The Looting

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Abstract

During the transition from plan to market, managers and politicians succeeded in maintaining de facto ownership of assets. This paper presents a theory and supporting econometric evidence on looting in transition. Looting is driven by the value of the loot, the probability of punishment and, less intuitively, firm size. Larger firms know their looted assets will not be reclaimed because the costs (unemployment) outweigh the benefits to the government. Using 1997 survey data for 950 firms in Poland, Romania, Russia, Slovakia and Ukraine, we construct two measures of looting and both suggest it is more severe in Russia and Ukraine than elsewhere. Our econometric results support the main predictions from the model: larger firms loot more. This finding is robust to different measures of looting, institutional conditions, firm size and firm age.

Keywords: Looting, Transition.
JEL Codes: H82, K42, O17, P26, P31.

1. Introduction

In 1997, Soyuzplodimport (SPI) purchased the right to use 43 vodka brands for USD 300,000 (among them, Stolichnaya). These brands have been valued by the Russian Agricultural Ministry at USD 400 million. The ownership of the brands used to be with VAO Soyuzplodoimport which went bankrupt in 1997. The Russian Agriculture Ministry and SPI have disputed the legality of the sale since, with the former arguing that the purchase from the bankrupt company at such a low price was clearly illegal. At the end of January 2002, a Moscow court awarded the brands to the Russian Agriculture Ministry.[1] Although Stolichnaya makes this a particularly visible case, for many observers of transition economies this is a familiar story: privatizations have achieved disappointing results in many countries with asset stripping and looting being particularly disturbing side effects in many instances.[2]

What determines looting? At first reaction, an economist would say that it has to do with costs and benefits. The main benefit is the value of the loot and the main cost is punishment if you get caught. According to this view, looting in transition economies will happen more frequently in situations in which the probability of being caught and subsequently punished is low and in situations in which the value of the loot is sufficiently large. In this paper, we add a third, less intuitive, factor that we believe is of crucial importance in explaining looting in transition economies: firm size. If governments care about employment because the unemployed will be disgruntled if they lose their jobs, it is politically very difficult to enforce the law against a very large firm which uses looted assets. Further, in our model, we show that even when law enforcement is very effective, looting will still take place if employment is relatively important to the government. This means that the very intuitive story that efficient law enforcement reduces looting is partially true in the sense that it applies mostly to relatively small firms. If a firm is sufficiently large, there will not be political will to enforce the law and thus the effectiveness of law enforcement is not as crucial. The model also shows how other factors can influence the government's decision to enforce the law. In particular we analyze the decision of the government to enforce the law as a function of the overall excess employment in the economy, as a function of the cost of law enforcement, as a function of the average efficiency of the economy and as a function of the ex-ante (i.e. pre-privatization) average returns in the economy. The story of the Stolichnaya brand also illustrates an important feature of the model, namely, that assets the government choose to reclaim will tend to be those which the government is capable of extracting benefits from. Ceteris paribus,

[1] See http://news.bbc.co.uk/hi/english/business/newsid_1794000/1794734.stm (BBC report on February 1, 2002).

[2] The terms "looting", "tunneling" and "asset stripping" have all been used in this context. Akerlof and Romer (1993) define looting as borrowing with no intent to repay in order to use the loan for private purposes. Johnson, La Porta, Lopez-de-Silanes and Shleifer (2000) argue that tunneling is the transfer of assets and profits out of firms for the benefit of their controlling shareholders. We believe that for the case of transition economies, the first definition becomes too restrictive because we don't consider just loans from financial institutions (looting is also asset stripping) while the second definition is inadequate because it emphasizes well defined controlling shareholders (which we do not believe is realistic at the outset of the transition). Thus, we follow Stiglitz (1999) and use the generic term looting to describe a larger set of phenomena.

an internationally-known brand will be more useful than some generic equipment and machinery.

In order to test the key implications of our model, we must have measures of looting. In this paper, we propose two measures. One way we measure looting is as the percentage of the firm's capital equipment that originated from a state enterprise. We use survey data for about 950 manufacturing firms in Poland, Slovak Republic, Romania, Ukraine and Russia in 1997. Notice that we restrict our sample to firms that are not spin-offs from state enterprises, as these will be naturally expected to use capital previously in the state sector. Using this first measure, we find that looting is a much more common issue in Russia and Ukraine than in the Polish, Slovak and Romanian firms. This is an important finding: although this index is admittedly impure, the fact that it produces such a ranking of countries is indicative of the index quality. Otherwise, one has to assume that capital markets in general are much more developed in the CIS than in the Central European countries of our sample. This first measure of looting covers the physical capital channel, while our second measure of looting targets the financial capital channel. The second measure of looting we propose is the percentage of start-up capital at foundation from the source "financing from a state enterprise," when the respondent has to differentiate between a loan from a state bank and this second measure of looting. This second measure of looting produces the same ranking of countries.

The model generates as key testable implication that looting will be fundamentally determined by firm size. Using firm-level data for the five transition economies mentioned above, this data provides ample support for our hypothesis: firm size is an important determinant of looting in transition economies. This result is robust to different measures of looting, different proxies for institutional conditions, different ways to measuring firm size and different ways of measuring the age of the firm.

This is the first paper, to the best of our knowledge, that offers a theory of looting and tests it empirically. Yet, the literature on related topics is extensive, and in particular those that focuses on privatization and that on institutions and political economy aspects. A whole body of literature has been dedicated to the study of the relationship between privatization processes and their outcomes. In particular, Debande and Friebel (1999) show how privatization will improve manager incentives while making the soft-budget constraint problem worse as firms are stripped of their assets and their managers obtain additional cash threatening a government which cares about employment with additional unemployment. On privatization and restructuring, also see Carlin, Fries, Shaeffer and Seabright (2001), Djankov and Murrell (2001), Frydman, Gray, Hessel and Rapaczynski (2000) and Roland (2000, esp. chapters 4 and 10). Another often cited reason for these disappointing results from privatization is the lack of law enforcement (see for example Hoff (2000), Johnson, Kaufmann and Shleifer (1998) and Roland and Verdier (2000).On political economy issues, see Castanheira and Popov (2001) and Roland (2001). We should note that Cull, Matesova and Shirley (2001) study the effects of different types of ownership on the performance of Czech firms. Despite anchored on a theory of looting, their empirical analysis does not have measures of looting per se. Their empirical results are for firm performance and study the role of ownership arrangements with the expectation that looting varies across this dimension.

The plan of the paper is as follows. In the next section, we introduce our theoretical framework. In section 3 we analyze its main implications. Section 4 presents our data set and measures of looting in transition economies. Section 5 has our empirical results. Section 6 concludes.

2. Model

In the model, we introduce a government and a continuum of firms whose number is normalized to 1. As in Schleifer and Vishny (1998), we assume that government cares about its budget and about the overall level of employment in the system. We put this in the simplest way possible by assuming that

$$U_G = \alpha B + (1-\alpha)L$$

where B ("budget") is proportional to overall returns made by firms and L represents overall employment.[3] $\alpha \in [0,1]$ is a parameter that characterizes how much the government cares for its budget versus how much it cares about employment. To further simplify things, we assume that B is equal to total returns by firms.

With regard to firms, we first assume that they are represented by their employment level $l \rightsquigarrow U\left[0, \overline{l}\right]$. Also, we assume that each firm is controlled by the manager who was in charge before privatization. A firm's manager faces three choices: it can do nothing, it can restructure or it can loot.

- If the manager does nothing, the firm gives him the same returns $s > 0$ which it produced before privatization while employment stays at level l. We assume that s is identical for all firms.

