



# Dictators and oligarchs: A dynamic theory of contested property rights <sup>☆</sup>

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## ABSTRACT

In an economy with weak economic and political institutions, the major institutional choices are made strategically by oligarchs and dictators. The conventional wisdom presumes that as rent-seeking is harmful for oligarchs themselves, institutions such as property rights will emerge spontaneously. We explicitly model a dynamic game between the oligarchs and a dictator who can contain rent-seeking. The oligarchs choose either a weak dictator (who can be overthrown by an individual oligarch) or a strong dictator (who can only be replaced via a consensus of oligarchs). In equilibrium, no dictator can commit to both: (i) protecting the oligarchs' property rights from the other oligarchs and (ii) not expropriating oligarchs himself. We show that a weak dictator does not limit rent-seeking. A strong dictator does reduce rent-seeking but also expropriates individual oligarchs. We show that even though eliminating rent-seeking is Pareto optimal, weak dictators do get appointed in equilibrium and rent-seeking continues. This outcome is especially likely when economic environment is highly volatile.

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## 1. Introduction

Many economists agree that protection of property rights is a key precondition for investment and growth. However, in choosing *how* to enforce private property rights, one has to resolve an important trade-off. On the one hand, it is crucial to have a strong government that protects private agents' property from rent-seeking by each other. On the other hand, a strong government can also behave as a Leviathan that expropriates the private agents itself. In this paper, we model this trade-off in an economy with weak institutions where private agents ('oligarchs') strategically choose the type of the government that rules over them.

We formally explore a dynamic game where the oligarchs can bring up a strong arbiter (a podesta, a president, or a dictator) who would resolve the coordination problem and provide the desired level of property rights protection. We explicitly model not only benefits, but also the costs of appointing a strong ruler: as argued by North (1981), the government which is strong enough to enforce property rights may find it difficult to commit not to use its strength to expropriate private owners.

The risks of bringing in a strong ruler are best illustrated by the fate of Russian oligarchs (see an early discussion in Glaeser et al., 2003; Sonin, 2003; Hoff and Stiglitz, 2004). These oligarchs were important strategic players during the 1990s: according to a non-academic estimate of a major tycoon Boris Berezovsky (interviewed in Financial Times, 1996), seven bankers controlled half of the economy in 1996 and directly influenced economic policy; Guriev and Rachinsky (2005) estimated that 22 groups controlled 40% of the economy in 2003; in recent years, Forbes magazine estimated the total wealth of 30–50 richest Russians at 25–30% of Russia's GDP. Not surprisingly, it was widely believed that the oligarchs directly – and strategically – influenced the institutions of property rights protection. As argued in Boone and Rodionov (2002), the oligarchs initially benefited from rent-seeking as they diluted the stakes of the government and outside owners. Once they consolidated ownership and saw the huge benefits to limiting the rent-seeking (due to resumed economic growth), they switched from rent-seeking to investment and started to lobby for stronger

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property rights – consistent with the overall logic of the reform (Boycko et al., 1995). Most oligarchs therefore supported Vladimir Putin's bid for presidency on a law-and-order platform; in fact, they organized and bankrolled the transfer of power from Boris Yeltsin to Putin. Yet, it was Putin who soon became, thanks to a widely popular crackdown on Chechen separatists, too strong and independent of the oligarchs. Furthermore, the parliamentary elections of 2003 provided Putin with a popular mandate to expropriate quite a few of the tycoons. Out of the Berezovsky's Group of Seven, one has lost influence before Mr. Putin came to power, but two more (including Berezovsky himself) were sent into exile, while another one was imprisoned by Putin. Albeit unique in several respects (e.g. see [Goriaev and Sonin, 2006](#), for more details on the Yukos affair), this story is typical. One could also easily find structural similarities to podesteria in medieval cities in Italy ([Greif, 2006](#)), Porfirio Diaz' Mexico ([Robinson, 2003](#)), and to robber barons in the Gilded Age in the US ([Glaeser et al., 2003](#)).<sup>1</sup>

Our formal model endogenizes the oligarchs' choice of strong vs. weak ruler; we also study when and whether this choice is socially optimal and how it depends on the external economic conditions. In our theory, the oligarchs need to find a ruler (a “dictator”) who should be able both to suppress individual oligarchs' temptation to rent-seek against each other and to commit not to expropriate individual oligarchs himself. We consider a dynamic game between the oligarchs and the dictator and show that no dictator can deliver on both counts. The dictator's behavior depends crucially on his ability to withstand the oligarchs' pressure. We distinguish between weak and strong dictators. Weak dictators are defined as those who lack popular support and can be overthrown by any individual oligarch. A strong dictator is a charismatic leader with substantial popular support and therefore requires a consensus of oligarchs to be removed from the office. We show that a weak dictator cannot expropriate the oligarchs; but neither can he resolve the rent-seeking problem. As any individual oligarch can remove him from office, the dictator cannot prevent rent-seeking by either oligarch. When appointing a strong dictator, oligarchs solve this problem: the dictator's decisions are protected by the oligarchs' inability to coordinate. Thus, a strong dictator can contain the rent-seeking. However, he will also collude with some oligarchs to expropriate others. Therefore, even though the weak dictator cannot enforce the property rights and is therefore Pareto suboptimal, the oligarchs may still prefer him in equilibrium.

The other distinction between the weak dictators and the strong ones is the flexibility of regime to changes in economic environment. Suppose the oligarchs have appointed a weak dictator but then situation has changed so that a weak dictator is no longer optimal. Oligarchs can easily replace him with a stronger one. However, once the situation changes back and a weak dictator is preferred by the oligarchs, they cannot remove the dictator. The latter uses divide-and-rule tactics and successfully defends his position. This asymmetry implies that the oligarchs will always be cautious about bringing in the strong dictator – by doing so, they give up the option of replacing him. The irreversibility of appointing a strong dictator implies a relationship between uncertainty and the choice of the ruler. The theory of investment under uncertainty ([Dixit and Pindyck, 1994](#)) suggests that the more volatile the environment, the less likely the irreversible investment. Therefore in the more volatile economies (e.g. in those rich in natural resources), the oligarchs are more likely to “wait-and-see” and appoint a weak ruler even if a strong ruler would be better on average. This logic implies that weak property rights may well be a steady state in a dynamic game even if the oligarchs would benefit from secure property rights and could potentially bring a dictator who could enforce them.

Our work is related to three strands of recent research in economics and political science. First, there is a newly emerged “oligarchs” literature. A few papers discuss the issue of (non-)emergence of property rights in oligarchic economies, both theoretically ([Sonin, 2003](#); [Polishchuk and Savvateev, 2004](#); [Hoff and Stiglitz, 2004](#); [Acemoglu, 2008](#); [Braguinsky and Myerson, 2007](#); [Gradstein, 2007](#)), and empirically (e.g., [Boone and Rodionov, 2002](#); [Claessens et al., 2000](#); [Guriev and Rachinsky, 2005](#)). Our analysis is particularly close to that of [Acemoglu \(2008\)](#) and [Braguinsky and Myerson \(2007\)](#). [Acemoglu \(2008\)](#) analyzes the trade-off between property rights for oligarchs and the rest of the society (while we focus on the interaction of property rights of individual oligarchs). Also, in Section 4.1, [Acemoglu](#) discusses the effect of heterogeneity of oligarchs and the possibility of regime change through a coalition of low-skilled oligarchs and the poor against the high-skilled oligarchs. This scenario is similar to the collusion between a dictator and an oligarch to expropriate another oligarch, and to the divide-and-rule tactics that help a strong dictator to remain in power in our paper. Yet, our setup and the regime change mechanisms are very different. [Braguinsky and Myerson \(2007\)](#) develop a truly dynamic model of capital accumulation in an oligarchic economy allowing for expropriation of some oligarch by the others. Both [Acemoglu \(2008\)](#) and [Braguinsky and Myerson \(2007\)](#) model oligarchs as infinitesimal and non-strategic players.

