Taming the (Not So) Stationary Bandit: Turnover of Ruling Elites and Protection of Property Rights*

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Abstract

We propose a theoretical model and provide empirical evidence that show that rotation of ruling elites could improve property rights protection, and that such association holds for non-democratic political regimes when it is based on elites' concerns about security of their own property rights in the event they lose power. Such incentives provide a solution to credible commitment problem in maintaining secured property rights when institutional restrictions on expropriation are weak or absent. It is further shown that the strength of such immediate incentives to maintain secured property rights depends positively on the size of elites' market assets. These conclusions are confirmed empirically by using a panel of 58 developed and developing nations for the period from 1975 through 2005.

JEL Codes: K11, O17, P14.
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1. Introduction

The importance of secured property rights for economic development and welfare is a firmly established fact supported by a vast body of evidence. Nonetheless, cross-country comparisons reveal profound variations in property rights protection around the globe, and what exactly makes for secured property rights remains a subject of debates. The existing theories trace quality of property rights and economic institutions in general to history (Acemoglu, Johnson, Robinson, 2001), geography (Sokoloff and Engerman, 2000), culture (Tabellini, 2008), size and structure of the economy (Clague et al., 1996; Mehlun, Moene, Torvik, 2006), inequality and diversity in the society (Keefer and Knack, 2002), etc.

Such theories usually involve political mechanisms that shape incentives of political actors and interest groups and hence affect public choice of property rights regimes. Since secured property rights lay grounds for open-access order (North, Wallis, Weingast, 2009) and broad-based economic growth with widely shared benefits, democracy should be expected to uphold property rights. This claim however does not find firm support in data, at least without numerous caveats (Clague et al., op. cit.; Lizzeri, Persico, 2005). A contrarian view (Glaeser et al., 2004) holds that secured property rights can be supplied by an autocratic regime as well, if it exercises its discretion over policies and institutions in favor of those supporting development and growth. Olson (1993) explains such affinity of regime's and societal interests by the famous "stationary bandit" concept: an authoritarian ruler with firm grip on power values economic growth as a means to sustain and expand his tax base, and hence invests in growth-promoting institutions, first and foremost secured property rights. Such incentives are much better for development than those of a 'roving bandit' whose hold of power is transient and insecure and who therefore resorts only to 'migratory plunder'.

The "stationary bandit" theory leads to a testable hypothesis that longer tenure of autocratic regimes should be positively associated with more secure property rights. This hypothesis however is not supported by data either – according to Besley and Ghatak (2010), "the data suggest that, if anything, polities with long-lived politicians and parties holding office tend to have less secure property rights." One explanation could be that the "invisible political hand" does not fully align the incentives of a "stationary bandit" which lives off the proceeds of expropriation of the private sector with those of the private sector itself which is the victim of such expropriation (McGuire, Olson, 1996). Additional mechanisms are required to further narrow down such gap.

McGuire and Olson (op. cit) describe such mechanism by pointing out that the gap between the interests of ruling elites and those of the private sector gets narrower if the elites *own* production assets in the private sector, and therefore becomes naturally interested, as the rest of the private sector, in enabling institutional environment that enhances returns to such assets. Amazingly, such alignment could become complete even if the regime owns a relatively modest share of productive assets.

What makes this logic somewhat less convincing is the implicit assumption that the ruling class is subjected to the same rules and requirements as the rest of the private sector, and has no privileges in

(non)paying taxes, protecting its economic interests, accessing high-yield resources and markets, etc. In real-life autocracies this "equal treatment" assumption is routinely violated, when rulers and their cronies obtain tax and custom duty exemptions, enjoy preferential access to most coveted segments of the economy, easily resolve in their favor economic disputes and otherwise benefit from the principle "For my friends – anything, for my enemies – the law".[1]

We argue in this paper that the incentives to improve property rights protection and otherwise supply good institutions beyond the confines of the "invisible political hand" are still possible in autocracies, provided that there is sufficient *turnover* among ruling elites who consider the prospect of losing power as real and factor in such likelihood in their choice of institutional regimes. In this case elites' preferences over the degree of property rights protection reflect the eventuality of being subjected to the same treatment as everyone else outside of the ruling circle. This makes the elites more sensitive to the quality of institutions and security of property rights.

Two key ingredients are required for this mechanism to work: (i) ruling elites' turnover, and (ii) elites' ownership of market assets. Notice that democratic system of government is *not* among these ingredients. Government turnover is usually considered as a feature (and evidence) of robust democracies (Persson, Tabellini, 2003). In such case a positive association between property rights protection and frequency of government change could be explained by democratic political competition, as voters support parties that offer better protection of property rights. Empirical support to this familiar motive of the Chicago School of political economy (Wittman, 1995) is not universal: there are evidences of both beneficial (Besley, Persson, Sturm, 2010) and adverse (Lizzeri, Persico, 2005) impact of political competition on the quality of government-supplied institutions and policies.

In our theory the provision of good institutions is not powered by conventional political competition in pluralistic democracies, and is based on different kind of incentives to secure property rights – instead of vying for support of voters that value such institutions, political elites are driven by immediate self-interest of obtaining "institutional insurance" for the eventuality of losing power due to internal rivalry and squabbling in the ruling class, changes of coalitions, etc.; lost election and declining popular support might or might not be among such causes.

The rest of the paper is organized as follows. In the next sector we review the modern literature on "endogenous property rights" and show how an approach based on elites' rotation and material self-interest can resolve some of the existing controversies. A theoretical model presented in Section 3 captures the above ingredients of property rights protection and confirms that elites' turnover and asset ownership are indeed factors contributing to secured property rights, and that these factor complement each other. In Section 4 we describe cross-country panel data used for empirical verification of our claims. Estimation results presented in Section 5 support the predictions of the theory; of special significance is the finding that positive association between ruling elites' rotation and security of property rights is particularly strong and significant for *less* democratic countries which supports our explanation of such link over the conventional democratic competition theory. Section 6 concludes.

[1] Attributed to the Brazilian President Getulio Vargas.

2. Endogenous property rights and credible commitment

Property rights are often endogenous to political institutions, incentives of political actors, and restrictions on their choices. A crosscutting theme of the endogenous property rights literature (reviewed in Besley and Ghatak (2010)) is the *credible commitment problem.* An insufficiently accountable government could turn into a coercive authority that threatens the private sector with expropriation of income and property. The essence of the credible commitment problem is that such threat suppresses private investments and hence erodes the "tax base" of the autocratic regime.

A firmly established regime with sufficiently long time horizon values private investments which should lead to moderation in expropriation of private property and overall improvement of the institutional regime (Olson, 1993) – hence the conclusion that consolidated and secure power of a coercive authority is better than insecure and/or fragmented one. A firm grip on power not only creates incentives for more secured property rights, but also reduces political risks of institutional reforms that lead to greater empowerment of the private sector (Acemoglu, Robinson, 2006) – elites which are less confident in their political future could deem such institutional modernization prohibitively risky.

