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EXITING A LAWLESS STATE*

Karla Hoff and Joseph E. Stiglitz

An earlier paper showed that an economy could be trapped in an equilibrium state in which the absence of the rule of law led to asset-stripping and the prevalence of asset-stripping led to the absence of a demand for the rule of law, highlighting a coordination failure. This article looks more carefully at the dynamics of transition from a non-rule-of-law state. The article identifies a commitment problem as the critical feature inhibiting the transition: the inability, under a rule of law, to forgive theft. This can lead to the perpetuation of the non-rule-of-law state, even when it might seem that the alternative is Pareto-improving.

Why do dysfunctional institutions persist? It is now well understood that they persist if there are politically powerful losers from reform and no way to promise them compensation credibly. There are two possible lines of attack on this problem. The first investigates whether the problem of commitment can be solved dynamically. The second asks how a society evolves when such commitment is not possible. We are concerned with the second question. The presumption has been that if a reform is ‘good enough’, then once a society understands the magnitude of its benefits, sufficient demand for the reform will emerge that it will occur. Creating the rule of law is an example of such a reform. The rule of law stops the few from stealing from the many. In this view, one would expect the rule of law to emerge.¹

Even though we believe that the rule of law creates a vast majority of winners, we see that many societies are not moving towards the rule of law. In Russia and many other post-communist countries, little progress towards either forming a strong constituency for the rule of law, or establishing the rule of law, has been made since the privatisation of most state enterprises.² Figure 1 presents the distribution, for the earliest and latest years available, of World Bank scores of adherence to the rule of law for 27 post-communist countries and the world as a whole.³ In 1996, the post-communist countries

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¹ In this approach, if the rule of law does not emerge, it is because the few people that benefit from the future rents that they receive under the *status quo* are so strong that they can prevent the reform. Thus, the analysis focuses on political structures that allow narrow political groups to block the reform, at such great social cost. Models of political obstacles to efficiency-enhancing reforms include Besley and Coate (1998), Acemoglu and Robinson (2000), Sonin (2003), Acemoglu *et al.* (2005) and Rajan (2007).

² See, for example, Pistor (1999) and the symposium on ‘Demand for Law’ in which Pistor (1999) appears, Black *et al.* (2000), Nagy (2000, p. 88), Sperling (2000, pp. 16-7), Kolodko (2000) and Graham (2002, esp. p. 49). Other scholars have argued that in many countries, the cause of the absence of the rule of law lies on the supply side, for instance, in the inability to finance a market-oriented system; see Johnson *et al.* (1997) and Roland and Verdier (2003). But financial problems reflect decisions of essentially the same kind as the demand side decisions that we analyse here. Russia was giving away at fire-sale prices state assets of value an order of magnitude greater than the cost of administering a rule-of-law system; see e.g. Kotkin (2001, p. 215).

³ <http://info.worldbank.org/governance/wgi2007/>

had on average slightly less adherence to the rule of law than the world as a whole but showed low dispersion. Between 1996 and 2005, a twin peaks pattern emerged for the post-communist countries and for the world: some post-communist countries achieved a good measure of rule of law, while for the majority, scores remained low or deteriorated. Holmes (2002) reflects a widely shared view (see fn. 2) when he writes that in Russia the central obstacle to the emergence of the rule of law is the lack of demand:

No well-organised constituency for a rule-of-law system exists in Russia today. Putin may sincerely want to introduce the rule of law. He may repeatedly announce that he is going to create it. . . . These subjective intentions are irrelevant, however. The rule of law is going to emerge only if there are strong constituencies supporting it. (p. 87)

One possible explanation for this puzzle is that the rule of law is not such a great thing. Perhaps we have overestimated its ability to increase income or underestimated its distributional consequences, in particular, those that cannot be undone by credible commitments to redistribute. For example, the traditional view of the enclosure of the commons in England was that it created large, dispersed benefits. Yet Weitzman (1974) showed that most people could be worse off under the efficient enclosure than under inefficient free access rights.⁴ The establishment of the rule of law in a lawless state is a more compelling example of a reform that should engender widespread support, since it is a movement from the jungle to order. Political philosophers from Hobbes to Nozick clearly viewed this kind of reform as an improvement. Economists have argued that although private, relation-based governance may suffice for a middle-income country, the rule of law is necessary to make the transition to a high-income country (Rodrik, 2003, p. 17; Dixit, 2004, p. 82). Yet, as Figure 1 illustrates, many societies do not seem to be moving towards the rule of law.

In this article we offer an alternative explanation. We assume that the rule of law is an institutional change that permits higher levels of welfare *to everyone* because of the greater incentives to production. We also assume that individuals are forward-looking, with expectations that are consistent with the properties of the underlying model. But we allow individuals who do not believe that a quick transition to the rule of law will occur to adapt their economic activities accordingly. *Costs of exiting the lawless state arise endogenously from these adaptive behaviours and engender resistance to reform.*

We show this in a simple, dynamic model that builds on our earlier static model of coordination.⁵ In the earlier model, agents with control rights over enterprises face two choices: one economic, whether to build the value of their assets or strip them; and one political, whether to adopt the rule of law or not. Given the static nature of that model, only those who choose to build value benefit from the rule of law. Thus, the probability distribution of the political outcome depends on the fraction of the population that chooses to build value, which itself depends on the probability distribution of the political outcome. We showed that self-fulfilling Pareto-inferior equilibria may exist in which few agents build value and thus few demand the rule of law.⁶

⁴ Subsequently, Allen (1982) challenged the view that the enclosure movement enhanced efficiency.

⁵ See Hoff and Stiglitz (2004a), which also provides a brief review of the transition from communism in Russia. For a diagrammatic exposition, see Hoff and Stiglitz (2004b).

⁶ For another example of political-economic links with self-fulfilling equilibria, see Chang (2006).

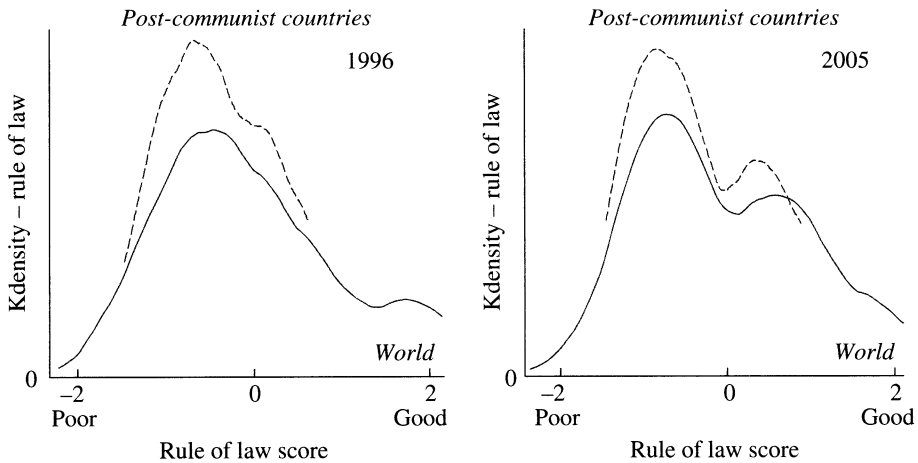


Fig. 1. Distribution of World Bank Rule of Law Scores for Post-communist Countries and All Countries, 1996 and 2005

Note. Indicators are scaled so that the world average and median are zero and the standard deviation is one.

In the dynamic setting that we explore here, all individuals obtain a future benefit from the establishment of the rule of law. Therefore, individuals who strip assets in the current period may vote *for* creating the rule of law. Their choice depends on the trade-off between the loss from the expected recapture of part of their stripping income in the transition to the rule of law and the gain with respect to future economic activities.