The literature on oligarchs is also related to the work on selective protection of property rights. Both [Greif \(2006\)](#) and [Haber et al. \(2003\)](#) show how the medieval Mediterranean rulers and the 19th century Mexican presidents enforced property rights as a private good. These rulers used divide-and-rule strategies trading protection of property rights of individual owners for political support. [Robinson \(2003\)](#) and [Treisman \(2003\)](#) show how the reformers in modern Russia, Argentina, and Brazil have made similar deals with specific interest groups to promote their reform agendas. [Bueno de Mesquita et al. \(2003\)](#) provide other examples and build a theory of a non-democratic government that is accountable to a *selectorate*, a group that is sufficiently strong to maintain an incumbent in office. [Acemoglu et al. \(2004\)](#), [Padro i Miguel \(2006\)](#), and [Besley and Kudamatsu \(2007\)](#) build formal theories of such regimes by explicitly modelling the divide-and-rule game (see also a dynamic model of leadership turnover in [Gallego and Pitchik, 2004](#)). In an early contribution, [Weingast \(1997\)](#) builds a simple game-theoretic model of selective transgression of property rights in a democracy. This literature identifies a few solutions to the political commitment problem above; in particular, [Greif \(2006\)](#) shows how it can be resolved through reputation or collective reputation; [Haber et al. \(2003\)](#) focus on the third-party enforcement.

<sup>1</sup> The institutional subversion by the rich has started in the US as early as in 1820s. In his Veto Message on the Second Bank, 1832, President Andrew Jackson said “It is to be regretted that the rich and powerful too often bend the acts of government to their selfish purposes.”

In this paper, we assume that these mechanisms do not function, and there is no external source of commitment. There are also no sunk investments that can be held as a hostage.

Second, we contribute to the “new comparative economics” (Djankov et al., 2003). The trade-off faced by the oligarchs in our model is very similar to the main trade-off in this literature, the one between disorder (weak property rights, rent-seeking, expropriation by each other), and dictatorship (strong property rights, expropriation by the dictator, see e.g. Hafer, 2006).

The analysis of costs of disorder and dictatorship has also been carried out by students of political history from Aristotle, Hobbes, and Machiavelli to Finer (1997). Machiavelli (1515, ch. IV) compares principalities with and without strong barons (using the examples of Turkey vs. France, ch. IV and XIX, and the use of divide-and-rule tactics by Alexander VI against Orsini and Colonna clans in Rome, ch. VII). He argues that principalities with a weak central ruler cannot be run effectively; they are also an easy prey for an external enemy to capture. Finer (1997) considers many examples of Palace/Nobility politics comparing regimes with different degrees of Palace's strength relative to that of the Nobility. He also emphasizes the disadvantages of the regimes with utter weakness of central authority, especially the eighteenth century Poland, where each magnate could veto any decision, or Tokugawa Japan (which Finer calls ‘anarchy institutionalized’).

Our contribution to the new comparative economics is to show how the dictatorship-disorder trade-off is resolved in a dynamic game between oligarchs and dictators, why disorder may emerge endogenously even when it is clearly inefficient; we also develop a comparative statics analysis with regard to the degree of uncertainty and volatility. In this sense, our paper is similar to Aghion and Bolton (2003) who consider constitutions as incomplete social contracts. They analyze the choice of majority vs. unanimity rule (similar to the choice of the dictator's strength in our case) trading off the costs of expropriating minorities and compensating vested interests. The follow-up papers by Aghion et al. (2004, 2008) reformulate this trade-off in terms of choosing the degree of ‘political insulation’ (also very similar to our ‘strength’) and find empirical support for this theory using the cross-country data and the panel data on the US cities. Our analysis is also related to the one in Acemoglu (2005) who studies the effect of a state's strength on economic performance. Acemoglu's “strong” state is the one capable of imposing high taxes; this state is effective at providing public goods but also stifles private agents' incentive to invest. If the private agents have an efficient tax evasion technology, the state is labelled “weak.” The weak state does not overtax returns to private investments but fails to collect taxes to provide public goods. In Section 3, Acemoglu (2005) replaces the notion of the state's “strength” with that of “political power” which is similar to ours: the ruler is politically powerful if it is hard to replace him. In Section 4, Acemoglu also studies “consensually-strong states”. Here the ruler and the citizens can commit to a deal where the ruler collects high taxes and invests them efficiently in public goods. While our analysis focuses on similar issues, we analyze the interactions between strong/weak rulers and strategic oligarchs; we also allow for an endogenous choice of the ruler's strength by the oligarchs.

The costs of disorder are also explicitly studied in the “lawlessness and economics” literature. Dixit (2004) analyzes costs and benefits of private enforcement of contracts and property rights. Our analysis is especially related to the results best described by a quote from Gambetta (1993, p. 198): “protectors, once enlisted, invariably overstay their welcome”. In other words, similarly to our dictators hired by oligarchs to resolve their conflicts, private enforcers may abuse their authority and expropriate their clients.

The third related strand of the literature is the political economy of non-democratic regimes. This literature raises an empirical question whether or not an oligarchic regime might be sustainable politically in the long run. The Latin American experience demonstrates that a country with a small rich elite (though not exactly few strategic oligarchs) and a poor majority often oscillates between an elitist dictatorship and populist democracy.<sup>2</sup> Existing dynamic models of such processes assume exogenous economic shocks as the main underlying cause of coups and revolutions (Acemoglu and Robinson, 2001, 2006). A paper which comes closest to ours is Robinson (2001) where the governing elites are more likely to be predatory if better institutions may threaten their hold on power and the benefits that come with the power. The aim of our analysis is to go beyond Acemoglu and Robinson (2001, 2006), and Robinson (2001) by analyzing the mechanisms of interaction not only between the poor and the rich, but also of a strategic interaction within the ruling elite.

The rest of the paper is organized as follows. In Section 2, we illustrate our main idea in a simple static model. Section 3 contains the dynamic setup, and Section 4 provides the analysis of the choice of the dictator and the equilibrium level of property rights protection in this model. In Section 5, we discuss the path dependence and the effect of uncertainty on the choice of the regime. Section 6 discusses robustness and extensions, and Section 7 concludes.

## 2. Static model

In this Section we consider a simple static example to demonstrate the main trade-off. We consider a one-shot game between two oligarchs and a dictator. In the beginning of the game, the oligarchs collectively choose whether to appoint a weak dictator or a strong dictator. A weak dictator needs to maintain support of both oligarchs to stay in office, while a strong dictator can expropriate one of the oligarchs as long as he is supported by the other one.

If the dictator is strong, he can choose one of two levels of property rights protection  $p=0.1$ . The high level of property rights protection  $p=1$  incurs prohibitively high costs of rent-seeking so oligarchs receive the payoff of  $\Pi$  each. If the protection is weak

<sup>2</sup> The theory of political transitions between oligarchy, democracy, and tyranny also dates back to Aristotle and Plato. Aristotle already argued that oligarchy is almost a precondition for the rise of dictators. Yet, the recent formal analysis of political transitions is still restricted to comparing oligarchy vs. democracy or dictatorship vs. democracy.

$p=0$ , oligarchs rent-seek in equilibrium and each gets  $r < \Pi$ . We assume that a weak dictator cannot limit rent-seeking, so oligarchs rent-seek and end up getting the payoff of  $r$  each. (In the next Section we endogenize the choice of property rights and explain why weak dictators cannot enforce property rights). The same outcome prevails if the dictator is removed from office.

