

NON-BENEVOLENT GOVERNMENT AND RULE OF LAW IN TRANSITION ECONOMIESVardan Baghdasaryan [†]

Abstract – We analyze the dynamics of property rights protection in a transition economy characterized by unequal distribution of resources among a continuum of agents. Poorer have the option to produce or store, and richer have a choice between production or appropriation. Property rights can be influenced by a non-benevolent government, which maximizes its private benefits and suffers losses whenever the property rights protection level in the country is far from the bliss point of the pivotal agent. We demonstrate that positive dynamics in property rights protection can be observed whenever such a government is relatively more efficient in extracting its private rents from GDP redistribution process as opposed to direct payments from appropriating agents. This result can be obtained even with moderate political pressure.

Keywords: transition economy, property rights, rent appropriation.
JEL Classification: P26, P35, P21

1. INTRODUCTION

The “Washington Consensus”¹ set out the reform agenda for the transition of Soviet Republics and most Eastern European countries from a command economy to a market-based system. The main idea was that the primary role was given to macroeconomic stability, deregulation, privatization, and liberalization, whereas institutional development was thought to be secondary in the process and expected to emerge as a consequence. Unlike Latin America, where these tools were proposed to overcome the debt crisis, in the Soviet Union they were supposed to form the basis for economic system transformation in a situation when a country was rapidly moving to total economic collapse. All these actions were carried out in very short terms (for this reason and due to quite painful effects for the society are sometimes called “Shock Therapy”) while ignoring underlying

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¹An agreement between IMF, the World Bank and US about the “correct” path for the transition economies (Williamson, 2000).

conditions and preceding social and historical development of those countries. Proponents of such an approach believed that necessary legislative and institutional structures would emerge “naturally” as soon as property is transferred to private agents (Shleifer, 1995). Private property in a competitive setting was believed to play a catalyzing role for the emergence of regulatory and legislative basis as well as the institutional environment supporting the transition to market economy.

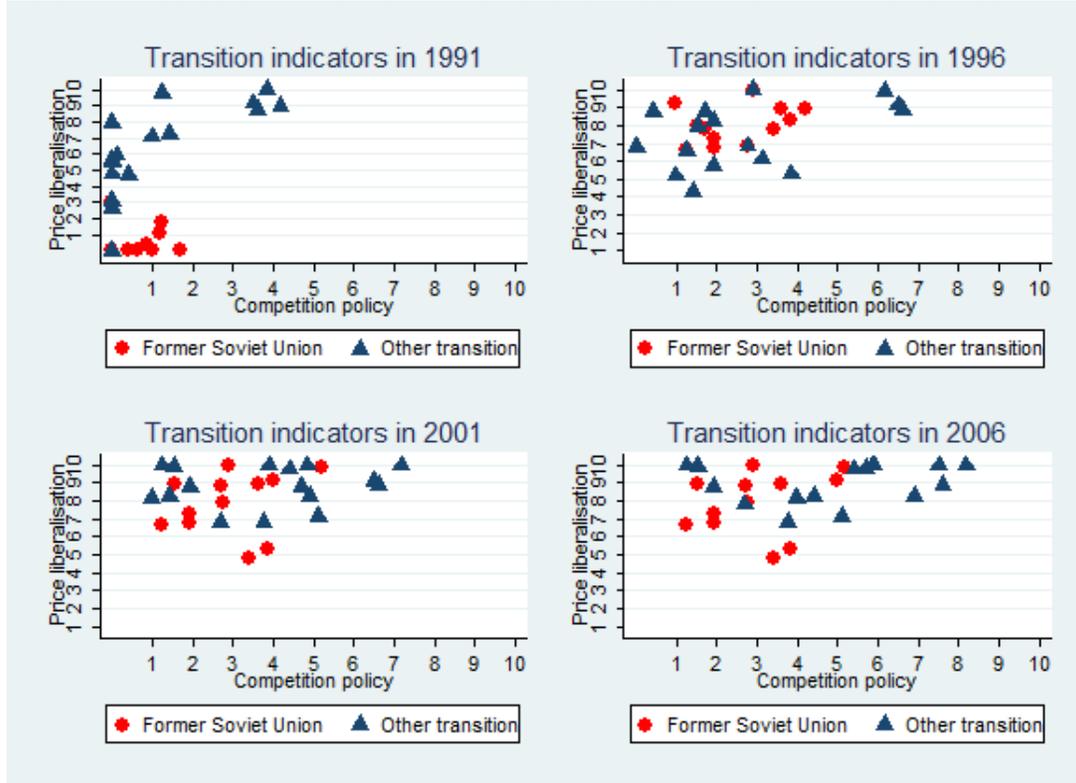
More than thirty years have passed since then, but the feeling that initial expectations didn't realize was out there already by the end of the previous century (Rodrik, 2006). In most of the post-soviet countries institutions supporting the free market relationships are still immature. The situation is aggravated because of the imitative operation of the institutions. In many cases respective regulations and laws exist and conform to best international practices but there is no proper application and enforcement. According to the transition indicators evaluated and published annually by the European Bank for Reconstruction and Development for all the transition countries (including those currently EU members), most of the countries completed the so called “first generation” of reforms by 2000.² Unlike liberalization and privatization related reforms, ensuring the superiority of legal order and equal conditions on the markets turned out to be a serious challenge. The scatter plot below (Figure 1) compares the pace of price liberalization reforms vs quality of competition between 1991 and 2006 in former Soviet Union (FSU) countries.³ As already stated above, liberalization went through quite fast and irreversible. Whereas the indicator of competition policy, which can serve as a legitimate proxy for critical assessment of countries' institutional environment, showed limited positive dynamics. This is true not only for the first decade of transition but also for subsequent periods.

A very similar picture is observed if we look directly at the Rule of Law Indicator. According to the Rule of Law pillar of the World Governance indicators, almost non of

²We consider as a part of first generation reforms actions aimed at privatization of public ownership and liberalization of the markets and prices. Also, the reform completion is measured here by comparing the actual score of a specific reform indicator published in EBRD Transition Indicators to the maximum possible score. According to rough estimations by 2000 average score was around 80% of maximum possible.

³We have normalized the transition indicators reported by the EBRD on 0-10 scale, with higher value corresponding to better conformity with developed countries' experience.

