Instability of Democracy as Resource Curse

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We suggest a dynamic game theoretic model to explain why resource abundance may lead to instability of democracy. Stationary Markov perfect equilibria of this game with four players – Politician, Oligarch, Autocrat and Public (voters) – are analyzed. Choosing a rate of resource rent tax, potential Autocrat competes with conventional Politician for the office, and Oligarch, the owner of the resource wealth, bribes Politician to influence her decisions. Actual Autocrat's tax policy may be different from the announced one. If the difference is large, then Public may revolt or Oligarch may organize a coup to throw Autocrat down.

It is shown that the probability of democracy preservation is decreasing in the amount of resources if the institutional quality is low enough. It does not depend on the amount of resources, if the institutional quality is higher than a threshold. The level of the threshold, however, depends positively on the resource wealth. We have found also that under very low institutional quality, a paradoxical effect takes place: the probability of democracy preservation may decrease with small improvements of institutional quality.

It is shown as well that Oligarch earns larger part of rent under democracy than under autocracy. This result conforms to empirical observation which is demonstrated in the paper: under low quality of institutions, democratization leads to higher inequality and inequality entails worsening of the attitude to democracy.

Key words: resource abundance, resource curse, democracy, autocracy, elections, political stability.

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Предложена динамическая теоретико-игровая модель, позволяющая объяснить, почему избыток ресурсов в стране может вести к нестабильности демократии. Изучаются стационарные совершенные Марковские равновесия этой игры с четырьмя игроками – Политиком, Олигархом, Автократом и Избирателями. Выбирая налог на ренту, потенциальный Автократ конкурирует с Политиком за победу на выборах, а Олигарх – владелец ресурсной ренты – подкупает Политика, чтобы повлиять на его решения. Фактический выбор налога Автократом после его прихода к власти может отличаться от обещанного во время избирательной компании. Если разница велика, то Избиратели могут восстать, либо олигарх может организовать заговор, чтобы свергнуть Автократа.

Показано, что вероятность сохранения демократии убывает с увеличением количества ресурсов при достаточно низком качестве институтов и не зависит от объема ресурсов, если качество институтов превышает определенный порог. Однако уровень этого порога увеличивается с ростом ресурсного богатства. При очень низком качестве институтов обнаружен парадоксальный эффект: малое улучшение институциональной среды может вести к уменьшению вероятности сохранения демократии.

Показано также, что при демократии Олигарх всегда присваивает большую часть ренты, чем при авторитаризме. Это согласуется с результатами наших эконометрических расчетов, демонстрирующих, что при низком качестве институтов демократизация ведет к усилению неравенства, а неравенство снижает популярность демократии.

Ключевые слова: ресурсное изобилие, ресурсное проклятие, демократия, автократия, выборы, политическая стабильность.

ISBN

1 Introduction

Despite the widely held believes that the world is becoming freer and more democratic, there are in fact not so many countries that became democratic in the last three decades and managed to stay democratic thereafter. Carothers (2002) points out that of nearly 100 countries that are considered as newcomers to the democratic world from authoritarianism, only 18 (10 countries of Eastern Europe; Brazil, Chile, Mexico, Uruguay in Latin America; Taiwan, the Philippines and South Korea in East Asia; Ghana in Africa) "are clearly en route to becoming successful well-functioning democracies or at least have made some democratic progress and still enjoy a positive dynamics of democratization".

Consider the dynamics of the political rights index — measure of democracy compiled by Freedom House — in 1972–2002. It ranges from 7 (complete authoritarianism) to 1 (complete democracy) and measures the freedom of elections, manifestations, mass media, political parties, etc. During the third and forth wave of democratization, i. e. during the three decades, from 1972 to 2002, about 40 countries managed to move from authoritarianism to democracy and to stay that way (political right index decreased to 1–2 by 2002): 4 countries in Western Europe (Cyprus, Greece, Portugal, Spain), 12 countries in Eastern Europe (new entrants to the EU in 2004 and in 2007), 10 countries in Latin America, 7 in Africa and 6 in Asia and Oceania.

Over three dozen of new democracies in three decades may sound like a lot, but in fact there were more countries — full 100 — that moved to democracy during these three decades, but experienced at least some return to authoritarianism by the end of the period.

Virtually all fuel exporting countries are not democratic. In fact, there were only three democracies in the club in 2002 (Bolivia, Mexico, Norway) and Bolivia left the club in 2003–06. Even accepting the loose criterion for new democracies index of political rights of 3 and less), we find only 4 more fuel exporters in this group — Ecuador, Indonesia, Seychelles Venezuela — out of 25 (besides, Venezuela left the democratic club in 2006). And the stability of the democratic regime in these new democracies leaves a lot to be desired. Normally fuel exporting countries have very unstable "demo-autocracies". Nigeria and Venezuela are typical examples of such countries with unstable democracy — both of them experienced several years of democracy during last 4 decades, but ended up being not completely democratic in 2000–06.

A number of papers deal with the relationship between resource abundance and instability of democracy (Barro (1996, 1999), Ross (1999, 2001), Wantchekon (1999), Polterovich and Popov (2006)). These and some other papers try to explain the connection between resource abundance and authoritarianism. They point out three channels that decrease chances of opposition rise in resource rich countries, and therefore lead to higher stability of autocracy:

1). Autocrat's ability of financing enforcement structures (police, public prosecutor's office, army, secret service, etc.) to suppress protest movements and to protect her country from aggressors;

2). Autocrat's ability of setting low taxes and conducting social policies to reach people tolerance and prevent formation of opposition;

3). Underdeveloped social capital.

Robert Barro includes a dummy for OPEC countries (Barro, 1996) and a dummy for oil-exporting countries in accordance to the IMF definition (Barro,1999) and find their significantly negative influence on democracy indicators. He concludes "that the income generated from natural resources such as oil may create less pressure for democratization than income associated with the accumulation of human and physical capital." (Barro, 1999, p. 164). Wantchekon (1999) argues that when the state institutions are weak, resource abundance tends to create incumbency advantage since an incumbent party may have private information about level of rents available for distribution or even discretionary power over distributive policies. In a model suggested by Wantchekon the opposition creates political unrest if it fails in the elections. The incumbent wins the elections only if she may use the rent to compensate possible voter's losses arising due to unrest. Thus incumbency advantage prevents any change of power, and this, by definition, leads to authoritarianism whereas the unrests result in political instability. The author presents an empirical analysis of incumbency advantage. By definition, the incumbency advantage took place if a democratic regime prevailed in a country, and during her current tenure in office, an "incumbent unconstitutionally closed the lower house of the national legislature and rewrote the rules in their favor". Regressions show that the incumbency advantage depends positively on ratios of primary export to GDP, and negatively on the values of Gini coefficients.

A comprehensive study of the oil-impedes-democracy hypothesis was done by Michael Ross (Ross, 2001). He used data from 113 states between 1991–1997, and found that resource wealth makes democratization harder. He also has found "at least tentative support for three causal mechanisms that link oil and authoritarianism: a rentier effect, through which governments use low tax rates and high spending to dampen pressures for democracy; a repression effect, by which governments build up their internal security forces to ward off democratic pressures; and a modernization effect, in which the failure of the population to move into industrial and service sector jobs renders them less likely to push for democracy." (Ross, 2001, pp.356–357). In fact, this study corroborates that all three channels mentioned above, really work against democratization.

Polterovich and Popov (2006) demonstrate that average share of net fuel import for 1960–1975 effects positively both democratization and government effectiveness indicators. Egorov, Guriev and Sonin (2006) assumes that resource abundance increases incentives of a dictator to stay in power so that the success of economic policies turns out to be comparatively less important. Therefore, as their model shows, the dictator is less interested to control efforts of her subordinates, and consequently less interested in free mass media. The absence of free media hampers civil society development, which is the main prerequisite for democratization.

The fourth channel may exist due to mutual influence of resource abundance, institution quality and democratization. Lobbying, dishonest competition, corruption flourish in many resource abundant developing countries hampering economic growth (Auty (2001), Sachs and Warner (1999, 2001), Leite and Weidmann (1999), Bulte at al (2003), Lane and Tornell (1999), Torvik (2002), Wantchekon, and Yehoue (2002)). This is not the case, however, for advanced economies such as Norway or Canada. Moreover, recent researches, using more correct measures of resource abundance, longer time periods, and more sophisticated econometrics techniques, have challenged the resource curse hypothesis and have found that, on average, a resource rich country has not lower GDP per capita than resource poor one with similar other characteristics (Rodriguez, Sachs (1999), Alexeev, Conrad (2005), Stijns (2005), Acemoglu et al (2005), Brunnschweiler, C. N. (2006)). To explain these facts, a threshold hypothesis was suggested and studied in a number of papers both theoretical and empirical ones. The hypothesis claims that the resource curse takes place if and only if institutional quality does not exceed a threshold level that depends on the resource quantity (Mehlum, Moene and Torvik (2005), Robinson, Torvik and Verdier (2006), Zhukova (2006), Kartashev (2006)). On the other hand, our recent paper (Polterovich, Popov, 2006) implies that, under weak institutions, democratization results in their further deterioration and therefore decreases the rate of growth. Thus resource abundance raises chances for a country to have weak institutions, therefore democratization may worsen them further giving support or even rise to resource curse. If people expect these high democratization costs they may be more tolerant to autocratic regime.

The fifth channel — via inequalities — is examined in this paper: instability of democracy in resource-rich weak-institution countries results in people disillusionment in democracy and therefore radically weakens any democratic opposition to autocratic regime.

In Polterovich, Popov, Tonis (2007) we analyzed data on sustainability of democratic regimes in resource rich countries and suggested a model to explain why resource abundance may lead to instability of democracy. Our central idea was that the abundance of point resources allows resource owners ("oligarchs") to acquire dominant economic power. If institutions are weak under democracy, the economic power may be converted into political one. Oligarchs can thrust their preferred decisions on a government and parliament, bribing politicians. This creates a base for a potential Autocrat's strategy to get power.

In the model, the rate of resource rent tax was the only policy instrument. The tax affected the income of a representative voter. Choosing a tax rate, Autocrat competed with conventional Politician (a representative political party) for the office. It was demonstrated that democratic regime becomes instable assuming, however, that strategies announced by Autocrat are credible.

In this paper we suggest a dynamic model to weaken this unrealistic assumption and to take into account that the actual Autocrat's policy may be different from the announced one. If the difference between the two policies is large, then the public may revolt or the Oligarch may organize a coup to throw the Autocrat down.

Stationary Markov perfect equilibria of this game with four players — Politician, Oligarch, Autocrat and Public (voters) - are analyzed. It is shown that the probability of democracy preservation is decreasing in the amount of resources, if the institutional quality is low enough. It does not depend on the amount of resources and is determined only by cultural characteristics of the society, if the institutional quality is higher than a threshold. The level of the threshold, however, depends positively on the resource wealth. These effects are consequences of the optimal Autocrat's policy: the larger the amount of resources, the stronger Oligarch's incentives to bribe politicians.

We argue that instability of democracy is a typical feature of countries with weak institutions and high differentiation of wealth no matter what are its sources — resource abundance or other causes. This statement is supported by the data analysis.

This paper adds a new dimension to the argument — it demonstrates the functioning of the mechanism that leads to the instability of democracy: democratization under poor institutions results in growing income and wealth inequalities that undermine the credibility of the democratic rulers and raises the attractiveness of the autocrat. When an autocrat comes to power she may (or may not) reduce inequalities: if she does, authoritarian regime becomes stable, if she does not, there is a growing possibility of the revolution. However, the degree of equality is restricted: an attempt to extract too much rent from Oligarch and distribute it to public may result in a coup d'etat organized by Oligarch.