The bargaining game is as follows: with probability  $1-\alpha$  the dictator makes a take-it-or-leave-it offer to both oligarchs, with probability  $\alpha/2$  each oligarch makes a take-it-or-leave-it offer to the other oligarch and the dictator. The offer is a triple of the property rights  $p = \{0,1\}$  and oligarchs' transfers to the dictator  $t_1, t_2$  (alternatively, it can be defined as a triple of property rights  $p$  and the oligarchs' payoffs  $v_i = r(1-p) + \Pi p - t_i$ ). The disagreement payoffs are normalized to zero.

In this Section we assume that there is no cost of enforcing property rights, so the outcome  $p=1$  is always optimal. Let us solve for equilibrium and check when the oligarchs prefer to appoint strong versus weak dictators.

If the weak dictator is chosen, rent-seeking is not limited, so the total payoff is  $2r$ . The dictator has to offer each oligarch at least  $r$ , otherwise he will be overthrown. Hence, in equilibrium each oligarch gets  $r$  and the dictator gets 0.

Now we shall consider the strong dictator. To remain in office, a strong dictator has to offer the payoff of at least  $r$  to one oligarch, but can offer 0 to the other one. Therefore if the dictator gets to make an offer, he compares  $2\Pi - r$  (if the property rights are enforced  $p=1$ ) and  $2r - r$  (if they are not  $p=0$ ). Obviously, he prefers stronger property rights  $p=1$ .

If oligarch  $i$  gets to make an offer (which happens with probability  $\alpha/2$ ), he offers trivial payoff to the dictator and to the other oligarch. He therefore chooses the property rights to maximize  $v_i = 2r(1-p) + 2\Pi p$ ; again, the strong property rights are chosen  $p=1$ .

Therefore, if the dictator is strong, each oligarch expects to get  $\frac{1}{2}(1-\alpha)r + \frac{\alpha}{2}2\Pi$ . We can now compare the oligarchs' payoffs under weak and strong dictator and conclude that the oligarchs collectively prefer a weak dictator whenever

$$\Pi < r \left( 1 + \frac{1-\alpha}{2\alpha} \right). \tag{1}$$

Notice that this condition may hold even if the strong property rights are Pareto optimal  $\Pi > r$ . The oligarchs expect the strong dictator to expropriate one of them and therefore prefer a weak dictator even though this choice results in socially wasteful rent-seeking.

### 3. Dynamic setup

In this Section, we generalize the setup above in several directions. First, we consider a dynamic game, second, we endogenize the inability of the weak dictator to enforce property rights, third, we allow for a non-trivial cost of enforcing property rights.

We consider a repeated game between two oligarchs  $O_{1,2}$  and a dictator  $D$ . In each period, oligarchs choose whether to produce or engage in rent-seeking. Given the other oligarch's choice, rent-seeking is a dominant strategy. Yet, the rent-seeking equilibrium is inefficient. In other words, the oligarchs play a prisoner's dilemma<sup>3</sup>:

	rent–seek	produce	
rent–seek	$r; r$	$R; \pi$	
produce	$\pi; R$	$\Pi; \Pi$	(2)

We assume  $\pi < r < \Pi < R$ . Clearly,  $(r;r)$  is a unique Nash equilibrium but  $(\Pi;\Pi)$  is Pareto-optimal.

The oligarchs would benefit from an external enforcer of property rights who could rule out the rent-seeking equilibrium. We assume that the oligarchs may appoint a dictator who can choose one of two levels of property rights protection  $p=0,1$ . The high level of property rights protection  $p=1$  incurs prohibitively high costs of rent-seeking so that the oligarchs choose the  $(\Pi;\Pi)$  outcome. If the protection is weak  $p=0$  the game is as in (2), so both oligarchs rent-seek in equilibrium. Weak protection of property rights  $p=0$  is costless while the strong protection  $p=1$  costs the dictator  $c$ .

The oligarchs can choose whether to appoint a strong or a weak dictator. We proxy the dictator's strength by his political support base independent of oligarchs. A *weak* dictator is one that each individual oligarch can remove from office unilaterally. A *strong* dictator can withstand the pressure of a single oligarch; it takes two oligarchs to remove him.<sup>4</sup>

The dictator chooses  $p$  and asks oligarchs for contributions  $t_i$ . If he is weak, he needs to make sure that both oligarchs are happy. If the dictator is strong, he only has to keep one oligarch satisfied and can afford to expropriate the other one. We allow for contracts  $\{p, t_1, t_2\}$  to be enforced within a period but not across periods. As usual in the incomplete contract theory, the duration of the period is the maximum length of the enforceability of contract. Yet another important assumption is that we do not allow oligarchs to coordinate within a period. They can only act collectively when choosing the new dictator before a period starts, and only if there is no incumbent dictator (i.e. if the previous period's dictator was removed from office).

Whenever the dictator is replaced, each oligarch incurs a cost of regime turnover  $K \geq 0$ .

<sup>3</sup> This prisoner's dilemma can be formally microfounded in a general equilibrium model, see, for example Murphy et al. (1991), Sonin (2003), Polishchuk and Savvateev (2004).

<sup>4</sup> One can also consider a *very strong* dictator that cannot be overthrown even by a consensus of oligarchs. Would oligarchs ever agree to appoint such a dictator? This may be the case if two conditions hold: (i) there is a need for the dictator's investment in protection of property rights that extend beyond the current period (e.g. oligarchs invest in long-term projects); (ii) the dictator can commit not to expropriate the dictators completely or there is a non-trivial chance that dictator resigns, dies or becomes weaker. Then, the oligarchs may prefer to appoint a very strong dictator in order to provide him with incentives to commit to the long-term property rights protection.

### 3.1. Notation and assumptions

We model the game in discrete time. The discount rate is  $\rho$ . The distribution of bargaining power between the dictator and the two oligarchs is  $1-\alpha, \alpha/2, \alpha/2$ . The dictator's expected payoff is  $U_D$  where  $D \in \{S, W\}$  is the type of dictator for the next period, strong or weak, respectively. Similarly, each oligarch's expected payoff is  $V_D: V_S$  if the dictator is strong,  $V_W$  if the dictator is weak, and  $V_N$ , if the dictator is new.

We assume that the parties' reservation utilities are normalized to zero; in other words, even if dictator wants to expropriate an oligarch, he cannot force the oligarch into a negative payoff. (Our model would work with any finite cap on the transfer from the expropriated oligarch).

Let us also introduce the social returns to protecting property rights:

$$\Delta = 2\Pi - 2r - c. \quad (3)$$

If this gain is very high, all dictators will protect property rights; if it is negative, neither ruler ever would. We will therefore focus on the intermediate case: we will assume that enforcing property rights is efficient but the efficiency gains are not too high. This assures that a strong dictator chooses  $p=1$  and a weak dictator chooses  $p=0$ ; otherwise the two would choose the same property rights protection.

**Assumption.** The efficiency gains from property rights enforcement are positive but are not very large

$$0 \leq \Delta \leq R - r. \quad (4)$$

Hereinafter, we will understand the social welfare as the joint expected surplus of the dictator and the oligarchs  $J_D = U_D + 2V_D$ . We do not model the effects on the other agents in the economy. The assumption (4) makes up for this shortcoming. Indeed, it is natural to assume that rent-seeking imposes a negative externality on non-oligarch economic agents as well. As stronger property rights are more efficient for dictators and oligarchs than rent-seeking, they will also be more efficient in terms of a welfare function that would include non-oligarchs' payoffs as well.

