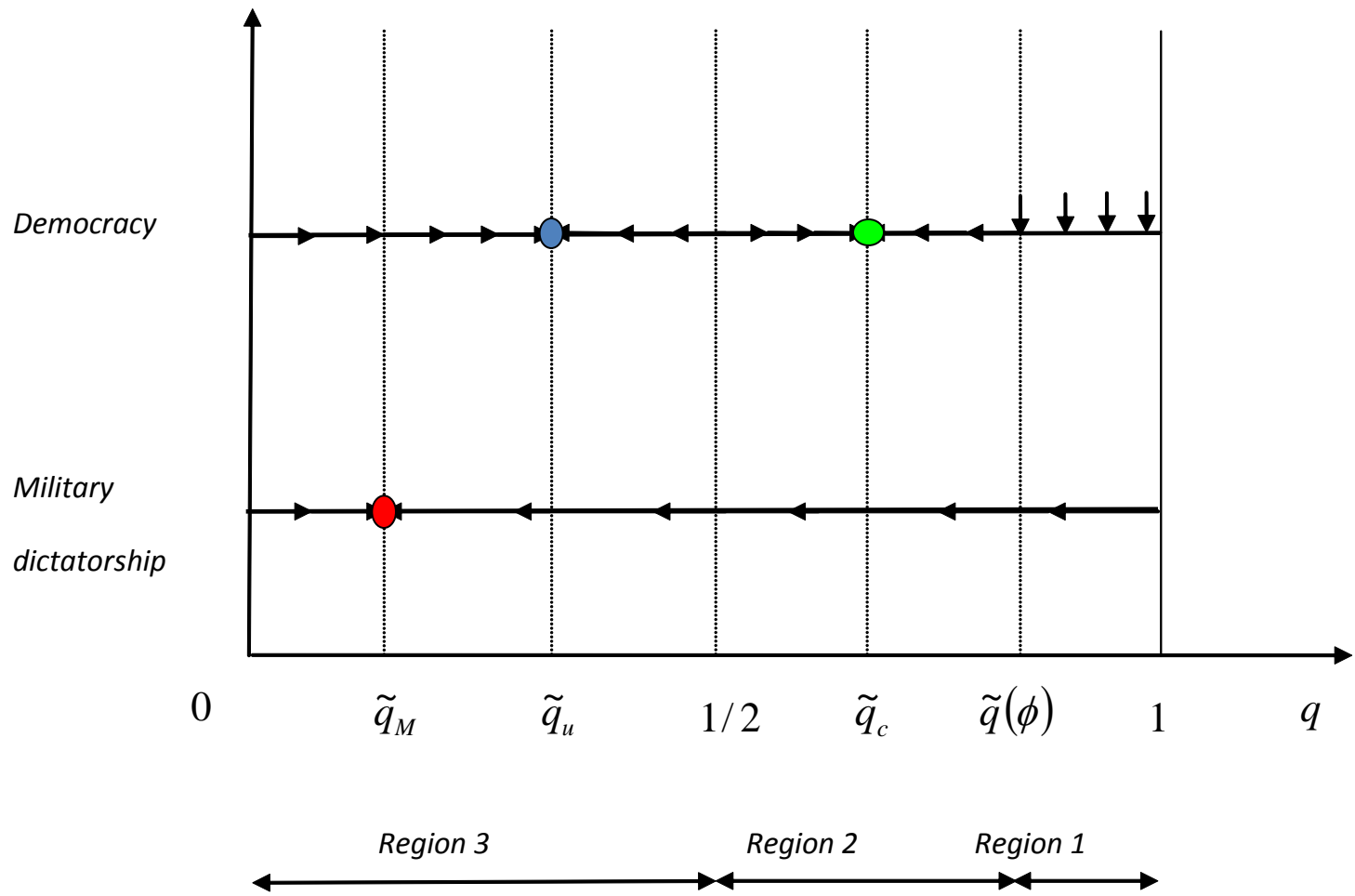
Figure 1. Timing of events in Democracy and Military dictatorship.