We also have found that under very low institutional quality, a paradoxical effect takes place: the probability of democracy preservation may decrease with an improvement of institutional quality, so an institutional improvement large enough is needed to get out of the corrupt democracy trap.

The paper is organized as follows. In section 2, a model of the election system in a resource-abundant country with imperfect institutions is set up. In section 3, analysis of the model is presented and properties of its equilibrium are discussed. In section 4, data analysis supporting some results of the model is presented. Section 5, concludes.

2 A Model

The model describes the election system in a resource-abundant country with imperfect institutions. There are four actors in the model: Oligarch, Public, Politician Autocrat. Oligarch is the owner of the rent produced by the natural resource sector. Public consists of people who are not involved in resource extraction. Public is modelled as a continuum of citizens forming interval $[0, L]$. It is assumed that these people form a handsome majority in the society, so L may be treated also as the number of all people in the country. Politician is a head of a political party representing the interests of Public.

There is no production in the model. It is assumed that the disposable income per capita in the non-resource sector is equal to a fixed amount $W > 0$ per period. The income of the resource sector is the resource rent which consists of revenues net of production costs including minimum profit rate at which firms are willing to work. The resource rent is $R > 0$ per capita per period, i. e. the total amount of the resource rent is LR.

The rent is taxed at rate $t \in [0, 1]$, so that only $(1-t)LR$ is earned by Oligarch. The tax revenues tLR are equally distributed among the Public. The income of a representative non-resource worker after tax redistribution is thus $W + tR$. We assume here that the tax does not cause any distortion in the economic activity and the resource sector will work as far as $t \leq 1$.

Tax rate t is considered as the only policy instrument in this simple model. Politician who has the office competes with Autocrat. Each of them chooses her own tax rate: $t = \tau$ for Politician and $t = \tau^0$ for Autocrat.

The central feature of the model by which we are trying to explain the instability of democracy in resource abundant countries is political corruption. We assume that Oligarch tries to use her economic power to collude with Politician (by means of bribery) and set low resource tax rate τ (which would be equal to 1 otherwise). However the collusion may reduce the attractiveness of democratic regime and lead to autocracy, so there is a tradeoff in choosing τ for the coalition of Politician and Oligarch.

The time structure of the model is as follows. There is an infinite sequence of discrete time periods. The country is ruled either by democratic Politician or by Autocrat. In the beginning of the game, Politician has the office. In the beginning of each period, there is either democratic or autocratic political regime. Transition from democracy to autocracy can be performed through elections. If Autocrat wins, she abandons the elections. Transition from autocracy to democracy may happen, if Autocrat is deposed either through an uprising initiated by Public, or through a coup financed by Oligarch.

All players live forever and plan their actions over the infinite time horizon. They maximize the present discounted value (average over time) of their one-period objective functions with discounting factor $\rho \in (0,1)$. For example, if F_k is Politician's payoff in period k, then the intertemporal Politician's utility F is given by

$$F = (1-\rho)\sum_{k=0}^{\infty} \rho^k F_k. \tag{1}$$

From now on, the term "intertemporal payoff" will refer to expressions like (1).

In the beginning of the game, elections are coming on and a potential oncoming Autocrat competes with the incumbent democratic Politician for the power. Autocrat chooses tax rates $\tau^0, \tau^1 \in [0,1]$ and declares tax rate τ^0 which she promises to set upon winning the elections. However, if she wins the elections, she will actually set tax rate τ^1. Then Politician colludes with Oligarch and they set tax rate $\tau \in [0,1]$ through bargaining. Tax rate τ is intended to be in force during the period, if Politician is reelected.

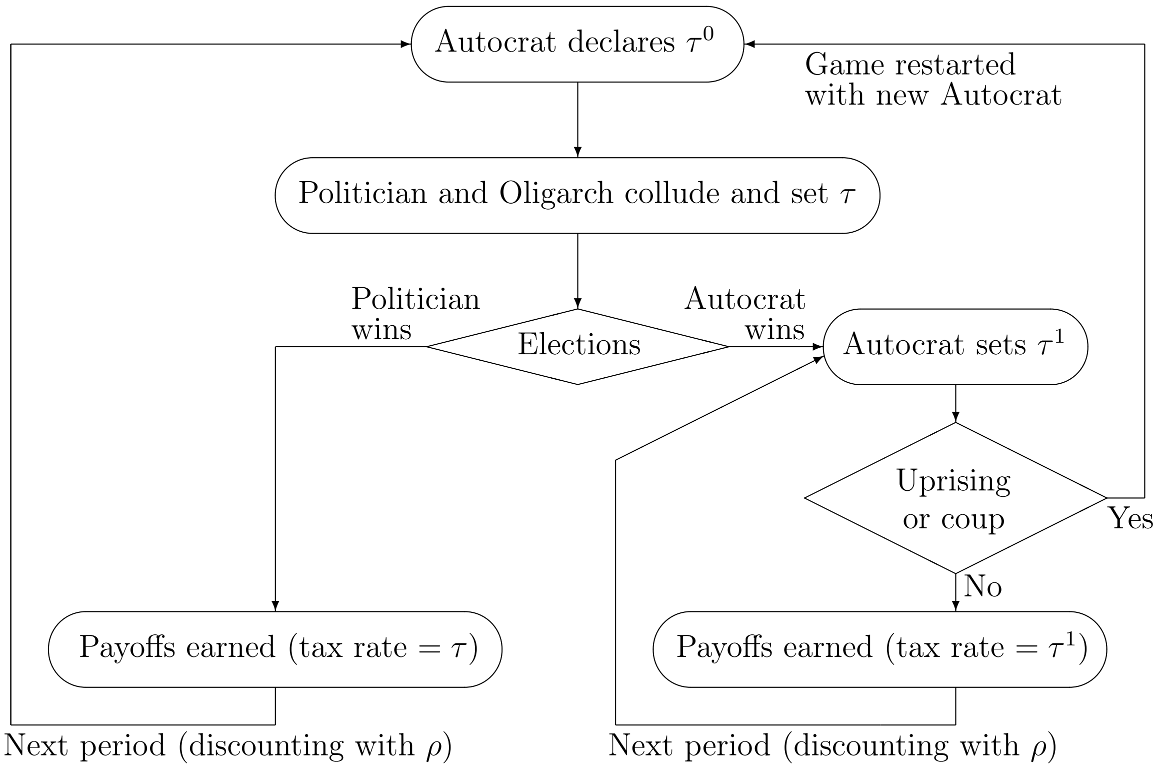


Рис. 1: Block scheme of of the game.

Then elections take place. The elections are described by the following probabilistic voting model[1]. Let is assume that the utility of voter $i \in [0, L]$ under democracy is

$$U_{Di} = (W + \tau R)\varepsilon_i \tag{2}$$

[1]This is a modification of the probabilistic voting model considered in Persson and Tabellini (2000).

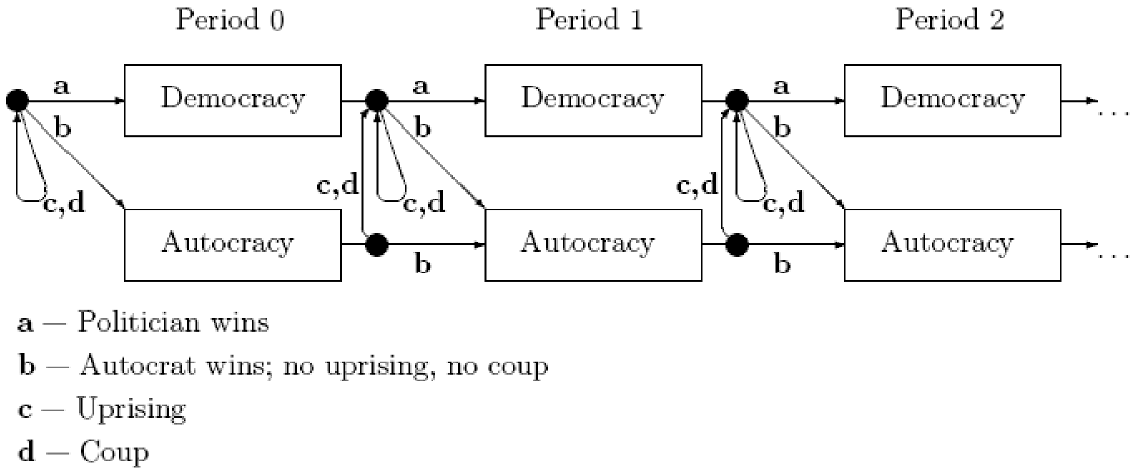


Рис. 2: Timing of the game and transition between states.

and she believes that her utility under autocracy will be

$$U_{Ai} = (W + \tau^0 R)\delta. \tag{3}$$

In the right-hand side of (2) and (3), there are the expected disposable incomes under the corresponding regime (recall that according to our assumptions, citizens are not fully rational and trust Autocrat's promise τ^0) multiplied by coefficients ε_i and δ, respectively. Here ε_i and δ are characteristics of political preferences: $\varepsilon_i \geq 0$ is an "ideological bias" specific for each voter (measuring the extent to which she prefers democracy) and $\delta \geq 0$ is a "popularity shock" specific for Autocrat in the current period and characterizing the relative attractiveness of the Autocrat for the population as a whole (apart from benefits from her expected policy).

Political characteristics ε_i and δ are subject to the following assumptions. Ideological bias ε_i for each voter $i \in [0, L]$ is deterministic and constant over time but varies with i. The distribution of ε_i over Public is determined by cumulative distribution function[2] $\Psi(\varepsilon)$. Popularity shock δ is stochastic, uniformly distributed within $[0, 1]$. We assume that under democracy, popularity shocks δ in different periods of time are statistically independent. We assume also that Autocrat having the power is able to control public opinion so that δ dose not decrease during her term of power.

Voter i prefers democracy, if $U_{Di} \geq U_{Ai}$ and prefers autocracy otherwise. Autocrat wins the elections, if she is supported by majority of Public. Thus, Autocrat wins, if $\delta > \underline{\delta}(\tau, \tau^0)$, where $\underline{\delta}(\tau, \tau^0)$ is determined from equating U_{Di} and U_{Ai} for the median

[2]If citizens are put in increasing order, so that ε_i is non-decreasing in i, then $\varepsilon_i = \Psi^{-1}(i)$.

voter.

Based on the election model, one can derive the probability of winning the elections by Politician (this will be done later on). Let us denote this probability as $p(\tau, \tau^0)$. Autocrat wins the elections with probability $1 - p(\tau, \tau^0)$. Probability function $p(\tau, \tau^0)$ is used by both Politician and Oligarch to calculate their expected incomes in the pre-election tax bargaining. If Politician wins the elections, then the democratic regime will continue and the resource rent is taxed at previously set tax rate τ (we assume that there is no possibility for Politician to set other tax rate because this will require very costly procedure of parliamentary approval). In this case, the game is restarted in the next period: in the beginning of the next period, new elections are coming on, Autocrat and Politician (in collusion with Oligarch) declare their intended tax rates and so on.

If Autocrat wins the elections, then she can revise her policy declared before the elections and set other tax rate τ^1 (now there is no legal system to prevent this deviation). The new tax rate may cause public dissatisfaction and an uprising may be initiated. On the other hand, Oligarch may financially support the opposition and organize a coup, if she would incur substantial losses from the autocratic regime. As a result of an uprising or a coup, Autocrat is deposed just after being elected. If so, then the democratic regime is restored and the game is restarted. We assume that this period of political instability takes much less time than a standard electoral term. We also assume for simplicity that in the subsequent subgame, the same Politician and a new potential Autocrat run for the office and suggest their tax rates.