Asset stripping in our model is like getting 'blood on one's hands', in that it makes an individual vulnerable to a loss in the transition to the rule of law. We do not assume that the blood is never washed away. On the contrary, we make the minimalist assumption that only the current period's return from asset stripping is vulnerable to recapture. However, as long as the non-rule-of-law state persists, some agents may choose to strip assets, period after period. Thus the blood on their hands would be fresh when the rule of law state was created and so they would gain from the establishment of the rule of law only after they began to build value – that is, *with a time lag*.⁷ This can delay the establishment of the rule of law or even lock the society out of it. Our results highlight a coordination problem that an elected policy maker cannot solve because of a commitment problem inherent in the rule of law.

All that we require to generate the possibility of losers from institutional reform endogenously is that, under the rule of law, society cannot commit itself to zero recapture of income from asset stripping.⁸ This commitment problem arises from what scholars take to be key features of any system that provides impartial third party enforcement of property rights and contracts:

- (a) Such a legal system should be viewed as a self-enforcing equilibrium between political officials and citizens, and

⁷ This result is reminiscent of Adsera and Ray (1998), who assume that, for *all* agents, the benefits of coordination come with an *exogenous* delay. Our article explores a mechanism that can generate (for some agents) the delay that Adsera and Ray model as a reduced form.

⁸ Or, more precisely, that the risk of recapture will not increase under the rule of law.

- (b) Only if the distribution of power is such that conflicting actors seek to resolve their conflicts by recourse to law does law rule.

Following from these two properties is a third, namely,

- (c) The contents of the rule of law are subject to interrogation and reform, rather than capable of being frozen at a moment in time.⁹

In other words, one cannot simultaneously have the rule of law and fence it in so as to commit a society not to capture illegitimate gains obtained before some time *t*. In Section 4, we sketch a simple mechanism underlying the commitment problem in a rule-of-law governed democracy: Politicians have incentives to appropriate *illegitimately* obtained income and to redistribute it to their supporters, whereas they do *not* have such incentives with respect to *legitimately* obtained income.

As in our earlier static model, we have chosen to develop our points in a specific context – post-communist countries after the privatisation of many state enterprises. But the framework of our article illuminates a very general problem and thus may serve as a basis for integrating the literature. Starting with a society in which theft is allowed but allowing theft is not in anyone's self-interest, can we explain the creation of third party enforcement of property rights, which makes it costly for individuals to steal?¹⁰ Our framework shows why *it is difficult to create a demand for the rule of law from scratch*, e.g. without norms that limit theft. Our framework is Markov; i.e. current and future outcomes are conditioned only on the current state. If, more realistically, we allow that outcomes also depend on history, then the difficulty of exiting the lawless state after asset-stripping will be greater than our model would suggest, as we show in Section 2. In the conclusion, we suggest additional applications of our framework.

Our article contributes to the rapidly growing literature on the positive economics of institutional change (see references in fn. 1). Our departure from the existing work on the problem of credible commitment to compensate losers from reform is that we treat individuals' economic interests as endogenous, whereas existing work¹¹ treats them as parametric. That modelling approach is appropriate when economic institutions are stable with regard to the political transitions that the model tries to explain, e.g. the case of the transitions from authoritarianism of Latin America and Southern Europe (O'Donnell *et al.*, 1986). What is historically distinct about the post-communist transitions is the possibility of simultaneous deep change in both the economy and the polity. These transitions have been compared to 'rebuilding the ship the sea': 'Hardly any of the *institutional* elements of the old order can be relied upon, i.e., is considered...worthy of preservation for more than a transitory period or recognised as a worthy legacy' (Elster *et al.*, 1998, p. 18, emphasis in original). In this context it is appropriate to treat economic interests as endogenous. Our article focuses on the costs of exiting a lawless state created by two kinds of problems: (1) the coordination of

⁹ See, e.g. on (a) Weingast (1997) and Basu (2000) and on (b,c), Maravall and Przeworski (2003). Regarding point (c), it is worthwhile to quote from the Supreme Court decision in the case of *Nebbia vs. New York* (1934), where the Court declared that 'there is no closed case or category of business affected with the public interest...' (cited in North, 1981, p. 198).

¹⁰ Basu (1997, p. 248) observes that 'Since this exercise...has not been done thus far, we do not really know whether the model of the market, abstracted from its social and political moorings, can ever be realized.'

¹¹ As Acemoglu and Robinson (2006, p. 316) emphasize. Acemoglu *et al.* (2005) outline the desiderata for a yet-to-be-built general theory of institutional change.

economic and political choices and (2) the constraints that the rule of law imposes on the content of laws.

Our article also contributes to the literature on privatisation. Studies of privatisation all over the world have concluded that privatisation is unlikely to improve performance when corporate governance institutions are weak.¹² While noting in that case the absence of any benefit from privatisation, these studies overlook a cost that we emphasise here: by widening the scope for asset stripping, privatisation may create political forces opposed to establishing the rule of law. Not surprisingly, scholars have enjoined developing countries before privatising firms to ‘embrace a corporate governance perspective. . . that can constrain the grabbing hands of public and private actors’ (Dyck, 2001, p. 59). In Section 3, we extend our model to consider two policies that affect the demand for the rule of law – the sequencing and pacing of the post-communist transition and macroeconomic policy.

Our framework of binary choices in the economy and the polity is too simple to capture the institutional path of any real post-communist country. In our concluding Section, we emphasise the need in future work to incorporate changes over time in the distribution of power.

1. A Dynamic Model of the Demand for the Rule of Law

1.1. *The Agents*

There is a continuum one of forward-looking agents with control rights over enterprises. Time is divided into an infinite number of periods. In every period, each agent has a choice between two economic actions:

Building value: Making an irreversible investment to increase the enterprise’s value, or
Stripping assets: Stripping the assets of the enterprise by appropriating corporate value for themselves and expropriating minority investors, sometimes also referred to as ‘tunnelling’.

The assumption behind this setup is that agents are not constrained by norms, other informal institutions or corporate institutions such as boards.¹³ In choosing their strategies, agents look at the entire future stream of returns, where $\delta \in (0,1)$ is the discount factor.

Agents differ in their ability to strip assets. θ denotes an agent’s type, and a higher value of θ corresponds to a greater ability to strip assets. θ has a continuous distribution $H(\theta)$ and density function $h(\cdot)$.

1.2. *The Political Environment*

There are two possible political institutions. Initially the polity is a ‘non-rule-of-law state’.¹⁴ The alternative political institution is ‘the rule of law’, by which we mean well-

¹² See Dyck (2001), Djankov and Murrell (2002), and Megginson (2005).

¹³ For an interesting case study of the institutional vacuum in one Russian firm, see Gray and Hendley (1997).

¹⁴ A typical characterisation of the institutional environment in which the first wave of Russian privatisation occurred was a ‘systemic vacuum. . . [without] effective regulations and controls’ (Kolodko, 2000, p. 196), permitting ‘a sort of Hobbesian capitalism’ (Freeland 2000, p. 21).

defined and enforced property rights, broad access to those rights and predictable rules for resolving rights disputes. The gain from the rule of law is that it makes property rights effective. We assume that for *every* agent, this is a gain: the profit incentives of a private firm under the rule of law are stronger than the rent-seeking incentives in the non-rule-of-law state (see inequality (4)). The question we address in this article is whether this assumption is sufficient to ensure a demand for establishing the rule of law.

In each period, individuals have to express a political preference, e.g. by voting over policies that would create the rule of law. Voting is a metaphor for the myriad ways, such as lobbying an elected policy maker, that individuals influence the collective choice over institutions. We assume that the probability π_t of transition to the rule of law in period t is a decreasing function of the fraction of agents, denoted x_t , who vote against the establishment of the rule of law:¹⁵

$$\pi_t = \pi(x_t), \pi'(\cdot) < 0 \quad \text{for } x \in (0, 1), 0 = \pi(1) < \pi(0) = 1. \quad (1)$$

Equation (1) means that the probability that the rule of law will be established rises from zero to one as the proportion of agents opposed to its establishment falls from 100% to zero.

