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Economic development and growth in transition countries

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CHAPTER 4

RENT-SEEKING, STATE CAPTURE AND INSTITUTIONAL REFORM IN TRANSITION COUNTRIES

4.1 Summary

We investigate the interrelation between capital accumulation and institutional reform in a general equilibrium framework. For this purpose we introduce institutions and a rent-seeking sector to a standard Ramsey-type model. We find that higher initial capital endowment and productivity may lead to a worse institutional outcome. Although the association between institutional strength and capital investment is ambiguous, weaker institutions are always related to lower income and higher inequality. We show that our insights are in line with stylized reality of a number of transition economies.

4.2 Introduction

One of the unique features of transition countries is that they had to create and develop the institutions of a market economy virtually from scratch. The time available for this tremendous task was limited and only a few countries had any experience with market-oriented reform. In order to understand the institutional configurations that emerged, it is extremely important to know who has played a role in influencing the institutions and by what incentives they have been driven.

Institutions are often assumed exogenously given, which is reasonable for the developed economies, where they have been established as a result of a long historical process and are relatively stable. However, this assumption becomes too strong in the transition context. The existence of transition countries with little or no institutional progress, corruption and poor governance brings us to the sobering conclusion that the policy makers have not been led by the public interest. In extreme cases, government policy has become subordinated to their private interests, and the impact on the overall institutional level has been substantial, a situation known as "state capture" (Hellmann and Schankermann, 2000).

The emergence of these powerful vested interests is related to another feature of transition: the fast destruction of the previous institutional system, and the existence of an initial period of institutional vacuum, when the old institutions were removed or discredited and the new ones - not yet created. This situation has given unique opportunities for well-connected individuals to transform their connections and control from the old system into a potential for lucrative operations and rent extraction (Hellman et al, 2003). This led to the concentration of large wealth in the hands of the rent-seekers (the extreme case being the Russian oligarchs) and large increases in inequality, particularly in CIS countries (Grun and Klasen, 2000).

In order to investigate these interrelationships, we design a theoretical model where

on one hand, prevailing institutions determine the level of output and the degree of rent-seeking in the economy, but on the other hand, institutions are endogenous due to a feedback from economic variables to institutional quality. This feedback is realized through investment in and realization of political influence by rent-seekers. In this way, this study is among few to model the state capture formally and outline some conditions under which it can emerge. Simultaneously, the model describes one possible mechanism of how institutional factors (more specifically, the rule of law and the degree of protection of property rights) affect economic performance (e.g. output, investment and inequality), contributing by this to explaining the "black box" of institutional influence on the economy. To achieve this goal, we embed an institutional index and its dynamics into a standard general equilibrium model with capital and labour, and use heterogeneous agents.

The effects of other social and political factors on institutions and institutional reform have already been described in previous work, for instance the degree of civic virtue and the nature of the privatization process (Hoff and Stiglitz 2005), the degree of democracy (Acemoglu and Robinson 2008), inequality (Chong and Gradstein 2007). However, all these factors are slowly moving, whereas the "wealth" variables we consider can change much quicker. Moreover, they can themselves be affected by the institutional dynamics, creating in this way a complex feedback mechanism.

Our main novel result is that an increase in variables like the capital stock or total factor productivity may both increase the influence of interest groups on policy-making and have a negative effect on institutions. It means that better economic development does not necessarily mean better institutions. We also demonstrate that the model conforms well to several transition-related stylized facts like the inverse relationship between institutional development and inequality.

The rest of the chapter is organized as follows. Section 4.3 presents an overview of the phenomena of rent-seeking and state capture, including a case study on Bulgaria, which to the best of our knowledge is the first attempt to systematize this evidence for recent years in Bulgaria. Section 4.4 indicates the place of the chapter in the broader literature, outlining the relationship of our model with previous models, and provides justification for the model's assumptions. Section 4.5 presents stylized facts concerning institutions in transition countries, which serve as important guidance for the model formulation and results. Section 4.6 presents the model setup, Section 4.7 explains the parameterization of the model, and Section 4.8 presents the numerical solution and the comparative statics. Finally, Section 4.9 discusses the model's findings and draws conclusions.

4.3 Rent-seeking and state capture in transition

4.3.1 General considerations

Almost all transition countries have witnessed examples of rent-seeking, or extracting of value from unproductive activities at the expense of the other economic agents. Unreformed institutions led to the emergence of rent-seeking possibilities, which provided much higher profit than productive entrepreneurship and in some cases real windfall gains (Havrylyshyn, 2001). For instance, managers of state-owned enterprises obtained subsidized government credits and invested them at the market interest rate; subsidized energy

and raw materials were re-sold at the market price. Half-way reform of the financial sector and dysfunctional financial supervision provided the new bank owners with a possibility for profitable arbitrage (Hellman, 1998). The lack of effective control over managers in state-owned enterprises allowed large-scale asset-stripping and increasing the insiders' stake in the former state-owned enterprises, particularly under privatization schemes favouring inside ownership (Black et al., 2000, Moser and Oppenheimer, 2001). Examples from early transition are well documented and are characteristic to varying degrees of all transition countries. However, there are countries which exhibit persistent rent-seeking even almost two decades later, as the case study on Bulgaria exemplifies.

In many cases, rent-seekers have also acquired political influence and affected policy-making in order to preserve the basis for their rent-seeking activity. When their influence is so substantial that policy-making turns into an instrument for promoting private interests, we are talking of state capture (as an analogy to the regulatory capture, where firms capture the bodies which are supposed to regulate them). An extreme example of political influence by the large-rent seekers and state capture are the Russian oligarchs of 1996-2000, who combined economic power with key political positions and large influence in the media (Black et al., 2000).

4.3.2 The case of Bulgaria

Although state capture is usually associated with countries like Russia, Bulgaria also presents a case of very persistent state capture. Here, the rent-seekers were initially members of the former party elite, managers of state-owned enterprises, members of the former security forces, former police and state-supported athletes (Barnes, 2007). Having access to public funds and the necessary connections, they engaged in many forms of rent-seeking, an important type being the protection racket of new small businesses in the 1990s. The weakening of the state allowed the rise of mighty and influential economic conglomerates like "Multigrup", which gained their initial capital mainly through asset stripping from major state-owned enterprises, organized crime (trafficking, money laundering) and later penetrated legitimate businesses like agricultural processing, trade and tourism (Barnes, 2007).

After almost two decades of reforms and even after the accession to the EU in 2007, examples of rent-seeking in Bulgaria still abound. The recent ones include looting of national and EU funds through criminal schemes, backed at the highest political levels; distorted and non-transparent assignment of public procurement projects to politically connected firms; non-transparent and unaccounted spending of budget funds (for instance, 1 billion BGN (Bulgarian leva) from the budget surplus in December 2007 and more than 4 billion in December 2008). Frequently observed are huge discrepancies between the amount of public funds allocated for certain projects and the value of the project's results, which unambiguously points at large diversion of funds. Also the privatization process has been perceived as highly corrupt and nontransparent, and the most popular privatization method, "worker-management buy-outs", has allowed the Government to sell enterprises to their preferred managers (Open Society Institute, 2002). However, asset stripping and looting can occur even in privatized enterprises through insider control and abuse of minority shareholders rights (as the developments in the steel factory "Kremikovtsi" in

2008 revealed - *Sega*, 2 November 2008).

The 2006 confession of A. Dogan is very revealing. The leader of the political party Movement for Rights and Freedom (then in the ruling coalition) A. Dogan stated that every major political party in Bulgaria, including his own, has a "belt of firms" (*Sega daily*, 27 July 2006; *Mediapool.bg*, 3 November 2008), or a group of connected companies which drain public funds with the help of the politicians, and in turn provide the party with generous financial support and election financing.

Apart from rent-seeking, there are also multiple examples of interest group influence and state capture, concerning laws and regulations. The government is too weak to overcome the influence of powerful groups with vested interests in the status quo in many public services areas (Open Society Institute, 2002). One of the weakest areas with liberal rules and practical absence of supervision has been party financing. (Open Society Institute 2002). A telling example is the abolishment of ceilings for party financing, voted with overwhelming majority in August 2006 ("Parliament abolishes ceilings to party financing", *Sega daily*, 8 February 2006). Another case are the provisions in the Criminal Law concerning large-scale tax crimes, which had been formulated in a way making it practically impossible to implement them (*Sega daily*, February 2007). In 2007, one of the national parks, Strandzha-Sakar, was deprived of its national park status for obscure reasons, with the idea to allow large-scale commercial construction in this attractive region. Illegal construction has also been very widespread in other areas and has become an important issue recently ¹.

The dysfunctional law implementation as a result of political influence by vested interests is exemplified by cases like the wide-spread vote-buying at elections (at the local elections in October 2007 and in the European Parliament elections in 2009 (*The New York Times*, 2008). Millions of leva were given by political parties in 2007 in order to buy tens of thousands of votes only in a single town (*Sega*, October 2007). Although the law prescribes some sanctions in such cases, they have not been applied in practice. Moreover, there are almost no sentences for the many showcase murders of influential businessmen supposedly linked to the grey economy in the last years. Also, no major political figure has been convicted for corruption and organized crime; the judiciary processes have been protracted for years and the suspect persons allowed to go free, usually for the lack of evidence, or charged symbolic fines. In early 2008 the European Commission decided to suspend payments under the PHARE, ISPA and SAPARD accession funds worth hundreds of millions of euro due to apparent fraud and organized crime (BBC News, March 2008). No investigation or prosecution of high-level corruption followed thereafter. The facts speak for themselves.

Barnes (2006) argues that Bulgaria experiences a so-called "competitive capture", where the state subsequently becomes prey to different groups of captors: they remove from power the previous incumbents, but capture the state themselves. Indeed, although Bulgaria experienced several radical changes in the ruling political parties, the capture by parties and related firm groups persisted. This type of capture, although superior to classical state capture in terms of social welfare, is still a hindrance to institutional reform.

¹For example, there was the case of construction and energy projects around cape Kaliakra, which attracted the attention of the European Commission (*Mediapool.bg*, 27 November 2008, available at: <http://www.mediapool.bg/show/?storyid=146419&srcpos=21>

Moreover, with time it becomes harder to eradicate since captors tend to penetrate all political parties, destroying the capture-free political alternatives (Barnes, 2006).

4.4 Related literature and modeling considerations

Conventional theories of economic reform argued that the main challenge to economic reforms is the *ex ante* opposition to reforms by those social groups that have to endure losses for the mere promise of future gains. Hellman (1998) demonstrated that this reasoning does not apply for the transition context and developed the theory of partial reform equilibrium as the theoretical framework tailor-made for transition reforms. It stipulates that the major political challenge comes actually from the winners of partial reform by their *ex post* effort to obstruct the completion of institutional reform. "Partial reform" refers to a state when a country has achieved certain progress in the fast and straightforward reforms like liberalization and privatization, but lags behind in the slower and complex institutional reforms - the creation of legislation, public administration, and law enforcement. If initial winners organize politically and slow down or stop further institutional reforms, this partially reformed state can become quite persistent.

