

# CAPTURE OF BANKRUPTCY: THEORY AND EVIDENCE FROM RUSSIA\*

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## Abstract

Laws that work well in a country with the rule of law may produce unexpected outcomes in a corrupt environment. We argue that the Russian legal system is impaired by the capture of regional divisions of arbitration courts, and analyze the consequences of this capture. Using a theoretical model and an empirical analysis, we conclude the following: First, governors in alliance with managers of large regional enterprises use bankruptcy to expropriate the federal government and outside investors. And second, the bankruptcy law does not put pressure on managers to restructure; instead, it may even prevent restructuring.

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*"Often, simply with these kinds of bandit methods I defend these enterprises from these things that are called bankruptcy..."*, - Evgeny Nazdratenko, the governor of Primorsky Krai speaking about the fishing enterprises in the region. "Itogi", p.6, May 4, 1999.

## 1 Introduction

The passage of a well-functioning bankruptcy law is an important component of the transition to a market economy. It should protect creditors, impose financial discipline on managers, induce restructuring, and free assets from inefficient use. Russia recently enacted a new bankruptcy law. This paper addresses the question of whether and how the new bankruptcy law and its implementation have changed managerial incentives and increased creditor protection. We argue that a distinguishing feature of the Russian bankruptcy institution is the capture of Arbitrage courts by the regional governments.<sup>1</sup> Arbitrage court judges, who have significant discretion in bankruptcy procedures, are not independent. Based on considerable anecdotal evidence, we observe that regional governors are able to influence the decisions of Arbitrage court judges.<sup>2</sup>

Governors may benefit from their influence on courts in various ways: they may extract rents from the managers of insolvent firms in exchange for protection from losing control in bankruptcy. Regional authorities may also receive benefits from the managers of profitable enterprises who fake insolvency. The latter use bankruptcy procedures (under regional influence) to avoid federal taxes and debt repayments to creditors outside the region. Governors may also use their influence to prevent the bankruptcy of large enterprises for political reasons. In this paper we focus on the first two cases.

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<sup>1</sup>The regional divisions of Arbitrage courts hear bankruptcy cases in Russia.

<sup>2</sup>According to the Russian legislation, all Arbitrage courts are in the federal jurisdiction and, thus, independent from the regional governors. The lack of federal financing and, often, large political and physical distance from the federal center makes Arbitrage courts highly dependent on regional politics: The governors often pay judges' bonuses and provide them with career opportunities.

Based on evidence and a theoretical model, we conclude that the capture of Arbitrage courts results in a failure of the bankruptcy institution to protect creditor rights or to put pressure on managers to restructure.

Russia has had a bankruptcy law since November 1992. The first bankruptcy law was completely ineffective.<sup>3</sup> This motivated the adoption of a new law in March 1998.<sup>4</sup> This law was drafted according to Western standards. In particular, it makes the initiation of bankruptcy proceedings very easy: a three-month-overdue debt of \$5,000 is sufficient for a creditor to file a bankruptcy petition against a firm. This paper analyses the effects of the enactment of the 1998 law.

On the one hand, the law was expected to vastly improve managerial incentives because it is harsh on the incumbent management: under the law, manager lose control in bankruptcy. On the other hand, the law was drafted to avoid inefficient liquidations: judges are given enough discretion sufficient to refuse liquidations suggested by creditors. We show that in the Russian context of weak law enforcement, discretionary powers granted to judges are abused, and the law does not achieve its goals.<sup>5</sup>

Experts had predicted that the law would cause a flood of bankruptcies. Prior to 1998, most Russian firms accumulated large arrears to the government and private creditors. As reported in table 1, the number of bankruptcies has, indeed, increased since the law was adopted. Many economists interpreted this fact as evidence of a hardening of managers' budget constraints. Aggregate figures,

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<sup>3</sup>Between 1992 and 1998, very few companies went bankrupt. A common view is that the failure of this law to bring about financial discipline was due to the limited scope of its application and excessively complicated procedures. To initiate a bankruptcy procedure, the total amount of outstanding debt had to exceed the total book value of a company's assets. To avoid bankruptcy, a company manager could simply issue worthless debt to his own firm at a high face value.

<sup>4</sup>The second law is currently in force in Russia.

<sup>5</sup>If a creditor files a bankruptcy petition, the following procedure is undertaken. First, a temporary manager, appointed by an Arbitrage court judge, collects information about the claims on the company and organizes a creditors meeting, where the creditors decide if they want a liquidation or reorganization. Second, the judge, taking into consideration the resolution of the creditors meeting, makes a ruling on the liquidation or reorganization of the company and appoints either a liquidation manager if a liquidation is ordered or an external manager if a reorganization is ordered. The judge does not necessarily need to follow the creditor's request. This clause in the law was motivated by the fact that creditors may opt for an inefficient liquidation. Initiation of either procedure deprives the current management of control over the firm unless a member of the incumbent management team is appointed as an external manager.

however, are insufficient to arrive at such a strong conclusion. By looking at which companies went bankrupt and what happened to companies in bankruptcy, we provide evidence in favor of the opposite conclusion: bankruptcy has softened managers' budget constraints. To explain this, we build a simple theoretical model of capture in bankruptcy and show that empirical evidence is consistent with the model.

The model investigates how bankruptcy capture affects managerial incentives, the financial position of firms and the protection of creditor rights.<sup>6</sup> A firm with a manager and two creditors is considered. The firm is insolvent in terms of verifiable cash flows but has high private benefits that accrue to the manager. One of the creditors is the governor, who can influence the decisions of the bankruptcy judge. An important assumption of the model is that the governor values bribes from the manager as well as tax debt repayments.<sup>7</sup> The model shows what happens when the judge is under the governor's influence: debts are not repaid; the firm does not restructure; and the manager pays bribes to the governor in exchange for protection from losing control during bankruptcy. As a result, the outside creditor is expropriated by a coalition of the incumbent manager and the governor. The bankruptcy law not only fails to create additional incentives for restructuring, but it may even prevent restructuring when such incentives exist. The intuition is the following. When official taxes are small, the governor may "stop companies from" or "prevent" restructuring because he can extract bribes only from insolvent firms. When the governor values official taxes highly, restructuring still may not happen because he cannot commit to liquidate; instead, he prefers to accept a bribe from the manager. The model provides a classic example of state capture: the manager captures the bankruptcy procedure via the governor when the governor places a high value on tax income or is weak (i.e., unable to influence

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<sup>6</sup>Aghion, Hart, and Moore [1992] studied the challenges of designing bankruptcy rules in transition economies. In particular, they suggested some measures to overcome liquidity constraints of potential buyers in liquidation.

<sup>7</sup>Bribes are paid out of manager's private benefit (the shadow income of the firm) and, therefore, are potentially much larger than the official income of the firm, which is the basis for calculating regional taxes.

judges on his own).<sup>8</sup>

We apply this model to the Russian economy by noting that the federal government, which is owed tax arrears by regional enterprises, is in the same position as any outside creditor. We formulate testable hypotheses of the capture model and test them using the data on Russian industrial enterprises. We find that the data are consistent with our hypotheses.

Our empirical results are the following. The probability that an external management procedure is initiated against a particular firm increases with the following regional factors: the strength of the governor in the region, tensions between the governor and the federal center, federal tax arrears in the region, and opacity in the system of regional tax collection. The probability of external management is higher for very large firms in efficient and profitable industries. By contrast, the probability of a liquidation procedure decreases with the strength of the regional governor, tensions between the governor and the center, and federal tax arrears in the region. The probability of liquidation is higher for smaller firms operating in loss-making industries. In addition, we find no evidence that the initiation of external management procedure (imposed by the judge) changes the performance characteristics of firms.

Our results suggest the following. The managers of large enterprises and regional governors collude to expropriate the federal government and investors from outside the region. Large insolvent firms are not restructured. And the incumbent managers stay in control even under the external management procedure. A possible reason is that they are protected by regional governors.<sup>9</sup>

Many authors have argued that "crony capitalism," i.e. maintaining close ties between business and the government in order to restrict competition, obtain favorable finance, and protect insiders

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<sup>8</sup>For discussions of state capture see Bardhan and Mookherjee [1999], and Hellman, Jones, and Kaufman [2000].

<sup>9</sup>The name for a reorganization procedure in Russian law is full of irony: in reality "external management" procedure does not result in management change. The procedure would be more appropriately called "incumbent management procedure."

from outside claimants, is a common feature of governance in transition and developing countries. Our paper illustrates that "crony capitalism" increases in Russia as the scale and depth of regional government intervention in the governance of Russian firms increases. There are several interesting papers that make this argument in different contexts: Shleifer and Vishny [1998], Ericson [1999], Treisman [1999], Gaddy and Ickes [1998], and Hellman, et. al. [2000].

Our paper contributes to the literature on federalism in Russia [see, for instance, Shleifer and Treisman, 2000, Treisman, 1997, and Zhuravskaya, 2000] by documenting that the bankruptcy institution is used by regional governments as a mechanism for redistribution of revenue from the federal center to the regions.

The paper is organized as follows. Section 2 presents basic facts about bankruptcies in Russia. Section 3 contains our theoretical model and its empirical predictions. Section 4 presents data, methodology and empirical results. Section 5 concludes.

## 2 Stylized facts about Russian bankruptcies

In this section, we summarize some basic facts regarding bankruptcy of industrial firms in Russia.<sup>10</sup>

1) Before 1998, bankruptcies were extremely rare. After the adoption of the 1998 law, we observe a sharp increase in the number of bankruptcies. In 1998, Arbitrage courts initiated one thousand external management procedures and forty seven hundred liquidation procedures. Table 1 presents aggregate statistics on the initiation of bankruptcy procedures over time.<sup>11</sup>

2) Liquidation procedures have been initiated in small and rarely medium-size enterprises. External management procedures have been initiated in very large enterprises. Differences in size are large both

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<sup>10</sup>We derive these facts from the same data set that we use for the systematic empirical tests of our model. This data set is described in section 4.