### 3.2. Timing and definition of equilibrium

The timing within each period is as follows:

- If the previous dictator was removed from office in the last period, oligarchs pay  $K$  each, and collectively select a new dictator.
- The oligarchs and the dictator bargain on a contract  $\{p, t_1, t_2\}$  where  $p \in \{0, 1\}$  is the level of property rights protection,  $t_i \geq 0$  is the payment by each oligarch. With probability  $1-\alpha$ , the dictator makes it a take-it-or-leave offer to each oligarch. With probability  $\alpha/2$  each oligarch makes a take-it-or-leave-it offer to the other oligarch and the dictator.
  - The offer is accepted, and the game continues.
  - If the offer is rejected by a sufficient number of oligarchs (one for weak dictators and two for strong dictators), the dictator is removed from office. The property rights are not enforced  $p=0$ .
- Oligarchs independently decide whether to produce or to rent-seek and whether to remove the dictator. If the dictator is weak, each oligarch can unilaterally remove the dictator. If the dictator is strong, the dictator stays in office as long as at least one oligarchs does not decide to remove him.
  - If the dictator remains in office, he implements  $p$ , and each oligarch  $O_i$  pays  $t_i$  to the dictator.
  - If the dictator is removed, property rights are not enforced.
- Payoffs  $\Pi, R, r, \pi$  are realized.
- Next period begins.

Let us detail the fate of the expropriated oligarch. If the dictator offers this oligarch a non-negative payoff, the oligarch stays in the game. If the dictator offers a negative payoff, the oligarch takes the outside option of zero, so the dictator receives nothing from expropriation. We assume that in the next period the expropriated oligarch either returns or is replaced by another oligarch. While the issues related to the strategic expropriation (i.e. expropriation in order to change the number of oligarchs in the next period and therefore the equilibrium in the next period) are certainly important in reality, in this paper we neglect them.

We can now define the equilibrium. We will consider the pure strategy Markov perfect equilibria: the strategies can only depend on the current state. Within a period, we will consider subgame perfect equilibria. The state  $d = \{S, W, N\}$  is the type of the incumbent dictator in the beginning of the period: the period opens with either strong ( $d=S$ ) or weak ( $d=W$ ) dictator, or without an incumbent dictator ( $d=N$ ). (When we consider uncertainty in Sections 5.3 and 6.1, the state would also include the current values of parameters  $\Delta, r, c$ .) Given the state, the parties' strategies within the period are their choices at every node of the game tree described above. The dictator's strategy is the contract  $\{p, t_1, t_2\}$  that he offers to the oligarchs if the nature picks him to make an offer (with probability  $1-\alpha$ ) and the decision to accept or reject the offers made by the oligarchs. An oligarch's strategy is more complex: in addition to the offer to other agents and decision to accept/reject the offer, there are also the decision to remove the dictator (if he is weak), and the decision to produce/rent-seek (if  $p=0$ ). All the strategies above are chosen independently; only once a period, oligarchs are allowed to coordinate. In the beginning of the period, in case there is no incumbent dictator, the oligarchs choose a new dictator collectively maximizing their joint surplus. Once the dictator is in place, the parties play subgame perfect equilibrium.

#### 4. The equilibrium choice of property rights

We first solve the within-period game given the dictator's type and expected payoffs from the continuation subgames. Then we will describe the choice of the dictator.

##### 4.1. Strong dictator

We model the bargaining between the dictator and the oligarchs by considering the contingencies where the dictator gets to make a take-it-or-leave-it offer (this takes place with probability  $1-\alpha$ ) and the contingencies where the oligarchs make an offer (probability  $\alpha/2$  each). If the parties disagree, the dictator is removed from office and gets 0; each oligarch gets  $r+\rho V_N$ .

Let us start with the case where the dictator makes an offer. Since the dictator is strong, he offers  $r+\rho V_N$  to  $O_1$  and zero to  $O_2$ . We shall now compare the dictator's payoffs for the different levels of property rights protection.

- The dictator offers  $p=1$ , and  $t_1, t_2$ .  $O_1$  gets  $\Pi-t_1+\rho V_S=r+\rho V_N$ .  $O_2$  gets  $\Pi-t_2+\rho V_S=0$ . The dictator's payoff is

$$-c+t_1+t_2+\rho U_S=2\Pi-r-c+\rho U_S+2\rho V_S-\rho V_N. \quad (5)$$

- The dictator offers  $p=0$  and  $\tilde{t}_1, \tilde{t}_2$ .  $O_1$  gets  $r-\tilde{t}_1+\rho V_S=r+\rho V_N$ .  $O_2$  gets  $r-\tilde{t}_2+\rho V_S=0$ . The dictator's payoff is  $\tilde{t}_1+\tilde{t}_2+\rho U_S=r+\rho U_S+2\rho V_S-\rho V_N$ .

Comparing the two payoffs we establish that a strong dictator offers  $p=1$  whenever  $\Delta=2(\Pi-r)-c>0$  (as assumed by Eq. (4)).

Now we should check what happens if  $O_1$  makes an offer (this happens with probability  $\alpha/2$ ). As the dictator is strong, this oligarch is happy to give zero rent to both the dictator and the other oligarch. Let us now compare  $O_1$ 's payoffs for different levels of property rights protection.

- $O_1$  offers  $p=1, t_1, t_2$ . The dictator's payoff is  $-c+t_1+t_2+\rho U_S=0$ .  $O_2$  gets  $\Pi-t_2+\rho V_S=0$ .  $O_1$  gets

$$2\Pi-c+\rho U_S+2\rho V_S. \quad (6)$$

- $O_1$  offers  $p=0, \tilde{t}_1, \tilde{t}_2$ . The dictator's payoff is  $\tilde{t}_1+\tilde{t}_2+\rho U_S=0$ .  $O_2$  gets  $r-\tilde{t}_2+\rho V_S=0$ .  $O_1$  gets

$$2r+\rho U_S+2\rho V_S.$$

Again, the choice of property rights is efficient:  $p=1$  whenever Assumption (4) holds.

Notice that the parties reach an agreement if Eq. (5) is positive (which is equivalent to Eq. (6) exceeding  $r+\rho V_N$ ).

**Claim 1.** A strong dictator chooses  $p=1$  whenever Assumption (4) holds and (5) is positive. Otherwise  $p=0$  or the dictator is removed.

We shall assume that the dictator's choice of whom to expropriate is random. Therefore, if the dictator makes an offer, each oligarch is expropriated with probability  $1/2$ . Each oligarch's payoff is

$$V_S = \frac{1-\alpha}{2}(r+\rho V_N) + \frac{\alpha}{2}(2\Pi-c+\rho U_S+2\rho V_S)$$

while the dictator gets

$$U_S = (1-\alpha)(2\Pi-c+\rho U_S+2\rho V_S-r-\rho V_N).$$

Solving this system, we find the joint surplus  $J_S = U_S + 2V_S = \frac{2\Pi-c}{1-\rho}$ . Therefore

$$U_S = -(1-\alpha)(r+\rho V_N) + (1-\alpha)\frac{2\Pi-c}{1-\rho} \quad (7)$$

$$V_S = \frac{1-\alpha}{2}(r+\rho V_N) + \frac{\alpha}{2}\frac{2\Pi-c}{1-\rho}$$

It only remains to check that Eq. (5) is positive:

$$\frac{2\Pi-c}{1-\rho} \geq r+\rho V_N. \quad (8)$$

We will show below (as we solve for  $V_N$ ) that this inequality does hold.

##### 4.2. Weak dictator

As the dictator is weak, he needs to satisfy each oligarch's participation constraint. Otherwise, each oligarch can deviate unilaterally and remove the dictator from the office.

First, consider the case where the dictator makes the take-it-or-leave-it offer (again, this happens with probability  $1 - \alpha$ ).

- The dictator offers  $p=1$ , and  $t_{1,2}=t$ . Each oligarch's payoff is  $\Pi - t + \rho V_W$ . The dictator gets  $-c + 2t + \rho U_W$ .  
 – Now either oligarch can deviate unilaterally and remove the dictator. This oligarch would get  $R + \rho V_N$ , while the dictator would get 0. To rule this out, the dictator has to offer  $t = \rho(V_W - V_N) - (R - \Pi)$ .
- The dictator offers  $p=0$ , and  $\tilde{t}_{1,2}=\tilde{t}$ . Each oligarch gets  $r - \tilde{t} + \rho V_W$ . The dictator's payoff is  $2\tilde{t} + \rho U_W$ .  
 – If an oligarch deviates and removes the dictator, the oligarch gets  $r + \rho V_N$ . Hence,  $\tilde{t} = \rho(V_W - V_N)$ .