- If the manager restructures, the firm gives him returns equal to $s + r$ where r is independent of l and is uniformly distributed on $[\overline{r} - \mu, \overline{r} + \mu]$. We assume that $|\overline{r}| < \mu$ so that $\overline{r} - \mu < 0$ and $\overline{r} + \mu > 0$. We interpret r to be the additional net benefits from strategic restructuring in privatization, as compared to state ownership. The assumptions guarantee that some firms (those for whom $r \leq 0$) will find that the costs of restructuring outweigh the benefits while the other firms have the potential for beneficial restructuring under privatization. We will refer to the former as "inefficient firms" while the latter firms are "efficient firms". Thus, $\overline{r}$ can be interpreted as the average level of efficiency in the system. With restructuring, employment is used efficiently and remains at level l

- If the manager decides to loot and looting is successful, he gets $s + v(r)$ where

$$v(r) = \frac{(\overline{r} + \mu)}{2\mu}(r + \mu - \overline{r})$$

[3]The interpretation here is that B is a measure of the potential for firms to generate receipts for the government.

This formulation implies that $v(r) - r$ is non-negative and strictly decreasing in r, with $v(\overline{r} - \mu) = 0$ while $v(\overline{r} + \mu) = \overline{r} + \mu$. These conditions imply that if looting is a freely available option, every firm will want to loot although the gains from looting over restructuring are decreasing in r.

The interpretation following these assumptions is the following. When a firm is looted, the manager manages to hide some of the looted assets (whether these are in the form of physical capital or loans) while it reinvests the rest in another venture. In doing so, she fully benefits from the returns deriving from such assets (and can dispose of the useless ones) and the returns are high because the manager paid little or nothing for the assets. On the other hand, only those assets that are still visible will be taxable by the government. As we shall describe in more detail later, while looting is going on, the government cannot observe it but it can only be discovered by law enforcement. Thus, the quantity that cannot be hidden by the firm has to be exactly equal to s because with any smaller quantity, the government would be able to tell that looting has occurred and any greater quantity would be taxed by the government. This also explains why looting gives managers more utility than restructuring itself: by looting, firms always manage to reduce their obligations to the public sector while being able to invest in profitable ventures. Thus, let us emphasize that $v(r)$ represents returns in excess of s only because assets have been stripped at little or no cost: there returns have not been realized as a result of restructuring.

With regard to employment, we assume it is reduced to a fraction βl of the original employment level where $\beta \leq 1$. This is because the looted firm will lose some or most of its employees, being now divested of its most valuable assets. This means that the new venture will have less of the excess employment problems of the old firm: at best it will hire an equivalent number of employees. Thus β represents an (inverse) measure of excess employment in the system. For example, if β is low, firms before restructuring suffer from a high degree of excess employment.

In response to looting, we assume that the government may decide to attempt to stop it through law enforcement. Thus, looting is only successful with probability γ, with $(1 - \gamma)$ representing the degree of effectiveness of law enforcement in the system. We assume that if looting is discovered, the looter will lose completely the control of his assets, thus getting a utility equal to 0. The assets are now liquidated and the government receives $s + v(r)$. An additional consequence is that by closing down the looter's new venture, its βl employees will be laid off. For simplicity, we assume that law enforcement has a fixed per-firm cost c.

Let us underline an implicit assumption here. Looting reduces the employment of the looted firm by a few or all of its members, but these layoffs cannot be stopped by the government who can only intervene by closing down or stripping the looter's new ventures. Thus, the employment represented by βl is not the looted firm's employment (which is already a sunk loss in utility to the government), but that of the looted ventures in which the looter has invested.

In the model, we assume that the whole game is common knowledge to both players except for the specific value of r that characterizes a firm. Among other things, this implies that the government is aware of the size of a firm but it is not aware of its potential for restructuring. This is in accordance with the notion that control rights are in the hands

of managers who are the only ones who can judge whether a firm is profitable or not. The following table summarizes returns for firms, for the government and employment under the three possible scenarios. We will define the strategies available to managers as N (no change), R (restructure) and S (looting).

	Returns to Managers	Returns to Government	Employment
N	s	s	l
R	$s+r$	$s+r$	l
S - unsuccessful	0	$s+v(r)$	0
S - successful	$s+v(r)$	s	βl

The timing of the model is extremely simple. In a first stage, managers choose one of the three possibilities $\sigma_r \in \{N, R, S\}$. In a second stage, government decides whether to enact law enforcement ($\sigma_G = E$) to stop looting or not ($\sigma_G = NE$). Nature determines the success of law enforcement and payoffs are realized. Throughout, we assume that if firms are indifferent between looting and either doing nothing or restructuring, they won't loot, while if they're indifferent between doing nothing and restructuring, they will do nothing. For the government, we assume that if it is indifferent between enforcing the law and not enforcing it, the government will enforce the law.

3. Analysis of the Model

To analyze the model, we proceed by backwards induction. The first thing to note is if the government was fully informed about the specific value of r for a specific firm, by attempting to stop looting, it would expect to obtain

$$\alpha(\gamma s + (1-\gamma)(s+v(r))) + (1-\alpha)\gamma\beta l - c \tag{3.1}$$

On the other had, by doing nothing, the government gets

$$\alpha s + (1-\alpha)\beta l \tag{3.2}$$

Given that, just by comparing the two expressions, we have a first basic proposition:

Proposition 1 *Government will attempt to stop looting iff*

$$l \leq \max\left(\overline{l}, 0\right)$$

where

$$\overline{l} = \frac{\alpha v(r)(1-\gamma) - c}{(1-\alpha)(1-\gamma)\beta} \tag{3.3}$$

Thus, government will decide to pursue looting only if the new venture does not employ too many people. In short, looting is challenged only if the illegal venture is not too big (in sense of having too many employees) to fail. If the venture is very large, shutting it down means great losses in terms of employment and these may greater than the benefits of catching the looter.

The analysis above also shows that if $\alpha v(r)(1-\gamma) < c$, then looting would go unchallenged. This is because in this case the expected financial gains from recovering the loot are not even enough to cover the costs of law enforcement even before the losses in terms of employment are considered.

The proposition above deals with the case in which the government can determine the profitability of each firm. In reality, as we've argued above, this is highly unlikely: determining the efficiency and potential profitability for a firm is very difficult for outsiders. So, instead of (1), we have that enforcement brings expected utility to the government equal to

$$\alpha(\gamma s + (1-\gamma)(s + v(r^*))) + (1-\alpha)\gamma\beta l - c \tag{3.4}$$

where $r^* = E(r|\sigma_r^* = S)$ is the expected value of r for those firms who decide to loot in equilibrium. We can then apply proposition 1 and find a value $l^*(r^*)$ such that for any firm with $l \leq l^*(r^*)$, the government will attempt to stop looting.