<sup>11</sup>Statistics in table 1 are given for all bankruptcies rather than only for industrial enterprises. In the empirical part of our study we focus on industrial enterprises.

in terms of output and employment. The mean output for firms with external management is five times bigger than the mean output for all firms in the registry of Russian industrial enterprises.<sup>12</sup> The mean output for firms that entered liquidation procedures is one third of the mean output for all firms in the registry. The number of employees at externally managed firms is on average four times as large as employment in all Russian firms. The number of employees at liquidated firms is not significantly different from the average in the registry.<sup>13</sup> Table 2 presents summary statistics for firms subject to external management and liquidation procedures compared to Russia's average.

3) Firms under external management are not inefficient in the technical sense (measured by labor productivity) and many of them have a very high cash flow. There were many industrial firms that did not go into bankruptcy and had worse performance compared to the firms that went into external management. 30.7% of firms had higher costs per ruble of output and 47.7% of firms had lower labor productivity than the median firm where external management was imposed. By contrast, firms under going liquidation are extremely unprofitable and inefficient. The mean labor productivity of firms that entered liquidation was 2.5 times lower and the mean cost per ruble of output was almost twice as large as firms in the registry.

4) Externally managed firms and firms under liquidation are distributed unevenly across industries. Table 3 presents the industrial structure of bankrupt firms. About 80% of externally managed firms' output is produced by firms in three industries: oil and gas (54.5%), chemical (9.4%), and ferrous metallurgy (16.5%). For comparison, the output of all firms in these industries (according to the registry) accounted for 30% of total industrial output. Firms under external management produced 24% of the output in oil and gas industry. Liquidation procedures are most frequent in light, consumer-

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<sup>12</sup>The registry is described in section 4. Here and later in this section we compare statistics as of 1996 for firms where bankruptcy procedures were initiated since 1997.

<sup>13</sup>Note that the registry contains a lot of very small enterprises. This drives the average employment down.

oriented industries. Almost half of all liquidation procedures were initiated in logging (21%), wood-working (16%), and textile (7%). 15% of all industrial firms operate in these industries. Industries in which external management procedures are more frequent are the best-performing in terms of cash flows and technical efficiency. On the contrary, industries in which liquidation procedures are more frequent are the worst-performing in terms of cash flows and technical efficiency. Table 4 presents several performance characteristics for these industries.

5) Firms under external management are distributed unevenly across regions as well. 59% of the output of firms under external management was produced in Irkutskaya oblast (11%), Republic of Bashkortostan (13%), Kemerovskaya oblast (16%), and Tyumenskaya oblast (19%). For comparison, the combined output of all industrial firms in these regions amounts to 18% of Russian industrial output. Over 30% of industrial production in Irkutskaya, Kemerovskaya and Tomskaya oblasts is produced by enterprises under external management. 24 regions have less than one percent of their output produced by enterprises under external management.

These stylized facts deserve a short discussion. The political economy literature has supplied a lot of arguments explaining why politicians are generally opposed to the liquidation of large and politically important companies (see, for instance, Shleifer and Vishny [1994]). It is not particularly puzzling, therefore, that only the small and worst firms in poorly performing industries are being liquidated. Most political economy models predict too few liquidations.

The distribution of external management procedures across firms, however, presents a puzzle. External management procedures have been mostly initiated against large and politically important firms in very profitable and efficient industries and/or in politically and economically strong regions. At the same time, firms in many regions and moderately performing industries have been completely unaffected by bankruptcy procedures. Our model of regional political protection provides an explanation

for this puzzle: governors employ their influence to protect the incumbent management of large firms using external management procedures. We present this model in the next section.

### 3 A model

#### 3.1 Basic assumptions

Consider a firm with large outstanding debts. There are three agents: a manager who is currently in control, and two creditors: an outside investor, and a governor. The outside investor is the major creditor: the firm has a large amount of outstanding debt to him. The governor has a claim on the firm equal to  $\tau$ . It corresponds to the firm's debt to the regional budget, i.e. unpaid taxes.<sup>14</sup>

A key assumption in our model is that the governor is not exclusively interested in tax income (repayment of tax arrears and flows of future taxes). He also values side payments. Therefore, he may, in exchange for bribes, use his influence on bankruptcy procedures to protect an insolvent firm from other creditors.

The firm is currently insolvent in terms of verifiable cash flows, whereby it generates zero verifiable profits, so that the creditors cannot be paid. Another key assumption is that although the firm is insolvent, there is a significant private benefit that accrues to the manager in control.<sup>15</sup> This private benefit includes hidden income, on-the-job benefits and so on. The firm could pull out of financial distress by deep restructuring. It requires high managerial effort and substantial time. We assume that after restructuring the firm i) repays all its debts and ii) operates profitably thereafter (with moderate managerial effort).<sup>16</sup>

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<sup>14</sup>  $\tau$  may also include social contributions and debts to the regionally owned enterprises.

<sup>15</sup> One of the possibilities is that the manager diverts profits from the profitable firm and fakes insolvency.

<sup>16</sup> If restructuring is completed, the firm generates positive verifiable profits (that cannot be diverted by the manager) in addition to the managerial private benefit.

While the firm is insolvent, the creditors can file a bankruptcy petition with an Arbitrage court. This initiates a procedure administered by a judge. The behavior of the judge is fully determined by his type as specified below, i.e. the judge is not a player in the game. The procedure is modeled in the following way: i) the judge decides whether to liquidate or reject the request for liquidation, and ii) in the former case the judge administers liquidation. The option "reject the request for bankruptcy" should be understood as essentially preserving the status-quo: the manager remains in control and runs the firm as he chooses. This can happen when the judge initiates external management and appoints the same manager to implement the reorganization.<sup>17</sup> One reason for this is that if the judge simply declines to initiate any procedure, the creditors may appeal to a higher level court.<sup>18</sup> On the other hand, if the judge initiates external management and does not change the manager, under the law all debts become frozen for the period of the external management procedure, creditors cannot file a petition with another court, and the status quo is preserved. In order to link the model with our empirical analysis, one needs to keep in mind that "rejection" corresponds to external management ("*vneshnee upravlenie*"). In an earlier version of the paper, we showed that allowing explicitly for reorganization with an external manager appointed by the judge yields the same qualitative results as the present simpler setting.

The judge may be either independent (benevolent) or dependent (corrupt). When the judge is benevolent his decisions are fully determined by the procedure. The outside investor as majority creditor is given the right to make the decision. This corresponds to the creditor-oriented procedure. When he administers liquidation, the judge maximizes the proceeds from the sale of the assets. He distributes them according to the priority rule: debts to the local budget  $\tau$  are paid first while the

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<sup>17</sup>The bankruptcy law formally requires that the manager be replaced. What we have in mind is that the new manager essentially represents the same interests as the old one, i.e., they are from the same management team.

<sup>18</sup>They may also petition for an individual debt repayment.

outside creditor gets  $L - \tau$ , where  $L$  is the liquidation value ( $L \geq \tau$ ). We also consider a modified procedure where the judge is required to turn down the majority creditor's request for liquidation when it is socially efficient to do so.

When the judge is corrupt, his decisions are captured by the governor. If the governor prefers liquidation, the judge rules accordingly and gives all of the liquidation value to the governor.<sup>19</sup> If the governor prefers continuation, the bankruptcy request is rejected. Influencing the judge is associated with a fixed cost  $\gamma$  for the governor (the cost is prohibitive for the outside investor).

The interaction is repeated infinitely. In each period the timing of the relationship is as follows. First, the manager undertakes an action. Thereafter, the creditors decide whether to file a bankruptcy petition or not. If one of them does, the judge decides whether to reject the request or to liquidate. When the governor can influence the judge and before the creditors decide to file or not, the governor and the manager may collude. They negotiate over a bribe paid by the manager to the governor in exchange for protection against liquidation.

### 3.1.1 The firm

The only input into the firm is managerial effort. We denote managerial effort by  $e \in \{S, C, R\}$  where  $S$  stands for steal the assets (alternatively, zero effort),  $C$  for continue as before (moderate effort) and  $R$  stands for restructure (high effort).<sup>20</sup> This effort is observable, but not contractible. When  $e = S$ , the firm is run down. It has zero continuation and liquidation value at the end of the period. If the manager chooses  $e = C$ , he secures that the firm is not run down while remaining insolvent. When the manager undertakes effort  $e = R$ , we say that he starts restructuring. To emphasize that

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<sup>19</sup>This may correspond to manipulating the liquidation procedure so as to favor buyers representing the governor. It may also cover facilitating plain robbery of the firm's assets.

<sup>20</sup> $S$  represents the situation in which the manager strips the firm of all the assets. This is an extreme case of "tunnelling" [Johnson, et. al 2000].

this is a long process, we assume that the process can be interrupted.<sup>21</sup> After restructuring has been initiated but before it has been completed, the creditors may file a bankruptcy petition. In such a case, restructuring can be completed only if the request is turned down. When the firm is restructured, it can be run profitably with moderate effort from the next period on.

### 3.1.2 The payoffs

There are private benefits that accrue to the player in control. We denote the life-time benefit (discounted as to period 1) earned by the manager when he completes restructuring and (thus) stays in control forever by  $V^R$ .  $V^R = \frac{\delta}{1-\delta}V(R)$  where  $\delta$  is a common discount factor and  $V(R)$  is the one period benefit earned in the restructured firm. Note that the manager earns no private benefit in the first period. This reflects the private cost of restructuring, i.e., of exerting high effort. Similarly let  $V^C$  denote life time payoff when the manager exerts a moderate effort ( $e = C$ ) in all periods.  $V^C = \frac{1}{(1-\delta)}V(C)$ , where  $V(C)$  is the corresponding one period private benefit. Finally, let  $V^S$  be the payoff associated with stealing all the assets in the first period ( $e = S$ ). We assume that  $V^C > V^R > 0$  (and  $V^C > V^S$ ) i.e., the manager has no direct incentives to restructure.