The dictator compares his payoffs  $-c + 2\rho(V_W - V_N) - 2(R - \Pi) + \rho U_W$  and  $2\rho(V_W - V_N) + \rho U_W$ . Apparently, the dictator always chooses weak property rights protection  $p=0$  and gets

$$\rho U_W + 2\rho V_W - 2\rho V_N. \tag{9}$$

(which must be positive). Each oligarch receives  $r + \rho V_N$ .

Now consider the contingency where  $O_1$  makes an offer. The offer includes transfers  $t_{1,2}$ , and either strong or weak property rights protection  $p=0,1$ .

- $O_1$  offers a contract  $p=1, t_1, t_2$ . The other oligarch  $O_2$  gets  $\Pi - t_2 + \rho V_W$  which must be at least as high as  $R + \rho V_N$ . Hence  $t_2 = \Pi + \rho V_W - R - \rho V_N$ . The dictator receives  $-c + t_1 + t_2 + \rho U_W = 0$ .  $O_1$ 's payoff is  $\Pi - t_1 + \rho V_W = 2U - c + \rho U_W + 2\rho V_W - R - \rho V_N$ .
- $O_1$  offers  $p=0, \tilde{t}_1, \tilde{t}_2$ . The other oligarch  $O_2$  gets  $r - \tilde{t}_2 + \rho V_W = r + \rho V_N$ . The dictator gets  $\tilde{t}_1 + \tilde{t}_2 + \rho U_W = 0$ . Hence  $O_1$ 's payoff is  $r - \tilde{t}_1 + \rho V_W = r + \rho U_W + 2\rho V_W - \rho V_N$ .

The oligarch  $O_1$  compares the payoffs and chooses  $p=0$  whenever  $2\Pi - R - r > c$ .

**Claim 2.** Weak dictator prefers  $p=0$  iff assumption (4) holds and Eq. (9) is positive.

Each oligarch gets

$$V_W = \left(1 - \frac{\alpha}{2}\right)(r + \rho V_N) + \frac{\alpha}{2}(r + \rho U_W + 2\rho V_W - \rho V_N).$$

The dictator's payoff is as follows

$$U_W = (1 - \alpha)(\rho U_W + 2\rho V_W - 2\rho V_N).$$

Solving this system, we find the joint surplus:

$$J_W = U_W + 2V_W = \frac{2r}{1 - \rho}.$$

Therefore

$$U_W = -2(1 - \alpha)(r + \rho V_N) + (1 - \alpha)\frac{2r}{1 - \rho},$$

$$V_W = (1 - \alpha)(r + \rho V_N) + \frac{\alpha r}{1 - \rho}. \tag{10}$$

**Remark 1.** Even though the off-equilibrium payoff  $R$  does not enter the equilibrium continuation values (10), it is crucial for the Claim 2. Indeed, in the subgame where the parties agree to a contract with  $p=1$ , there is an equilibrium in which the dictator implements  $p=1$  and oligarchs do not remove the dictator. However, in this equilibrium, each oligarch has to be compensated for forgoing the option to remove the dictator and to rent-peek; this option brings the deviating oligarch  $R + \rho V_N$ . Hence, the subgame with  $p=1$  becomes too costly for the dictator relative to the subgame with  $p=0$  as long as the assumption (4) holds.

### 4.3. The choice of a new dictator

In this Section, we solve for the oligarchs' payoff  $V_N$  in case the dictator is removed. In this contingency, the oligarchs are to choose a new dictator, either a weak one or a strong one. Comparing the oligarchs' payoffs (7) and (10) for either type of dictator, we find that the choice of the new dictator depends on  $V_N$ : a strong dictator is chosen whenever

$$(1 - \alpha)(r + \rho V_N) < \frac{\alpha \Delta}{1 - \rho}. \tag{11}$$

where  $\Delta$  is the social return to enforcing property rights (3). The left-hand side is the cost of the having a strong dictator (the loss due to expropriation of one of the oligarchs). The right-hand side is the benefit of property rights protection enforced by a strong dictator.

The Eq. (11) shows the importance of the dynamic setup. Indeed, if we considered a static setting (tantamount to the case  $\rho=0$ ), the choice of the dictator would depend on the relative bargaining power  $\frac{\alpha}{1 - \alpha}$  and on the relationship between the individual gains to rent-seeking  $r$  and the social gains to property rights enforcement  $\Delta$ . The strong dictator would be chosen whenever  $\Delta/r > (1 - \alpha)/\alpha$  (exactly as in Eq. (1)), i.e. whenever the oligarchs' bargaining power is high and property rights produce large social gains.

In the dynamic setting, however, the choice of the dictator today Eq. (11) also depends on the choice of the new dictator tomorrow  $\rho V_N$ . This is the case because the strong dictator expropriates oligarchs, and they do not receive the continuation value; thus the higher the value of  $\rho V_N$ , the more likely the weak dictator. In order to find  $V_N$ , we solve the dynamic game:

$$V_N = -K + \max\{V_S, V_W\}. \quad (12)$$

where  $K$  is the cost of changing a dictator. The system of Eqs. (7), (10)–(12) implies the following.

**Proposition 1.** *There is a unique Markov-perfect equilibrium. The oligarchs will choose a strong dictator whenever*

$$\Delta \geq \bar{\Delta} \equiv \frac{1-\alpha}{\alpha} \left[ r - K \frac{\rho(1-\rho)}{1-\rho(1-\alpha)} \right]. \quad (13)$$

*Otherwise they will choose a weak dictator.*

The condition (13) is intuitive. The greater the return to enforcing property rights  $\Delta$ , the more likely a strong dictator is chosen. The greater the payoff to rent-seeking  $r$  (compared to the complete expropriation by a strong ruler), the more likely the weak ruler is to emerge. One can also interpret this result as comparative statics with regard to the intensity of an external threat. Suppose there is an external threat that reduces payoffs in all states so that both  $r$  and  $\Pi$  decrease by the same amount. In this case, a strong dictator is more likely to emerge; indeed,  $\Delta$  remains the same while  $r$  decreases. This result is consistent with [Besley and Persson \(2007\)](#) as well as with the argument by [Machiavelli \(1515, ch. IV\)](#).

Interestingly, the greater the cost of turnover  $K$ , the more likely the strong dictator. The result is not driven by the fact that the weak rulers do not last long. Indeed, this setup involves no uncertainty; once the ruler is chosen, he remains in power in equilibrium indefinitely. The cost of turnover influences the preference for the strong ruler via the value of the outside option. The higher the cost of turnover, the lower the oligarchs' equilibrium payoff. As under the strong dictator, one of the oligarchs is expropriated completely (with probability  $\frac{1-\alpha}{2}$ ), the negative effect of higher turnover costs is more relevant for the case of the weak ruler where both oligarchs get their outside option.

It is worth noting that the condition (13) turns into Eq. (1) at  $\rho=0$  and  $c=0$ ; in other words, our static example is a limiting case of our dynamic model.

#### 4.4. Welfare analysis

Given the Assumption (4), the strong dictator is always more efficient than the weak one: the difference in joint surpluses  $[U_S + 2V_S] - [U_W + 2V_W] = \frac{\Delta}{1-\rho}$  is always positive. Yet, as long as condition (13) is violated, the oligarchs appoint a weak dictator. Why does this inefficiency emerge? The oligarchs do not appoint a strong ruler because there is no way for the ruler to commit to non-expropriation. In a sense, our model illustrates the non-existence of a “political Case theorem” ([Acemoglu, 2003](#); [Acemoglu and Robinson, 2001](#)). The oligarchs would like to appoint a dictator who would commit to contain rent-seeking and not to expropriate the oligarchs. The problem is that no dictator can credibly promise both. A weak dictator cannot commit to enforce property rights: as he can be overthrown by a single oligarch, he cannot constrain their rent-seeking. A strong dictator does enforce property rights in equilibrium but cannot commit not to expropriate.