If neither uprising nor coup happens, then Autocrat rules all the period, with tax rate τ^1. After that, in each subsequent period, Autocrat can revise τ^1; Public or Oligarch can react on this by initiation of an uprising or a coup or being inactive. The rule of Autocrat prolongs until she is deposed through an opposition action.

The structure of the game is presented by the block scheme depicted in Figure 1. This is a Markov game, i. e., a discrete-time Markov process with two types of states (democracy and autocracy under various τ, τ^0 and the information about δ) and with transition probabilities depending on players' strategies. Timing and transition between states are depicted in Figure 2. We shall look for a stationary Markov perfect equilibrium of this game (stationary over time), with players' moves depending on the state only, not on the history of previous moves.

As follows from Figure 2, the political activities in the beginning of each period lead to one of four possible outcomes: Politician wins (**a**), Autocrat wins with no reversion (**b**), an uprising happens initiated by Public (**c**) or a coup happens initiated by Oligarch (**d**). Let us denote the ex-ante (pre-election) probabilities of events **a, c** and **d** as p, q and r, respectively. Of course, the probability of event **b** is $1 - p - q - r$.

The informational structure of the model is as follows. The model has the structure of the principal-agent game. Autocrat is assumed to behave like a principal: when choosing her actions, she takes into account reaction functions of Politician, Oligarch and Public. When Politician and Oligarch bargain on τ, they know the declared autocratic tax rate τ^0 and rationally predict the actual tax rate τ^1 and the reaction of Public. Voters are assumed to behave myopically: when voting, they do not take into account the possibility of breaking promises by Autocrat. Only after the act of cheating they may react on it. In each period after Autocrat's win, citizens compare the actual tax rate τ^1 with the declared tax rate τ^0 and with the former democratic tax rate τ (they remember τ^0 and τ). If the difference in the tax rates is high, so that the number of dissatisfied people exceeds some critical mass, then an uprising happens.

As it has been said, we assume that Autocrat determines her actual tax rate τ^1 before the elections. Another possibility would be to define her decision τ^1 as a function of δ. It will be shown later on that the strategies found here form one of the equilibria in the modified game.

Thus, the parties play the following strategies. Autocrat's strategy is pair $(\tau^0, \tau^1(\tau))$. Politician and Oligarch collude and act as one person in the game; their strategy is their reaction function $\tau(\tau^0)$. Citizen i's strategy is her vote at the elections depending on τ and τ^0 and her decision to participate or not to participate in an uprising, depending on τ, τ^0 and τ^1.

Now let us derive the probability of winning the elections by Politician $p = p(\tau, \tau^0)$. With the uniform distribution of δ, it is given by

$$p = p(\tau, \tau^0) = \min\left(\frac{W + \tau R}{W + \tau^0 R} m, 1\right), \tag{4}$$

where

$$m = \Psi^{-1}(1/2) \tag{5}$$

is the ideological bias of the median voter. Politician wins, if $\delta \leq p$. We assume for simplicity that $m \geq 1$, i. e. democracy is preferable for the median voter, if $\tau \geq \tau^0$. In particular, $p(1, \tau_0) = 1$ for any $\tau^0 \in [0, 1]$. Note also that $p(\tau, \tau_0) = 1$, if $\tau = \tau^0$.

Let us consider now the time after electing Autocrat and determine the probability of an uprising (q) and that of a coup (r). An uprising may be initiated by Public, if the actual autocratic tax rate τ^1 is too low; a coup may be initiated by Oligarch, if τ^1 is too high.

Consider firstly that Public initiates an uprising (Oligarch will not finance a coup in this case, because the same result is obtained at no cost). Public may have two reasons to initiate an uprising: substantial advantage of democracy over autocracy in tax rates (τ is much higher than τ^1) and/or disappointment with the actual tax rate comparing to the declared one (τ^0 is much higher than τ^1, so Autocrat is viewed as a cheater by Public). Based on these considerations, let us assume that citizen i's utility under autocracy is

$$\tilde{U}_{Ai} = (W + \tau^1 R - \nu(\tau^0 - \tau^1)R)\delta, \tag{6}$$

where $\nu > 0$ is a parameter characterizing public disappointment with Autocrat's cheating.

It is harder for the opposition to depose Autocrat than to depose a democratic leader; more than just a simple majority is needed for that. Suppose that a share κ of people supporting the opposition is needed to depose Autocrat ($\kappa > 1/2$). Then an uprising happens, if $p < \delta < P$, where

$$P = P(\tau, \tau^0, \tau^1) = \min\left(\frac{W + \tau R}{W + \tau^1 R - \nu(\tau^0 - \tau^1)R} n, 1\right), \tag{7}$$

where

$$n = \Psi^{-1}(1 - \kappa). \tag{8}$$

Here difference $m - n$ is positive and measures the sustainability of autocracy.

Thus, the probability of an uprising initiated by Public is given by

$$q = q(\tau, \tau^0, \tau^1) = \max(P - p, 0). \tag{9}$$

Now suppose that $\delta > P$ (Autocrat won the elections and Public did not initiate an uprising) and let us introduce the possibility of a coup funded by Oligarch. Suppose for simplicity that the monetary expenditures needed for this compensation are negligible. Then

- Oligarch will organize a coup, if $G_A < G_D$;
- Oligarch will not organize a coup, if $G_A \geq G_D$,

where G_D and G_A are Oligarch's expected intertemporal incomes under democracy and autocracy, respectively (they will be determined later). Here we assume that if $G_A = G_D$, then Oligarch still does not organize a coup. The probability of a coup r is determined by

$$r = \begin{cases} 1 - p - q, & \text{if } G_A < G_D; \\ 0, & \text{otherwise.} \end{cases} \tag{10}$$

Let us describe now the objectives and payoffs of Politician and Oligarch. We assume that Politician and Oligarch want to maximize the intertemporal expected incomes of their reference groups, with one amendment: Politician who has the office earns extra wage λW in addition to the standard non-resource income W. Here parameter $\lambda > 0$ measures the benefits of political power for Politician. So, one-period utilities of Politician and Oligarch under democracy are defined, respectively, as $(1+\lambda)W + \tau R$ and $(1-\tau)R$. Under autocracy, they are, respectively, $W + \tau^1 R$ and $(1-\tau^1)R$ (we assume that Politician and Oligarch form rational expectations about the autocratic tax rate τ^1, as opposed to Public who initially trusts to the Autocrat's promise).

Let $f(\tau, \tau^0, \tau^1)$ be Politician's expected intertemporal income and $Lg(\tau, \tau^0, \tau^1)$ be Oligarch's expected intertemporal income (so $g(\tau, \tau^0, \tau^1)$ is its per-capita value). Then

$$f(\tau, \tau^0, \tau^1) = p\left((1-\rho)((1+\lambda)W + \tau R) + \rho F_D\right) + (q+r)F_D + (1-p-q-r)F_A; \tag{11}$$

$$g(\tau, \tau^0, \tau^1) = p\left((1-\rho)(1-\tau)R + \rho G_D\right) + (q+r)G_D + (1-p-q-r)G_A, \tag{12}$$

where probabilities p, q, r depend on τ, τ^0, τ^1 according to (4)–(10). Here F_D and G_D are intertemporal equilibrium payoffs of Politician and Oligarch in the game (which is equivalent to the subsequent subgame) under democracy; F_A and G_A are those under autocracy. Neither of F_D, G_D, F_A or G_A depend on τ, τ^0 or τ^1. These variables are characteristics of the whole game and depend only on the exogenous parameters of the game. They will be determined later on from Bellman-type equations which must hold in a stationary Markov perfect equilibrium of the game. The first term in each expression is a sum of current and future payoffs weighted with coefficients $1-\rho$ and ρ (recall that intertemporal payoffs are averaged over time (see (1)), so the sum of discounted values should be multiplied by $1-\rho$).

It follows from (11) that Politician would like to make τ as large as possible (if τ increases, then the "democratic" term in (11) increases and its weight p increases too). If Oligarch does not influence this decision making, then the tax rate will be maximal: $\tau = 1$. This is the regime of no corruption.

Now let us introduce political corruption. Suppose that Oligarch suggests Politician bribe LB, where B is the value of bribe per worker. Doing this, Oligarch wants to lower the tax rate from 1 to τ. Political corruption brings about transaction costs emerging from the illegal nature of bribing, the risk of punishment and moral disutility of corruption. On the other hand, LB is an inofficial income and is out of the income tax base. Therefore, it is reasonable to assume that the utility of the bribe for Politician is $\frac{LB}{\beta}$, where $\beta > 0$.

Thus, the intertemporal expected incomes of Politician and Oligarch after the bribery, $F(\tau, \tau^0, \tau^1, B)$ and $G(\tau, \tau^0, \tau^1, B)$, are given by

$$\begin{aligned} F(\tau, \tau^0, \tau^1, B) &= f(\tau, \tau^0, \tau^1) + \frac{(1-\rho)B}{\gamma}; \\ G(\tau, \tau^0, \tau^1, B) &= g(\tau, \tau^0, \tau^1) - (1-\rho)B, \end{aligned} \tag{13}$$

where $\gamma = \frac{\beta}{L}$ may be considered as a parameter of institutional development of the democratic system which includes measures against corruption and the degree of benevolence of the politicians. The case $\gamma < 1$ is most interesting for us, because otherwise, as we shall see, there will be no political corruption and effects that we discuss here do not occur. Bribe B is multiplied by $(1-\rho)$ in (13), because it is paid only in the current period (recall formula (1)).

Under this setting, in any bargaining solution (τ, B) tax rate τ maximizes the common objective function of Politician and Oligarch, namely, a weighted sum of their utilities:

$$V(\tau, \tau^0, \tau^1) = \gamma f(\tau, \tau^0, \tau^1) + g(\tau, \tau^0, \tau^1) \to \max_{\tau \in [0,1]} . \tag{14}$$

The bribe spendings B born by Politician should be such that the collusion outcome Pareto-dominates the non-collusion one (with no corruption and $\tau = 1$), i. e. B should be between $\underline{B}$ and $\overline{B}$, where

$$\begin{aligned} \underline{B} &= \frac{\gamma(f(1, \tau^0, \tau^1) - f(\tau, \tau^0, \tau^1))}{1-\rho}; \\ \overline{B} &= \frac{g(\tau, \tau^0, \tau^1) - g(1, \tau^0, \tau^1)}{1-\rho}. \end{aligned} \tag{15}$$

Which $B \in [\underline{B}, \overline{B}]$ will be chosen, depends on the relative bargaining powers of the parties. Let us assume for definiteness that Oligarch has the full bargaining power, so the bribe is minimal[3]: $B = \underline{B}$.

In a stationary Markov perfect equilibrium, the values of F_D, F_A, G_D, G_A are determined from the following Bellman equation system:

$$F_D = F(\tau, \tau^0, \tau^1, \underline{B}); \tag{16}$$

$$G_D = G(\tau, \tau^0, \tau^1, \underline{B}); \tag{17}$$

$$F_A = (1-\rho)(W + \tau^1 R) + \rho \left(\frac{q+r}{1-p} F_D + \frac{1-p-q-r}{1-p} F_A \right); \tag{18}$$

$$G_A = (1-\rho)(1-\tau^1)R + \rho \left(\frac{q+r}{1-p} G_D + \frac{1-p-q-r}{1-p} G_A \right). \tag{19}$$

These equations just bind F_D, F_A, G_D, G_A with the intertemporal payoffs of Politician and Oligarch under democracy ((16)–(17)) and under autocracy ((18)–(19)).