In each period  $i$ , the manager also pays a bribe  $b_i$  to the governor in exchange for protection either from the outside investor in bankruptcy, or from the governor's own intervention. When the judge is independent the governor has no protection to offer and the bribe is equal to zero. If the manager steals the assets, the bribe flow, denoted  $B^S$ , equals 0 as well. If the judge is dependent and the firm is restructured or liquidated in the first period, the bribe flow is  $B^R = b_1 \geq 0$ . The manager needs no more protection after the first period since either the firm has become solvent in terms of verifiable cash flow, or he is out of control. In contrast, if the manager does not restructure, the discounted bribe flow denoted  $B^C$  is defined by  $B^C = \sum_{i=1}^{\infty} \delta^{i-1} b_i$ . The bribe  $b_i$  is determined in negotiations

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<sup>21</sup>The same assumption that restructuring is a long process was first made by Roland and Verdier [1999].

(see below).

To simplify the presentation of our infinitely repeated game, we use a short form for the continuation game following the first sequence of moves. In the appendix, we show that the payoffs associated with the short form are (subgame perfect) equilibrium payoffs of the whole game. We write the manager's payoff :  $U_M = V^j - B^j$ , where  $V^j$  and  $B^j$ ,  $j = S, C, R$  are respectively the life time private benefit and the discounted bribe flow according to the specification above.

The governor's payoff is  $U_G = R(\tau, e) + X(b, L, \gamma)$ , where  $R(\cdot)$  is tax revenues.  $R(\tau, e)$  equals  $G(\tau) \geq 0$  when tax debts are repaid out of the liquidation value. If the firm is restructured  $R(\tau, e) = G^R$ , the tax is repaid and a flow of tax payments accrues from the firm,  $G^R \geq G(\tau)$ . In all other cases we have  $R(\tau, e) = 0$ . We shall assume that  $G(\tau)$  and  $G^R$  are both small (this is clarified later). The second term  $X(b, L, \gamma)$  corresponds to side income. It includes the flow of bribes paid by the manager  $B^j$ , or, alternatively, the appropriated liquidation value  $L$  if the liquidation procedure is captured net of the cost of influence  $\gamma$ .

The outside investor's payoff is given  $U_I = \Pi(e, L, \tau)$ , where  $\Pi(e, L, \tau) = I^R$  when the firm is restructured: debts are repaid and a flow of interest on new loans (not explicitly modelled) accrues to the investor. When the firm is liquidated by an independent judge,  $\Pi(e, L, \tau) = L - \tau$ . In all other cases the outside investor earns 0 payoff.

### 3.2 The independent judge case: a benchmark

In this section, we consider the case when the judge is independent ( $\gamma = \infty$ ). First, we note that the governor cannot affect the outcome. The governor can trigger bankruptcy, but the outside investor controls the procedure: he decides whether to liquidate or not.<sup>22</sup> As a result the governor has no

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<sup>22</sup> Under the law, the government representatives cannot vote at creditors' meetings. Since the tax debt is a higher priority claim than the debt owed to the private creditors, private creditors are entitled to decide on the fate of the firm, i.e. whether to liquidate or restructure.

incentives to file a bankruptcy petition.<sup>23</sup> We assume that when a player is indifferent between triggering bankruptcy or not, he chooses not to. Thus, when the judge is independent, the governor has no role to play.

In the case of an independent judge, the timing of the game is as follows:

**t = 0.** The manager chooses effort  $e \in \{S, C, R\}$ .

**t = 1/2.** The outside investor chooses whether or not to trigger bankruptcy and liquidate.

**t = 1.** If the manager is still in control, either restructuring is completed (if it started at  $t = 0$ ), or the firm remains insolvent (if  $e = C$ ). If the manager has stolen the assets ( $e = S$ ) or if bankruptcy is triggered at  $t = 1/2$ , the firm ceases to exist. All the players receive their payoffs.

**After t=1:** If restructuring has been completed, the firm enters the phase where it operates with profit. By the end of the next period, old debts are repaid out of verifiable profit, and a flow of interest and taxes is generated. If the manager had not initiated restructuring but was left in control, the game starts over from  $t = 0$ . In all other cases, the firm does not exist any longer.

The game is illustrated in Figure 1, where the payoffs are computed as the corresponding payoffs of the continuation game.

We assume that restructuring is socially efficient, formally  $V^R + I^R + G^R \geq L$ . The manager, however, prefers to run the firm with moderate effort whenever  $V^C > V^R$ . The following proposition shows the beneficial effect of the threat of bankruptcy on managerial incentives.

**Proposition 1** *Suppose that the investor prefers restructuring, i.e.  $L - \tau \leq I^R$ , then*

*i) if  $V^R \geq \max \{V^S, (1 - \delta)V^C\}$ , the threat of bankruptcy induces restructuring;*

*ii) if  $L - \tau > I^R$ , any subgame equilibrium yields the termination of the firm's activity: either*

*the manager exerts moderate effort and the firm is liquidated, or he steals the assets, and so the firm*

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<sup>23</sup> particular, the governor cannot exploit the threat of bankruptcy *against* the outside investor (to extract bribes). This is because the investor can reject his request.

*ceases to exist.*<sup>24</sup>

Under the condition of proposition 1 i), the bankruptcy law serves its purpose. The threat of losing control induces the manager to restructure ( $e = R$ ). The condition is that the life time private benefit of restructuring for the manager,  $V^R$ , exceeds his one-period private benefit of simply running,  $(1 - \delta)V^C$  and that of stealing the assets  $V^S$ . The result in proposition 1 ii) reveals a pitfall of this simple procedure. It corresponds to a classic inefficiency result applied to creditor-oriented procedures. It assumes that the manager cannot "bribe" the outside creditor to avoid bankruptcy. One reason is that private benefits are hidden profits and outside investors cannot use shadow income of the manager in binding negotiated agreements ("*mirnoe soglashenie*"). Another reason is that there are many outside investors. They may have a hard time agreeing on how to share the potential bribe revenue.

### **3.2.1 A role for the judge: no inefficient liquidation**

We now consider a slight modification of the bankruptcy procedure. Here, the judge is now required to reject any request for liquidation if the manager has started restructuring.

Recall that, by assumption, restructuring is always efficient. But the outside investor liquidates at  $t = 1/2$  whenever  $L - \tau > I^R$ , i.e. her action is, then, socially suboptimal. This justifies why society may not wish to let the creditor alone decide on the fate of the insolvent firm. Instead, the decision-making power may be delegated to an Arbitrage court judge.<sup>25</sup> To illustrate the potential value of leaving some discretion to the judge, we present the following result:

**Proposition 2** *In equilibrium the efficient outcome obtains if*

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<sup>24</sup>All proofs are in the appendix.

<sup>25</sup>Like in some other countries (France, for instatce), the bankruptcy legislation in Russia gives judges a significant discretionary power.

*i)  $V^R \geq \max \{V^S, (1 - \delta) V^C\}$  and*

*ii) the judge is benevolent and has some discretion to protect the manager.*

The result in proposition 2 depends crucially on the assumption that the judge acts in the social interests. Indeed, since managerial effort is not verifiable, compliance with the rule heavily relies on the judge's benevolence. In Russia's transition economy, this assumption appears particularly unreasonable. In the next section, we consider the risks of corruption and collusion associated with discretionary power given to an opportunistic (or dependent) judge.

### **3.3 Capture of bankruptcy**

In this section, we investigate a situation where the governor can, at some fixed cost  $\gamma \geq 0$ , capture the judge's decision in bankruptcy. When the governor exercises his influence, the judge effectively "rubber-stamps" the governor's decisions. If bankruptcy is triggered the governor decides whether to liquidate or reject the request (again, in our setup it is identical to the external management procedure with the same manager). If he chooses to liquidate, the governor appropriates all the "proceeds" as side income. First, we shall assume that  $\gamma < L$  the cost of influence is sufficiently small, so the governor's threat to intervene is credible.<sup>26</sup>

The dependent judge case is symmetrical to the independent judge case in the following respect. When the judge is independent, the governor has no real power because he cannot vote at the creditors meeting. In a similar way, political capture deprives the outside investor of influence over the procedure. She can trigger bankruptcy, but the governor can reject the request. Moreover, if liquidation follows, the governor appropriates all the proceeds.

The new feature of the capture model is collusion: the governor and the manager can agree on

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<sup>26</sup>Corollary 2, we consider the case of  $L - \gamma \leq 0$ .

a deal where the governor (uses his influence to) protect the manager from liquidation in exchange for a bribe. The collusive agreement arises as the outcome of negotiations. The timing of the game, ignoring a passive player (here the outside investor), is the following:

**t = 0.** The manager chooses an effort  $e \in \{S, C, R\}$ .

**t = 1/4.** The governor and the manager bargain over a bribe. If agreement is reached, the manager stays in control in which case the game continues to  $t = 1$ . If there is no agreement, we move to  $t = 2/3$ ;

**t = 1/2.** The governor files a bankruptcy petition and liquidates.

**t = 1.** If the manager is still in control, either restructuring is completed (if it started at  $t = 0$ ), or the firm remains insolvent (if  $e = C$ ). If bankruptcy is triggered at  $t = 2/3$ , the firm ceases to exist. The players receive their payoff from the firm and the bribe is paid to the governor.

**After t = 1:** If restructuring is completed, the firm enters a phase where it operates with profit. By the end of the next period, old debts are repaid out of verifiable profit, and a flow of interests and taxes is generated. If the manager had not initiated restructuring but was left in control, the game starts over as from  $t = 0$ . In all other cases the firm exists no more.

The game is illustrated in figure 2, where the payoffs are computed for the corresponding continuation game.

### 3.3.1 Collusion

The outcome of negotiations about the size of the bribe, subject to the manager's liquidity constraint at  $t = 1/4$  is the collusive agreement. The manager pays the bribe out of his current private benefit.