We also assume that the rule of law is an absorbing state: once it is established, the society continues in that state forever. Similar results would hold if there were a small probability of reversion to the non-rule-of-law state.¹⁶

1.3. *The Payoffs*

For simplicity, we model the process of building the value of an asset as requiring a given level of investment. An individual who builds value in a period obtains an income flow f per unit asset and makes an investment $I^j < f$ per unit asset, where j is the state of the world (N or L) at the end of the period, and $I^N > I^L$.¹⁷ One way to motivate this is to suppose that if N is the end-of-period state, then the firm must invest in the private enforcement of property rights to obtain a return on its investment.

Let b^j denote the net flow from building value:

$$b^j = f - I^j \quad \text{for } j = N, L. \quad (2)$$

Building value increases the asset to a proportion $\tilde{g} > 1$ of its former size. We assume $\delta\tilde{g} < 1$ so that asset values are finite.

The model makes an important simplification that leads to an underestimation of the value of the rule of law – the model abstracts from direct externalities across firms. In the real world, if a large fraction of the economy is engaged in asset stripping, then (as in Russia in the 1990s) overall production suffers. We abstract from these externalities in order to focus on externalities mediated by the political environment.

¹⁵ A part of the economy does not have control rights over firms. A premise of the analysis is that those who do are the decisive ‘voters’ over whether to create impartial third-party enforcement of property rights and contracts.

¹⁶ It would be easy to model such a reversion within our Markovian framework, and it is clear from Figure 1 that reversion occurs. Our assumption of no reversion increases the gains from transition to the rule of law and, thus, makes it more surprising that a strong demand for rule of law may not emerge.

¹⁷ Alternatively, as in Hoff and Stiglitz (2004a), we could model the rule of law as entailing an *increased* return from the *same* level of investment – e.g. because it reduces the costs of distribution. Nothing depends on the choice between these two simplifications.

Consider next the payoff to stripping assets. An agent who strips will increase the flow of income per unit asset at the cost of reducing the asset to a proportion $\tilde{z} < 1$ of its former size. Let s^j denote the payoff per unit asset to an agent of type θ , where j is the state of the world at the *end* of the period:

$$s^N(\theta) = \theta, \quad s^L(\theta; \lambda) = (1 - \lambda)\theta \quad \text{with } \lambda > 0. \quad (3)$$

In this expression, λ represents the diminution in the ability to strip after the imposition of the rule of law, which circumscribes certain actions used by strippers. λ also measures the expected recapture of current income from stripping if the transition to the rule of law occurs in a given period. Thus, an agent of type θ who is stripping assets suffers a loss $\theta\lambda$ in expected value in the transition period. This is his cost of exiting the lawless state.

As discussed above, we assume that for all agents, building value under the rule of law yields a higher lifetime utility than stripping assets under non-rule-of-law, i.e.

$$\frac{b^L}{1 - g} \geq \frac{\theta}{1 - z} \quad (4)$$

for all θ and with strict inequality for some θ , where $g \equiv \delta\bar{g}$ and $z \equiv \delta\tilde{z}$. One way to view the rule of law is that it suppresses the inferior, stripping technology – analogous to pulling a ship apart at sea – in favour of the superior, value-creating technology – rebuilding the ship. Below, we consider agents' choice of economic strategy in the initial state N – that is, in the wreckage of the central planned economy.

1.4. *The Choice of Economic Strategy*

If the initial state is N , individual economic choices are predicated on the path of aggregate political behaviour, $x_t, x_{t+1}, x_{t+2}, \dots$. Each agent has an expectation concerning these values, and in the equilibria explored here the expectation is correct. We will investigate a subset of possible equilibrium paths such that, as long as non-rule-of-law state prevails, the fraction of agents opposed to reform remains the same: $x_t = x_{t+1} = x_{t+2} = \dots \equiv x$. We will derive the *economic switch line* as those combinations of (x, θ) for which the agent is indifferent in state N between building value and stripping assets.

An agent of type θ has expected income per unit asset of $\bar{b}(x) = \pi(x)b^L + [1 - \pi(x)]b^N$ if he builds value in a given period, and $\bar{s}(x, \theta; \lambda) = \theta[1 - \pi(x)\lambda]$ if he strips assets. We write utility recursively. We denote it by $V_N(x)$ if the *initial* state is N and the individual chooses to build value, and similarly for V_L . Thus,

$$V_L \equiv \frac{b^L}{1 - g}. \quad (5)$$

If the initial state is N , then an individual of type θ will choose to build value in every period if and only if

$$V_N(x) \equiv \bar{b}(x) + g\{\pi(x)V_L + [1 - \pi(x)]V_N(x)\} \quad (6)$$

$$\geq \bar{s}(x, \theta; \lambda) + z\{\pi(x)V_L + [1 - \pi(x)]V_N(x)\}. \quad (7)$$

The inequality in (6) and (7) is equivalent to the condition,

$$\{1 - z[1 - \pi(x)]\}\bar{b}(x) - \{1 - g[1 - \pi(x)]\}\bar{s}(x, \theta; \lambda) + \pi(x)(g - z)V_L \equiv \Delta(x, \theta; \lambda) \geq 0 \quad (8)$$

The sign of $\Delta(x, \theta; \lambda)$, defined in the right-hand side of (8), is positive if and only if the individual is better off building value than stripping assets if the initial state is N . Since Δ is strictly decreasing in the agent's ability to strip, i.e.

$$\frac{\partial \Delta(x, \theta; \lambda)}{\partial \theta} = -[1 - \pi(x)\lambda]\{1 - g[1 - \pi(x)]\} < 0, \quad (9)$$

there is a critical value of θ for each value of x , which is denoted by $\theta_a(x; \lambda)$ and implicitly defined by

$$\Delta(x, \theta_a; \lambda) \equiv 0. \quad \text{Economic switch line} \quad (10)$$

Agents with $\theta \leq \theta_a$ build value in every period and have utility equal to (6) or, equivalently,

$$V_N(x) = \frac{\bar{b} + \pi g \frac{b^L}{1 - g}}{1 - (1 - \pi)g} = \frac{\bar{b}}{1 - g} + \frac{\pi g}{1 - g} [V_L - V_N(x)]. \quad (11)$$

Agents with $\theta > \theta_a$ strip assets until the transition to state L occurs, and have utility¹⁸

$$S_N(x, \theta; \lambda) = \frac{\bar{s} + \pi z \frac{b^L}{1 - g}}{1 - (1 - \pi)z} = \frac{\bar{s}}{1 - z} + \frac{\pi z}{1 - z} [V_L - S_N(x, \theta; \lambda)]. \quad (12)$$

In Figure 2, the switch line is negatively sloped because an increase in x lowers \bar{b} and raises \bar{s} . Greater constraints on stripping (higher λ) shift up the switch line because they make stripping less profitable. Formally, we have:

PROPOSITION 1.

$$(a) \frac{\partial \theta_a(x; \lambda)}{\partial x} < 0 \quad \text{and} \quad (b) \frac{\partial \theta_a(x; \lambda)}{\partial \lambda} > 0.$$

Proof. Differentiating (10) gives $\frac{\partial \theta_a}{\partial x} = -\pi' \frac{\partial \Delta(x, \theta_a; \lambda) / \partial \pi}{\partial \Delta(x, \theta_a; \lambda) / \partial \theta}$, where

$$\begin{aligned} \frac{\partial \Delta(x, \theta_a; \lambda)}{\partial \pi} &= (b^L - b^N)[1 - (1 - \pi)z] + \theta_a \lambda [1 - (1 - \pi)g] \\ &\quad + [(g - z)V_L - g\bar{s}(x, \theta_a; \lambda) + z\bar{b}(x)]. \end{aligned} \quad (13)$$

The first two terms of (13) are positive by construction. We prove in the Appendix that the final bracketed term is also positive. Part (a) then follows immediately from (9). Similarly we obtain $\partial \theta_a / \partial \lambda = -\pi(x)\theta_a\{1 - g[1 - \pi(x)]\} / \partial \Delta(x, \theta_a; \lambda) / \partial \theta > 0$, which proves part (b).

¹⁸ The bracketed terms on the right-hand side of (11) and (12) are the capital gains from transition to the rule of law.