Although rent-seeking and capture of politics by interest groups in transition countries has been studied extensively (Kaminski and Kaminski 2001, Black et al. 2000, Drazen 2004), there are only few attempts to analyze it formally. Sonin (1999 and 2003) first used formal analysis by building an overlapping generations model, in which individuals invest in private protection of property rights to compensate for the deficient state protection. The ability to protect property rights privately gives them also a possibility to encroach on other agents' income and extract rents. Therefore, it also gives an incentive to preserve the institutional status quo and oppose the establishment of the rule of law. Therefore, given a wealth bias in political decision making, (i.e. with a government maximizing the welfare of a voter positioned higher than median in the wealth distribution), the imperfect protection of property rights becomes a permanent condition.

Another model is the one by Hoff and Stiglitz (2004), which, although not specially designed for transition countries, is also highly relevant for describing the transition phenomena. The model features heterogenous-ability individuals facing a choice between working and rent-seeking. In equilibrium, even under the most favourable assumptions (absence of concentrated wealth, democratic elections, accountability and no possibility for state capture) the rule of law will not necessarily emerge, because if there is uncertainty about the future reform course, expected returns to rent-seeking might be higher than those to producing. Hoff and Stiglitz demonstrate in this way that the transfer of property does not automatically lead to development of market institutions, which is a sobering re-consideration of the paradigm of quick privatization as a sufficient condition for emergence of appropriate market institutions.

4.4.1 Political influence and lobbying

While other works (Hoff and Stiglitz 2004, Sonin 2003) assumed that political power (and hence also power to design and implement reforms) only derives from official elections, Acemoglu and Robinson (2008) consider the possibility that powerful interest groups *de-facto* influence policy making, alongside the official political channels. The "*de facto*"

power depends both on the "de jure" power deriving from elections, and on the investments of interest groups in acquiring de facto influence (e.g. Acemoglu and Robinson 2008). As demonstrated by anecdotal evidence, this is an important element of real policy formation in transition countries, which needs to be taken into account. There are cases where democratic elections do take place, but afterwards politicians (or interest groups through politicians) easily cooperate with their adversaries to influence the implementation of measures which have been officially adopted (Kaminski and Kaminski, 2001). In the extreme case, electoral competition can turn into a formality². The "de facto" power determines which group establishes their preferred institutional setup, and if the elite are powerful enough, the economy may end up with economic institutions favouring the elite despite democratic elections, a state described as "captured democracy" (Acemoglu and Robinson, 2008) and similar to our state capture. Under elite-favouring institutions the elite obtain rents, the incomes of citizens are reduced below factor payments and a part of national income is lost through a deadweight loss. Since in this model (Acemoglu and Robinson 2008) institutions depend on the political power of the groups, they are endogenous in this sense. In our model, we adopt a similar approach, allowing for the de facto power to depend also on the institutional level apart from the groups' contributions.

One important difference between our model and Acemoglu and Robinson (2008) is that we consider also capital and capital accumulation and the way it interacts with the political process and institution formation. We achieve this by embedding the institutional variable into a standard neoclassical model with capital and labour (Ramsey type). In this way, we can pay attention to the role of capital accumulation and its interaction with institutional change. Secondly, our institutional conditions are represented by a continuous variable, whereas in other models they usually take one of two possible values. In the model of Acemoglu and Robinson, the elite and citizens are involved in a complex game which determines the institutional outcome, whereas we adopt a simplified, non game-theoretic approach providing for a much stronger influence of the elite than the citizens. Evidence has shown that in many transition countries like Russia, citizens and the elite are not equal participants in the political process, and the influence of the former is much smaller.

Another important difference is that our rent-seekers (our equivalent to elite members in Acemoglu) take the decision on political influence collectively. Both Acemoglu and Robinson (2008) and Hoff and Stiglitz (2004) assume that every agent takes decisions autonomously and ignores any effect of his behaviour on the others' decisions. In contrast, we assume that the decision on political influence is taken through collective, organized action like in Persson and Tabellini (2000), Campos and Giovannoni (2006). It is hard to imagine that influencing country-wide laws and large rent-extraction would be possible without cooperation and coordination. Grossman and Helpman (2002) also show that the degree to which an interest group can influence policy depends on the strength of its political organization. We assume that rent-seekers share the costs of political influence - an assumption also used in Harstad and Svensson (2008). Consistently with anecdotal evidence, we assume the presence of an effective observing and exclusion mechanism, so that rent-seekers who have not contributed can not make use of the "benefits" generated

²Kaminski and Kaminski (2001) refer to such political systems as "electocracies" as opposed to democracies.

by influencing the legislature and implementation of the law.

The collective-decision assumption brings our model close to the vast literature on lobbying (e.g. Persson and Tabellini, 2000, Harstad and Svensson, 2008). However, we consider party contributions rather than campaign contributions - the party uses the contribution not in order to win in electoral competitions, but directly in political influence. Our political influence falls under the category of lobbying, although it may also include extra activities such as placing persons to the key positions under the rent-seekers' control, threatening and exercising direct pressure on high officials.

Another difference with the lobbying literature is that we do not consider multiple lobbies competing over a policy. Non-rent-seekers, deprived of political connections, have been to a much lower extent politically organized and able to lobby than the rent-seekers. This assumption can be regarded as analogous to Persson and Tabellini (2000) lobbying model where landowners exercise stronger political power in lobbying than their competitors since they are by tradition endowed with a certain productive factor (land) more than the other agents. (the policy variable is the size of a tax). Our equivalent of the "old sector" consists of the former senior managers or party nomenklatura, and the superior endowment takes the form of a positive value of the rent-seeking opportunity. Instead of a competing lobby, the counteracting force to the rent-seekers' lobbying is the reform course of a country, to which the government has committed - in order to increase the country's attractiveness for foreign investors, improve living standards or fulfill conditions for membership in a supranational organization like the European Union. This rather mechanistic reform rule has been adopted in order to ensure simplicity and tractability of the model.

4.4.2 Administrative corruption, lobbying and state capture

It is worth briefly explaining how lobbying and its result, state capture, relate to administrative corruption, that is paying of bribes to government officials for personal favours. Lobbying is aimed at policy-making institutions and not at bureaucracy; lobbyists interfere directly with the political decision-making process, without using bribes. The targets of the lobbying are the laws and rules and their enforcement, and therefore its consequences are more global and persistent than those of administrative corruption, which are often limited to a personal favour to the briber. The difference is well illustrated by Harstad and Svensson (2008), who refer to administrative corruption vs. lobbying as "bending the rules" vs. "changing the rules".

Therefore, in modeling political influence, we are closer to Harstad and Svensson (2008) (rent-seekers influence permanently the country-wide institutions, for instance by passing laws with deliberately built-in loopholes and low levels of sanctions) than to Rodriguez (2004), where the result of political influence is eliciting of personal favours with short-term effect, negotiated anew in every period. We consider the former assumption more intuitive for conditions of institutional reforms, and in section 4.3, we provide several examples of influencing laws and regulations of country-wide importance in the case of Bulgaria. By securing a lower general institutional level in the current period rent-seekers get the increment to their rent and loss for the society forever.

These two forms of corruption, bribing and lobbying, are found to be substitutes (Harstad and Svensson (2008), Campos and Giovannoni (2006)). Agents bribe when

their level of capital is low, but they switch to forming a lobbying group at its higher level. In general, this means that lobbying is more prevalent in richer countries, which is in line with the empirical findings (Harstad and Svensson, 2008). This conforms with one of our findings from section 7: the higher the initial income, the larger the extent of state capture we get.

4.4.3 Agent heterogeneity

A distinctive feature of our model is the division of agents in two groups, one of which is endowed with rent-seeking possibilities and the other not. Such a division of agents was already featured in Acemoglu and Robinson (2008), where rent-seeking possibilities are only characteristic for the elite. However, this assumption is also justified by the reality in most Eastern European and FSU countries, as explained by Alexeev (1998) for Russia. He argues that the huge post-privatization inequality increase in Russia in 1990s is actually not so large if we account for the initial distribution of control over assets, and not only of material wealth. It is true that the distribution of personal property and state housing in the Soviet Union was quite egalitarian, but the control rights on officially state-owned assets were highly concentrated - in the hands of the top enterprise management, ministerial bureaucracy, and party functionaries. These control rights sometimes extended to a kind of informal property rights, and depended on the individual's position in the industrial and party hierarchy. Similarly to official property rights in market economies, they often implied that their holders were the residual claimants of profit streams from state-owned enterprises, whereas "planned profit" transferred to the state was rather like a fixed payment. During privatization, using insider information and connections, persons with informal control rights had an opportunity to convert them into formal rights and the hidden large inequality became visible. This process was particularly facilitated in those countries where privatization had a rent-seeking nature by design (e.g. Russia, Black et al. 2000). Our view on initial distribution is very close to Alexeev's view: we consider the personal initial capital as uniformly distributed, but the ability to rent-seek as concentrated. Through rent-seeking it can gradually be transformed into unequal capital distribution.

Within the rent-seeking group, we assume a further level of agent heterogeneity by an individual characteristic, which determined the individual ability to rent-seek. As conventional in the previous works (e.g. Hoff and Stiglitz (2004), and Sonin (2003)), this characteristic is exogenous (determined by the individual's position in the previous system).

4.4.4 Rent-seeking as a separate economic sector

Finally, some attention should be devoted to the way we model rent-seeking. Here we borrow from the models in Murphy, Schleifer and Vishny (1993), Barelli and Pessoa (2001), Rodriguez (2004), and model rent-seeking as a production process involving capital and labour. Rent-seekers need to invest capital and effort in protecting the rents, exercising influence and controlling, but also for making the political influence look legitimate in order to avoid sanctions and civil protests. The result of the production process is not a product, but a transfer: it is subtracted from the output for the corresponding period

and therefore taken away from the factor payments to the workers like a lump-sum tax. We assume that the rent is not totally wasted: rent-seekers allocate the extracted rent between consumption and increase of their (rent-seeking) capital for the next period. One can think of a high-level bureaucrat, looting public funds in order to use them in the next period for production in his own business.

Similarly to Murphy, Shleifer and Vishny (1993) and Hoff and Stiglitz (2004), in our case rent-seekers are agents choosing between production or rent-seeking, and the result is an economy with two specialized sectors: a rent-seeking and producing sector (Hoff and Stiglitz call the activities correspondingly "asset stripping" and "value creating"). However, Hoff and Stiglitz (2004) assume that ability to asset-strip is inversely related to the ability to create value, whereas in our model they are independent, since the individual characteristic is related not so much to personal skills as to connections, influence and position under the socialist system.