We assume that the bribe is enforceable.<sup>27</sup> We do not explicitly model the bargaining game. Instead

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<sup>27</sup>One motivation is that the recurring nature of the interaction provides with suitable retaliation means in case of defection.

we use the (constrained) symmetric Nash bargaining solution. Our main results do not depend on the chosen solution concept. In particular, they hold for the alternative procedures where either the manager or the governor makes a take-it-or-leave-it offer.

Bargaining occurs after the manager has undertaken the action,  $e = S, R, C$ . The collusive deal is about giving a credible promise "to protect from liquidation *in the current period*" in exchange for a bribe. Note first that in the subgame following  $e = S$ , the manager does not need any protection since the firm ceases to exist anyway. In the subgame following  $e = R$ , the net gain from avoiding bankruptcy at  $t = 1/2$  is  $V^R + G^R - (L - \gamma)$ . When restructuring has been initiated, postponing bankruptcy for one period is equivalent to "postponing" it forever. In the next period, the firm is solvent and cannot be bankrupt any more. The main issue here is that the manager is liquidity constrained. Under restructuring, the first period's private benefit is equal to zero. The manager cannot pay the governor, so the gains from collusion cannot be realized.

Thus, collusion may only occur in a subgame following  $e = C$ . The stake of collusion, i.e., the aggregated value of postponing the liquidation decision, depends on the manager's decision in the next period, we denote this decision  $e_2$ . If  $e_2 = S$ , the stake of collusion is equal to  $\delta V^S - (L - \gamma)$ , i.e., in the next period the manager steals the assets and the governor forgoes the value of liquidation. Note first that  $\delta V^S - (L - \gamma) \leq 0$ , so the stake may be negative. Even if the stake is positive, it may not be realized because of the manager's liquidity constraint. His current private benefit equals  $(1 - \delta)V^C$ . In the following, we assume that  $(1 - \delta)V^C < L - \gamma$ , so if the governor expects the manager to steal the assets in the next period, he chooses to liquidate.

Let us now consider the case when  $e_2 = C$ . Postponing liquidation allows the manager to earn his private benefit in the next period:  $(1 - \delta)\delta V^C$ . Since the governor can liquidate in the next period, the cost of postponing is  $(L - \gamma)(1 - \delta)$ . The net gain is  $[\delta V^C - (L - \gamma)](1 - \delta)$ , which

we assume to be strictly positive. We denote the symmetric Nash bargaining solution by  $b^N$ :  $b^N = \frac{1}{2} [\delta V^C + (L - \gamma)] (1 - \delta)$ , which represents the value of the governor's outside option (liquidation now) plus half of the collusive gain.<sup>28</sup> Note that  $b^N \leq (1 - \delta) V^C$ , thus, the manager's liquidity constraint is not binding. We see also that since the net gain of collusion is positive, the normalized NPV of the bribe satisfies the governor incentive constraint:  $B^C = \frac{1}{2} [\delta V^C + L - \gamma] > (L - \gamma)$ .

To complete the analysis, we must investigate under what circumstances the governor should expect  $e_2 = C$ ,  $e_2 = S$ , or  $e_2 = R$ . This requires that we look at equilibria of the whole (repeated) game. We do this in the next section.

### 3.3.2 Equilibrium allocation under political capture

Our main result in this section is the following:

**Proposition 3** *When a)  $V^S - V^C > \max\{L - \gamma, (1 - \delta) V^C\}$  and b)  $G^R < L - \gamma$ , any subgame perfect equilibrium entails i) no bankruptcy; ii) no restructuring and; iii) the manager pays in each period  $i$  bribe  $b_i^*$  to the governor such that  $B^{C*} = \sum_{i=1}^{\infty} \delta^{i-1} b_i^* = \min\left\{\frac{b^N}{(1-\delta)}, \frac{(V^C - V^S)(1-\delta)}{(1-\delta)}\right\}$ .*

The intuition for proposition 3 is that the governor can only protect the manager in exchange for bribes as long as the manager needs protection, i.e., the firm is insolvent. Condition a) states that the governor prefers to extract bribes in each period rather than liquidate or take the manager's whole current period private benefit. As a consequence, the governor never takes a bribe such that it induces the manager to steal the assets:  $B^{C*} \leq V^C - V^S$ . Condition b) states that when the manager initiates restructuring, the governor liquidates because he values tax income too little relative to side income (bribes). Therefore, the manager never initiates restructuring.

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<sup>28</sup>Note that the manager has a zero outside option. He receives  $V^C(1 - \delta)$  whether he accepts or refuses to pay the bribe. As we will see later (in proposition 4),  $V^S$  is important, however, in determining the equilibrium.

**Corollary 1** *The result in proposition 3 holds for  $V^R > V^C$ .*

This is a remarkable result which emphasizes the potential costs of corruption in bankruptcy. In the capture model, the bankruptcy law may *hinder* restructuring. When  $V^R > V^C$ , the manager has private interest in restructuring. Restructuring does not happen in equilibrium, because capture of bankruptcy provides the governor with (additional) control rights over the firm. He uses these control rights to protect his rents (flow of bribes). This requires keeping the firm insolvent, i.e., no restructuring. Note that this is only true under condition b), i.e. when the governor does not value future tax revenues too highly.

**Corollary 2** *If  $V^R < V^C - B^{C*}$ , there is no restructuring in equilibrium even for  $G^R > L - \gamma$ .*

Corollary 2 depicts a situation symmetric to that of Corollary 1. Here, the governor values restructuring such that he would not liquidate if the manager initiated restructuring. The manager, however, prefers to run and pay bribes for protection. Capture of bankruptcy even in this case leads to no restructuring and no liquidation, since the governor cannot commit to liquidate if he sees no restructuring (he prefers to take a bribe rather than liquidate).

Our last result shows that even when the threat of a governor's intervention is not credible i.e.,  $L - \gamma < 0$ , capture of bankruptcy can be an important issue. Assume that the outside investor is uncertain about the type of judge (so he may file a bankruptcy petition in the hope that the judge is independent) while the manager knows that the judge is corrupt. We, then, have the following result:

**Proposition 4** *If  $\gamma < (1 - \delta)V^C$ , a sufficient condition for the firm never to be restructured is  $V^R < \delta V^C$ .*

The intuition is that if  $\gamma < (1 - \delta)V^C$  the manager can bribe the governor so that he rejects the investor's request for liquidation. Since the governor's threat to liquidate is not credible ( $L - \gamma < 0$ ),

the manager only needs protection against the outside investor. The outside investor only files one time. The presumption being that once she learns the true type of judge, she leaves the manager alone.<sup>29</sup> When  $V^R < \delta V^C$ , the manager *always* prefers to pay all of his private benefit once rather than restructure. Note that this result obtains when  $L - \gamma < 0$ , i.e. the governor has no (additional) control rights (when  $L - \gamma > 0$ , we are in the case depicted in proposition 3). In proposition 4, the judge is captured by the manager *via* the governor. As we argue in the empirical section, we view this case as the most relevant to the Russian reality. It depicts a situation when the governor and the manager explicitly collude against the outside investor. The result in proposition 4 covers situations where the manager's per period private benefit is larger in the insolvent firm than in the restructured one. One reason is that the absence of financial discipline makes it easier to hide income.

The main results of our theoretical investigation are as follows. When the judge is dependent on the governor, this creates a scope for collusion between the governor and the manager: the governor uses his influence to secure that the manager stays in control. There are two reasons why we have no restructuring. Either the manager prefers to run and pay bribes, or the governor prefers to keep the firm insolvent to secure side income. The sharing of the gains of collusion between the manager and the governor depends on the costs of influence, the liquidation value of the firm and the value for the manager of stealing the assets.

The results of the model depend crucially on our definition of bankruptcy capture in terms of (political) influence rather than bribes to the judge. In particular, we rule out the possibility that the outside investor bribes the judge in exchange for letting the manager complete restructuring. In contrast, allowing for collusion between the outside investor and the governor would not affect our results. Suppose that the outside investor offers a bribe to the governor so that he (via the judge) lets

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<sup>29</sup>This is consistent with the assumption that when a player is indifferent between filing or not he chooses not to file.

restructuring be completed. In this case, the governor would always take the bribe but still initiate a bankruptcy procedure to stop restructuring. Therefore, the outside investor would never offer such a bribe in the first place. In contrast, the manager only pays the governor to avoid bankruptcy *when the firm remains insolvent*. The governor, then, has no incentives to defect from the collusive agreement and bankrupt the firm because he expects rents in the future.

### 3.4 Application of the model to Russia and its empirical predictions

Creditors of most firms in Russia can be classified as follows: the federal government, a regional government, private outside creditors, private insider creditors, and employees. The debts of firms to the federal and regional governments are primarily in the form of tax arrears.<sup>30</sup> The debts of firms to private outside creditors (e.g., Moscow banks, arms-length suppliers, etc.) and private insider creditors (e.g., banks in the same regional financial industrial group, closely held suppliers, etc.) are in the form of loans and trade credits. Employees' claims on firms are in the form of wage arrears.

To interpret the model in relation to Russia, we note the following. First, the federal government often has the same role as the outside investor. There is a substantial amount of anecdotal evidence that regional Arbitrage courts, indeed, made rulings in favor of the regional and against federal authorities. And second, insider creditors (by definition) tend to be closely associated with the managers and the regional governments.<sup>31</sup> Recall that rejection of liquidation in our model corresponds to the initiation of the external management procedure with the appointment of the same manager as an external manager.

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<sup>30</sup> Governors are often able to manipulate the amount of tax debt that they have outstanding to regional energy companies. This is because, first, regional authorities set energy tariffs, and second, regional authorities may or may not agree to accept energy supplies to the nonpaying regional enterprises as taxes, while they can administratively prohibit disconnection of these nonpaying customers. We abstract from this possibility in the model because it is specific to the energy sector only.