Consider now the firms' behavior, given the rule $l^*(r^*)$ that the government follows. Any firm for which $l > l^*(r^*)$ will decide to loot because in that case looting is a dominant strategy for them (recall that $s + v(r) > \max(s, s + r)$ for any firm.) On the other hand, the other firms will face the following decision. If they decide to loot, their expected utility is $\gamma(s + v(r))$, if they decide to do nothing, their utility is s, while if they restructure, their utility is $s + r$. So looting is the preferred option if

$$\gamma(s + v(r)) > \max(s, s + r) \tag{3.5}$$

We obviously have two cases. In the first case, firms are inefficient and $\max(s, s + r) = s$ and (5) becomes

$$\gamma(s + v(r)) > s$$

Substituting for $v(r)$ and rearranging we get that looting will occur iff

$$r > r_A = \frac{2s\mu(1-\gamma) - \gamma(\mu^2 - \overline{r}^2)}{\gamma(\overline{r} + \mu)} \tag{5a}$$

In the second case firms are efficient and we have

$$\gamma(s + v(r)) > s + r$$

which becomes

$$r < r_B = \frac{\gamma(\mu^2 - \overline{r}^2) - 2s\mu(1-\gamma)}{2\mu - \gamma(\overline{r} + \mu)} \tag{5b}$$

It is easy to see that both (5a) (resp. (5b)) can be satisfied by some positive measure of firms $r < 0$ (resp. $r > 0$) iff

$$\gamma > \gamma^* = \frac{2s\mu}{2s\mu + \mu^2 - \overline{r}^2} \tag{5c}$$

This is intuitive as if law enforcement is expected to be very effective (γ is very low), no firm for which $l \leq l^*(r^*)$ will want to loot. In this particular case, then, all firms for which $l > l^*(r^*)$ will want to loot but none of the firms for which $l \leq l^*(r^*)$, thus making $r^* = \overline{r}$.

The reason for this extreme discontinuity is easily explained: if $l > l^*(\overline{r})$, the firm will always loot no matter what its efficiency is because the government will not even try to enforce the law. On the other hand, if $l \leq l^*(\overline{r})$, government will decide to enforce the law and enforcement is so effective that no firm wants to loot. So it doesn't matter what the efficiency of firms is, it is only size that determines whether looting will occur.

So assume that (5c) is satisfied. It is easy to see that

$$\widetilde{r} = \frac{r_A + r_B}{2} = \frac{(\gamma(\mu^2 - f^2) - 2s\mu(1-\gamma))(2\gamma(f+\mu) - 2\mu)}{2(2\mu - \gamma(f+\mu))\gamma(f+\mu)}$$

so that

$$r^* = \overline{r} + \frac{\overline{l}}{\overline{L}}(\widetilde{r} - \overline{r})$$

Let $D(\overline{r}, \mu, s, \gamma) = \widetilde{r} - \overline{r}$, we then have

$$v(r^*) = v(\overline{r}) + \frac{\overline{l}}{\overline{L}} D \frac{\overline{r} + \mu}{2\mu}$$

Considering (4), we have the following expression, equivalent to (3)

$$l^*(r^*) = \frac{[\alpha(1-\gamma)v(\overline{r}) - c]\overline{L}}{(1-\gamma)\left[\beta\overline{L}(1-\alpha) - \alpha D\frac{\overline{r}+\mu}{2\mu}\right]} \tag{3.6}$$

Thus, we have shown the following:

Proposition 2 *In equilibrium, we have:*

1. *If $\gamma \leq \gamma^*$, then all firms such that $l > l^*(\overline{r})$ will loot while none of the firms for which $l \leq l^*(\overline{r})$ will loot. Instead, all such firms which are also inefficient will do nothing while all such firms which are efficient, will restructure.*

2. *If $\gamma > \gamma^*$, then all firms such that $l > l^*(r^*)$ will loot. If $l \leq l^*(r^*)$ and $r \leq r_A$, firms will do nothing, if $l \leq l^*(r^*)$ and $r \geq r_B$, firms will restructure while if $l \leq l^*(r^*)$ and $r_A < r < r_B$, firms will loot.*

3. *The government will enforce the law iff $l \leq l^*(\overline{r})$ (whenever $\gamma \leq \gamma^*$) or $l \leq l^*(r^*)$ (whenever $\gamma > \gamma^*$)*

The proposition, with regard to government behavior, repeats the main message of proposition 1. The government will only attempt law enforcement if the firm is not too large, otherwise, the losses in terms of employment won't compensate the gains made in recovering the looted assets. Proposition 2, in addition, tells us that if law enforcement is sufficiently effective, (i.e., if $\gamma \leq \gamma^*$) then it is sufficient to discourage looting from all smaller firms. In other words, if looting occurs, it is just because the government doesn't find it profitable to stop it.

On the other hand, if law enforcement is not sufficiently effective, a positive measure of firms will loot even when law enforcement is used. For these firms, the potential gains

from looting, outweigh the potentials losses from getting caught. It is also interesting to note that looting, in this case will be done by firms in the "middle" of the efficiency scale. Intuitively, if firms are very inefficient, the gains from looting $v(r)$ are so small compared to the potential costs (the loss of s) that doing nothing will be chosen. In other words, there's so little to loot that it doesn't make it worth it. On the other hand, firms that are very efficient find that $v(r) - r$ is too small to justify looting. These firms are so efficient that the additional benefits of looting versus restructuring are too small to compensate for the possible costs. Also, it is easy to check that $\widetilde{r} < 0$ and that $\widetilde{r} - \overline{r} < 0$ iff

$$\gamma > \widetilde{\gamma} = 2s\frac{\mu}{(\overline{r}+\mu)(\mu+\overline{r}+2s)}$$

Since $\widetilde{\gamma} < \gamma^*$, this condition is always satisfied for the case we are considering. This means that $D < 0$ and $r^* < \overline{r}$. So, the average firm which loots is less efficient than the average firm.

Still, a number of firms will want to loot because they are too big for the government to want to shut them down. Thus, it is important to show how $l^*(r^*)$ reacts to changes in parameter values (the comparative statics for $l^*(\overline{r})$ can be gathered just by looking at (3) and substituting $\overline{r}$ for r).

- Recalling that β is an inverse measure of excess employment in the system, we have that if excess employment is significant in the economy, the government will target larger firms than it would otherwise. This is because excess employment implies that in looting managers already dismiss many employees so that the new venture is relatively "lean" compared to the looted firm. In that case, government will not have as many problems in closing the new venture.

- As c increases, law enforcement gets more and more expensive. Just as above, this means that law enforcement will be attempted only for very large firms.

- l^* is also increasing in α. The less government cares about employment, the harder it is to loot even for large firms.

Given the complexity of the expressions for l^*, it is difficult to analyze comparative statics directly. However, it is fairly straightforward to show with simulations that

Remark 1

1. *l^* is increasing in $\overline{r}$, the average level of efficiency in the economy.*

2. *l^* is increasing in s, the pre-restructuring returns in the economy.*

3. *l^* is decreasing in γ, a measure of the inefficiency of law enforcement.*

Figure 1 below, shows $l^*(\overline{r})$ for a certain set of parameter values.[4] Figure 2 shows $l^*(s)$ while figure 3 shows $l^*(\gamma)$

[4]Unless otherwise stipulated, in all these simulations

$$\overline{L} = 2, \alpha = 1/2, \beta = 3/4, \mu = 1, \gamma = 4/5, c = 1/100, s = 1, \overline{r} = 0$$