It is well - known that rent-seeking causes a loss due to the waste of productive resources. Political influence also causes a loss due to the negative externality lobbyists impose on the whole economy by worse institutions (Harstad and Svensson, 2008). In our model, we have double loss of productive capital: once from rent-seeking and then from political influence, since the investments in rent-seeking and political influence are different and decisions on them are taken separately. In the comparative statics section we attempt to quantify these two losses for different scenarios.

4.5 Stylized facts

Our model reconciles several stylized facts from the transition literature. First of all, it has been established that institutional development in the transition countries is positively correlated with economic growth, and this relationship is quite robust (Havrylyshyn 2001 and Grogan and Moers 2001, among others). Svejnar (2002) also observes that cross-country differences in income and growth are highly correlated with the advance in the so-called Type 2 reforms, which include development of institutions and law enforcement.

Apart from that, there is a number of more specific stylized facts relevant for our model, which are briefly presented in the following section.

4.5.1 State capture index and Hellman's stylized facts

The capture economy index, introduced by Hellman, allows some quantification of the state capture phenomenon (Hellman et al., 2003). The index is based on survey data, where survey participants have to determine "the extent to which firms or citizens influence the formation of laws, rules, regulations or decrees by public institutions" (Hellmann et al., 2003) The index is constructed on the basis of survey data³. Based on the index value (reproduced in our Table 4.1), transition countries can be divided into state-capture countries (with values of the index above 50) and non-state capture countries (below 50). The list of state-capture countries in 2007 comprises Azerbaijan, Bulgaria, Croatia, Geor-

³For constructing the economy capture index, firms were asked to which extent the following activities have had a direct impact on their business: the sale of parliamentary votes or Presidential decrees to private interests, the sale of court decisions in criminal and commercial cases, illicit contributions paid by private interests to political parties and campaigns. (Hellman et al., 2003)

gia, Kyrgyzstan, Latvia, Moldova, Romania, Russia, and Ukraine. Although the index is not available for Serbia and Macedonia, recent evidence exists (e.g. Pesic 2007) that they also can be included among the capture countries ⁴.

Hellman (1998) uses a number of stylized facts to provide empirical support for his partial reform theory. One of the stylized facts based on this index is that state capture countries are mostly middle reformers. The group of non-state capture countries is polarized: it comprises on one hand countries which have undertaken very little or no reforms, and on the other hand, those advanced on the reform path. In unreformed states with retained centralized control and dominating state sector, the private sector is too weak and small to be able to "capture the state". At the other end of the spectrum, in the best performing countries, there is a better developed civil society, limiting corruption and large rent-seeking opportunities.

Hellman also shows that the middle reformers experience the worst recessions. Further, he reports a hump-shaped relationship between reform progress and inequality, measured by the Gini coefficient: intermediate reformers have the highest values, while both the worst and the most successful reformers have maintained a lower level of inequality. Moreover, he observes that increased inequality is driven mainly by the larger income accruing to the highest quintile in the distribution, which he interprets as an indirect evidence of the activities of rent-seekers.

4.5.2 Stylized facts with institutional measures

Hellman plots various country characteristics against measures of reform progress, and in our model we use a measure of institutional quality. Therefore, for our purpose it would be useful to re-plot Hellman's relationships using institutional indicators. We use one of the governance indicators of the World Bank, namely "rule of law" (listed in Kaufmann et al., 2007) ⁵. "Rule of Law" is closest in its meaning to the institutional variable from our model, since it is a broad indicator which refers to the quality of the legal framework and of law enforcement in many areas (including the protection of the property rights). A brief comparison of the values of "rule of law" and the capture economy index reveals that the groupings of countries according to the two indicators overlap to a large extent with the exception of Slovakia and Latvia, which have substantially better institutional values than the state capture average. This is not the case with the newest EU members Bulgaria and Romania: being state capture countries, they show consistently moderate institutional values. A dynamic comparison of the institutional values between 1996 and 2006 reveals that in spite of some within-group changes, the classification has basically remained the same. The non-state capture countries have relatively good institutional values and have achieved progress (with the exception of Poland), but the worst performers, Turkmenistan, Uzbekistan, Belarus and Albania have worsened even further. In 2006, state capture countries still show middle to low institutional development.

⁴When we are describing countries generally as "state capture countries", it should be borne in mind that in each country, state capture has different characteristics and has developed also under the influence of idiosyncratic historical and other factors. For instance, in Russia there is evidence that recently state capture has been replaced by "business capture", where due to state strengthening and consolidation the state is in a position to extract rents from businesses (Yakovlev, 2006).

⁵In some cases, for robustness we also use another of the World Bank governance indicators - "control on corruption". The main relationships do not change when plotted against this indicator.

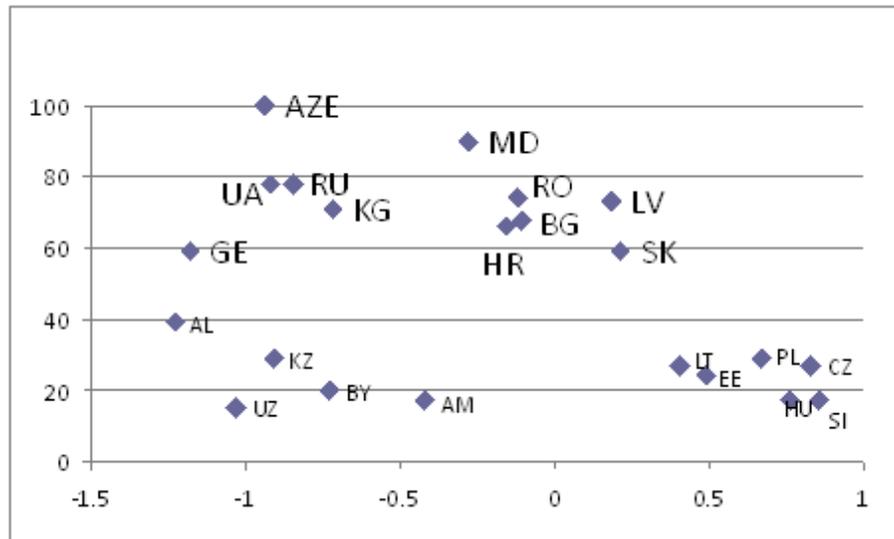


Figure 4.1: Rule of Law (X) vs. capture economy index (Y)

Ideally, most relevant for our theoretical model would be to compare institutional changes between the initial and the resulting values and not just ex post levels. However, we can not construct these changes since no reliable institutional measure is available for the early 1990s, and this is a period when for some countries the largest institutional changes took place.

The relationship between state capture and reform progress can also be translated into a relationship between state capture and institutional quality. Plotting Hellman's capture economy index (it was calculated for 1997) against the "rule of law" for 1996, reveals that we can distinguish three groups: a good institution-low capture group to the right, a poor institution - high capture group in the upper part (their abbreviations are marked with larger font) and the poor institution - low state capture group in the lower left (Figure 4.1).

Notes to Figure 4.1: 1. On the X axis are the values of the World bank's index "Rule of Law" for 2002. It takes values between -2 (poor institutional value) and 2 (good institutional value).

2. On the Y axis is the capture economy index of Hellman et al. (2001), taking values from 0 (complete lack of state capture) to 100 (state capture).

4.5.3 Inequality

In Figure 2, we plot inequality against institutional quality, and observe three groups: two with poor-institution countries and one of good-institution ones. There is a group of poor- institution, low inequality countries in the lower left, another with poor institution, high inequality countries in the upper left-middle, and finally the good institution - low inequality countries in the upper right. The second group comprises mostly state capture countries(those iwth high value of the capture economy index), and from the 5 countries

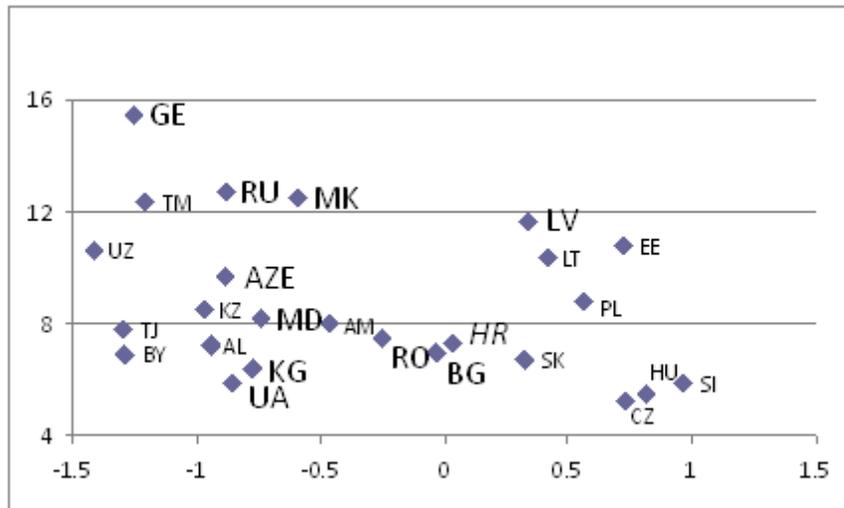


Figure 4.2: Rule of law (X) vs. inequality (Y)

with highest inequality 4 are also state capture countries: Russia, Georgia, Latvia and Macedonia, (for the fifth country - Turkmenistan, the capture economy index is not available)⁶. This relationship is in line with Hellman's observation that intermediate reformers have in general high inequality and poor institutions.

Notes to Figure 4.2: 1. On the X axis are the values of the World Bank's index "Rule of Law" for 2002. It takes values between -2 (poor institutional value) and 2 (good institutional value).

2. On the Y axis inequality is measured by the income ratio of the richest 10% to the poorest 10% in the years 1998 - 2002 (UNDP, 2007).

3. The abbreviations of state capture countries (judging by the capture economy index) are marked with larger font.

We also observe a general negative relationship between inequality and institutional quality, which is in line with the finding of Chong and Gradstein (2007). They establish empirically a negative dynamic relationship between these two variables: countries with worse institutions are also likely to have higher inequality, and causality runs in both directions. They also demonstrate that the particular institutional variable displaying the highest correlation with inequality is indeed the rule of law.

It would be very interesting to see whether the above relationships can also be confirmed using some alternative measure of state capture apart from Hellman's index and a more recent time period (since the index was only available for 1997). However, such measures are very hard to find. The corruption measures reported by international organizations (World Bank, Freedom House, Heritage Foundation) are "bundled measures" containing both administrative corruption and state capture (see Section 4.4.2) and would not be very informative in our case, where we need a measure only of state capture. There is also an additional problem when measuring corruption: that conventional measures of

⁶If we repeat the plotting using the alternative institutional variable "Control of Corruption", we obtain a similar relationship (not reported).

corruption might be meaningless when "the state itself is sold" and we deal with extreme corruption affecting the core responsibilities of the state, so that the criminal, business and political worlds are fused (Kaminski and Kaminski, 2001).