FIGURE 1. Selected transition indicators for FSU and other transition countries



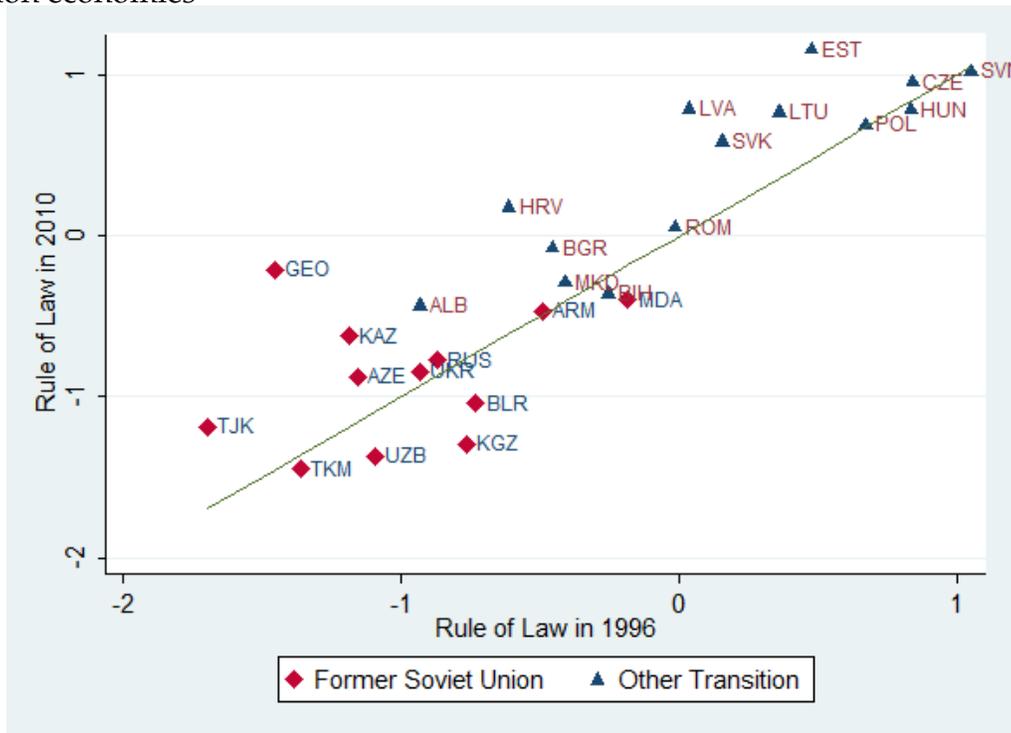
Source: EBRD Transition Indicators

the FSU countries have recorded a positive trend, whereas negative changes have been recorded for some of them. As can be inferred from Figure 2, only Georgia had recorded considerable progress by 2010. This was achieved after the “Rose Revolution,” which introduced significant changes in the social and economic life of the country and was strongly supported by western democracies. Moreover, it is easy to note that the FSU and other transition countries were quite different already back in 1996, and no major changes can be observed since then.⁴

Reforms in transition economies have attracted much attention, particularly by the end of the previous century. The outcome of reforms implemented for the transition from command to market-style relationships was highly heterogeneous - reflecting cultural,

⁴Appendix 2 contains figures with more detailed information on the Rule of Law by countries.

FIGURE 2. Change in Rule of Law index between 1996 and 2010 in transition economies



Source: World Bank, World Governance Indicators

economic, and geopolitical differences that did and still exist among the transition countries. Even if we focus only on former Soviet Union countries, we can still observe considerable differences in outcomes.

In this paper, we revisit the Rule of Law evolution problem in transition economies. As it is common in the literature, we focus on property rights as the core element of the rule of law (hereafter, we will use these terms interchangeably). We focus on the role of non-benevolent government and the options available to it for extracting private rents. By constructing a dynamic model where (1) the Government can choose the effort level for reforming property rights protection (reforms can be positive and negative) to maximize its private benefits and (2) the agents taking the property rights level as given, make decisions about allocating wealth between production and alternative uses. The government is assumed to bear additional costs whenever the property rights protection is far from the level preferred by a subset of agents with political power. The analysis describes how

even moderate political pressure contributes to the improvement of property rights protection if the Government is granted the possibility to extract private benefits from taxing the production. Depending on its abilities and initial level of property rights protection, Government can be interested in expanding political participation, which will make it easier to implement positive reforms. The punchline of the analysis is that not all types of government misconduct are equally harmful. It will be interesting to reform property rights if it is more efficient in extracting rents from taxed production rather than from direct bribes from appropriating agents.

Our analysis contributes to the literature on reforms and the emergence of property rights in transition countries. Numerous facets of reforms were analysed in the empirical and theoretical literature on transition. Right from the beginning of the transition process, one of the main research questions was the comparison of gradualism vs. shock therapy approach aimed at identifying the main determinants favouring both methods. Dewatripont and Roland (1995) compare the big bang (shock therapy) and gradual reforms under the assumption of costly reversibility and complementarity of two reform packages. They perform the analysis assuming that the benevolent politician is acting optimally in the interests of the representative agent. Under the assumption that implementing only one reform can never be optimal, authors demonstrate that gradualism would be optimal when there is learning from implementing first reforms, delaying second reforms is not causing too much losses, and reversing partial reforms in case of failure is far less costly than reversing full reforms. Also, the advantages of gradualism largely depend on correct sequencing of reforms. Implementing reforms with higher probability of success at first decreases chances of reversal.

The next topic on the transition research agenda in the mid of 1990s was the fast emergence of the unofficial economy and its role in the further development of transition countries. Johnson et al. (1997) demonstrate how resources flow to the informal sector due to the almost unrestricted influence of political power on the economic life in transition. This in turn, undermines the state's ability to collect enough taxes to provide public goods,

most crucial of which are the legal order and enforcement. Roland and Verdier (1999) analyse a similar problem. In their model, agents decide whether to produce or join the group that appropriates the producers, considering the government's tax rate and the probability of being caught. The Government instead uses the tax revenue to maintain legal order - to set up a mechanism to catch the appropriators. Both of these models admit multiple equilibria to demonstrate that the path a transition economy might take can be very different. The problem we are considering here is similar to these models in the sense that the ability of the Government to efficiently tax results of economic activity might contribute to legal order. However, the channel we discuss is completely different.

By the end of the 1990s, it was already clear that post-soviet transition could hardly be evaluated as painless or successful. On the contrary, China's longer transformation path proved to be more promising, ensuring high growth in the long-term and no major negative shocks for the population. Exploration of factors causing differences attracted scholars' attention who proposed different explanations. Qian and Roland (1998) conducted an interesting analysis that is somehow connected to the idea of correct sequencing of reforms discussed above. They have shown that China's better outcomes in the transition process than Russia can also be explained by the fact that the former overcame the problems of soft budget constraints by giving the primary role to decentralization rather than privatization. In particular, decentralization of fiscal authorities increases competition in attracting investments by local authorities and decreases the incentives to bailout. Another public finance-related hypothesis is proposed by Berkowitz and Li (2000). In particular, authors explain the difference in the reform performance between Russia and China by inconsistent division of tax rights in the former. The same tax base is used to be taxed by different public subjects that fall into the "Tragedy of the Commons" and squeeze out the firms' resources.