Now let us describe Autocrat's objectives. We assume that Autocrat is not interested in incomes at all. Thus, according to the classification suggested by Wintrobe (2007), we consider the case of pure totalitarian Autocrat whose ultimate goal is power. She chooses tax rates τ^0 and τ^1 to maximize the expected number of periods in office. As distinct from Politician, neither does Autocrat care about her personal gain, nor about social welfare (unless these objectives increase her power). This difference in goals is a very stylized attempt to distinguish between two types of political actors. We believe that this difference catches a characteristic feature of reality in the case of totalitarian rather than tinpot Autocrat.

This completes the description of the model. One need to find stationary Markov perfect equilibria of this game.

3 Tax Policy and Instability of Democracy

The analysis of the model begins with the following observation. Note that neither $p(\tau, \tau^0)$, nor $P(\tau, \tau^0, \tau^1)$ depend on R or W separately but only on their ratio, R/W. Hence, the

[3]This case corresponds to the maximal effect of political corruption. The less Oligarch's bargaining power, the less political corruption.

objective functions of Politician and Oligarch defined in (11) and (12) are homogeneous of degree one in (W, R) (a more detailed proof of this statement would include consideration of Bellman values F_D, F_A, G_D, G_A and the corresponding Bellman equations). Thus, without loss of generality, we can set $W = 1$ and consider R as the relative rather than absolute value of the resource rent.

Firstly, let us determine Autocrat's optimal choice of τ^1 (the tax actually set after being elected).

Proposition 1 *Tax rate τ^1 is set by Autocrat in equilibrium so as to make $G_A = G_D$.*

Proof. Let us consider the choice of τ^1 by Autocrat after the election that she has win. Note that due to (4), τ should be lower than 1 in this case. To avoid a coup from Oligarch's side, Autocrat should choose τ^1 so that $G_A \leq G_D$. On the other hand, Autocrat is better off to choose maximal τ^1 among those for which $G_A \leq G_D$. Indeed, if Autocrat can increase τ^1 with no risk of a coup, then she can decrease the probability of uprising initiated by Public, if there is some uncertainty about δ, or at least will not increase the probability, if there is full certainty. Hence, it is worthwhile for Autocrat to increase τ^1 as far as $G_A \leq G_D$.

Note that in a stationary Markov perfect equilibrium, $0 < \tau^1 < 1$. Indeed, if $\tau^1 = 1$, then Oligarch earns zero under autocracy and earns some positive amount under democracy, because $\tau < 1$, so it is worthwhile for Oligarch to initiate a coup. On the other hand, if $\tau^1 = 0$, then autocracy is undoubtedly not less profitable for Oligarch than democracy. By continuity, there must exist $\tau^1 \in [0, 1]$ such that $G_A = G_D$. Autocrat will choose the maximal of such τ^1. ∎

Now let us consider bargaining between Politician and Oligarch when they determine tax rate τ as the solution to optimization problem (14), provided that τ^0 is known for them. One can rewrite $V(\tau, \tau^0, \tau^1)$ from (14) as follows:

$$V(\tau, \tau^0, \tau^1) = p(1-\rho)\big(\gamma(1 + \lambda + \tau R) + (1-\tau)R\big) + (\rho p + q)V_D + (1-p-q)V_A, \quad (20)$$

where

$$V_D = \gamma F_D + G_D; \quad V_A = \gamma F_A + G_A. \quad (21)$$

The right-hand side of (20) is to be maximized with respect to $\tau \in [0,1]$. Let us denote the solution to this maximization problem as $\hat{\tau}(\tau^0, \tau^1)$. Suppose that the solution is interior, i. e. constraint $\tau \in [0,1]$ is not binding and $0 < p < 1$. Suppose also that $p(\tau, \tau^0) \geq P(\tau, \tau^0, \tau^1)$ at the solution. Then $\hat{\tau}(\tau^0, \tau^1) = \tau^*$, where

$$\tau^* = \frac{V_D - V_A}{2(1-\gamma)(1-\rho)R} + \frac{1 + R + \gamma\lambda - V_D}{2(1-\gamma)R} - \frac{1}{R}. \tag{22}$$

Alternatively, if $P(\tau, \tau^0, \tau^1) > p(\tau, \tau^0)$ at the interior solution, then

$$\hat{\tau}(\tau^0, \tau^1) = \tau^* + \frac{q}{2p} \frac{(V_D - V_A)}{(1-\gamma)(1-\rho)R}. \tag{23}$$

Note that $\dfrac{q}{p}$ in (23) does not depend on τ:

$$\frac{q}{p} = \frac{(1 + \tau^0 R)n}{(1 + \tau^1 R - \nu(\tau^0 - \tau^1)R)m} - 1. \tag{24}$$

Substituting (22) and (23) into (24), we obtain that $\hat{\tau}(\tau^0, \tau^1) = \tau^*$, if $\tau^0 \leq \hat{\tau}^0(\tau^1)$ and $\hat{\tau}(\tau^0, \tau^1)$ is determined by (23), if $\tau^0 > \hat{\tau}^0(\tau^1)$, where $\hat{\tau}^0(\tau^1)$ is the solution to

$$p(\tau, \tau^0) = P(\tau, \tau^0, \tau^1). \tag{25}$$

It is easy to see that

$$\hat{\tau}^0(\tau^1) = \left(\frac{1}{R} + \tau^1\right)\frac{m}{\tilde{n}} - \frac{1}{R}, \tag{26}$$

where

$$\tilde{n} = m - \frac{m-n}{1+\nu}; \quad 0 < \tilde{n} < m. \tag{27}$$

Thus, for an interior solution,

$$\hat{\tau}(\tau^0, \tau^1) = \begin{cases} \tau^*, & \text{if } \tau^0 \leq \hat{\tau}^0(\tau^1); \\ \tau^* + \dfrac{q}{2p}\dfrac{(V_D - V_A)}{(1-\gamma)(1-\rho)R}, & \text{otherwise.} \end{cases} \tag{28}$$

Formula (28) ignores constraint $\tau \in [0,1]$ and the possibility that $p(\tau, \tau^0) = 1$. The latter is true, if $\tau \geq \bar{\tau}(\tau^0)$, where

$$\bar{\tau}(\tau^0) = \frac{\tau^0}{m} - \frac{1}{R}\left(1 - \frac{1}{m}\right). \tag{29}$$

If $\gamma < 1$ then V is decreasing in τ for $\tau \in [\bar{\tau}(\tau^0), 1]$. Thus, (28) is relevant, if its right-hand side is within $[0, \bar{\tau}(\tau^0)]$. Otherwise, for $\gamma < 1$, $\hat{\tau}(\tau^0, \tau^1)$ is equal to the nearest end of this interval. In particular, this means that $\tau < 1$ in equilibrium.

If $\gamma > 1$, then V is increasing in τ for $\tau \in [\bar{\tau}(\tau^0), 1]$, so $\hat{\tau}(\tau^0, \tau^1) = 1$.

Now let us consider the first stage of the period, declaring tax rate τ^0 by Autocrat at the electoral campaign.

Proposition 2 *In equilibrium, tax rate τ^0 declared by Autocrat is the highest one for which there is no threat of uprising. In particular, if $0 < \tau^0 < 1$, then $\tau^0 = \hat{\tau}^0(\tau^1)$.*

Proof. Firstly, let us note that it is optimal for Autocrat to maximize the probability of entering upon the office and retain power in the current period (let us denote this probability as Π). Indeed, once having chosen τ^0, Autocrat will find it optimal to choose the same τ^1 in all future periods (namely, τ^1 determined by Proposition 1), and the probability to "survive" will be the same. Note that Π is given by

$$\Pi = 1 - \max(p(\tau, \tau^0), P(\tau, \tau^0, \tau^1)). \tag{30}$$

If $\tau^0 < \hat{\tau}^0(\tau^1)$, then $p(\tau, \tau^0) > P(\tau, \tau^0, \tau^1)$, so $\Pi = 1 - p(\tau, \tau^0)$. Since $\hat{\tau}(\tau^0)$ actually does not depend on τ^0 in this case, then Π is increasing in τ^0 for $\tau^0 < \hat{\tau}^0(\tau^1)$.

If $\tau^0 > \hat{\tau}^0(\tau^1)$, then $p(\tau, \tau^0) < P(\tau, \tau^0, \tau^1)$, so $\Pi = 1 - P(\tau, \tau^0, \tau^1)$. Let us show that Π is decreasing in τ^0 in this case. Differentiating $P(\hat{\tau}(\tau^0), \tau^0, \tau^1)$ with respect to τ^0 (provided that $0 < \hat{\tau}(\tau^0) < 1$) yields

$$\frac{\partial P(\hat{\tau}(\tau^0), \tau^0, \tau^1)}{\partial \tau^0} = \left(\frac{\left(\frac{1}{m} + \frac{\nu(1 + 2q/p)}{n}\right)(V_D - V_A)}{2(1-\rho)(1-\gamma)(1 + \hat{\tau}(\tau^0)R)} + \frac{\nu}{n} \right) \frac{P(\hat{\tau}(\tau^0), \tau^0, \tau^1)^2}{1 + \hat{\tau}(\tau^0)R} \tag{31}$$

Note that in a stationary Markov perfect equilibrium, V_D must be equal to the maximal value of the joint objective function of Politician and Oligarch solving their tax bargaining problem, whereas V_A is equal to some suboptimal value (optimal τ is replaced with suboptimal τ^1). Hence, $V_D \geq V_A$ in equilibrium, so the right-hand side of (31) is positive, whence $P(\hat{\tau}(\tau^0), \tau^0, \tau^1)$ is strictly increasing in τ^0, if $0 < \hat{\tau}(\tau^0) < 1$. If $\hat{\tau}(\tau^0) = 0$ or $\hat{\tau}(\tau^0) = 1$, then $P(\hat{\tau}(\tau^0), \tau^0, \tau^1)$ is increasing in τ^0 as well.

Thus, Π reaches its maximum at $\tau^0 = e(\hat{\tau}^0(\tau^1))$. Since Autocrat is interested maximizing Π, she will set τ^0 just at this level. ■

Note that according to (26), $\hat{\tau}^0(\tau^1) \geq \tau^1$, so $\hat{\tau}^0(\tau^1)$ is always positive in equilibrium. Hence, the ex-ante probability of eventual defeat of Autocrat P is equal to the probability of winning the elections by the Politician: $P = p$. So, the probability of uprising is zero; it will be also zero in subsequent periods, because nothing will change about choosing τ^1 by Autocrat. As follows from Proposition 1, the probability of a coup is zero too. Thus, the following important corollary from Proposition 2 is obtained:

Proposition 3 *Once having won, Autocrat retains her power forever.*

As follows from Propositions 1 and 3, the threat of a coup from Oligarch's side and the threat of an uprising from the Public side are completely avoided by Autocrat in equilibrium. However, these threats matter, since they determine Autocrat's strategy.

To complete the determination of a stationary Markov perfect equilibrium, one need to find the equilibrium values of F_D, G_D, F_A and G_A.