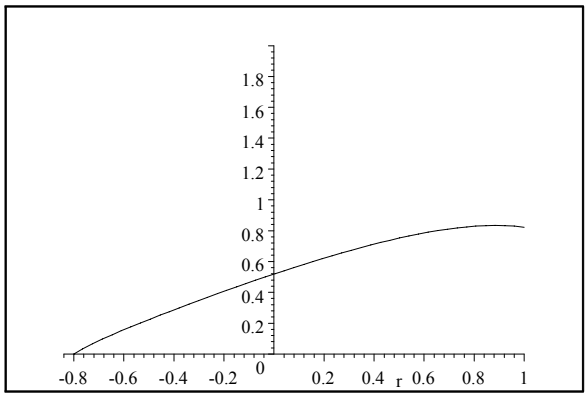

Figure 1. $l^*(\overline{r})$

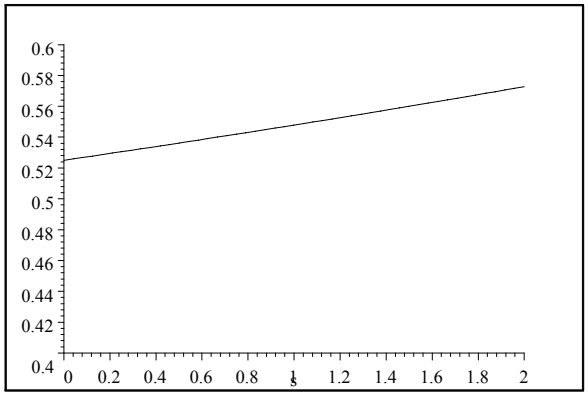

Figure 2. $l^*(s)$

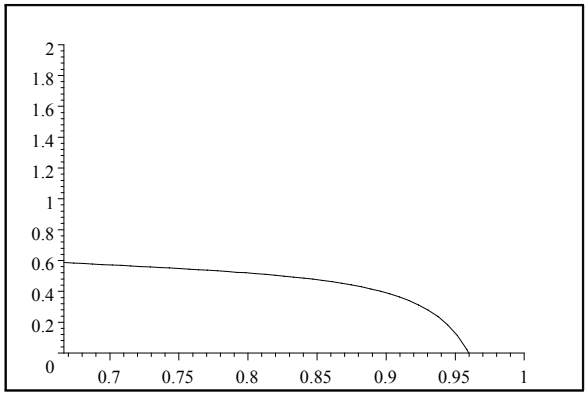

Figure 3. $l^*(\gamma)$

The last of these results is hardly surprising. It says that if law enforcement is less effective, the government will have to lower the threshold at which it intervenes to compensate for that.

The threshold is also increasing in s, which is the pre-restructuring level of efficiency in the economy. Intuitively, a higher s makes firms even more reluctant to loot. Indeed,

except, of course when the parameter becomes the relevant variable. Also note that in some case the boundaries are reduced because (5c) and $\alpha v(r)(1-\gamma) \geq c$ mus be satisfied for l^* to be well defined.

(5) can be rewritten as

$$\begin{array}{rll} v(r) > \frac{1-\gamma}{\gamma} s & if & r \leq 0 \\ v(r) > \frac{1-\gamma}{\gamma} s + \frac{1}{\gamma} r & if & r > 0 \end{array}$$

and it is easy to see that as s increases, the benchmark becomes higher as firms have now more to lose if looting is not successful.

Finally, if the average efficiency in the economy increases, so does l^*. While such an increase obviously increases the incentive for the government to catch looters (as $v(\overline{r})$ is now higher), it can also be shown that it increases the share of relatively small firms who loot and this effect would tend to make the government reduce l^*. The first effect dominates the second and l^* is increasing in $\overline{r}$.

4. Measures of Looting

Our theoretical model stresses the counter-intuitive relationship between looting and the size of the firm. In order to test empircially the implications of the model, we need measures of looting. The data set we choose to examine the issue of looting in transition economies is the one used by Johnson, Kaufmann, McMillan and Woodruff (2000). Although it is described in detail in their paper, there are a number of features that are of particular interest to our concerns.

The survey was carried out in mid-1997, in five very different transition economies, namely, Poland, Slovakia, Romania, Ukraine and Russia. This group of countries offer a range of speeds and types of institutional and economic reform. For instance, in terms of progress in transition the EBRD (2000) transition indicators put Poland as a top all-around performer and Slovakia as a good performer with caveats in terms of accountability and transparency. Romania is classified as an intermediate case, while Russia and Ukraine, in this order, complete the ranking. It must be said that this set of countries also display a wide array of initial conditions, industrial structures and privatization strategies.

The survey was carried out through face-to-face interviews with general managers of about 300 firms in each of the five countries. These are basically medium sized firms and as such the large majority of these were founded recently, that is, after 1990. Johnson et al. (2000) argue that "the resulting sample is reasonably representative of small and medium-sized manufacturing firms in each country, though it is not a census."

Another feature of the sample is that it includes start-up firms as well as firms that are spin-offs from state enterprises. The sample reflects the ownership structure in the different countries. For instance, for Russia and Ukraine more than 50% of the firms interviewed are spin-offs (from state owned enterprises) while in the other three countries the share of start-ups is much higher. Our focus in this paper is on looting and the measures we propose for it are based on the amount of capital (physical and financial) that were appropriated illegally from a state enterprise. Capital from state enterprises is, almost by definition, more likely to be found in a spin-off than in a start-up firm. In order to provide estimates of looting that are conservative, we decide to limit our attention to start-up firms and we do that, in our empirical analysis, by keeping in the sample only those firms that answer "no" to the question "was this firm previously a part of a state enterprise?" Our sample

starts out with slightly less than 1,500 firms in the five countries (to be precise: 303 in Poland, 308 in Slovakia, 321 in Romania, 268 in the Ukraine and 269 in Russia). Once we restrict it to those firms that were not previously part of a state firm, the sample reduces to 966 firms: 237 in Poland, 238 in Slovakia, 281 in Romania, 128 in Ukraine and 82 in Russia. If one believes that looting is more prominent in Russia and Ukraine than in the other three countries, focusing solely on start-ups will also provide more conservative estimates of looting.

Table 1 shows the average number of full-time employees in all five countries, in different industrial sectors at the date the firm started to operate. By and large these are medium size firms, with on average 25 employees. The averages are not particularly different among the Romanian, Slovak and Ukrainian firm, but the Polish and Russian firms tend to be slightly larger. It is interesting to note that larger firms are in pulp and paper and chemicals, and the relatively smaller firms are in handicrafts.

How do we measure looting? As noted above, we define looting as capital currently owned by a private firm that was illegally appropriated from a state enterprise. To say the least, this phenomenon is extremely difficult to measure. Consider a high-level bureaucrat of a manager of a state firm, early in the transition. She decides that it is worthwhile to loot. There are at least two non-excluding options: one is to take physical capital from a state firm and use it to open a private firm. Another is to sell physical capital from a state firm and use the proceedings to open a private firm. Fortunately, the data sets contain information that captures these two types of looting. One way we measure looting is as the percentage of the firm's capital equipment that originated from a state enterprise. In the survey questionnaire, this is presented as follows:

Question: How much of your capital equipment came from state enterprises which helped found this firm?

1	0%
2	1-25%
3	26-50%
4	51-75%
5	76-100%

Table 2 summarizes the answers to this question. It shows that looting is a more common phenomenon in Russia and Ukraine, where more than 30 percent of the firms interviewed , which were not part of a state enterprise, say that a positive share of their capital came from the state sector at the firm's foundation. Because the share of start-ups is smaller in the Russian and Ukrainian samples, it is even more remarkable that there are a few firms in the other countries that (despite being start-ups) have almost all of their capital originating from the state sector. This is, however, an interesting commentary. The data is unequivocal in suggesting that looting has been a more severe problem in Russia and Ukraine than in Poland, Slovakia and Romania.

Table 3 shows the distribution of looting across industrial sectors, irrespective of country of operation. One way of reading the table is to try to identify those sectors with a lowest share of firms saying that zero percent of their capital came from state enterprises (those will be the sectors with relatively more looting according to our first measure).

From Table 3, we identify handicrafts, wood and food products and clothing as the sectors in which looting is relatively low. On the other hand, looting is relatively high in metal parts, construction, chemical products, electrical machinery and in pulp and paper.