However, even given the willingness of an authoritarian regime to improve protection of property rights, its actual ability to do so is conditional on providing assurance to private investors that their property rights will not be violated beyond a moderate level of expropriation once investments are made and become exposed to unlimited predation. Such assurance can be based on regime's reputation which becomes a valuable asset in a repeated prisoner dilemma-type setting. The efficacy of the reputational solution to the credible commitment problem depends on the regime's inter-temporal discount rate – the higher is the value placed on future revenues, the broader is the credible commitment range in which the regime can select its preferred property rights protection level (Besley, Ghatak, op. cit.). The discount rate can be proxied by ruling elites' turnover, which reinforces the conclusion that regimes with longer tenure should be more likely to supply secured property rights – which, as it was mentioned earlier, cannot be supported empirically.

An alternative explanation that stands better chances to find support in data is that the credible commitment problem could be addressed by imposing "institutionalized restrictions on coercive power" (Besley, Ghatak, op. cit.) which limit ruling elites' ability to expropriate. Such restrictions could be placed by checks and balances dividing power among a larger number of veto players (Persson, Roland, and Tabellini, 1997); however according to Justesen (2009) a robust empirical confirmation of a positive association between power sharing and security of property rights is lacking. What appears to be a more straightforward way to credibly commit to good institutions is to increase the size of supporting coalition that the regime needs to stay in power, as this would tilt the regime's preferences from inefficient redistribution towards the provision of public goods and factors of production. This is in effect a move towards democratization – Lizzery and Persico (2005) make such association particularly clear by arguing that elites extend suffrage on broader population in order to increase the supply of public goods.

Alternately institutionalized restrictions on government expropriation can be imposed by a judiciary that enjoys a degree of independence –a well-known commitment device for stable investment expectations

(North, 2005). In this case courts and judges are not merely agents of regime or polity (Glaeser, Shleifer, 2002) – they become actors and principals in their own right (Schedler, Diamond, and Plattner, 1999), and by fair and impartial administration of justice, provide a solution to the credible commitment problem. It is noteworthy that such solution could be pursued on a track unrelated to democratization per se and hence work in more authoritarian polities as well.

Under the conventional credible commitment perspective, elites acquiesce to reducing their power to expropriate in order to provide assurance to private investors; such consent is conditional on long-term perspective and low government turnover rates. To explain how secure property rights can emerge in imperfect democracies with *high* rates of rotation among ruling elites, we need to rationalize similar self-restrain by going beyond the traditional formulation of the credible commitment paradigm. Namely, elites could value – and endorse – restrictions on government's ability to expropriate not only as a means to assure private investors, but also to protect their own interests after losing power. Such combination of roles of predator and prey creates ambivalence over property rights protection and could lead to preference profiles supporting sufficiently secure property rights.

The prospect of being treated like commoners "internalizes a political externality" and creates a tradeoff between the welfare of the ruling class and the welfare of the private sector, which is typical for democratic accountability. Hence government turnover, even if not driven by democratic processes, creates policy incentives similar to those in democracies. One more essential ingredient that is required to make such mechanism work is *elites' ownership* of substantial economic assets, in which case returns to such assets augment political rents when the owners are in power, and become their sole source of income after losing power.

Our assumption is that while holding office, elites are not worried about their *own* property rights which are by default exempt from government expropriation, but become fully exposed to such expropriation after losing power. The fact that property owners through their presence among ruling elites *and thanks to the likelihood of losing this privileged status* have a say over property rights regime brings such regimes closer to outcomes of "property owning democracy" (Rawls, 2001) – even if democracy as such remains suppressed – and consequently bodes well for the security of property rights. This metaphor is made precise in the next section where elites' choice over property rights regime is described by a model similar to those of democratically accountable government.

McGuire and Olson (1996) demonstrated that asset ownership brings incentives of the ruling class closer to those of the private sector and thus reinforces the "invisible political hand" that makes a "stationary bandit" paying attention to the needs of private investors. However, to overcome an internal contradiction of this mechanism described in the previous section, we need to assume, unlike McGuire and Olson that the "bandit" is not fully stationary and might well lose power. This prospect does not weaken the "invisible political hand" – if anything, it makes it stronger. This is a testable hypothesis that we bring to data in Section 5.

Another implication of our reasoning, this time in full agreement with McGuire and Olson (1996) is that the beneficial impact of elites' turnover on protection of property rights grows stronger when elites' asset ownership increases. Indeed, accordingly grows the weight placed by elites on secured property rights in

resolving the tradeoff between predator and prey. This hypothesis, which is also tested later in the paper, appears to be at odds with another stylized fact of the endogenous property rights theory – i.e. that economic inequality is harmful for property rights (Glaeser, Scheinkman, and Shleifer, 2003). Since ruling elites are expected to be among wealthiest segments of population, increase in their asset ownership should be associated with greater inequality. Notice however that our hypothesis is conditional on elites' turnover, unlike in e.g. Acemoglu, Robinson, Johnson (2001) or (Sokoloff, Engerman, 2000), where inequality makes elites fully entrenched and creates incentives for preserving rent-extraction institutions instead of those of (universally protected) private ownership.

We assume that restrictions on government expropriation – through granting some independence to judiciary or perhaps other means – are established by means of *elite settlement* understood as a tacit agreement to end the "winner-take-all" practices and uphold a mutually accommodating consensus of government institutions and rules of conduct (Burton, Higley, 1987). Due to turnover elites are not monolithic, and by reaching a settlement they establish a modus operandi which is sustained by a threat of sanctions applied to violators. A stronger version of such consensus could be *elite pacts* – "explicit … agreement(s) among a select set of actors which seek to define … rules governing the exercise of power on the basis of mutual guarantees for the 'vital interests'" (O'Donnell, Schmitter, 1986, p. 37). Finally, a stronger yet agreement could be based on *constitutional design* when restrictions on government expropriation are maintained through formal and informal arrangements, political and legal tradition, precedents, etc. Such constitution is chosen by the incumbent elites which are uncertain about their political fate and select a constitutional regime under the "veil of ignorance" based on their beliefs about what the future holds for them (Aghion, Alesina, Trebbi, 2004).

In a model that follows we assume that the ruling elites' turnover rate is an exogenous characteristic of the polity which affects the choice of property rights protection.[2] As with other credible commitment-type theories of endogenous property rights, a limit on expropriation is sustained as an equilibrium, and deviations from the equilibrium path entail sanctions. However, unlike the conventional credible commitment setting for the 'stationary bandit", such sanctions are imposed not (only) by private investors, but by fellow elites that expropriate violators once those are out of power.

3. The model

The economy consists of a unit continuum of productive assets; a unit of assets produces one unit of returns per unit of time. Due to property rights insecurity the share $1-\alpha \in [0,1]$of the returns to assets of all agents other than those from the ruling elite group is expropriated by the government.[3] The quality of protection of property rights is measured by the residual share $\alpha \in [0,1]$ that is agents' to keep.[4]

[2] Similarly in (Glaeser, Shleifer, 2002) differences in concentration in feudal power affects the choice between common and civil law systems. Notice that the causality between security of property rights and ruling elites' turnover might also run in reverse: better protected property rights make losing power less costly economically. Our main objective in this paper is to establish positive association between these two characteristics; causality analysis is left for future research.