Due to Proposition 3, F_A and G_A are easily determined by τ^1 as follows:

$$\begin{aligned} &F_A = 1 + \tau^1 R; \\ &G_A = (1 - \tau^1)R. \end{aligned} \tag{32}$$

Due to Proposition 1,

$$G_D = G_A = (1 - \tau^1)R. \tag{33}$$

Recall that $p(1, \tau^0) = 1$. Hence, due to (16)

$$F_D = F(\tau, \tau^0, \tau^1, \underline{B}) = f(1, \tau^0, \tau^1) = (1 - \rho)(1 + R + \lambda) + \rho F_D. \tag{34}$$

Solving (34) for F_D yields

$$F_D = 1 + R + \lambda. \tag{35}$$

Substituting (32)–(35) into (21), we obtain

$$\begin{aligned} &V_D = \gamma(1 + R + \lambda) + (1 - \tau^1)R; \\ &V_A = \gamma(1 + \tau^1 R) + (1 - \tau^1)R. \end{aligned} \tag{36}$$

Note that due to (26), $\tau^0 < \tau^1$. Additionally, since $G_A = G_D < g(\tau, \tau^0, \tau^1)$ for $\gamma < 1$ (because $\tau < 1$ in this case, so the bribe is positive), then, due to (12),

$$(1-\tau^1)R < p(1-\rho)(1-\tau)R + (1-p(1-\rho))(1-\tau^1)R, \tag{37}$$

whence $\tau < \tau^1$. All in all, if $\gamma < 1$, then we have the following chain of inequalities in equilibrium:

$$0 \le \tau < \tau^1 < \tau^0 \le 1. \tag{38}$$

Due to (38), there can be the following types of equilibria:

Type A (interior equilibrium): $0 < \tau < \tau^1 < \tau^0 < 1$;

Type B (populist promise): $0 < \tau < \tau^1 < \tau^0 = 1$;

Type C (pro-Oligarch policy): $0 = \tau < \tau^1 < \tau^0 < 1$;

Type D (pro-Oligarch policy, populist promise): $0 = \tau < \tau^1 < \tau^0 = 1$.

These equilibrium types occur for $p < 1$. Otherwise, another type of equilibrium should be considered:

Type E (stable democracy): $p = 1$.

Let us show how to determine the equilibrium. Suppose firstly that it is interior.

Type A. In this case, τ is determined by (22). Substituting this into (20) yields

$$V = \frac{p}{2}\left((1-\rho)(1+R+\gamma\lambda) + \rho V_D\right) + \left(1-\frac{p}{2}\right)V_A. \tag{39}$$

Note that (39) is a Bellman-type recursive formula for the joint utility of Politician and Oligarch (actually, it is just a weighted sum of (16) and (17)). Solving the Bellman equation $V = V_D$ for V_D, we obtain

$$V_D = \frac{(2-p)V_A + p(1-\rho)(1+R+\gamma\lambda)}{2-\rho p}. \tag{40}$$

Substituting (36) into (40), we obtain

$$1 + \tau^1 R = \frac{\tilde{\gamma}(\lambda(2-p) + (2-\rho p)(1+R))}{\lambda p(1-\rho) + \tilde{\gamma}(2-\rho p)}, \tag{41}$$

where

$$\tilde{\gamma} = \frac{\lambda}{\dfrac{1}{\gamma} - 1}. \tag{42}$$

If $0 < \gamma < 1$, which is the case for type A equilibria, then $\tilde{\gamma}$ is positive, increasing in γ and can be considered as an aggregate parameter of corruption disincentives including measures against corruption and official income of bureaucrats.

Substituting (41) into (22) yields

$$1 + \tau R = \frac{\tilde{\gamma}(\tilde{\gamma} + \lambda + 1 + R)}{\lambda p(1-\rho) + \tilde{\gamma}(2 - \rho p)}. \tag{43}$$

Taking into account the optimal choice of τ^0 (see (26)), we obtain another equation binding τ with p:

$$1 + \tau R = \frac{(1 + \tau^1 R)p}{\tilde{n}}. \tag{44}$$

Combining (41)–(44), we obtain the equation on p:

$$(\lambda(2-p) + (2-\rho p)(1+R))p = \tilde{n}(\tilde{\gamma} + \lambda + 1 + R). \tag{45}$$

The appropriate solution to (45) is

$$p = \frac{1 + R + \lambda - \sqrt{(1+R+\lambda)^2 - \tilde{n}(\tilde{\gamma} + 1 + R + \lambda)(\rho(1+R) + \lambda)}}{\rho(1+R) + \lambda}. \tag{46}$$

One can see from (45) that p is increasing in $\tilde{\gamma}$ and decreasing in R in an interior equilibrium.

Now let us investigate boundary equilibria using the same technique.

Type B. A type B equilibrium in which $\tau^0 = 1$ can be determined from equation system analogous to the case of type A, with the only difference that the optimal choice of τ^0 is now $\tau^0 = 1$ rather than $\tau^0 = \hat{\tau}^0(\tau^1)$, so (44))should be replaced with the following equation:

$$1 + \tau R = \frac{p(1+R)}{m}. \tag{47}$$

Combining (41)–(43) with (47), we obtain the following equation on p:

$$p(\lambda p(1-\rho) + \tilde{\gamma}(2-\rho p))(1+R) = \tilde{\gamma} m(\tilde{\gamma} + \lambda + 1 + R). \tag{48}$$

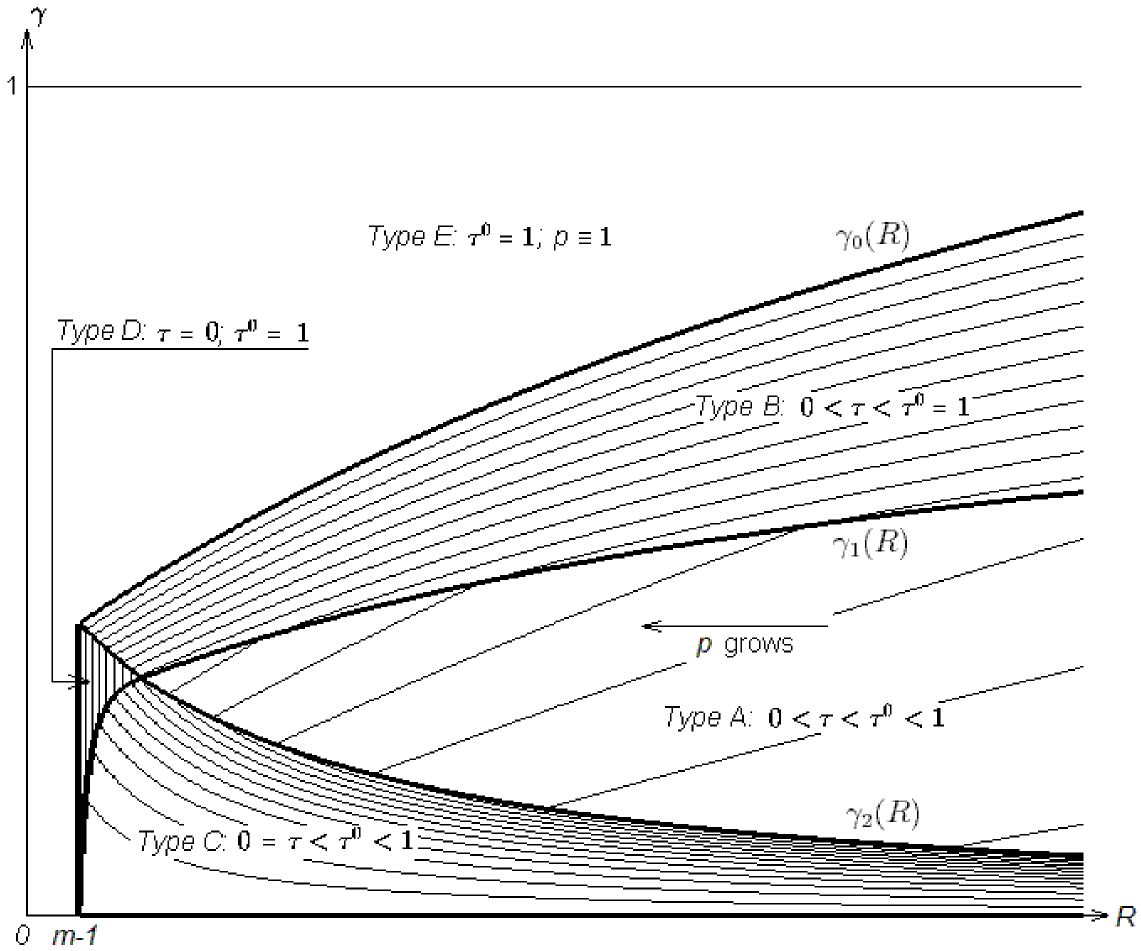


Рис. 3: Equilibrium types and level curves of p depending on R and γ.

This equation determines the equilibrium. One can see from (48) that p is increasing in $\tilde{\gamma}$ and decreasing in R in type B equilibrium.

Type C. In this case, $\tau = 0$, so the Bellman equation (39) is replaced with

$$V = (1-\rho)p(\gamma(1+\lambda)+R) + (1-p)V_A + \rho p V_D, \tag{49}$$

where $V = V_D$ in equilibrium. Solving for V_D and using (16)–(19), we obtain τ^1. Using (26), we obtain an equation, whence p can be derived:

$$1 + \tau^1 R = \frac{\tilde{n}}{p} = \frac{\lambda p(1-\rho) + \tilde{\gamma}\lambda(1-p) + \tilde{\gamma}(1+R)(1-\rho p)}{\tilde{\gamma}(1-\rho p) + \lambda p(1-\rho)}. \tag{50}$$

One can see from (50) that p is decreasing in $\tilde{\gamma}$ and R in type C equilibrium.

Type D. In this case, $\tau = 0$ and $\tau^0 = 1$. Hence,

$$p = \frac{m}{1+R}. \tag{51}$$

As follows from (50), p is independent of $\tilde{\gamma}$ and is decreasing in R in type D equilibrium.

Type E. Here $p = 1$. This type of equilibrium occurs, if $R \leq m-1$ or $\gamma = 0$ or $\gamma \geq \gamma_0(R)$, where

$$\gamma_0(R) = 1 - \frac{\lambda \tilde{n}}{\lambda + (2-\rho-\tilde{n})(1+R)} \tag{52}$$

is increasing in R and approaches 1 as $R \to \infty$. Here $p = 1$, $\tau^0 = 1$, $\tau^1 = \dfrac{\tilde{\gamma}}{\lambda + \tilde{\gamma}}$ and $\tau = \bar{\tau}(1) = \dfrac{1}{m} - \dfrac{1}{R}\left(1 - \dfrac{1}{m}\right)$.

Using equations (45)–(51) determining equilibria of each type, one can calculate τ and $1-\tau^0$. Comparing them with zero, one can obtain the sets of parameters for which each type of equilibrium occurs. One can see that in plain (γ, R), the boundaries between types A/C and B/D are given by equation $\gamma = \gamma_2(R)$, while the boundaries A/B and C/D are given by equation $\gamma = \gamma_1(R)$. Here $\gamma_2(R)$ is decreasing in R and $\gamma_1(R)$ is increasing in R.

Based on the above analysis, the general picture of equilibrium behavior can be determined. We look for the tax policy and the probability of sustaining democracy p depending on of resource rent and institutional quality.