Sources: Kaufmann et al. (2006), Hellman (1999), World Bank (2008), UNDP(2007)

To sum up, the the stylized facts that we expect our model to conform to are the following :

1. (a) A positive correlation between current institutional quality and current income level;
- (b) A positive correlation between initial institutional conditions and final institutional quality;
- (c) In general, a negative correlation between institutional quality and the degree of state capture. However, also presence of countries which have low values for both;
- (d) In general, a negative correlation between institutional quality and inequality, but also the presence of countries which have low values in both.

4.6 The model setup

We consider an economy populated by a continuum of individuals with measure one. A share $\lambda < \frac{1}{2}$ of them have the option to extract rents or engage in productive activity, the rest do not have a rent-seeking option and only produce. Our model has only two periods, both for the sake of simplicity and because it attempts to capture transitory phenomena, which have developed under the influence of a limited number of policy decisions and changes in the underlying conditions; we do not describe a theoretical steady state achieved in an infinite number of periods. In our first period, agents choose between consumption and saving; in the second period, agents consume all their capital.

The institutional quality is described by the parameter $\theta > 0$, where a lower value of θ stands for better institutional quality. This parameter affects the relative return to rent-seeking as compared to productive investment and therefore determines the portion of others' income that can be expropriated as a rent. In addition, in the endogenous institutions case it also determines to what extent political influence by interest groups is possible.

Initially we assume that θ follows an exogenous process, later we endogenize it.

4.6.1 The firms

We consider a standard market sector with firms producing a single good with the following production function:

$$Y = F(K, L) = AK^\alpha L^{1-\alpha}.$$

The representative firm's maximization problem is

$$\max_{K,L} F(K, L) - rK - wL. \quad (4.1)$$

Table 4.1: Cross-country comparison of the institutional, state capture indicators and inequality

indicator	rule of law		CE index	inequality	inequality
year	1996	2006	1997	Gini coef. (year)	highest/lowest 10%
state-capture countries (according to the state capture index)					
Azerbaijan	-0.94	-0.86	100	36.5(2001)	9.7
Bulgaria	-0.11	-0.17	68	29.2(2003)	7
Croatia	-0.16	-0.03	66	29(2001)	7.3
Georgia	-1.18	-0.61	59	40.4(2003)	15.4
Kyrgyzstan	-0.72	-1.18	71	30.3(2003)	6.4
Latvia	0.18	0.52	73	37.7(2003)	11.6
Macedonia	-0.53	-0.46	na	39(2003)	12.5
Moldova	-0.28	-0.61	90	33.2(2003)	8.2
Romania	-0.12	-0.16	74	31(2003)	7.5
Russia	-0.85	-0.91	78	39.9(2002)	12.7
Slovakia	0.21	0.43	59	25.8(2006)	6.7
Serbia	-0.99	-0.59	na	na	na
Ukraine	-0.92	-0.72	78	28.1(2003)	5.9
non state-capture countries					
Albania	-1.23	-0.70	39	31.1(2004)	7.2
Armenia	-0.42	-0.52	17	33.8(2003)	8
Belarus	-0.73	-1.16	20	29.7(2002)	6.9
Czech Republic	0.83	0.73	27	25.4(1996)	5.2
Hungary	0.76	0.73	17	26.9(2002)	5.5
Estonia	0.49	0.91	24	35.8(2003)	10.8
Kazakhstan	-0.91	-0.79	29	33.9(2003)	8.5
Lithuania	0.40	0.45	27	36(2003)	10.4
Poland	0.67	0.25	29	34.5(2002)	8.8
Slovenia	0.85	0.79	17	28.4(1998)	5.9
Tajikistan	-1.74	-1.06	na	32.6(2003)	7.8
Turkmenistan	-1.16	-1.44	na	40.8(1998)	12.3
Uzbekistan	-1.03	-1.44	15	36.8(2003)	10.6

As a result of this maximization, labour and capital are paid their marginal products:

$$r = F'(K) = \alpha A \left(\frac{K}{L} \right)^{\alpha-1}, \quad (4.2)$$

$$w = F'(L) = (1 - \alpha) A \left(\frac{K}{L} \right)^{\alpha}. \quad (4.3)$$

4.6.2 The households

A household faces the usual intertemporal consumption - saving problem. A household with opportunities for rent-seeking in addition chooses between rent extraction and production. The size of the extracted individual rent Π_i is given by a function f^{Π} which depends on their investment in (financial) capital $k^{(r)}$:

$$\Pi_i = f^{\Pi}(k^{(r)}) = \theta s_i k^{(r)}. \quad (4.4)$$

The rent is also a function of θ , the prevailing institutional conditions in the economy. The individual parameter s_i characterizes the size of the rent-seeking opportunities. We assume that s is uniformly distributed in the interval $[0, S]^7$. For agents without rent-seeking opportunities $s_i = 0$. Although production implies the use of productive capital and rent-seeking - the use of financial capital, we assume that they are perfect substitutes and in what follows, we will use a common symbol for capital k .

We also assume that all agents (workers and rent-seekers) in the economy start with the same initial capital k_0 . In the second period, the whole capital stock is consumed: $k_2 = 0$.

Before proceeding with the model, a brief clarification concerning notation is necessary. We will denote variables like consumption and capital with two subscripts: the first subscript for the period (1 or 2) and the second subscript for the agent type - w if the agent is a worker and i if rent-seeker (in that case, we use individual indices due to the heterogeneity of rent-seekers). In those cases where there is only one subscript, it refers to the period.

4.6.2.1 Workers

The representative household without rent-seeking possibility (we will call it "worker") maximizes their utility for the two periods:

$$\max_{c_1, c_2, k_{1w}} u(c_{1w}) + \beta u(c_{2w}). \quad (4.5)$$

subject to the following budget constraints:

$$c_{1w} + k_{1w} + T_1 = (r_1 + 1)k_0 + w_1, \quad (4.6)$$

$$c_{2w} + T_2 = (r_2 + 1)k_{1w} + w_2. \quad (4.7)$$

⁷The uniformity assumption is made for simplicity and since we have no a priori reason to assume a specific distribution.

where k_{1w} is the capital of a representative worker at the end of period 1 and T_1 and T_2 are the amounts “stolen” from income by rent seekers correspondingly in the first and second period (for example, in the form of underpayment or underprovision of public goods and services).

The corresponding FOC for log-utility is

$$k_{1w} : c_{2w} = \beta c_{1w} (r_2 + 1). \quad (4.8)$$

Solving this for k_{1w} gives us

$$k_{1w} = \frac{\beta}{1 + \beta} ((r_1 + 1)k_0 + w_1 - T_1) - \frac{1}{1 + \beta} \frac{w_2 - T_2}{r_2 + 1}.$$

For the sake of tractability let us denote $R_j := r_j + 1$ the gross discounted interest rate in period j , where $j = 1, 2$ and $W_j := w_j - T_j$ net salary to get

$$(1 + \beta) k_{1w} = \beta (R_1 k_0 + W_1) - \frac{W_2}{R_2}. \quad (4.9)$$

Thus the optimal capital is a generalized difference between the discounted incomes in period one and in period two.

4.6.2.2 Rent-seekers

The rent-seekers maximize the same as workers utility function given by (4.5) subject to a somewhat different set of budget constraints.

Proposition 1 *In any given period, a rent-seeker uses her capital stock either entirely for producing or entirely for rent-seeking. Therefore, the budget constraints she faces are*

$$c_{1i} + k_{1i} = k_0 + \theta_1 s_i k_0^r, \quad (4.10)$$

$$c_{2i} = k_1^i + \theta_2 s k_1^r. \quad (4.11)$$

if she chooses rent-seeking, and identical to the worker's budget constraints if she chooses working.

Proof. All proofs are left to Appendix E. ■

Since potential rent-seekers may choose either work or rent-seeking in each period, we consider separately their three relevant combinations of choices: rent-seeking in both periods, working in both periods; rent-seeking in period 1, but switching to work in period 2.

4.6.2.3 Double rent-seeking

Let us denote by γ_1 and γ_2 the measures of working individuals correspondingly in period 1 and period 2. Note that these are also the positions of the indifferent rent-seekers (indifferent between working and rent-seeking) in the two periods. Then $k_{1\gamma_1}$ is the capital of the indifferent rent-seeker at the end of period 1, and $k_{1\gamma_2}$ would be the capital of the indifferent rent-seeker for period 2.

The agents who rent seek in both periods have measure $\Gamma = 1 - \max(\gamma_1, \gamma_2)$ by definition. Then the capital k_{1i} of any such individual is found as a solution to (4.5) subject to the constraints (4.10)-(4.11) that can be written as

$$c_{1i} + k_{1i} = k_0 + \theta_1 s_i k_0, \quad (4.12)$$

$$c_{2i} = k_{1i} + \theta_2 s_i k_{1i}. \quad (4.13)$$

Thus, the Euler equation in this case can be written as

$$k_{1i} = \frac{\beta}{1 + \beta} k_0 (1 + \theta_1 s_i). \quad (4.14)$$

4.6.2.4 Double work

The agents who work in both periods are of measure $\Gamma_w = \min(\gamma_1, \gamma_2)$. The constraints for the first (indifferent) rent-seeker take the following form:

$$c_{1\Gamma_w} + k_{1\Gamma_w} + T_1 = (r_1 + 1)k_0 + w_1, \quad (4.15)$$

$$c_2 + T_2 = (r_2 + 1)k_{1\Gamma_w} + w_2. \quad (4.16)$$

The Euler equation in this case is familiar:

$$k_{1\Gamma_w} = \frac{\beta}{1 + \beta} (R_1 k_0 + W_1) - \frac{1}{1 + \beta} \frac{W_2}{R_2}.$$

Note that the value does not differ from that of a worker ($k_{1\Gamma_w} = k_{1w}$), which is consistent, as only the behavior and not the type of an agent matters in our model.

4.6.2.5 Rent-seek first, work afterwards

For any rent-seeker i who was active in the first period and started working in the second (this happens if $\gamma_1 \leq i \leq \gamma_2$), we have the following budget constraints:

$$c_{1i} + k_{1i} = k_0 + \theta_1 s_i k_0, \quad (4.17)$$

$$c_{2i} + T_2 = (r_2 + 1)k_{1i} + w_2, \quad (4.18)$$

and the Euler equation takes the form

$$k_{1i} = \frac{\beta}{1 + \beta} (1 + \theta_1 s_i) k_0 - \frac{1}{1 + \beta} \frac{W_2}{R_2}. \quad (4.19)$$

4.6.3 The equilibrium

4.6.3.1 Arbitrage conditions

In order to find what part of the potential rent-seekers choose to invest their capital in rent-seeking, we should keep in mind that the rent-seeker situated at the point γ_1 in period 1 and γ_2 in period 2 is indifferent between the returns from the two activities:

$$\begin{aligned}\theta_1 s_{\gamma_1} k_0 &= r_1 k_0 + W_1, \\ \theta_2 s_{\gamma_2} k_{1\gamma_2} &= r_2 k_{1\gamma_2} + W_2.\end{aligned}\tag{4.20}$$

In other words, since the capital is perfectly mobile between two sectors (production and rent-seeking), we have payoff equalization.