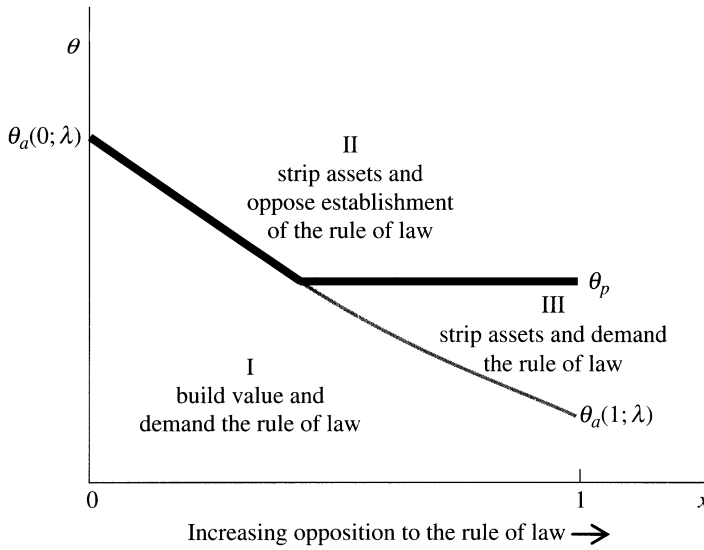


Fig. 2. *The Switch Lines*

1.5. *Preferences over Political Institutions*

In each period, agents express a political preference, e.g. by voting, over the rule of law. Those who build value demand the rule of law, since it would increase their incomes currently and in the future. Those who strip assets face an intertemporal trade-off. Their lifetime income is $(1 - \lambda)\theta + zV_L$ if the transition to the rule of law occurs at the end of the current period, and $\theta + zS_N(x, \theta; \lambda)$ otherwise.

Let β denote an asset-stripper's benefit (which could be positive or negative) if state N persists one more period:¹⁹

$$\beta(x, \theta; \lambda) = \lambda\theta - z[V_L - S_N(x, \theta; \lambda)]. \tag{14}$$

β is a strictly increasing function of θ because those who strip better have a greater cost of exiting the lawless state:

$$\frac{\partial \beta}{\partial \theta} = \lambda + \frac{(1 - \pi\lambda)z}{1 - (1 - \pi)z} > 0 \tag{15}$$

and so there exists a switch point, which we denote by θ_p , at which $\beta = 0$. The switch point has the following properties, as one can easily check:

PROPOSITION 2. θ_p is decreasing in λ and is invariant to aggregate political behaviour, x .

$$(a) \frac{\partial \theta_p}{\partial \lambda} = - \frac{\partial \beta / \partial \lambda}{\partial \beta / \partial \theta} < 0, \quad (b) \frac{\partial \theta_p}{\partial x} = - \frac{\partial \beta / \partial x_{\beta=0}}{\partial \beta / \partial \theta} = 0. \tag{16}$$

The intuition for (16a) is that since the higher is λ , the greater an asset stripper's cost of exiting the lawless state, more agents will oppose the establishment of the rule of law

¹⁹ We treat (14) as if it is defined over all θ , but it affects behaviour only through (17), i.e. it is relevant only to asset-strippers.

(θ_p is decreased). For (16b), the intuition is that when $\beta = 0$, individuals are indifferent between states, and so a marginal change in x has a zero first-order effect on an individual's 'vote'.

We are now ready to define the *political switch line*, denoted $\theta^*(x; \lambda)$, as those combinations of (x, θ) for which the individual is indifferent between states N and L :

$$\theta^*(x; \lambda) \equiv \text{Max}(\theta_a, \theta_p). \quad \textit{Political switch line} \tag{17}$$

Agents of type $\theta \leq \theta^*$ demand legal reform (the rule of law) and agents of type $\theta > \theta^*$ oppose it. Figure 2 depicts an example of a *political switch line*. It coincides with the *economic switch line* for $\theta_a > \theta_p$, and otherwise, corresponds to θ_p . As shown in the Figure, some asset-strippers support the rule of law even though its establishment will make them vulnerable to the recapture of illegitimate gains from asset stripping; the long-run benefits from the rule of law exceed the 'exit cost' of transition. These agents fall in Region III of the Figure, where $\theta_a < \theta < \theta_p$.

There are also two possible polar configurations. The first occurs if λ is so high – and thus θ_p is so low – that *no* asset stripper demands the rule of law. The second configuration, depicted in Figure 3, occurs if $\lambda = 0$. (In the Figure, θ_{max} denotes the maximum ability to strip among agents, which is implicitly defined by writing (4) as a strict equality.) With no risk of recapture of stripping returns, there is no exit cost from the lawless state and so *all* asset strippers demand the rule of law. We will argue in Section 4 that the rule of law, *by constraining the content of laws*, bars setting $\lambda = 0$.

1.6. The Stripping Ability Curve

To analyse the equilibrium demand (x) for the rule of law, one additional curve is needed that reflects the distribution of types in the population. We denote by the

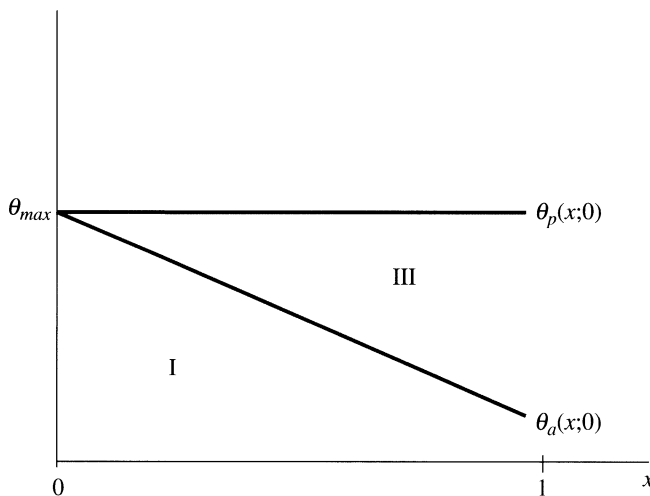


Fig. 3. *The Switch Lines When There is No Risk of Recapture of Stripping Returns*

stripping ability curve the function $x(\theta) = 1 - H(\theta)$. For each value of θ , the stripping ability curve gives the fraction of agents whose ability to strip is greater than or equal to that value. If the distribution of θ is approximately normal, then the stripping ability curve will have the shape of the dotted line in Figure 4; another example is in Figure 5(a).

1.7. Equilibrium Paths

An equilibrium path in the lawless state depends on the fraction of agents x^* who oppose the establishment of the rule of law, where x^* solves

$$x^* = 1 - H[\theta^*(x^*; \lambda)]. \quad (18)$$

An interior equilibrium is a pair of values (x, θ) that satisfy the *political switch line* and the *stripping ability curve*. Since both curves are downward sloping, they can have more than one intersection. Figure 4 depicts the case of two stable values of x^* (at 0 and x'').

Figure 4 also depicts an unstable equilibrium, at x' . At that point, the *political switch line* is steeper than the *stripping ability curve*. This means that the response along the political switch line to a perturbation in x will be greater than the perturbation itself. So if there is a perturbation at x' , the 'switched' agents do not wish to switch back. The perturbation changes the way agents believe the system will evolve, which lowers θ_a by so much that some agents change their economic strategy and, having done that, face sufficiently high exit costs that *their preference ordering over political institutions changes*. Thus the path along which a fraction x' opposes the establishment of a rule of law in each period is unstable.