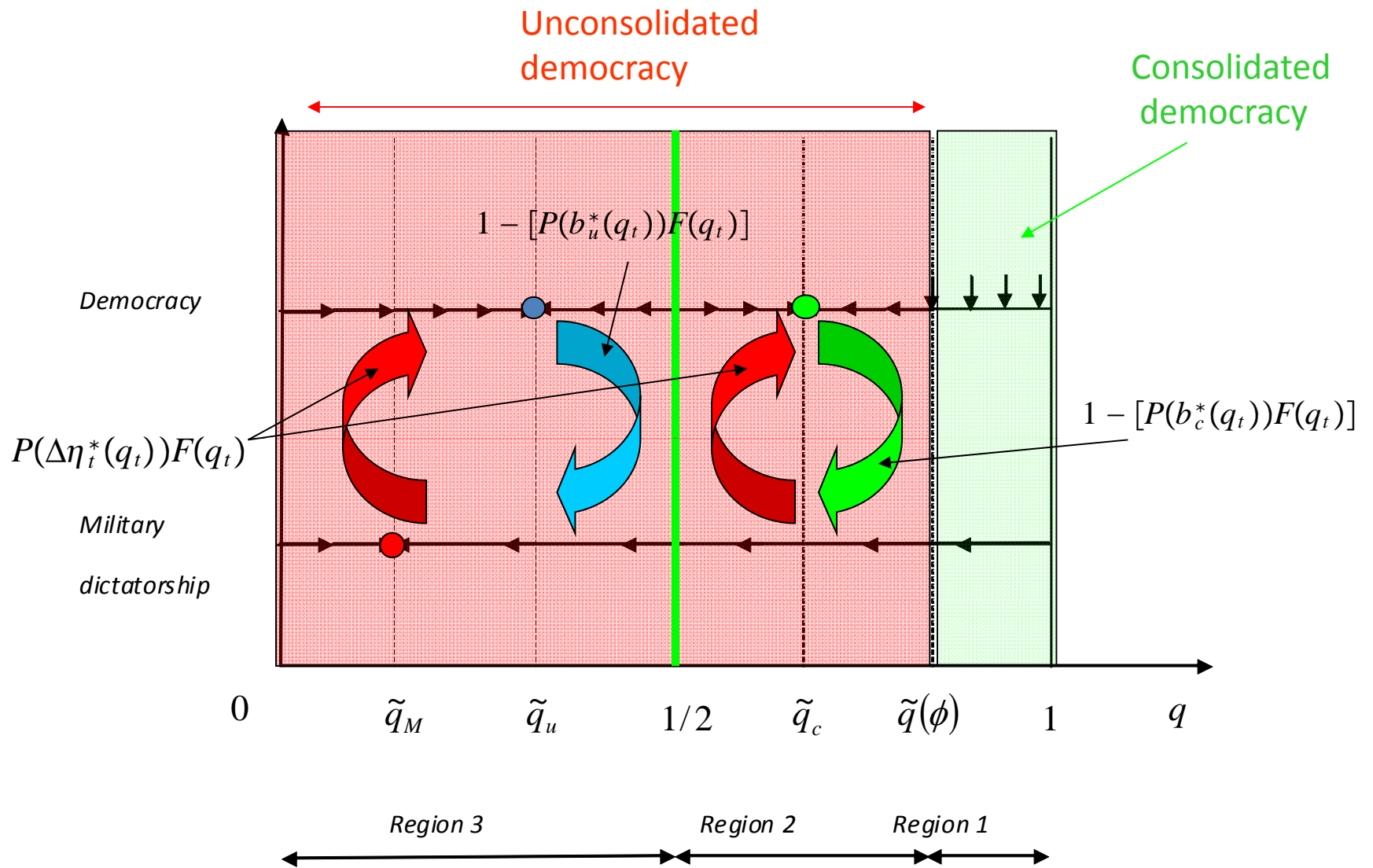
**Figure 2a.** The provision of public democratic investment in democracy.