The measure of rent-seekers in the first period is

$$1 - \gamma_1 = \frac{S - s_{\gamma_1}}{S} \lambda,\tag{4.21}$$

since s is uniformly distributed.

4.6.3.2 Capital market

In the capital market, the supply of productive capital is given by the capital of the working agents (workers and potential rent-seekers not engaged in rent-seeking). Therefore, if we denote the working capital supply by $K_0^{(s)}$ and its demand by $K_0^{(d)}$, the available capital stock is $K_0^{(s)} = \gamma_1 k_0$ in the first period and in the second $K_1^{(s)} = \begin{cases} \gamma_1 k_{1w} + \int_{\gamma_1}^{\gamma_2} k_{1i} di, & \gamma_1 < \gamma_2; \\ \gamma_2 k_{1w}, & \gamma_1 \geq \gamma_2. \end{cases}$

It should be noted that in the first case the new working agents (those who were rent-seeking in period 1) all have different capital k_{1i} . After substituting the optimal capital values for the worker and rent-seeker from the corresponding utility maximization problems we obtain for the case $\gamma_1 < \gamma_2$, (i.e. people between γ_1 and γ_2 are rent-seeking in the first period, but working in the second):

$$K_1^{(s)} = \frac{1}{1 + \beta} \left(\gamma_1 \beta (R_1 k_0 + W_1) - \gamma_2 \frac{W_2}{R_2} \right) + \int_{\gamma_1}^{\gamma_2} \frac{\beta (\theta_1 s_i + 1) k_0}{1 + \beta} di, \gamma_1 < \gamma_2.$$

Due to the uniform distribution

$$s_i = \frac{(i - 1) S}{\lambda} + S = \frac{S}{\lambda} (i - 1 + \lambda),\tag{4.22}$$

where $i \in [1 - \lambda, 1]$.

Then

$$K_1^{(s)} = \frac{1}{1+\beta} \left(\gamma_1 \beta W_1 - \gamma_2 \frac{W_2}{R_2} \right) + \frac{\beta}{1+\beta} k_0 \left(\left(\theta_1 S \left(1 - \frac{1}{\lambda} \right) + 1 \right) (\gamma_2 - \gamma_1) + \theta_1 \frac{(\gamma_2^2 - \gamma_1^2) S}{2\lambda} + \gamma_1 R_1 \right).$$

In the opposite case ($\gamma_1 \geq \gamma_2$) the capital supply is simply

$$K_1^{(s)} = \frac{\gamma_2}{1+\beta} \left(\beta (R_1 k_0 + W_1) - \frac{W_2}{R_2} \right).$$

The demand for capital from producers follows from the profit maximization problem of the productive firm: $K_t^{(d)} = \left(\frac{r_{t+1}}{\alpha A} \right)^{\frac{1}{\alpha-1}} L_{t+1}$. The capital market equilibrium can be written then as $K_t^s = K_t^d$:

$$\gamma_1 k_0 = \left(\frac{r_1}{\alpha A} \right)^{\frac{1}{\alpha-1}} \gamma_1.$$

$$\begin{aligned} K_1^{(s)} &= \left(\frac{r_2}{\alpha A} \right)^{\frac{1}{\alpha-1}} \gamma_2 & \gamma_1 < \gamma_2; \\ \frac{\gamma_2}{1+\beta} \left(\beta (R_1 k_0 + W_1) - \frac{W_2}{R_2} \right) &= \left(\frac{r_2}{\alpha A} \right)^{\frac{1}{\alpha-1}} \gamma_2, & \gamma_1 \geq \gamma_2. \end{aligned}$$

4.6.3.3 Labor market

On the labor market, the supply is fixed (in our case only workers offer labor inelastically, so that $L_t^{(s)} = \gamma_t$). The demand for labor is derived from the firm maximization: $L_t^{(s)} = \left(\frac{(1-\alpha)A}{w_t} \right)^{\frac{1}{\alpha}} K_{t-1}$, where $t = 1, 2$. The labor market equilibrium is then $L_t^{(s)} = L_t^{(d)}$:

$$\gamma_t = \left(\frac{(1-\alpha)A}{w_t} \right)^{\frac{1}{\alpha}} K_{t-1}. \quad (4.23)$$

4.6.3.4 Prices

The prices in the first period can be found independently and straightforwardly:

$$\begin{aligned} r_1 &= \alpha A k_0^{\alpha-1} \\ w_1 &= (1-\alpha) A k_0^\alpha \end{aligned} \quad (4.24)$$

For the second period we have the following system for the equilibrium in two markets:

$$\begin{aligned} K_1^s &= \left(\frac{r_2}{\alpha A} \right)^{\frac{1}{\alpha-1}} \gamma_2, & \gamma_1 < \gamma_2; \\ \frac{1}{1+\beta} \left(\beta (R_1 k_0 + W_1) - \frac{W_2}{R_2} \right) &= \left(\frac{r_2}{\alpha A} \right)^{\frac{1}{\alpha-1}}, & \gamma_1 \geq \gamma_2. \end{aligned} \quad (4.25)$$

$$\left(\frac{\alpha A}{r_2} \right)^{\frac{1}{\alpha-1}} = \left(\frac{(1-\alpha)A}{w_2} \right)^{\frac{1}{\alpha}}.$$

The physical budget constraint is the following (the total extracted rent is equal to the product sacrificed by the workers):

$$\int_{\gamma_1}^1 \theta_1 s_i k_0 di = \gamma_1 T_1, \quad (4.26)$$

$$\int_{\gamma_2}^1 \theta_2 s_i k_1 di = \gamma_2 T_2.$$

Proposition 2 *The competitive equilibrium in the first period is characterized by a set of prices (w_1, r_1) , share of rent-seekers γ_1 and size of the transfer T_1 which satisfy the following conditions:*

$$r_1 = \alpha A k_0^{\alpha-1}, \quad (4.27)$$

$$w_1 = (1 - \alpha) A k_0^\alpha,$$

$$\gamma_1 = \frac{A k_0^{\alpha-1}}{\theta_1 S} \lambda + \sqrt{\left(\frac{A k_0^{\alpha-1}}{\theta_1 S}\right)^2 \lambda^2 - 2\lambda + 1}, \quad (4.28)$$

$$T_1 = \theta_1 k_0 S \left(\frac{1 + \gamma_1}{2\lambda} + 1 - \frac{1}{\lambda} \right) \frac{1 - \gamma_1}{\gamma_1}. \quad (4.29)$$

Such an equilibrium exists when the following restrictions hold:

$$\frac{1}{2} \frac{\lambda}{1 - \lambda} < \frac{A k_0^{\alpha-1}}{\theta_1 S} < 1.$$

Proposition 3 *The competitive equilibrium in the second period is characterized by a set of prices (w_2, r_2) , share of rent-seekers γ_2 and size of the transfer T_2 which satisfy the following conditions:*

$$\left(\frac{r_2}{\alpha A}\right)^{\frac{1}{\alpha-1}} \gamma_2 = \frac{1}{1 + \beta} \left(\gamma_1 \beta W_1 - \gamma_2 \frac{W_2}{R_2} \right) + \frac{\beta}{1 + \beta} k_0 \left(\left(\theta_1 \frac{S}{\lambda} \left(\lambda - 1 + \frac{\gamma_2 + \gamma_1}{2} \right) + 1 \right) (\gamma_2 - \gamma_1) + \gamma_1 R_1 \right) \quad (4.30)$$

$$\left(\frac{\alpha A}{r_2}\right)^{\frac{1}{\alpha-1}} = \left(\frac{(1 - \alpha) A}{w_2}\right)^{\frac{1}{\alpha}} \quad (4.31)$$

$$\left(\theta_2 \frac{S}{\lambda} (\gamma_2 - 1 + \lambda) - r_2 \right) \frac{\beta}{1 + \beta} k_0 \left(1 + \theta_1 \frac{S}{\lambda} (\gamma_2 - 1 + \lambda) \right) = w_2 - T_2 \quad (4.32)$$

$$\theta_2 \frac{S}{\lambda} \frac{1}{1 + \beta} \left(\frac{-w_2 - T_2}{R_2} \left(\left(\frac{\gamma_2 + \gamma_1}{2} + \lambda - 1 \right) (\gamma_2 - \gamma_1) \right) + \beta k_0 \left(\theta_1 \frac{S}{3\lambda} (\lambda^3 - (\gamma_1 + \lambda - 1)^3) + \left(\frac{1 + \gamma_1}{2} + \lambda - 1 \right) (1 - \gamma_1) \right) \right) = \gamma_2 T_2 \quad (4.33)$$

in the case $\gamma_1 < \gamma_2$, and

$$\begin{aligned} \frac{1}{1+\beta} \left(\beta (R_1 k_0 + W_1) - \frac{W_2}{R_2} \right) &= \left(\frac{r_2}{\alpha A} \right)^{\frac{1}{\alpha-1}} \\ \left(\frac{\alpha A}{r_2} \right)^{\frac{1}{\alpha-1}} &= \left(\frac{(1-\alpha)A}{w_2} \right)^{\frac{1}{\alpha}} \\ \left(\theta_2 \frac{S}{\lambda} (\gamma_2 - 1 + \lambda) - r_2 \right) \frac{1}{1+\beta} \left(\beta (R_1 k_0 + W_1) - \frac{W_2}{R_2} \right) &= W_2 \\ \theta_2 \frac{S}{\lambda} \frac{\beta}{1+\beta} k_0 \left(\theta_1 \frac{S}{3\lambda} (\lambda^3 - (\gamma_1 + \lambda - 1)^3) + \left(\frac{1+\gamma_1}{2} + \lambda - 1 \right) (1 - \gamma_1) \right) &= \gamma_2 T_2 \end{aligned}$$

in the case $\gamma_1 \geq \gamma_2$.

These highly nonlinear systems, which we solve numerically, serve as basis for the endogenizing of the institutions in the next section.

4.7 Endogenizing institutions

We proceed by making the second-period institutional value endogenous. We leave intact the assumption that in the first period the institutional quality θ_1 is exogenously given, determined by initial conditions and the initial history of reform. However, now its second-period value θ_2 is determined as a result of both the reform commitment of the government and the political influence of rent-seekers to counter the reform implementation.

Non-rent-seekers have a strong interest in advancing the institutional reform since a completed reform would eliminate rent extraction. They are mostly not politically connected entrepreneurs or workers, who suffer welfare losses in the course of reform expecting future gains (Hellman, 1998). The other pro-reform force is the government's commitment to a certain reform agenda, which determines the size of the targeted reform step. It is defined as the level of institutional quality $\hat{\theta}, \hat{\theta} \leq \theta_1$, which is feasible and desirable to achieve by the end of period 1 in the absence of counteracting forces. For simplicity, we assume that the targeted institutional level $\hat{\theta} = \hat{\theta}(\theta_1)$ is given by $\hat{\theta} = \theta_1 - \mu$, where μ is an exogenous parameter giving the feasible reform step.