In a nutshell, our first measure of looting seems to work well as it shows that in sectors in which there is more to loot (that is, more capital), there seems to be more looting. It also generates measures of looting accross countries that accord to expectations based upon the EBRD transition indicators.

One major problem with this measure is the possibility that not all capital in a start-up firm (that was never part of a state enterprise) was acquired through illegal means or looting. It may well be the case that the firm has purchased those assets from the public sector and paid for them the full market price. For this latter possibility to actually happen, there must have been homogeneity across the five countries in their privatization methods: large state firms must have been dismantled piece by piece and directly sold to these start-up firms in all five countries. This has clearly not been the case. The cross-country aspect of the data is useful at this point, as these five countries have employed markedly different privatization methods. For instance, for this sample only Russia and Slovakia used voucher schemes, Romania and Ukraine emphasized privatization to insiders (management buyouts) and direct sales played a role in the Polish and Slovak privatizations. Admittedly, this first measure is not pure in that it is picking up looting as well as legal acquisition of public capital by de novo firms. Yet we believe the share of the latter is not large. Unfortunately, the data does not permit breaking down the measure. Fortunately, however, the data set offers another possible measure of looting.

While our first measure of looting focuses on physical capital, the second focuses on financial assets. The measure refers to the relative importance of various sources of start-up capital at the date of the foundation of the firm, again for those firms who answered that they were never a part of a state enterprise. In the survey questionnaire, this is presented as follows:

Question: From which source did you get your start-up capital in the beginning and what was the percentage share from each source?

1	Your own savings
2	Savings of family
3	Savings from other private firms or individuals
4	Financing from a state enterprise
5	A loan
6	Issuing shares to the public
7	Other (specify)

If you answer 5 (a loan), where was this loan obtained from? 1. State bank 2. Private bank 3. A friend 4. A family member 5. A domestic private firm 6. A domestic state firm 7. A foreign firm 8. Other source: (specify)

For our second measure, we count as looting the percentage of start-up capital in the beginning from the source "financing from a state enterprise." Notice that the respondent

has to differentiate between a loan from a state bank and our second measure of looting. The rationale for only including start-ups in the sample is even stronger in this case.

Table 4 summarizes the responses by country. Notice that the number of observations declines vis-à-vis those that answered the question underlying our first measure of looting and it does so in an unnatural way. The number of Polish, Slovak and Romanian respondents is very much the same as before. The decline in the number of observations is driven almost entirely by Russian and Ukrainian firms which decline answering this question. In spite of this, the smallest percentages of firms answering that none of their start-up capital came from financing from a state enterprise are those for Ukraine and Russia. So, even according to our second measure of looting these latter two countries stand out. Notice that, according to this second measure, looting does not vary as much across industrial sectors. The latter is an important result. It suggests that not only the second measure of looting works relatively well per se, but it also performs satisfactorily vis-à-vis our first looting measure. There are very few reasons to expect that sectorial differences would be found in an indicator of looting that does not stress amount of physical capital looted, but emphasizes finance.

Finally, institutional conditions play an important role in understanding the nature and extent of looting across transition economies. Table 5 shows the shares of unreported sales on actual figures for all five countries and all industrial sectors. The results show that the share of unreported sales is much higher in Russia and the Ukraine than in the other three countries. It is remarkable that high shares of unreported sales are not confined to less visible sectors (such as food and clothing), but extend to rather visible sectors such as chemical products. Notice that there is also a lot of inter-sectoral variance: for instance, unreported sales in the Russian pulp and paper industry are almost 50 percent of actual sales, while in the Ukrainian pulp and paper industry they are less than 15 percent of actual sales. They are close to 10 percent of actual sales in Slovakia and about 3 percent in Poland and Romania. Notice that results for salaries, exports and imports, follow similar patterns and give a clear picture of the very different institutional environments in which these firms operate.

5. Empirical Results

The theoretical model emphasises that one of the key determinants of looting is the size of the firm. The previous discussion on the difficulties of measuring looting called attention to the fact that looting has various facets. Our data set does not allow us to measure looting directly (that is, from the perspective of the looted firm) at the moment it has more likely occurred, that is, early in the transition from plan to market when uncertainty about future performance and choice of reform strategies was high. In a number of cases, firms were looted, equipment sold and the proceedings invested in financial assets instead of re-invested in industrial activities in some form. Because the data is based on manufacturing firms' responses, it will under-estimate the amount of looting for these reasons. Yet, the data allow us to study the equipment and finance channels raised above in the context of our theoretical model. One important question is whether or not controlling for various determinants of looting, the number of employees or the size of the firm remains a crucial

part of the explanation.

Table 6 presents maximum-likelihood ordered probit estimates for our first measure of looting, namely, the share of physical capital at the outset that originated from a state enterprise. Recall the sample we use solely contain start-ups that were never part of a state enterprise (that is, it excludes all spin-off firms). Column 1 shows our results when we also control for country and industry-specific characteristics. It shows that size, as measured by total number of employees at the date the firm was founded, is a positive and significant determinant of looting as our model predicts. There are also some interesting results with respect to the fixed effects we are controlling for. Romania was chosen as the reference category for the countries and "miscellaneous" as the reference category for the industrial sectors. According to our first measure of looting, it seems to be a more severe problem in Russia and Ukraine then in Poland and Slovakia (note that all these coefficients are statistically significant). In terms of the industrial sectors, the results are much less informative. Yet, there is some evidence that the type of looting in question is less severe in the food and handicrafts industries.

One potential problem with these results is that the variable capturing firm size includes part-time workers. The data set offers an alternative, namely the number of full-time workers at the date the firm was founded. Column 2 shows our results if we use this different measure of firm size. Using this alternative measure, we once again find that larger firms seem to have looted more. Notice that using a measure of firm size at the date the firm started to operate lessens endogeneity concerns. Further, the pattern of results with respect to the country dummies does not change. As for differences across industries, the only important change is that using full-time workers as a measure of size the clothing sector also appears to have been subjected to less looting.

A third important issue for our understanding of looting in transition is the age of each firm. It is important to make sure that the results above are not driven by differences in how long these small and medium private firms have been in operation (e.g., latecomers or newer firms having looted less). Column 3 presents these results when controlling for the year the firm was registered and our preferred measure of firm size (number of full-time employees). Notice that our results do not change; size is still a fundamental explanatory factor of looting in transition. Further, the pattern of results we obtained with the country and sector dummies remains intact. Column 4 shows that using our preferred measure of age, namely the year when the firm started operating, generates very similar results.

We find that firm size is important to understand looting when the latter is measure as a share of initial capital. What happens if we use another measure of looting? That is, what happens if we measure looting by the share of start-up capital that was obtained as a loan from a state enterprise? Table 7 has these results. Column 1 shows that, using our second measure of looting and controlling for country and sector-specific characteristics, firm size, as measured by total number of employees at the date the firm was founded, is a positive and significant determinant of looting. This is exactly what our model predicts. There are also some interesting results with respect to the dummy variables. In particular, the conclusions are the same irrespective of which measure we use. Looting seems to be a more severe problem in Russia and Ukraine then in Slovakia (note that all these coefficients are statistically significant). Interestingly, the coefficient on the dummy variable

for Poland is not statistically significant. In terms of industrial sectors, the results are less informative. Yet there is some evidence that the type of looting in question is less severe in the handicrafts sector. Column 2 shows our results if we use our preferred measure of firm size. Using this alternative measure, we once again find that larger firms seem to have looted more. Further, the pattern of results with respect to the country dummies does not change. As for differences across sectors, the only important change is that using full-time workers as a measure of size the clothing sector appears to have been subjected to less looting.