Another aspect of transition studies, where our research also fits in, is the demand for reforms within society. While the collapse of the Soviet Union hasn't left much choice for first steps to be implemented, like price liberalization and fast privatization of the public

assets, further reforms had to be implemented under the pressure of the population in general and newly formed interest groups in particular. These reforms can be described as deep institutional changes that would support free-market relations and are sometimes referred to as “second generation” reforms. Effective protection of property rights, or, in more general terms, ensuring the rule of law can be considered as an integral measure of those institutional reforms. More recent literature on post soviet transition studies focuses on analyzing impediments to the rule of law. Thus, Hoff and Stiglitz (2004) develop a model in which the agents can choose between investing in assets or stripping them away, and they are assumed to have different abilities in that respect. Authors show that there may be cases when the agents would be better off by investing and demanding the rule of law, but still, in equilibrium, the probability of the rule of law emerging is quite low. This happens because agents ignore the effects of their political choice on other participants. Polishchuk and Savvateev (2004) explain the weak property rights problem by unequal distribution of resources and inefficient production technologies in a setting where economic agents can direct their resources to expropriation instead of production. Opposition towards the rule of law comes from a richer segment of the population and political environment, which gives larger political influence to wealthier agents and creates more favorable grounds for nonemergence of property rights. The model proposed in this paper borrows from Polishchuk and Savvateev (2004) approach, with more details provided below.

The actual outcome of mass privatization is possibly another explanation for the non-emergence of the rule of law in transition economies. Thus, instead of the wide dispersion of ownership anticipated by the privatization, concentration grew up immensely in most transition economies in a quite short period. Using both legal and illegal schemes, selected individuals were able to collect the ownership rights from the population and the employees. Due to their close connection with the Government, these persons were in fact creating an Oligarchy. There are different estimations about their power in 90ies. Thus according to a nonformal estimate of now passed away Russian tycoon in exile

Boris Berezovskiy (Financial Times, 1996), seven bankers controlled half of the economy in 1996 and were able to influence economic policy in the country. In a more recent study, 22 groups were estimated to control up to 40% of the Russian economy in 2003 (Guriev and Rachinskiy (2005)). Given such outcomes, it would be rational to assume that actual political demand for reforms is coming not from the society as a whole but from a very limited share of it. Following such approach Guriev and Sonin (2008) build a theory of property rights emergence as an outcome of a game between two oligarchs and a Dictator. Promoting the idea that rent-seeking is harmful to oligarchs themselves, the emergence of property rights is expected to limit rent-seeking possibilities. In this dynamic game, it is demonstrated that a strong dictator (which requires the consent of both oligarchs to be removed from the office) cannot commit to instituting protection of property rights and not to expropriate one of the oligarchs. Due to this problem, weak dictators, who do not limit rent-seeking, can be elected in equilibrium.

Difficulties associated with implementing reforms are not associated only with transition countries. One of the reasons people resist reforms (or to changes in general) is the individual specific uncertainty about the outcome of the reforms for themselves (Fernandez and Rodrick, 1991). According to the argument, once people do not know whether they will be in the losers' or gainers' group and the former groups is still quite large, risk-neutral agents can still decline the ex-post efficient reform with rational expectations.

As already mentioned above, in this paper, we build on Polishchuk and Savvateev (2004) results, introducing a non-benevolent government that maximizes its private rents taking into account political constraints. Also, we modify the model by assuming that only a limited segment of the agents with wealth above a given threshold level can participate in rent-seeking activities and have their input in political decisions. The remaining population can either invest their wealth in production or store (which dilutes resources). The remaining of the paper is structured as follows. In the second part, we present the preferences of the agents and the Government and describe production and appropriation technologies. In the third part, we characterize the equilibrium of static and dynamic

parts of the model. We discuss the political economy and policy implications of the results obtained and wrap up with the conclusions.

2. THE MODEL

Assume continuum on $[0,1]$ of heterogeneous agents differing by endowment of resources (wealth). This stock \bar{w} of resources could be either used for production purposes or depending on agent's identity for one of the following two activities: directed to appropriation activities or stored (with a waste). Resources are distributed among the agents according to a commonly known realization of log-normal distribution:: $\ln w \sim N(m, \sigma^2)$. Every agent has an access to production technology with a production function $f(w) = w^\alpha$, which satisfies the standard conditions when $\alpha \leq 1$.

Without loss of generality, agents can be distributed on $[0,1]$ segment according to their increasing wealth. The agents are divided into two groups and only one (smaller and richer) group - $x \in [s, 1]$ can choose to split the available resources between production and appropriation (h). In formal terms, smaller group means that $s > 0.5$ **and** there are agents among the poor group who would select to participate in rent-seeking in case they were given such a possibility. We will formalize the second part of this statement below. At the same time, the representative y of $[0, s)$ segment must decide how much of the resources to deploy in the production and how much to keep. We denote by g the part of the resources not involved in the production and assume that it earns some return $p < 1$ for that agent.

Following the literature in the field, we model the appropriation technology as follows. Let $\mathcal{K} \in [0, 1]$ be the portion of the economy's GDP Y that can be appropriated through relevant non-productive activities. So \mathcal{K} represents (inversely) the quality of property rights protection within the country. The extreme cases of $\mathcal{K} = 0$ and $\mathcal{K} = 1$ correspond, respectively, to fully protected property rights and to complete anarchy. The gain of such an agent is proportional to the amount h of this agent's resources invested in appropriation⁵. Thus, if H is the total amount of resources spent for rent seeking in the whole

⁵For similar treatment see, for example, Polishchuk and Savvateev(2004), Sonin(2003)

economy, then the agent's payoff is given by $\mathcal{K}hY/H$. Unlike Polishchuk and Savvateev(2004), where total amount of resources directed for rent seeking (H) is fully wasted, here at least part of these resources can be taken away by the Government for its private purposes.

Having stated the strategies available to both types of agents, we can formulate the objectives. Thus, an agent $x \in [s, 1]$ solves the following maximization problem:

$$(1) \quad \max_{h \in [0, w(x)]} (1 - \mathcal{K})(1 - \tau)f(w(x) - h) + \mathcal{K}hY/H$$

An agent $y \in [0, s)$ solves the following problem:

$$(2) \quad \max_{g \in [0, w(y)]} (1 - \mathcal{K})(1 - \tau)f(w(y) - g) + pg$$

Objective functions in (1) and (2) show that agents deciding to produce can retain only the part of output protected by property rights. The Government taxes away τ share of production from both groups.