[3] The model does not consider property rights insecurity die to the threat of private predation – "Robin Hood redistribution", which is considered as less damaging than government predation – "King John redistribution

Members of a ruling elite group expect that they could lose power and economic privileges that it entails, and is such case will themselves become victims of government predation. The likelihood of such outcome depends on the intensity of ruling elites' turnover which is modeled by a Poisson process. The probability of elite member's political survival for t years and up equals $\exp(-\lambda t)$, for some $\lambda > 0$. The parameter λ measures the elites' political turnover rate, which is an exogenous parameter of the model. It is assumed for simplicity that losing power is irreversible.

Each elite group owns a share $W \in (0,1]$ of the total stock of production assets in the economy. When in power, this group's income per unit of time is $W + (1-\alpha)(1-W)$ (consisting resp. of full returns to own assets which are protected from expropriation, and the expropriate portion of the returns to all other assets). Once out of power, the group sees its returns per unit of time dropping to αW.

Agents' utility functions are $\int_0^\infty U\big(c(t)\big)\exp(-\rho t)dt$, where $c(t)$ is the income stream, and $\rho > 0$ is the discount rate. The function $U(\cdot)$ is monotonically increasing, concave and such that $\lim_{c\to 0} U'(c) = \infty$, $\lim_{c\to\infty} U'(c) = 0$. If an elite group stays in power for *t* years and is out of power thereafter, its lifelong utility is

$$\int_0^t U\big(W + (1-\alpha)(1-W)\big)\exp(-\rho s)ds + \int_t^\infty U(\alpha W)\exp(-\rho s)ds =$$

$$U\big(W + (1-\alpha)(1-W)\big)\frac{1}{\rho}(1-\exp(-\rho t)) + U(\alpha W)\frac{1}{\rho}\exp(-\rho t).$$

Expected value of the above expression with the Poisson distribution $F(t) = 1 - \exp(-\lambda t)$ is as follows:

$$\int_0^\infty [\,U\big(W + (1-\alpha)(1-W)\big)\frac{1}{\rho}(1-\exp(-\rho t)) + U(\alpha W)\frac{1}{\rho}\exp(-\rho t)]\;\lambda\exp(-\lambda t)dt =$$

$$\frac{1}{\rho}\Big\{U\big(W + (1-\alpha)(1-W)\big) - \frac{\lambda}{\lambda+\rho}\big[U\big(W + (1-\alpha)(1-W)\big) - U(\alpha W)\big]\Big\}. \qquad (1)$$

Elites select the optimal level of property rights security α^* by solving the following problem:

$$\max_{\alpha\in[0,1]} [\,\rho U\big(W + (1-\alpha)(1-W)\big) + \lambda U(\alpha W)]. \qquad (2)$$

(Glaeser, Scheinkman, Shleifer, 2002) that views such threats as less pernicious than. Acemoglu and Johnson (2005) conclude that expropriation risk affects income per capita more significantly than other aspects of insecure property rights.

[4] For simplicity, aggregate returns to assets is assumed unaffected by the expropriation rate (Acemoglu, Robinson, 2006). The model can be easily modified to incorporate private sector's reaction to property rights regimes, as in e.g. Besley and Ghatak (2010); such modification leads main conclusions of the model intact.

Elites' commitment to maintain the above expropriation rate is credible as a subgame perfect equilibrium if a deviation from such equilibrium is sanctioned by a trigger strategy that subjects the violator to full expropriation thereafter. If such violation occurs (and it should obviously involve full expropriation by those in power), the violator's expected utility is

$$\int_0^\infty [\,U(1)\frac{1}{\rho}(1-\exp(-\rho t))+\ U(0)\frac{1}{\rho}\exp(-\rho t)]\ \lambda\exp(-\lambda t)dt=\frac{1}{\lambda+\rho}U(1)+\ \frac{\lambda}{\rho(\lambda+\rho)}U(0).$$

Notice that this is the value of the elites' payoff function (2) corresponding to the choice $\alpha=0$, which is (perhaps, non-strictly) inferior to the optimal choice α^*. Therefore the credibility of elites' commitment to maintain $\alpha=\alpha^*$ automatically follows from the definition of α^*.[5]

The maximand in (2) is a sum of elites' utility per unit of time while holding power, weighted with the discount rate ρ, and of such utility after power is lost, weighted with the political turnover rate λ. After losing power former elites are themselves victims of government expropriation, and therefore one can expect that greater λ leads to higher security of property rights. Notice that the above model is formally similar to those used in the political economy literature (see e.g. Persson, Tabellini, 2000) to describe choice of a (partially) accountable government which maximizes a weighted sum of its own "immediate" utility and the utility (income) of the society.

A comparative statics analysis confirms that this is indeed the case. For an interior optimum $0<\alpha^*<1$, one has

$$\frac{U'(\alpha^*W+1-\alpha^*)}{U'(\alpha^*W)}=\frac{\lambda}{\rho}\frac{W}{1-W}. \qquad (3)$$

When α increases from 0 to 1, due to the "neoclassical" properties of the utility function U, the right-hand side of the equation (3) monotonically increases from 0 to 1, and hence whenever

$$\frac{\lambda}{\rho}\frac{W}{1-W}<1,$$

there is a unique interior optimum $\alpha^*(\lambda,W)$ (holding ρ constant) in the problem (2), which monotonically increases in λ. Once

$$\frac{\lambda}{\rho}\frac{W}{1-W}\geq 1, \qquad (4)$$

property rights become fully protected – sufficiently high turnover rate makes ruling elites forgo gains of political redistributions, as those are overweighed by their own future losses due to insecure property rights.[6]

[5] Notice that in the conventional endogenous property rights setting when trigger strategies are played by private investors the credibility constraint on the expropriation rate to which the government would like to commit could be binding (Besley, Ghatak, 2010).

Proposition 1. The level of property right protection α^* monotonically increases from zero to one in elites' turnover rate in the range $\lambda \in [0, \rho(1-W)/W]$ and remains equal one for $\lambda > \rho(1-W)/W$.

Proof. One can easily check that the left-hand side of the equation (3) is a monotonically increasing function of $\alpha \in [0,1]$ and also takes values from zero to one. According to (3), that means that indeed α increases from zero to one in the range $\lambda \in [0, \rho(1-W)/W]$. For $\lambda \geq \rho(1-W)/W$, the corner solution $\alpha^* = 1$ obtains. ■

The above analysis demonstrates that elites' turnover indeed contributes to security of property rights. Another factor that favors secured property rights is the size of elites' market assets. At this point our analysis touches upon a more general issue as to whether direct need in a public good (in the present case – secured property rights) is sufficient to ensure provision of such public good by the ruling class which is politically unaccountable to the general public. The answer is that if the ruling class's demand (consumption) of the public good is a "measure zero" part of the aggregate demand, then no public good provision will ensue.[7] In the case of secured property rights, the demand for such public good (more precisely, public production input) is proportional not to the size of the ruling elites' group, which could be very small ("measure zero"), but to the size of the elites' production assets which could be quite significant. In this case direct need in secured property rights could make up for absent political accountability – again, conditional on the likelihood of ruling elites' losing power.