As noted, an important issue for looting in transition is firm's age. Column 3 presents our results when controlling for the year the firm was registered and our preferred measure of firm size (number of full-time employees in the year the firm started to operate). Notice that our main result is unaffected; firm size is still a fundamental explanatory factor of looting in transition. However, with this second measure of looting, the age of the firm becomes a significant explanatory factor: older firms seem to have looted more than newer firms. Further, the pattern of results we obtain with the country and industry dummies remain intact. Column 4 shows that using our preferred measure of age, namely the year when the firm started operating, generates similar results. Although older firms have a higher share of start-up capital finance in the beginning from state firms, size is still a crucial explanatory factor for looting.[5]

There is an additional determinant of looting our model stresses, namely institutions. Ceteris paribus, effective law enforcement discourages looting. Note that looting occurs in countries and industries in which the probability of punishment differs (we expect these differences to also hold over time, but unfortunately we do not have the time dimension in the data set). As noted above, the data offers some different measures of institutions. For instance, it asks firms to estimate the share of average unreported sales on total sales in their sector of activity. Table 8 presents our results in this respect, focusing on the first measure of looting (share of physical capital) and using our preferred measure of firm size and firm age (number of full-time employees at start of operation and year of start of operation, respectively). Column 1 shows that size is still a crucial determinant, although the coefficient on the institutional variable (share of unreported sales on total sales) is not statistically significant.[6]

Column 2 from Table 8 has similar results for another proxy for institutional conditions, namely, the share of unreported salaries on total salaries. Although the major prediction of our model is born out by the data, the results suggest a counter-intuitive result for the institutional variable: the larger the relative share of unreported salaries, the smaller the looting. Column 3 shows our results when the institutional variable is the share of input costs that are unreported. It is interesting to note that this time around the sign on the coefficient for institutions carries the expected sign: the higher the degree of underreporting (input costs in this case) the more likely the firm has looted. Column 4 shows the results for using the share of unreported exports on total exports and column 5 shows same set of

[5]These results are unaffected by the inclusion of capital intensity measured (at the date of the firm foundation) in the estimation.

[6]Firm size remains the main determinant of looting if country dummies are included in the estimation, irrespective of the measure of looting we use. These results are available from the authors on request.

results when the institutional variable is the share of unreported imports on total imports. In these last two cases, although the coefficient on these institutional variables have the expected positive signs, only the one on exports is statistically significant. Firm size is still a crucial explanatory factor to understand looting in transition.

How do institutional conditions perform as a determinant of looting when the latter is measured as the share of state firm finance in the start-up capital of these de novo firms? Table 9 shows these results. None of the coefficients on the institutional variables we report is statistically significant, but firm size continues to play an important role. Size of the firm is again found as a significant explanatory variable for looting, corroborating our hypothesis that larger firms play a fundamental role in driving looting in transition economies.

Table 10 test for one of the main implication from our model. We argue that, in terms of relative efficiency, there will be three types of firms. The first type is for those firms with very low efficiency. In this case, the expected payoff is so low that looting does not occur. For the high efficiency firms, there is not need to loot: expected firm returns are so high that it is that the risk of getting caught looting is not worthwhile. The third type is the middle ground. These are firms that have intermediate levels of efficiency in the sense that in order to raise returns it should loot, given the probability of getting caught. Empirically this translates into testing whether there is an inverted-U relationship between firm efficiency and looting. The only measure the data set offers of this relative efficiency, at the moment the firm is founded, is profitability. Our expectation is that the linear coefficient on this measure would be positive and for the quadratic negative. Column 1 shows that after-tax profits in the first full year of operation of the firm has a positive and significant impact on looting measured as share of physical capital (notice that this result obtain irrespective of whether or not we control form the age of the firm). Column 2 shows that the inverted-U prediction generated by our model is confirmed: the coefficient on the linear term is positive and statistically significant while the coefficient on the quadratic term is negative and statistically significant. Yet our main results are in column 3: the size of the firm is still a fundamental determinant of looting in transition even accounting for differences in firm efficiency. Column 4 of Table 10 shows results for our second measure of looting. In this case, the coefficient on profitability as a measure of efficiency carries the correct sign, but is not statistically significant. Column 2 shows evidence that the inverted-U pattern we discussed above seems relevant, although the coefficients are not statistically significant. Note, however, that column 6 has our main result, namely that firm size is still a fundamental determinant of looting in transition economies.

One final issue that should be addressed is whether or not looting provides an early advantage to firms. Do looters grow faster? Do firms that looted more perform better than firms that have looted less? Unfortunately, our data set is not as comprehensive when it comes to measuring firm performance. There is one measure available, namely, the increase in the employment of full-time workers between the date the firm started operating and the data of the survey. Table 11 shows some preliminary results on the effects of our two measures of looting on firm performance. Column 1 has a number of interesting results. First, although firm growth does not seem different across industrial sectors, it certainly differs across countries. Polish and Slovak firms seem to have grown much faster than

their Romanian, Ukrainian and Russian counterparts. Second, the initial size of the firm matters for its subsequent growth: the smaller the firm, the faster it has grown. Third, older firms seem to have grown faster than newer firms. Column 2 adds our first measure of looting to this specification. Notice that the results just discussed remain. In addition, looting has a positive effect on firm growth, although the coefficient is only statistically significant at 11 percent. Column 3, however, shows that our second measure of looting is statistically significant and does affect our previous results. Firms that have looted, in particular through the finance channel, seem to have done better than their counterparts in terms of employment growth. This result also supports our theoretical predictions in that the government will be more reluctant to seize assets from firms that are growing faster.

In summary, this section has presented econometric evidence that attempt to support the theoretical model developed earlier. The results provide ample support for our hypothesis: firm size is an important determinant of looting in transition economies. Larger firms loot more. This conclusion is robust to different measures of looting, different proxies for institutional conditions, different ways to measuring firm size and different ways of measuring the age of the firm.

6. Conclusions

In this paper, we presented a theory of looting in transition economies which highlights the importance of firm size. We argued that very large firms which own looted assets will be safe from law enforcement because governments understand that the costs of intervening against them, in terms of employment, are larger than the benefits of reclaiming the looted assets.

Using firm-level survey data for about 1,000 firms in Poland, Slovak Republic, Romania, Ukraine and Russia in 1997, we find ample support for our hypothesis: firm size is an important determinant of looting in transition economies. This result is robust to different measures of looting, different proxies for institutional conditions, different ways to measuring firm size and different ways of measuring the age of the firm.

The analysis suggests a possible policy implication. If many assets are sector-specific so that large looters necessarily loot out of large firms, then a way to avoid looting at least to some extent, is to avoid immediate privatization for large firms. Small firms will not lend themselves to looting much and this will allow the government to build up enough resources to improve the effectiveness of law enforcement. As we've seen, as this improves, l^*, the minimal size at which all firms loot, will increase thus allowing a second stage privatization for large firms with fewer consequences. The fact that firm size is easily observable makes this a definite possibility. Note that to some extent, privatizing on the basis of efficiency of firms, by privatizing the very inefficient and the very efficient firms at the same time would also be effective, but much less practical as efficiency is not easily observable by the government.