The model could have two corner solutions: $x^* = 0$ is always an equilibrium (though it need not be stable), since at $x = 0$ the *political switch line* lies above, or is coincident with, the *stripping ability curve*. $x^* = 1$ is also an equilibrium if the *political switch line* lies

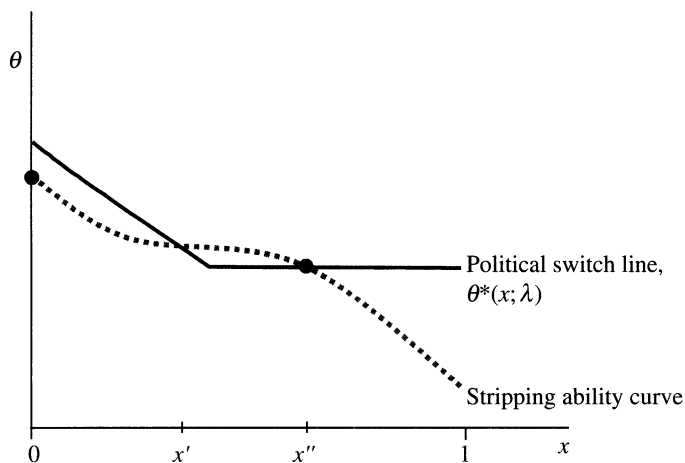


Fig. 4. Multiple Equilibria

below the *stripping ability curve* at $x = 1$. If this point is an equilibrium, then the society is trapped in the non-rule-of-law state.²⁰

The model clarifies the effect of changes in the expected recapture fraction, λ .²¹ A decrease in λ makes asset stripping more attractive (the *economic switch line* shifts down) but also increases the demand for rule of law by asset strippers (the *political switch line* shifts up). The net effect on support for the establishment of the rule of law thus depends on the nature of the original equilibrium. Starting from a stable equilibrium in which the marginal 'voter' is a wealth-creator,²² a reduction in λ *increases the opposition* to the establishment of the rule of law, since it increases the fraction of agents who strip assets. However, starting from a stable equilibrium in which the marginal 'voter' is an asset stripper, the effect is the opposite: a reduction in λ *increases the demand for* the rule of law, since it lowers exit costs from a lawless state.

1.8. A Numerical Example

In the standard model of 'political and economic losers' who block reform (see references in fn. 1), dysfunctional institutions serve the interests of narrow groups at the expense of everyone else. In our model, in contrast, *the victims of the dysfunctional institutions include those who choose them*. To illustrate this, we present a numerical example. In the example, we assume:

- (a) a transition probability equal to the squared demand for the rule of law: $\pi(x) = (1 - x)^2$,
- (b) a set of values of the parameters,²³ and
- (c) a distribution of stripping abilities in which two-thirds of the agents have $\theta = \theta_{max}$ and among the remainder, θ is uniformly distributed on $[0.65, \theta_{max}]$.

Figure 5(a) shows that the stable equilibria of x^* are 0 and 0.75. In the first case, no one opposes the establishment of the rule of law, and reform occurs in period 1. In the second case, three-fourths of the agents oppose the rule of law, and reform is delayed on average for 16 periods.²⁴ Figure 5(b) depicts the growth paths of agents' expected aggregate lifetime income in these two cases.²⁵ Expected aggregate income is 20% lower along the path of delayed reform. Every agent is strictly worse off.

²⁰ As emphasised by Greif (1994), culture is an equilibrium selection device and so it is interesting to consider within this model the role that culture might have played in Russia. Two facts suggest that the 'good' corner equilibrium, with $x^* = 0$, would not be a focal point: (a) managers commonly engaged in asset stripping well before the mass privatisation of 1992–4 (Grigoriev, 1992) and (b) most beneficiaries of the mass privatisation of large state enterprises in Russia were the managers. For instance, Varese (2001, Appendix B), finds in his survey of one Russian city in 1993 that 51% of the 92 full-time officials of the Communist Party in 1988 were top managers of economic enterprises.

²¹ We discuss other comparative statics results in Hoff and Stiglitz (2004a).

²² Or, more accurately, if the intersection of $\theta^*(x; \lambda)$ and the *stripping ability curve* lies along θ_a , not θ_p .

²³ $f = 0.05$, $f^L = 0.01$, $f^N = 0.0475$, $\tilde{g} = 1.05$, $\tilde{z} = 0.9$, $\lambda = 0.3$, and $\delta = 0.945$. Using (4), these values imply $\theta_{max} = 0.8$. The EXCEL program is available at <http://www.econ.worldbank.org/staff/khoff>.

²⁴ One can show by standard methods that given a transition probability π per period, the expected number of periods before reform is $1/\pi$. If $x^* = 0.75$, then $\pi(x^*) = 0.0625$ and the expected delay is 16 periods.

²⁵ When $x^* = 0.75$, 87% of agents build value (the marginal asset-stripper demands the rule of law). To compute aggregate income, we assume that each agent has control rights over an equal share of aggregate assets. This implies that the fraction of *agents* who strip assets equals the fraction of *assets* that are stripped.

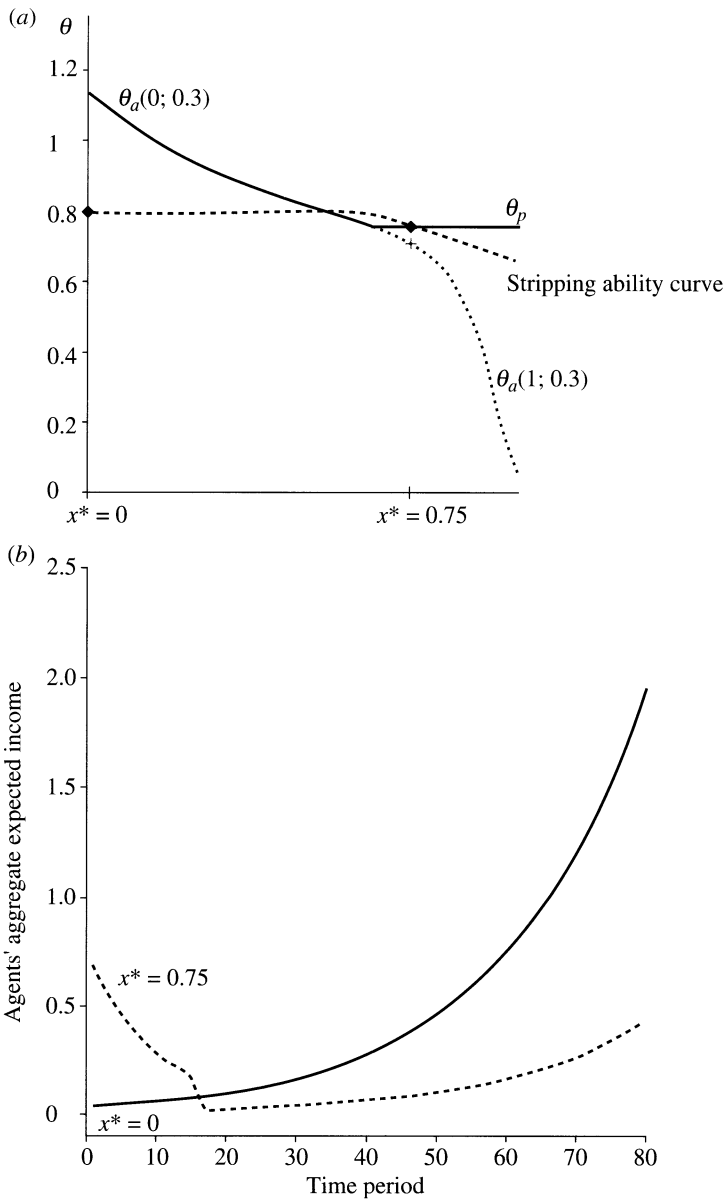


Fig. 5. (a) A Numerical Example (b) Paths of Agents' Aggregate Expected Income

2. Sources of Historical Dependence

In the Markovian model we have constructed, actions do not depend on history. In this Section, we consider sources of historical dependence.

2.1. History-dependent Payoffs

An important example of history dependence are endogenous shifts in the distribution of types $H(\theta)$. Consider a set of societies with initially similar distributions of types

among which, for some reason, one subset began with an initially high level of asset stripping and another subset with an initially low level. If stripping assets was characterised by learning-by-doing, then behaviour would be self-reinforcing. The distribution of types would diverge over time, as would the degree of support for the rule of law. As Holmes (2003, pp. 20–1) states,

Bullies and plunderers – who could never flourish if the rules of the game were crystal clear and reliably enforced – cannot be expected to promote or enforce a system that will radically devalue the rude skills of acquisition and domination they have perfected in the state of nature.