More precisely, due to (4), when

$$W \geq \frac{\rho}{\lambda + \rho}, \qquad (5)$$

full security of property rights obtains. This conclusion is similar to McGuire and Olson's (1996) where it is shown that when the share of the ruling regime's market assets exceeds a certain threshold, such regime's public policies become socially optimal. In our case such conclusion is conditional on elites' rotation – without such rotation ($\lambda = 0$) no share of elites' assets, no matter how large, ensures fully secured property rights (or, for that matter, *any* property rights protection, as immediately follows from problem (2)).

When $W < \rho/(\lambda + \rho)$, increase in the size of elites' assets usually improves property rights protection. This statement could be made precise under various mild additional assumptions; one such possibility is illustrated by the following

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[6] Another way to explain this result is to view the elites' choice as acquiring a lottery that according to (2) pays (on top of W) the amount $(1-W)(1-\alpha)$ with probability $\frac{\rho}{\lambda+\rho}$, and $-W(1-\alpha)$ with probability $\frac{\lambda}{\lambda+\rho}$. When inequality (4) holds, such lottery has a non-positive expected value for any $\alpha < 1$, and hence is rejected by a risk-averse agent.

[7] Similarly in lobbying over international trade regimes, when a lobby representing a particular industry has measure zero in the total population, it will not be spending its resources on lowering prices of goods that the lobby consumes, and will instead use these resources entirely on raising prices of goods produced by the lobby's industry (Grossman, Helpman, 1994).

Proposition 2. Let agents' relative risk aversion $r(z) \equiv -\frac{zU''(z)}{U'(z)}$ does not exceed unity, for all $z > 0$. In this case the level of property rights protection α^* monotonically increases from zero to one in elites' market assets size $W \in [0, \rho/(\lambda+\rho)]$ and remains equal one for $W > \rho/(\lambda+\rho)$.

Proof. When $W = 0, \alpha^* = 0$ – with no production assets elites are oblivious to property rights after losing power. When $W > \rho/(\lambda+\rho)$, as stated earlier, property rights are fully secured ($\alpha^* = 1$). In the $(0, \rho/(\lambda+\rho))$ range the problem (2) has interim solutions, and differentiating of the first-order condition (3) by W yileds

$$\frac{\partial \alpha}{\partial W}[W^2 R(\alpha W) + W(1-W)R(\alpha W + 1 - \alpha)] = \frac{1}{1-W} + \alpha W[R(\alpha W + 1 - \alpha) - R(\alpha W)]. \quad (6)$$

Here $R(z) \equiv -\frac{U''(z)}{U'(z)}$ is the measure of absolute risk aversion. To conclude the proof, observe that $\alpha W R(\alpha W) = r(\alpha W) \leq 1$. ■

Notice that two factors that uphold secured property rights – elites' turnover and the size of their market assets – complement each other in that none of them alone ensures full property rights security. Examples show that such complementarity holds in the intermediate range of property rights protection as well. Thus, for constant relative risk aversion utility functions $U(z) = z^{1-\beta}$, $\beta \in (0,1)$ with $R(z) \equiv \beta$ one obtains from (3) that in the interim range of property rights protection

$$\alpha^* = \frac{1}{1 - W + WC^{1/\beta}}, \quad (7)$$

where $C \equiv \frac{\lambda W}{\rho(1-W)} < 1$, and as calculations show, $\frac{\partial^2 \alpha^*}{\partial \lambda \partial W} > 0$. Figure 1 illustrates the dependence of property rights protection on λ and W for $\beta = 1/2$.

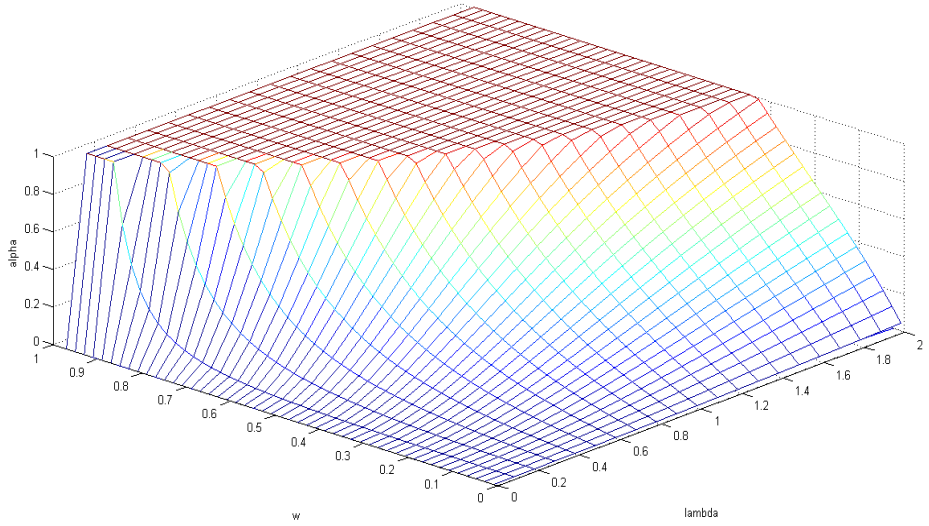

Figure 1.Security of property rights in relation to political elites' turnover and market assets

4. Data and measurement

To test the above theories, we have assembled a panel comprising 58 developed and developing nations and spanning from 1975 through 2005. Panel data are recorder for every five years period; this restriction is imposed by the availability of property rights measures. Full list of variables is presented in Table 1 in the Appendix; Table 2 shows averages, means, standard deviations, and minimal and maximal values of the panel variables.

Our main dependent variable *property_rights* is the rule of law and property rights index (*Legal Structure and Security of Property Rights*) calculated by the Fraser Institute (Gwartney, Hall, and Lawson, 2010). This is an aggregate of indicators of judicial independence, integrity of the legal system, legal enforcement of contracts and other similar characteristics that have immediate bearings on the security of property rights. This index also incorporates property rights protection measures from the Global Competitiveness Report.

Government turnover can be measured directly and by various proxies of rotation and instability among ruling elites. Besley and Ghatak (2010) observe that this parameter affects ruling class's inter-temporal discount rates, and suggest as proxies colonial settlers' mortality, as in Acemoglu, Robinson, Johnson (2001), or incidence of civil wars. Carmignani (2009) uses empirical data from Beck et al. (2001) and confines the rotation measure to heads of states only. Keefer (2010) includes in his indexes a broader set of political actors involving *veto players* from the legislative branch (see also Justesen, 2009). According to Tsebelis (2002), a veto player is a political actor who can block a move from the status quo and otherwise influence essential government policies. This concept is a good fit to our needs, since we are interested in replacement rate of individuals who occupy key policy-making positions in the ruling polity. Considering a broader group of veto players than just e.g. chief executives produces a richer and more

informative picture and improves the odds of capturing and correctly measuring the impact of elites' rotation and asset ownership on property rights security.