<sup>31</sup> We do not consider employees in this paper because, according to Russia's Civil Code, employees of an enterprise are not deemed to be creditors, and therefore, they can not file a bankruptcy petition.

Thus, the three main results of our theoretical model are the following. First, the managers of enterprises with large private benefits collude with regional governors and use the external management procedure to protect themselves from the federal tax obligations and outside investor claims. Second, regional governors may use bankruptcy as a threat to extract rents from the managers of potentially solvent (in terms of verifiable cash flows) firms that want to restructure and avoid a governor's control. The third result is that the initiation of the external management procedure does not induce restructuring.

Under the assumptions of no uncertainty and symmetric information, our model predicts no bankruptcy. With asymmetric information, for instance, if the outside investor does not know for sure to what extent the governor is able to influence courts, bankruptcy can happen in equilibrium. This logic allows us to formulate empirical predictions:

1) Assuming that a governor's costs of influencing a judge are likely to be unrelated to firm characteristics and that large firms and firms in good industries are more likely to have high private benefits, we expect more external management procedures and no liquidation procedures among large enterprises in efficient industries with high cash flows.<sup>32</sup> Smaller firms in loss-making industries are more likely to have independent Arbitrage court hearings, so they may be liquidated.

2) We expect external management procedures to be more frequent in regions where the governors are relatively strong, since their costs of influencing Arbitrage courts are relatively small. For the same reason, regions with stronger governors should have fewer liquidation procedures.

3) According to the model, external management is an indication of conflict between outside investors (i.e., the federal government) and the manager and the regional governors. External man-

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<sup>32</sup>Many enterprises are attractive to governors not because they have high cash flows or private benefits themselves, but because they have strategic positions in their industries and regions. For instance, control over a region-wide energy company gives the governor power over many large enterprises in the region. Examples of such companies are Kuzbassenergo (Kemerovskaya oblast, external management introduced in September, 1998) and Dalenergo (Primorsky kray, external management introduced in August 1998).

agement, therefore, should be more frequent and liquidation should be less frequent in the regions, where relations between the governor and the federal center are relatively bad. In addition, the regions with relatively high presence of firms with external management procedures should have larger federal tax arrears.

4) There exist different technologies of side transfers from managers to the governors, i.e., monetary contributions, barter, political support, etc. We suggest that non-transparent tax collection (in-kind tax payments and offsets) provides an easy channel for bribes. Thus, the percentage of taxes collected in kind in the region can proxy for the magnitude of bribes.<sup>33</sup>

5) According to the model, capture of bankruptcy implies no restructuring under external management. Employment cuts are often the first step of restructuring. (Performance improvement can only be observed later.) We expect, therefore, that the capture of bankruptcy results in maintaining employment in bankrupt firms.

## 4 Empirical analysis

### 4.1 Data sources

For the purposes of our empirical study, we constructed our own data set by merging data from the following sources:

- a list of Russian firms where external management was imposed between 1997 and the first half of 1999, constructed by searching through all publicly available sources at the federal, regional

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<sup>33</sup> A so-called "governors' off-budget fund", formed in 1997 in Kemerovskaya oblast, can serve as an example of the well-established mechanism for monetary contributions. Each enterprise in the region was ordered by the governor to make contributions to this fund. According to the Russian nation-wide newspaper "Izvestia" (16 September 1999), the deeply troubled West-Siberian Metallurgy Kombinat (ZapSib) has regularly contributed to this fund while accumulating large federal tax arrears.

and local levels;<sup>34</sup>

- a complete list of Russian firms where liquidation procedure was started between 1997 and the first half of 1999;<sup>35</sup>

- financial and statistical data for Russian firms in 1996, 1997 and 1998 from the Russian Enterprise Registry Longitudinal Database (RERLD), extracted from the official registry of Russian industrial enterprises;<sup>36</sup>

- regional statistical data from 1) statistical abstracts "Regions of Russia, 1998", 2) the official web site of the Russia's State Tax Agency, and 3) "MFK Renaissance".

#### **4.2 Empirical methodology, definitions of variables, and summary statistics**

To test our model, we pose two empirical questions:

1) Given the ex ante characteristics of a firm, what are the probabilities that either a) the firm goes into external management procedure, b) a liquidation procedure is initiated against it, or c) bankruptcy procedure will not be initiated against this firm at all?

2) Do we see any signs of restructuring after the external management procedure is initiated against firms?

Answering the first question allows us to test empirical predictions 1 through 4 of the model described in section 3.4. The second question tests empirical prediction 5.

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<sup>34</sup>Sources included newspapers, press-releases, news-agency announcements, etc. We had access to these sources through electronic news data bases available from "Internet Securities" and "AK&M".

<sup>35</sup>This list is reported by the Higher Arbitrage Court Journal.

<sup>36</sup>This is a database containing panel data from the Goskomstat annual industrial censuses on most Russian industrial enterprises covering 85% of Russia's industrial output. Detailed information on how the RERLD was constructed is given in Brown and Brown [1999].

#### 4.2.1 Testing for the effect of ex ante characteristics of firms

To answer the first question, our approach is to analyze the effect of ex ante characteristics of firms prior to the time when bankruptcies were initiated on the probability that these firms become bankrupt. This approach allows ruling out any reciprocal effects of bankruptcy onto the characteristics of firms. So, we treat characteristics of firms as exogenous.

We divide firms into three groups by looking at their bankruptcy status in the period between 1997 and the first half of 1999.<sup>37</sup> We compare financial and performance characteristics of firms, industries and political characteristics of regions as of 1996 for these groups of firms. The groups are: 1) firms that did not go into bankruptcy in this period; 2) firms where external management was introduced; 3) firms in which a liquidation procedure had started.

We estimate the Multinomial Logit regression model of a probability that a firm, given its characteristics, subsequently falls into either an external management procedure or is liquidated. We use a sample consisting of all firms drawn from RERLD for 1996 to estimate the following model:

Probability ( $Y_i = j$ ) =  $F[\beta_1 * (\text{firm characteristics})_i + \beta_2 * (\text{industry characteristics})_i + \beta_3 * (\text{region characteristics})_i] + \varepsilon_i$ , where  $F$  is a logistic function and  $i$  is an identifier of a firm in the sample.

Each observation of the dependent variable  $Y_i$  is equal to either of the three following outcomes,  $j$ : 0 - bankruptcy procedure was not initiated for the firm  $i$ ; 1 - external management procedure was initiated for the firm  $i$ ; 2 - liquidation procedure was initiated for this firm between  $i$ .

We use three groups of regressors: firm-, industry-, and region-specific characteristics. All characteristics were measured in 1996, unless stated otherwise. The first panel of table 5 presents a description of the sample, summary statistics, and definitions of all of the variables.

**Firm characteristics** consist of the following variables: 1) "*cash flow*" =  $\text{Ln}(\text{cost per unit of$

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<sup>37</sup>As we discussed in the introduction, bankruptcies, as important phenomena in Russia, started in 1998. There were, however, a few bankruptcies in 1997 as well. We include them in our sample.

output) $_i$ ;<sup>38</sup> 2) "labor productivity" =  $\text{Ln}(\text{output per employee})_i$ ; 3) "restructuring" =  $[\text{Ln}(\text{output per employee in 1997})_i - \text{Ln}(\text{output per employee in 1996})_i]$ ; 4) "size" =  $\text{Ln}(\text{employment})_i$ .

As **industry characteristics** we consider the following: 1) "industry cash flow" = industry median(firms' "cash low"); 2) "labor productivity" = industry median (firms' "labor productivity"); 3) "restructuring" = industry median (firms' "restructuring").

As **regional characteristics** we use: 1) "relations of a governor to the federal center", an index constructed by MFK Renaissance, which measures how difficult the relationships of the governor with the federal government in 1997 are (larger values mean a better relationship);<sup>39</sup> 2) "strength of governor in the region", an index constructed by MFK Renaissance, which measures the extent to which the regional governor politically controls the economy of the region in 1997;<sup>40</sup> 3) "federal tax arrears" =  $\text{Ln}(\text{federal tax arrears per capita in the region of firm } i \text{ in 1996})$ ; 4) "cash tax collections" =  $\text{Ln}(\text{percentage of cash tax collections in total tax collections from the region in 1997})$ ; "GRP per capita" =  $\text{Ln}(\text{gross regional product per capita in the region in 1996})$ .<sup>41</sup>

Table 6 summarizes the empirical predictions of the model discussed in section 3.4 in terms of our variables in comparison to the empirical predictions of the benchmark model of an independent judge: There are several important differences in the predictions of our model and the benchmark case that allow us to test the model. The efficient bankruptcy model suggests that the effects of firm-, regional-, and industry-characteristics have the same sign for liquidation and reorganization (external management) procedures.<sup>42</sup> On the contrary, the capture model predicts that each of the regional and

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<sup>38</sup>Larger values of cost per unit of output mean a smaller cash flow.

<sup>39</sup>This index was constructed using information on 1) the frequency of public statements by the governor against the policies of the center, 2) the extent to which regional laws and regulations violate federal laws, 3) the level of support of the governor by the center at the last elections, and 4) the bilateral treaty between the region and the center.

<sup>40</sup>This index was constructed using the information on the last election results and the percent of output of enterprises controlled by the governor's team in industrial production.

<sup>41</sup>Several regional characteristics were measured in 1997. For these characteristics, we do not have data for 1996. We, however, treat them as exogenous because 1) these characteristics vary very little in time and 2) very few companies in our sample went bankrupt in 1997.