Then by definition, the following assertions hold: Total output in the economy is the sum of production of all the agents:

$$(3) \quad GDP = Y = Y_{(0,s)} + Y_{(s,1)} = \int_0^s (w(y) - g(y))^\alpha dy + \int_s^1 (w(x) - h(x))^\alpha dx$$

Pool of resources directed at appropriation is given by (hereafter will refer to this amount as "appropriation pool"):

$$(4) \quad H = \int_s^1 h(z) dz$$

Also, let G denote the total amount of resources left out of the production process: $G = \int_0^s g(y) dy$.

Initially given level (stock) of property rights can be changed in time by a non-benevolent Government by exerting costly effort - $r(t)$. It has two sources for extracting its rents - either from the taxed part of country's GDP (τY) or from total direct payments (H) of appropriating agents. The efficiency, with which the government is able to extract rents from these two sources, is parametrized with θ_1 for GDP and θ_2 for the appropriation pool (H). It is assumed that if the Government takes no action at all, the property rights deteriorate in time.

Finally, the Government suffers losses whenever the actual level of property rights protection is far from the one required by agents having decisive power in the economy. In other words, the Government is effectively constraint in its actions with the necessity of having political support within the society. Exactly how the level of property rights enjoying the support of a decisive fraction of voters is determined depends on the political structure of the society. In a democratic setting under standard assumptions, the median voter would be decisive. In transition countries, the political economy is distorted in the sense that voting rights are not equally distributed among the members of the society. It is more usual that the set of agents influencing the decisions of the Government is narrower than usual and characterized by higher wealth. There can be various modes to incorporate this type of distortion. Thus, Sonin (2003) assumes a situation where pivotal voter is located at p^{th} percentile instead of median, with a political system biased towards rich. An alternative approach is to assume that median voter of the restricted subset of voters is pivotal. For example, in the logic of the model described here this would be the median voter $x \in [s, 1]$. Whatever will be approach adopted below, we denote this bliss point of politically preferred level of property rights with $\bar{\mathcal{K}}$.

Having laid down these facts, we can formulate the program that Government would be solving:

$$(5) \quad \max \int_0^T e^{-\rho t} (\theta_1 \tau Y(t) + \theta_2 H(t) - \phi r(t)^2 - \psi (\mathcal{K}(t) - \bar{\mathcal{K}})^2) dt$$

subject to:

$$(6) \quad \dot{\mathcal{K}}(t) = (1 + \delta)\mathcal{K}(t) - r(t)$$

Parameters θ_1 and θ_2 measure the “ability” of the government to extract rents from the economy and appropriation pool, respectively. ϕ captures the cost of reforms and ψ cost of having property rights further from the preferred bliss point. Both reforms and non-optimal property rights are modeled in quadratic form. The rest are standard time preference parameters and property development dynamic rule (6).

When solving this problem, the Government considers that agents optimize given the level of property rights in the economy at any moment of time. This optimization provides the equilibrium values of Y and H as given in (3) and (4). Usually, the dynamic approaches in transition studies were more applied to studying the optimal speed of reallocation from public to private ownership of the property (Castanheira and Roland, 2000). But we believe that the dynamics of property rights can also be analyzed with a similar approach.

The timing of the model is as follows. Within each period, agents of both types decide how much of resources to diverge from production for appropriation and storage purposes. In doing this, they take the level of property rights as given. Their optimal decisions result in total production (GDP) and appropriation pool (H) (as well as resource taken out of production and stored - G). The Government instead solves a dynamic problem taking into account the results of the agents’ action and impact of its decisions on their behaviour. A couple of issues need to be highlighted here. First, solving the Government’s problem in a continuous time setting and assuming that agents optimize at any given point of time is clearly an approximation to simplify the analysis. Second, for this version of the model, we assume that the level of wealth in each period is not changing for the agents. In a more realistic setting, one must model the evolution of wealth during time, considering the impact of decisions to store and appropriate on this process. Though

it is important to stress that introducing this additional dynamics in the model might create complications: when determining the preferred level of property rights, agents with political power must consider its impact on future flows of wealth.

3. EQUILIBRIUM

3.1. Equilibrium of agents' intratemporal interaction. First, we characterize the equilibrium assuming that the level of property rights is given. The problem is quite simple at this stage. Non-appropriating agents maximize the objective function in (2), which gives the following standard optimality condition⁶.

$$(7) \quad g^*(y) = w(y) - \left[\frac{p}{\alpha(1 - \mathcal{K})(1 - \tau)} \right]^{\frac{1}{\alpha-1}}$$

It is obvious from (7) that there is direct relationship between g^* and the level of property protection \mathcal{K} . The worse is the environment (higher the \mathcal{K}), more resources are diverted from the production process (larger the g^*). Whereas those who can participate in appropriation maximize the objective function given by (1). Following Polishchuk and Savvateev (2004) we assume that the values of Y and H in problem (1) are taken as given by every optimizing agent and that their individual action in isolation will have no influence on those aggregates. It is necessary to emphasize that the approach proposed here is not suitable for the analysis of oligarchic structures. To put differently, one cannot claim that the richer segment of the population which enjoys political influence is oligarchy. The later are quite large players in the economy and it would be naive to assume that there would be no strategic interaction among themselves. The following proposition presents optimality condition for these type of agents.

⁶In this analysis we focus on internal solutions only

Proposition 1. *For every $\mathcal{K} \in [0, 1]$, and under the **Assumption A** presented below the equilibrium value of h^* - resources diverted for rent-seeking purposes - is uniquely determined from the following optimality condition:*

$$(8) \quad C_1 C_3 (w(x) - h^*(x))^{\alpha-1} - 2(1-s)(w(x) - h^*(x))^\alpha - C_2 = 0$$

where:

$$C_1 = \frac{(1-\mathcal{K})(1-\tau)}{\mathcal{K}} \alpha;$$

$$C_2 = s \left[\frac{p}{\alpha(1-\tau)(1-\mathcal{K})} \right]^{\frac{\alpha}{\alpha-1}};$$

$$C_3 = \int_s^1 w(z) dz;$$

Proof. See Appendix 1.

The result of Proposition 1 is essentially the same as in Polishchuk and Savvateev (2004). Having obtained this result, they continue their analysis by comparing equilibria in economy with fully protected property rights with a setting where the resources can be traded among the agents but the property rights are not fully enforced. Afterwards, the authors analyze the political economy of property rights under different wealth distribution and production function efficiency characteristics. Our analysis differs in a number of ways. First, we have already introduced an additional assumption to rule out the possibility that there would be agents among the richer segment that would not be directing to appropriation a positive amount of resources (see Assumption A below). Second, we will focus on the situations where in the equilibrium of the model richer agents prefer imperfect protection of property rights. In essence this means that we limit the productivity and wealth distribution parameters to those that support such outcome. Fixing these limitations, we analyse the Government's problem and conditions which would lead to development or regress in property rights, taking into account political economy constraints.