Our main independent variable *prob_stabns* is an index of rotation of veto players which is calculated based on historic al data of replacement of key political actors over the period from 1975 through 2009; the source of data is the *Database of Political Institutions* (Keefer, op.cit.).Veto players in presidential political systems are the chief executive and the leader of the largest political party, while in parliamentary systems veto players are prime ministers and leaders of the three largest government parties. Definitions of veto players depend inter alia on the number of chambers of the legislature (bicameral or single chamber) and the electoral process (close or open list).

The database reflects changes (replacement) of veto players over a certain period; in particular, any change of the chief executive or political party dominating the legislature is considered as a rotation among veto players. Based on the above database, annual replacement rates of veto players were calculated and averaged over five year periods, leading to the *prob_stabns*[8] index characterizing the probability of losing power by incumbent political elites. Such averaging is in effect the maximum likelihood estimation of the Poisson distribution parameter λ which in our model measures the elites' turnover rate.

An important objective of our empirical analysis was to establish whether a relationship between the rotation of ruling elites and quality of property rights protection is based on the conventional political competition, where competing parties are trying to win over voters' support by supplying enabling institutional regimes conducive for private sector development, or, as it is claimed in the paper, that political elites are motivated by their immediate self-interests, based on concerns about their well-being after losing power. To discriminate between these two theories, we use the institutionalized democracy-institutionalized autocracy index $polity2$ obtained from the *Polity IV* database (Marshall and Jaggers, 2009). This index reflects electoral process and checks and balances restricting the executive authority; it varies in the "-10" (autocracy) to "10" democracy" range. Across our sample and observation period, the democracy index is significantly (0.31) correlated with property rights protection, and only mildly (0.13) – with elites' turnover (Table 3). In what follows the cutoff level $polity2 = 8$ was used to differentiate between more and less democratic regimes, dividing our sample in more or less equal halves.

Our theory suggests that protection of property rights should be related to the size of economic assets owned by political elites. We do not have direct measures of such assets and rely instead on general economic inequality measures as proxies for the (relative) size of elites' assets. Such proxy selection is based on the assumption that elites belong to the wealthiest part of population and hence the relative size of their holdings should be positively correlated with general indexes of wealth concentration. The latter is measured by Gini coefficients ($gini$) obtained from the 2008 *World Income Inequality Database* (*WIID*) compiled by the United Nations University (UNU-WIDER). This database comprises all major sources of income and wealth inequality data, including those supplied by the World Bank (Deininger and Squire, 2004), and covers the period from 1960 to 2006. An important advantage of the *WIID* database for the purposes of our study is the inclusion of property income in overall income calculation

[8] A similar rotation measure *stabs* differs from *stabns* by counting among veto players speakers of upper chambers of legislatures.

(*income concept*). Whenever necessary, *WIID* database was augmented from other sources. According to Table 3, there is a significant negative correlation between inequality and property rights protection (-0.47) and weak positive correlation with rotation of ruling elites (0.08), whereas democracy and inequality are virtually uncorrelated (0.02).

We included in our regression models various control variables (Table 1), which account for major existing theories explaining cross-country variations of property rights security. The controls include GDP per capita (in wealthier countries there is greater need in secured property rights (Clague et al., 1996); equally plausibly, secured property rights create enabling conditions for economic growth); level of education (according to the "development hypothesis", education strengthens demand for sound institutions and advances reforms establishing such institutions (Glaeser et al., 2004); population (according to Spolaore (2006), it is easier, ceteris paribus, to create and maintain good institutions in more populous countries); and fuel and metal exports (natural riches cause the "resource curse" that adversely affects the quality of institutions, including property rights (Robinson, Torvik, Verdier, 2006; Mehlun, Moene, Torvik, 2006)). Other controls are legal origins (Anglo-Saxon, Romano-Germanic, and socialist, which are shown to have significant impact on the quality of property rights (La Porta et al., 1999; Levine, 2005); ethnic fractionalization which can adversely affect security of property rights (Keefer and Knack, 2002); and regional dummies. Correlations between the control variables and the property rights index reported in Table 3 largely conform to the exiting theories of these factors' impact on property rights.

5. Estimation results

Our theory predicts that ruling elites' turnover should be positively associated with property rights protection. We test this hypothesis by a series of regression models with various specifications and control variables.

Our base model

$$property\_rights_{it} = const_i + \beta_1 prob\_stabns_{it} + \gamma_{it} controls + \epsilon_{it} \qquad (8)$$

is a random effects panel regression (fixed effects model was rejected by a Hausman test). Its estimation results (Table 4, columns 1-10) support our main hypothesis: elites' turnover is indeed positively associated with security of property rights. The coefficients for *prob_stabns* are positive and significant in all specifications of the model that vary from one another by included control variables, and the value of this coefficient exhibits only modest variations for most of specifications. Moreover, coefficients for included control variables have expected signs consistent with the existing theories: GDP per capita, population, and secondary schools attendance are positively associated with property rights protection, whereas for resource exports such association is negative.

To further check robustness, we use instead of panel estimates a pooled regression model. The estimation results are reported in column (11) of Table 4 ($R^2 = 0.644$). The coefficient for *prob_stabns* remains positive, of the same magnitude as in panel estimates, and significant at the 5% level. Finally, and a yet

another specification, panel variables were averaged over the period of observation, and a cross-sectional regression model was estimated (column (12) of Table 4; $R^2 = 0.637$). The coefficient for elites' turnover keeps its sign and order of magnitude, but as a result of much smaller snumber of observations is not any longer significant.

The next task of empirical analysis is to demonstrate that the observed positive association between ruling elites' turnover and property rights protection is indeed based, at least in significant part, on elites' concerns about their personal well-being and safety of their assets once they have lost power. Alternately such association could be based on conventional democratic competition for voters' support, in which case elites' turnover could be an index of intensity of such competition, which, as one would expect, should have positive impact on the quality of institutions. To discriminate between these two explanations and find direct support to the first one, as per our theory, we divide our sample into two subgroups of more and less democratic countries by using the $polity2$ index, as described in Section 4. Next the base model (8) is re-estimated for each of the sub-samples.

The results which are reported in Table 4 provide strong support for our hypothesis. For the sub-sample of less democratic countries (columns (1)-(6)) where the conventional political competition effect should be *less* pronounced the regression coefficient for the elites' turnover index is almost twice as *high* as for the whole sample and is significant in all specifications at the 0.01 level (for the full sample significance in some specifications significance was established at lower levels).