<sup>42</sup>Signs should be the same for all variables, possibly with the exception of the size of the firm because of the political

industry- characteristics has the opposite effect on the probability that the firm is going to fall into liquidation or external management.<sup>43</sup>

#### 4.2.2 Testing whether external management causes restructuring

Our second empirical question is whether the introduction of external management causes firms to restructure.<sup>44</sup> As discussed in section 3.4, we distinguish between two measures of restructuring: 1) growth in labor productivity, measured by  $\Delta_t[\text{Ln}(\text{output per employee})]_i$ , and 2) employment growth, measured by  $\Delta_t[\text{Ln}(\text{employment})]_i$ , where  $\Delta_t$  is the difference between two consecutive years after the introduction of external management. The first variable measures the change in firm performance; the second measures defensive restructuring.<sup>45</sup>

To test whether or not external management induced restructuring we compare the following two variables to zero:

$$D_1 = \Delta_t[\text{Ln}(\text{output per employee})]_i - \text{Median industry } [\Delta_t[\text{Ln}(\text{output per employee})]_i]$$

$$D_2 = \Delta_t[\text{Ln}(\text{employment})]_i - \text{Median industry } [\Delta_t[\text{Ln}(\text{employment})]_i]$$

The model predicts that  $H_0 : D_1 = 0$  ( $H_a : D_1 > 0$ ) and  $H_0 : D_2 = 0$  ( $H_a : D_2 < 0$ ) should not be rejected for firms with external management.<sup>46</sup> A clean test of these hypotheses for firms where external management was introduced in 1998 requires data for 1999. We do not have data for 1999. We can construct  $D_1$  and  $D_2$  only using differences between 1997 and 1998. We have 87

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costs of liquidation. Liquidation and external management procedures may imply different magnitudes of effects, however.

<sup>43</sup>Note that if data are consistent with predictions 1-4 from section 3.4, it is insufficient to conclude that the model is fully tested. This is because one cannot empirically distinguish between the model and the following situation in which a bankruptcy procedure is not captured but regional protection happens outside bankruptcy. Suppose that strong regional governments do, indeed, provide protection to large regional enterprises against the federal government and the outside creditors. The federal government and outside creditors, then, would try to collect their claims and, therefore, petition for bankruptcy of these protected firms. In order to fully test our model, we, therefore, need to check whether protection happens in bankruptcy, i.e., test hypothesis 5 from section 3.4.

<sup>44</sup>The motivation behind this question is given in point 5 of section 3.4.

<sup>45</sup>Both measures are imperfect; but only these two measures are available.

<sup>46</sup>Note that alternative hypotheses imply that firms with external management should have higher growth in labor productivity and lower growth in employment compared to other firms in their industry.

observations for  $D_1$  and  $D_2$  for firms that initiated external management procedures in 1997, so we test our hypotheses on this sub-sample. We call this a "clean test". Since the external management procedure in our model is identical to maintaining status quo for the firms,  $D_1$  and  $D_2$  (calculated using 97 and 98 data) should be zero for firms that went into external management in 1998 as well. Therefore, we test the hypotheses using a sample of 279 firms against which external management procedure started in 1997-1998. We call this a "dirty test". The second panel of table 5 presents summary statistics for variables used in these tests.

### 4.3 Empirical results

Table 7 presents the regression results of tests for the effect of ex ante characteristics of firms. The results support our theoretical findings since the signs of the coefficients are as predicted by our model and the magnitudes of the effects are economically significant. First, given the industry and regional characteristics, having relatively low cash flow increases the probability that a firm falls into either form of bankruptcy, external management or liquidation. Being technically efficient decreases the probability that a firm will fall into either form of bankruptcy, external management or liquidation. And, having successful restructuring efforts decreases the probability that a firm will be liquidated. Successful restructuring efforts do not significantly affect the probability that a firm will fall into external management procedure. Size enters significantly: firms under external management are much larger than others on average, whereas firms under liquidation procedures are a bit larger than others. Size does not have a significant negative effect on liquidation on average, as table 6 suggested. This is because as a comparison group in the regression we take all firms in the registry that did not go bankrupt and, therefore, in the sample we have a lot of very small firms that do not even have debts (and therefore cannot be bankrupt). The prediction of the model holds: the liquidated firms

are small compared to firms that are large enough to have debt and large enough liquidation values to make it worthwhile to bankrupt them.

Second, given the firm- and region-specific characteristics, being in an industry with large cash flows positively affects the probability of going into external management procedures, and negatively affects the probability of going into liquidation. Technical efficiency of an industry does not significantly affect bankruptcy probabilities. Restructuring efforts prior to most bankruptcies in an industry negatively affect the probability of a firm in this industry falling into external management and into liquidation.

Third, given the firm- and industry-specific characteristics and controlling for gross regional product per capita, regional political variables significantly affect the prior probabilities: the probability of observing external management is higher and the probability of liquidation is lower in the regions where the governor is at odds with the federal center and is relatively more powerful politically in his region. The probability of having external management is also positively affected by our measure of the regional political protection - federal tax arrears per capita. The probability of liquidation is negatively related to federal tax arrears. The percentage of taxes collected in cash is lower for regions with external management procedures.

These results are very robust. They do not change when we control for 2-digit industry-specific effects with dummies and if we include all variables or run regressions for each of the variables separately or take any combination of them. (Table 7 presents the results of three regressions.) Both qualitative and quantitative results are also unaffected by running regressions on the whole sample from the registry or on a sub-sample that includes only firms with employment of at least 100 employees.<sup>47</sup>

Table 8 presents the results of the tests of our hypotheses that external management does not cause improvement in performance and is not associated with worker layoffs. The results are consistent with

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<sup>47</sup>The reason for running the regression on this sub-sample is that firms with employment below 100 are not required to report to the Registry, so there could be some self-selection biases associated with that.

the model in three out of the four tests. Indeed, the hypothesis that there is no difference between growth in labor productivity for the firms that went into external management and for the rest of the firms in their industries cannot be rejected in favor of the alternative, i.e. that it is positive. The difference is statistically indistinguishable from zero. P-values are 0.42, in the case of the "clean test," and 0.78, in the case of the "dirty test". The next hypothesis is that there is no difference between employment growth in the firms that went into external management and the rest of the firms in their industries. The alternative hypothesis is that this difference is negative. The results of this test are mixed. The "clean test" supports our model. The difference is insignificant. P-value for the test is 0.42. The "dirty test" yields a negative difference with t-statistic equal to -1.41 and P-value equal to 0.08.<sup>48</sup> Since three tests out of the four are consistent with the prediction of our model and only one test rejects it with relatively low power, we conclude that the data broadly support the model of bankruptcy capture. In addition, there are many anecdotes that directly support hypothesis 5.<sup>49</sup>

## 5 Conclusion

In this paper, we investigate bankruptcy in Russia using a theoretical model and systematic analysis of available evidence. Bankruptcy laws are intended to solve several important problems of governance: release of assets from inefficient uses, secure the rights of creditors, and discipline the managers, etc. Although the Russian bankruptcy law was drafted with these goals in view, in reality it does not induce restructuring or harden managerial budget constraints. We argue that the current legal system in Russia is undermined by the capture of regional divisions of Arbitrage courts. We analyze the

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<sup>48</sup>P-values are given for one-sided tests.

<sup>49</sup>For example, the team of external managers that are pro-Aman Tuleev (the governor of Kemerovskaya oblast) at the "Kuznetsk Metallurgy Kombinat" performed much worse than their counterparts from a team supported by the major outside investor "MIKOM". Other examples reported in the media include: Achinsky glinozemny kombinat and Krasugol (Krasonyarski kray), West-Siberian Metallurgy Kombinat (Kemerovskaya oblast), Korshunovsky GOK (Irkutskaya oblast), and GP Russkii Dizel (St. Petersburg).

consequences of this capture.

A supposedly balanced law under the absence of the rule of law has transformed into a mechanism that allows regional governors in alliance with the incumbent managers of the large regional enterprises to leave other claim-holders unsatisfied. In particular, outside creditors, even the major ones, such as large Moscow banks and the federal government, have no effective legal mechanism for collecting their claims.

We build a simple model to investigate some effects of bankruptcy capture. We show that when the judiciary is captured, the manager has no incentive to restructure and the debt to the outside investor is not repaid. Instead, the threat of bankruptcy is used to perpetuate insolvency in a collusive deal between the manager and the governor. We test empirical predictions of the model using data on Russian industrial enterprises. Our empirical results are the following. First, the probability of external management in a firm is positively related to its size, profitability of the industry, strength of the governor in the region where the firm is operating, tension between the governor and the federal center, federal tax arrears in the region, and opacity of the tax collection system in the region. The probability of liquidation is negatively related to most of these factors. And second, introduction of an external management procedure does not change performance of the firms and is not associated with layoffs.

The dependence of Arbitrage courts on regional governments has important implications for the Russian economy. First, there is no pressure on managers of industrial enterprises to restructure. Second, even very profitable projects can hardly be financed by outside investors because the bankruptcy law does not secure their property rights. Third, regional protection of firms against federal tax authorities seriously undermines federal attempts to improve tax collection.

Our findings shed some light on a fundamental question: How does the language of the law affect

agents' behavior when enforcement is weak and the judiciary is dependent? Our analysis suggests that it may be worthwhile to give up some more sophisticated features of the law, including judges' discretion to avoid inefficient liquidation, in order to secure implementation of the basic objectives of the law.