Proposition 4 *In stationary Markov perfect equilibrium, one of the following regimes takes place, depending on resource rent R and institutional quality γ (see Figure 3):*

— *not very high institutional quality and large resource rent*

$(R > m-1,\ \gamma_2(R) < \gamma < \gamma_1(R)) \quad \Longrightarrow \quad$ *type A (interior equilibrium);*

— *higher institutional quality or smaller resource rent than for type A equilibrium*

$(R > m-1,\ \gamma_2(R) < \gamma < \gamma_0(R),\ \gamma \geq \gamma_1(R)) \quad \Longrightarrow \quad$ *type B (populist promise);*

— *high institutional quality or very small resource rent*

$(R \leq m-1$ *or* $\gamma = 0$ *or* $\gamma \geq \gamma_0(R)) \quad \Longrightarrow \quad$ *type E equilibrium (stable democracy);*

— *low institutional quality and not very small resource rent*

$(R > m-1,\ 0 < \gamma \leq \gamma_2(R),\ \gamma < \gamma_1(R)) \quad \Longrightarrow \quad$ *type C (pro-Oligarch policy);*

— *relatively low institutional quality and small resource rent*

$(R > m-1,\ \gamma_1(R) \leq \gamma \leq \gamma_2(R)) \quad \Longrightarrow \quad$ *type D (pro-Oligarch policy, populist promise);*

The variety of equilibrium regimes depending on R and γ is depicted in Figure 3. Thick curves separate plain (R, γ) into five areas corresponding to all the cases of Proposition 4. Thin curves are the level curves of p which display the impact of resource abundance and institutional quality on the stability of democracy. One can see from Figure 3 that p is decreasing in R in areas A, B, C and D; p is increasing in γ in areas A and B and decreasing in γ in areas C and D. This means that if γ increases with R being constant, p is not monotone: it firstly falls and then rises.

Now let us find how the tax rates τ, τ^0 and τ^1 depend on the resource rent and the institutional quality. In our comparative statics analysis, the following types of exogenous shocks will be considered:

(a) an increase of R, with γ being constant;

(b) an increase of γ, with R being constant;

(c) an increase of R compensated by an increase of γ: R and γ are increased such that the probability of democracy preservation p remains constant.

Proposition 5 *In stationary Markov perfect equilibrium, the tax rates* τ, τ^0 *and* τ^1 *react on shocks (a), (b) and (c) as follows:*

(a) if the resource rent R *is sufficiently large, then a further increase in* R *leads to a non-strict decrease in all of the three tax rates for high* γ *and to a non-strict increase in*

the tax rates for low γ;

(b) an increase of the institutional quality γ leads to a non-strict increase in the tax rates;

(c) a compensated increase of R and γ (so that p does not change) leads to a non-strict increase in the tax rates.

Proof.

(a) Suppose that R is large ($R \to \infty$). Let us write down an approximate expression for the tax rate τ which is linear in $1/R$, neglecting for terms which are infinitesimally small comparing to $1/R$. We obtain

$$\tau \approx \begin{cases} \dfrac{\tilde{\gamma}}{q} + \left(\dfrac{\tilde{\gamma}}{q}\left(1 + \dfrac{\lambda(1-\underline{p})}{1-\rho\underline{p}}\right) + \dfrac{\tilde{\gamma}}{2(1-\rho\underline{p})} - 1\right)\dfrac{1}{R}, & \text{for type } A; \\ \dfrac{\underline{p}}{m} + \left(\dfrac{\tilde{\gamma}+\lambda}{2(m/\underline{p}-1)} + \dfrac{\underline{p}}{m} - 1\right)\dfrac{1}{R}, & \text{for type } B; \\ 0 & \text{for types } C, D; \\ \dfrac{1}{m} + \left(\dfrac{1}{m} - 1\right)\dfrac{1}{R} & \text{for type } E, \end{cases} \tag{53}$$

where $\underline{p}$ is the limit of probability p for $R \to \infty$; $q = \lambda\underline{p}(1-\rho) + \tilde{\gamma}(2-\rho\underline{p})$. One can see that this approximation of τ is increasing in R for low γ (in particular, when γ is close to the lower boundary of region A) and decreasing for high γ (in particular, when p is close to 1).

Autocrat's declared tax rate τ^0 in region A is approximately given by

$$\tau^0 \approx \frac{m\tau}{\underline{p}} + \left(\frac{m}{\underline{p}}\left(1 - \frac{\tilde{\gamma}}{2(1-\rho\underline{p})}\right) - 1\right)\frac{1}{R}, \tag{54}$$

where τ is given by (53). One can see that the right-hand side of (54) is increasing in R for low γ and decreasing for high γ (in region A). In regions B, D and E, $\tau^0 = 1$. Region C is out of consideration because point (R, γ) is out of region C for high R.

Tax rate τ^1 is between τ and τ^0. The corresponding property for τ^1 can be proved in the same manner as for τ and τ^0.

(b) and (c) can be easily checked using formulas (43)–(50) for the equilibrium values of τ, τ^0, τ^1 and p. ∎

Proposition 4 and Figure 3 lead to the following conclusions.

First, the probability of democracy preservation is a non-increasing function of resources. This means that a "political resource curse" is present: if institutions are not good enough, resource abundance leads to instability of democracy.

Second, there exists a threshold $\gamma = \gamma_0(R)$ for institutional quality parameter γ such that the negative influence of resource abundance on the probability of sustaining democracy appears for institutional quality lower than the threshold and a full stability of democracy is achieved for higher institutional quality. Thus, the political resource curse should be considered as conditional: it appears only when the institutional quality is not high enough. It should also be noted that the larger is the resource rent, the higher is the threshold, i. e. countries with more resources need to have higher institutional quality to be immune to the political resource curse. However, there is an "ultimate threshold" for institutional quality $\gamma = 1$. If $\gamma > 1$, then it is better off for Oligarch to accept a rent tax increase than to give a bribe. Even very resource abundant countries having passed this threshold are not subject to the political resource curse.

Third, for low institutional quality (type C equilibrium), the impact of slightly increasing γ (for example, through stronger punishment for corruption) paradoxically leads to decreasing the probability of democracy preservation. So, low institutional quality situation looks like a trap. Only a large enough positive institutional change will lead to higher stability of democracy.

This strange effect takes place only if the institutional quality is so low that Oligarch can bribe Politician to set zero tax and the tax remains zero after the increase of the institutional quality. In this case, the increase of the institutional quality leads to a higher bribe paid by Oligarch. So, Oligarch gets worse off under democracy and initiates a coup under higher tax rate under autocracy. Since Autocrat becomes more free to set high tax τ^1, she promises higher tax τ^0. Since τ^0 becomes higher and τ remains at zero level, the autocracy becomes more attractive and the probability of sustaining democracy gets lower. This effect is less pronounced, if R is large.

The effect described above shows that the positive influence of institutional quality on the stability of democracy is a non-trivial fact which does not take place, if the elasticity of political decisions with respect to institutional changes is too low.

Fourth, the tax rates depend on the resource rent positively for low institutional quality and negatively for high institutional quality. In order to maintain the same probability of democracy preservation, the players should increase their tax rates as the resource rent goes up.

It should be noted that high concentration of the rent is an assumption crucial for validity of our results. It does not matter, what are the sources of the rent — resource abundance or other causes.

4 Stylized Facts And Empirical Findings

It follows from the model developed above that under corrupt democracy, rent tax rate is lower than under autocracy. One can suppose that in reality, low rent tax rate is associated with high inequality. If so, we get a chance to check empirically some consequences of our model. The first one is that democratization under low quality of institutions results in increase of inequality. The second consequence is that inequality entails worsening of the attitude to democracy. The third one is a general conclusion of the model: under bad institutions, democratization leads to unstable democracy, and inequality contributes to this instability. Besides, we will show that, if institutions are not good enough, then abundance of point resources is associated with higher inequality and instability of democracy.

4.1 Democratization and inequality

It was argued in the previous paper (Polterovich, Popov, Tonis, 2008) and was noted in the introduction that there is an interrelationship between the quality of the institutions (corruption level) and the stability of democracy: democratization under high corruption leads to even greater corruption, whereas high corruption decreases chances for successful democratization (results in the restoration of the authoritarian regime).

There is another channel of influence, however: instability of democracy can be caused by inequalities in income and wealth distribution.

It was noted in Milanovic (1998), Gradstein and Milanovic (2004) that in all post communist countries (with the exception of Slovakia) the Gini coefficient of income distribution increased during reforms (see Figure 4). Is it the result of democratization or market-oriented reforms? There was an increase in income inequalities even in post-communist countries that failed to move away from authoritarianism, such as Belarus, Uzbekistan, Turkmenistan, although it appears to have been less pronounced than in similar countries undergoing democratization.

The following regression (for all countries where statistics is available)[4] provides evidence that democratization is indeed associated with the growth of income inequalities[5]:

$$
\begin{aligned}
&Ineq = 48.4 - 0.25^{***}Ycap90 + 9.1 \cdot 10^{-7***}AREA - 10.2^{***}TR- \\
&-1.47^{*}DEM_{72-75} + 1.25^{**}\Delta, \\
&N = 117, \quad R^2 = 0.37,
\end{aligned}
\tag{55}
$$

where

$AREA$ — territory of a country, square km;

$Ineq$ — GINI coefficient in the latest available year of the period 1985–2005;

DEM_{72-75} — average level of authoritarianism (1 to 7, 7 — complete authoritarianism, 1 — complete democracy) according to Freedom House, in 1972–75;

TR — dummy variable for post-communist countries;

$Ycap90$ — PPP GDP per capita in 1990 as a % of the US level;

Δ — increase in the level of democracy (decline in the political rights index — the difference between the average for 1972–75 and the average for 1999–2002, in points).

The equation suggests that income inequality was the greater, the lower was the level of authoritarianism DEM_{72-75} in 1972–75, and the higher was the increase in the level of democracy in subsequent three decades, Δ. The coefficient of Δ retains significance if such control variables as territory and transition dummy are excluded.

According to equation (55), the decline in the political rights index by one point results in the increase in the Gini coefficient of income distribution by 1.25 p. p.

On face value, this result seems to be counterintuitive: it is known that developed

[4] The data are from the World Development Indicators. Gini coefficient of income inequalities is for the latest available year for the period 1985–2005. 2/3 of observations are for the period after 2000.

[5] We use standard notations in regression equations: ***, **, * denote the significance level of the coefficients at 1%, 5% and 10% respectively.

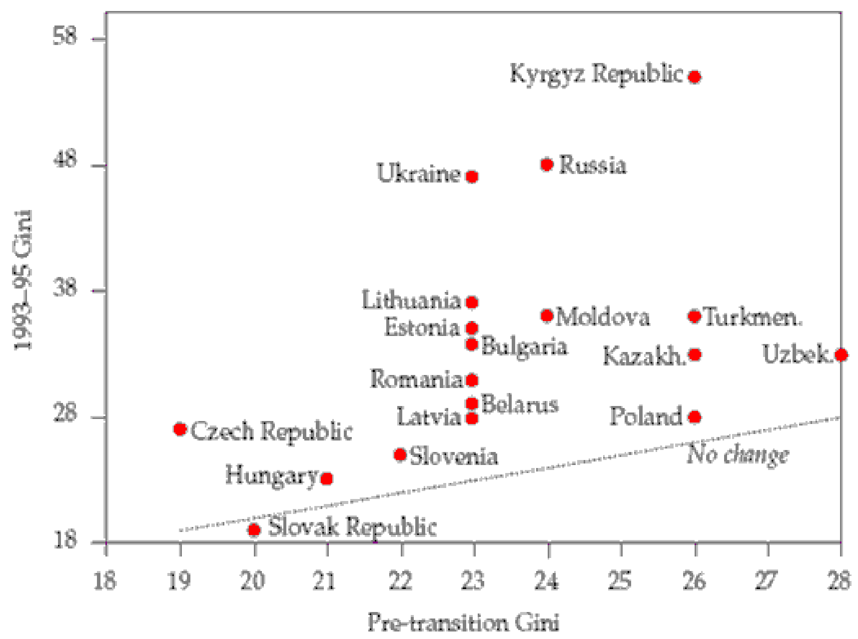


Рис. 4: Increase in income inequalities in transition economies (source: Milanovic, 1998).

countries are usually democratic and have relatively low income inequalities and it is usually assumed that, if income of the median voter is below average, there would be a greater redistribution in favor of the poor. But the crucial control variable in (55) is GDP per capita. It is high for Europe and Canada and associated with strong social policies (generally free education and health care). In contrast, in developing countries with poor institutions democratic election process is often "privatized" by powerful lobbies, so inequalities become larger.