### 5. Path dependence and the effect of uncertainty

The analysis above describes the equilibrium choice of the dictator by the oligarchs. How does this equilibrium emerge? What happens if for some reason the incumbent dictator is weak while  $\Delta > \bar{\Delta}$ ? What happens if  $\Delta < \bar{\Delta}$  but the incumbent dictator is strong? In either situation, oligarchs would rather replace the dictator. In order to prevent this, the incumbent dictator may be willing to offer the oligarchs additional compensation for keeping him in office.

In the analysis below we slightly modify the timing and allow the oligarchs to decide collectively in the beginning of each period whether to remove the dictator from the office. More specifically, we replace the first bullet item in the description of timing in Section 3.2 with the following order of events: Oligarchs choose whether to remove the incumbent dictator from office (which would cost each oligarch  $K$ ) and select a new dictator. The nature picks an oligarch  $O_i$  to propose to the other oligarch  $O_j$ ,  $j \neq i$ , whether to remove the dictator. Before agreeing or turning down  $O_i$ 's proposal, the other oligarch  $O_j$  can ask the dictator for a side payment.

While this procedure of removing an incumbent seems to be cumbersome, it captures the idea of divide-and-rule game which is the focus of our paper; unless there were an opportunity for collusion between  $O_i$  and the dictator, the oligarchs would always remove the incumbent that is not maximizing their joint surplus.

#### 5.1. Removing a weak incumbent

If the returns to establishing secure property rights  $\Delta$  are sufficiently high, the oligarchs are ready to remove the dictator even though it costs  $K$ . This is the case whenever

$$V_S > K + V_W. \quad (14)$$

This inequality implies  $V_S > V_W$  hence  $V_N = V_S - K$ . Substituting this into Eqs. (7) and (10), we find that Eq. (14) is equivalent to

$$\Delta \geq \Delta^* \equiv \frac{1-\alpha}{\alpha} r + K \frac{2(1-\rho)}{\alpha} > \bar{\Delta}. \quad (15)$$

**Proposition 2.** *Suppose that the incumbent dictator is weak and Eq. (15) holds. Then either oligarch will remove the dictator from the office and replace him with a strong one.*

When the condition (15) holds, either oligarch is happy to remove the dictator. It only remains to check that the dictator cannot bribe the oligarchs. As the dictator is weak he has to bribe both oligarchs; the dictator has to offer either oligarch at least  $V_S - K - V_W$ . It is easy to check that whenever Eq. (15) holds, the dictator cannot afford giving each oligarch this much. The result is intuitive. As the weak dictator is socially inefficient, his payoff is below the bribes he has to provide the oligarchs to remain in power.

### 5.2. Removing a strong incumbent

Now consider the opposite situation when dictator is strong but the oligarchs would rather appoint a weak one. This would be the case whenever

$$V_W > K + V_S. \quad (16)$$

This inequality implies  $V_S < V_W$  hence  $V_N = V_W - K$ . Substituting into Eqs. (7) and (10), we find that Eq. (16) is equivalent to  $\Delta < \Delta^{**} \equiv \frac{1-\alpha}{\alpha} \left[ r - K \frac{(1-\rho)(2-\rho(1-\alpha))}{(1-\alpha)(1-\rho(1-\alpha))} \right]$ ; it is easy to show that  $\Delta^{**} < \bar{\Delta}$ .

As the dictator is strong, the condition (16) is necessary but not sufficient. The oligarchs need to coordinate their actions against the dictator. The dictator will try to use the divide-and-rule tactics by bribing one of the oligarchs. The dictator is removed in equilibrium if and only if  $V_W - K < V_S + U_S$ . Indeed, if  $O_1$  moves to remove the dictator, the other oligarch's best response is to ask the dictator for a bribe. The coalition of the dictator and  $O_2$  has the joint surplus of  $V_S + U_S$  if dictator stays in power and only  $V_W - K$  if he is removed.

Substituting into Eqs. (7) and (10), we find that  $V_W - K < V_S + U_S$  can only be the case if the property rights protection is socially suboptimal  $\Delta < 0$ .

**Proposition 3.** *Suppose that the incumbent dictator is strong and assumption (4) holds. Then the dictator is not removed in equilibrium.*

If  $O_1$  tries to remove the dictator,  $O_2$  is better-off colluding with the dictator. If  $O_1$  is content with the dictator, it makes no sense for  $O_2$  even to try to remove the dictator: the dictator is strong and  $O_2$  cannot remove him alone.

It is important to emphasize that there is a non-trivial range of parameters for which the condition (16) does hold; each oligarch would benefit from replacing the dictator. However, as they cannot resolve the coordination problem, the dictator remains in power.

### 5.3. Effect of uncertainty

The results above suggest an important asymmetry between the weak and the strong dictators. While non-trivial turnover costs  $K$  provide certain protection to either type of dictators, removing the strong dictator is impossible even if  $K$  is low. The matter is that the strong dictator can use divide-and-rule tactics. Therefore there can emerge a dynamic path along which the oligarchs prefer to replace the strong dictator with the weak one but cannot solve the coordination problem. Ironically, the strong dictator is brought in to help oligarchs resolve the coordination problem with enforcing their property rights against each other. On the other hand, the dictator takes advantage of the very same coordination problem to remain in power and expropriate the oligarchs.

In the model above, parameters are stable over time. Hence the choice of dictator which is optimal today will continue to be optimal tomorrow as well. Now we shall consider the case where the economic environment changes over time. For example, there can be bad economic times (low  $\Pi$  and therefore low  $\Delta = \Delta^L$ ) and prosperity (high  $\Delta = \Delta^H > \Delta^L$ ). Consider the case where  $\Delta^L < \bar{\Delta} < \Delta^* < \Delta^H$  (see Eq. (13)). In other words, if the oligarchs knew that prosperity  $\Delta = \Delta^H$  is to last forever, they would choose a strong dictator. If they believe that the recession  $\Delta = \Delta^L$  is to last forever they would choose a weak dictator.

While coping with the uncertainty of the future economic environment, the oligarchs must take into account the implications of irreversibility of appointing a strong dictator (similarly to the irreversibility of investment, see Dixit and Pindyck, 1994). By appointing a weak dictator, the oligarchs acquire an option to replace the dictator with a strong one if the state changes to  $\Delta = \Delta^H$ . On the other hand, if the oligarchs appoint a strong dictator, they effectively give up this replacement option. Therefore, the oligarchs would be biased in favor of appointing a weak dictator.

To formalize this simple intuition, we assume that oligarchs need to appoint a dictator before uncertainty is resolved. They know that once the dictator is appointed, uncertainty is realized and  $\Delta$  is either  $\Delta^L$  with probability  $\phi$  or  $\Delta^H$  with probability  $1-\phi$  (and remains at this level forever).

Denote  $V_d(\Delta)$  the payoff of an oligarch if the dictator's type is  $d \in \{S, W\}$  and the realized economic environment is  $\Delta \in \{\Delta^L, \Delta^H\}$ . If the oligarchs choose a weak dictator, their expected payoff is  $(1-\phi)[-K + V_S(\Delta^H)] + \phi V_W(\Delta^L)$ . Indeed, if the true state is  $\Delta = \Delta^L$  they will keep the weak dictator in place, and if  $\Delta = \Delta^H > \Delta^*$ , they replace the weak dictator with a strong one.