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## Appendix

**Proof of Proposition 1.** i) In the subgame where  $e = C$ , and the investor has not filed for bankruptcy, the game starts again. In the new sequence, the manager faces exactly the same incentives: if it was optimal to choose  $e = C$  at  $t = 0$ , is optimal to do so at  $t = 1$ ; so debts will not be repaid at the end of the next period. Anticipating this the investor files for bankruptcy at  $t = 1/2$ , since  $L - \tau > 0$ . Thus, choosing  $e = C$  provides the manager with the life-time utility of  $V^C(1 - \delta)$  (as he loses control at  $t = 1/2$ ). In the subgame where  $e = R$ , the investor obtains  $I^R$  if he lets the manager complete the restructuring and  $L - \tau$  if he chooses to bankrupt the firm. Under the condition of proposition 1 i), he chooses to let the manager proceed. Therefore, a manager with  $V^R \geq \max \{V^C(1 - \delta), V^S\}$  chooses  $e = R$  at  $t = 0$ . ii) The proof is similar to that of i) except that under the condition of proposition 1 ii), the investor chooses to liquidate even in the subgame when  $e = R$ . Since  $(1 - \delta)V^C > 0$ , the manager never initiates restructuring. ■

**Proof of Proposition 2.** The result follows immediately from proposition 1 and the assumption of a benevolent judge. ■

**Proof of Proposition 3.** In any subgame where  $e = R$ , the governor faces the choice between awaiting debts repayment and the flow of taxes or liquidating which yields a payoff of  $L - \gamma$ . No bribes can be paid since the manager has no liquidity. By condition b), the governor prefers to liquidate and the manager loses control and his payoff is zero. In the subgame where  $e = C$ , the governor obtains his one time payoff  $L - \gamma$  if he liquidates. If he takes the bribe (and does not liquidate), the manager proceeds to the next period. The manager chooses  $e_2 = C$  if and only if  $V^C - \sum b_i^* \geq V^S$ . Under condition a)  $(V^S - V^C) > \max \{L - \gamma, (1 - \delta) V^C\}$  the governor prefers to satisfy the condition for  $e_2 = C$ , rather than to liquidate or induce stealing. Using our assumption on negotiations, i.e. (constrained) symmetric Nash bargaining solution, we must in equilibrium have  $\sum_{i=1}^{\infty} \delta^{i-1} b_i^* = \min \left\{ \frac{b^N}{(1-\delta)}, \frac{(V^C - V^S)(1-\delta)}{(1-\delta)} \right\} = M$ . Hence, under the conditions in proposition 3, any subgame perfect equilibrium entails  $e = C$ , no bankruptcy and no liquidation and  $\sum_{i=1}^{\infty} \delta^{i-1} b_i^* = M$ . ■

**Proof of Corollary 1.** In the subgame where  $e = R$ , the governor always bankrupt the firm see proof to proposition 3. Initiating restructuring ( $e = R$ ) means losing control and 0 payoff to the manager. Hence, he refrains from  $e = R$  even when  $V^C < V^R$ . ■

**Proof of Corollary 2.** Where  $G^R$  large, the governor has interest in restructuring, so he always lets the manager complete it. The manager chooses not to restructure when  $V^R < V^C - \sum_{i=1}^{\infty} b_i^*$ . By condition a) the governor prefers to pocket bribes. ■

**Proof of Proposition 4.** If  $\gamma < (1 - \delta) V^C$ , the manager can cover the cost of protection only out of his current private benefit. Since  $L - \gamma < 0$ , the most the manager pays for protection is  $(1 - \delta) V^C$ . Therefore, he chooses not to restructure when  $V^R < \delta V^C$ . ■

Table 1. Basic statistics on initiation of bankruptcy procedures. All enterprises (including financial sector).

	1993	1994	1995	1996	1997	1998	1999
Claims submitted	n/a	n/a	n/a	≈ 4,00 0	≈ 6,00 0	12,781	15,583
Proceedings initiated	<100	240	1,108	2,618	4,320	8,337	10,933
Liquidation ordered	50	n/a	469	1,035	2,200	4,747	8,299
External management ordered	n/a	n/a	135	413	850	1,041	1,183
Cases refused	n/a	n/a	n/a	n/a	800	4,444	4,650
<hr/>							
Who initiated bankruptcies in 1998 (% of total claims submitted)							
Debtor			20.38				
Creditor (non governmental)			24.97				
Creditor (government)			53.02				
Prosecutor			1.63				

Source: Higher Arbitration Court Journal

Table 2. Summary information

	Significant Difference: External Management vs. Liquidation	External management		Liquidations		Registry	
		Median	Mean (SE)	Median	Mean (SE)	Median	Mean (SE)
Employment	Yes	796	2,027 (202)	240	472 (45)	143	489 (11)
Output	Yes	18,471	225,491 (50,562)	3,282	14,620 (4,785)	4,516	44,692 (3,806)
Cost per ruble of output	Yes	112	143 (7)	135	206 (45)	97	117 (0.97)
Labor productivity	Yes	23	52 (6)	13	22 (2)	31	54 (62)
Labor productivity growth, %	Yes	-17	-18 (2)	-29	-25 (3)	-5	-4 (34)

Table 3. Industrial structure of liquidated firms and firms under external management (1996, firms that got bankrupt in 1997-1999)

External management and liquidated firms. Industrial structure in 2 digit OKONH. All industries. Population of firms in Russia is taken as a benchmark.										
Industry	Output, %			Employment, %			Number of firms, %			
	Extern.	Liquid.	Russia	Extern.	Liquid.	Russia	Extern.	Liquid.	Russia	
	M.			M.			M.			
11	Fuel and energy	55.98	3.97	38	15.87	1.17	13	7.10	1.06	6
12	Metallurgy	18.87	7.82	14	20.18	7.85	11	6.83	3.44	3
13	Chemical, Petrochemical, Pharmaceutical	11.75	2.56	7	15.79	4.61	7	9.84	2.38	3
14	Engineering, metal-working	8.76	24.38	17	31.74	34.62	38	30.05	21.69	24
15	Wood and paper	1.17	8.98	4	4.43	21.25	8	12.02	31.48	11
16	Construction	0.32	3.28	4	0.83	4.57	6	3.83	9.79	9
17	Light industry	0.66	2.72	2	6.27	12.16	7	10.93	15.08	12
18	Food industry	2.27	46.05	11	4.39	13.62	9	15.85	12.96	20
19	Other	0.22	0.24	4	0.51	0.14	3	3.55	2.12	12
Total		100	100	100	100	100	100	100	100	100

Liquidated firms. Industrial structure in 3 digit OKONH. Industries with highest employment percentage of all liquidated firms.								
Industry	Employment, %			Output, %			Number of firms, %	
	Liquid. Firms	Russia		Liquid. Firms	Russia	Liquid. Firms	Russia	
151	Logging	16.89	2.8	17.22	0.7	21.16	5.4	
152	Wood-working	13.71	2.9	11.15	1.3	15.70	5.6	
171	Textile	12.88	3.4	6.81	0.9	7.17	3.7	
147	Other machine building (i.e. electronics)	10.97	13.1	3.49	4.1	4.44	4.1	
Total		54.45	22.2	38.67	7.0	48.46	18.8	

External management firms. Industrial structure in 3 digit OKONH. Industries with highest employment percentage of all external management firms.							
Industry	Employment, %			Output, %		Number of firms, %	
	External Manag.	Russia		External Manag.	Russia	External Manag.	Russia
112	Fuel industry (oil and gas)	19.04	3.8	54.50	16.5	7.14	0.9
131	Chemical	16.30	4.9	9.43	4.6	9.64	1.9
121	Ferrous metallurgy	16.15	6.0	16.53	8.7	5.00	1.2
143	Instrument engineering	9.09	8.5	2.68	6.0	7.86	2.6
Total		60.58	23.2	83.15	35.8	29.64	6.6

Note: Industry number 147 is very widely defined; we have observed liquidations only in Ship building, Electronics, and Communications

Table 4. Performance indicators of a median firm in selected 3 digit OKONH industries that have biggest presence of bankrupt firms.

Industry	External management or liquidation prevails:	Cost per rouble of output	Labor productivity	Balance sheet profit	Labor productivity growth
151 Logging	Liquidation	112.7	18.8	-73.0	-9.7
152 Wood-working	Liquidation	100.0	21.0	0.0	-7.4
171 Textile	Liquidation	110.8	14.1	0.0	-9.7
147 Other machine building	Liquidation	96.1	16.9	0.0	0.0
Registry		95.7	30.0	7.2	-5.0
112 Oil and gas	External management	75.5	290.7	8998.5	-16.0
131 Chemical	External management	93.3	48.9	41.5	1.0
121 Ferrous metallurgy	External management	91.3	67.0	946.9	1.0
143 Instrument engineering	External management	91.0	30.0	34.4	6.9

Table 5

## Panel A

Summary statistics and precise definitions for variables used in regressions testing for the effect of ax ante characteristics of firms

Variable:	Measured by:	Mean	Std. Dev.	Min	Max
<b>Dependent variable:</b>	0- No bankruptcy (16923 obs.)	0.04	0.25	0	2
	1- External management (344 obs.)				
	2- Liquidation (208 obs.)				
<b>Independent variables:</b>					
<b>Firm characteristics:</b>					
Cash flow (measured by AC)	Log cost per unit of output	4.65	0.34	-0.24	5.45
Labor productivity	Log output per employee	3.43	1.05	-1.69	6.81
Restructuring	Change in log labor productivity	-0.08	0.48	-0.99	2.44
Size	Log employment	5.17	1.27	1.10	10.53
<b>Industry characteristics:</b>					
Cash flow (measured by AC)	Median log cost per unit of output	4.57	0.07	4.32	5.19
Labor productivity	Median log output per worker	3.44	0.71	1.97	5.67
Restructuring	Median change in log labor productivity	-0.04	0.06	-0.88	0.75
<b>Region characteristics:</b>					
Relations of governor to center	MFK Renaissance Index 1	3.39	1.32	1.00	5.00
Strength of governor	MFK Renaissance Index 2	3.77	1.73	1.00	5.00
Federal tax arrears	Log federal tax arrears per capita	-3.92	0.87	-7.87	-1.50
Cash tax collections	Log % of taxes collected in cash	-0.68	0.29	-1.43	-0.06
Gross regional product	Log GRP per capita	9.49	0.42	8.54	11.09

**Number of observations:** 17,475 (calculated using firms for which we have all variables)

## Panel B

Summary statistics and precise definitions for variables used in testing whether external management causes restructuring

Variable:	Measured by:	Mean	Std. Dev.	Min	Max
D1	Difference between the change in log labor productivity in external management firm and the change in log labor productivity in the median firm in the respective industry	-0.042	0.756	-3.97	2.55
D2	Difference between the change in log number of employees in external management firm and the change in log number of employees in the median firm in the respective industry	-0.018	0.215	-0.81	0.80

**Number of observations:** 279

Table 6. Predictions of our model of captured bankruptcy comparing to the predictions of the efficient bankruptcy model in terms of our empirical variables.