Rent-seekers aim at decreasing the actual reform step below the targeted one in order to keep a higher rent, and for this purpose they organize politically. In terms of Acemoglu and Robinson (2008), the targeted $\hat{\theta}$ is voted at official elections and represents the de jure political power of the pro-reform forces, whereas the rent-seeker's reform setback reflects their de facto power. The final institutional level θ_2 ($\theta_2 \geq \hat{\theta}$) is hence a function of the efforts of the rent-seekers. The actual reform step (as opposed to the targeted one) is denoted by $\varepsilon = \theta_2 - \hat{\theta}$. An important assumption we make is that rent-seekers cannot induce an institutional setback ε larger than the targeted step μ , i.e. although they slow down the institutional improvement, they can never achieve deterioration beyond initial institution quality. This assumption is made for simplicity, but it does not contradict the available data. Judging by the EBRD institutional reform indicator, all countries have ended the 1990s with better reform values than they started in the beginning of the

1990s. The assumption simplifies the analysis substantially, since now we can ignore the case $\gamma_1 > \gamma_2$ in section 4.

The political power of the rent-seekers to set back the proposed reform depends on their total investment for influencing policy O (analogous to the contribution to political party campaigns in Persson and Tabellini, 2000). Obviously, the contribution is an increasing function of the desired outcome ε . We also assume that it is less costly to mess up the institutions if they are bad in the first place, that is O is a decreasing function of θ_1 . In the case of fully developed institutions ($\theta_1 = 0$) influencing the reform becomes prohibitively costly. (This is a somewhat extreme assumption since even in that case there might be some lobbying). At the same time, costs become prohibitively high only when θ_1 is very close to zero. This is an intuitive assumption since unless laws and their implementation are sound, it is impossible to insulate decision-making from the vested interests. Analogously to Persson and Tabellini, we assume that the total cost of changing institutions through political influence depends quadratically on the result:

$$O = \frac{B\varepsilon^2}{\theta_1}, \quad (4.34)$$

where $\theta_1 > 0$. The expression $\frac{B}{\theta_1}$ is a measure of the costs of political influence per "unit of institutional change". B is an exogenous country-specific parameter. It can be assumed to capture other institutions, different from the rule of law, which co-determine the easiness of achieving political influence. More specifically, it can be interpreted as the degree of centralization of political power and the type of political system: with similar levels of institutional development, state capture will be much more difficult in a country closer to dictatorship (corresponding to a larger B) than in a country with decentralized governance. Campos (2006) also demonstrates empirically that lobbying is more likely to occur in parliamentary systems than in those with centralized governance. Alternatively, it can be regarded as a measure of transparency and accountability of the political decision-making bodies: low accountability facilitates political influence by interest groups.

In order to take into account the restriction $\varepsilon \leq \mu$, we can re-define 4.34 as

$$O = \begin{cases} \frac{B\varepsilon^2}{\theta_1} & \varepsilon \leq \mu; \\ \infty, & \varepsilon > \mu. \end{cases}$$

The collective decision over political influence is taken based on the aggregate budget constraint of the party members. The individual share of contribution o is determined proportionally to the benefit of every rent-seeker, whereby we assume some sense of justice among the rent-seekers, but not outside their circle. We also assume that party members can effectively be excluded from enjoying the benefits of state capture if they do not pay a contribution. In this way, free riding is excluded and all members pay their share of the investment in political influence. Additionally, since common knowledge is preserved and there is no free riding, each agent can compute her optimal contribution as a function of her type by assuming that all other party members have the same contribution functions.

The individual utility maximization problems remain exactly the same as those in Section 4.6.2 with the exception of the double rent-seekers, who now have the opportunity to increase their second-period rent through paying a contribution in the first one. Therefore, here we also have to optimize with respect to the individual contribution o .

$$\max_{c_1, c_2, k_{1i}, o_i} u(c_{1i}) + \beta u(c_{2i}), \quad (4.35)$$

$$c_{1i} + k_{1i} + o_i = k_0 + \theta_1 s_i k_0, \quad (4.36)$$

$$c_{2i} = k_{1i} + \theta_2(O) s_i k_{1i}, \quad (4.37)$$

where $\theta_2(O) = \hat{\theta} + \sqrt{\frac{\theta_1 O}{B}}$, $O = \int_{\gamma_s}^1 o(s_j) dj$.

In the following proposition, we formulate the second-period equilibrium in the endogenous case⁸.

Proposition 4 *The competitive equilibrium with endogenous institutions is characterized in the second period by a set of prices (w_2, r_2) , share of rent-seekers γ_2 , a transfer T_2 and a total political party contribution O , which satisfy the conditions of proposition 3 and the following additional condition:*

$$\begin{aligned} O &= \frac{1}{2} \left(\beta z + X^2 - X \sqrt{X^2 + 2\beta z} \right), \text{ where} \\ X &: = \left(\frac{1}{\frac{S}{\lambda} (\gamma_2 - 1 + \lambda)} + \hat{\theta} \right) \sqrt{\frac{B}{\theta_1}}; \\ z &: = \frac{1}{1 + \beta} k_0 \left(1 + \theta_1 \frac{S}{\lambda} (\gamma_2 - 1 + \lambda) \right). \end{aligned}$$

Corollary 5 *Under the restriction $\gamma_1 < \gamma_2$, the exogenous model is the limiting case of the endogenous one under the condition $B \rightarrow \infty$, i.e. in the case of prohibitively high costs of political influence.*

4.8 Parameterization

Before turning to the numerical comparative statics, we perform parameterization of the model based on the Bulgarian case. We choose to parameterize on the endogenous model, which is more general and adequate for describing the reality since we assume that in all countries we have at least some possibilities for political influence. As shown in Corollary 5, the exogenous model would correspond to a hypothetical case with prohibitively high costs of influencing institutions (for instance, in countries with authoritarian regimes).

Since our stylized model only considers two periods, and we would like to allow for a sufficiently large institutional change between the two periods, we assume that the length of each of the periods is 5 years. This means that period one, which creates the base for anchoring of the vested interests in the political leadership, would roughly correspond to the situation until 1995, and the second period till 2000. Additional justification for

⁸The first-period optimization remains unaffected, the only difference being that the rent-seekers' consumption is decreased by the contribution o .

this division is the value of the institutional indicators: in the first half of the 1990s the transition countries are characterized by relatively close values of the institutional indicators and measures of inequality, whereas the difference has grown very wide in the second half of the 1990s (Gruen and Klasen, 2003).

We choose the following parameter values for the model. For the annual discount factor we use the standard value of $\beta = 0.95$, which means that the value over the whole 5-year period is $0.95^5 = 0.77$. For the capital's share in output α , we follow Tsalinski (2007) who estimates an average value of 0.4 for the years around 2003. A similar figure is obtained also by Ganev (2005) and used by Eller (2004), although he admits that the capital elasticity for southeastern European transition countries might be substantially higher.

To the best of our knowledge, the only study reporting estimates of levels for total factor productivity (TFP) in transition countries is Eller (2004) who uses $A = 1.5$ for Central Europe. Ladu (2006) estimates separate TFP values for different European regions and the lowest TFP in certain Spanish and UK regions in the range of 1.7 to 2. Keeping in mind that currently TFP values in Central and Eastern Europe are still below the corresponding values for EU, we see that Ellers' estimate is quite reasonable.

The most problematic variable is the initial capital/output ratio. Transition countries started heavily over-capitalized, some researchers even estimated a capital-output ratio several times higher than that of market economies (Izyumov and Vahaly, 2006). However, a large part of the inherited capital turned out to be unusable under market conditions and had to be scrapped. According to different estimates the depreciated part of capital was between 15 and 50 percent of the total stock (Izyumov and Vahaly). Therefore, a couple of available estimates of this ratio in early transition are very unreliable and differ by large amounts. Instead of relying on the early ratios, we are forced to use more reliable recent data. Izyumov and Vahaly's estimate for capital/output ratio for Bulgaria in 2002 is 1.28. Tsalinski (2007) arrives at a yearly figure of 1.5 for the years 1998-2003. We use this value, and translating it into a 5-year value (dividing by the 5-year output), we obtain a ratio equal to $1.5/5 = 0.3$. Now we are also in a position to express the initial capital k_0 from the production function equation:

$$k_0 = \left(\frac{K}{Y} A \right)^{\frac{1}{1-\alpha}}.$$

Substituting the values of the known parameters we obtain $k_0 = 0.26$.

As for the two parameters that characterize rent-seeking (λ and S), we have basically no guidelines from the data or previous works. We take $\lambda = 0.2$, on the assumption that rent-seekers are not a large share of all agents. As for the value of S , we assume $S = 4.2$ in order to make the return to rent-seeking be of comparable magnitude as the return from working and avoid in this way corner solutions.

Next, we calibrate the transfer T_2 . There is evidence that the portion of the government funds drained as a rent is substantial. The American ambassador Beyrle, cited by the Focus agency, stated in 2005 that in procurement projects an estimated 20 to 25% of the project value was diverted due to corruption. He also cited estimates that the sum that Bulgaria lost due to corruption only in 2006 is equal to the combined budgets of Health, Educational and Environmental ministries (SofiaEcho, 2007). A publication by

Table 4.2: Overview of the model parameters

Parameter	Benchmark value	Description
θ_1	1.5	Initial institutional value
μ	0.9	Maximum feasible reform step
β	0.77	Discount factor
α	0.4	Capital share of output
A	1.5	Total factor productivity
k_0	0.26	Initial capital
λ	0.2	Measure of potential rent-seekers
S	4.2	Rent-seeking endowment of the largest rent-seeker
B	0.8	Cost of political influence

the Centre for the Study of Democracy reports similar and persistent rates of fund draining also in other areas, e.g. health care (Centre for the Study of Democracy, 2003). This figure can also serve as an indication for the share of rent extracted outside the public sector, since we define rent-seeking more broadly than only that done by bureaucrats. We should also keep in mind that the grey economy is estimated at around 30% of GDP in Bulgaria. Based on all this data, we assume that 20% of total output is extracted as rent, i.e. $\frac{T_2}{Y_2} = 0.2$.

Another indicator we use for calibration is the ratio of the incomes of the top 20 percent to the lowest 20 percent reported by the UNDP. In the beginning of the 2000s, its value for Bulgaria is 4.4. We construct the income ratio of the rent-seekers' to workers' income and compare it with the UNDP ratio. Then we solve the system numerically to fit the values of the remaining parameters θ_1 , μ and B . Under the above values of λ and S , we can find values of $\theta_1 = 1.5$, $\mu = 0.9$ and $B = 0.8$. Table 4.2 summarizes the parameter values which we take as a benchmark for our analysis. The solution to the model with the benchmark values provides an illustration of a case whereby the institutional conditions improve and the number of rent-seekers does not increase. Nevertheless, the economy ends up with increasing rent seeking $T_2 > T_1$ and a large institutional backlash (the institutional improvement $\theta_1 - \theta_2$ is only 0.4, as compared to the desired $\mu = 0.7$).