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Table 1
Average Number of Full-Time Employees, by Industry and Country

main business activity	country					
	Poland	Slovakia	Romania	Ukraine	Russia	Total
Metal pa	26.19	13.77	19.53	20.13	33.64	20.45
Wood pro	15.38	25.36	36.61	24.00	39.00	28.23
Food pro	11.87	15.63	12.09	25.12	17.20	14.48
Clot/fwe	53.89	22.03	27.61	26.55	28.33	34.27
Construc	24.44	22.81	21.32	23.40	38.14	23.97
Chemical	24.62	18.81	17.92	27.00	45.25	22.23
Paper an	53.25	57.22	79.00	18.13	19.00	48.80
Handicra	9.67	3.50	14.40	10.00	21.25	13.53
Electric	48.71	20.10	13.50	19.73	27.11	29.12
Miscella	42.94	8.63	13.29	17.57	33.52	24.11
Total	31.89	19.13	22.41	21.96	31.58	24.65

Table 2
Looting as Physical Capital from State Enterprise, per Country

	capital from st/enterprises					
country	0%	1 - 25%	26 - 50%	51 - 75%	76 - 100	Total
Poland	226	7	0	0	3	236
	95.76	2.97	0.00	0.00	1.27	100.00
Slovakia	229	2	3	2	2	238
	96.22	0.84	1.26	0.84	0.84	100.00
Romania	245	26	6	0	4	281
	87.19	9.25	2.14	0.00	1.42	100.00
Ukraine	80	20	24	3	0	127
	62.99	15.75	18.90	2.36	0.00	100.00
Russia	52	21	7	1	0	81
	64.20	25.93	8.64	1.23	0.00	100.00
Total	832	76	40	6	9	963
	86.40	7.89	4.15	0.62	0.93	100.00

Table 3
Looting as Physical Capital from State Enterprise, per Industry

main business activity	capital from st/enterprises 0%	1 - 25%	26 - 50%	51 - 75%	76 - 100	Total
Metal pa	201	17	9	1	3	231
	87.01	7.36	3.90	0.43	1.30	100.00
Wood pro	69	4	1	1	0	75
	92.00	5.33	1.33	1.33	0.00	100.00
Food pro	117	5	4	1	1	128
	91.41	3.91	3.13	0.78	0.78	100.00
Clot/fwe	143	5	1	0	3	152
	94.08	3.29	0.66	0.00	1.97	100.00
Construc	67	14	5	0	1	87
	77.01	16.09	5.75	0.00	1.15	100.00
Chemical	69	6	1	1	1	78
	88.46	7.69	1.28	1.28	1.28	100.00
Paper an	23	3	3	1	0	30
	76.67	10.00	10.00	3.33	0.00	100.00
Handicra	14	1	0	0	0	15
	93.33	6.67	0.00	0.00	0.00	100.00
Electric	51	3	5	0	0	59
	86.44	5.08	8.47	0.00	0.00	100.00
Miscella	78	18	11	1	0	108
	72.22	16.67	10.19	0.93	0.00	100.00
Total	832	76	40	6	9	963
	86.40	7.89	4.15	0.62	0.93	100.00

Table 4
Looting as Start-up Capital Finance from State Enterprise

country	% from financing from state ent 0%	1-30%	31-70%	71-100%	Total
Poland	231	2	1	3	237
	97.47	0.84	0.42	1.16	100.00
Slovakia	237	0	0	1	238
	99.58	0.00	0.00	0.42	100.00
Romania	279	0	0	2	281
	99.29	0.00	0.00	0.71	100.00
Ukraine	30	2	3	1	36
	83.33	5.56	11.12	2.78	100.00
Russia	21	1	1	0	23
	91.30	4.35	4.35	0.00	100.00
Total	798	5	5	7	815
	97.91	0.12	0.25	0.25	100.00

Table 5
Share of Unreported Sales as a Percentage of Actual Sales, per Industry and Country

	Poland	Slovak	Romania	Ukraine	Russia	AVERAGE
Metal parts	4.387	7.545	5.717	12.83	38.62	10.66
Wood prod/furn	7.467	7.111	7.895	36.67	50.63	17.10
Food prod & bev	5.000	7.762	5.000	42.14	26.82	11.72
Clot/ftw/leathw	9.459	10.880	3.857	46.79	45.00	16.05
Construction	8.846	7.381	5.619	25.00	45.48	20.46
Chemical prod	2.292	4.000	7.313	47.13	45.93	16.92
Paper & packing	3.333	9.167	2.000	13.13	46.67	21.21
Handicrafts/art	15.500	5.000	17.500	22.50	.	16.57
Electrical mach	0	8.067	12.500	37.25	38.53	20.52
Miscellaneous	4.455	4.722	0	19.24	44.05	23.74
AVERAGE	5.409	7.4	5.74	26.77	41.33	16.34

Table 6
Determinants of Looting in Transition Economies:
Size, Age, Country and Industry Effects
(Looting as share of physical capital from state enterprise)
Maximum Likelihood Ordered Probit Estimates

	(1)	(2)	(3)	(4)
Firm size (all employees)	.0032818*** .0009219			
Firm size (full time employees)		.0033678*** .0009918	.0032938*** .0010344	.0033466*** .0010199
Age: Year firm was registered			-.0071052*** .0086442	
Age: Year firm start operate				-.0017976*** .0098262
Dummy: Poland	-.6420098*** .18247	-.6192851*** .182535	-.6482206*** .1934684	-.6262677*** .1953646
Dummy: Slovakia	-.5253911*** .1984458	-.5141614*** .1987835	-.5086147*** .1983948	-.5124628*** .1979665
Dummy: Ukraine	.7546334 *** .1479247	.7714167*** .1490329	.7834399 *** .1493542	.7877735*** .149336
Dummy: Russia	.5889555*** .171428	.5990062*** .1725479	.6089294*** .1723063	.6057307*** .1724282
Dummy: Metal	-.0533598 .1693991	-.0703726 .1710303	-.0549382 .1731645	-.0651068 .1714169
Dummy: Wood	-.3588413 .2620057	-.3548329 .2630598	-.3356927 .2644962	-.347592 .2637182
Dummy: Food	-.4117589** .2207925	-.3882878* .2225639	-.3591268 .223869	-.3710532* .223041
Dummy: Cloth	-.5992482*** .2340664	-.5910284** .2354151	-.5524972** .2368924	-.5641574** .2360773
Dummy: Construction	.0894162 .1904287	.1046519 .1912545	.1114582 .1936623	.1086102 .1915741
Dummy: Chemical	-.0945663 .2442231	-.0879053 .2452341	-.065041 .2467243	-.0807764 .2449548
Dummy: Pulp and paper	.0217597 .286572	.0125816 .28479	.0261483 .2858165	.0146632 .2853578
Dummy: handcrafts	-.8318621* .4782458	-.8264881* .4782098	-.810628* .4771714	-.7557313 .4785867
Dummy: Electric	-.2079513 .2357072	-.2108969 .2367375	-.2069372 .2384622	-.2111254 .2374734
Number of obs	951	941	937	937
Log likelihood	-445.95848	-440.47021	-437.79923	-439.46898

*** denotes statistically significant at the 1 percent level.
** denotes statistically significant at the 5 percent level.
* denotes statistically significant at the 10 percent level.