For the sub-sample of more democratic countries (columns (7)-(11)), on the contrary, the coefficient of elites' rotation coefficient is usually lower, by as much as 20%, than for the full sample, and its significance can be established only at the 0.1 level. It is also noteworthy that these results are robust to selection of control variables, and that again included controls have the expected signs, thus supporting the chosen specification of the regression models. Notice that for less democratic countries controls are of low or no significance, which is in sharp contrast with 0.01 significance of the main explanatory variable, whereas for more democratic countries statistical significance of some controls is higher than for elites' turnover.

Next, we empirically test our second main hypothesis that the size of elites' assets makes the impact of elites' turnover on property rights protection stronger (or, what is the same, that these two factors complement each other). To test this hypothesis we sub-divide the sample into two halves by economic inequality, using $gini$=50 as the cutoff level, and estimate the regression model (8) for both sub-samples, which with such cutoff are of more or less equal size. Estimation results are presented in Table 6.

For the sub-sample with greater economic inequality (which proxies ruling elites' relative wealth; columns (1)-(4) of Table 6) the coefficient for the elites' turnover rate *prob_stabns* is significant, depending on selection of control variables, at 0.01 or 0.05 levels, and its value is almost twice as high as for the full sample. For countries with lesser economic inequality (and arguably less wealthy ruling elites), this coefficient nearly vanishes and loses significance, being overshadowed by the fuel exports variable. As before, all controls retain expected signs. These results lend support to the claim that elites' asset ownership significantly amplifies the impact of elites' turnover on security of property rights. With

low inequality elites' turnover has no tangible impact on property rights protection, which is again fully consistent with our reasoning.

Finally, we want to find some evidence that causality in the established positive association between property rights protection and elites' turnover indeed runs from the turnover to property rights, not the other way around (one could argue that secured property rights make ruling elites less keen to cling to power, as the threat of expropriation after losing power is not looming large). To test the two alternative causality hypotheses against each other, we run two regressions. In the first one for a given country we average its property rights protection indexes for the period *after* 1990, and regress such averages on the same countries' averages of elites' turnover rates *before* 1990s, retaining most of the control variables (first four columns of Table 7). Alternately, we regress the averages of elites' turnover rates *after* 1990 on the averages of property right protection indexes *before* 1990s (last five columns of the same table).

Estimation results favor the causality assumed in this paper against the alternative. In the regression of property rights, the coefficients for elites' rotation rates are positive and large (almost three times the size of those in our base model estimated in Table 4), but have lower significance, which should be ascribed to a much smaller sample. Coefficients with control variables retain the expected signs. An attempt to regress the elites' turnover rates on property rights protection fails – the regression coefficients for property rights are close to zero and are of no statistical significance.

6. Concluding comments

We have demonstrated that turnover of ruling elites bodes well for property rights protection. Moreover, such effect is only mildly pronounced for robust democracies where one would expect it should be of particular strength, reflecting the beneficial impact on property rights of political competition for voters' support. The effect is shown to be much stronger for a sub-sample of less democratic regimes where conventional political competition is hardly at work. This lends support to our theory which explains such effect by elites' concerns about preservation of their own assets after losing power – clearly more frequent rotation of ruling elites should make such effect more pronounced. Another contributing factor, also in agreement with the proposed theory, is the size of assets owned by the elites.

The described association between elites' rotation and property rights protection offers a new solution to the credible commitment problem central for the endogenous property rights theory. The conventional solution is based on private investors' exit after one-off violation by the government of the commitment to a pre-announced property rights regime. In our case sanctions would be imposed by successor rulers if the elites that currently hold power violate the commitment.

Our findings both agree and disagree with earlier theories, especially those advanced by Olson and McGuire. We show that long tenure of an autocrat is not necessarily and unconditionally beneficial for property rights protection. On the one hand long tenure indeed creates a long-term perspective which, all else equal, makes commitment to secured property rights more credible. On the other hand, long (in the extreme – unlimited) tenure of rulers destroys potentially powerful immediate incentives to preserve a secured property rights regime – an incentive which could partially internalize "political externalities" of

private sector expropriation and thus substitute for missing democratic accountability. This paper is in agreement with McGuire and Olson (1996) that elites' private ownership of market assets improves the quality of institutions and public polices, but conditions such conclusion by the same elite rotation requirement.

The recent dramatic events in the Arab world show that authoritarian regimes that were in power for several decades in a row failed to supply institutions required for sustainable and broadly based economic growth, and in particular to adequately protect property rights. Similarly in the transition region the countries which experienced frequent, at times revolving-door type, changes of government, in general fared better than those controlled by untouchable and non-replaceable polities (Hellman, 1998).

The paper shows that a degree of political competition, even if taking place in a non-democratic setup and hence not of the Chicago school kind, could still noticeably improve economic outcomes. Similar incentives could ultimately make better not only economic, but political institutions as well: as argued by Lizzery and Persico (2004), elites' concerns about their well-being in case they lose out in the inter-elite power struggle could explain extension of voting rights and transition to democracy.

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Appendix

Table 1: List of variables

Variable	Description	Source
property_rights	Aggregated index of property rights protection	Economic Freedom of the World (Fraser Institute, 2009), http://www.freetheworld.com/datasets_efw.html
prob_stabs **prob_stabns**	Estimated probabilities of veto players replacement based on *stabns* index	Database of Political Institutions (DPI, 2010), http://siteresources.worldbank.org/INTRES/Resources/469232-1107449512766/DPI2010_Codebook2.pdf
polity2 **pol_reg**	Democracy index and dummy (= 1, if polity2>8).	Polity IV (2009), http://www.systemicpeace.org/polity/polity4.htm
Gini	Gini coefficient	World Income Inequality Database, v 2.0b (UNU-WIDER, 2008), http://www.wider.unu.edu/research/Database/en_GB/database/ The World Factbook (CIA, 2009), https://www.cia.gov/library/publications/the-world-factbook/
GDP_per_capita	Log real GDP per capita at purchasing power parity	Penn World Tables 6.3 (CIC, 2007), http://pwt.econ.upenn.edu/
secondary_schooling	The share of those enrolled in secondary schools to the total number of school age children	Global Development Network Growth Database (2005), http://dri.fas.nyu.edu/object/dri.resources.growthdatabase
fuel_export **metal_export**	The share of exports of fuels (oil, gas, coal) and metals in gross exports	The World Bank's World Government Indicators, http://data.worldbank.org/indicator
Population	Population size	Penn World Tables 6.3 (CIC, 2007), http://pwt.econ.upenn.edu/
Urbanization	Share of urban population	The World Bank's World Government Indicators, http://data.worldbank.org/indicator
leg_british **leg_french** **leg_socialist**	Legal origin dummies (resp. British, Romano-Germanic, and socialist)	Global Development Network Growth Database (2005), http://dri.fas.nyu.edu/object/dri.resources.growthdatabase
reg_eap **reg_eca** **reg_mena** **reg_sa** **reg_we** **reg_na** **reg_ssa**	Regional dummies for East Asia and Pacific(EAP), Eastern Europe and Central Asia (ECA), Middle East and Northern Africa (MENA), South Asia (SA), Western Europe (WE), North America (NA), Sub-Saharan Africa (SSA), Latin America and the Caribbean (LAC).	Global Development Network Growth Database (2005), http://dri.fas.nyu.edu/object/dri.resources.growthdatabase The World Bank's World Government Indicators, http://data.worldbank.org/indicator

reg_lac		
ethnic_frac	Ethnic homogeneity index (probability that two individuals chosen at random belong to the same ethno-linguistic group).	Global Development Network Growth Database (2005), http://dri.fas.nyu.edu/object/dri.resources.growthdatabase