	Capture of bankruptcy (Dependent on governor judiciary)		Efficient bankruptcy (Independent judiciary)	
	External management	Liquidation	External management	Liquidation
<b>Firm characteristics:</b>				
Cash flow (measured by cost)	+	+	+	+
Labor productivity	-	-	-	-
Restructuring	?	-	-	-
Size	+	-	No effect	No effect
<b>Industry characteristics:</b>				
Cash flow (measured by cost)	-	+	+ or no effect	+ or no effect
Labor productivity	+ or no effect	- or no effect	No effect	No effect
Restructuring	?	-	-	-
<b>Region characteristics:</b>				
Relations of governor to center	-	+	No effect	No effect
Strength of governor	+	-	No effect	No effect
Federal tax arrears	+	-	+ or no effect	+ or no effect
Cash tax collections	-	No effect	No effect	No effect
Gross regional product	No effect	No effect	No effect	No effect

Table 7. Multinomial Logit Model. Comparison group - firms not in bankruptcy. Bankruptcy outcomes are: 1 if firm has external management; 2 if firm is liquidated

	Regression (1)				Regression (2)				Regression (3)			
	External management		Liquidation		External management		Liquidation		External management		Liquidation	
<b>Firm characteristics:</b>	Coefficient	Slope, %	Coefficient	Slope %	Coefficient	Slope %	Coefficient	Slope %	Coefficient	Slope %	Coefficient	Slope %
Cash flow (measured by cost)	1.67*** (0.19)	3.17	1.92*** (0.21)	2.16	2.16*** (0.14)	4.08	2.55*** (0.15)	2.85	2.18*** (0.14)	4.14	2.58*** (0.15)	2.90
Labor productivity	-0.36*** (0.09)	-0.68	-0.47*** (0.12)	-0.53								
Restructuring	-0.02 (0.10)	-0.03	-0.61*** (0.15)	-0.70	0.04 (0.10)	0.08	-0.54*** (0.15)	-0.61	0.03 (0.10)	0.07	-0.53*** (0.15)	-0.60
Size	1.29*** (0.06)	2.47	0.61*** (0.07)	0.67	1.27*** (0.06)	2.41	0.53*** (0.07)	0.58	1.25*** (0.06)	2.38	0.55*** (0.07)	0.60
<b>Industry characteristics:</b>												
Cash flow (measured by cost)	-3.89*** (1.00)	-7.55	3.42** (1.26)	4.01	-3.27*** (0.79)	-6.36	4.50*** (0.98)	5.19	-4.00*** (0.79)	-7.79	4.44 (1.00)	5.18
Labor productivity	0.21 (0.13)	0.41	0.14 (0.16)	0.15								
Restructuring	-2.85*** (0.98)	-5.41	-3.19** (1.59)	-3.59	-2.15** (0.89)	-4.08	-1.60 (1.43)	-1.77	-2.05** (0.88)	-3.91	-1.65 (1.42)	-1.84
<b>Region characteristics:</b>												
Relations of governor to center	-0.16** (0.07)	-0.31	0.30*** (0.09)	0.35	-0.24*** (0.06)	-0.46	0.32*** (0.09)	0.37				
Strength of governor	0.12** (0.05)	0.24	-0.10 (0.07)	-0.12	0.15*** (0.05)	0.29	-0.14** (0.07)	-0.16				
Federal tax arrears	0.16** (0.08)	0.31	-0.15* (0.08)	-0.18					0.21*** (0.08)	0.41	-0.23*** (0.08)	-0.27
Cash tax collections	-0.76*** (0.22)	-1.46	-0.47* (0.27)	-0.52					-0.72*** (0.22)	-1.37	-0.36 (0.27)	-0.40
Gross regional product	-0.14 (0.17)	-0.27	0.05 (0.20)	0.06	-0.19 (0.15)	-0.37	-0.18 (0.18)	-0.20	-0.32** (0.15)	-0.62	0.01 (0.19)	0.02
Constant	0.09 (4.93)	0.94	-33.93*** (6.13)	-38.90	-4.74 (3.83)	-8.18	-39.35*** (4.55)	-44.62	-0.06 (3.92)	0.82	-41.60*** (4.75)	-47.69
Average unconditional probability, %		1.96		1.16		1.95		1.15		1.96		1.16
Observations	17475				17632				17475			
Pseudo R2	0.223				0.212				0.214			
Log Likelihood	-2164				-2199				-2191			

Stars denote statistical significance at 1, 5, and 10% significance level

Table 8.

D1 = difference between the growth of labor productivity in external management firm and the growth of labor productivity in the median firm in the respective industry

D2 = difference between the growth of number of employees in external management firm and the growth of number of employees in the median firm in the respective industry

	Mean (SE) t-statistic (p-value for one-sided test)	Number of observations
<b>Restructuring = change in log labor productivity</b>		
D1:		
“Clean” test (97): $H_0: D1 = 0$ ( $H_a: > 0$ )	0.0164 (0.086) t = 0.1923 (p = 0.42)	87
“Dirty” test (97-98): $H_0: D1 = 0$ ( $H_a: > 0$ )	-0.04169 (0.045) t = -0.9203 (p = 0.82)	279
<b>Defensive Restructuring = change in log employment</b>		
D2:		
“Clean” test (97): $H_0: D2 = 0$ ( $H_a: < 0$ )	-0.0057 (0.029) t = -0.1980 (p = 0.42)	87
“Dirty” test (97-98): $H_0: D2 = 0$ ( $H_a: < 0$ )	-0.0182 (0.013) t = -1.4107 (p = 0.08)	279

“Clean” test means that growth is calculated for 1997-1998 and sub-sample consists of firms that went into external management in 1997.

“Dirty” test means that growth is calculated for 1997-1998 and sub-sample consists of firms that went into external management in 1997 and 1998.

Figure 1. Independent judge

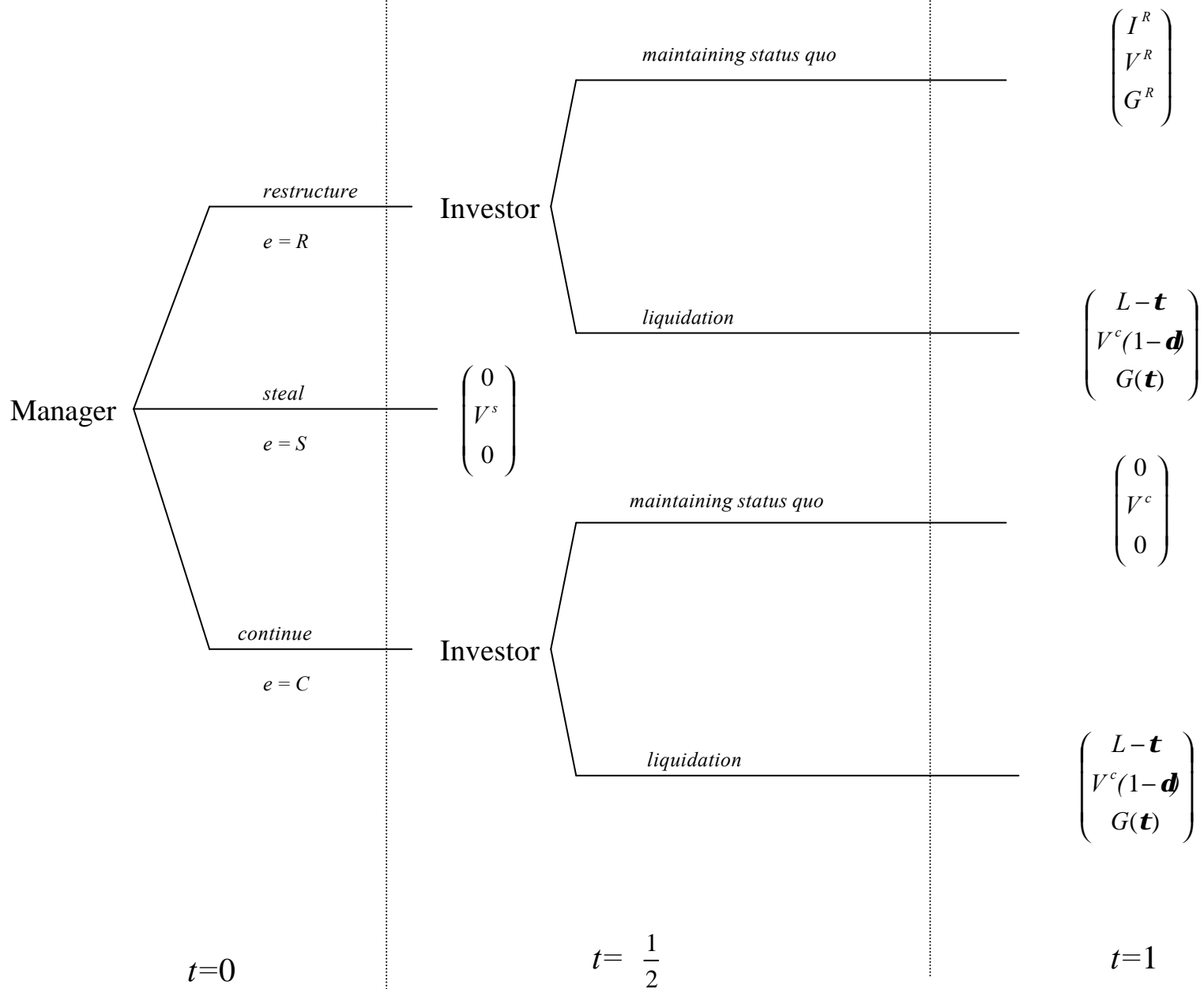


Figure 2. Dependent judge