Assumption A. *There are agents among the poorer segment of the population for whom it would be optimal to participate in the rent-seeking if they were given such a possibility.*

Or in formal terms:

$$s > \mu = F^{-1}(h^*(x) - t), \text{ where } t = w(x) - h^*(x) \text{ for the case when } s = 0.$$

The optimal solutions (7) and (8) above have the following two important features:

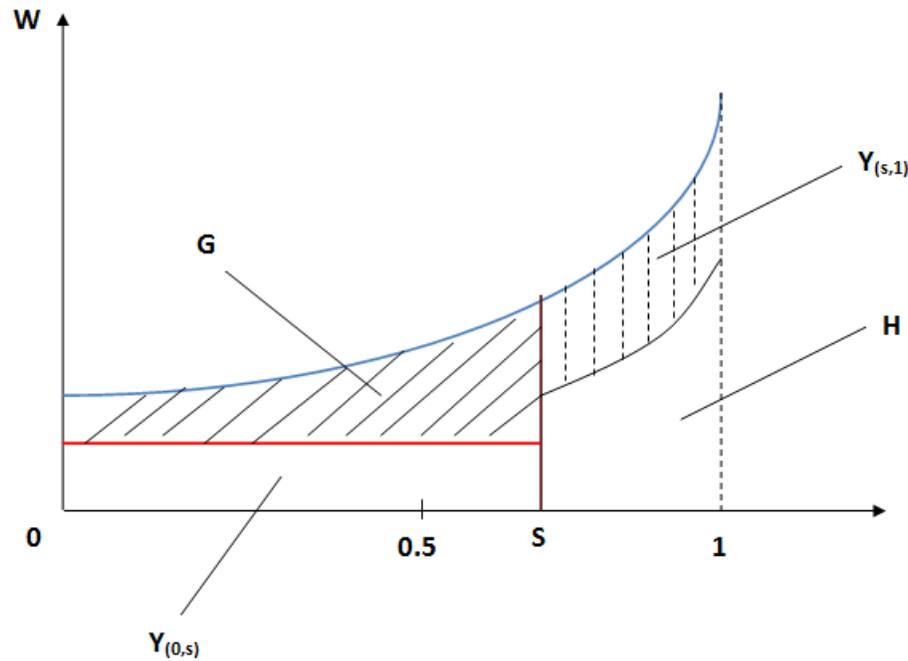
- non-appropriating agents direct equal an amount of resources to production and store the difference, with the richer agents storing more resources;
- the same is true about appropriating agents, that is the difference between the resources available and the amount directed to appropriative activities is the same for everybody. One can easily verify this by looking at the RHS of equation (6), which doesn't depend on the agent's identity.

The figure presented below represents the distribution of available resources between production (Y), appropriation (H), and storage(G) for a given level of property protection and resource distribution. Agents are distributed along the horizontal line according to their increasing wealth.

Thus \mathcal{K} influences the decisions taken by appropriating agents through direct and indirect channels. Directly, it determines whether to put additional resources in production or appropriation activity. Indirectly, it influences the potential size of the economy's share that would be available for appropriation. At this stage, there are two questions of interest. First, it is important to understand the relationship between the $h^*(x)$ and the level of property rights protection \mathcal{K} . Second is to reveal the preferred level of \mathcal{K} for appropriating agents and whether this optimum level varies due to the differences in the wealth of the agents. The following proposition provides answers to these points.

Proposition 2. *Following statements are true:*

FIGURE 3. Distribution of resources among production (Y), appropriation(H) and storage(G)



(1) $h^*(x)$ is monotonously increasing in \mathcal{K} .

It is easy to verify that whenever the property rights protection is close to perfect level ($\mathcal{K} = 0$), then $h^*(x) \rightarrow 0$ - appropriation is completely wasteful as almost zero share of GDP is available for such activities. On the other hand, given the formulated objective function of the representative appropriating agent in a situation close to complete anarchy, such agents will direct most of their resources to appropriating activities, ignoring the fact that due to such situation the overall GDP and its part available for appropriation is quite small. The latter is due to the fact that each individual agent in the setting we have doesn't take into account externalities of his actions (in other words, the level of the Y and H are given for him).

(2) **There exists a unique preferred level of property rights protection \mathcal{K} for each member of $\in [s, 1]$.**

To see this, consider the derivative of Value function of the problem in (3.1) with respect to \mathcal{K} as if the latter is a parameter of the model⁷.

⁷Here and just below we ignore taxation

$$(9) \quad \frac{\partial V}{\partial \mathcal{K}} = -(w(x) - h^*(x))^\alpha - (1 - \mathcal{K})\alpha(w(x) - h^*(x))^{\alpha-1} \frac{\partial h^*(x)}{\partial \mathcal{K}} + \\ h^*(x)Y/H + \mathcal{K} \frac{\partial h^*(x)}{\partial \mathcal{K}} Y/H + \mathcal{K} h^*(x) \frac{\partial Y}{\partial \mathcal{K}} \frac{1}{H} - \mathcal{K} h^*(x) Y H^{-2} \frac{\partial H}{\partial \mathcal{K}}$$

There are multiple forces determining the eventual sign of this derivative. On the one hand, an increase in \mathcal{K} (that is decrease of property rights protection level) has a positive effect as a larger part of the produced GDP is available for appropriation. But at the same time it has negative impact on both the size of the GDP and the benefit from production for an individual agent. Whether the overall impact will be positive or negative depends on the parameters of the problem and the status-quo point of \mathcal{K} . What is important is that the relationship between V and \mathcal{K} is single-picked⁸.

- (3) **The optimal \mathcal{K} for the appropriating agents is increasing in the wealth level w .** That is, if there exists an optimal \mathcal{K} different from 0 for each of such agents, the agent with the highest level of initial resource wealth prefers the higher \mathcal{K} with respect to other agents.

To see point 3, assume that each agent can also determine the most preferred level of \mathcal{K} for himself. That is he can maximize the objective function in (3.1) **also** with respect to \mathcal{K} . As a result, we obtain the following expression:

$$(10) \quad K^* = \frac{Hf(w - h^*)}{\frac{\partial Y}{\partial \mathcal{K}} h^*} - Y / \frac{\partial Y}{\partial \mathcal{K}}$$

From Proposition 1, we know that difference $(w - h)$ is the same for all agents $x \in (s, 1]$. This means that for an agent with higher w , we have higher h . Considering that $\frac{\partial Y}{\partial \mathcal{K}}$ is negative, an increase in h makes the first addendum of (10) larger.

⁸It is easy to check that $\frac{\partial H}{\partial \mathcal{K}}$, $\frac{\partial h^*(x)}{\partial \mathcal{K}}$ and $\frac{\partial Y}{\partial \mathcal{K}}$ are monotonously increasing or decreasing functions.