We are now equipped to trace the comparative statics of the variables of interest.

4.9 Comparative statics

Here we analyze the effects of the parameters of the model on the endogenous variables⁹.

First, in Table 4.3 we provide an overview of the solution of the model in the benchmark case. The calibration of the model to Bulgarian values reveals a relatively modest degree of setback as a result of the state capture: instead of achieving the targeted value of $\theta = 0.6$ (corresponding to the reform without political influence), the final institutional

⁹The derivations for the income difference ID and the total output Y can be found in Appendix F.

Table 4.3: Variable values in the benchmark case

Variables	Description	Value
γ_2	Second-period share of workers	0.917
θ_2	Second-period institutional value	0.759
ID	Income difference between avg. rent-seeker and worker	5.126
Y	Total output	0.898
O	Total party contribution	0.013
T_2/Y	Second-period transfer as a share of total output	0.195
ε	Reform setback achieved by rent-seekers	0.159
c_2^w	Second-period consumption of a worker	0.761
K^p	Total productive investment	0.316
K^r	Total rent-seeking investment	0.028
k^w	Investment of a worker	1.156

value is $\theta_2 = 0.75$, meaning that around 18% of the planned reform step μ has been prevented from implementation.

The income loss due to investment in political influence instead of production, O/Y , amounts to 1.5% of total output. Cumulative rent-seeking investment is 0.03, and total productive investment is 0.36. It means that about 9% of total investment in the economy is an unproductive investment, and allows us to roughly quantify the loss of productive resources stemming from rent-seeking.

Before presenting our comparative statics results, it should be noted that we are only interested in non-corner solutions and this is the key factor underlying our choice of parameter ranges. Our observed relationships and patterns are robust in the sense that they describe fully the variable behaviour within the range of parameters providing an internal solution.

4.9.1 Initial institutional level

First we consider the impact of the initial institutional level θ_1 (Table 4.4). The less developed institutions are, the higher return to rent-seeking as compared to working, therefore more agents choose rent-seeking, channeling their capital to unproductive purposes. Therefore, with increasing θ_1 , the share of rent-seekers in both periods increases, final institutional level worsens (θ_2 increases), and naturally final output Y decreases due to the lower level of productive resources. It is also intuitive that the second-period income difference ID increases with higher θ_1 : rent-seekers receive higher and workers - lower income. These findings are in line with the empirically established importance of initial conditions (in this case the initial institutional conditions) for output (Stylized fact (b)). Indeed, countries which in the beginning of transition had some initial experience with market institutions performed in general better than those that built the institutions from scratch (de Melo, 1997). The influence of current institutions on output (stylized fact (a)) can be demonstrated through plotting Y_1 against θ_1 and output Y_2 against θ_2 (in both cases the relation is positive). The general negative relationship between institutional quality and inequality is in line with the empirical findings of Chong and Gradstein

Table 4.4: Comparative statics for varying initial institutions

Variables / value of θ_1	1.3	1.5 (benchmark)	1.7	1.9
γ_2	0.955	0.917	0.891	0.870
θ_2	0.589	0.759	0.936	1.117
ID	3.332	5.126	7.693	11.471
Y_2	0.921	0.898	0.889	0.888
O	0.022	0.013	0.009	0.006
ε	0.189	0.159	0.136	0.117
T_2/Y_2	0.107	0.195	0.298	0.414
K^p	0.317	0.316	0.322	0.333
K^r	0.023	0.040	0.049	0.054

(2007).

Total productive investment (the part of total end-of-period 1 capital that is not consumed) displays interesting U-shaped dynamics with respect to θ_1 , although the range of change in this variable is relatively small (see Figure 4.3). For our parameter values, the lowest point is achieved slightly below the benchmark value (1.4) and further worsening institutions actually lead to higher investment levels. This shape is due to the interaction of two terms: the capital of the "two-period workers" and of those former rent-seekers who turn to working in the second period. While the capital of the second group falls with increasing θ_1 , the capital of the first group increases. One explanation is the following. The agents that are always working know that the higher θ_1 , the larger part of their income will be taken away in the next period. In order to achieve consumption smoothing prescribed by the log utility, they invest a larger part of their income and consume less. Correspondingly, first-period worker consumption decreases with θ_1 . Quite the opposite is true for the rent-seekers who turn into workers. The higher θ_1 , the more they have captured in the first period and at the same time, the more they will have taken away from them in the second period. Therefore, they consume more in period 1 and leave less for looting in period 2. Although such a behavior of workers might seem completely counter-intuitive and artificial at first glance, it follows from the properties of the utility function, which does not include leisure.

The ratio K^p/Y_1 which proxies total productive investment as a share of GDP (for period 1) is increasing with θ_1 : countries with worse institutions tend to have a higher investment/GDP ratios. However, the amount of rent-seeking capital is increasing in θ_1 as well, faster than the productive one, hence its share $\frac{K^r}{K^p+K^r}$ is rising.

4.9.2 Initial capital

The results concerning the amount of initial capital per worker are less intuitive (see Table 4.5). The measure of rent-seekers depends positively on k_0 . The larger the capital of the rent-seekers, the more attractive is rent-seeking as compared to working (due to the decreasing returns on capital in production). True, when more agents choose rent-seeking, the wage and interest rise due to the more scarce productive factors, but on the other hand, the increased transfer T outweighs the effect of higher salary and interest.

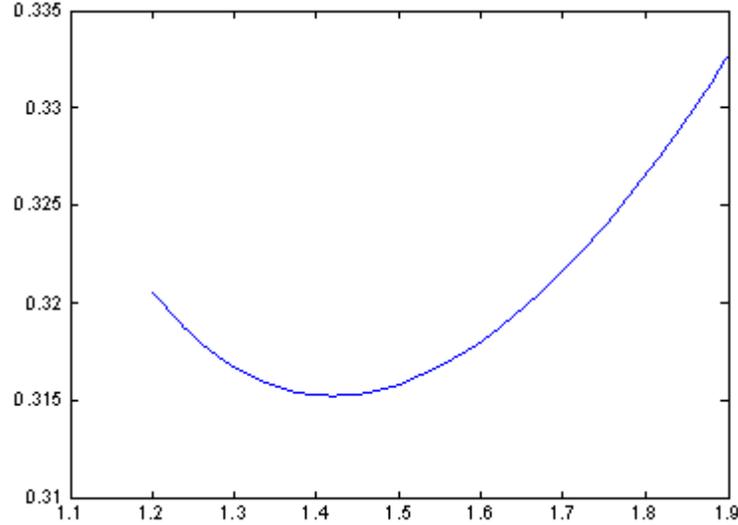


Figure 4.3: Total productive investment (Y) vs. initial institutions (X)

The higher k_0 , the higher also θ_2 and the income difference ID . Total output Y and the productive investment K^p increase with k_0 , quite intuitively. However, rent-seeking capital also increases with k_0 , both absolutely and relatively to K^p . The second loss (resources spent for political influence O) and the reform setback ε also increases with k_0 . The fact that political contribution increases with the amount of capital per worker means the "richer" countries (in terms of higher initial capital) tend to be more prone to rent-seeking and also complies with the finding of Harstad and Svensson (2008) model that richer countries tend to have more lobbying than poorer ones. They are also characterized by larger resource loss and larger inequality. In fact, this finding might be related to the literature on the resource curse and the quality of institutions, e.g. Mehlum et al. 2006 - countries that are rich in natural resources tend to have high income if institutions are good and low income if institutions are poor, due to the intensive rent-seeking. In our sample, the resource-rich countries like Russia and Azerbaijan, are also among the countries exhibiting the highest inequality.

4.9.3 Total factor productivity

Higher total factor productivity in the productive sector, by increasing the relative attractiveness of working, leads to a higher share of workers, lower T and lower income difference (see Table 4.6).

We can also link total factor productivity, at least in the initial phase, with the level of distortions like over-industrialization under communism, which have a negative effect on transition performance and more specifically output level and growth (de Melo, 1997). If we assume that the presence of initial distortions implies a lower long-run value of total factor productivity A , then our model is also in line with the fact that countries with

Table 4.5: Comparative statics for varying initial capital

Variables / value of k_0	0.26(benchmark)	0.4	0.6	0.8
γ_2	0.917	0.887	0.862	0.846
θ_2	0.758	0.789	0.816	0.826
ID	5.125	8.199	13.831	21.834
Y_2	0.898	0.985	1.088	1.174
O	0.013	0.019	0.025	0.027
T_2/Y_2	0.195	0.324	0.486	0.627
ε	0.16	0.19	0.22	0.23
K^p	0.316	0.418	0.559	0.697
$I/Y1$	0.406	0.467	0.543	0.611
K^r	0.040	0.066	0.095	0.119
$K^r/(K^p + K^r)$	0.065	0.098	0.129	0.150

Table 4.6: Comparative statics with varying values of A

Variables / value of A	1.1	1.3	1.5(benchmark)	1.7
γ_2	0.890	0.904	0.917	0.930
θ_2	0.731	0.746	0.7589	0.770
ID	8.097	6.287	5.126	4.317
Y_2	0.601	0.745	0.898	1.061
O	0.009	0.011	0.013	0.015
ε	0.131	0.146	0.159	0.170
T_2/Y_2	0.321	0.249	0.195	0.148
K^p	0.263	0.289	0.316	0.343
$I/Y1$	0.478	0.437	0.406	0.382
K^r	0.041	0.041	0.040	0.037

relatively low levels of distortions have escaped the sharp output fall and large inequality increases. The investment as a share of GDP is decreasing in total factor productivity: when a unit of capital produces more, less units are needed to maintain a certain output level. The amount of rent-seeking investment decreases with A as well, albeit rather slowly.

A non-intuitive result is that with higher A the final institutional level is worse, i.e. θ_2 is higher. This is the only case in comparative statics where we see θ_2 and γ_2 move in the same direction. The reason is that increasing A creates more workers, but the remaining rent-seekers can easily secure a larger individual transfer at no additional price (higher A does not affect in any way the costs of political influence). Therefore, it is optimal for them to invest more in political influence, which brings them higher transfer in period 2. Indeed, we observe that although the total transfer T_2 decreases, the transfer per rent-seeker $\frac{T_2}{1-\gamma_2}$ increases (not reported in the table), and the capital spent for political influence O increases.

Therefore, we obtain the seemingly paradoxical result that countries with higher total factor productivity, once political influence is possible, will under equal conditions end up with worse institutions and higher spending on political influence, although they score better on the macroeconomic indicators such as output and inequality, and a larger share of agents choose working. Admittedly, this result is a product of the assumed production function for the rent seekers. However, it could actually describe well the cases of Bulgaria and Romania.