If the oligarchs appoint a strong dictator, they know that they will be unable to replace him whatever the realization of uncertainty; therefore the payoff is  $(1 - \phi)V_S(\Delta^H) + \phi V_S(\Delta^L)$ . Comparing these two payoffs, we obtain the following result.

**Proposition 4.** Assume  $0 < \Delta^L < \bar{\Delta} < \Delta^* < \Delta^H$ . Then the oligarchs choose a strong dictator whenever

$$(1 - \phi)K < \frac{\alpha\phi(\bar{\Delta} - \Delta^L)}{2(1 - \rho)}. \quad (17)$$

Otherwise they choose a weak dictator.

The Proposition implies that the emergence of strong property rights protection is unlikely if the low state is sufficiently likely and it is sufficiently bad. This also implies that given the average returns to property rights protection  $E\Delta = \phi\Delta^L + (1 - \phi)\Delta^H$ , an increase in uncertainty results in weaker property rights. Indeed, consider a mean-preserving spread of the underlying random variable. Suppose that the variance of the economic environment increases (e.g.  $\Delta^H$  increases and  $\Delta^L$  decreases keeping the expected value  $\phi\Delta^L + (1 - \phi)\Delta^H$  constant). Then, the condition (17) is less likely to hold and the oligarchs are more likely to choose a weak dictator. This situation may well occur when the expected returns to protecting property rights  $\phi\Delta^L + (1 - \phi)\Delta^H$  are above  $\bar{\Delta}$  so that oligarchs would choose a strong dictator *on average*. Yet, even in this case if the uncertainty is high, the oligarchs prefer to appoint a weak ruler: the option value of replacing an incumbent is large.

In the above analysis, we refer to the state  $\Delta = \Delta^H$  as 'prosperity'; this is the case where returns to production relative to rent-seeking are high. The most straightforward example is technological progress. In any microfounded model with rent-seeking, an increase in productive efficiency should raise the returns to production  $\Pi$  faster than returns to rent-seeking,  $r$ . However, the analysis above would apply to the opposite case as well. For example, a positive terms-of-trade shock in a resource-based economy would result in lower  $\Delta$ . An increase in the resource prices leads to higher returns to both production and rent-seeking. Yet, the returns to rent-seeking increase faster: when resource prices are high, rents are high so the oligarchs are not interested in enforcement of property rights. In contrast, when the resource prices fall, that is, rent-seeking becomes dangerously damaging, the relative returns to production are higher  $\Delta = \Delta^H$ ). In this case, positive terms-of-trade shock is characterized by lower rather than higher  $\Delta$  and therefore greater extent of rent-seeking. However, in both cases, we obtain the result that higher uncertainty implies weaker property rights protection.

## 6. Robustness and extensions

In order to build a tractable dynamic model, we have made a number of simplifying assumptions both on the technology of rent-seeking and property rights protection and on timing of the events. Our results are robust to extensions. In particular, re-ordering the events would produce similar results – as long as we preserve the main trade-off between strong dictator's ability to expropriate and weak dictator's inability to limit rent-seeking. It is crucial for our model to have two commitment problems: the individual oligarchs cannot commit to keep the weak dictator in office and the strong dictator cannot commit not to expropriate the oligarchs. If at least one of these commitment problems can be resolved through rearranging the moves, introducing hostages etc., there would be no problem to implement the first best. If the oligarchs could commit to an agreement to keep the weak dictator in the office, the weak dictator would be able to reduce rent-seeking. Similarly, if the strong dictator could commit to stay away from expropriation, the oligarchs would always be happy to appoint a strong dictator.

Also, introducing a continuous rather than a binary choice of property rights protection and of dictator's strength would not change the main result (see Section 8.3 in Greif, 2006, for a formal model with continuous investment in military strength of dictator and oligarchs). We consider the extensions related to the nature of uncertainty and the number of oligarchs below.

### 6.1. Effect of uncertainty in a generalized model

The example above assumes that the uncertainty is resolved once and for all. In this Section, we consider a more general setting with a Markovian uncertainty with two states of nature: "bad times" ( $L$ ) and "good times" ( $H$ ). For simplicity's sake, the states differ only in terms of the returns to containing rent-seeking:  $\Delta^L < \Delta^H$ .

If the present state is  $H$ , in the next period it remains  $H$  with probability  $1 - \lambda$ , and switches to  $L$  with probability  $\lambda$ . If the current state is  $L$ , it does not change with probability  $1 - \mu$  or returns to  $H$  with probability  $\mu$ .

We shall consider an equilibrium where  $\Delta^L$  is sufficiently low so that the oligarchs appoint a weak dictator in the state  $L$ . The question is whether they will appoint a strong dictator in the state  $H$ . On one hand, in this state, the returns to stronger property rights  $\Delta^H$  are high; on the other hand, once the state  $L$  arrives, the oligarchs would not be able to remove the strong dictator.<sup>5</sup>

<sup>5</sup> In this setting, once a strong dictator is appointed, he will remain in office forever. A more realistic setup would involve a small exogenous probability of dictator's departure; results would be similar.

We will study the equilibrium where the second effect dominates, so the oligarchs prefer to appoint a weak dictator even in the state  $H$ . Reproducing the analysis from Section 2, we establish the following system of equations for oligarchs' payoffs  $V_{S,W,N}^i$  and the joint surplus  $J_{S,W}^i$  (here the superscript  $i=L,H$  denotes the state  $L,H$ ).

$$\begin{aligned} V_S^i &= \frac{1-\alpha}{2} (r + \rho V_N^i) + \frac{\alpha}{2} J_S^i; & V_W^i &= (1-\alpha) (r + \rho V_N^i) + \frac{\alpha}{2} J_W^i; \\ V_N^H &= -K + [(1-\lambda)V_W^H + \lambda V_W^L]; & V_N^L &= -K + [(1-\mu)V_W^L + \mu V_W^H]; \\ J_S^L &= \Delta^L + 2r + \rho[(1-\mu)J_S^L + \mu J_S^H]; & J_W^L &= 2r + \rho[(1-\mu)J_W^L + \mu J_W^H]; \\ J_S^H &= \Delta^H + 2r + \rho[(1-\lambda)J_S^H + \lambda J_S^L]; & J_W^H &= 2r + \rho[(1-\lambda)J_W^H + \lambda J_W^L]. \end{aligned}$$

In order for the solution to be an equilibrium outcome we need to require  $V_S^H - V_W^H < 0 < V_S^L - V_W^L$ . We have already assumed above that  $\Delta^L$  is sufficiently low so the right-hand side inequality holds. The left-hand side one makes sure that even in the high state, the oligarchs are afraid to appoint a strong dictator as the latter would be impossible to remove. This condition is equivalent to

$$\Delta^H < \frac{\lambda \rho (\Delta^H - \Delta^L)}{1 - \rho(1 - \lambda - \mu)} + \frac{1 - \alpha}{\alpha} \frac{\rho(1 - \rho)}{1 - \rho(1 - \alpha)} \left[ r \left( \frac{1}{\rho(1 - \rho)} - \frac{\lambda(1 - \alpha)}{1 - \rho(1 - \alpha)(1 - \lambda - \mu)} \right) - K \right].$$

This inequality holds whenever volatility of economic environment  $\Delta^H - \Delta^L$  is sufficiently high.

## 6.2. Number of oligarchs

Our main result is that the dictator either fails to stop rent-seeking or expropriates some oligarchs. Does this result extend to the case of  $N > 2$  oligarchs? The answer is 'yes' even though the model is more complicated. If  $N > 2$ , there can be a whole range of dictators' strengths  $n \in (1, N)$ , where  $n$  is the number of oligarchs it takes to remove the dictator from the office. Yet, the analysis is straightforward. If  $n = 1$ , the dictator is weak and cannot stop rent-seeking; if  $n > 1$ , the dictator expropriates  $(n - 1)$  oligarchs.