Efficiency in stripping may also increase as it becomes more institutionalised (and similarly, the ability to engage in growth-enhancing investments may increase with use, or atrophy without it).

An offsetting factor would be that as the stock of assets goes down, the returns from further stripping decline. When assets to strip run out, everyone would support the rule of law. However, in natural resource-rich economies, such as Russia's, this would not happen quickly.

A further source of history dependence are labour adjustment costs if hired labour is specialised to either stripping assets or building value, e.g. mobsters *vs.* engineers. A formal model is Krugman (1991).

2.2. *History-dependent Beliefs*

The experience of the transition may reinforce one or another view of man; one can learn to trust, or not to. A history of corruption may influence a social group's norms in ways that would make it harder to achieve a rule of law state (Fisman and Miguel, 2006). The following response of a Russian minister to allegations of corruption illustrates that the abuse of power can come to be publicly perceived as legitimate:

Vladimir Rushaylo has flatly denied the allegations that 70 per cent of all Russian officials are corrupted . . . 'Only those who have links with the organised criminal gangs can be regarded as corrupted officials. Do not mistake bribe-taking for corruption,' the Russian Interior Minister stressed.

(RIA news agency, Moscow, March 13, 2001/BBC Monitoring © BBC)

2.3. *Cumulative Exit Costs*

We assumed that only those assets stripped in the transition period were subject to recapture, whereas assets stripped in earlier periods were 'grandfathered' – time had gained them legitimacy. In reality, it is the cumulative stock of asset stripping that is at risk of recapture. As the stock increases over time, the costs of exiting the non-rule-of-law state also increase. This effect would be even larger if, as the amounts taken mount, demands that more of the assets be recaptured increase, i.e. λ increases.

Recapture may not be the only exit cost. Asset strippers who have engaged in criminal activity may also face a risk of retroactive criminal prosecution. Recognising

the huge cost associated with the transition to the rule of law, they may ‘invest’ a great deal in the maintenance of the non-rule-of-law state, including murdering those who work to establish the rule of law. Not only are some individuals locked in by their past but others who might wish to support the rule of law may incur tremendous risks in doing so.²⁶

3. Policies that Change the Political/Economic Dynamics

A better understanding of barriers to institutional reform can serve as a guide to what conditions might be changed in order to achieve success. We will consider first the sequencing and pacing of reform, and then macroeconomic policy.²⁷

3.1. *The Sequencing and Pacing of Reform*

The model in Section 1 analysed how, *after* privatisation, asset-stripping affects the demand for the rule of law. Here we develop a very simple model that links what happens *before and during* formal privatisation – and what happens *after*. The extended model captures aspects of the debate in the 1990s between advocates of ‘gradualist policies’ and proponents of a ‘Big Bang’ approach to privatisation. (In the end, only Russia and the Czech Republic followed the latter approach.) A gradualist approach postpones privatisation until corporate governance institutions are in place, whereas a Big Bang, sometimes called ‘shock therapy’, privatises as rapidly as possible.²⁸

At the outset of the transition from communism, a central rationale for rapid privatisation was to avoid the diminution of wealth within the state from asset stripping and inefficiency. Let Y_G denote output per period from the initial stock of assets in the public sector. If wastage reduces the assets each period to a proportion μ of their former size, and if the assets are privatised at time T , then the assets will have diminished by a factor μ^T .

Gradualism entails creating corporate governance mechanisms that reduce the ability of an agent to strip assets after privatisation. Such mechanisms shift down the *stripping ability curve*.²⁹ We parameterise the shift by a function $\omega(\cdot)$. The faster the privatisation, the weaker is corporate governance.

²⁶ The assassination in of V. Golovlyov, a member of the Duma, is one of a long list of assassinations, nearly all unsolved, of Russian public officials. It was believed that ‘Mr. Golovlyov was killed by former cronies because he had jumped [from a criminal past] to the side of the law helping the investigators.’ (Michael Wines, *New York Times*, August 24, 2002).

²⁷ On the uses of political-economic models for posing normative questions with regard to aspects of policy that are treated as exogenous, see Rodrik (1993). Besides the two policies considered in this Section, another key influence on the demand for rule of law are controls on international capital flows; see e.g. Qian (1999), Hoff and Stiglitz (2004a) and Braguinsky and Myerson (2007).

²⁸ This policy choice also has implications, which we do not discuss here, for the manner of privatisation (its perceived legality and the ability to transfer state enterprises to outsider, not insider, owners, with large consequences for privatisation’s success) and also for employment losses and fiscal costs; see Roland (1994), Dewatripont and Roland (1995) and Frydman *et al.* (1999). An engaging overview of the debate is McMillan (2002, ch. 15).

²⁹ One measure of this is in Atanasov *et al.* (2007), which shows that following a change in Bulgarian securities law to restrict the scope for financial tunnelling, share prices jumped in a high-risk-of-tunnelling group of firms relative to share prices in a low-risk control group.

Given the initial stock of assets in the public sector, I let $W[x^*(\omega, \lambda), \omega(T), \lambda(T)]$ denote the maximised value after privatisation of expected future income *as of time* T . The model of Section 1 maps into this function. $W(\cdot)$ depends on the constituency against the rule of law, $x^*(\omega, \lambda)$ and also depends directly on the extent of corporate governance mechanisms ω and on λ through their influence on stripping.

The value of expected future income *at time zero* can be written as

$$\frac{Y_G}{1 - \delta\mu} (1 - \delta^T \mu^T) + \delta^T \mu^T W[x^*(\omega, \lambda), \omega(T), \lambda(T)]. \quad (19)$$

Equation (19) captures several effects of delaying privatisation. First, delay means greater dissipation of value while assets remain in the public sector. But transferring property to the private sector does not eliminate agency problems.³⁰ Strengthening corporate governance institutions increases the value of the assets in the hands of the private sector. A third set of effects relates to the political dynamics. Creating better corporate governance institutions before privatising large state enterprises reduces the incentives and scope for asset stripping and so influences the constituency for reform.

Thus, if one plots social welfare in (19) as a function of the speed of privatisation, it may be that some delay in official privatisation trades off optimally the agency costs of state ownership with the agency costs and political risks (given weak corporate governance) of private ownership. Figure 6 depicts this case.

But whether a comparison of gradualism and the Big Bang is a relevant comparison for Russia is contentious. In one view, no reform-minded government existed to ‘engineer’ the transition. As the Russia historian Stephen Kotkin (2001) writes:

The idea that the collapse suddenly ended in December 1991 and that a handful of new ‘democrats’ or ‘radical reformers’ had come to power, was silly. (p. 7)

...[*W*]ho was supposed to have implemented [the critics’] suggested state-led ‘gradualist’ policies – the millions of officials who had betrayed the Soviet state and enriched themselves in the bargain? No Russian leadership, rising to power by virtue of the spiraling collapse of central (Soviet) state institutions, could have prevented the ensuing total appropriation of bank accounts and property that ...were in the hands of unrestrained actors. (p. 116, emphasis in original)

A second perspective is that Yeltsin enjoyed enormous authority in the autumn and winter of 1991–2. That authority gave him the opportunity to *change the political forces in place before implementing privatisation*. Had he made those changes, he could have

³⁰ In both the public and the private sectors, deadweight losses arise because information is asymmetric, incentives are not aligned and controllers take distortionary actions to divert assets and income from the ‘true’ owner (the state or the corporation) to themselves (Stiglitz, 2000). Two recent developments shed light on the importance of agency costs in privatised firms in Russia: (a) A study finds that oligarchs who controlled *state* enterprises reported twice as much income as those who controlled *private* enterprises, ‘presumably because it was more difficult to hide incomes in those businesses’ (Braguinsky, forthcoming). The less income that is hidden, the less income that is likely diverted, with consequent deadweight losses. (b) One can interpret actions of Putin to limit the ability of privatised Russian firms to sell reserves of natural resources as reflecting his belief that this will reduce the diversion of assets (see *The Russia Journal*, ‘Kremlin eyes Russia’s natural resources,’ Aug. 2–8, 2002 repr. in Johnson’s Russia List).