3.2. Equilibrium dynamics of Government's Problem. Having formulated the main characteristics of the equilibrium in a static setting based on agents' problems, now we turn to the analysis of Government preferences about the reforms. As it has been formulated earlier, Government might undertake costly actions to change (both in a positive and negative sense) the level of property rights protection in the country. The problem in (5)-(6), as well as additional equations (3) and (4), include many parameters. That is, there are many degrees of freedom that will eventually shape the equilibrium outcome of the program. Though it is important to underline once again that we limit part of the parameters in the model so that at the inception moment $t = 0$, the decisive subset of population prefers imperfect protection of property rights (whatever aggregation (voting) rule is applied). In this regard, our approach will be the following. First, we will present the condition which determines the reform direction and briefly discuss the effect of various parameters of the Government program. Then we will turn to the discussion of the political economy of the model. Wherever possible, the analysis will be complemented by numerical examples.

Proposition 3. *Government solves the following problem:*

$$(11) \quad \max \int_0^T e^{-\rho t} (\theta_1 \tau Y(t) + \theta_2 H(t) - \phi r(t)^2 - \psi (\mathcal{K}(t) - \bar{\mathcal{K}})^2)$$

subject to:

$$(12) \quad \dot{\mathcal{K}}(t) = (1 + \delta)\mathcal{K}(t) - r(t)$$

$$(13) \quad Y(t) = s \left[\frac{p}{\alpha(1 - \mathcal{K}(t))} \right]^{\frac{\alpha}{\alpha-1}} + (1 - s)(w - h^*(\mathcal{K}(t)))^\alpha$$

$$(14) \quad H(t) = \int_s^1 h^*(\mathcal{K}(t), z) dz$$

$$(15) \quad \mathcal{K}(0) = \mathcal{K}_0$$

Given any initial level of property rights protection $K(0)$, the government will make a costly effort to increase the protection level (decrease K) if the following condition holds:

$$(16) \quad (\rho - 1 - \delta)r + \frac{\theta\tau \frac{\partial Y}{\partial K} + (1 - \theta) \frac{\partial H}{\partial K} - 2\psi(K - \bar{K})}{2\phi} > 0$$

Otherwise, the effort will be exerted to decrease the level of protection.

Proof. See Appendix 1.

The result in (16) suggests that the Government will increase the level of property rights protection if the positive impact from growth in GDP overcomes the negative outcome from a decrease in the appropriation pool. But apart from that Government is constrained by the political support – going further from the desired level of property rights protection \bar{K} is harmful. Note that without describing the political structure of the economy, that is how specifically the \bar{K} is determined, one cannot determine what will be the effect of variation in the property rights.

4. DISCUSSION

Political Economy. Two issues are at stake here. First, it is interesting to examine the various implications of different political structures that determine the socially preferable level of K holding the other parameters of the model fixed. The second question is about the desired level of political participation of the agents from the point of view of Government. In the model discussed so far we haven't formalized distortions to the political economy setting or limitation of the political influence of the agents. For our further discussion we introduce the following assumption.

Assumption B. *Whenever we assume that political power is granted only to a subset of agents, this subset will coincide with those having access to appropriation.*

Given Assumption B, an important issue is the preference of the Government with respect to voting (hence appropriation) rights distribution among the agents. While s - the threshold above which agents can participate in appropriation and influence the government's decision - is exogenously given, we limit ourselves to the analysis of situations where the government would be interested in having this subset shrink or expand.

Defining the set of agents with political influence is not enough. Depending on the identity of the pivotal agent within this subset the outcome will be different. Thus we know from Proposition 2, that with higher wealth of the appropriating agent, higher K will be preferred by him. **Given this result and the Government objective function (11) we can state that ceteris paribus - 1. electoral rule making pivotal the richer agent, and 2. narrow set of politically influential agents (larger s) decreases the motives of Government to increase the level of property rights protection.**

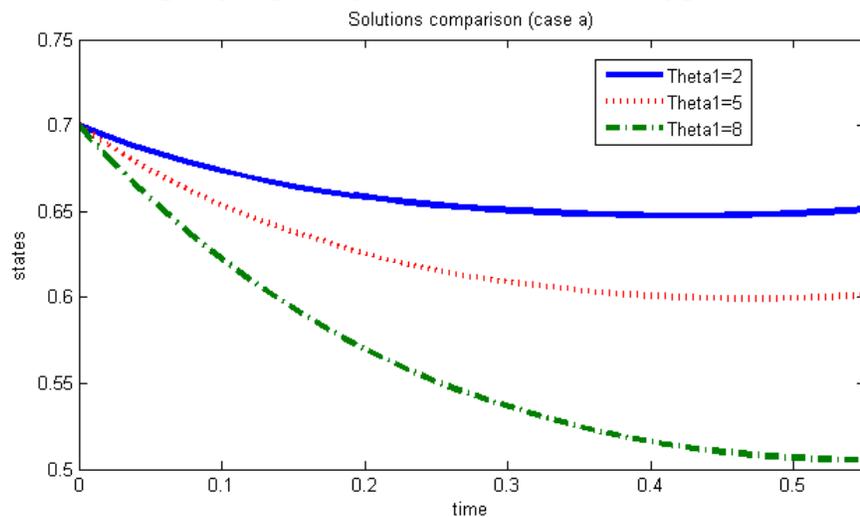
Now suppose that Government can without any cost change the subset of agents having political influence. A legitimate question to ask would be: under what circumstances the Government will be interested in undertaking such action? To discuss this issue it is necessary to refer again to objective function (11). Expanding the set of influential agents, in any case, means to decrease the socially preferable level of \mathcal{K} (which corresponds to better protected property rights). In terms of (11), this corresponds to a decrease in parameter $\tilde{\mathcal{K}}$. This can be beneficial for the Government when it is getting more benefit (marginally) from the increase in GDP than a decrease in the appropriation pool, given that this difference offsets the reform costs. This relationship is heavily shaped by parameters of θ_1 and θ_2 which in some sense describe the "quality" of the Government. Whenever $\theta_1 \gg \theta_2$ we deal with a Government that is able to extract more rents from one unit of taxed share of GDP than from one unit of appropriation pool⁹. But on top of that increasing s under Assumptions A and B will inevitably increase appropriation pool H . So this is an additional impediment to increased property rights protection. As an example, one can consider situation where the Government prefers to obtain its private

⁹An alternative formulation would be to state that higher quality government obtains more utility from taxed GDP than from appropriation pool.

rents through corruption in tax collection process or when implementing public expenditures, rather than obtaining direct bribes from the economic agents and in return granting them the right to appropriate rents in the economy (like granting monopoly position on the market or exclusive right to natural resources).

The following figures present the dynamics of property rights protection for different “types” of Government. For ease of presentation, we assume that $\theta_1 = 10 - \theta_2$ ¹⁰. Property rights protection preferred by pivotal voter \mathcal{K} is assumed to be equal to 0.6, so we have limited political pressure on Government.