Table 7
Determinants of Looting in Transition Economies
Size, Age, Country and Industry Effects
(Looting as share of start-up capital finance from state enterprise)
Maximum Likelihood Ordered Probit Estimates

	(1)	(2)	(3)	(4)
Firm size (all employees)	.005635*** .0014489			
Firm size (full time employees)		.0060218*** .0015397	.0088443*** .0022294	.0087808*** .0022092
Age: Year firm was registered			.0964915*** .0370522	
Age: Year firm start operate				.0902841*** .0296299
Dummy: Poland	.182405 .3780829	.1868368 .3852144	.4857856 .4078391	.4902156 .4136405
Dummy: Slovakia	-7.506352*** .5838751	-8.181203*** .6327527	-7.735871*** .74298	-7.836043*** .7493513
Dummy: Ukraine	1.660325*** .4227547	1.66622*** .4275078	1.944857 *** .4796766	1.933737 *** .4919401
Dummy: Russia	1.354407 ** .5530223	1.366751 ** .5579288	1.634006 ** .6231307	1.607666** .6267835
Dummy: Metal	-.5162287 .5656103	-.5309239 .5849571	-.3570975 .4989701	-.3700744 .4986823
Dummy: Wood	.5894482 .5280249	.5830995 .5253022	.6646161 .5729261	.6375973 .5729693
Dummy: Food	-.4043345 .6196525	-.3702383 .6186935	-.4185349 .6516119	-.4430015 .666258
Dummy: Cloth	.3248466 .4472976	.3418817 .4425024	.4587197 .4772805	.4175258 .468401
Dummy: Construction	-.0662667 .5352099	-.0362784 .5345579	.071425 .6036149	.0557298 .5966471
Dummy: Chemical	.2791748 .5977592	.2846883 .598136	.3206078 .6187308	.2622068 .6266471
Dummy: Pulp and paper	-.0620246 .6373983	-.0939673 .6577775	-.2763078 .7629732	-.2836557 .7582765
Dummy: handcrafts	-7.20824 *** .3809507	-7.774536*** .3759359	-7.260833 *** .4211246	-5.978158 *** .5226505
Dummy: Electric	.3703193 .6489901	.3599747 .64454	.2020758 .6319136	.1836283 .6378744
Number of obs	804	794	794	793
Log likelihood	-76.330472	-75.763781	-72.341736	-72.469485

*** denotes statistically significant at the 1 percent level.
** denotes statistically significant at the 5 percent level.
* denotes statistically significant at the 10 percent level.

Table 8
Determinants of Looting in Transition Economies
The Role of Institutional Conditions
(Looting as share of physical capital from state enterprise)
Maximum Likelihood Ordered Probit Estimates

	(1)	(2)	(3)	(4)	(5)
Firm size (full time employees)	.0025269*** .0009713	.0025976*** .0009305	.003557 *** .0008489	.0020777* .001077	.0021272** .0010644
Age: Year firm start operate	.0257809*** .0094995	.0258461*** .0094788	.0258982* .0142811	.0164358* .009387	.0158119* .008833
Share unreported on total sales	.0003224 .0028309				
Share unreported on total salaries		-.0059332** .0029285			
Share unreported on total inputs			.0045717** .0020505		
Share unreported on total exports				.0033312* .0017259	
Share unreported on total imports					.0022244 .0018261
Country dummies?	No	No	No	No	No
Industry dummies?	Yes	Yes	Yes	Yes	Yes
Number of obs	635	622	400	599	592
Log likelihood	-382.40154	-369.97615	-165.35699	-350.41851	-344.00224

*** denotes statistically significant at the 1 percent level.
** denotes statistically significant at the 5 percent level.
* denotes statistically significant at the 10 percent level.

Table 9
Determinants of Looting in Transition Economies
The Role of Institutional Conditions
(Looting as share of start-up capital finance from state enterprise)
Maximum Likelihood Ordered Probit Estimates

	(1)	(2)	(3)	(4)	(5)
Firm size (full time employees)	.012881*** .0025578	.013343*** .002726	.0211934*** .0065871	.0087379*** .0021447	.0090749*** .0021326
Age: Year firm start operate	.096616** .0418724	.0980862** .0463797	.0405666 .0311885	.1230943* .0722964	.1054309 .0909429
Share unreported on total sales	.0014961 .0062802				
Share unreported on total salaries		.0091974 .0074871			
Share unreported on total inputs			.0044801 .0054307		
Share unreported on total exports				-.0029353 .004355	
Share unreported on total imports					-.0023032 .0041506
Country dummies?	No	No	No	No	No
Industry dummies?	Yes	Yes	Yes	Yes	Yes
Number of obs	550	540	387	519	512
Log likelihood	-27.021774	-26.297151	-10.314697	-31.655472	-31.399442

*** denotes statistically significant at the 1 percent level.
** denotes statistically significant at the 5 percent level.
* denotes statistically significant at the 10 percent level.

Table 10
Determinants of Looting in Transition Economies
The Role of Profitability
Maximum Likelihood Ordered Probit Estimates

	Looting as share of physical capital from state enterprise			Looting as share start-up capital finance from state enterprise		
	(1)	(2)	(3)	(4)	(5)	(6)
After-tax profit 1st year (% inv.)	.0790108* .0434757	.678255*** .2378116	.715482*** .2432169	.0457761 .0811595	.2808576 .3234383	.4457058 .503941
Squared: After-tax profit 1st year (% inv.)		-.075432** .0296042	-.074663** .0307018		-.0302736 .041599	-.0190207 .0613542
Firm size (full time employees)			.003798*** .0010986			.010143*** .0023612
Age: Year firm start operate	-.0044435 .0084417	-.0018137 .0086814	-.0082135 .0111584	-.014462 .0182538	-.0132209 .0178278	.1180936 .0404544
Country dummies?	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies?	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs	941	941	923	796	796	779
Log likelihood	-451.29614	-448.45513	-432.65135	-94.458955	-94.344382	-70.501859

*** denotes statistically significant at the 1 percent level.
** denotes statistically significant at the 5 percent level.
* denotes statistically significant at the 10 percent level.

Table 11
Do looters grow faster?
Firm growth measured as employment growth
Ordinary Least Square estimates

	(1)	(2)	(3)
Looting as share of physical capital from state enterprise		.3818312 .2365359	
Looting as share start-up capital finance from state enterprise			.0482659** .0242446
Firm size (full time employees)	-.0253807*** .0076058	-.0260312*** .0070996	-.0292604*** .0068578
Age: Year firm start operate	-.1668572*** .0549557	-.16511*** .0549601	-.1803181*** .0566858
Dummy: Poland	2.249921*** .5996804	2.289272*** .6053734	2.214405*** .60497
Dummy: Slovakia	.8377006** .3910483	.8739044** .3934206	.8762058** .397942
Dummy: Ukraine	-2.507348*** .2716009	-2.68121*** .2783556	-2.927194*** .3865893
Dummy: Russia	-2.016007*** .3123953	-2.110401*** .3198586	-2.336728*** .4445761
Dummy: Metal	-.2904096 .5466622	-.2793746 .5476507	-.3697093 .7184399
Dummy: Wood	-.1126976 .6368935	-.0706051 .6388427	-.270858 .773965
Dummy: Food	-.3489197 .4976887	-.3097878 .5012996	-.4523344 .6537885
Dummy: Cloth	.2139844 .543189	.2748071 .5480909	.1356837 .7176334
Dummy: Construction	-.8631667 .5918364	-.8661325 .5948462	-1.1284 .8107794
Dummy: Chemical	-.1371158 .5950002	-.1600625 .6014553	-.2100966 .7651634
Dummy: Pulp and paper	.7701917 1.179801	.7647374 1.183512	1.111828 1.51214
Dummy: Handicrafts	1.455744 2.71897	1.538796 2.723109	2.106291 3.807761
Dummy: Electric	-.9344577 .590056	-.9201808 .5951358	-1.39654 .8964226
Constant	18.64515*** 5.159	18.02307*** 5.184677	20.0347*** 5.29583
Number of obs	937	935	792
R-squared	0.1669	0.1665	0.1356

*** denotes statistically significant at the 1 percent level.
** denotes statistically significant at the 5 percent level.
* denotes statistically significant at the 10 percent level.