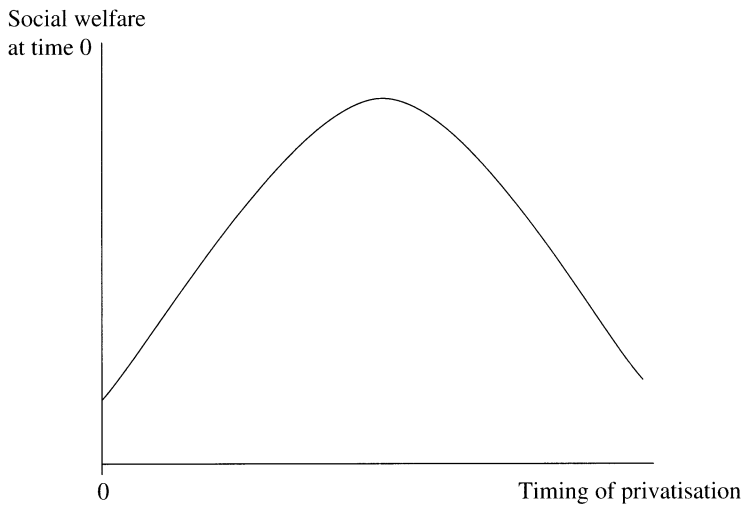


Fig. 6. *Social Welfare When Delaying Privatisation Lowers Private Sector Agency Costs*

implemented gradualism. He chose not to do this and to focus instead on economic reforms first.³¹

A third view is that while gradualism was not politically feasible in Russia because it would have expropriated powerful stakeholders, Big Bang privatisation was both feasible and also favourable to the progress of Russia towards a free market economy because it would *change the interests of the key political players*. Fast privatisation, moreover, would constrain the policy options of future governments that might oppose capitalism (Boycko *et al.*, 1995; Shleifer and Treisman, 2000).³²

History cannot readily resolve counterfactual questions. However, Poland provides an example where advocates of Big Bang privatisation had argued that gradualism was not politically feasible but privatisation was delayed and wealth within the state was preserved (the rate of wastage μ was low). Given Poland's success in preserving wealth and in moving towards the rule of law,³³ there is a strong presumption that Big Bang privatisation would have been inferior to the gradual privatisation strategy that Poland adopted. It is also plausible that Russia could have preserved a large fraction of its principal assets, natural resources, within the public sector: In extractive industries, one can at worst steal the flow. If the right to sell assets does not exist, no one can steal the capital value.

3.2. *Macroeconomic Policy*

Macroeconomic policy can also change the political/economic dynamics that we investigate in this article. In post-communist countries, rapid price liberalisation led to

³¹ This view is held with various nuances by Fish (1994), McFaul (1995, pp. 225–7), Dewatripont and Roland (1995), Black *et al.* (2000), Reddaway and Glinski (2001) and Goldman (2003).

³² Biais and Perroti (2002) and Hoff (2003) discuss the limits of the strategic use of privatisation.

³³ See Belka *et al.* (1993) and Grzymala-Busse (2003).

high inflation, which led to tight monetary policy to dampen the inflation. We will slightly modify the model of Section 1 to capture a link between macroeconomic policy and institutional change.

We relax our assumption in (1) about the probability $\pi(\cdot)$ of transition to the rule of law. We assume here that a particular type $\hat{\theta}$ is decisive, as in the case of a median voter model,³⁴ so that we can direct attention at how policy affects him. We also assume that $\hat{\theta}$ is sufficiently high that if an individual of type $\hat{\theta}$ strips, he will oppose the establishment of the rule of law in the current period, i.e. $\hat{\theta} > \theta_p$. Thus, if he strips, $\pi = 0$ and his utility is $S_N(\hat{\theta}, r) = s^N(\hat{\theta}, r) + zS_N(\hat{\theta}, r)$, where r denotes the interest rate. If he builds value, then $\pi = 1$ and his utility is $V_L(r) = b^L(r) + gV_L(r)$. Under plausible circumstances, raising r lowers the relative return to building value: at a higher value of r , the cost of capital is higher, the likelihood of credit rationing is greater and future profits obtained from current investments are more heavily discounted.³⁵

Government chooses a level of public spending, G , and through monetary policy influences the level of the interest rate.³⁶ The rule of law will be established if

$$\frac{s^N(\hat{\theta}, r)}{1 - z} \leq \frac{b^L(r)}{1 - g}. \quad \text{Rule-of-Law constraint} \quad (20)$$

Equating the two sides of (20) implicitly defines a critical value \hat{r} . Only if the interest rate is below it will the rule of law be established.

Suppose that social welfare depends on growth, the level of social expenditures, and inflation and, in turn, these three variables depend on r and G . In any given state (N or L), welfare is an indirect function of these two government policies. In Figure 7, in the traditional approach, the social optimum is at point P . That approach takes the political institutions as given but in this article we have emphasised their endogeneity.

Suppose that social welfare under the rule of law is so much higher than under no rule of law that under any policy, the rule-of-law state provides greater welfare than the non-rule-of-law state. Then $\{r, G\}$ should be chosen so that the rule of law emerges as part of the political equilibrium, i.e. $r \leq \hat{r}$. The iso-welfare curves are dashed in the policy region where the rule of law is unattainable. Maximum social welfare is obtained at point P' , not P .

4. Is It Possible to Have Secure But Illegitimate Rights to Income?

All that we require to generate the possibility of losers from reform is that society cannot commit to $\lambda = 0$. Some defenders of Big Bang privatisation have argued that the reason for the failures is the fear of renationalisation, and that all that is required to turn defeat into victory is to guarantee that there will be no recapture of assets even from those who have engaged in stripping of corporate value or in other respects

³⁴ Suppose that the establishment of the rule of law depends on a majority voting rule: $\pi = 0$ if $x > 1/2$ and otherwise $\pi = 1$. The 'tipping point' at which the rule of law is established is a population fraction $\hat{x} = 1/2$. Associated with the tipping point is a critical value of stripping ability, which we denote by $\hat{\theta}$, such that half of the population has a stripping ability above the critical value and half below it.

³⁵ This result can be derived by positing in our basic model that the discount factor is a function of r .

³⁶ For simplicity, suppose that the level of G does not affect the relative return to building value.

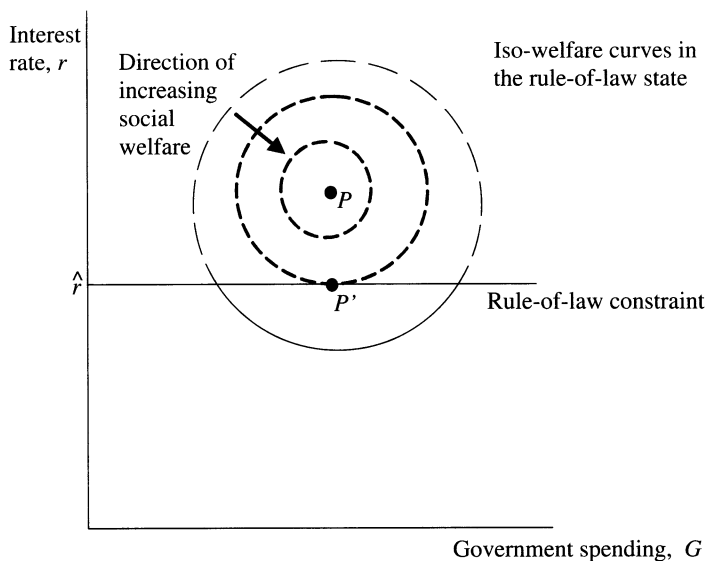


Fig. 7. *Rule-of-law Constraint*

defrauded investors or the state. In this Section, we explain why it may be neither desirable, nor feasible, to provide such a guarantee.