FIGURE 4. Property rights dynamics for different types of Government



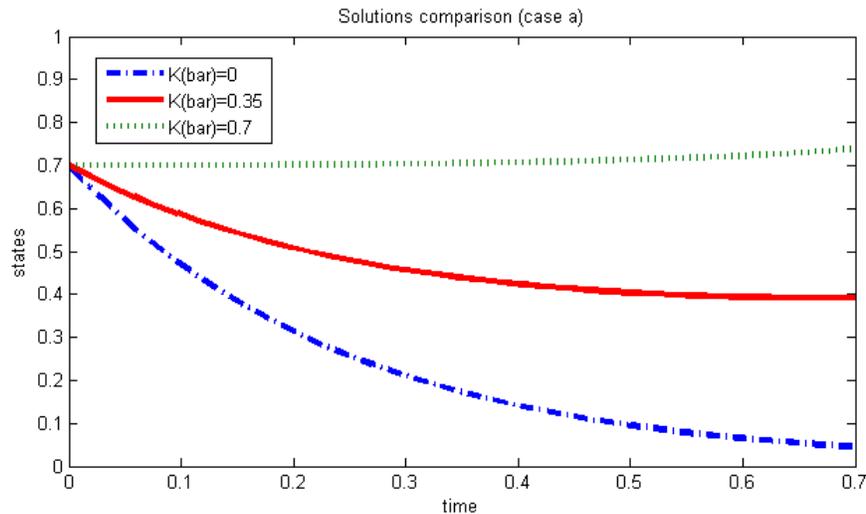
As it can be inferred from Figure 4 a quality Government (with higher θ_1) will be more inclined to reform property rights protection. But the existence of political pressure limits the effect of changes. An alternative way to state the problem is that an even higher quality Government would be unable to carry out reforms if it faces political pressure from a limited group of agents interested in preserving incomplete protection of property rights.

The next panel (Figure 5) compares the dynamic of property rights protection for the Government facing different levels of political constraint. Here instead we fix θ_1 at an

¹⁰Assumptions about the parameters of the wealth distribution and the model in general are presented in the Appendix 3

intermediate level and look at the dynamics for different levels of socially preferred property rights \bar{K} .

FIGURE 5. Property rights dynamics for different types of Government



Under parametric assumptions, applied complete democracy with median voter preferring $K = 0$ positive dynamics of property rights evolution would eventually result in almost complete protection. And on the opposite, when status-quo and socially preferred levels of property rights are equal, there will be virtually no dynamics.

Policy Implications. There are a number of issues worth to be stressed in the context of this discussion:

- (1) **Not all types of corruption have the same outcome.** This is one of the most important implications of the analysis conducted here. A corrupt government might still be motivated to strengthen property rights protection in the country if these rent-seeking activities are sourced from the GDP redistribution process. Consider the following example. To extract private benefits, the Government can either misallocate part of the taxes collected or give some agents exclusive rights to expropriate others in exchange for some return. Our analysis suggests that while the Government of the first type would be directly interested in an increase in the country's

GDP, the other type of Government wouldn't as its benefits are not directly associated with the size of GDP. The associated implication is that at some point, it might be beneficial to increase the government size in GDP, thus increasing the stake from which private extraction is possible. Second, and more importantly, to increase Government motivation for implementing reforms associated with property rights at the initial stage of associated reforms, it might be a common interest to exercise less scrutiny over the efficiency of redistribution through taxes.

- (2) **Whenever production is less dependent on decisions taken by individual agents, chances for positive dynamics in property rights are lower.** Or expressed in more formal terms, lower is the elasticity of production with respect to the level of property right protection, lower are the chances for positive changes. Thus, resource led growth can be sustained even without changes in property rights protection. This means that in order for the channel identified in this analysis to be operational, it is necessary that production is dependent on the decisions of a large number of agents.
- (3) **Governments able to extract rents from the production process will be interested in political reforms.** As demonstrated, if there are agents who prefer incomplete protection of property rights in a society, these agents are more averse to property rights protection the richer they are. If in status-quo political influence is given only to a limited share of agents at the top of wealth distribution, this constraints Government's ability to positive reforms even if it would be really interested in increasing protection level. To ease this political constraint, the Government will try to increase political freedoms and shift the pivotal voter to the center of wealth distribution.
- (4) **Equal but unproductive societies might have more political freedom than unequal and productive societies when the Government is not able to extract rents from the production process.** Unproductive societies direct more resources to appropriation, so there is wider consensus about incomplete protection of property

rights. This, in turn, will make political constraint less binding even if we observe wider participation (more agents having the right to express their opinion about the preferred level of property rights). This situation can be described as a “bad” consensus between agents and the Government.

5. CONCLUSIONS

In this paper, we attempted to analyze the possible dynamics of property rights protection in a transition economy characterized by unequal distribution of resources and with only one part of the agents having a right to participate in appropriation. We introduce a non-benevolent government, which maximizes its private benefits suffering disutility whenever property rights protection level in the country is far from the bliss point of the pivotal agent. We have demonstrated that positive dynamics in property rights protection can be observed when such a government is relatively more efficient in extracting its private rents from the GDP redistribution process as opposed to direct payments from appropriating agents. The political economy setting has a crucial role, as even that type of Government would not be able to make positive reforms if the decisive set of agents opposes better protection of property rights.

The model has many degrees of freedom, and results depend on the parameter assumptions made. Further research is required to pin down at least some ranges for those parameters and possibly calibrate the model to describe different dynamics observed in post-soviet transition countries, as presented in the last part of the appendix. Also, it is important to endogenize the political participation threshold. One way to do this would be to connect the initial threshold directly to a level of wealth and then introduce the wealth evolution rule in time.

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6. APPENDIX 1. PROPOSITIONS' PROOFS

Proposition 1

For every $\mathcal{K} \in [0, 1]$, and under the **Assumption A** the equilibrium value of h^* - resources diverted for rent-seeking purposes - is uniquely determined from the following optimality condition:

$$(17) \quad C_1 C_3 (w(x) - h^*(x))^{\alpha-1} - 2(1-s)(w(x) - h^*(x))^\alpha - C_2 = 0$$

where:

$$C_1 = \frac{(1-\tau)(1-\mathcal{K})}{\mathcal{K}} \alpha;$$

$$C_2 = s \left[\frac{p}{\alpha(1-\tau)(1-\mathcal{K})} \right]^{\frac{\alpha}{\alpha-1}};$$

$$C_3 = \int_s^1 w(z) dz;$$

Proof.