Table 2: Means, standard deviations, and ranges

Variable	mean	Sd	min	max
property_rights	6.346	1.690	1.147	9.625
prob_stabs	.1246	.2683	0	1
prob_stabns	.1357	.2848	0	1
polity2	5.615	6.628	-10	10
pol_reg	.7567	.4296	0	1
Gini	35.21	9.936	18	61.76
GDP_per_capita	1,6620	10,890	1282	74,6006
Population	40,770	116,850	70	1,093,600
fuel_export	15.38	24.89	0	100
metal_export	6.201	10.90	0	72
ethnic_frac	27.64	22.97	0	89
leg_british	.2727	.4459	0	1
leg_french	.4	.4905	0	1
leg_socialist	.1636	.3704	0	1
leg_german	.0909	.2876	0	1
leg_scandinavian	.07272	.2600	0	1
reg_eap	.1017	.3026	0	1
reg_eca	.2373	.4259	0	1
reg_mena	.1186	.3238	0	1
reg_sa	.01695	.1292	0	1
reg_we	.2542	.4360	0	1
reg_na	.03390	.1812	0	1
reg_ssa	.01695	.1292	0	1
reg_lac	.22034	.4150	0	1
secondary_schooling	82.75	24.14	.5959	161.6618

Table 3: Cross-correlations

	property_rights	prob_stabns	prob_stabs	gini	polity2	GDP_per_capita	population	fuel_export	ethnic_frac	secondary_schooling	metal_export
property_rights	1.00										
prob_stabns	0.03 (0.62)	1.00									
prob_stabs	0.02 (0.74)	**0.99** (0.00)	1.00								
gini	-0.47 (0.00)	0.08 (0.23)	0.06 (0.31)	1.00							
polity2	0.31	0.13	0.12	-0.02	1.00						

	(0.00)	(0.01)	(0.02)	(0.77)							
GDP_per_ capita	0.56 (0.00)	-0.10 (0.04)	-0.10 (0.04)	-0.32 (0.00)	0.02 (0.75)	1.00					
population	-0.06 (0.28)	0.13 (0.01)	0.09 (0.07)	0.06 (0.39)	0.09 (0.08)	-0.13 (0.01)	1.00				
fuel_export	-0.21 (0.00)	-0.12 (0.03)	-0.11 (0.04)	0.16 (0.02)	-0.38 (0.00)	0.11 (0.05)	-0.11 (0.04)	1.00			
ethnic_frac	-0.09 (0.13)	0.06 (0.34)	0.02 (0.69)	-0.01 (0.86)	-0.03 (0.61)	-0.16 (0.01)	0.37 (0.00)	0.07 (0.25)	1.00		
secondary_ schooling	0.67 (0.00)	0.04 (0.50)	0.04 (0.47)	-0.51 (0.00)	0.36 (0.00)	0.46 (0.00)	-0.20 (0.00)	-0.23 (0.00)	-0.21 (0.00)	1.00	
metal_export	-0.17 (0.00)	0.00 (0.97)	0.00 (0.98)	0.27 (0.00)	-0.24 (0.00)	-0.14 (0.01)	-0.02 (0.73)	-0.08 (0.13)	0.10 (0.11)	-0.07 (0.19)	1.00

Table 4: Property rights and elites' turnover: full sample

VARIABLES	(1) full	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
prob_stabns	0.357*	0.331**	0.333**	0.347***	0.381***	0.441***	0.375***	0.423**	0.415**	0.342***	0.406**	0.394
	(0.208)	(0.135)	(0.139)	(0.109)	(0.111)	(0.117)	(0.126)	(0.207)	(0.201)	(0.114)	(0.167)	(1.014)
GDP_per_capita	8.39e-05***	8.25e-05***	8.35e-05***	8.68e-05***	8.66e-05***	0.000116***	0.000131***			8.75e-05***	8.31e-05***	4.02e-05
	(2.16e-05)	(1.71e-05)	(1.68e-05)	(1.63e-05)	(1.64e-05)	(1.65e-05)	(1.46e-05)			(1.76e-05)	(1.58e-05)	(2.62e-05)
Population	2.37e-06	8.27e-07	8.52e-07	1.13e-06***					1.22e-06*		1.34e-06	1.85e-07
	(2.06e-06)	(5.66e-07)	(5.51e-07)	(2.86e-07)					(7.37e-07)		(1.48e-06)	(8.54e-07)
fuel_export	-0.00845	-0.0118*	-0.0118*	-0.0110***	-0.0115***	-0.0140***	-0.0153	-0.00635**		-0.0118***	-0.00933***	0.0349***
	(0.00651)	(0.00638)	(0.00661)	(0.00367)	(0.00364)	(0.00507)	(0.00956)	(0.00291)		(0.00360)	(0.00287)	(0.0109)
metal_export	-0.00453	-0.00694							-0.0517*		0.0176***	
	(0.0111)	(0.00523)							(0.0274)		(0.00609)	
secondary_schooling	0.0229***	0.0237***	0.0237***	0.0231***	0.0222***					0.0238***		0.0349***
	(0.00560)	(0.00405)	(0.00408)	(0.00443)	(0.00407)					(0.00362)		(0.0109)
ethnic_frac	-0.00235	0.00138	0.000726				0.00318	-0.00548	-0.00623			0.00929
	(0.00685)	(0.00626)	(0.00593)				(0.00370)	(0.00938)	(0.00982)			(0.00749)
leg_british	0.268	-0.0364										-0.597
	(0.372)	(0.317)										(0.361)
leg_french	-0.415	-0.596***	-0.592***	-0.382***	-0.432***	-0.689***					-0.275	-0.808**
	(0.370)	(0.148)	(0.127)	(0.147)	(0.133)	(0.129)					(0.183)	(0.361)
Reginal dummy	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO
Observations	247	247	247	286	286	305	261	261	261	296	305	
Number of id	41	41	41	54	54	55	42	42	42	58	54	54

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Property rights and elites' turnover: more and less democratic countries