It may actually be functional for society that some recapture of past theft is expected. A key limit on the extent of opportunistic behaviour in a lawless state is that such behaviours are punished under a future regime. If self-interested individuals perceived λ to be zero, then, until the moment of the establishment of the rule of law, each would be trying to steal as much as he could. On such grounds, Adam Smith (1759, Part II, ii, 3.3) argued that justice was necessary to the existence of society.

The *sine qua non* of the rule of law or any rule-governed state is the effective restriction on arbitrary power. Our article focuses on a limited range of theft – that of corporate assets. It is difficult to see how a society could commit itself to totally forgiving corporate theft (if its costs were viewed as high), while not doing so for other forms of theft. And the latter, both theory and history suggest a rule-governed state cannot do.³⁷ Instead of reviewing this vast literature, we suggest one mechanism that would make such a commitment impossible in a democracy.

The consequences of the state's seizing illegitimately taken property are markedly different from the consequences of the state's taking or redistributing legitimately obtained wealth. It is rational for politicians seeking to increase their share of the electorate to argue for the first and not the second and for redistributing the illegitimately obtained wealth to voters. Nationalising stolen wealth does not harm investment incentives. On the contrary, it improves them.

³⁷ See fn. 9 and Elster (2004), who finds that attempts to design institutions to protect once politically powerful groups from justice under successor regimes have never succeeded. Such protection was denied not only to past elites, but even to ordinary people who '[a]lthough not wrongdoers... were the beneficiaries of wrongdoing' (Elster, p. 39).

In contrast, in a democratic society, what stops nationalisation of legitimate wealth and its distribution to voters by politicians is that doing that would discourage investment, which would leave most citizens worse off. By the same token, what may stop nationalisation of illegitimately taken wealth is that beliefs about its unfairness change, or that the new owners are more efficient than the old owners and so better able to command power and to benefit society.³⁸

Myths have a role to play in changing a political consensus but inventing myths takes time. In Russia, there is evidence that rights' holders have some but limited ability – through investing in the firms and providing public goods – to change the perceived legitimacy of their property rights (Frye, 2006).

It is at times of transition that new myths and beliefs are created. At the beginning of the transition, not everyone believed that privatisation and the creation of a market economy would, at least by themselves, improve the well-being of most citizens. Support for the Coasian position that, in the absence of transaction costs, *any* distribution of property rights under a rule of law is efficient and therefore should be respected, depends on the fact that it actually does lead to efficient outcomes. There is an equilibrium in which this is not believed and justifiably so, because it does not produce the promised results if it is not believed. Distrust in this proposition undermines the legitimacy of rights directly and, indirectly, weakens property rights through the mechanism outlined in our model, by undermining the demand for the rule of law. Our article has investigated this type of coordination failure and the 'exit costs' from a non-rule-of-law state to which the coordination failure gives rise.

5. Avenues for Future Research

Our model leaves open a wide range of problems for future work:

5.1. *The Evolution of Inequality*

As is well known, in Russia many of the asset-strippers evolved into oligarchs and the loans-for-shares programme in 1995–7 consolidated the oligarchic structure of power. The dysfunctional institutions in Russia led to a vast increase in inequality of wealth and power; an interesting discussion is Colloudon (2002). This development lies completely outside our model. Moreover, as economic historians have established, high inequality is itself a key factor in the creation and persistence of dysfunctional institutions; see e.g. Engerman and Sokoloff (1997, 2003) and Acemoglu *et al.* (2002). An important problem for future research is thus to incorporate the modelling of changes in inequality with that of changes in institutions. This should shed further light on why attempts to jumpstart capitalist institutions are hazardous.

5.2. *Bayesian Dynamics*

Not only do we see that the distribution of power coevolves with institutions. A similar process occurs with respect to beliefs. In the post-communist countries, individuals

³⁸ For historical examples, see Rajan and Zingales (2003, ch. 6).

update their beliefs about whether privatisation leads to efficiency on the basis of the economic outcomes of the privatisation and also the incentives of the advocates of particular positions. The fact that short-run outcomes were so poor in many of the post-communist economies and that those advocating rapid privatisation enriched themselves by it so greatly,³⁹ would increase doubts about the validity of the view that a market economy is broadly beneficial (Denisova *et al.*, 2007). An analysis of the Bayesian dynamics, in which agents update their beliefs about the truth of the Coasian view, might help to explain differences across countries in the paths of institutional development.

5.3. *International Policy as a Coordination Device*

We have explored the role of *national* policies (e.g. macroeconomic policy) in limiting the economic behaviour that can reinforce bad institutions. What role can *international* organisations, such as the World Trade Organisation, play in facilitating coordination? In the case of the Eastern European countries, the opportunity to join the European Union made a particular set of rules focal and led individuals to anticipate large rewards from coordinating on them, which helps to explain the successful transitions in those economies; see Elster *et al.* (1998) and Roland and Verdier (2003).

5.4. *Other Applications of the Model*

We have focused on the transition from communism but our analysis has three other applications. Without change, the model can be applied to the problem of post-conflict states in which economic and political structures have collapsed. A second application is to post-colonial countries in which the legitimacy of inherited law is contested. To those currently in possession of assets, there is a risk that another claimant to the property will appear and have the backing of law. This lowers the relative return to investing (relative to asset stripping). Stripping affects the political dynamics. It creates an additional obstacle to the movement towards the rule of law based on any conceivable criteria of legitimacy of property rights.

A third application is to oil field unitisation. Imagine that a number of individuals own an oil reservoir in common; that is, none has the right to exclude any of the others. Overexploitation makes extraction inefficient for each individual by prematurely depleting subsurface pressure. But because no one pays for the use of the field, no one takes this cost fully into account in deciding how to exploit the field. The problem disappears if one individual owns the whole field and charges each individual for his use (Libecap 1989). However, anticipation of delay in unitisation leads to individual drilling. Imagine that every period of individual drilling gives a leaseholder private information about the value of his lease. Then he may gain from a delay in unitisation if his private information is favourable. Delay, by making the information public and so increasing his rental share under unitisation, offsets the impact on him

³⁹ Of the 296 businessmen in Russia ranked by experts as most influential in 1995–9, one-third either came from the ranks of former reformist politicians or their close personal assistants, or became elected politicians or office-holders at some point after becoming wealthy. The Russian media in 1999 named virtually all of these 296 as warranting criminal investigation for asset stripping (Braguinsky, forthcoming).

of the damage to the reservoir. This can lead to opposition to unitisation, period after period.

We hope that some of these issues will be pursued in future research.

Appendix

We use the following property of the economic switch line in the proof of Proposition 1.

LEMMA. $(g - z)V_L - g\bar{s}(x, \theta_a; \lambda) + z\bar{b}(x) \geq 0$

Proof of Lemma. Rearranging terms in (8) and using (10) gives

$$(g - z)V_L = \frac{\bar{s}(x, \theta_a; \lambda) - \bar{b}(x) - (1 - \pi)[g\bar{s}(x, \theta_a; \lambda) - z\bar{b}(x)]}{\pi(x)}. \quad (8')$$

By substituting for $(g - z)V_L$ from (8') and rearranging terms, we can write the left-hand side of the lemma as

$$(g - z)V_L - g\bar{s}(x, \theta_a; \lambda) + z\bar{b}(x) = \frac{1}{\pi}(1 - g)(1 - z) \left[\frac{\bar{s}(x, \theta_a; \lambda)}{1 - z} - \frac{\bar{b}(x)}{1 - g} \right] = (g - z)[V_L - V_N(x)]$$

where the last expression is obtained by substituting for $\bar{b}/(1 - g)$ from (11) and for $\bar{s}/(1 - z)$ from (12) and by recognising that $V_N(x) \equiv S_N(x, \theta_a; \lambda)$. Since $g > z$ and $V_L \geq V_N(x)$, the Lemma is proved.

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