**Figure 2b.** The provision of public democratic investment in democracy.

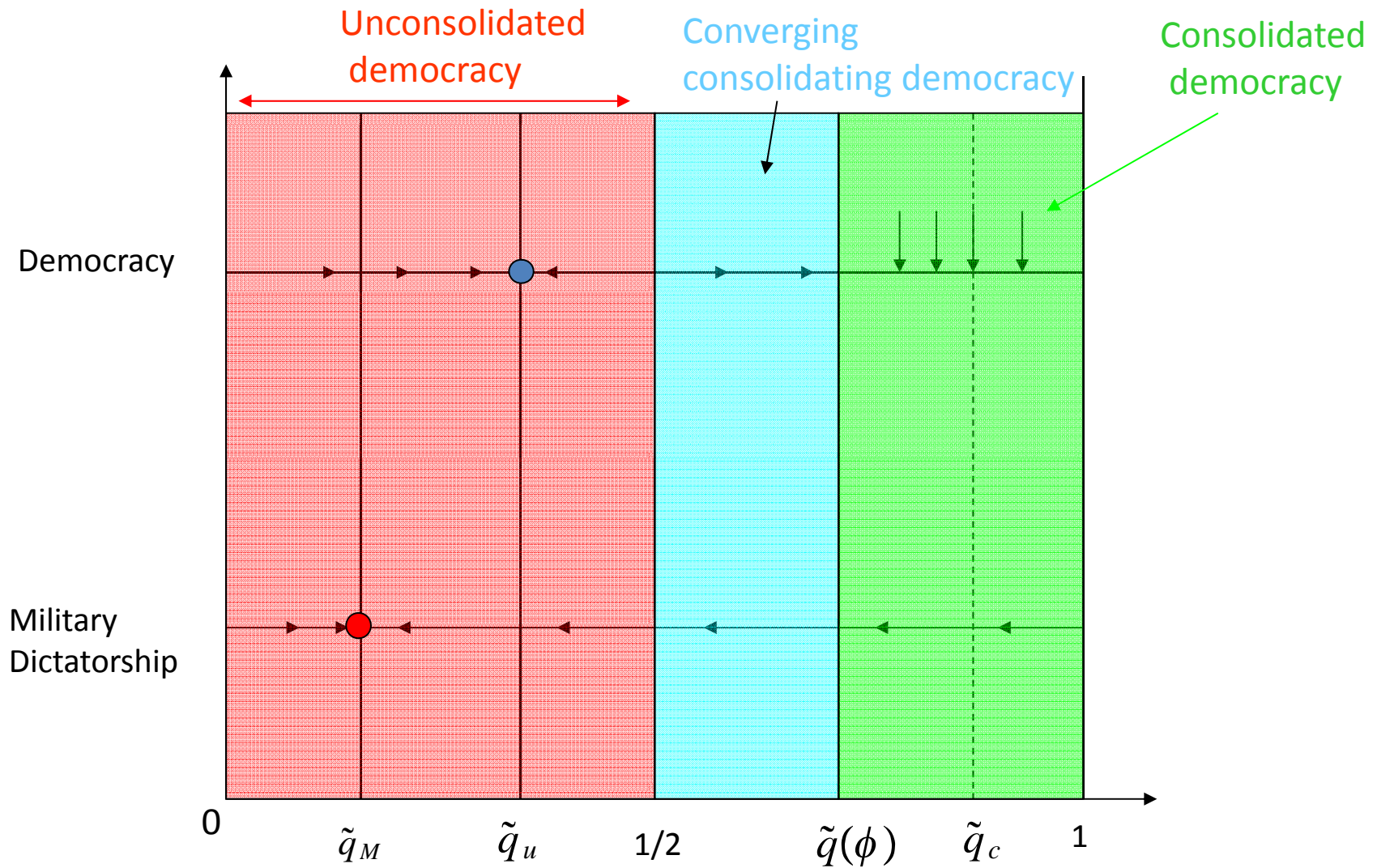


**Figure 3.** The dynamics of political culture  $q$  in democracy and in military dictatorship.

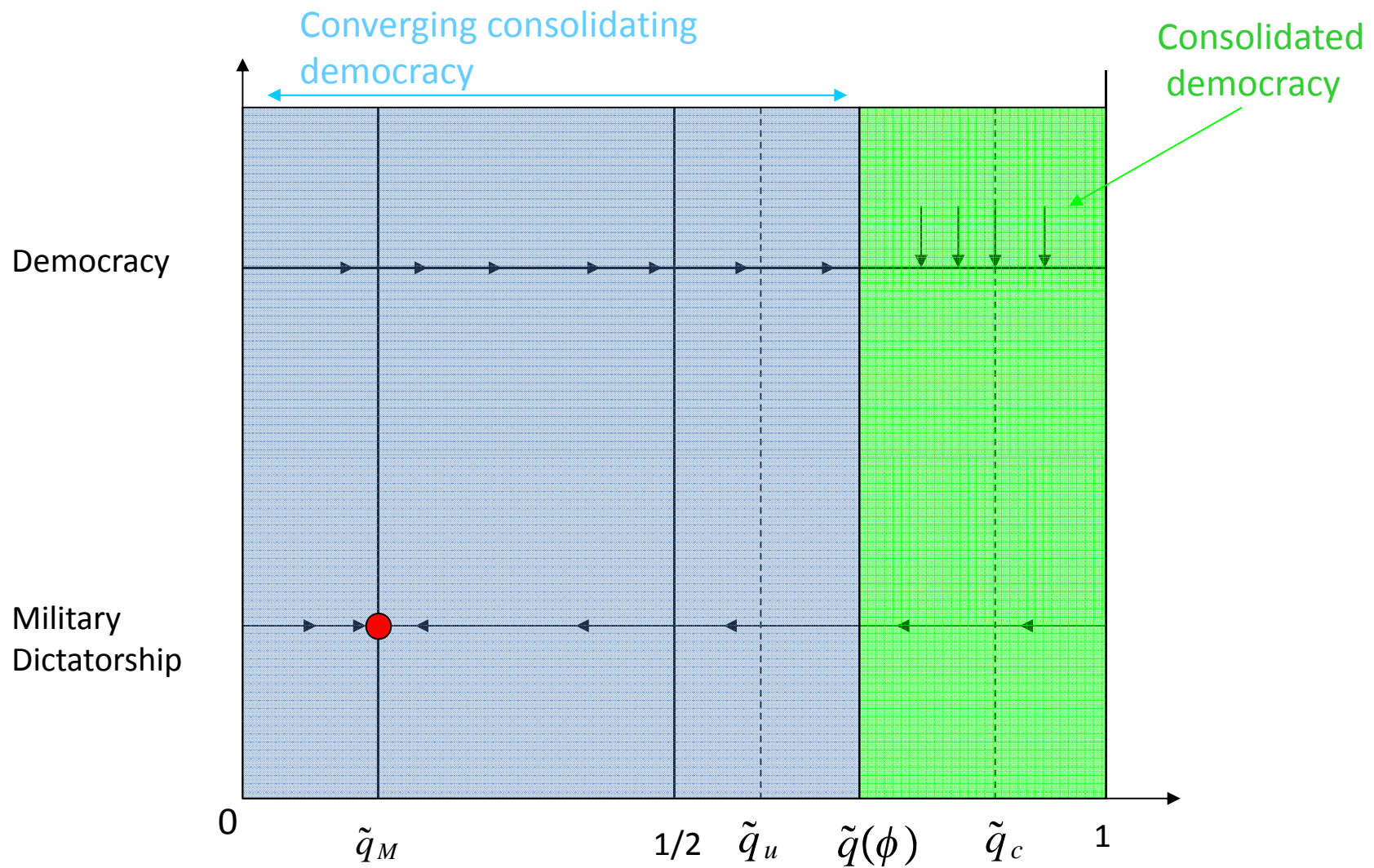


**Figure 4a.** Transition probabilities between democracy and military dictatorship when there is no converging democracy.





**Figure 4b.** The dynamics of democracy and political culture towards consolidation.



**Figure 4c.** Fully converging democracy and political culture towards consolidation.