Consider now the impact of $Exfuel$ — the average share of fuel in total export for 1960–99 period, %. When this variable is added into the right hand side of (55), it acquires an insignificant coefficient. But with another variable for the level of democracy, DEM — the average level of authoritarianism according to Freedom House, in 1970–2002, there is a negative impact of democracy and a positive impact of fuel export on inequality:

$$\begin{aligned}
&Ineq = -0.25^{***}Y90 + 1.30\cdot 10^{-8**}POP + 1.25\cdot 10^{-6***}AREA - 8.28^{***}Tr - \\
&-1.46^{**}DEM - 0.06^{**}EXfuel + 53.9, \qquad (56)\\
&N = 111, \quad R^2 = 0.42, \quad \text{all coefficients significant at 4\% level or less,}
\end{aligned}$$

where

POP — population in 1999, mln. inhabitants;

There is also a non-linear, threshold relationship, suggesting that export of fuel helps to reduce inequalities under authoritarian regimes and under democratic regimes with good institutions; in contrast, when democratization occurs in countries with poor institutions, export of fuel is associated with greater inequalities:

$$\begin{aligned} &Ineq = 47.23^{***} - 0.20^{***}Y90 - 0.001^{**}PopDens + 1.53 \cdot 10^{-6***}AREA- \\ &-11.18^{***}Tr - 1.12 \cdot 10^{-8*}POP + Exfuel(0.54^{***} - 0.05^{***}DEM - 0.007^{***}IC), \quad (57) \\ &N = 90, \quad R^2 = 0.42, \quad \text{all coefficients significant at 10\% level or less,} \end{aligned}$$

where

$PopDens$ — population density in 1999, mln. inhabitants per 1 square km;

IC — average 1984–90 investment climate index from the International Country Risk Guide: it ranges from 0 to 100%, higher values mean better climate (World Bank);

DEM — average level of authoritarianism (1 to 7) according to Freedom House, in 1970–2002 (as above);

If we add IC and DEM as linear variables into the right hand side, they turn out to be insignificant.

Eliminating the interactive terms ($DEM \cdot Exfuel$ and $IC \cdot Exfuel$) produces worse results — linear terms for DEM and IC still remain insignificant.

The economic interpretation of (57) is quite straightforward: if the expression in brackets, $(0.53 - 0.05DEM - 0.007IC)$, is positive, the export of fuel is associated with the increase in income inequalities; if it is negative, then the export of fuel leads to the decrease in inequality. The expression in brackets is negative, for instance, for countries with completely authoritarian regimes, (DEM, the average index of political rights, is equal to 7), and with investment climate index in 1984–90 IC is higher than 26% (for instance, Lebanon, — 28%), or for very authoritarian countries (the average index of political rights is equal to 6) with investment climate index in 1984–90 over 33%. For democratic countries (average index of political rights is less than 2), the export of fuel was associated with lower income inequalities only if the index of investment climate was higher than 62% — quite a rare case in developing countries. For the majority of fuel exporters with poor institutions, democratization was thus accompanied by increased income inequalities.

To test for the robustness, we used another indicator of concentration of property —

the number of billionaires in the country as measured by the Forbes list[6] (controlling for the size of the country — its GDP and population). The interesting result is that democratization leads to the increase in the number of billionaires, if the institutions are of poor quality (investment climate index in 1984–90 is lower than 38%):

$$\begin{aligned}&Bill\# = 9.43^{***} + 0.046 *** Y - 1.22 \cdot 10^{-7***} POP + 0.049^{*} URBANIZ + \\ &+\Delta(4.56^{*} - 0.12^{**} IC), \\ &N = 44, \quad R^2 = 0.8847, \quad \text{all coefficients significant at 10\% level or less,}\end{aligned} \tag{58}$$

where

$Bill\#$ — number of billionaires, according to Forbes list, in 2007;

Y — total PPP GDP in 1999, billion dollars.

If we add any of the following control variables — transition dummy, democracy level, land area, population density, then these variables turn out to be insignificant, although other variables retain significance. Adding Islam dummy variable ruins the regression (and Islam dummy is not significant anyway). The impact of resource export on the number of billionaires is positive, but if democracy variables are included, the coefficients lose their significance.

Thus, we have shown empirically that the first consequence from our model mentioned above: democratization under low quality of institutions results in increase of inequality. Abundance of point resources contributes to the increase of inequality.

4.2 Inequalities and Attitude Towards Democracy

The data from *Latinobarometro*, that regularly conducts surveys in Latin American countries to measure the attitude of the public to democracy and authoritarianism[7],

[6] Forbes website:
http://www.forbes.com/lists/2007/10/07billionaires_The-Worlds-Billionaires_CountryOfPrmRes.html.

[7] Attitude towards democracy is measured by answers, positive or negative, to two statements: (1) "Democracy is preferable to any type of government"; (2) "In certain circumstances authoritarian government can be preferable to a democratic one". In subsequent regressions, the dependent variable is the ratio of the share of respondents that gave a positive answer to the first questions to the share of respondents who answered positively the second question.

strongly suggest that inequalities in income and wealth distribution undermine the attractiveness of democratic institutions. Even a quick glance at Figure 5 shows that inequalities create a negative attitude towards democracy. People perceive democracy as a failure, if it leads to the polarization of the society. It is noteworthy that the negative relationship between inequalities and preferences of democracy is stronger for wealth distribution data ($R^2 = 53\%$) than for income distribution data ($R^2 = 26\%$).

A more careful analysis suggests that this negative relationship is quite robust. If we consider democratic preferences in 18 countries for all three available years (1996, 2001, 2006 — 52 observations), we get a negative relationship between inequalities and attitude towards democracy:

$$\begin{aligned} &DEMpreference = 96.5 + 1.9^{***}GOVeff - 0.18^{***}GINI, \\ &N = 52, \quad R^2 = 0.23, \end{aligned} \tag{59}$$

where

$DEMpreference$ — Attitude towards democracy measured as explained above in 2006;

$GOVeff$ — government effectiveness index for 1996 from the WB[8] (ranges from -2.5 to $+2.5$, the higher the better);

$GINI$ — Gini coefficient (in %) in the latest year available for the 1985–2005 period.

After adding natural control variables, such as GDP per capita in the beginning of the period (1995), the level of education (average number of years of schooling per person), and average level of democracy in 1970–2000, we get even better results:

$$\begin{aligned} &DEMpreference = 96.54 - 0.75^{***}Ycap95 + 7.97^{*}GOVeff + 5.71^{***}EDUC- \\ &-7.46^{***}DEM - 0.58^{*}GINI, \\ &N = 52, \quad R^2 = 0.4780, \quad \text{all coefficients significant at 7\% level or less,} \end{aligned} \tag{60}$$

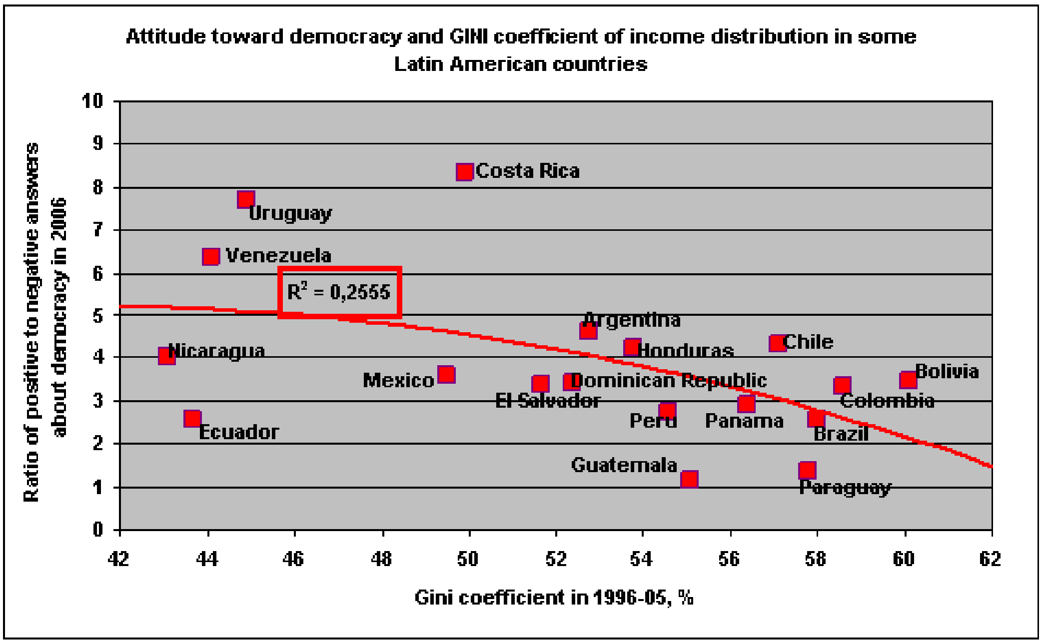
where

$Ycap95$ — PPP GDP per capita in 1995 as a % of the US level;

$DEMpreference$ — attitude towards democracy measured as explained above in 1996, 2001 and 2006;

$EDUC$ — human capital average number of years of education in 1980–99;

[8]See Kaufmann et al (1999).



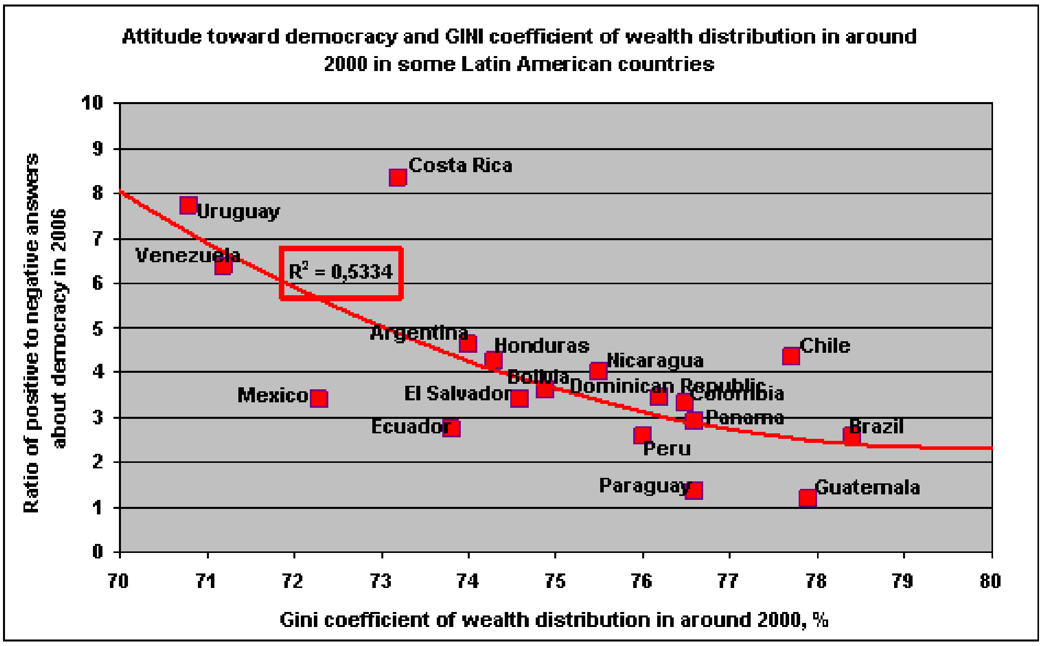


Рис. 5: Attitude toward democracy and inequality in some Latin American countries. Source: Latinobarometro, cited in: Economist, November 17, 2007; Word Development indicators, 2007; Davies, Sandstrom, Shorrocks, Wolf, 2007

DEM — average level of democracy in 1972–2002, points;

$GOVeff$ — government effectiveness index for 1996 from the WB.