To sketch a formal argument, we need to make an assumption on whether a subset of oligarchs can collude to remove the dictator from office and engage in rent-seeking. Given that coordination is costly, the results crucially depend on the relationship between the size of anti-dictator coalition and the cost of coordination. For simplicity's sake, let us focus on the natural extreme case where such coordination is infinitely costly.

In this case, the trade-off is as follows. If the dictator is weak  $n = 1$ , then he cannot contain rent-seeking (each oligarch can threaten to deviate unilaterally). If the dictator is strong  $n \geq 2$ , he can easily expropriate  $n = 1$  oligarchs. Therefore from the oligarchs' point of view any  $n > 2$  is dominated by  $n = 2$  (greater extent of expropriation but the same level of property rights protection). Therefore the oligarchs will choose between a weak dictator  $n = 1$  and a strong one with  $n = 2$ . As the number of oligarchs  $N$  increases, the probability of being expropriated  $1/N$  decreases, therefore the choice of the strong dictator is more likely.

This simple result is an implication of the binary choice of the property rights protection  $p = 0,1$ . If  $p$  is continuous and the stronger the dictator, the higher  $p$  he can implement, the optimal choice of the dictator's strength may increase with the number of oligarchs  $N$ . Again, this analysis depends on the choice of microfoundations of the rent-seeking game.

## 6.3. Endogenous popular support

Our results would only be reinforced in a setting where the dictator's popular support (and therefore his strength) would be endogenous to the economic performance. In such a model, oligarchs would be even more reluctant to appoint a strong dictator in good economic times: this dictator would soon gain immunity from the oligarchs' pressures. Moreover, like in the models of managerial entrenchment in the corporate governance literature, the dictator may invest in his strength to withstand oligarchs' attempts to remove him.

## 7. Conclusions

In this paper, we consider a dynamic model of the interaction between dictators and oligarchs. Oligarchs are powerful economic agents who behave strategically both in economics and politics. As the economic institutions are imperfect, oligarchs suffer from continued rent-seeking and are interested in building a state that would resolve their coordination problem and constrain rent-seeking. We show that such a state does not always emerge. Indeed, the oligarchs want to appoint a ruler who would both protect their property rights from other oligarchs and not expropriate the oligarchs himself. This trade-off is hard to resolve. If the oligarchs appoint a weak dictator, he cannot constrain oligarchs' rent-seeking. If the oligarchs appoint a strong dictator, he does protect the oligarchs from each other but cannot commit not to expropriate certain oligarchs himself. Therefore, in some situations, the oligarchs would rather appoint a weak dictator even though a strong dictator is Pareto optimal.

We also show that once the strong dictator is appointed he cannot be removed – even if the oligarchs are better-off under a weak dictator. The strong dictator can use divide-and-rule tactics to exploit the very same coordination failure between the oligarchs that the latter requested him to resolve. This irreversibility implies two predictions. First, appointing a strong dictator is an even less attractive choice for the oligarchs. It is therefore not surprising that in many oligarchic economies we observe a weak state and persistent rent-seeking even when stronger protection of property rights is clearly better for everyone. Second, the

probability of appointing a weak ruler increases in the degree of economic uncertainty. This is why strong property rights are unlikely to emerge in countries with volatile terms of trade, in particular in resource-rich economies.

## Appendix A. Proofs

**Proof of Proposition 1.** Let us assume that  $V_S > V_W$ . Substituting Eq. (12) into Eqs.(7), (10), and (11) we find  $V_S - V_W = (\Delta - \bar{\Delta}) \frac{\alpha}{1-\rho} \frac{1-\rho(1-\alpha)}{2-\rho(1-\alpha)}$ . The case  $V_S < V_W$  is similar:  $V_S - V_W = (\Delta - \bar{\Delta}) \frac{\alpha}{2(1-\rho)}$ .

Therefore  $V_S - V_W \geq 0$  holds if and only if Eq. (13) is the case.

Hence the equilibrium is as follows: if  $\Delta \geq \bar{\Delta}$ , the parties expect that whenever there is an opportunity to appoint a new dictator, a strong dictator will always be appointed. If  $\Delta < \bar{\Delta}$ , hence the parties expect that the weak dictator will always be appointed in equilibrium.

The last remaining step of the proof is checking whether Eqs. (5) and (9) are positive. Substituting Eq. (12) into Eqs. (8) and (9) we find that both are positive as long as the assumption (4) holds.  $\square$

**Proof of Proposition 2.** Let us consider the oligarchs' choice in the beginning of the period. When the oligarchs choose the dictator, the act in their collective interest. Since they are symmetric, and each of them can remove a weak dictator unilaterally, it is sufficient to calculate the payoff of either oligarch and find the conditions when the individual oligarchs prefer to remove the weak dictator.

If the oligarch keeps the dictator in place, she receives  $V_W$ . If she decides to remove the weak dictator, she knows it only makes sense if the oligarchs will then collectively choose a strong one (otherwise the cost of turnover  $K$  is wasted), so Eq. (14) must hold. As this condition implies  $V_S > V_W$ , the parties know that  $V_N = V_S - K$ . Straightforward calculations imply that Eq. (14) is tantamount to Eq. (15).

**Proof of Proposition 3.** Like in the Proof of Proposition 2, we should first calculate the individual oligarch's returns to removing the strong incumbent. It is easy to show that each oligarch benefit from removing the strong dictator (i.e. Eq. (16) holds) whenever  $\Delta < \Delta^{**} \equiv \frac{1-\alpha}{\alpha} \left[ r - K \frac{(1-\rho)(2-\rho(1-\alpha))}{(1-\alpha)(1-\rho(1-\alpha))} \right] = \bar{\Delta} - K \frac{2(1-\rho)}{\alpha} < \bar{\Delta}$ .

However, as the incumbent is strong, we also need to check whether the dictator can divide-and-rule through colluding with one of the oligarchs. The collusion is impossible whenever the joint surplus of the dictator and this oligarch is higher when the dictator stays  $V_S + U_S$  rather than when the dictator is replaced (with a weak one)  $V_W - K$ . Straightforward calculations imply

$$V_S + U_S = \left( \frac{3-\alpha}{2} \right) \frac{r}{1-\rho} + \frac{1-\alpha}{2} \frac{K}{1-\rho(1-\alpha)} + \left( 1 - \frac{\alpha}{2} \right) \frac{\Delta}{1-\rho}; \quad V_W - K = \frac{r}{1-\rho} - \frac{K}{1-\rho(1-\alpha)}.$$

Therefore,  $(V_S + U_S) - (V_W - K) = \frac{1-\alpha}{2} \frac{r}{1-\rho} + \frac{3-\alpha}{2} \frac{K}{1-\rho(1-\alpha)} + \left( 1 - \frac{\alpha}{2} \right) \frac{\Delta}{1-\rho}$  which is positive for any  $\Delta \geq 0$ .

**Proof of Proposition 4.** Under the assumptions of the Proposition, the oligarchs' choice is as follows. If the oligarchs choose a weak dictator, they keep the option to replace him with a strong one in the high state  $\Delta = \Delta^H$ . Hence, their expected payoff is  $(1-\phi)[-K + V_S(\Delta^H)] + \phi V_W(\Delta^L)$ . If they choose a strong one, they will have the strong dictator whatever  $\Delta$  is; their payoff is  $(1-\phi)V_S(\Delta^H) + \phi V_S(\Delta^L)$ . Subtracting these two payoffs and using the Proof of Proposition 1 we find that the oligarchs choose a strong dictator if and only if

$$0 \leq (1-\phi)K - \phi \left[ V_W(\Delta^L) - V_S(\Delta^L) \right] = (1-\phi)K - \phi \left( \bar{\Delta} - \Delta^L \right) \frac{\alpha}{2(1-\rho)}$$

which is equivalent to Eq. (17).

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