These countries have relatively good productivity levels in comparison to the transition sample average (including also CIS and the southeastern European states) and after recovering from the severe crises of 1997-98 for a number of years performed well in terms of growth and investment. However, both countries experience serious problems with institutional reform and are (particularly Bulgaria) burdened with persistent and broad corruption. Another conclusion we can draw is that an improvement in economic fundamentals (in this case productivity) without pressing on with the reforms on institutions can actually have an adverse effect on institutional quality and increase redistribution from the workers towards the rent-seekers: the additional output only increases the basis for their rents. It is straightforward to draw a parallel with recent developments in Bulgaria.

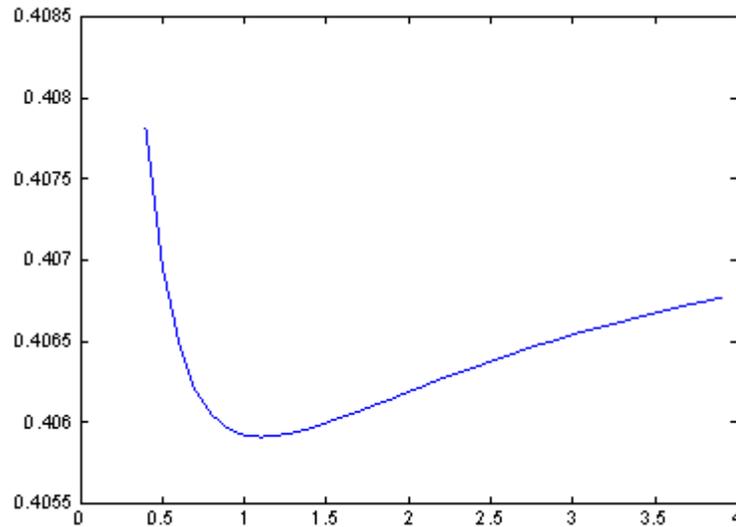
4.9.4 Costs of political influence

Intuitively, the measure of rent-seekers $1-\gamma_2$ increases and θ_2 decreases with lowering cost of political influence B . (We demonstrated analytically that under sufficiently high costs of political influence the endogenous model reduces to the exogenous one). Numerically, if we allow B to vary from 0.4 to 4, the effect varies from a large setback $\varepsilon = 5.5$ (very small institutional advance) to θ_2 being very close to the no-political-influence value $\hat{\theta}$. Recall that ε is the difference between the real final institutional level θ_2 and the targeted one $\hat{\theta}$.

In equilibrium, spending on political influence O decreases with B , i.e. the substitution effect (retreating from political influence) dominates the income effect (increased expenditure due to increasing price B for the state capturers). In fact, the two types of

Table 4.7: Comparative statics with varying costs of political influence B

Variables / value of B	0.4	0.8 (benchmark)	1.0	2.0	3.0	4.0
γ_2	0.904	0.917	0.921	0.930	0.934	0.936
θ_2	0.865	0.759	0.733	0.674	0.651	0.641
ID	5.974	5.126	4.930	4.495	4.336	4.252
Y	0.892	0.898	0.900	0.906	0.909	0.910
O	0.019	0.013	0.012	0.007	0.005	0.004
ε	0.256	0.159	0.133	0.074	0.052	0.041
T_2/Y	0.232	0.195	0.186	0.165	0.157	0.154
K^p	0.317	0.316	0.316	0.316	0.316	0.316
K^r	0.044	0.040	0.038	0.035	0.034	0.033

Figure 4.4: Productive investment I as a function of the cost B .

resource loss (capital channeled into rent-seeking K^r and capital used for political influence O) decrease with B . This in turn feeds into the increase in Y . The final income difference ID decreases with B , which is consistent with the result of Rodriguez (2004) that lobbying tends to exacerbate initial inequality.

As can be seen from Figure 4.4, the dependence of productive investment I as well as I/Y on B is nonlinear: it is decreasing sharply for very low levels of B and increasing henceforth. The explanation is similar to the one in the case of k_0 .

4.9.5 Reform step

The effect of changes in μ on most of our variables listed in Table 4.8 is as expected.

It is less straightforward that the expenditure on political influence O and its result - the setback ε , are increasing fast with the reform step. Other things equal, the more

Table 4.8: Comparative statics with varying reform step

Variables / value of μ	0.7	0.9 (benchmark)	1.1	1.3
γ_2	0.898	0.917	0.942	0.971
θ_2	0.922	0.759	0.612	0.488
ID	6.445	5.126	4.045	3.198
Y_2	0.890	0.898	0.914	0.938
O	0.008	0.013	0.024	0.044
ε	0.122	0.159	0.212	0.288
T_2/Y_2	0.251	0.195	0.143	0.099
K^p	0.318	0.316	0.317	0.323
$K^p/Y1$	0.409	0.406	0.408	0.416
K^r	0.046	0.040	0.031	0.017

ambitious the reform step, the more intensively rent-seekers work to achieve a bigger setback since the cost of the political action is lower than the damage they would suffer from the full step realization. The investment - output ratio I/Y has again a U-shaped dynamics, so that it falls for very small reform steps and increases after the step passes a threshold.

4.9.6 Explanation of the stylized facts

The combined comparative statics results for θ , the costs B and the feasible reform step μ also shed light on some of the stylized facts listed at the end of section 4.3: low-inequality countries comprise both very poor and advanced reformers. We saw already that the second-period income difference ID increases with θ_2 : less advanced reformers have more inequality. However, it still remains to be explained why there are also very poor reformers with low levels of inequality. This can be done if we take into account that countries in the transition sample differ in their political systems, which is reflected in differing costs of political influence B and feasible reform steps μ . In countries with authoritarian regimes the costs of political influence are high since the authoritarian power does not allow other political influences. This is reflected in a high value for B , for instance $B = 10$. Plotting again the relation between inequality and institutions with this value of B , we obtain much lower inequality levels than with our earlier levels. But it is also logical to assume that an authoritarian regime is associated with a small size of the feasible reform step μ , which explains why such countries have remained at low development levels. Indeed, countries like Belarus, Uzbekistan and Turkmenistan have not even started comprehensive economic and political reforms, and have both poor institutions and relatively low inequality. This result parallels the finding of Acemoglu and Robinson (2008) that a larger democratic advantage for the citizens may imply a stronger domination of politics by the elite. It reveals the drawbacks of a democratization process which is performed without the will or possibility for institutional reform.

By the same token it is also clear that the intermediate reformers are the countries that have the highest value of the state capture index (stylized fact (c)). We employ as proxy for state capture the size of the backlash, or the difference between planned and actual

Table 4.9: Comparative statics with varying parameters lambda and S

Variables / value of k_0	$S = 4.2, \lambda = 0.2$ (benchmark)	$S = 6; \lambda = 0.1$
γ_2	0.917	0.914
θ_2	0.759	0.741
ID	5.126	12.360
Y_2	0.898	0.911
O	0.013	0.011
ε	0.159	0.141
T_2/Y_2	0.195	0.263
K^p	0.316	0.329
K^r	0.040	0.046

final institutional value. On one hand, countries that have relatively favourable initial conditions have worse conditions for political influence and the backlash is moderate. On the other hand, in authoritarian countries the feasible institutional reform step is limited, which also limits the possible backlash.

4.9.7 Rent-seeking ability S and the measure of potential rent-seekers

The parameters λ and S characterize rent-seeking, and we consider two possibilities here: (i) the number of rent-seekers is relatively large, but their rent-seeking ability is relatively small; (ii) the case where they are a small but powerful clique. The intuition behind the two scenarios is that there were more and less centralized communist countries, and in more centralized ones the circle of individuals with power over decision making and resource distribution was narrower, but the circle of influence - larger (for instance, the case where a high official was responsible for a whole industrial sector). We take our standard values of $\lambda = 0.2$ and $S = 4.2$ for the first scenario, and $\lambda = 0.1$ and $S = 6$ for the second one. Most variables, with the exception of the income difference and the size of the transfer, have very similar values in the two cases.

4.10 Conclusions and discussion

Our main research question was to investigate how economic variables like the level of capital per worker and TFP may affect institutions in a transition country undergoing institutional reform given that there is a possibility for political influence of vested interests. Our modelling approach embeds institutional reform in a general equilibrium model with capital and labour and models a two-way relationship. On one hand, the prevailing institutional level affects output and its redistribution by determining the relative returns to rent-seeking and producing. On the other hand, the institutional path itself is influenced by the income in the economy, the wealth of rent-seekers and their investment in political influence.

We have shown that under certain circumstances improvement in some economic variables may increase state capture and have a negative effect on institutions. This is the main value added from a full model with labour and capital taken as a background for

incorporating institutional reform, as compared to previous models from the literature that usually neglected capital.

The negative effects of rent-seeking are most pronounced in the case of changes in initial capital. Starting with higher capital, if political influence is feasible, the country ends up with worse institutions, higher income difference, and lower output, since higher capital increases the attractiveness of rent-seeking. We can extend this reasoning to include external financial help for a capture-prone country (for instance, the accession funds of the EU). As one of the prevalent forms of current rent-seeking is the looting of public funds from the budget, provision of such financial help to institutionally unreformed countries is equivalent to an increase in capital. Nominally, we have more productive capital per capita; however, since it is public money which can easily be looted through rent-seeking, it increases the amount extracted by rent-seekers and fuels their efforts to capture the state. This results in slowing institutional reform and the loss of the incentives of a part of the economic agents to proceed with it. Moreover, in the next period, the worse institutions also feed into worse economic characteristics due to more rent-seekers and larger looting.

Another parameter which can have certain negative influence is the total factor productivity, which is usually perceived as a positive factor increasing the growth prospects. In spite of its positive effect on output and income difference, if it is not accompanied by increasing the potential for reform, it can actually increase the degree of state capture, the setback achieved for rent-seekers and the share of capital devoted to political influence. Finally, even a more ambitious and determined reform agenda by the pro-reform forces, which is basically the only tool for moving out of the state capture trap, would usually fall short of the target, since the prospect of severe limiting of their activities mobilizes rent-seeking for more intensive resistance and the more ambitious the targeted reform, the lower are its chances to fully succeed.

In general, rent-seeking and political influence are mutually reinforcing: the possibility for state capture leads to more intensive rent-seeking and in turn, rent-seeking, by allowing rent-seekers to accumulate larger capital, enables more effective political influence. Also, once political influence and state capture are in place, they are likely to become persistent since in the first place, rent-seekers seek to destroy the tools for removal of rent-seeking. This was one of the key weaknesses in the initial reform program (the Washington consensus): not devoting sufficient attention to institution building. It was assumed that after the implementation of a reform package including liberalization and privatization, and after the economy has reached a certain level of income, the necessary institutions would develop automatically. Perhaps, the logic was that institutions are just a public good, which can be provided in better quality and quantity with a larger budget. Our results show that this is not necessarily the case and that under the feedback mechanisms institutions should be a first priority, since they determine economic performance and development over a long horizon.