Similar result is obtained for wealth distribution:

$$\begin{aligned}&DEMpreference = 253.2 - 0.76^{***}Y95 + 8.31^{**}GOVeff + 3.58^{*}EDUC- \\ &-6.08^{***}DEM - 0.06^{*}PopDens - 2.36^{***}WEALTHineq - 0.58^{*}, \qquad (61)\\ &N = 52, \quad R^2 = 0.5317, \quad \text{all coefficients significant at 10\% level or less.}\end{aligned}$$

The regression is not very stable, however. With government effectiveness index for 1996 we can get reasonable results only adding population density as a control variable (it is not exactly clear why population density should affect negatively the attitude towards democracy). When substituting government effectiveness index for 1996 with the same indicator for 2001 (i. e. in the middle of the period of 1996–2006 instead of the beginning of the period), we get good results even without population density. Notice that the sign of the coefficient of GDP per capita variable is negative (the higher the GDP per capita, the worse is the attitude towards democracy), which is counter-intuitive. The reason is that other control variables (level of education, level of democracy, level of government effectiveness) are strongly correlated with GDP per capita. If these control variables are excluded, the sign of the coefficient of GDP per capita becomes positive, as intuition suggests.

The results of this subsection show that higher inequality leads to worsening of the attitude to democracy. This is one of the consequences of our model.

4.3 Instability of democracy under poor institutions and high inequalities

In our previous paper (Polterovich, Popov, Tonis, 2007) we showed that stability of democracy is negatively affected by the resource wealth. The indicator of the instability of democracy, suited for our purposes, is V, the ratio of the index of political rights in 2002 to its minimum value in the period 1972–2002. It is a measure of the success of democratization: the lower it is (the closer it is to 1), the less pronounced was the retreat from the highest point of democracy in the whole period.

$$V = 2.4^{*} - 0.005^{***}Y75 - 0.01^{***}IC - 0.09{*}DEM_{72-75} + 0.006^{***}EXfuel, \quad (62)$$
$$N = 89, \quad R^2 = 0.16, \quad \text{all coefficients significant at 10\% level or less,}$$

where

DEM_{72-75} — average level of democracy in 1972–75, equals to the Freedom House index of political rights, ranging from 1 to 7 for every year; the absolute level shows the degree of authoritarianism, so, lower values mean more democracy (http://www.freedomhouse.org/ratings/index.htm);

$Y75$ — PPP GDP per capita in 1975;

$EXfuel$ — share of fuel exports in total exports in 1960–99, %;

IC — average 1984–90 investment climate index from the International Country Risk Guide: it ranges from 0 to 100%, higher values mean better climate (World Bank).

Thus, it turns out that, controlling for the initial level democracy in 1972–2002, the magnitude of the democratic retreat that occurred in 1972–2002 was greater in relatively poor countries with weaker institutions and larger resource exports.

Hence, it may be hypothesized that resource wealth is the factor contributing to income and wealth inequalities, and that these inequalities result in greater instability of democratic regime. However, it can be shown that all inequalities in income and wealth distribution, no matter what causes them, undermine the stability of democratic regimes. Even if we control for the resource abundance (fuel export), Gini coefficients of income and wealth[9] distribution exhibit negative and significant influence on the stability of democracy. For wealth inequalities the regression is:

$$V = 0.41 - 0.01^{***}Y75 - 0.12^{**}DEM_{72-75} + 0.007^{***}EXfuel +$$
$$+0.02^{***}WEALTHineq, \quad (63)$$
$$N = 94, \quad R^2 = 0.23, \quad \text{all coefficients significant at 5\% level or less,}$$

where

$WEALTHineq$ — GINI coefficient of wealth distribution around the year 2000.

[9]Data on wealth distribution are taken from Davies et al (2007). They are based on household surveys in 20 countries and the estimated relationship between wealth and income distribution for other countries.

For income inequalities we were able to obtain a similar regression:

$$\begin{aligned} &V = 1.73 - 0.01^{***}Y75 - 0.15^{**}DEM_{72-75} + 0.007^{**}EXfuel + 0.12^{*}GINI, \\ &N = 83, \quad R^2 = 0.26, \quad \text{all coefficients significant at 8\% level or less,} \end{aligned} \tag{64}$$

Adding population size, land area or population density as control variables to (63) and (64) does not improve the regression (added variables are not significant, although basic variables retain their significance).

5 Conclusion

In this paper, we developed a multi-period model to demonstrate the existence of conditional political resource curse: if institutions are not good enough, resource abundance leads to instability of democracy. We have found a threshold for the institutional quality parameter such that the negative influence of resource abundance on the probability of sustaining democracy appears for institutional quality lower than the threshold and a full stability of democracy is achieved for higher institutional quality. We also have found that under very low institutional quality, a paradoxical effect takes place: the probability of democracy preservation may decrease with an improvement of institutional quality.

In the second part of the paper, we demonstrated that some consequences of the model are supported by empirical data: under low quality of institutions, democratization leads to higher inequality and inequality entails worsening of the attitude to democracy.

Our conclusions from the model are based on the assumption that Public is not able to predict future Autocrat's behavior. Another not very realistic assumption used in the model is that Autocrat is able to maintain her popularity non-decreasing during her term. It would be interesting to release these assumptions.

References

Acemoglu, D., Robinson, J.A. and T.Verdier. (2003). Kleptocracy and Divide-and Rule: A Model of Personal Rule. NBER Working Series, Working Paper 10136.

(http://www.nber.org/papers/w10136).

Acemoglu, A., Johnson, S., Robinson, J., and P. Yared (2005). Income and Democracy. MIT, Working paper 05-05, February, 35 pp.

Akhmedov, A., and E. Zhuravskaya (2004). Opportunistic Political Cycles: Test in a Young Democracy Setting. - Quarterly Journal of Economics, November 2004, 1301- 1338.

Alexeev, M. and R. Conrad (2005) "The elusive curse of oil." Working Papers Series, SAN05-07.

Auty, R.M. (ed.), (2001), Resource Abundance and Economic Development, Oxford University Press, 340 pp.

Barro, R. J., 1996, Democracy and Growth. Journal of Economic Growth, Vol.1, 3-27

Barro, R.J., 1999, Determinants of Democracy, The Journal of Political Economy, vol. 107, No. 6, Part. 2.

Brunnschweiler, C. N. (2006) "Cursing the blessings? Natural resource abundance, institutions, and economic growth." Economics Working Paper Series 06/51, ETH Zurich.

Bulte, E.H. R. Damania, and R. T. Deacon (2003), Resource Abundance, Poverty and Development. Working paper, Department of Economics, University of California, Santa Barbara. (http://www.econ.ucsb.edu/papers/wp21-03.pdf).

Carothers, Thomas (2002). The End of the Transition Paradigm. - Journal of Democracy, Jan. 2002, pp.5-21.

Clague, Ch., Keefer, Ph., Knack, St., and M. Olson (1996). Property and Contract Rights in Autocracies and Democracies. Journal of Economic Growth, Vol.1, (June), 243-276.

Chistyakov, E. (2006). Natural Resources, Corruption, and Manufacturing in Small Open Economy. Master's Thesis. New Economic School. Moscow. (Manuscript).

Davies, James B., Susanna Sandstrom, Antony Shorrocks, and Edward N. Wolf (2007). Estimating the Level and Distribution of Global Household Wealth. Research Paper No. 2007/77, November 2007.

Diamond, L. J. Thinking About Hybrid Regimes. Journal of Democracy - Volume 13, Number 2, April 2002, pp. 21-35.

Egorov, G., Guriev, S. and K. Sonin (2006). Media Freedom, Bureaucratic Incentives, and the Resource Curse. CEDI Working Paper No. 06-10, (http://cedi.org.uk).

Geveling, L. (2001). Kleptocracy. M.: Academy of Humanitarian Research. 592pp. (in Russian).

Kartashov, G. (2006) "Economic growth and institutional quality in resource oriented countries." (in Russian). Master's Thesis. New Economic School, Moscow. (Manuscript).

Kaufmann, Daniel, Kraay, Aart, and Zoido-Lobatón Pablo (1999). Governance Matters. World bank Policy Research Working Paper 2 196
(http://www.worldbank.org/wbi/governance/pdf/govmatrs.pdf).

Leite C. and J. Weidmann (1999). "Does Mother Nature Corrupt? Natural Resources, Corruption, and Economic Growth." IMF Working Paper No. 99/85.

Mehlum, H., K.O. Moene and R. Torvik (2005) "Institutions and the resource curse." Economic Journal, Royal Economic Society 116(508): 1-20.

Persson T. and G. Tabellini (2000) Political Economics: Explaining Economic Policy, MIT Press, 2000.

Polterovich, V. and Popov, V. (2006). Democratization, Quality of Institutions and Economic Growth, Working Paper #2006/056.

Robinson, J.A., R. Torvik and T. Verdier (2006). "Political foundations of the resource curse." Journal of Development Economics 79: 447-468.

Rodriguez, F. and J.D.Sachs (1999). Why do resource abundant economies grow more slowly? A new explanation and an application to Venezuela, Journal of Economic Growth, 4, 277-303.

Ross, M.L. (2001). Does Oil Hinder Democracy? World Politics 53 (April 2001), 325-61.

Sachs, J.D. and A.M. Warner (1999). The big push, natural resource booms and growth. Journal of Development Economics, vol.59, 43-76.

Sachs, J.D. and A.M. Warner (2001). "The curse of natural resources." European

Economic Review 45: 827-838.

Stiglitz, J.E. (2004). The Resource Curse Revisited, Project Syndicate. (http://www.project-syndicate.org/commentaries/ commentary_text.php4?id=1656&lang=1&m=contributor).

Stijns P.C. (2005). "Natural resource abundance and economic growth revisited." Mimeo, Department of Economics, UC Berkeley.

Tornell A., and Lane P.R. (1999). "The voracity effect." American Economic Review 89: 22-46.

Torvik, R. (2002). "Natural resources, rent seeking and welfare." Journal of Development Economics 67: 455-470.

Wantchekon, L. (1999). Why do Resource Dependent Countries Have Authoritarian Governments? Yale University, 24 pp. (http://www.yale.edu/leitner/pdf/1999-11.pdf).

Wantchekon, L., and E. Yehoue (2002). Crime in New Democracies. 24 pp. (http://www.nyu.edu/gsas/dept/politics/faculty/wantchekon/research/crime.pdf).

Wintrobe, R (2007). Dictatorship: Analytical Approaches, in: C.Boix and S. Stokes, Oxford Handbook of Comparative Politics, Oxford University Press, 2007.

Zhukova, N. (2006). Institutions and Optimal Level of Resources in Resource Abundant Countries. Master's Thesis. New Economic School, Moscow. (Manuscript).