For an agent $x \in [s, 1]$, optimal $h(x)$ is determined from the following F.O.C.:

$$(18) \quad \frac{(1-\mathcal{K})(1-\tau)}{\mathcal{K}} \alpha (w(x) - h^*(x))^{\alpha-1} = \frac{Y}{H}$$

Taking into account optimality conditions for g - (5) and for h - (10), the equilibrium value of GDP can be presented as:

$$(19) \quad Y = s \left[\frac{p}{\alpha(1-\tau)(1-\mathcal{K})} \right]^{\frac{\alpha}{\alpha-1}} + (1-s)(w(x) - h^*(x))^\alpha$$

In particular, the second addendum of (11) is obtained taking into account that from the optimality condition (10) we have the difference $w(x) - h(x)$ as constant for each $x \in [s, 1]$.

Finally, the definition of H can be rewritten as follows:

$$(20) \quad H = \int_s^1 h(z)dz = \int_s^1 w(z)dz - \int_s^1 ((w(z) - h(z))dz = \int_s^1 w(z)dz - (1-s)((w(z) - h(z)))$$

Finally, using the notations for C_1 , C_2 , and C_3 we obtain the result in (6).

Proposition 3.

To obtain result in 16 we solve the following program:

$$(21) \quad \max \int_0^T e^{-\rho t} (\theta_1 \tau Y(t) + \theta_2 H(t) - \phi r(t)^2 - \psi (\mathcal{K}(t) - \bar{\mathcal{K}})^2)$$

subject to:

$$(22) \quad \dot{\mathcal{K}}(t) = (1 + \delta)\mathcal{K}(t) - r(t)$$

$$(23) \quad Y(t) = s \left[\frac{p}{\alpha(1-\tau)(1-\mathcal{K}(t))} \right]^{\frac{\alpha}{\alpha-1}} + (1-s)(w - h^*(\mathcal{K}(t)))^\alpha$$

$$(24) \quad H(t) = \int_s^1 h^*(\mathcal{K}(t), z) dz$$

$$(25) \quad \mathcal{K}(0) = \mathcal{K}_0$$

To save on notations denote with $F = \theta_1 \tau Y(t) + \theta_2 H(t) - \phi r(t)^2 - \psi (\mathcal{K}(t) - \bar{\mathcal{K}})^2$ The Hamiltonian of this project and respective F.O.C.s (with transversality condition) would be:

$$(26) \quad H = e^{-\rho t} F + \lambda((1 + \delta)K - r)$$

F.O.C.

$$(27) \quad e^{-\rho t} F_r - \lambda(t) = 0$$

$$(28) \quad e^{-\rho t} F_K + (1 + \delta)\lambda(t) = -\dot{\lambda}(t)$$

$$(29) \quad \lambda(T)K(T) = 0$$

Substituting (27) in (28) and totally differentiating w.r.t. time we obtain the condition for the dynamics of control variable of reform efforts - $r(t)$.

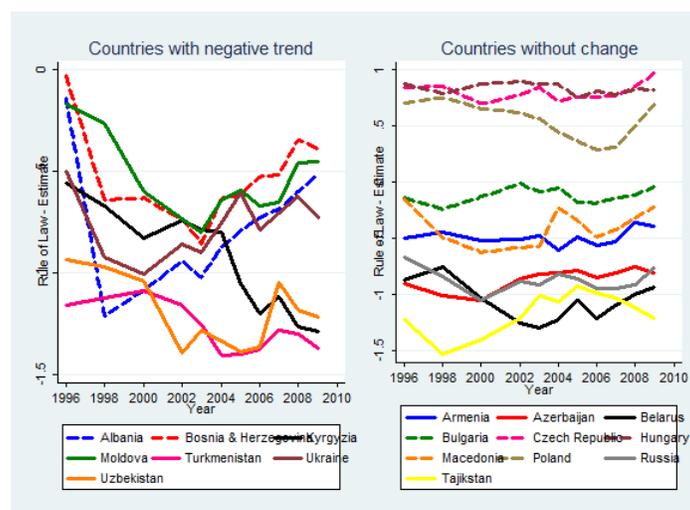
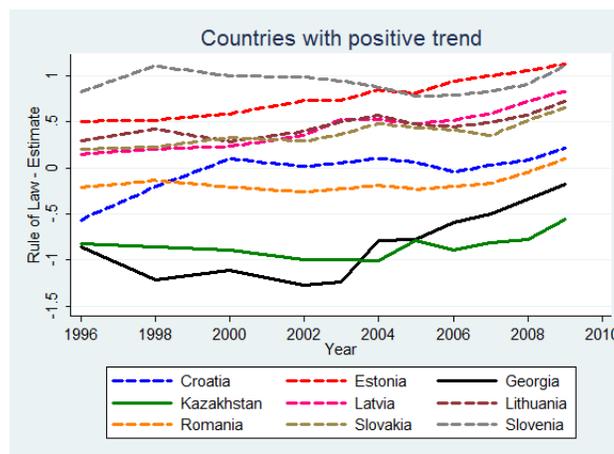
$$(30) \quad \dot{r}(t) = \frac{(\rho - 1 - \delta)F_r - F_K}{F_{rr}}$$

Substituting for respective partial derivatives F with respect to r and K and taking into account effects of an increase in property rights protection on GDP growth and appropriation pool, positive dynamics in property rights protection if the following condition holds:

$$(31) \quad (\rho - 1 - \delta)r + \frac{\theta\tau \frac{\partial Y}{\partial K} + (1 - \theta)\frac{\partial H}{\partial K} - 2\psi(K - \bar{K})}{2\phi} > 0$$

7. APPENDIX 2. RULE OF LAW IN TRANSITION ECONOMIES

The following three figures summarize the performance of FSU and Eastern European countries with respect to the Rule of Law indicator calculated on the -2.5 to 2.5 scale, with a higher value corresponding to better standards. The countries are divided into three groups reflecting overall change trend during the 1996-2009 period. The countries with an improvement of above 0.2 points are considered to have a positive trend. Those with a negative change of more than -0.2 points are included in the negative trend group. And the remaining are assumed to have recorded no material change of the indicator during the period considered.¹¹



¹¹Source: World Government indicators, www.govindicators.org

8. APPENDIX 3. INPUT ASSUMPTIONS FOR NUMERIC ESTIMATIONS

The parameters below have been applied for the numerical estimations in Figures 4 and 5:

Storage: return rate - $p = 0.6$

Production: function parameter - $\alpha = 0.3$

Appropriation: (political participation) threshold - $s = 0.8$

GDP: taxation rate - $\tau = 0.2$

Wealth: lognormal distribution parameters - $\mu = 1, v = 0.25$

Rate: of property rights deterioration if no action taken - $\delta = 0.03$

Discount: rate - $i = 0.03$

Reform: cost parameter - $\phi = 0.1$

Political: pressure disutility parameter - $\psi = 2$