VARIABLES	(1) dem	(2) dem	(3) dem	(4) dem	(5) dem	(6) dem	(7) less dem	(8) less dem	(9) less dem	(10) less dem	(11) less dem
prob_stabns	0.264*	0.260*	0.326*	0.339*	0.277*	0.322**	0.683***	0.654***	0.641***	0.646***	0.501***
	(0.159)	(0.157)	(0.167)	(0.182)	(0.154)	(0.152)	(0.140)	(0.135)	(0.138)	(0.111)	(0.132)
GDP_per_capita	9.06e-05***	9.13e-05***	9.41e-05***	9.00e-05***	9.10e-05***	0.000133***	1.76e-05	1.88e-05	2.11e-05	2.09e-05	3.28e-05
	(1.42e-05)	(1.48e-05)	(1.13e-05)	(1.09e-05)	(1.05e-05)	(1.03e-05)	(4.11e-05)	(4.42e-05)	(4.40e-05)	(4.22e-05)	(2.31e-05)
population	9.33e-07**	9.40e-07**	1.01e-06***	1.19e-06***	1.48e-06***	1.05e-06**	-3.54e-07	2.80e-07	3.59e-07		
	(4.71e-07)	(4.49e-07)	(3.45e-07)	(2.51e-07)	(2.13e-07)	(5.21e-07)	(1.23e-06)	(1.67e-06)	(1.62e-06)		
fuel_export	-0.0153*	-0.0154*	-0.0151*				0.00301	0.00327	0.00268	0.00212	-8.75e-05
	(0.00885)	(0.00879)	(0.00806)				(0.00403)	(0.00421)	(0.00395)	(0.00334)	(0.00235)
metal_export	-0.00648	-0.00656					-0.000993	-0.00474			
	(0.00705)	(0.00717)					(0.00726)	(0.00849)			
secondary_schooling	0.0199***	0.0198***	0.0189***	0.0209***	0.0217***		0.0206*	0.0200	0.0204	0.0205*	0.0213***
	(0.00489)	(0.00489)	(0.00419)	(0.00353)	(0.00331)		(0.0117)	(0.0124)	(0.0126)	(0.0122)	(0.00747)
ethnic_frac	0.00290	0.00133				0.000815	-0.00602	0.00513	0.00481	0.00596	
	(0.00271)	(0.00261)				(0.00276)	(0.0154)	(0.0151)	(0.0148)	(0.00983)	
leg_british	-0.207						0.861				
	(0.219)						(0.615)				
leg_french	-0.447***	-0.329***	-0.304***	-0.367**			-0.501				
	(0.119)	(0.0942)	(0.0958)	(0.150)			(0.331)				
Observations	166	166	179	180	189	171	81	81	81	81	108
Number of id	35	35	41	41	45	35	20	20	20	20	33

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Property rights and elites' turnover: the impact of asset ownership

VARIABLES	(1) gini>50	(2) gini>50	(3) gini>50	(4) gini>50	(5) gini<50	(6) gini<50	(7) gini<50	(8) gini<50
prob_stabns	0.628***	0.567**	0.595***	0.588**	-0.0318	-0.0356	-0.000818	0.0341
	(0.215)	(0.236)	(0.226)	(0.229)	(0.208)	(0.212)	(0.211)	(0.233)
GDP_per_capita	7.01e-05*	6.90e-05*	7.12e-05*	7.04e-05*	7.63e-05***	8.97e-05***	9.10e-05***	0.000116***
	(4.10e-05)	(3.76e-05)	(3.80e-05)	(3.67e-05)	(1.13e-05)	(1.48e-05)	(1.62e-05)	(1.81e-05)
population	1.46e-07	2.41e-07	3.42e-07		5.24e-07	1.24e-06		
	(8.08e-07)	(8.96e-07)	(9.01e-07)		(8.28e-07)	(1.02e-06)		
fuel_export	-0.0121	-0.0129*	-0.0121	-0.0125*	-0.0177***	-0.0207***	-0.0209***	-0.0166***
	(0.00763)	(0.00741)	(0.00765)	(0.00716)	(0.00214)	(0.00234)	(0.00235)	(0.00401)
metal_export	-0.00657	-0.00769			-0.00420			
	(0.00650)	(0.00485)			(0.00463)			
secondary_schooling	0.0272**	0.0288***	0.0291***	0.0290***	0.0157***	0.0148**	0.0141**	
	(0.0106)	(0.0105)	(0.0105)	(0.0107)	(0.00582)	(0.00593)	(0.00552)	
ethnic_frac	0.00893	0.0115	0.0111	0.0117	-0.00517	-0.00467	-0.000811	-0.00100
	(0.0120)	(0.00917)	(0.00908)	(0.00767)	(0.00596)	(0.00887)	(0.00648)	(0.00545)
leg_british	0.255				0.132			
	(0.326)				(0.454)			
leg_french	-0.0510				-0.809***			
	(0.325)				(0.237)			
Observations	119	119	119	119	127	127	127	137
Number of id	39	39	39	39	37	37	37	38

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Causality test: property rights vs. elites' turnover

VARIABLES	Regression *property_rights* after 1990 on *prob_stabns* before 1990				Regression of *prob_stabns* after 1990 on *property_rights* before 1990				
	property_rights_1	property_rights_1	property_rights_1	property_rights_1	prob_stabns_1	prob_stabns_1	prob_stabns_1	prob_stabns_1	prob_stabns_1
prob_stabns_0	0.801*	0.946**	0.877*	1.075*					
	(0.752)	(0.447)	(0.468)	(0.950)					
property_rights_0					-0.0235	-0.0211	-0.0248	-0.0169	-0.0212
					(0.0184)	(0.0188)	(0.0199)	(0.0132)	(0.0116)
fuel_export_0	-0.0267***	-0.0248***	-0.0246***		-0.00203**	-0.00218**	-0.00236***		
	(0.00418)	(0.00186)	(0.00192)		(0.000642)	(0.000707)	(0.000603)		
leg_french	-0.934**	-0.851***	-0.835***	-1.528***	0.0731*	0.0593	0.0465	0.0463	
	(0.328)	(0.237)	(0.229)	(0.284)	(0.0338)	(0.0383)	(0.0478)	(0.0582)	
secondary_schooling_0	-0.00399				0.00113			0.000683	0.000173
	(0.0195)				(0.000898)			(0.00119)	(0.00108)
Population_0	-8.37e-07	-4.99e-07		-4.26e-07	3.46e-07**	2.92e-07**			
	(1.02e-06)	(7.73e-07)		(8.91e-07)	(1.13e-07)	(9.74e-08)			
GDP_per_capita_0	0.000145***	0.000148***	0.000149***	0.000119**	-4.39e-06**	-3.11e-06	-3.56e-06	-4.74e-06***	-4.75e-06**
	(2.46e-05)	(2.35e-05)	(2.30e-05)	(3.86e-05)	(1.85e-06)	(2.41e-06)	(2.38e-06)	(1.26e-06)	(1.46e-06)
leg_socialist									
eth_frac_0				-0.00606					
				(0.00688)					
Observations	45	48	48	42	45	48	48	48	49
R-squared	0.737	0.733	0.732	0.686	0.290	0.278	0.242	0.148	0.135

Robust standard errors in parentheses. *** **p<0.5, ** p<0.1, * p<0.15**